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Technical Specification

**Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
Internet Protocol (IP) multimedia call control protocol
based on Session Initiation Protocol (SIP) and
Session Description Protocol (SDP);
Stage 3
(3GPP TS 24.229 version 8.3.0 Release 8)**



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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document defines a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP).

The present document is applicable to:

- the interface between the User Equipment (UE) and the Call Session Control Function (CSCF);
- the interface between the CSCF and any other CSCF;
- the interface between the CSCF and an Application Server (AS);
- the interface between the CSCF and the Media Gateway Control Function (MGCF);
- the interface between the S-CSCF and the Multimedia Resource Function Controller (MRFC)
- the interface between the CSCF and the Breakout Gateway Control Function (BGCF);
- the interface between the BGCF and the MGCF;
- the interface between the CSCF and an IBCF;
- the interface between the BGCF and any other BGCF; and
- the interface between the CSCF and an external Multimedia IP network.

Where possible the present document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of SIP and SDP. Where this is not possible, extensions to SIP and SDP are defined within the present document. The document has therefore been structured in order to allow both forms of specification.

As the IM CN subsystem is designed to interwork with different IP-Connectivity Access Networks (IP-CANs), the IP-CAN independent aspects of the IM CN subsystem are described in the main body and annex A of this specification. Aspects for connecting a UE to the IM CN subsystem through specific types of IP-CANs are documented separately in the annexes or in separate documents.

NOTE: The present document covers only the usage of SIP and SDP to communicate with the entities of the IM CN subsystem. It is possible, and not precluded, to use the capabilities of IP-CAN to allow a terminal containing a SIP UA to communicate with SIP servers or SIP UAs outside the IM CN subsystem, and therefore utilise the services provided by those SIP servers. The usage of SIP and SDP for communicating with SIP servers or SIP UAs outside the IM CN subsystem is outside the scope of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

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[2] 3GPP TS 23.002: "Network architecture".

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- [4] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [4A] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".
- [4B] 3GPP TS 23.167: "IP Multimedia Subsystem (IMS) emergency sessions".
- [4C] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".
- [5] 3GPP TS 23.218: "IP Multimedia (IM) Session Handling; IM call model".
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- [7] 3GPP TS 23.228: "IP multimedia subsystem; Stage 2".
- [7A] 3GPP TS 23.234: "3GPP system to Wireless Local Area Network (WLAN) interworking; System description".
- [8] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network protocols; Stage 3".
- [8A] 3GPP TS 24.141: "Presence service using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".
- [8B] 3GPP TS 24.147: "Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".
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- [11C] 3GPP TS 29.161: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based Services with Wireless Local Access and Packet Data Networks (PDN)".
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- [13C] 3GPP TS 29.213: "Policy and charging control signalling flows and Quality of Service (QoS) parameter mapping".
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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

- Entry point:** In the case that "border control concepts", as specified in 3GPP TS 23.228 [7], are to be applied in an IM CN subsystem, then these are to be provided by capabilities within the IBCF, and the IBCF acts as an entry point for this network (instead of the I-CSCF). In this case the IBCF and the I-CSCF can be co-located as a single physical node. If "border control concepts" are not applied, then the I-CSCF is considered as an entry point of a network. If the P-CSCF is in the home network, then the I-CSCF is considered as an entry point for this document.
- Exit point:** If operator preference requires the application of "border control concepts" as specified in 3GPP TS 23.228 [7], then these are to be provided by capabilities within the IBCF, and requests sent towards another network are routed via a local network exit point (IBCF), which will then forward the request to the other network (discovering the entry point if necessary).
- Geo-local number:** Either a geo-local service number as specified in 3GPP TS 23.228 [7] or a number in non-international format according to an addressing plan used at the current physical location of the user.
- Home-local number:** Either a home local service number as specified in 3GPP TS 23.228 [7] or a number in non-international format according to an addressing plan used in the home network of the user.
- Newly established set of security associations:** Two pairs of IPsec security associations that have been created at the UE and/or the P-CSCF after the 200 (OK) response to a REGISTER request was received.
- Old set of security associations:** Two pairs of IPsec security associations still in existence after another set of security associations has been established due to a successful authentication procedure.
- Temporary set of security associations:** Two pairs of IPsec security associations that have been created at the UE and/or the P-CSCF, after an authentication challenge within a 401 (Unauthorized) response to a REGISTER request was received. The SIP level lifetime of such created security associations will be equal to the value of reg-await-auth timer.
- Integrity protected:** See 3GPP TS 33.203 [19]. Where a requirement exists to send information "integrity protected" the mechanisms specified in 3GPP TS 33.203 [19] are used for sending the information. Where a requirement exists to check that information was received "integrity protected", then the information received is checked for compliance with the procedures as specified in 3GPP TS 33.203 [19].
- Instance ID:** An URN generated by the device that uniquely identifies a specific device amongst all other devices, and does not contain any information pertaining to the user (e.g., in GPRS instance ID applies to the Mobile Equipment rather than the UICC). The public user identity together with the instance ID uniquely identifies a specific UA instance.
- Resource reservation:** Mechanism for reserving bearer resources that is required for certain access technologies.
- Local preconditions:** The indication of segmented status preconditions for the local reservation of resources as specified in RFC 3312 [30].
- Alias SIP URI:** A URI is an alias of another URI if the treatment of both URIs is identical, i.e. both URIs belong to the same set of implicitly registered public user identities, and are linked to the same service profile, and are considered to have the exact same service configuration for each and every service.
- Initial registration:** The registration procedure for a public user identity initiated by the UE in the absence of any valid registration.
- Re-registration:** The registration procedure initiated by the UE to refresh or update an already existing registration for a public user identity.

Registration of an additional public user identity: The registration procedure initiated by the UE to explicitly register an additional public user identity during the life time of the registration of another registered public user identity, where both public user identities have the same contact address and P-CSCF.

Emergency registration: A special registration that relates to an emergency public user identity.

Initial emergency registration: An emergency registration that is also an initial registration.

Emergency reregistration: An emergency registration that is also a reregistration.

Back-to-Back User Agent (B2BUA): As given in RFC 3261 [26]. In addition, for the usage in the IM CN subsystem, a SIP element being able to handle a collection of "n" User Agents (behaving each one as UAC and UAS, according to SIP rules), which are linked by some application logic that is fully independent of the SIP rules.

UE private IP address: It is assumed that the NAT device performs network address translation between a private and a public network with the UE located in the private network and the IM CN subsystem in the public network. The UE is assumed to be configured with a private IP address. This address will be denoted as UE private IP address.

UE public IP address: The NAT device is assumed to be configured with one (or perhaps more) public address(es). When the UE sends a request towards the public network, the NAT replaces the source address in the IP header of the packet, which contains the UE private IP address, with a public IP address assigned to the NAT. This address will be denoted as UE public IP address.

Encapsulating UDP header: For the purpose of performing UDP encapsulation according to RFC 3948 [63A] each IPsec ESP packet is wrapped into an additional UDP header. This header is denoted as Encapsulating UDP header.

Port_Uenc: In most residential scenarios, when the NAT device performs address translation, it also performs translation of the source port found in the transport layer (TCP/UDP) headers. Following RFC 3948 [63A], the UE will use port 4500 as source port in the encapsulating UDP header when sending a packet. This port is translated by the NAT into an arbitrarily chosen port number which is denoted as port_Uenc.

IMS flow set: An IMS flow set is a set of flows as defined in draft-ietf-outbound [92]. The flows in an IMS flow set are determined by a combination of transport protocol, IP addresses, protected client ports and protected server ports as defined in 3GPP TS 33.203 [19]. An IMS flow set is established by a successful IMS registration procedure.

NOTE 1: For IPsec, an IMS flow set is made up of the following four flows:

- Flow 1: (IP address UE, port_uc) <--> (IP address P-CSCF, port_ps) over TCP;
- Flow 2: (IP address UE, port_uc) <--> (IP address P-CSCF, port_ps) over UDP;
- Flow 3: (IP address UE, port_us) <--> (IP address P-CSCF, port_pc) over TCP; and
- Flow 4: (IP address UE, port_us) <--> (IP address P-CSCF, port_pc) over UDP.

NOTE 2: For IPsec, according to 3GPP TS 33.203 [19], the P-CSCF can only select among flows 1, 3, or 4 when forwarding requests towards the UE, where flow 1 is only possible in case of TCP connection re-use. According to 3GPP TS 33.203 [19], flow 2 is only used for UE originated requests and corresponding responses. The P-CSCF uses flow 2 to identify the correct IMS flow set.

NOTE 3: An IMS flow set can be considered as a realisation of a logical flow as used in draft-ietf-sip-outbound [92]. But this definition does not depend on any particular definition of a logical flow.

NOTE 4: For TLS, an IMS flow set is made up of the following flow:

- (IP address UE, port) <--> (IP address P-CSCF, port) over TCP.

NOTE 5: For digest without TLS, an IMS flow set is as defined in draft-ietf-sip-outbound [92].

IMS flow token: A IMS flow token is uniquely associated with a IMS flow set. When forwarding a request destined towards the UE, the P-CSCF selects the flow from the IMS flow set denoted by the IMS flow token as appropriate according to 3GPP TS 33.203 [19] and RFC 3261 [26].

IP Association: A mapping at the P-CSCF of a UE's packet source IP address and port with the identities of the UE.

Authorised Resource-Priority header: a Resource-Priority header that is either received from another entity in the trust domain relating to the Resource-Priority header, or which has been identified as generated by a subscriber known to have such priority privileges for the resource priority namespace and level of priority used within that namespace.

For the purposes of the present document, the following terms and definitions given in RFC 1594 [20B] apply.

Fully-Qualified Domain Name (FQDN)

For the purposes of the present document, the following terms and definitions given in RFC 3261 [26] apply (unless otherwise specified see clause 6).

Client
Dialog
Final response
Header
Header field
Loose routing
Method
Option-tag (see RFC 3261 [26] subclause 19.2)
Provisional response
Proxy, proxy server
Recursion
Redirect server
Registrar
Request
Response
Server
Session
(SIP) transaction
Stateful proxy
Stateless proxy
Status-code (see RFC 3261 [26] subclause 7.2)
Tag (see RFC 3261 [26] subclause 19.3)
Target Refresh Request
User agent client (UAC)
User agent server (UAS)
User agent (UA)

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.002 [2] subclause 4.1.1.1 and subclause 4a.7 apply:

Breakout Gateway Control Function (BGCF)
Call Session Control Function (CSCF)
Home Subscriber Server (HSS)
Media Gateway Control Function (MGCF)
Multimedia Resource Function Controller (MRFC)
Multimedia Resource Function Processor (MRFP)
Subscription Locator Function (SLF)

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.122 [4C] apply:

Home PLMN (HPLMN)
Visited PLMN (VPLMN)

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.218 [5] subclause 3.1 apply:

Filter criteria
Initial filter criteria
Initial request
Standalone transaction
Subsequent request

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.228 [7] subclauses 3.1, 4.3.3.1, 4.3.6, 4.6, 4.13, 5.2, 5.4.12.1 and 5.10 apply:

Border control concepts
Geo-local service number
Home local service number
Implicit registration set
Interconnection Border Control Function (IBCF)
Interrogating-CSCF (I-CSCF)
IMS Application Level Gateway (IMS-ALG)
IMS application reference
IMS Application Reference Identifier (IARI)
IMS communication service
IMS Communication Service Identifier (ICSI)
Local service number
IP-Connectivity Access Network (IP-CAN)
Policy and Charging Rule Function (PCRF)
Private user identity
Proxy-CSCF (P-CSCF)
Public Service Identity (PSI)
Public user identity
Serving-CSCF (S-CSCF)
Statically pre-configured PSI

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.167 [4B] apply:

Emergency-CSCF (E-CSCF)
Geographical location information
Location identifier
Location information

For the purposes of the present document, the following terms and definitions given in 3GPP TR 33.203 [19] apply:

IM Subscriber Identity Module (ISIM)
Port_pc
Port_ps
Port_uc
Port_us
Protected server port
Protected client port

For the purposes of the present document, the following terms and definitions given in 3GPP TR 21.905 [1] apply:

Universal Integrated Circuit Card (UICC)
Universal Subscriber Identity Module (USIM)
User Equipment (UE)

For the purposes of the present document, the following terms and definitions given in RFC 2401 [20A] Appendix A apply:

Security association

A number of different security associations exist within the IM CN subsystem and within the underlying access transport. Within this document this term specifically applies to either:

- i) the security association that exists between the UE and the P-CSCF. For this usage of the term, the term "security association" only applies to IPsec. This is the only security association that has direct impact on SIP; or

- ii) the security association that exists between the WLAN UE and the PDG. This is the security association that is relevant to the discussion of Interworking WLAN as the underlying IP-CAN.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.002 [1B] apply:

WLAN UE
3GPP AAA proxy
3GPP AAA server
Packet Data Gateway (PDG)

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.234 [7A] apply.

Interworking WLAN

For the purposes of the present document, the following terms and definitions given in ITU-T E.164 [57] apply:

International public telecommunication number

For the purposes of the present document, the following terms and definitions given in draft-ietf-ecrit-requirements [91] apply:

Emergency service identifier
Emergency service URN
Public Safety Answering Point (PSAP)
PSAP URI

For the purposes of the present document, the following terms and definitions given in draft-ietf-sip-gruu [93] apply:

Globally Routable User Agent URI (GRUU)

For the purposes of the present document, the following terms and definitions given in draft-ietf-sip-outbound [92] apply:

Flow

For the purposes of the present document, the following terms and definitions given in RFC 4346 [102] appendix B apply:

TLS session

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|--------|---|
| 1xx | A status-code in the range 101 through 199, and excluding 100 |
| 2xx | A status-code in the range 200 through 299 |
| AAA | Authentication, Authorization and Accounting |
| AS | Application Server |
| APN | Access Point Name |
| AUTN | Authentication Token |
| B2BUA | Back-to-Back User Agent |
| BGCF | Breakout Gateway Control Function |
| c | conditional |
| BRAS | Broadband Remote Access Server |
| CCF | Charging Collection Function |
| CDF | Charging Data Function |
| CDR | Charging Data Record |
| CK | Ciphering Key |
| CN | Core Network |
| CPC | Calling Party Category |
| CSCF | Call Session Control Function |
| DHCP | Dynamic Host Configuration Protocol |
| DNS | Domain Name System |
| DOCSIS | Data Over Cable Service Interface Specification |

| | |
|---------|--|
| DTD | Document Type Definition |
| EC | Emergency Centre |
| ECF | Event Charging Function |
| E-CSCF | Emergency CSCF |
| FQDN | Fully Qualified Domain Name |
| GCID | GPRS Charging Identifier |
| GGSN | Gateway GPRS Support Node |
| GPRS | General Packet Radio Service |
| GRUU | Globally Routable User agent URI |
| HPLMN | Home PLMN |
| HSS | Home Subscriber Server |
| i | irrelevant |
| IARI | IMS Application Reference Identifier |
| IBCF | Interconnection Border Control Function |
| I-CSCF | Interrogating CSCF |
| ICID | IM CN subsystem Charging Identifier |
| ICSI | IMS Communication Service Identifier |
| IK | Integrity Key |
| IM | IP Multimedia |
| IMS | IP Multimedia core network Subsystem |
| IMS-ALG | IMS Application Level Gateway |
| IMSI | International Mobile Subscriber Identity |
| IOI | Inter Operator Identifier |
| IP | Internet Protocol |
| IP-CAN | IP-Connectivity Access Network |
| IPsec | IP security |
| IPv4 | Internet Protocol version 4 |
| IPv6 | Internet Protocol version 6 |
| ISC | IP Multimedia Subsystem Service Control |
| ISIM | IM Subscriber Identity Module |
| I-WLAN | Interworking – WLAN |
| IWF | Interworking Function |
| LRF | Location Retrieval Function |
| m | mandatory |
| MAC | Message Authentication Code |
| MCC | Mobile Country Code |
| MGCF | Media Gateway Control Function |
| MGW | Media Gateway |
| MNC | Mobile Network Code |
| MRFC | Multimedia Resource Function Controller |
| MRFP | Multimedia Resource Function Processor |
| n/a | not applicable |
| NAI | Network Access Identifier |
| NA(P)T | Network Address (and Port) Translation |
| NASS | Network Attachment Subsystem |
| NAT | Network Address Translation |
| NP | Number Portability |
| o | optional |
| OCF | Online Charging Function |
| PCRF | Policy and Charging Rules Function |
| P-CSCF | Proxy CSCF |
| PDG | Packet Data Gateway |
| PDP | Packet Data Protocol |
| PDU | Protocol Data Unit |
| PIDF-LO | Presence Information Data Format Location Object |
| PLMN | Public Land Mobile Network |
| PSAP | Public Safety Answering Point |
| PSI | Public Service Identity |
| PSTN | Public Switched Telephone Network |
| QoS | Quality of Service |
| RAND | RANdOm challenge |
| RES | RESponse |

| | |
|--------|--|
| RTCP | Real-time Transport Control Protocol |
| RTP | Real-time Transport Protocol |
| S-CSCF | Serving CSCF |
| SCTP | Stream Control Transmission Protocol |
| SDP | Session Description Protocol |
| SIP | Session Initiation Protocol |
| SLF | Subscription Locator Function |
| SQN | SeQuence Number |
| TLS | Transport Layer Security |
| UA | User Agent |
| UAC | User Agent Client |
| UAS | User Agent Server |
| UDVM | Universal Decompressor Virtual Machine |
| UE | User Equipment |
| UICC | Universal Integrated Circuit Card |
| URI | Uniform Resource Identifier |
| URL | Uniform Resource Locator |
| URN | Uniform Resource Name |
| UDVM | Universal Decompressor Virtual Machine |
| USIM | Universal Subscriber Identity Module |
| VPLMN | Visited PLMN |
| WLAN | Wireless Local Area Network |
| x | prohibited |
| xDSL | Digital Subscriber Line (all types) |
| XMAC | expected MAC |
| XML | eXtensible Markup Language |

3A Interoperability with different IP-CAN

The IM CN subsystem can be accessed by UEs resident in different types of IP-CAN. The main body of this document, and annex A, are general to UEs and IM CN subsystems that are accessed using any type of IP-CAN. Requirements that are dependent on the type of IP-CAN are covered in annexes B, D, E and H, or in separate specifications.

4 General

4.1 Conformance of IM CN subsystem entities to SIP, SDP and other protocols

SIP defines a number of roles which entities can implement in order to support capabilities. These roles are defined in annex A.

Each IM CN subsystem functional entity using an interface at the Gm reference point, the Ma reference point, the Mg reference point, the Mi reference point, the Mj reference point, the Mk reference point, the Mm reference point, the Mr reference point, the Mw reference point and the Ici reference point, and also using the IP multimedia Subsystem Service Control (ISC) Interface, shall implement SIP, as defined by the referenced specifications in Annex A, and in accordance with the constraints and provisions specified in annex A, according to the following roles.

The Gm reference point, the Ma reference point, the Mg reference point, the Mi reference point, the Mj reference point, the Mk reference point, the Mm reference point, the Mr reference point, the Mw reference point and the ISC reference point are defined in 3GPP TS 23.002 [2]. The Ici reference point is defined in 3GPP TS 23.228 [7].

- The User Equipment (UE) shall provide the User Agent (UA) role, with the exceptions and additional capabilities to SIP as described in subclause 5.1, with the exceptions and additional capabilities to SDP as described in subclause 6.1, and with the exceptions and additional capabilities to SigComp as described in subclause 8.1. The UE shall also provide the access technology specific procedures described in the appropriate access technology specific annex (see subclause 3A and subclause 9.2.2).

- The P-CSCF shall provide the proxy role, with the exceptions and additional capabilities to SIP as described in subclause 5.2, with the exceptions and additional capabilities to SDP as described in subclause 6.2, and with the exceptions and additional capabilities to SigComp as described in subclause 8.2. Under certain circumstances as described in subclause 5.2, the P-CSCF shall provide the UA role with the additional capabilities, as follows:
 - a) when acting as a subscriber to or the recipient of event information; and
 - b) when performing P-CSCF initiated dialog-release, even when acting as a proxy for the remainder of the dialog.
- The P-CSCF shall also provide the access technology specific procedures described in the appropriate access technology specific annex (see subclause 3A and subclause 9.2.2).
- The I-CSCF shall provide the proxy role, with the exceptions and additional capabilities as described in subclause 5.3.
- The S-CSCF shall provide the proxy role, with the exceptions and additional capabilities as described in subclause 5.4, and with the exceptions and additional capabilities to SDP as described in subclause 6.3. Under certain circumstances as described in subclause 5.4, the S-CSCF shall provide the UA role with the additional capabilities, as follows:
 - a) the S-CSCF shall also act as a registrar. When acting as a registrar, or for the purposes of executing a third-party registration, the S-CSCF shall provide the UA role;
 - b) as the notifier of event information the S-CSCF shall provide the UA role;
 - c) when providing a messaging mechanism by sending the MESSAGE method, the S-CSCF shall provide the UA role; and
 - d) when performing S-CSCF initiated dialog release the S-CSCF shall provide the UA role, even when acting as a proxy for the remainder of the dialog.
- The MGCF shall provide the UA role, with the exceptions and additional capabilities as described in subclause 5.5, and with the exceptions and additional capabilities to SDP as described in subclause 6.4.
- The BGCF shall provide the proxy role, with the exceptions and additional capabilities as described in subclause 5.6.
- The AS, acting as terminating UA, or redirect server (as defined in 3GPP TS 23.218 [5] subclause 9.1.1.1), shall provide the UA role, with the exceptions and additional capabilities as described in subclause 5.7.2, and with the exceptions and additional capabilities to SDP as described in subclause 6.6.
- The AS, acting as originating UA (as defined in 3GPP TS 23.218 [5] subclause 9.1.1.2), shall provide the UA role, with the exceptions and additional capabilities as described in subclause 5.7.3, and with the exceptions and additional capabilities to SDP as described in subclause 6.6.
- The AS, acting as a SIP proxy (as defined in 3GPP TS 23.218 [5] subclause 9.1.1.3), shall provided the proxy role, with the exceptions and additional capabilities as described in subclause 5.7.4.
- The AS, performing 3rd party call control (as defined in 3GPP TS 23.218 [5] subclause 9.1.1.4), shall provide the UA role, with the exceptions and additional capabilities as described in subclause 5.7.5, and with the exceptions and additional capabilities to SDP as described in subclause 6.6.

NOTE 1: Subclause 5.7 and its subclauses define only the requirements on the AS that relate to SIP. Other requirements are defined in 3GPP TS 23.218 [5].

- The AS, receiving third-party registration requests, shall provide the UA role, with the exceptions and additional capabilities as described in subclause 5.7.
- The MRFC shall provide the UA role, with the exceptions and additional capabilities as described in subclause 5.8, and with the exceptions and additional capabilities to SDP as described in subclause 6.5.
- The IBCF shall provide the proxy role, with the exceptions and additional capabilities to SIP as described in subclause 5.10, and with the exceptions and additional capabilities to SDP as described in subclause 6.6. If the IBCF provides an application level gateway functionality, then the IBCF shall provide the UA role, with the

exceptions and additional capabilities to SIP as described in subclause 5.10, and with the exceptions and additional capabilities to SDP as described in subclause 6.6. If the IBCF provides screening functionality, then the IBCF may provide the UA role, with the exceptions and additional capabilities to SIP as described in subclause 5.10.

- The E-CSCF shall provide the proxy role, with the exceptions and additional capabilities as described in subclause 5.11.

In addition to the roles specified above, the P-CSCF, the I-CSCF, the IBCF, the S-CSCF, the BGCF and the E-CSCF can act as a UA when providing server functionality to return a final response for any of the reasons specified in RFC 3261 [26].

NOTE 2: Annex A can change the status of requirements in referenced specifications. Particular attention is drawn to table A.4 and table A.162 for capabilities within referenced SIP specifications, and to table A.317 and table A.328 for capabilities within referenced SDP specifications. The remaining tables build on these initial tables.

NOTE 3: The allocated roles defined in this clause are the starting point of the requirements from the IETF SIP specifications, and are then the basis for the description of further requirements. Some of these extra requirements formally change the proxy role into a B2BUA. In all other respects other than those more completely described in subclause 5.2 the P-CSCF implements proxy requirements. Despite being a B2BUA a P-CSCF does not implement UA requirements from the IETF RFCs, except as indicated in this specification, e.g., relating to registration event subscription.

NOTE 4: Except as specified in clause 5 or otherwise permitted in RFC 3261, the functional entities providing the proxy role are intended to be transparent to data within received requests and responses. Therefore these entities do not modify message bodies. If local policy applies to restrict such data being passed on, the functional entity has to assume the UA role and reject a request, or if in a response and where such procedures apply, to pass the response on and then clear the session using the BYE method.

All the above entities are functional entities that could be implemented in a number of different physical platforms coexisting with a number of other functional entities. The implementation shall give priority to transactions at one functional entity, e.g. that of the E-CSCF, over non-emergency transactions at other entities on the same physical implementation. Such priority is similar to the priority within the functional entities themselves specified elsewhere in this document.

Additional routing functionality can be provided to support the ability for the IM CN subsystem to provide transit functionality as specified in Annex I. The additional routing functionality shall assume the proxy role.

4.2 URI and address assignments

In order for SIP and SDP to operate, the following prerequisite conditions apply:

- 1) I-CSCFs used in registration are allocated SIP URIs. Other IM CN subsystem entities may be allocated SIP URIs. For example sip:pcscf.home1.net and sip:<impl-specific-info>@pcscf.home1.net are valid SIP URIs. If the user part exists, it is an essential part of the address and shall not be omitted when copying or moving the address. How these addresses are assigned to the logical entities is up to the network operator. For example, a single SIP URI may be assigned to all I-CSCFs, and the load shared between various physical boxes by underlying IP capabilities, or separate SIP URIs may be assigned to each I-CSCF, and the load shared between various physical boxes using DNS SRV capabilities.
- 2) All IM CN subsystem entities are allocated IP addresses. Any IM CN subsystem entities can be allocated IPv4 only, IPv6 only or both IPv4 and IPv6 addresses. For systems providing access to IM CN subsystem using a UMTS/GSM network this is specified in 3GPP TS 23.221 [6] subclause 5.1.
- 3) The subscriber is allocated a private user identity by the home network operator. This private user identity is available to the SIP application within the UE. Depending on the network operator, various arrangements exist within the UE for retaining this information:
 - a) where an ISIM is present, within the ISIM application, see subclause 5.1.1.1A;
 - b) where no ISIM application is present but USIM is present, the private user identity is derived (see subclause 5.1.1.1A);

- c) where neither ISIM nor USIM is present, the private user identity is available to the UE via other means (see subclause 5.1.1.1B).

NOTE 1: 3GPP TS 33.203 [19] specifies that a UE attached to a 3GPP network has a UICC containing a ISIM application or a USIM.

NOTE 2: The SIP URIs can be resolved by using any of public DNSs, private DNSs, or peer-to-peer agreements.

- 4) The subscriber is allocated one or more public user identities by the home network operator. The public user identity shall take the form of SIP URI as specified in RFC 3261 [26] or tel URI as specified in RFC 3966 [22]. At least one of the public user identities is a SIP URI . All registered public user identities are available to the SIP application within the UE, after registration. Depending on the network operator, various arrangements exist within the UE for retaining this information:

- a) where an ISIM is present, at least one public user identity, which is a SIP URI, within the ISIM application, see subclause 5.1.1.1A;
- b) where no ISIM application is present but USIM is present, a temporary public user identity is derived (see subclause 5.1.1.1A);
- c) where neither ISIM nor USIM is present, the public user identities are available to the UE via other means (see subclause 5.1.1.1B).

NOTE 3: 3GPP TS 33.203 [19] specifies that a UE attached to a 3GPP network has a UICC containing a ISIM application or a USIM.

- 5) If the UE supports GRUU (see table A.4, item A.4/53), then it shall have an Instance ID, in conformance with the mandatory requirements for Instance IDs specified in draft-ietf-sip-gruu [93] and draft-ietf-sip-outbound [92].
- 6) For each tel URI, there is at least one alias SIP URI in the set of implicitly registered public user identities that is used to implicitly register the associated tel URI.

NOTE 4: For each tel URI, there always exists a SIP URI that has identical user part as the tel URI and the user parameter equals "phone" (see RFC 3261 [26] subclause 19.1.6), that represents the same public user identity.

- 7) The public user identities may be shared across multiple UEs. A particular public user identity may be simultaneously registered from multiple UEs that use different private user identities and different contact addresses. When reregistering and deregistering a given public user identity and associated contact address, the UE will use the same private user identity that it had used during the initial registration of the respective public user identity and associated contact address. If the tel URI is a shared public user identity, then the associated alias SIP URI is also a shared public user identity. Likewise, if the alias SIP URI is a shared public user identity, then the associated tel URI is also a shared public user identity.
- 8) For the purpose of access to the IM CN subsystem, UEs can be allocated IPv4 only, IPv6 only or both IPv4 and IPv6 addresses. For systems providing access to IM CN subsystem using a UMTS/GSM network this is specified in 3GPP TS 23.221 [6] subclause 5.1 (see subclause 9.2.1 for the assignment procedures).
- 9) For the purpose of emergency service, the UE shall use at least an emergency public user identity, which is a SIP URI derived as specified in 3GPP TS 23.003 [3] and an associated tel URI.
- 10) For the purpose of indicating an IMS communication service to the network, UEs are assigned ICSI values appropriate to the IMS communication services supported by the UE, coded as URNs as specified in subclause 7.2A.8.2.

4.2A Transport mechanisms

This document makes no requirement on the transport protocol used to transfer signalling information over and above that specified in RFC 3261 [26] clause 18. However, the UE and IM CN subsystem entities shall transport SIP messages longer than 1300 bytes according to the procedures of RFC 3261 [26] subclause 18.1.1, even if a mechanism exists of discovering a maximum transmission unit size longer than 1500 bytes.

NOTE: Support of SCTP as specified in RFC 4168 [96] is optional for IM CN subsystem entities implementing the role of a UA or proxy. SCTP transport between the UE and P-CSCF is not supported in the present document. Support of the SCTP transport is currently not described in 3GPP TS 33.203 [19].

For initial REGISTER requests, the UE and the P-CSCF shall apply port handling according to subclause 5.1.1.2 and subclause 5.2.2.

The UE and the P-CSCF shall send and receive request and responses other than initial REGISTER requests on the protected ports as described in 3GPP TS 33.203 [19].

In case of an emergency session if the UE does not have sufficient credentials to authenticate with the IM CN subsystem and regulations allow, the UE and P-CSCF shall send request and responses other than initial REGISTER requests on non protected ports.

4.2B Security mechanisms

3GPP TS 33.203 [19] defines the security features and mechanisms for secure access to the IM CN subsystem. This document defines a number of access security mechanisms, as summarised in table 4-1.

Table 4-1: Summary of access security mechanisms to the IM CN subsystem

| Mechanism | Authentication | Integrity protection | Use of security agreement in accordance with RFC 3329 [48] | Support (as defined in 3GPP TS 33.203 [19]) |
|---|-------------------------|----------------------|--|--|
| IMS AKA plus IPsec ESP (see 3GPP TS 33.203 [19] clause 6) | IMS AKA | IPsec ESP | Yes | Mandatory for all UEs containing a UICC, else optional. Mandatory for all P-CSCF, I-CSCF, S-CSCF |
| SIP digest plus check of IP association (see 3GPP TS 33.203 [19] annex N) | SIP digest | None | No | Optional for UEs Optional for P-CSCF, I-CSCF, S-CSCF |
| SIP digest plus Proxy Authentication (see 3GPP TS 33.203 [19] annex N) | SIP digest | None | No | Optional for UEs Optional for P-CSCF, I-CSCF, S-CSCF |
| SIP digest with TLS (see 3GPP TS 33.203 [19] annex N and annex O) | SIP digest | TLS session | Yes | Optional for UEs Optional for P-CSCF, I-CSCF, S-CSCF |
| NASS-IMS bundled authentication (see 3GPP TS 33.203 [19] annex R) | not applicable (note 1) | None | No | No UE support required Optional for P-CSCF, I-CSCF, S-CSCF |
| NOTE 1: Authentication is not provided as part of the IM CN subsystem signalling. | | | | |

Specification of the mechanisms identified within table 4-1 within this document are provided in clause 5. Subclauses where security procedures are required consist of a general subclause applicable whichever security mechanisms are in use, and a separate subclause for each security mechanism identified by a row within table 4-1.

NOTE 1: Security mechanisms for early deployment are outside the scope of this specification, and are therefore not documented here.

Authentication associated with registration to the IM CN subsystem is applicable to IMS AKA and SIP digest and is covered in subclause 5.1.1 for the UE, subclause 5.2.2 for the P-CSCF and subclause 5.4.1 for the S-CSCF. Additionally, SIP digest allows for authentication to also occur on an initial request for a dialog or a request for a standalone transaction, this additional capability is covered in subclause 5.1.2A and subclause 5.4.3.2.

If a UE that implements SIP digest is configured not to use TLS, then the UE does not establish a TLS session toward the P-CSCF. If a UE supports TLS, then the UE supports TLS as described in 3GPP TS 33.203 [19].

For SIP digest authentication, the P-CSCF can be configured to have TLS required or disabled:

- if TLS is required, the P-CSCF requires the establishment of a TLS session from all SIP digest UEs, in order to access IMS subsequent to registration; or
- if TLS is disabled, the P-CSCF does not allow the establishment of a TLS session from any UE.

NOTE 2: The mechanism to configure the P-CSCF to have TLS required or disabled is outside the scope of this specification.

SIP digest cannot be used in conjunction with the procedures of Annex F.

For emergency calls, 3GPP TS 33.203 [19] specifies some relaxations, which are further described in the subclauses of this document relating to emergency calls.

3GPP TS 33.210 [19A] defines the security architecture for network domain IP based control planes.

3GPP TS 33.210 [19A] applies for security mechanisms between entities in the IM CN subsystem.

4.3 Routing principles of IM CN subsystem entities

Each IM CN subsystem functional entity shall apply loose routing policy as described in RFC 3261 [26], when processing a SIP request. In cases where the I-CSCF, IBCF, S-CSCF and the E-CSCF may interact with strict routers in non IM CN subsystem networks, the routing procedures defined in RFC 3261 [26] that ensure interoperability with strict routers shall be used by the I-CSCF, IBCF, S-CSCF and E-CSCF.

4.4 Trust domain

4.4.1 General

RFC 3325 [34] provides for the existence and trust of an asserted identity within a trust domain. For the IM CN subsystem, this trust domain consists of the functional entities that belong to the same operator's network (P-CSCF, the E-CSCF, the I-CSCF, the IBCF, the S-CSCF, the BGCF, the MGCF, the MRFC, and all ASs that are included in the trust domain). Additionally, other nodes within the IM CN subsystem that are not part of the same operator's domain may or may not be part of the trust domain, depending on whether an interconnect agreement exists with the remote network. SIP functional entities that belong to a network for which there is an interconnect agreement are part of the trust domain. ASs outside the operator's network can also belong to the trust domain if they have a trusted relationship with the home network.

NOTE 1: Whether any peer functional entity is regarded as part of the same operator's domain, and therefore part of the same trust domain, is dependent on operator policy which is preconfigured into each functional entity.

NOTE 2: For the purpose of this document, the PSAP is automatically regarded as being within the trust domain. This means that e.g. the handling of the P-Access-Network-Info header, P-Asserted-Identity header and the History-Info header will be as if the PSAP is within the trust domain, and these header fields will not be removed for trust domain issues.

Within the IM CN subsystem trust domains will be applied to a number of header fields. These trust domains do not necessarily contain the same functional entities or cover the same operator domains. The procedures in this subclause apply to the functional entities in clause 5 in the case where a trust domain boundary exists at that functional entity.

A trust domain applies for the purpose of the following header fields: P-Asserted-Identity, P-Access-Network-Info, History-Info, Resource-Priority, P-Asserted-Service. Clause 5 defines additional procedures concerning these header fields.

4.4.2 P-Asserted-Identity

A functional entity at the boundary of the trust domain will need to determine whether to remove the P-Asserted-Identity header according to RFC 3325 [34] when SIP signalling crosses the boundary of the trust domain.

Subclause 5.4 identifies additional cases for the removal of the P-Asserted-Identity header.

4.4.3 P-Access-Network-Info

A functional entity at the boundary of the trust domain shall remove the P-Access-Network-Info header.

4.4.4 History-Info

A functional entity at the boundary of the trust domain will need to determine whether to remove the History-Info header according to RFC 4244 [66] subclause 3.3 when SIP signalling crosses the boundary of the trust domain. Subclause 5.4 identifies additional cases for the removal of the History-Info header.

4.4.5 P-Asserted-Service

A functional entity at the boundary of the trust domain will need to determine whether to remove the P-Asserted-Service header according to draft-draze-sipping-service-identification [121] when SIP signalling crosses the boundary of the trust domain.

4.4.6 Resource-Priority

A functional entity shall only include a Resource-Priority header in a request or response forwarded to another entity within the trust domain. If a request or response is forwarded to an entity outside the trust domain, the functional entity shall remove the Resource-Priority header from the forwarded request or response. If a request or response is received from an untrusted entity (with the exception requests or responses received by the P-CSCF from the UE for which procedures are defined in subclause 5.2) that contains the Resource-Priority header, the functional entity shall remove the Resource-Priority header before forwarding the request or response within the trust domain.

4.5 Charging correlation principles for IM CN subsystems

4.5.1 Overview

This subclause describes charging correlation principles to aid with the readability of charging related procedures in clause 5. See 3GPP TS 32.240 [16] and 3GPP TS 32.260 [17] for further information on charging.

The IM CN subsystem generates and retrieves the following charging correlation information for later use with offline and online charging:

1. IM CN subsystem Charging Identifier (ICID);
2. Access network charging information;
3. Inter Operator Identifier (IOI);
4. Charging function addresses:
 - a. Charging Data Function (CDF);
 - b. Online Charging Function (OCF).

How to use and where to generate the parameters in IM CN subsystems are described further in the subclauses that follow. The charging correlation information is encoded in the P-Charging-Vector header as defined in subclause 7.2A.5. The P-Charging-Vector header contains the following parameters: icid, access network charging information and ioi.

The offline and online charging function addresses are encoded in the P-Charging-Function-Addresses as defined in RFC 3455 [52]. The P-Charging-Function-Addresses header contains the following parameters: "ccf" for CDF and "ecf" for OCF.

NOTE: P-Charging-Function-Addresses parameters were defined using previous terminology.

4.5.2 IM CN subsystem charging identifier (ICID)

The ICID is the session level data shared among the IM CN subsystem entities including ASs in both the calling and called IM CN subsystems. The ICID is used also for session unrelated messages (e.g. SUBSCRIBE request, NOTIFY request, MESSAGE request) for the correlation with CDRs generated among the IM CN subsystem entities.

The first IM CN subsystem entity involved in a SIP transaction will generate the ICID and include it in the `icid` parameter of the P-Charging-Vector header in the SIP request. For a dialog relating to a session, this will be performed only on the INVITE request, for all other transactions, it will occur on each SIP request. See 3GPP TS 32.260 [17] for requirements on the format of ICID. The P-CSCF will generate an ICID for UE-originated calls. The I-CSCF will generate an ICID for UE-terminated calls if there is no ICID received in the initial request (e.g. the calling party network does not behave as an IM CN subsystem). The AS will generate an ICID when acting as an originating UA. The MGCF will generate an ICID for PSTN/PLMN originated calls. Each entity that processes the SIP request will extract the ICID for possible later use in a CDR. The I-CSCF and S-CSCF are also allowed to generate a new ICID for UE-terminated calls received from another network.

There is also an ICID generated by the P-CSCF with a REGISTER request that is passed in a unique instance of P-Charging-Vector header. The valid duration of the ICID is specified in 3GPP TS 32.260 [17].

The `icid` parameter is included in any request that includes the P-Charging-Vector header. However, the P-Charging-Vector (and ICID) is not passed to the UE.

The ICID is also passed from the P-CSCF to the IP-CAN via PCRF. The interface supporting this operation is outside the scope of this document.

4.5.3 Access network charging information

4.5.3.1 General

The access network charging information are the media flow level data shared among the IM CN subsystem entities for one side of the session (either the calling or called side). GPRS charging information (GGSN identifier and PDP context information) is an example of access network charging information.

4.5.3.2 Access network charging information

The IP-CAN provides the access network charging information to the IM CN subsystem. This information is used to correlate IP-CAN CDRs with IM CN subsystem CDRs, i.e. the access network charging information is used to correlate the bearer level with the session level.

The access network charging information is generated at the first opportunity after the resources are allocated at the IP-CAN. The access network charging information is passed from IP-CAN to P-CSCF via PCRF, over the Rx and Gx interfaces. Access network charging information will be updated with new information during the session as media flows are added or removed. The P-CSCF provides the access network charging information to the S-CSCF. The S-CSCF may also pass the information to an AS, which may be needed for online pre-pay applications. The access network charging information for the originating network is used only within that network, and similarly the access network charging information for the terminating network is used only within that network. Thus the access network charging information are not shared between the calling and called networks. The access network charging information is not passed towards the external ASs from its own network.

The access network charging information is populated in the P-Charging-Vector header.

4.5.4 Inter operator identifier (IOI)

The Inter Operator Identifier (IOI) is a globally unique identifier to share between sending and receiving networks, service providers or content providers.

The sending network populates the `orig-ioi` parameter of the P-Charging-Vector header in a request and thereby identifies the operator network from which the request originated. The `term-ioi` parameter is left out of the P-Charging-Vector header in this request. The sending network retrieves the `term-ioi` parameter from the P-Charging-Vector header within the message sent in response, which identifies the operator network from which the response was sent.

The receiving network retrieves the orig-ioi parameter from the P-Charging-Vector header in the request, which identifies the operator network from which the request originated. The receiving network populates the term-ioi parameter of the P-Charging-Vector header in the response to the request, which identifies the operator network from which the response was sent.

There are three types of IOI:

- Type 1 IOI, between the P-CSCF (possibly in the visited network) and the S-CSCF in the home network. This is exchanged in REGISTER requests and responses.
 - Type 2 IOI, between the S-CSCF of the home originating network and the S-CSCF of the home terminating network or between the S-CSCF of the home originating network and the MGCF when a call/session is terminated at the PSTN/PLMN or between the MGCF and the S-CSCF of the home terminating network when a call/session is originated from the PSTN/PLMN or with a PSI AS when accessed across I-CSCF. This is exchanged in all session-related and session-unrelated requests and responses. For compatibility issues related to CS charging system behaviour simulation, the S-CSCF in the terminating network shall forward the orig-ioi parameter from the P-Charging-Vector header in the initial request, which identifies the operator network from which the request originated.
- Editor's Note: The solution documented above results in overloading of the IOI parameter to the AS add additional complexity to the billing system in identifying the required IOI pair, some investigation is still in progress to see if a simpler solution can be adopted that meets the requirements.**
- Type 3 IOI, between the S-CSCF or I-CSCF of the home operator network and any AS. This is exchanged in all session-related and session-unrelated requests and responses.

Each entity that processes the SIP request will extract the IOI for possible later use in a CDR. The valid duration of the IOI is specified in 3GPP TS 32.240 [16].

4.5.5 Charging function addresses

Charging function addresses are distributed to each of the IM CN subsystem entities in the home network for one side of the session (either the calling or called side) and provide a common location for each entity to send charging information. Charging Data Function (CDF) addresses are used for offline billing. Online Charging Function (OCF) addresses are used for online billing.

There may be multiple addresses for CDF and OCF addresses populated into the P-Charging-Function-Addresses header of the SIP request or response. The parameters are ccf and ecf for CDF and OCF, respectively. At least one instance of either ccf or ecf is required. If ccf address is included for offline charging, then a secondary ccf address may be included by each network for redundancy purposes, but the first instance of ccf is the primary address. If ecf address is included for online charging, then a secondary instance may also be included for redundancy.

The CDF and/or OCF addresses are retrieved from an Home Subscriber Server (HSS) via the Cx interface and passed by the S-CSCF to subsequent entities. The charging function addresses are passed from the S-CSCF to the IM CN subsystem entities in its home network, but are not passed to the visited network or the UE. When the P-CSCF is allocated in the visited network, then the charging function addresses are obtained by means outside the scope of this document. The AS receives the charging function addresses from the S-CSCF via the ISC interface. CDF and/or OCF addresses may be allocated as locally preconfigured addresses. The AS can also retrieve the charging function address from the HSS via Sh interface.

4.6 Support of local service numbers

For the IM CN subsystem, the support of local service numbers is provided by an AS in the subscriber's home network as described in subclause 5.7.1.7.

4.7 Emergency service

The need for support of emergency calls in the IM CN subsystem is determined by national regulatory requirements.

If the UE cannot detect the emergency call attempt, the UE initiates the request as per normal procedures as described in subclause 5.1.2A. Depending on network policies, for a non-roaming UE an emergency call attempt can succeed even if

the UE did not detect that an emergency session is being requested, otherwise the network rejects the request indicating to the UE that the attempt was for an emergency service.

The UE procedures for UE detectable emergency calls are defined in subclause 5.1.6.

The P-CSCF and E-CSCF procedures for emergency service are described in subclause 5.2.10 and 5.11, respectively.

Access dependent aspects of emergency service (e.g. emergency registration support and location provision) are defined in the access technology specific annexes for each access technology.

5 Application usage of SIP

5.1 Procedures at the UE

5.1.1 Registration and authentication

5.1.1.1 General

The UE shall register public user identities (see table A.4/1 and dependencies on that major capability).

The UE shall use one IP address for all SIP signalling, i.e. simultaneous registration using different IP addresses from the same UE is not supported in this release of this document. The only exception is a possible parallel emergency registration as described in subclause 5.1.6.

NOTE: The UE can use multiple Contact header parameter values simultaneously, provided they all contain the same IP address and port number.

Editor's Note: It is anticipated that the above requirement will be reevaluated due to the work on related work items in Rel-8.

The UE shall register and deregister only its public user identities with the associated contact address that belong to the UE.

In case a UE registers several public user identities at different points in time, the procedures to re-register, deregister and subscribe to the registration-state event package for these public user identities can remain uncoordinated in time.

If SIP digest is used without TLS, the UE shall not include RFC 3329 [48] headers in any SIP messages.

Editor's note: Concerns have been expressed at the lack of use of RFC 3329 by the SIP digest proposal. Specifically one of the issues raised concerns how does the UE find out which security mechanisms are supported by the network if RFC 3329 is not used, beyond those that are mandatory in the network such as IMS AKA.

In case a device performing address and/or port number conversions is provided by a NA(P)T or NA(P)T-PT, the UE may need to modify the SIP contents according to the procedures described in either annex F or annex K.

5.1.1.1A Parameters contained in the ISIM

This subclause applies when a UE contains either an ISIM or a USIM.

The ISIM application shall always be used for authentication to the IM CN subsystem, if it is present, as described in 3GPP TS 33.203 [19].

The ISIM is preconfigured with all the necessary parameters to initiate the registration to the IM CN subsystem. These parameters include:

- the private user identity;
- one or more public user identities; and
- the home network domain name used to address the SIP REGISTER request

In case the UE is loaded with a UICC that does not contain the ISIM application, the UE shall:

- generate a private user identity;
- generate a temporary public user identity; and
- generate a home network domain name to address the SIP REGISTER request to;

in accordance with the procedures in clause C.2.

The temporary public user identity is only used in REGISTER requests, i.e. initial registration, re-registration, UE-initiated deregistration.

The UE shall not reveal to the user the temporary public user identity if the temporary public user identity is barred. The temporary public user identity is not barred if received by the UE in the P-Associated-URI header.

If the UE is unable to derive the parameters in this subclause for any reason, then the UE shall not proceed with the request associated with the use of these parameters and will not be able to register to the IM CN subsystem.

5.1.1.1B Parameters provisioned to a UE without ISIM or USIM

In case the UE contains neither a ISIM application nor a USIM, the UE shall use preconfigured parameters to initiate the registration to the IM CN subsystem and for authentication.

The following IMS parameters are assumed to be available to the UE:

- a private user identity;
- a public user identity; and
- a home network domain name to address the SIP REGISTER request to.

These parameters may not necessarily reside in a UICC.

5.1.1.2 Initial registration

5.1.1.2.1 General

The initial registration procedure consists of the UE sending an unprotected REGISTER request and, if challenged depending on the security mechanism supported for this UE, sending the integrity protected REGISTER request or other appropriate response to the challenge. The UE can register a public user identity with its contact address at any time after it has acquired an IP address, discovered a P-CSCF, and established an IP-CAN bearer that can be used for SIP signalling. However, the UE shall only initiate a new registration procedure when it has received a final response from the registrar for the ongoing registration, or the previous REGISTER request has timed out.

When registering any public user identity, if the UE has an already active pair of security associations or a TLS session, then the UE shall use those security associations to protect the REGISTER requests.

If the UE detects that the existing security associations or TLS sessions are no longer active (e.g., after receiving no response to several protected messages), the UE shall:

- consider all previously registered public user identities as deregistered; and
- stop processing all associated ongoing dialogs and transactions, if any (i.e. no further SIP signalling will be sent by the UE on behalf of these transactions or dialogs).

The UE shall send only the unprotected REGISTER requests to the port advertised to the UE during the P-CSCF discovery procedure. If the UE does not receive any specific port information during the P-CSCF discovery procedure, or if the UE was pre-configured with the P-CSCF's IP address or domain name and was unable to obtain specific port information, the UE shall send the unprotected REGISTER request to the SIP default port values as specified in RFC 3261 [26].

The UE shall extract or derive a public user identity, the private user identity, and the domain name to be used in the Request-URI in the registration, according to the procedures described in subclause 5.1.1.1A or subclause 5.1.1.1B. A public user identity may be input by the end user.

On sending a REGISTER request, the UE shall populate the header fields as follows:

- a) a From header set to the SIP URI that contains the public user identity to be registered;
- b) a To header set to the SIP URI that contains the public user identity to be registered;
- c) a Contact header set to include SIP URI(s) containing the IP address of the UE in the hostport parameter or FQDN. If the UE supports GRUU (see table A.4, item A.4/53), the UE shall include a +sip.instance parameter containing the instance ID. The UE shall include all supported ICSI values (coded as specified in subclause 7.2A.8.2), and IARI values (coded as specified in subclause 7.2A.9.2), for the IMS communication services and IMS applications it intends to use in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3840 [62];
- d) a Via header set to include the IP address or FQDN of the UE in the sent-by field. For the TCP, the response is received on the TCP connection on which the request was sent;
- e) an Expires header, or the expires parameter within the Contact header, set to the value of 600 000 seconds as the value desired for the duration of the registration;

NOTE 1: The registrar (S-CSCF) might decrease the duration of the registration in accordance with network policy. Registration attempts with a registration period of less than a predefined minimum value defined in the registrar will be rejected with a 423 (Interval Too Brief) response.

- f) a Request-URI set to the SIP URI of the domain name of the home network used to address the REGISTER request;
- g) the Supported header containing the option tag "path", and if GRUU is supported, the option tag "gruu"; and
- h) if a security association or TLS session exists, and if available to the UE (as defined in the access technology specific annexes for each access technology), a P-Access-Network-Info header set as specified for the access network technology (see subclause 7.2A.4).

On receiving the 200 (OK) response to the REGISTER request, the UE shall:

- a) store the expiration time of the registration for the public user identities found in the To header value;
- b) store as the default public user identity the first URI on the list of URIs present in the P-Associated-URI header;

NOTE 2: The UE can utilize additional URIs contained in the P-Associated-URI header, e.g. for application purposes.

- c) treat the identity under registration as a barred public user identity, if it is not included in the P-Associated-URI header;
- d) store the list of Service-Route headers contained in the Service-Route header, in order to build a proper preloaded Route header value for new dialogs and standalone transactions; and
- e) find the Contact header within the response that matches the one included in the REGISTER request. If this contains a "pub-gruu" parameter or a "temp-gruu" parameter or both, and the UE supports GRUU (see table A.4, item A.4/53), then store the value of those parameters as the GRUUs for the UE in association with the public user identity that was registered.

When a 401 (Unauthorized) response to a REGISTER request is received the UE shall behave as described in subclause 5.1.1.5.1.

On receiving a 305 (Use Proxy) response to the unprotected REGISTER request, the UE shall:

- a) release all IP-CAN bearers used for the transport of media according to the procedures in subclause 9.2.2;
- b) initiate either a new P-CSCF discovery procedure as described in subclause 9.2.1, or select a new P-CSCF, if the UE was pre-configured with more than one P-CSCF's IP addresses or domain names;
- c) select a P-CSCF address, which is different from the previously used address, from the address list; and
- d) perform the procedures for initial registration as described in subclause 5.1.1.2.

On receiving a 423 (Interval Too Brief) response to the REGISTER request, the UE shall:

- send another REGISTER request populating the Expires header or the expires parameter with an expiration timer of at least the value received in the Min-Expires header of the 423 (Interval Too Brief) response.

On receiving a 408 (Request Timeout) response or 500 (Server Internal Error) response or 504 (Server Time-Out) or 600 (Busy Everywhere) response for an initial registration, the UE may attempt to perform initial registration again.

When the timer F expires at the UE, the UE may:

- a) select a different P-CSCF address from the list of P-CSCF addresses discovered during the procedures described in subclause 9.2.1 or from its pre-configured list of P-CSCF's IP addresses or domain names;
- b) if no response has been received when attempting to contact all P-CSCFs known by the UE, the UE may get a new set of P-CSCF-addresses as described in subclause 9.2.1; and
- c) perform the procedures for initial registration as described in subclause 5.1.1.2.

NOTE 3: It is an implementation option whether these actions are also triggered by other means than expiration of timer F, e.g. based on ICMP messages.

After a maximum of 5 consecutive unsuccessful initial registration attempts, the UE shall not automatically attempt any further initial registration via the same network and the same P-CSCF, for an implementation dependant time of at least:

- a) the amount of time indicated in the Retry-After header of the 4xx, 5xx, or 6xx response received in response to the most recent registration request, if that header was present; or
- b) 30 minutes, if the header was not present and the initial registration was automatically performed as a consequence of a failed reregistration; or
- c) 5 minutes, if the header was not present and the initial registration was not performed as a consequence of a failed reregistration.

These limits do not apply if the UE is power cycled.

5.1.1.2.2 Initial registration using IMS AKA

On sending a REGISTER request, as defined in subclause 5.1.1.2.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header, with:
 - the username directive, set to the value of the private user identity;
 - the realm directive, set to the domain name of the home network;
 - the uri directive, set to the SIP URI of the domain name of the home network;
 - the nonce directive, set to an empty value; and
 - the response directive, set to an empty value;

NOTE 1: If the UE specifies its FQDN in the host parameter in the Contact header and in the sent-by field in the Via header, then it has to ensure that the given FQDN will resolve (e.g., by reverse DNS lookup) to the IP address that is bound to the security association.

NOTE 2: The UE associates two ports, a protected client port and a protected server port, with each pair of security association. For details on the selection of the port values see 3GPP TS 33.203 [19].

- b) additionally for the Contact header, if the REGISTER request is protected by a security association, include the protected server port value in the hostport parameter;
- c) additionally for the Via header, for UDP, if the REGISTER request is protected by a security association, include the protected server port value in the sent-by field; and

- d) the Security-Client header field set to specify the security mechanism the UE supports, the IPsec layer algorithms the UE supports and the parameters needed for the security association setup. The UE shall support the setup of two pairs of security associations as defined in 3GPP TS 33.203 [19]. The syntax of the parameters needed for the security association setup is specified in annex H of 3GPP TS 33.203 [19]. The UE shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The UE shall support the IPsec layer algorithms for integrity and confidentiality protection as defined in 3GPP TS 33.203 [19], and shall announce support for them according to the procedures defined in RFC 3329 [48].

On receiving the 200 (OK) response to the REGISTER request defined in subclause 5.1.1.2.1, the UE shall additionally:

- a) set the security association lifetime to the longest of either the previously existing security association lifetime (if available), or the lifetime of the just completed registration plus 30 seconds.

NOTE 3: If the UE receives Authentication-Info, it will proceed as described in RFC 3310 [49].

5.1.1.2.3 Initial registration using SIP digest

Editor's note: Need identify the difference between "SIP digest plus IP address check (see 3GPP TS 33.203 [19] annex N)" and " SIP digest plus Proxy Authentication (see 3GPP TS 33.203 [19] annex N)" ideally with separate headers in the text. This needs to occur throughout the document.

On sending a REGISTER request, as defined in subclause 5.1.1.2.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header as defined in RFC 2617 [21], with:
- the username directive, set to the value of the private user identity;
 - the realm directive, set to the domain name of the home network;
 - the uri directive, set to the SIP URI of the domain name of the home network;
 - the nonce directive, set to an empty value; and
 - the response directive, set to an empty value.

5.1.1.2.4 Initial registration using SIP digest with TLS

On sending a REGISTER request, as defined in subclause 5.1.1.2.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header set in accordance with subclause 5.1.1.2.3; and
- b) the Security-Client header field set to specify the security mechanism the UE supports. The UE shall support the setup of a TLS session as defined in 3GPP TS 33.203 [19]. The UE shall support the "tls" security mechanism, as specified in RFC 3329 [48]. The UE shall support TLS for integrity and confidentiality protection as defined in RFC 3261 [26], and shall announce support for them according to the procedures defined in RFC 3329 [48].

On receiving the 200 (OK) response to the REGISTER request defined in subclause 5.1.1.2.1, the UE shall additionally:

- a) set the TLS session lifetime to the longest of either the previously existing TLS session lifetime (if available), or the lifetime of the just completed registration plus 30 seconds.

If a UE supports TLS, then the UE shall support TLS ciphersuites as described in 3GPP TS 33.203 [19]. TLS session lifetime is determined by local configuration of the UE.

For SIP digest with TLS, the UE associates a protected server port with the TLS session port on the UE.

5.1.1.2.5 Initial registration using NASS-IMS bundled authentication

On sending a REGISTER request, as defined in subclause 5.1.1.2.1, the UE shall additionally populate the header fields as follows:

- a) optionally, an Authorization header, with the username field, set to the value of the private user identity;

NOTE: In case the Authorization header is absent, the mechanism only supports that one public user identity is associated with only one private user identity.

Editor's note: The mapping of the public user identities and the private user identity need to be described.

On receiving the 200 (OK) response to the REGISTER request defined in subclause 5.1.1.2.1, there are no additional requirements for the UE.

NOTE 1: When NASS-IMS bundled authentication is in use, a 401 (Unauthorized) response to the REGISTER request is not expected to be received.

5.1.1.3 Subscription to the registration-state event package

Upon receipt of a 2xx response to the initial registration, the UE shall subscribe to the reg event package for the public user identity registered at the user's registrar (S-CSCF) as described in RFC 3680 [43].

The UE shall use the default public user identity for subscription to the registration-state event package, if the public user identity that was used for initial registration is a barred public user identity. The UE may use either the default public user identity or the public user identity used for initial registration for the subscription to the registration-state event package, if the initial public user identity that was used for initial registration is not barred.

On sending a SUBSCRIBE request, the UE shall populate the header fields as follows:

- a) a Request URI set to the resource to which the UE wants to be subscribed to, i.e. to a SIP URI that contains the public user identity used for subscription;
- b) a From header set to a SIP URI that contains the public user identity used for subscription;
- c) a To header set to a SIP URI that contains the public user identity used for subscription;
- d) an Event header set to the "reg" event package;
- e) an Expires header set to 600 000 seconds as the value desired for the duration of the subscription;
- f) if available to the UE (as defined in the access technology specific annexes for each access technology), a P-Access-Network-Info header set as specified for the access network technology (see subclause 7.2A.4); and
- g) a Contact header set to contain:
 - the same IP address or FQDN;
 - if IMS AKA or SIP digest with TLS is being used as a security mechanism, the protected server port value as in the initial registration; and
 - if SIP digest plus IP address check, SIP digest plus proxy authentication or NASS-IMS bundled authentication is being used as a security mechanism, the port value of an unprotected port where the UE expects to receive subsequent mid-dialog requests. The unprotected port value shall be set to the port value used in the initial REGISTER request.

Upon receipt of a 2xx response to the SUBSCRIBE request, the UE shall store the information for the established dialog and the expiration time as indicated in the Expires header of the received response.

If continued subscription is required, the UE shall automatically refresh the subscription by the reg event package, for a previously registered public user identity, either 600 seconds before the expiration time if the initial subscription was for greater than 1200 seconds, or when half of the time has expired if the initial subscription was for 1200 seconds or less. If a SUBSCRIBE request to refresh a subscription fails with a non-481 response, the UE shall still consider the original subscription valid for the duration of the most recently known "Expires" value according to RFC 3265 [28]. Otherwise, the UE shall consider the subscription invalid and start a new initial subscription according to RFC 3265 [28].

5.1.1.4 User-initiated reregistration and registration of an additional public user identity

5.1.1.4.1 General

The UE can perform the reregistration of a previously registered public user identity with its contact address at any time after the initial registration has been completed. The UE shall perform the reregistration over any existing set of security associations or TLS session that is associated with the related contact address.

The UE can perform registration of additional public user identities at any time after the initial registration has been completed. The UE shall perform the registration of additional public user identities over the existing set of security associations or TLS sessions, if appropriate to the security mechanism in use, that is associated with the related contact address.

Unless either the user or the application within the UE has determined that a continued registration is not required the UE shall reregister an already registered public user identity either 600 seconds before the expiration time if the previous registration was for greater than 1200 seconds, or when half of the time has expired if the previous registration was for 1200 seconds or less, or when the UE intends to update its capabilities according to RFC 3840 [62] or when the UE needs to modify the ICSI values or IARI values that the UE intends to use in the g.3gpp.app_ref feature tag.

The UE shall protect the REGISTER request using a security association or TLS session, see 3GPP TS 33.203 [19], established as a result of an earlier registration, if one is available.

The UE shall extract or derive a public user identity, the private user identity, and the domain name to be used in the Request-URI in the registration, according to the procedures described in subclause 5.1.1.1A or subclause 5.1.1.1B.

On sending a REGISTER request that does not contain a challenge response, the UE shall populate the header fields as follows:

- a) a From header set to the SIP URI that contains the public user identity to be registered;
- b) a To header set to the SIP URI that contains the public user identity to be registered;
- c) a Contact header set to include SIP URI(s) that contain(s) in the hostport parameter the IP address of the UE or FQDN, and containing the instance ID of the UE in the +sip.instance parameter, if the UE supports GRUU (see table A.4, item A.4/53). The UE shall include all supported ICSI values (coded as specified in subclause 7.2A.8.2), and IARI values (coded as specified in subclause 7.2A.9.2), for the IMS communication services and IMS applications it intends to use in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3840 [62];
- d) a Via header set to include the IP address or FQDN of the UE in the sent-by field. For the TCP, the response is received on the TCP connection on which the request was sent;
- e) an Expires header, or an expires parameter within the Contact header, set to 600 000 seconds as the value desired for the duration of the registration;

NOTE 1: The registrar (S-CSCF) might decrease the duration of the registration in accordance with network policy. Registration attempts with a registration period of less than a predefined minimum value defined in the registrar will be rejected with a 423 (Interval Too Brief) response.

- f) a Request-URI set to the SIP URI of the domain name of the home network used to address the REGISTER request;
- g) the Supported header containing the option tag "path", and if GRUU is supported, the option tag "gruu"; and
- h) if available to the UE (as defined in the access technology specific annexes for each access technology), a P-Access-Network-Info header set as specified for the access network technology (see subclause 7.2A.4).

On receiving the 200 (OK) response to the REGISTER request, the UE shall:

- a) store the new expiration time of the registration for this public user identity found in the To header value;
- b) store the list of Service-Route headers contained in the Service-Route header, in order to build a proper preloaded Route header value for new dialogs and standalone transactions; and

NOTE 2: The UE can utilize additional URIs contained in the P-Associated-URI header, e.g. for application purposes.

- c) find the Contact header within the response that matches the one included in the REGISTER request. If this contains a "pub-gruu" parameter or a "temp-gruu" parameter or both, and the UE supports GRUU (see table A.4, item A.4/53), then store the value of those parameters as the GRUUs for the UE in association with the public user identity that was registered.

When a 401 (Unauthorized) response to a REGISTER is received the UE shall behave as described in subclause 5.1.1.5.1.

On receiving a 423 (Interval Too Brief) response to the REGISTER request, the UE shall:

- send another REGISTER request populating the Expires header or the expires parameter with an expiration timer of at least the value received in the Min-Expires header of the 423 (Interval Too Brief) response.

On receiving a 408 (Request Timeout) response or 500 (Server Internal Error) response or 504 (Server Time-Out) response for a reregistration, the UE shall perform the procedures for initial registration as described in subclause 5.1.1.2.

On receiving a 305 (Use Proxy) response to the REGISTER request, the UE shall:

- a) release all IP-CAN bearers used for the transport of media according to the procedures in subclause 9.2.2;
- b) initiate either a new P-CSCF discovery procedure as described in subclause 9.2.1, or select a new P-CSCF, if the UE was pre-configured with more than one P-CSCF's IP addresses or domain names;
- c) select a P-CSCF address, which is different from the previously used address, from the address list; and
- d) perform the procedures for initial registration as described in subclause 5.1.1.2.

When the timer F expires at the UE, the UE shall:

- 1) stop processing of all ongoing dialogs and transactions, if any (i.e. no further SIP signalling will be sent by the UE on behalf of these transactions or dialogs); and
- 2) after releasing all IP-CAN bearers used for the transport of media according to the procedures in subclause 9.2.2, the UE may:
 - a) select a different P-CSCF address from the list of P-CSCF addresses discovered during the procedures described in subclause 9.2.1 or from its pre-configured list of P-CSCF's IP addresses or domain names;
 - b) if no response has been received when attempting to contact all P-CSCFs known by the UE, the UE may get a new set of P-CSCF-addresses as described in subclause 9.2.1; and
 - c) perform the procedures for initial registration as described in subclause 5.1.1.2.

NOTE 3: It is an implementation option whether these actions are also triggered by other means than expiration of timer F, e.g. based on ICMP messages.

5.1.1.4.2 IMS AKA as a security mechanism

On sending a REGISTER request, as defined in subclause 5.1.1.4.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header, with:
 - the username directive set to the value of the private user identity;
 - the realm directive, set to the value as received in the realm directive in the WWW Authenticate header;
 - the uri directive, set to the SIP URI of the domain name of the home network;
 - the nonce directive, set to last received nonce value; and
 - the response directive, set to the last calculated response value;

NOTE 1: If the UE specifies its FQDN in the host parameter in the Contact header and in the sent-by field in the Via header, then it has to ensure that the given FQDN will resolve (e.g., by reverse DNS lookup) to the IP address that is bound to the security association.

NOTE 2: The UE associates two ports, a protected client port and a protected server port, with each pair of security associations. For details on the selection of the protected port value see 3GPP TS 33.203 [19].

- b) additionally for the Contact header, include the protected server port value in the hostport parameter;
- c) additionally for the Via header, for UDP, if the REGISTER request is protected by a security association, include the protected server port value in the sent-by field;
- d) a Security-Client header field, set to specify the security mechanism it supports, the IPsec layer algorithms for security and confidentiality protection it supports and the new parameter values needed for the setup of two new pairs of security associations. For further details see 3GPP TS 33.203 [19] and RFC 3329 [48]; and
- e) a Security-Verify header that contains the content of the Security-Server header received in the 401 (Unauthorized) response of the last successful authentication.

On receiving the 200 (OK) response to the REGISTER request, the UE shall additionally:

- a) set the security association lifetime to the longest of either the previously existing security association lifetime, or the lifetime of the just completed registration plus 30 seconds.

NOTE 3: If the UE receives Authentication-Info, it will proceed as described in RFC 3310 [49].

5.1.1.4.3 SIP digest as a security mechanism

On sending a REGISTER request that does not contain a challenge response, the UE shall additionally populate the header fields as follows:

- a) an Authorization header as defined in RFC 2617 [21], including:
 - the username directive, set to the value of the private user identity;
 - the realm directive, set to the domain name of the home network;
 - the uri directive, set to the SIP URI of the domain name of the home network;
 - the nonce directive, set to an empty value; and
 - the response directive, set to an empty value;
- b) the Contact header with the port value of an unprotected port where the UE expects to receive subsequent requests; and
- c) the Via header with the port value of an unprotected port where the UE expects to receive responses to the request.

5.1.1.4.4 SIP digest with TLS as a security mechanism

On sending a REGISTER request, as defined in subclause 5.1.1.4.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header set in accordance with subclause 5.1.1.2.3; and
- b) the Security-Client header field set to specify the security mechanism the UE supports. The UE shall support the setup of a TLS session as defined in 3GPP TS 33.203 [19]. The UE shall support the "tls" security mechanism, as specified in RFC 3329 [48]. The UE shall support TLS for integrity and confidentiality protection as defined in RFC 3261 [26], and shall announce support for them according to the procedures defined in RFC 3329 [48].

On receiving the 200 (OK) response to the REGISTER request defined in subclause 5.1.1.2.1, the UE shall additionally:

- a) set the TLS session lifetime to the value configured.

5.1.1.4.5 NASS-IMS bundled authentication as a security mechanism

On sending a REGISTER request, as defined in subclause 5.1.1.4.1, the UE shall additionally populate the header fields as follows:

- a) optionally, an Authorization header, with the username field, set to the value of the private user identity;

NOTE: In case the Authorization header is absent, the mechanism only supports that one public user identity is associated with only one private user identity.

Editor's note: The mapping of the public user identities and the private user identity need to be described.

On receiving the 200 (OK) response to the REGISTER request defined in subclause 5.1.1.2.1, there are no additional requirements for the UE.

NOTE 2: When NASS-IMS bundled authentication is in use, a 401 (Unauthorized) response to the REGISTER request is not expected to be received.

5.1.1.5 Authentication

5.1.1.5.1 IMS AKA - general

Authentication is performed during initial registration. A UE can be re-authenticated during subsequent reregistrations, deregistrations or registrations of additional public user identities. When the network requires authentication or re-authentication of the UE, the UE will receive a 401 (Unauthorized) response to the REGISTER request.

On receiving a 401 (Unauthorized) response to the REGISTER request, the UE shall:

- 1) extract the RAND and AUTN parameters;
- 2) check the validity of a received authentication challenge, as described in 3GPP TS 33.203 [19] i.e. the locally calculated XMAC must match the MAC parameter derived from the AUTN part of the challenge; and the SQN parameter derived from the AUTN part of the challenge must be within the correct range; and
- 3) check the existence of the Security-Server header as described in RFC 3329 [48]. If the header is not present or it does not contain the parameters required for the setup of the set of security associations (see annex H of 3GPP TS 33.203 [19]), the UE shall abandon the authentication procedure and send a new REGISTER request with a new Call-ID.

In the case that the 401 (Unauthorized) response to the REGISTER request is deemed to be valid the UE shall:

- 1) calculate the RES parameter and derive the keys CK and IK from RAND as described in 3GPP TS 33.203 [19];
- 2) set up a temporary set of security associations based on the static list and parameters it received in the 401 (Unauthorized) response and its capabilities sent in the Security-Client header in the REGISTER request. The UE sets up the temporary set of security associations using the most preferred mechanism and algorithm returned by the P-CSCF and supported by the UE and using IK and CK (only if encryption enabled) as the shared key. The UE shall use the parameters received in the Security-Server header to setup the temporary set of security associations. The UE shall set a temporary SIP level lifetime for the temporary set of security associations to the value of reg-await-auth timer; and
- 3) send another REGISTER request using the temporary set of security associations to protect the message. The header fields are populated as defined for the initial request, with the addition that the UE shall include an Authorization header containing:
 - the realm directive set to the value as received in the realm directive in the WWW Authenticate header;
 - the username directive, set to the value of the private user identity;
 - the response directive that contains the RES parameter, as described in RFC 3310 [49];
 - the uri directive, set to the SIP URI of the domain name of the home network;
 - the algorithm directive, set to the value received in the 401 (Unauthorized) response; and

- the nonce directive, set to the value received in the 401 (Unauthorized) response.

The UE shall also insert the Security-Client header that is identical to the Security-Client header that was included in the previous REGISTER request (i.e. the REGISTER request that was challenged with the received 401 (Unauthorized) response). The UE shall also insert the Security-Verify header into the request, by mirroring in it the content of the Security-Server header received in the 401 (Unauthorized) response. The UE shall set the Call-ID of the security association protected REGISTER request which carries the authentication challenge response to the same value as the Call-ID of the 401 (Unauthorized) response which carried the challenge.

On receiving the 200 (OK) response for the security association protected REGISTER request, the UE shall:

- change the temporary set of security associations to a newly established set of security associations, i.e. set its SIP level lifetime to the longest of either the previously existing set of security associations SIP level lifetime, or the lifetime of the just completed registration plus 30 seconds; and
- use the newly established set of security associations for further messages sent towards the P-CSCF as appropriate.

NOTE: In this case, the UE will send requests towards the P-CSCF over the newly established set of security associations. Responses towards the P-CSCF that are sent via UDP will be sent over the newly established set of security associations. Responses towards the P-CSCF that are sent via TCP will be sent over the same set of security associations that the related request was received on.

When the first request or response protected with the newly established set of security associations is received from the P-CSCF, the UE shall delete the old set of security associations and related keys it may have with the P-CSCF after all SIP transactions that use the old set of security associations are completed.

Whenever the 200 (OK) response is not received before the temporary SIP level lifetime of the temporary set of security associations expires or a 403 (Forbidden) response is received, the UE shall consider the registration to have failed. The UE shall delete the temporary set of security associations it was trying to establish, and use the old set of security associations. The UE should send an unprotected REGISTER message according to the procedure specified in subclause 5.1.1.2 if the UE considers the old set of security associations to be no longer active at the P-CSCF.

In the case that the 401 (Unauthorized) response is deemed to be invalid then the UE shall behave as defined in subclause 5.1.1.5.3.

5.1.1.5.2 Void

5.1.1.5.3 IMS AKA abnormal cases

If, in a 401 (Unauthorized) response, either the MAC or SQN is incorrect the UE shall respond with a further REGISTER indicating to the S-CSCF that the challenge has been deemed invalid as follows:

- in the case where the UE deems the MAC parameter to be invalid the subsequent REGISTER request shall contain no AUTS directive and an empty response directive, i.e. no authentication challenge response;
- in the case where the UE deems the SQN to be out of range, the subsequent REGISTER request shall contain the AUTS directive (see 3GPP TS 33.102 [18]).

NOTE: In the case of the SQN being out of range, a response directive can be included by the UE, based on the procedures described in RFC 3310 [49].

Whenever the UE detects any of the above cases, the UE shall:

- send the REGISTER request using an existing set of security associations, if available (see 3GPP TS 33.203 [19]);
- populate a new Security-Client header within the REGISTER request, set to specify the security mechanism it supports, the IPsec layer algorithms for integrity and confidentiality protection it supports and the parameters needed for the new security association setup; and
- not create a temporary set of security associations.

5.1.1.5.4 SIP digest – general

On receiving a 401 (Unauthorized) response to the REGISTER request, and where the algorithm parameter is MD5, the UE shall extract the digest-challenge parameters as indicated in RFC 2617 [21] from the WWW-Authenticate header. The UE shall calculate digest-response parameters as indicated in RFC 2617 [21]. The UE shall send another REGISTER request containing an Authorization header. The header fields are populated as defined in subclause 5.1.1.2.3, with the addition that the UE shall include an Authorization header containing a challenge response, cnonce, qop, and nonce-count parameters as indicated in RFC 2617 [21]. The UE shall set the Call-ID of the REGISTER request which carries the authentication challenge response to the same value as the Call-ID of the 401 (Unauthorized) response which carried the challenge. If SIP digest is used without TLS, the UE shall not include RFC 3329 [48] headers with this REGISTER.

On receiving the 200 (OK) response for the REGISTER request, if the algorithm parameter in the Authentication-Info header is MD5, the UE shall authenticate the S-CSCF using the "response-auth" directive in the Authentication-Info header as described in RFC 2617 [21].

5.1.1.5.5 SIP digest – abnormal procedures

On receiving a 403 (Forbidden) response, the UE shall consider the registration to have failed. If performing SIP digest with TLS, the UE should send an initial REGISTER according to the procedure specified in subclause 5.1.1.2 if the UE considers the TLS session to be no longer active at the P-CSCF.

5.1.1.5.6 SIP digest with TLS – general

On receiving a 401 (Unauthorized) response to the REGISTER request, the procedures in subclause 5.1.1.5.3 apply with the following differences:

- The UE shall check the existence of the Security-Server header as described in RFC 3329 [48]. If the header is not present or the list of supported security mechanisms does not include "tls", the UE shall abandon the authentication procedure and send a new REGISTER request.

In the case that the 401 (Unauthorized) response to the REGISTER is deemed to be valid the UE shall send another REGISTER request using the TLS session to protect the message. The header fields are populated as defined for the initial request, with the addition that the UE shall include an Authorization header containing a challenge response, cnonce, qop, and nonce-count parameters as indicated in RFC 2617 [21]. The UE shall also insert the Security-Client header that is identical to the Security-Client header that was included in the previous REGISTER request (i.e. the REGISTER request that was challenged with the received 401 (Unauthorized) response). The UE shall also insert the Security-Verify header into the request, by mirroring in it the content of the Security-Server header received in the 401 (Unauthorized) response. The UE shall set the Call-ID to the same value as the Call-ID of the 401 (Unauthorized) response which carried the challenge.

When SIP digest with TLS is used, and for the case where the 401 (Unauthorized) response to the REGISTER request is deemed to be valid, the UE shall establish the TLS session as described in 3GPP TS 33.203 [19]. The UE shall use this TLS session to send all further messages towards the P-CSCF.

5.1.1.5.7 SIP digest with TLS – abnormal procedures

The procedures in subclause 5.1.1.5.4 apply.

5.1.1.5.8 NASS-IMS bundled authentication – general

NASS-IMS bundled authentication is only applicable to UEs that contain neither USIM nor ISIM. Authentication is achieved via the registration and re-registration procedures as defined in subclause 5.1.1.2 and subclause 5.1.1.4. NASS-bundled authentication is granted by the network upon receipt by the UE of a 200 (OK) response to the initial REGISTER request.

There is no separate authentication procedure.

5.1.1.5.9 NASS-IMS bundled authentication – abnormal procedures

There is no separate authentication procedure, and therefore no abnormal procedures.

5.1.1.5.10 Abnormal procedures for all security mechanisms

A UE shall only respond to two consecutive invalid challenges and shall not automatically attempt authentication after two consecutive failed attempts to authenticate. The UE may attempt to register with the network again after an implementation specific time.

5.1.1.5A Network-initiated re-authentication

At any time, the UE can receive a NOTIFY request carrying information related to the reg event package (as described in subclause 5.1.1.3). If:

- the state attribute in any of the <registration> elements is set to "active";
- the value of the <uri> sub-element inside the <contact> sub-element is set to the Contact address that the UE registered; and
- the event attribute of that <contact> sub-element(s) is set to "shortened";

the UE shall:

- 1) use the expiry attribute within the <contact> sub-element that the UE registered to adjust the expiration time for that public user identity; and
- 2) start the re-authentication procedures at the appropriate time (as a result of the S-CSCF procedure described in subclause 5.4.1.6) by initiating a reregistration as described in subclause 5.1.1.4, if required.

NOTE: When authenticating a given private user identity, the S-CSCF will only shorten the expiry time within the <contact> sub-element that the UE registered using its private user identity. The <contact> elements for the same public user identity, if registered by another UE using different private user identities remain unchanged. The UE will not initiate a reregistration procedure, if none of its <contact> sub-elements was modified.

5.1.1.5B Change of Ipv6 address due to privacy

Stateless address autoconfiguration as described in RFC 2462 [20E] defines how an IPv6 prefix and an interface identifier is used by the UE to construct a complete IPv6 address.

If the UE receives an IPv6 prefix, the UE may change the interface identity of the IPv6 address as described in RFC 3041 [25A] due to privacy but this will result in service discontinuity for services provided by the IM CN subsystem.

NOTE: The procedure described below will terminate all established dialogs and transactions and temporarily disconnect the UE from the IM CN subsystem until the new registration is performed. Due to this, the UE is recommended to provide a limited use of the procedure to ensure a maximum degree of continuous service to the end user.

In order to change the IPv6 address due to privacy, the UE shall:

- 1) terminate all ongoing dialogs (e.g., sessions) and transactions (e.g., subscription to the reg event);
- 2) deregister all registered public user identities as described in subclause 5.1.1.4;
- 3) construct a new IPv6 address according to the procedures specified in RFC 3041 [25A];
- 4) register the public user identities that were deregistered in step 2 above, as follows:
 - a) by performing an initial registration as described in subclause 5.1.1.2; and
 - b) by performing a subscription to the reg event package as described in subclause 5.1.1.3; and
- 5) subscribe to other event packages it was subscribed to before the change of IPv6 address procedure started.

5.1.1.6 User-initiated deregistration

5.1.1.6.1 General

The UE can deregister a public user identity that it has previously registered with its contact address at any time.

The UE shall protect the REGISTER request using a security association or TLS session, see 3GPP TS 33.203 [19], established as a result of an earlier registration, if one is available.

The UE shall extract or derive a public user identity, the private user identity, and the domain name to be used in the Request-URI in the registration, according to the procedures described in subclause 5.1.1.1A or subclause 5.1.1.1B.

Prior to sending a REGISTER request for deregistration, the UE shall release all dialogs related to the public user identity that is going to be deregistered or to one of the implicitly registered public user identities. However:

- if the dialog that was established by the UE subscribing to the reg event package used the public user identity that is going to be deregistered; and
- this dialog is the only remaining dialog used for subscription to reg event package;

then the UE shall not release this dialog.

On sending a REGISTER request, the UE shall populate the header fields as follows:

- a) a From header set to the SIP URI that contains the public user identity to be deregistered;
- b) a To header set to the SIP URI that contains the public user identity to be deregistered;
- c) a Contact header set to either the value of "*" or SIP URI(s) that contain(s) in the hostport parameter the IP address of the UE or FQDN, and containing the Instance ID of the UE in the +sip.instance parameter, if the UE supports GRUU (see table A.4, item A.4/53);
- d) a Via header set to include the IP address or FQDN of the UE in the sent-by field;
- e) an Expires header, or the expires parameter of the Contact header, set to the value of zero, appropriate to the deregistration requirements of the user;
- f) a Request-URI set to the SIP URI of the domain name of the home network used to address the REGISTER request; and
- g) if available to the UE (as defined in the access technology specific annexes for each access technology), a P-Access-Network-Info header set as specified for the access network technology (see subclause 7.2A.4).

When a 401 (Unauthorized) response to a REGISTER request is received the UE shall behave as described in subclause 5.1.1.5.1.

On receiving the 200 (OK) response to the REGISTER request, the UE shall remove all registration details relating to this public user identity.

If there are no more public user identities registered, the UE shall delete any security associations or TLS sessions and related keys it may have towards the IM CN subsystem.

If all public user identities are deregistered and any security association or TLS session is removed, then the UE shall consider subscription to the reg event package cancelled (i.e. as if the UE had sent a SUBSCRIBE request with an Expires header containing a value of zero).

5.1.1.6.2 IMS AKA as a security mechanism

On sending a REGISTER request, as defined in subclause 5.1.1.6.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header, with:
 - the username directive, set to the value of the private user identity;
 - the realm directive, set to the value as received in the realm directive in the WWW-Authenticate header;

- the uri directive, set to the SIP URI of the domain name of the home network;
 - the nonce directive, set to last received nonce value; and
 - the response directive, set to the last calculated response value;
- b) additionally for the Contact header, include the protected server port value in the hostport parameter;
- c) additionally for the Via header, include the protected server port value bound to the security association in the sent-by field;

NOTE 1: If the UE specifies its FQDN in the host parameter in the Contact header and in the sent-by field in the Via header, then it has to ensure that the given FQDN will resolve (e.g., by reverse DNS lookup) to the IP address that is bound to the security association.

- d) a Security-Client header field, set to specify the security mechanism it supports, the IPsec layer algorithms for integrity and confidentiality protection it supports and the new parameter values needed for the setup of two new pairs of security associations. For further details see 3GPP TS 33.203 [19] and RFC 3329 [48]; and
- e) a Security-Verify header that contains the content of the Security-Server header received in the 401 (Unauthorized) response of the last successful authentication.

NOTE 2: When the UE has received the 200 (OK) response for the REGISTER request of the only public user identity currently registered with its associated set of implicitly registered public user identities (i.e. no other is registered), the UE removes the security association established between the P-CSCF and the UE. Therefore further SIP signalling (e.g. the NOTIFY request containing the deregistration event) will not reach the UE.

5.1.1.6.3 SIP digest as a security mechanism

On sending a REGISTER request, as defined in subclause 5.1.1.6.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header as defined in RFC 2617 [21], including:
- the username directive, set to the value of the private user identity;
 - the realm directive, set to the domain name of the home network;
 - the uri directive, set to the SIP URI of the domain name of the home network;
 - the nonce directive, set to an empty value; and
 - the response directive, set to an empty value;
- b) the Contact header with the port value of an unprotected port where the UE expects to receive subsequent mid-dialog requests; and
- c) the Via header with the port value of an unprotected port where the UE expects to receive responses to the request.

5.1.1.6.4 SIP digest with TLS as a security mechanism

On sending a REGISTER request, as defined in subclause 5.1.1.6.1, the UE shall additionally populate the header fields as follows:

- a) an Authorization header set in accordance with subclause 5.1.1.6.3; and
- b) a Security-Client header field, set to specify the security mechanism it supports. For further details see 3GPP TS 33.203 [19] and RFC 3329 [48]; and
- c) a Security-Verify header that contains the content of the Security-Server header received in the 401 (Unauthorized) response of the last successful authentication.

5.1.1.6.5 Initial registration using NASS-IMS bundled authentication

On sending a REGISTER request, as defined in subclause 5.1.1.6.1, the UE shall additionally populate the header fields as follows:

- a) optionally, an Authorization header, with the username field, set to the value of the private user identity;

NOTE: In case the Authorization header is absent, the mechanism only supports that one public user identity is associated with only one private user identity.

Editor's note: The mapping of the public user identities and the private user identity need to be described.

On receiving the 200 (OK) response to the REGISTER request defined in subclause 5.1.1.6.1, there are no additional requirements for the UE.

NOTE 2: When NASS-IMS bundled authentication is in use, a 401 (Unauthorized) response to the REGISTER request is not expected to be received.

5.1.1.7 Network-initiated deregistration

Upon receipt of a NOTIFY request on the dialog which was generated during subscription to the reg event package as described in subclause 5.1.1.3, including one or more <registration> element(s) which were registered by this UE with:

- the state attribute set to "terminated" and the event attribute within the <contact> element belonging to this UE set to "rejected" or "deactivated"; or
- the state attribute set to "active" and within the <contact> element belonging to this UE, the state attribute set to "terminated" and the associated event attribute set to "rejected" or "deactivated";

the UE shall remove all registration details relating to these public user identities. In case of a "deactivated" event attribute, the UE shall start the initial registration procedure as described in subclause 5.1.1.2. In case of a "rejected" event attribute, the UE shall release all dialogs related to those public user identities.

Upon receipt of a NOTIFY request, the UE shall delete any security associations or TLS sessions towards the P-CSCF either:

- if all <registration> element(s) have their state attribute set to "terminated" (i.e. all public user identities are deregistered) and the Subscription-State header contains the value of "terminated"; or
- if each <registration> element that was registered by this UE has either the state attribute set to "terminated", or the state attribute set to "active" and the state attribute within the <contact> element belonging to this UE set to "terminated".

The UE shall delete these security associations or TLS sessions towards the P-CSCF after the server transaction (as defined in RFC 3261 [26]) pertaining to the received NOTIFY request terminates.

NOTE 1: Deleting a security association or TLS session is an internal procedure of the UE and does not involve any SIP procedures.

NOTE 2: If all the public user identities or contact addresses registered by this UE are deregistered and the security association or TLS session is removed, the UE considers the subscription to the reg event package terminated since the NOTIFY request was received with Subscription-State header containing the value of "terminated").

5.1.2 Subscription and notification

5.1.2.1 Notification about multiple registered public user identities

Upon receipt of a 2xx response to the SUBSCRIBE request the UE shall maintain the generated dialog (identified by the values of the Call-ID, To and From headers).

Upon receipt of a NOTIFY request on the dialog which was generated during subscription to the reg event package the UE shall perform the following actions:

- if a state attribute "active", i.e. registered is received for one or more public user identities, the UE shall store the indicated public user identities as registered;
- if a state attribute "active" is received, and the UE supports GRUU (see table A.4, item A.4/53), then for each public user identity indicated in the notification that contains a <pub-gruu> element or a <temp-gruu> element or both (as defined in draft-ietf-sipping-gruu-reg-event [94]) then the UE shall store the value of those elements in association with the public user identity;
- if a state attribute "terminated", i.e. deregistered is received for one or more public user identities, the UE shall store the indicated public user identities as deregistered and shall remove any associated GRUUs.

NOTE 1: There may be public user identities which are automatically registered within the registrar (S-CSCF) of the user upon registration of one public user identity or when S-CSCF receives a Push-Profile-Request (PPR) from the HSS (as described in 3GPP TS 29.228 [14]) changing the status of a public user identity associated with a registered implicit set from barred to non-barred. Usually these automatically or implicitly registered public user identities belong to the same service profile of the user and they might not be available within the UE. The implicitly registered public user identities may also belong to different service profiles. The here-described procedures provide a different mechanism (to the 200 (OK) response to the REGISTER request) to inform the UE about these automatically registered public user identities.

NOTE 2: draft-ietf-sipping-gruu-reg-event [94] provides guidance on the management of temporary GRUUs, utilizing information provided in the reg event notification.

5.1.2.2 General SUBSCRIBE requirements

If the UA receives a 503 (Service Unavailable) response to an initial SUBSCRIBE request containing a Retry-After header, then the UE shall not automatically reattempt the request until after the period indicated by the Retry-After header contents.

5.1.2A Generic procedures applicable to all methods excluding the REGISTER method

5.1.2A.1 UE-originating case

The procedures of this subclause are general to all requests and responses, except those for the REGISTER method.

When the UE sends any request, the UE shall:

- if IMS AKA is in use as a security mechanism, include the protected server port in the Via header entry relating to the UE;
- if SIP digest is in use as a security mechanism:
 - a) if the UE has not obtained a GRUU, populate the Contact header of the request with the port value of an unprotected port where the UE expects to receive subsequent mid-dialog requests; and
 - b) populate the Via header of the request with the port value of an unprotected port where the UE expects to receive responses to the request;
- if SIP digest with TLS is in use as a security mechanism include the protected server port in the Via header entry relating to the UE;
- if NASS-IMS bundled authentication is in use as a security mechanism, and therefore no port is provided for subsequent SIP messages by P-CSCF during registration, the UE shall send any request to the same port used for the initial registration as described in subclause 5.1.1.2.

If SIP digest is used without TLS, the UE shall not include RFC 3329 [48] headers in any SIP messages.

When using SIP digest without TLS, the UE shall populate the Contact header with the port value of an unprotected port where the UE expects to receive requests from the P-CSCF.

When SIP digest is in use, upon receiving a 407 (Proxy Authentication Required) response to an initial request, the originating UE shall:

- extract the digest-challenge parameters as indicated in RFC 2617 [21] from the Proxy-Authenticate header field;
- calculate the response as described in RFC 2617 [21]; and
- send a new request containing a Proxy-Authorization header in which the header fields are populated as defined in RFC 2617 [21] using the calculated response.

When SIP digest is in use, upon receiving a 200 (OK) response in response to a challenged request, the originating UE shall authenticate the response using the "response-auth" directive in the Proxy-Authentication-Info header as described in RFC 2617 [21].

Editor's Note: The Proxy-Authentication-Info header is not currently defined in RFC 3261 [26]. The progress of this issue in the IETF will need to be evaluated and a decision made on whether to include this feature in Release 8 of this specification.

Where a security association or TLS session exists, the UE shall discard any SIP response that is not protected by the security association or TLS session and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause 5.1.1.

In accordance with RFC 3325 [34] the UE may insert a P-Preferred-Identity header in any initial request for a dialog or request for a standalone transaction as a hint for creation of an asserted identity (contained in the P-Asserted-Identity header) within the IM CN subsystem.

NOTE 1: Since the S-CSCF uses the P-Asserted-Identity header when checking whether the UE originating request matches the initial filter criteria, the P-Preferred-Identity header inserted by the UE determines which services and applications are invoked.

The UE may include any of the following in the P-Preferred-Identity header:

- a public user identity which has been registered by the user;
- a public user identity returned in a registration-state event package of a NOTIFY request as a result of an implicit registration that was not subsequently deregistered or that has not expired; or
- any other public user identity which the user has assumed by mechanisms outside the scope of this specification to have a current registration.

NOTE 2: The temporary public user identity specified in subclause 5.1.1.1 is not a public user identity suitable for use in the P-Preferred-Identity header.

NOTE 3: Procedures in the network require international public telecommunication numbers when telephone numbers are used in P-Preferred-Identity header.

NOTE 4: A number of headers can reveal information about the identity of the user. Where privacy is required, implementers should also give consideration to other headers that can reveal identity information. RFC 3323 [33] subclause 4.1 gives considerations relating to a number of headers.

Where privacy is required, in any initial request for a dialog or request for a standalone transaction, the UE shall set the From header to "Anonymous" as specified in RFC 3261 [26].

NOTE 5: The contents of the From header should not be relied upon to be modified by the network based on any privacy specified by the user either within the UE indication of privacy or by network subscription or network policy. Therefore the user should include the value "Anonymous" whenever privacy is explicitly required. As the user may well have privacy requirements, terminal manufacturers should not automatically derive and include values in this header from the public user identity or other values stored in or derived from the UICC. Where the user has not expressed a preference in the configuration of the terminal implementation, the implementation should assume that privacy is required. Users that require to identify themselves, and are making calls to SIP destinations beyond the IM CN subsystem, where the destination does not implement RFC 3325 [34], will need to include a value in the From header other than Anonymous.

The UE shall determine the public user identity to be used for this request as follows:

- 1) if a P-Preferred-Identity was included, then use that as the public user identity for this request; or
- 2) if no P-Preferred-Identity was included, then use the default public user identity for the security association or TLS session as the public user identity for this request;

If this is a request for a new dialog, and the request includes a Contact header, the Contact header is populated as follows:

- 1) if a public GRUU value (pub-gruu) has been saved associated with the public user identity to be used for this request, and the UE does not indicate privacy of the P-Asserted-Identity, then the UE should insert the public GRUU (pub-gruu) value as specified in draft-ietf-sip-gruu [93];
- 2) if a temporary GRUU value (temp-gruu) has been saved associated with the public user identity to be used for this request, and the UE does indicate privacy of the P-Asserted-Identity, then the UE should insert the temporary GRUU (temp-gruu) value as specified in draft-ietf-sip-gruu [93];

NOTE 6: The above items 1 and 2 are mutually exclusive.

- 3) if the request is related to an IMS communication service that requires the use of an ICSI then the UE shall include in a g.3gpp.app_ref feature tag the ICSI value (coded as specified in subclause 7.2A.8.2), for the IMS communication service and the UE may include the IARI value for the IMS application (coded as specified in subclause 7.2A.9.2), that is related to the request as defined in subclause 7.9.2 and RFC 3841 [56B]. The UE may also include other ICSI values that the UE is prepared to use for all dialogs with the terminating UE(s) and other IARI values for any IMS application that is related to the IMS communication service and that applies for the dialog; and
- 4) if the request is related to an IMS application that is supported by the UE when the use of an ICSI is not needed, then the UE may include the IARI value (coded as specified in subclause 7.2A.9.2), that is related to the to any IMS application and that applies for the dialog, in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3841 [56B].

NOTE 7: The above items 3 and 4 are mutually exclusive.

If this is a request within an existing dialog, and the request includes a Contact header, and the Contact address previously used in the dialog was a GRUU, then the UE should insert the previously used GRUU value in the Contact header as specified in draft-ietf-sip-gruu [93].

If this is a request for a new dialog or standalone transaction and the request is related to an IMS communication service that requires the use of an ICSI then the UE:

- 1) shall include the ICSI value (coded as specified in subclause 7.2A.8.2), for the IMS communication service that is related to the request in a P-Preferred-Service header field according to draft-dra-ge-sipping-service-identification [121]. If a list of network supported ICSI values was received as specified in 3GPP TS 24.167 [8G], the UE shall only include an ICSI value that is in the received list;

NOTE 8: The UE only receives those ICSI values corresponding to the IMS communication services that the network provides to the user.

- 2) may include an Accept-Contact header field containing an ICSI value (coded as specified in subclause 7.2A.8.2) that is related to the request in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 if the ICSI for the IMS communication service is known.

Editor's note: It is FFS whether the UE shall always include an ICSI value in an Accept-Contact header field. This also may need some clarifications to the stage 2 text to fully align.

NOTE 9: If the UE includes the same ICSI values into the Accept-Contact header and the P-Preferred-Service header, there is a possibility that one of the involved S-CSCFs or an AS changes the ICSI value in the P-Asserted-Service header, which results in the message including two different ICSI values (one in the P-Asserted-Service header, changed in the network and one in the Accept-Contact header).

If an IMS application indicates that an IARI is to be included in a request for a new dialog or standalone transaction, the UE shall include an Accept-Contact header field containing an IARI value (coded as specified in subclause 7.2A.9.2) that is related to the request in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3841 [56B].

NOTE 10:RFC 3841 [56B] allows multiple Accept-Contact header fields along with multiple Reject-Contact header fields in a SIP request, and within those header fields, expressions that include one or more logical operations based on combinations of feature tags. Which registered UE will be contacted depends on the Accept-Contact header field and Reject-Contact header field combinations included that evaluate to a logical expression and the relative qvalues of the registered contacts for the targeted registered public user identity. There is therefore no guarantee that when multiple Accept-Contact header fields or additional Reject-Contact header field(s) along with the Accept-Contact header field containing the ICSI value or IARI value are included in a request that the request will be routed to a contact that registered the same ICSI value or IARI value. Charging and accounting is based upon the contents of the P-Asserted-Service header field and the actual media related contents of the SIP request and not the Accept-Contact header field contents or the contact reached.

NOTE 11:The UE only includes the parameters require and explicit in the Accept-Contact header field containing the ICSI value or IARI value if the IMS communication service absolutely requires that the terminating UE understand the IMS communication service in order to be able to accept the session. Including the parameters require and explicit in Accept-Contact header fields in requests which don't absolutely require that the terminating UE understand the IMS communication service in order to accept the session creates an interoperability problem for sessions which otherwise would interoperate and violates the interoperability requirements for the ICSI in 3GPP TS 23.228 [7].

After the dialog is established the UE may change the dialog capabilities (e.g. add a media or request a supplementary service) if defined for the IMS communication service as identified by the ICSI value using the same dialog. Otherwise, the UE shall initiate a new initial request to the other user.

The UE can indicate privacy of the P-Asserted-Identity that will be generated by the P-CSCF in accordance with RFC 3323 [33], and the additional requirements contained within RFC 3325 [34].

If resource priority in accordance with RFC 4412 [116] is required for a dialog, then the UE shall include the Resource-Priority header field in all requests associated with that dialog.

Editor's Note: Further study is needed in order to find out whether usage scenarios of the Resource-Priority header field might not be covered by the mechanisms described above or might need additional action in other functional entities.

If available to the UE (as defined in the access technology specific annexes for each access technology), the UE shall insert a P-Access-Network-Info header into any request for a dialog, any subsequent request (except ACK requests and CANCEL requests) or response (except CANCEL responses) within a dialog or any request for a standalone method (see subclause 7.2A.4).

NOTE 12:During the dialog, the points of attachment to the IP-CAN of the UE may change (e.g. UE connects to different cells). The UE will populate the P-Access-Network-Info header in any request or response within a dialog with the current point of attachment to the IP-CAN (e.g. the current cell information).

The UE shall build a proper preloaded Route header value for all new dialogs and standalone transactions. The UE shall build a list of Route header values made out of, in this order, the P-CSCF URI (containing the IP address or the FQDN learnt through the P-CSCF discovery procedures, and, if IMS AKA is in use as a security mechanism, the protected server port learnt during the registration procedure), and the values received in the Service-Route header saved from the 200 (OK) response to the last registration or re-registration.

Editor's note: Are there special requirements in the above paragraph for other security mechanisms.

The UE may indicate that proxies should not fork the request by including a "no-fork" directive within the Request-Disposition header in the request as described in RFC 3841 [56B].

When a SIP transaction times out, i.e. timer B, timer F or timer H expires at the UE, the UE may behave as if timer F expired, as described in subclause 5.1.1.4.

NOTE 13:It is an implementation option whether these actions are also triggered by other means.

The UE may use non-international formats of E.164 addresses, including geo-local numbers and home-local numbers, in the Request-URI.

NOTE 14:The way how the UE defines the default network for the numbers in a non-international format is implementation specific.

NOTE 15 The way how the UE process the dial-string and handles special characters (e.g. pause) in order to produce a conformant SIP URI or tel URI according to RFC 3966 [22] is implementation specific.

NOTE 16: Home operator's local policy can define a prefix string(s) to enable subscribers to differentiate dialling a geo-local number and/or a home-local number.

When the UE uses home-local number, the UE shall include in the "phone-context" parameter the home domain name in accordance with RFC 3966 [22].

When the UE uses geo-local number, the UE shall:

- if access technology information available to the UE (i.e., the UE can insert P-Access-Network-Info header into the request), include the access technology information in the "phone-context" parameter according to RFC 3966 [22] as defined in subclause 7.2A.10; and
- if access technology information is not available to the UE (i.e., the UE cannot insert P-Access-Network-Info header into the request), include in the "phone-context" parameter the home domain name prefixed by the "geo-local" string according to RFC 3966 [22] as defined in subclause 7.2A.10.

NOTE 17: The "phone-context" parameter value can be entered by the subscriber, or can be inserted by the UE, based on implementation.

5.1.2A.2 UE-terminating case

The procedures of this subclause are general to all requests and responses, except those for the REGISTER method.

Where a security association or TLS session exists, the UE shall discard any SIP request that is not protected by the security association or TLS session and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause 5.1.1.

If an initial request contains an Accept-Contact header field containing a g.3gpp.app_reffeature tag the UE should invoke the IMS application that is the best match for the ICSI value and if included IARI value contained in the g.3gpp.app_reffeature tag. The UE can receive multiple Accept-Contact header fields containing g.3gpp.app_reffeature tags. In this case it is up to the implementation which of the multiple ICSI values or IARI values it takes action on.

NOTE 1: The application verifies that the contents of the request (e.g. SDP media capabilities, Content-Type header field) are consistent with the the ICSI value and if included IARI value contained in the g.3gpp.app_ref feature tag.

If an initial request does not contain an Accept-Contact header field containing a g.3gpp.app_ref feature tag the UE shall invoke the application that is the best match based on the contents of the request (e.g. SDP media capabilities, Content-Type header field, feature tag).

The UE can indicate privacy of the P-Asserted-Identity that will be generated by the P-CSCF in accordance with RFC 3323 [33], and the additional requirements contained within RFC 3325 [34].

NOTE 2: In the UE-terminating case, this version of the document makes no provision for the UE to provide a P-Preferred-Identity in the form of a hint.

NOTE 3: A number of headers can reveal information about the identity of the user. Where, privacy is required, implementers should also give consideration to other headers that can reveal identity information. RFC 3323 [33] subclause 4.1 gives considerations relating to a number of headers.

If the response includes a Contact header, and the response is sent within an existing dialog, and the Contact address previously used in the dialog was a GRUU, then the UE should insert the previously used GRUU value in the Contact header as specified in draft-ietf-sip-gruu [93].

If the response includes a Contact header, and the response is not sent within an existing dialog, the Contact header is populated as follows:

- 1) if a public GRUU value (pub-gruu) has been saved associated with the public user identity from the P-Called-Party-ID header, and the UE does not indicate privacy of the P-Asserted-Identity, then the UE should insert the public GRUU (pub-gruu) value as specified in draft-ietf-sip-gruu [93];

- 2) if a temporary GRUU value (temp-gruu) has been saved associated with the public user identity from the P-Called-Party-ID header, and the UE does indicate privacy of the P-Asserted-Identity, then should insert the temporary GRUU (temp-gruu) value in the Contact header as specified in draft-ietf-sip-gruu [93];

NOTE 4: The above items 1 and 2 are mutually exclusive.

- 3) if the request is related to an IMS communication service that requires the use of an ICSI then the UE shall include in a g.3gpp.app_ref feature tag the ICSI value (coded as specified in subclause 7.2A.8.2), for the IMS communication service and then the UE may include the IARI value for any IMS application that applies for the dialog, (coded as specified in subclause 7.2A.9.2), that is related to the request as defined in subclause 7.9.2 and RFC 3841 [56B]. The UE may also include other ICSI values that the UE is prepared to use for all dialogs with the originating UE(s) and other IARI values for the IMS application that is related to the IMS communication service; and
- 4) if the request is related to an IMS application that is supported by the UE when the use of an ICSI is not needed, then the UE may include the IARI value (coded as specified in subclause 7.2A.9.2), that is related to any IMS application and that applies for the dialog, in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3841 [56B].

NOTE 5: The above items 3 and 4 are mutually exclusive.

After the dialog is established the UE may change the dialog capabilities (e.g. add a media or request a supplementary service) if defined for the IMS communication service as identified by the ICSI value using the same dialog. Otherwise, the UE shall initiate a new initial request to the other user.

If the UE did not insert a GRUU in the Contact header, and IMS AKA is in use as a security mechanism, then the UE shall include the protected server port in the address in the Contact header.

If resource priority in accordance with RFC 4412 [116] is required for a dialog, then the UE shall include the Resource-Priority header field in all requests associated with that dialog.

Editor's Note: Additional usage scenarios of the Resource-Priority header field might not be covered by the mechanisms described above or might need additional action in other functional entities.

If available to the UE (as defined in the access technology specific annexes for each access technology), the UE shall insert a P-Access-Network-Info header into any response to a request for a dialog, any subsequent request (except CANCEL requests) or response (except CANCEL responses) within a dialog or any response to a standalone method (see subclause 7.2A.4).

5.1.3 Call initiation - UE-originating case

5.1.3.1 Initial INVITE request

Upon generating an initial INVITE request, the UE shall include the Accept header with "application/sdp", the MIME type associated with the 3GPP IMS XML body (see subclause 7.6.1) and any other MIME type the UE is willing and capable to accept.

The "integration of resource management and SIP" extension is hereafter in this subclause referred to as "the precondition mechanism" and is defined in RFC 3312 [30] as updated by RFC 4032 [64].

The preconditions mechanism should be supported by the originating UE.

The UE may initiate a session without the precondition mechanism if the originating UE does not require local resource reservation.

NOTE 1: The originating UE can decide if local resource reservation is required based on e.g. application requirements, current access network capabilities, local configuration, etc.

In order to allow the peer entity to reserve its required resources, an originating UE supporting the precondition mechanism should make use of the precondition mechanism, even if it does not require local resource reservation.

Upon generating an initial INVITE request using the precondition mechanism, the UE shall:

- indicate the support for reliable provisional responses and specify it using the Supported header mechanism; and
- indicate the support for the preconditions mechanism and specify it using the Supported header mechanism.

Upon generating an initial INVITE request using the precondition mechanism, the UE should not indicate the requirement for the precondition mechanism by using the Require header mechanism.

NOTE 2: If an UE chooses to require the precondition mechanism, i.e. if it indicates the "precondition" option tag within the Require header, the interworking with a remote UE, that does not support the precondition mechanism, is not described in this specification.

NOTE 3: Table A.4 specifies that UE support of forking is required in accordance with RFC 3261 [26]. The UE can accept or reject any of the forked responses, for example, if the UE is capable of supporting a limited number of simultaneous transactions or early dialogs.

Upon successful reservation of local resources the UE shall confirm the successful resource reservation (see subclause 6.1.2) within the next SIP request.

NOTE 4: In case of the precondition mechanism being used on both sides, this confirmation will be sent in either a PRACK request or an UPDATE request. In case of the precondition mechanism not being supported on one or both sides, alternatively a reINVITE request can be used for this confirmation, in case the terminating UE does not support the PRACK request (as described in RFC 3262 [27]) and does not support the UPDATE request (as described in RFC 3311 [29]).

NOTE 5: If the UE supports the P-Early-Media header, upon receiving a 18x provisional response with a P-Early-Media header indicating authorized early media, as described in RFC 5009 [109], if the preconditions are met, the UE should, based on local configuration, present received early media to the user.

NOTE 6: If the UE supports the P-Early-Media header, upon receiving a 180 (Ringing) provisional response with a P-Early-Media header indicating authorized early media, as described in RFC 5009 [109], if the preconditions are met, and the UE presents the received early media to the user based on local configuration, the UE will not provide an indication that the invited user is being alerted.

NOTE 7: If the UE supports the P-Early-Media header and if the most recently received P-Early-Media header within the dialog includes a parameter applicable to media stream with value "inactive", then based on local configuration, the UE will provide an indication that the invited user is being alerted and stop presenting received early media to the user if requested by any previous receipt of P-Early-Media header within the dialog.

If the UE wishes to receive early media authorization indications, as described in RFC 5009 [109], the UE shall add the P-Early-Media header with the "supported" parameter to the INVITE request.

When a final answer is received for one of the early dialogues, the UE proceeds to set up the SIP session. The UE shall not progress any remaining early dialogues to established dialogs. Therefore, upon the reception of a subsequent final 200 (OK) response for an INVITE request (e.g., due to forking), the UE shall:

- 1) acknowledge the response with an ACK request; and
- 2) send a BYE request to this dialog in order to terminate it.

Upon receiving a 488 (Not Acceptable Here) response to an initial INVITE request, the originating UE should send a new INVITE request containing SDP according to the procedures defined in subclause 6.1.

NOTE 8: An example of where a new request would not be sent is where knowledge exists within the UE, or interaction occurs with the user, such that it is known that the resulting SDP would describe a session that did not meet the user requirements.

Upon receiving a 421 (Extension Required) response to an initial INVITE request in which the precondition mechanism was not used, including the "precondition" option tag in the Require header, the originating UE shall:

- send a new INVITE request using the precondition mechanism, if the originating UE supports the precondition mechanism; and
- send an UPDATE request as soon as the necessary resources are available and a 200 (OK) response for the first PRACK request has been received.

Upon receiving a 503 (Service Unavailable) response to an initial INVITE request containing a Retry-After header, then the originating UE shall not automatically reattempt the request until after the period indicated by the Retry-After header contents.

The UE may include a "cic" tel-URI parameter in a tel-URI, or in the userinfo part of a SIP URI with user=phone, in the Request-URI of an initial INVITE request if the UE wants to identify a user-dialed carrier, as described in RFC 4694 [112] and draft-yu-tel-dai [113]. The UE shall not, however, specify a "dai" tel-URI parameter in a tel-URI or in the userinfo part of a SIP URI with user=phone in the Request-URI, as described in draft-yu-tel-dai [113].

NOTE 9: The method whereby the UE determines when to include a "cic" tel-URI parameter and what value it should contain is outside the scope of this document (e.g. the UE could use a locally configured digit map to look for special prefix digits that indicate the user has dialed a carrier).

NOTE 10: The value of the "cic" tel-URI parameter reported by the UE is not dependent on UE location (e.g. the reported value is not affected by roaming scenarios).

In the event the UE receives a 380 (Alternative Service) response to an INVITE request the response containing a XML body that includes an <alternative service> element with the <type> child element set to "emergency", the UE shall attempt an emergency call as described in subclause 5.1.6.

5.1.4 Call initiation - UE-terminating case

5.1.4.1 Initial INVITE request

The preconditions mechanism should be supported by the terminating UE.

The handling of incoming initial INVITE requests at the terminating UE is mainly dependent on the following conditions:

- the specific service requirements for "integration of resource management and SIP" extension (hereafter in this subclause known as the precondition mechanism and defined in RFC 3312 [30] as updated by RFC 4032 [64], and with the request for such a mechanism known as a precondition); and
- the UEs configuration for the case when the specific service does not require the precondition mechanism.

If an initial INVITE request is received the terminating UE shall check whether the terminating UE requires local resource reservation.

NOTE 1: The terminating UE can decide if local resource reservation is required based on e.g. application requirements, current access network capabilities, local configuration, etc.

If local resource reservation is required at the terminating UE and the terminating UE supports the precondition mechanism, and:

- a) the received INVITE request includes the "precondition" option-tag in the Supported header or Require header, the terminating UE shall make use of the precondition mechanism and shall indicate a Require header with the "precondition" option-tag in any response or subsequent request it sends towards to the originating UE; or
- b) the received INVITE request does not include the "precondition" option-tag in the Supported header or Require header, the terminating UE shall not make use of the precondition mechanism.

If local resource reservation is not required by the terminating UE and the terminating UE supports the precondition mechanism and:

- a) the received INVITE request includes the "precondition" option-tag in the Supported header and:
 - the required resources at the originating UE are not reserved, the terminating UE shall use the precondition mechanism; or
 - the required local resources at the originating UE and the terminating UE are available, the terminating UE may use the precondition mechanism;

- b) the received INVITE request does not include the "precondition" option-tag in the Supported header or Require header, the terminating UE shall not make use of the precondition mechanism; or
- c) the received INVITE request includes the "precondition" option-tag in the Require header, the terminating UE shall use the precondition mechanism.

NOTE 2: Table A.4 specifies that UE support of forking is required in accordance with RFC 3261 [26].

NOTE 3: If the terminating UE does not support the precondition mechanism it will apply regular SIP session initiation procedures.

If the terminating UE requires a reliable alerting indication at the originating side, the UE shall send the 180 (Ringing) response reliably. If the received INVITE indicated support for reliable provisionable responses, but did not require their use, the terminating UE shall send provisional responses reliably only if the provisional response carries SDP or for other application related purposes that requires its reliable transport.

5.1.5 Call release

Void.

5.1.6 Emergency service

5.1.6.1 General

A CS and IM CN subsystem capable UE shall follow the conventions and rules specified in 3GPP TS 22.101 [1A] and 3GPP TS 23.167 [4B] to select the domain for the emergency call attempt. If the CS domain is selected, the UE shall attempt an emergency call setup according to the procedures described in 3GPP TS 24.008 [8].

The UE shall determine, whether it is currently attached to its home operator's network (e.g. HPLMN) or to a different network than its home operator's network (e.g. VPLMN) by applying access technology specific procedures described in the access technology specific annexes.

If the IM CN subsystem is selected and the UE is currently attached to its home operator's network (e.g. HPLMN) and the UE is currently registered, the UE shall attempt an emergency call as described in subclause 5.1.6.8.4.

If the IM CN subsystem is selected and the UE is currently attached to its home operator's network (e.g. HPLMN) and the UE is not currently registered, the UE shall:

- 1) perform an initial emergency registration, as described in subclause 5.1.6.2; and
- 2) attempt an emergency call as described in subclause 5.1.6.8.3.

If the IM CN subsystem is selected and the UE is attached to a different network than its home operator's network (e.g. VPLMN) and the assigned P-CSCF is located in its home operator's network (e.g. in the HPLMN), the UE shall:

- 1) perform an initial emergency registration, as described in subclause 5.1.6.2; and
- 2) attempt an emergency call as described in subclause 5.1.6.8.3.

If the IM CN subsystem is selected and the UE has no credentials the UE can make an emergency call without being registered. The UE shall attempt an emergency call as described in subclause 5.1.6.8.2.

The IP-CAN can, dependant on the IP-CAN capabilities, provide local emergency numbers to the UE which has that capability, in order for the UE to recognize these numbers as emergency call.

5.1.6.2 Initial emergency registration

When the user initiates an emergency call, if emergency registration is needed, the UE shall perform an emergency registration prior to sending the SIP request related to the emergency call.

IP-CAN procedures for emergency registration are defined in 3GPP TS 23.167 [4B] and in each access technology specific annex.

When a UE performs an initial emergency registration the UE shall perform the actions as specified in subclause 5.1.1.2 with the following additions:

- the UE shall populate the To and From header in the REGISTER request with the emergency public user identity as specified in 3GPP TS 23.003 [3].

When the UE performs an initial emergency registration and whilst this emergency registration is active, the UE shall:

- handle the emergency registration independently from any other ongoing registration to the IM CN subsystem;
- handle any signalling or media related IP-CAN for the purpose of emergency calls independently from any other established IP-CAN for IM CN subsystem related signalling or media; and
- handle all SIP signalling and all media related to the emergency call independently from any other ongoing IM CN subsystem signalling and media.

5.1.6.2A New initial emergency registration

The UE shall perform a new initial emergency registration, as specified in subclause 5.1.6.2, if the UE determines that:

- it has previously performed an emergency registration which has not yet expired; and
- it has obtained an IP address from the serving IP-CAN, as specified in subclause 9.2.1, different than the IP address used for the emergency registration.

5.1.6.3 Initial subscription to the registration-state event package

The UE shall not subscribe to the reg event package for any emergency public user identity.

5.1.6.4 User-initiated emergency reregistration

The UE shall perform user-initiated emergency reregistration as specified in subclause 5.1.1.4 if half of the time for the emergency registration has expired and:

- the UE has emergency related ongoing dialog; or
- standalone transactions exist; or
- the user initiates an emergency call.

The UE shall not perform user-initiated emergency reregistration in any other cases.

5.1.6.5 Authentication

When a UE performs authentication a UE shall perform the procedures as specified in subclause 5.1.1.5.

5.1.6.6 User-initiated emergency deregistration

The UE shall not perform user-initiated deregistration of any registered emergency public user identity.

NOTE: The UE will be deregistered when the emergency registration expires.

5.1.6.7 Network-initiated emergency deregistration

An emergency registration will not be deregistered by the network (see subclause 5.4.8.4).

5.1.6.8 Emergency session setup

5.1.6.8.1 General

The UE shall translate any user indicated emergency number as specified in 3GPP TS 22.101 [1A] to an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69]. An additional sub-service type can be added if information on the type of emergency service is known.

In the event the UE receives a 380 (Alternative Service) response to an INVITE request the response containing a XML body that includes an <alternative service> element with the <type> child element set to "emergency", the UE shall automatically send an ACK request to the P-CSCF as per normal SIP procedures and terminate the session.

NOTE 1: The UE can attempt an emergency call setup according to the procedures described in 3GPP TS 24.008 [8].

NOTE 2: Emergency numbers which the UE does not detect, will be treated as a normal call.

5.1.6.8.2 Emergency session set-up in case of no registration

When establishing an emergency session for an unregistered user, the UE shall be allowed to receive responses to emergency requests and requests inside an established emergency session on the unprotected ports. All other messages not arriving on a protected port shall be rejected or silently discarded by the UE.

Prior to establishing an emergency session for an unregistered user, the UE shall acquire a local IP address, discover a P-CSCF, and establish an IP-CAN bearer that can be used for SIP signalling. The UE shall send only the initial INVITE requests to the port advertised to the UE during the P-CSCF discovery procedure. If the UE does not receive any specific port information during the P-CSCF discovery procedure, the UE shall send the initial INVITE request to the SIP default port values as specified in RFC 3261 [26].

The UE shall apply the procedures as specified in subclause 5.1.2A.1 and subclause 5.1.3 with the following additions:

- 1) the UE shall set the From header field of the INVITE request to "Anonymous" as specified in RFC 3261 [26];
- 2) the UE shall include a Request-URI in the initial INVITE request that contains an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69]. An additional sub-service type can be added if information on the type of emergency service is known;

NOTE 1: Other specifications make provision for emergency service identifiers, that are not specifically the emergency service URN, to be recognised in the UE. Emergency service identifiers which the UE does not detect will be treated as a normal call by the UE.

- 3) the UE shall insert in the INVITE request, a To header with:
 - the same emergency service URN as in the Request URI; or
 - if the UE cannot perform local dialstring interpretation for the dialled digits, a dialstring URI representing the dialled digits in accordance with RFC 4976 [103] or a tel URL representing the dialled digits;

NOTE 2: This version of this document does not provide any specified handling of a URI with the dialled digits in accordance with RFC 4976 [103] at an entity within the IM CN subsystem. Behaviour when this is used is therefore not defined.

- 4) if available to the UE (as defined in the access technology specific annexes for each access technology), the UE shall include in the P-Access-Network-Info header in any request for a dialog, any subsequent request (except ACK requests and CANCEL requests) or response (except CANCEL responses) within a dialog or any request. The UE shall populate the P-Access-Network-Info header with the current point of attachment to the IP-CAN as specified for the access network technology (see subclause 7.2A.4). The P-Access-Network-Info header contains the location identifier such as the cell id, the line id or the identity of the I-WLAN access node, which is relevant for routing the emergency call;
- 5) the UE shall populate the P-Preferred-Identity header in the INVITE request with an equipment identifier as a SIP URI. The special details of the equipment identifier to use depends on the IP-CAN;

- 6) a Contact header set to include SIP URI that contains in the hostport parameter the IP address of the UE and an unprotected port where the UE will receive incoming requests belonging to this dialog. The UE shall not include either the public or temporary GRUU in the Contact header;
- 7) a Via header set to include the IP address of the UE in the sent-by field and for the UDP the unprotected server port value where the UE will receive response to the emergency request, while for the TCP, the response is received on the TCP connection on which the emergency request was sent;
- 8) if the UE has its location information available, the UE shall include the location information in the INVITE request in the following way:
 - if the UE is aware of the URI that points to where the UE's location is stored, include the URI in the Geolocation header in accordance with draft-ietf-sip-location-conveyance [89]; or
 - if the geographical location information of the UE is available to the UE, include its geographical location information as PIDF location object in accordance with RFC 4119 [90] and include the location object in a message body with the content type application/pidf+xml in accordance with draft-ietf-sip-location-conveyance [89]. The Geolocation header is set to a Content ID in accordance with draft-ietf-sip-location-conveyance [89]; and
- 9) if the UE has no geographical location information available, the UE shall not include any geographical location information as specified in draft-ietf-sip-location-conveyance [89] in the INVITE request.

NOTE 3: It is suggested that UE's only use the option of providing a URI when the domain part belongs to the current P-CSCF or S-CSCF provider. This is an issue on which the network operator needs to provide guidance to the end user. A URI that is only resolvable to the UE which is making the emergency call is not desirable.

NOTE 4: During the dialog, the points of attachment to the IP-CAN of the UE can change (e.g. UE connects to different cells). The UE will populate the P-Access-Network-Info header in any request or response within a dialog with the current point of attachment to the IP-CAN (e.g. the current cell information).

The UE shall build a proper preloaded Route header value for all new dialogs. The UE shall build a Route header value containing only the P-CSCF URI (containing the unprotected port number and the IP address or the FQDN learnt through the P-CSCF discovery procedures).

When a SIP transaction times out, i.e. timer B, timer F or timer H expires at the UE, the UE may behave as if timer F expired, as described in subclause 5.1.1.4.

NOTE 5: It is an implementation option whether these actions are also triggered by other means.

NOTE 6: A number of headers can reveal information about the identity of the user. Where privacy is required, implementers should also give consideration to other headers that can reveal identity information. RFC 3323 [33] subclause 4.1 gives considerations relating to a number of headers.

NOTE 7: RFC 3261 [26] provides for the use of the Priority header field with a suggested value of "emergency". It is not precluded that emergency sessions contain this value, but such usage will have no impact on the processing within the IM CN subsystem.

5.1.6.8.3 Emergency session set-up within an emergency registration

After a successful initial emergency registration, the UE shall apply the procedures as specified in subclause 5.1.2A, 5.1.3 and 5.1.4 with the following additions:

- 1) the UE shall insert in the INVITE request, a From header that includes the emergency public user identity or the tel URI associated with the emergency public user identity, as described in subclause 4.2;
- 2) the UE shall include a Request URI in the INVITE request that contains an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69]. An additional sub-service type can be added if information on the type of emergency service is known;
- 3) the UE shall insert in the INVITE request, a To header with:
 - the same emergency service URN as in the Request URI; or

- if the UE cannot perform local dialstring interpretation for the dialled digits, a dialstring URI representing the dialled digits in accordance with RFC 4976 [103] or a tel URL representing the dialled digits;

NOTE 1: This version of this document does not provide any specified handling of a URI with the dialled digits in accordance with RFC 4976 [103] at an entity within the IM CN subsystem. Behaviour when this is used is therefore not defined.

- 4) if available to the UE, and if defined for the access type as specified in subclause 7.2A.4, the P-Access-Network-Info header shall contain a location identifier such as the cell id, line id or the identity of the I-WLAN access node, which is relevant for routeing the IMS emergency call;

NOTE 2: The IMS emergency specification in 3GPP TS 23.167 [4B] describes several methods how the UE can get its location information from the access network or from a server. Such methods are not in the scope of this specification.

- 5) the UE shall insert in the INVITE request, a P-Preferred-Identity header that includes the emergency public user identity or the tel URI associated with the emergency public user identity as described in subclause 4.2;

- 6) if the UE has its location information available, then the UE shall include it in the INVITE request in the following way:

- if the UE is aware of the URI that points to where the UE's location is stored, include the URI in the Geolocation header in accordance with draft-ietf-sip-location-conveyance [89]; or
- if the geographical location information of the UE is available to the UE, include its geographical location information as PIDF location object in accordance with RFC 4119 [90] and include the location object in a message body with the content type application/pidf+xml in accordance with draft-ietf-sip-location-conveyance [89]. The Geolocation header is set to a Content ID in accordance with draft-ietf-sip-location-conveyance [89]; and

NOTE 3: It is suggested that UE's only use the option of providing a URI when the domain part belongs to the current P-CSCF or S-CSCF provider. This is an issue on which the network operator needs to provide guidance to the end user. A URI that is only resolvable to the UE which is making the emergency call is not desirable.

- 7) if the UE has no geographical location information available, the UE shall not include any geographical location information as specified in draft-ietf-sip-location-conveyance [89] in the INVITE request.

NOTE 4: RFC 3261 [26] provides for the use of the Priority header field with a suggested value of "emergency". It is not precluded that emergency sessions contain this value, but such usage will have no impact on the processing within the IM CN subsystem.

Upon receiving a 380 (Alternative Service) response to the INVITE request, with the 380 (Alternative Service) response including a IM CN subsystem XML body, with the type element set to "emergency" and the action element set to "emergency-registration" the UE shall:

- perform an initial emergency registration using a different VPLMN if available, as described in subclause 5.1.6.2 and if the new emergency registration succeeded, attempt an emergency call as described in this subclause;
- attempt emergency call via CS domain according to the procedures described in 3GPP TS 24.008 [8], if available and not already tried; or
- perform implementation specific actions to establish the emergency call.

5.1.6.8.4 Emergency session setup within a non-emergency registration

Editor's note: This subclause contains text specific to the "protected server port" which will require modification to handle SIP digest, and NASS-IMS bundled authentication.

The UE shall apply the procedures as specified in subclauses 5.1.2A, 5.1.3 and 5.1.4 with the following additions:

- 1) the UE shall include a Request URI in the INVITE request that contains an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69]. An additional sub-service type can be added if information on the type of emergency service is known;
- 2) the UE shall insert in the INVITE request, a To header with:
 - the same emergency service URN as in the Request URI; or
 - if the UE cannot perform local dialstring interpretation for the dialled digits, a dialstring URI representing the dialled digits in accordance with RFC 4976 [103] or a tel URL representing the dialled digits;

NOTE 1: This version of this document does not provide any specified handling of a URI with the dialled digits in accordance with RFC 4976 [103] at an entity within the IM CN subsystem. Behaviour when this is used is therefore not defined.

- 3) the UE shall insert in the INVITE request, a From header that includes the public user identity or the tel URI associated with the public user identity, as described in subclause 4.2;
- 4) if available to the UE, and if defined for the access type as specified in subclause 7.2A.4, the P-Access-Network-Info header shall contain a location identifier such as the cell id, line id or the identity of the I-WLAN access node, which is relevant for routeing the IMS emergency call;

NOTE 2: 3GPP TS 23.167 [4B] describes several methods how the UE can get its location information from the access network or from a server. Such methods are not in the scope of this specification.

- 5) the UE shall insert in the INVITE request a P-Preferred-Identity that includes the public user identity or the tel URI associated with the public user identity as described in subclause 4.2;
- 6) if the UE has its location information available, then the UE shall include it in the INVITE request in the following way:
 - if the UE is aware of the URI that points to where the UE's location is stored, include the URI in the Geolocation header in accordance with draft-ietf-sip-location-conveyance [89]; or
 - if the geographical location information of the UE is available to the UE, include its geographical location information as PIDF location object in accordance with RFC 4119 [90] and include the location object in a message body with the content type application/pidf+xml in accordance with draft-ietf-sip-location-conveyance [89]. The Geolocation header is set to a Content ID in accordance with draft-ietf-sip-location-conveyance [89]; and
- 7) if the UE has no geographical location information available, the UE shall not include any geographical location information as specified in draft-ietf-sip-location-conveyance [89] in the INVITE request; and

NOTE 2: It is suggested that UE's only use the option of providing a URI when the domain part belongs to the current P-CSCF or S-CSCF provider. This is an issue on which the network operator needs to provide guidance to the end user. A URI that is only resolvable to the UE which is making the emergency call is not desirable.

- 8) if a public GRUU value (pub-gruu) has been saved associated with the public user identity to be used for this request, and the UE does not indicate privacy of the P-Asserted-Identity, then insert the public GRUU (pub-gruu) value in the Contact header as specified in draft-ietf-sip-gruu [93]; otherwise the UE shall include the protected server port in the address in the Contact header.

Upon receiving a 380 (Alternative Service) response to the INVITE request, with the 380 (Alternative Service) response include a IM CN subsystem XML body, with the type element set to "emergency" and the action element set to "emergency-registration" the UE shall:

- perform an initial emergency registration, as described in subclause 5.1.6.2; and
- attempt an emergency call as described in subclause 5.1.6.8.3;
- attempt emergency call via CS domain according to the procedures described in 3GPP TS 24.008 [8], if available and not already tried; or
- perform implementation specific actions to establish the emergency call.

Editor's Note: It is FFS how the UE will indicate if no location is available if the UE does not support draft-ietf-sip-location-conveyance [89].

NOTE 4: RFC 3261 [26] provides for the use of the Priority header field with a suggested value of "emergency". It is not precluded that emergency sessions contain this value, but such usage will have no impact on the processing within the IM CN subsystem.

5.1.6.9 Emergency session release

Normal call release procedure shall apply, as specified in the subclause 5.1.5.

5.1.7 Void

5.2 Procedures at the P-CSCF

5.2.1 General

Subclause 5.2.2 through subclause 5.2.9 define P-CSCF procedures for SIP that do not relate to emergency. All SIP requests are first screened according to the procedures of subclause 5.2.10 to see if they do relate to an emergency.

For all SIP transactions identified:

- as relating to an emergency; or
- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the P-CSCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE 1: The special treatment can include filtering, higher priority processing, routeing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

The P-CSCF shall support the Path and Service-Route headers.

NOTE 2: The Path header is only applicable to the REGISTER request and its 200 (OK) response. The Service-Route header is only applicable to the 200 (OK) response of REGISTER request.

When the P-CSCF sends any request or response to the UE, before sending the message the P-CSCF shall:

- remove the P-Charging-Function-Addresses and P-Charging-Vector headers, if present.

When the P-CSCF receives any request or response from the UE, the P-CSCF:

- 1) shall remove the P-Charging-Function-Addresses and P-Charging-Vector headers, if present. Also, the P-CSCF shall ignore any data received in the P-Charging-Function-Addresses and P-Charging-Vector headers; and
- 2) may insert previously saved values into the P-Charging-Function-Addresses and P-Charging-Vector headers before forwarding the message;

NOTE 3: When the P-CSCF is located in the visited network, then it will not receive the P-Charging-Function-Addresses header from the S-CSCF, IBCF, or I-CSCF. Instead, the P-CSCF discovers charging function addresses by other means not specified in this document.

- 3) shall remove the P-Access-Network-Info header, if the request or the response include a P-Access-Network-Info header with a "network-provided" parameter;
- 4) may insert a P-Access-Network-Info header where, if the request or the response are sent using:
 - xDSL as an IP-CAN, the access-type field is set to one of "ADSL", "ADSL2", "ADSL2+", "RADSL", "SDSL", "HDSL", "HDSL2", "G.SHDSL", "VDSL", or "IDSL", the "network-provided" parameter is

added and the "dsl-location" parameter is set with the value received in the Location-Information header in the User-Data Answer command as specified in ETSI ES 283 035 [98];

NOTE 4: The way the P-CSCF deduces that the request comes using xDSL access is implementation dependent.

Editor's Note: Insertion of P-Access-Network-Info header by a P-CSCF is not allowed according to RFC 3455 [52].

- DOCSIS as an IP-CAN, the access-type field is set to "DOCSIS" and the "network-provided" parameter is added.

NOTE 5: The way the P-CSCF deduces that the request comes using DOCSIS access is implementation dependent.

Editor's Note: Insertion of P-Access-Network-Info header by a P-CSCF is not allowed according to RFC 3455 [52].

- 3GPP as an IP-CAN, the access-type field is set to the value has been obtained from the PCRF using the procedures specified in 3GPP TS 29.214 [13D] and the "network-provided" parameter is added.

Editor's Note: The granularity of the RAT provided by the PCRF is different from the coding of the P-Access-Network-Info header defined in this document. The definition of the access-type field for 3GPP IP-CAN is FFS.

NOTE 6: The way the IM CN subsystem functionalities (e.g. S-CSCF, AS) deduce the request comes using a 3GPP Rel-8 P-CSCF is implementation dependent.

Editor's Note: Insertion of P-Access-Network-Info header by a P-CSCF is not allowed according to RFC 3455 [52].

When the P-CSCF receives any request or response containing the P-Media-Authorization header, the P-CSCF shall remove the header.

NOTE 7: Depending on the security mechanism in use, the P-CSCF can integrity protect all SIP messages sent to the UE outside of the registration and authentication procedures by using a security association or TLS session. The P-CSCF will discard any SIP message that is not protected by using a security association or TLS session and is received outside of the registration and authentication procedures. The integrity and confidentiality protection and checking requirements on the P-CSCF within the registration and authentication procedures are defined in subclause 5.2.2.

With the exception of 305 (Use Proxy) responses, the P-CSCF shall not recurse on 3xx responses.

NOTE 8: If the P-CSCF is connected to a PDF the requirements for this interconnection is specified in the Release 6 version of this specification.

The P-CSCF may add, remove, or modify, the P-Early-Media header within forwarded SIP requests and responses according to procedures in RFC 5009 [109].

NOTE 9: The P-CSCF can use the header for the gate control procedures, as described in 3GPP TS 29.214 [13D]. In the presence of early media for multiple dialogs due to forking, if the P-CSCF is able to identify the media associated with a dialog, (i.e., if symmetric RTP is used by the UE and the P-CSCF can use the remote SDP information to determine the source of the media) the P-CSCF can selectively open the gate corresponding to an authorized early media flow for the selected media.

When SIP digest is used without TLS, the P-CSCF shall discard any SIP messages received outside of the registration and authentication procedures that do not map to an existing IP association as defined in subclause 5.2.3.

In case a device performing address and/or port number conversions is provided by a NA(P)T or NA(P)T-PT controlled by the P-CSCF, the P-CSCF may need to modify the SIP contents according to the procedures described in annex F. In case a device performing address and/or port number conversions is provided by a NA(P)T or NA(P)T-PT not controlled by the P-CSCF, the P-CSCF may need to modify the SIP contents according to the procedures described in annex K if both a reg-id and instance ID parameter are present in the received contact header as described in draft-ietf-outbound [92].

5.2.2 Registration

5.2.2.1 General

The P-CSCF shall be prepared to receive only the unprotected REGISTER requests on the SIP default port values as specified in RFC 3261 [26]. The P-CSCF shall also be prepared to receive only the unprotected REGISTER requests on the port advertised to the UE during the P-CSCF discovery procedure.

Editor's note: Some text is required at this point on the coexisting of the different security mechanisms, and how to determine which procedures appropriate to a particular security mechanism apply.

When the P-CSCF receives a REGISTER request from the UE, the P-CSCF shall:

- 1) insert a Path header in the request including an entry containing:
 - the SIP URI identifying the P-CSCF;
 - an indication that requests routed in this direction of the path (i.e. from the S-CSCF towards the P-CSCF) are expected to be treated as for the UE-terminating case. This indication may e.g. be in a parameter in the URI, a character string in the user part of the URI, or be a port number in the URI;
- 2) insert a Require header containing the option tag "path";
- 3) insert a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17] and a type 1 orig-ioi parameter. The P-CSCF shall set the type 1 orig-ioi parameter to a value that identifies the sending network of the request. The P-CSCF shall not include the type 1 term-ioi parameter;
- 4) insert a P-Visited-Network-ID header field, with the value of a pre-provisioned string that identifies the visited network at the home network;
- 5) if the P-CSCF is located in the visited network, and local policy requires the application of IBCF capabilities in the visited network towards the home network, forward the request to an IBCF in the visited network.

If the selected exit point:

- does not respond to the REGISTER request and its retransmissions by the P-CSCF; or
- sends back a 3xx response or 480 (Temporarily Unavailable) response to a REGISTER request;

the P-CSCF shall select a new exit point and forward the original REGISTER request.

NOTE 1: The list of the exit points can be either obtained as specified in RFC 3263 [27A] or provisioned in the P-CSCF.

If the P-CSCF fails to forward the REGISTER request to any exit point, the P-CSCF shall send back a 504 (Server Time-Out) response to the user, in accordance with the procedures in RFC 3261 [26] unless local policy allows omitting the exit point; and

NOTE 2: If the P-CSCF forwards the request to an IBCF in the visited network, the IBCF can determine the entry point of the home network, using the same mechanisms as described in NOTE 1 above. In that case the P-CSCF does not need to determine the entry point of the home network.

- 6) determine the entry point of the home network and forward the request to that entry point.

If the selected entry point:

- does not respond to the REGISTER request and its retransmissions by the P-CSCF; or
- sends back a 3xx response or 480 (Temporarily Unavailable) response to a REGISTER request;

the P-CSCF shall select a new entry point and forward the original REGISTER request.

NOTE 3: The list of the entry points can be either obtained as specified in RFC 3263 [27A] or provisioned in the P-CSCF.

If the P-CSCF fails to forward the REGISTER request to any entry point, the P-CSCF shall send back a 504 (Server Time-Out) response to the user, in accordance with the procedures in RFC 3261 [26].

When the P-CSCF receives a 200 (OK) response to a REGISTER request, the P-CSCF shall check the value of the Expires header field and/or Expires parameter in the Contact header. When the value of the Expires header field and/or expires parameter in the Contact header is different than zero, then the P-CSCF shall:

- 1) save the list of Service-Route headers preserving the order. The P-CSCF shall store this list during the entire registration period of the respective public user identity. The P-CSCF shall use this list to validate the routing information in the requests originated by the UE. If this registration is a reregistration, the P-CSCF shall replace the already existing list of Service-Route headers with the new list;
- 2) associate the Service-Route header list with the registered public user identity;
- 3) store the public user identities and wildcarded public user identities, found in the P-Associated-URI header value, including any associated display names, and associate them to the registered public user identity, i.e. the registered public user identity and its associated set of implicitly registered public user identities and implicitly registered wildcarded public user identities;
- 4) store the default public user identity, including its associated display name, if provided, for use with procedures for the P-Asserted-Identity header. The default public user identity is the first on the list of URIs present in the P-Associated-URI header;

NOTE 4: There can be more than one default public user identity stored in the P-CSCF, as the result of the multiple registrations of public user identities.

- 5) store the values received in the P-Charging-Function-Addresses header; and
- 6) if a term-voi parameter is received in the P-Charging-Vector header, store the value of the received term-voi parameter.

NOTE 5: Any received term-voi parameter will be a type 1 term-voi. The type 1 term-voi identifies the home network of the registered user.

5.2.2.2 IMS AKA as a security mechanism

When the P-CSCF receives a REGISTER request from the UE, as defined in subclause 5.2.2.1, the P-CSCF shall additionally:

- 1) insert the parameter "integrity-protected" (described in subclause 7.2A.2) with a value "yes" into the Authorization header field in case the REGISTER request was either received protected with the security association created during an ongoing authentication procedure and includes an authentication challenge response (i.e. RES parameter), or it was received on the security association created during the last successful authentication procedure, otherwise insert the parameter with the value "no";
- 2) in case the REGISTER request was received without protection, then check the existence of the Security-Client header. If the header is present, then remove and store it. If the header is not present, then the P-CSCF shall return a suitable 4xx response; and
- 3) in case the REGISTER request was received protected, then:
 - a) check the security association which protected the request. If the security association is a temporary one, then the request is expected to contain a Security-Verify header in addition to a Security-Client header. If there are no such headers, then the P-CSCF shall return a suitable 4xx response. If there are such headers, then the P-CSCF shall compare the content of the Security-Verify header with the content of the Security-Server header sent earlier and the content of the Security-Client header with the content of the Security-Client header received in the challenged REGISTER. If those do not match, then there is a potential man-in-the-middle attack. The request should be rejected by sending a suitable 4xx response. If the contents match, the P-CSCF shall remove the Security-Verify and the Security-Client header;
 - b) if the security association the REGISTER request was received on, is an already established one, then:
 - the P-CSCF shall remove the Security-Verify header if it is present;

- a Security-Client header containing new parameter values is expected. If this header or any required parameter is missing, then the P-CSCF shall return a suitable 4xx response; and
 - the P-CSCF shall remove and store the Security-Client header before forwarding the request to the S-CSCF; and
- c) check if the private user identity conveyed in the Authorization header of the protected REGISTER request is the same as the private user identity which was previously challenged or authenticated. If the private user identities are different, the P-CSCF shall reject the REGISTER request by returning a 403 (Forbidden) response.

When the P-CSCF receives a 401 (Unauthorized) response to a REGISTER request, the P-CSCF shall:

- 1) delete any temporary set of security associations established towards the UE;
- 2) remove the CK and IK values contained in the 401 (Unauthorized) response and bind them to the proper private user identity and to the temporary set of security associations which will be setup as a result of this challenge. The P-CSCF shall forward the 401 (Unauthorized) response to the UE if and only if the CK and IK have been removed;
- 3) insert a Security-Server header in the response, containing the P-CSCF static security list and the parameters needed for the security association setup, as specified in Annex H of 3GPP TS 33.203 [19]. The P-CSCF shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The P-CSCF shall support the IPsec layer algorithms for integrity and confidentiality protection as defined in 3GPP TS 33.203 [19] and shall announce support for them according to the procedures defined in RFC 3329 [48];
- 4) set up the temporary set of security associations with a temporary SIP level lifetime between the UE and the P-CSCF for the user identified with the private user identity. For further details see 3GPP TS 33.203 [19] and RFC 3329 [48]. The P-CSCF shall set the temporary SIP level lifetime for the temporary set of security associations to the value of reg-await-auth timer; and
- 5) send the 401 (Unauthorized) response to the UE using the security association with which the associated REGISTER request was protected, or unprotected in case the REGISTER request was received unprotected.

NOTE 1: The challenge in the 401 (Unauthorized) response sent back by the S-CSCF to the UE as a response to the REGISTER request is piggybacked by the P-CSCF to insert the Security-Server header field in it. The S-CSCF authenticates the UE, while the P-CSCF negotiates and sets up two pairs of security associations with the UE during the same registration procedure. For further details see 3GPP TS 33.203 [19].

When the P-CSCF receives a 200 (OK) response to a REGISTER request as defined in subclause 5.2.2.1, the P-CSCF shall additionally:

- 1) if an existing set of security association is available, set the SIP level lifetime of the security association to the longest of either the previously existing security association lifetime, or the lifetime of the just completed registration plus 30 seconds;
- 2) if a temporary set of security associations exists, change the temporary set of security associations to a newly established set of security associations, i.e. set its SIP level lifetime to the longest of either the previously existing set of security associations SIP level lifetime, or the lifetime of the just completed registration plus 30 seconds; and
- 3) protect the 200 (OK) response to the REGISTER request within the same security association to that in which the request was protected.

When receiving a SIP message (including REGISTER requests) from the UE over the newly established set of security associations that have not yet been taken into use, the P-CSCF shall:

- 1) reduce the SIP level lifetime of the old set of security associations towards the same UE to $64 \cdot T1$ (if currently longer than $64 \cdot T1$); and
- 2) use the newly established set of security associations for further messages sent towards the UE as appropriate (i.e. take the newly established set of security associations into use).

NOTE 2: In this case, the P-CSCF will send requests towards the UE over the newly established set of security associations. Responses towards the UE that are sent via UDP will be sent over the newly established set of security associations. Responses towards the UE that are sent via TCP will be sent over the same set of security associations that the related request was received on.

NOTE 3: When receiving a SIP message (including REGISTER requests) from the UE over a set of security associations that is different from the newly established set of security associations, the P-CSCF will not take any action on any set of security associations.

When the SIP level lifetime of an old set of security associations is about to expire, i.e. their SIP level lifetime is shorter than $64 \cdot T1$ and a newly established set of security associations has not been taken into use, the P-CSCF shall use the newly established set of security associations for further messages towards the UE as appropriate (see NOTE 2).

When sending the 200 (OK) response for a REGISTER request that concludes a re-authentication, the P-CSCF shall:

- 1) keep the set of security associations that was used for the REGISTER request that initiated the re-authentication;
- 2) keep the newly established set of security associations created during this authentication;
- 3) delete, if existing, any other set of security associations towards this UE immediately; and
- 4) go on using for further requests sent towards the UE the set of security associations that was used to protect the REGISTER request that initiated the re-authentication.

When sending the 200 (OK) response for a REGISTER request that concludes an initial authentication, i.e. the REGISTER request that initiated the authentication was received unprotected, the P-CSCF shall:

- 1) keep the newly established set of security associations created during this authentication;
- 2) delete, if existing, any other set of security associations towards this UE immediately; and
- 3) use the kept newly established set of security associations for further messages sent towards the UE.

NOTE 4: The P-CSCF will maintain two Route header lists. The first Route header list - created during the registration procedure - is used only to validate the routing information in the initial requests that originate from the UE. This list is valid during the entire registration of the respective public user identity. The second Route list - constructed from the Record Route headers in the initial INVITE and associated response - is used during the duration of the call. Once the call is terminated, the second Route list is discarded.

The P-CSCF shall delete any security association from the IPsec database when their SIP level lifetime expires.

The handling of the security associations at the P-CSCF is summarized in table 5.2.2-1.

Table 5.2.2-1: Handling of security associations at the P-CSCF

| | Temporary set of security associations | Newly established set of security associations | Old set of security associations |
|--|--|--|--|
| SIP message received over newly established set of security associations that have not yet been taken into use | No action | Take into use | Reduce SIP level lifetime to $64 \cdot T1$, if lifetime is larger than $64 \cdot T1$ |
| SIP message received over old set of security associations | No action | No action | No action |
| Old set of security associations currently in use will expire in $64 \cdot T1$ | No action | Take into use | No action |
| Sending an authorization challenge within a 401 (Unauthorized) response for a REGISTER request | Create Remove any previously existing temporary set of security associations | No action | No action |
| Sending 200 (OK) response for REGISTER request that concludes re-authentication | Change to a newly established set of security associations | Convert to and treat as old set of security associations (see next column) | Continue using the old set of security associations over which the REGISTER request, that initiated the re-authentication was received. Delete all other old sets of security associations immediately |
| Sending 200 (OK) response for REGISTER request that concludes initial authentication | Change to a newly established set of security associations and take into use immediately | Convert to old set of security associations, i.e. delete | Delete |

5.2.2.3 SIP digest as a security mechanism

When the P-CSCF receives a REGISTER request from the UE, as defined in subclause 5.2.2.1, the P-CSCF shall additionally:

- if the REGISTER request does not map to an existing IP association, and does not contain a challenge response, not include the integrity-protected parameter; or
- if the REGISTER request does not map to an existing IP association, and does contain a challenge response, include an integrity-protected parameter with the value set to "ip-assoc-pending"; or
- if the REGISTER request does map to an existing IP association, include an integrity-protected parameter with the value set to "ip-assoc-yes".

NOTE 1: The absence of an "integrity protected" parameter in the Authorization header is an indication to the I-CSCF and S-CSCF that this is an initial REGISTER request.

If the P-CSCF receives a 504 (Server Time-Out) response to a REGISTER request, and if the REGISTER request is mapped to an existing IP association, then the P-CSCF shall delete the IP association.

NOTE 2: The P-CSCF deletes the IP association on receipt of 500 (Server Internal Error) or 504 (Server Time-Out) so that the next REGISTER request received from the UE will look like an initial REGISTER request.

When the P-CSCF receives a 200 (OK) response to a REGISTER request as defined in subclause 5.2.2.1, and the value of the Expires header field and/or expires parameter in the Contact header is different than zero, the P-CSCF shall additionally:

- a) create an IP association by storing and associating the UE's packet source IP address along with the "sent-by" parameter of the Via header, cf. RFC 3261 [26], of the REGISTER request with the private user identity and all the successfully registered public user identities related to that private user identity. If draft-ietf-sip-outbound [92] is used then the P-CSCF shall also include the UE's packet source port of the REGISTER request as part of the IP association;

- b) if draft-ietf-sip-outbound [92] is used then overwrite any existing IP association which has the same pair of IP address and port, but a different private user identity. If draft-ietf-sip-outbound [92] is not used then overwrite any existing IP association which has the same IP address, but a different private user identity; and
- c) send the 200 (OK) response to the UE unprotected as defined in clause 4 of RFC 3581 [56A].

5.2.2.4 SIP digest with TLS as a security mechanism

When the P-CSCF receives a REGISTER request from the UE, as defined in subclause 5.2.2.1, the P-CSCF shall additionally:

- if the REGISTER request was not received over an existing TLS session, not include the integrity-protected parameter; or
- if the REGISTER request was received protected with a TLS session and where the Session ID for the TLS session is not bound to a private user identity, include an integrity-protected parameter with the value set to "tls-pending"; or
- if the REGISTER request was received protected with a TLS session created during an ongoing authentication procedure and includes an authentication challenge response (i.e. response parameter), include an integrity-protected parameter with the value set to "tls-yes"; or
- if the REGISTER request was received received on the TLS session created during the last successful authentication procedure and with no authentication challenge response (i.e. no response parameter), include an integrity-protected parameter with the value set to "tls-yes". In this case, the TLS Session ID for the TLS session shall be associated with a private user identity from a previously successful registration and the private user identity in the REGISTER request shall match the private user identity associated with the TLS Session ID.

NOTE: The absence of an "integrity protected" parameter in the Authorization header is an indication to the I-CSCF and S-CSCF that this is an initial REGISTER request.

When the P-CSCF receives a 200 (OK) response to a REGISTER request as defined in subclause 5.2.2.1, and the value of the Expires header field and/or expires parameter in the Contact header is different than zero, the P-CSCF shall additionally:

- create an association by storing and associating the UEs IP address and port of the TLS connection with the TLS Session ID, the private user identity and all the successfully registered public user identities related to that private user identity; and
- protect the 200 (OK) response to the REGISTER request within the same TLS session to that in which the request was protected.

5.2.2.5 NASS-IMS bundled authentication as a security mechanism

When the P-CSCF receives a REGISTER request from the UE, as defined in subclause 5.2.2.1, the P-CSCF shall additionally:

- 1) store an association between the IP source address and port of the initial REGISTER request and the public user identities found in the P-Associated-URI header value and associate them to the public user identity under registration; and
- 2) store an association between the IP source address and port of the initial REGISTER request the default public user identity for use with procedures for the P-Asserted-Identity header. The default public user identity is the first on the list of URIs present in the P-Associated-URI header.

Editor's note: It needs to be investigated if the P-CSCF should take some action on the line identifier.

5.2.3 Subscription to the user's registration-state event package

Upon receipt of a 200 (OK) response to the initial REGISTER request, the P-CSCF shall:

- 1) generate a SUBSCRIBE request in accordance with RFC 3680 [43], with the following elements:

- a Request-URI set to the resource to which the P-CSCF wants to be subscribed to, i.e. to a SIP URI that contains the default public user identity of the user;
 - a From header set to the P-CSCF's SIP URI;
 - a To header, set to a SIP URI that contains the default public user identity of the user;
 - an Event header set to the "reg" event package;
 - an Expires header set to a value higher than the Expires header indicated in the 200 (OK) response to the REGISTER request;
 - a P-Asserted-Identity header set to the SIP URI of the P-CSCF, which was inserted into the Path header during the registration of the user to whose registration state the P-CSCF subscribes to; and
 - a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17];
- 2) if the P-CSCF is located in the visited network, and local policy requires the application of IBCF capabilities in the visited network towards the home network, then the P-CSCF shall forward the request to an IBCF in the visited network; and
 - 3) determine the entry point of the home network (e.g., by using DNS services) and send the SUBSCRIBE request to that entry point, according to the procedures of RFC 3261 [26].

NOTE: The subscription to reg event package is done once per private user identity.

Upon receipt of a 2xx response to the SUBSCRIBE request, the P-CSCF shall store the information for the so established dialog and the expiration time as indicated in the Expires header of the received response.

If continued subscription is required the P-CSCF shall automatically refresh the subscription by the reg event package 600 seconds before the expiration time for a previously registered public user identity, either 600 seconds before the expiration time if the initial subscription was for greater than 1200 seconds, or when half of the time has expired if the initial subscription was for 1200 seconds or less. If a SUBSCRIBE request to refresh a subscription fails with a non-481 response, the P-CSCF shall still consider the original subscription valid for the duration of the most recently known "Expires" value according to RFC 3265 [28]. Otherwise, the P-CSCF shall consider the subscription invalid and start a new initial subscription according to RFC 3265 [28].

5.2.4 Registration of multiple public user identities

Upon receipt of a 2xx response to the SUBSCRIBE request the P-CSCF shall maintain the generated dialog (identified by the values of the Call-ID, To and From headers).

Upon receipt of a NOTIFY request on the dialog which was generated during subscription to the reg event package of the user, the P-CSCF shall perform the following actions:

- 1) for each public user identity whose state attribute in the <registration> element is set to "active", i.e. registered; and
 - the state attribute within the <contact> sub-element is set to "active"; and
 - the value of the <uri> sub-element inside the <contact> sub-element is set to the contact address of the user's UE; and
 - the event attribute of that <contact> sub-element(s) is set to "registered" or "created";

the P-CSCF shall:

- bind the indicated public user identity as registered to the contact information of the respective user; and
 - add the public user identity to the list of the public user identities that are registered for the user;
- 2) for each public user identity whose state attribute in the <registration> element is set to "active", i.e. registered; and
 - the state attribute within the <contact> sub-element is set to "terminated";

- the value of the <uri> sub-element inside the <contact> sub-element is set to the contact address of the user's UE; and
- the event attribute of that <contact> sub-element(s) is set to "deactivated", "expired", "probation", "unregistered", or "rejected";

the P-CSCF shall consider the indicated public user identity as deregistered for this user, and shall release all stored information for the public user identity bound to the respective user; and

- 3) for each public user identity whose state attribute in the <registration> element is set to "terminated", i.e. deregistered; and
 - the value of the <uri> sub-element inside the <contact> sub-element is set to the contact address of the user's UE; and
 - the event attribute of that <contact> sub-element(s) is set to "deactivated", "expired", "probation", "unregistered", or "rejected";

the P-CSCF shall consider the indicated public user identity as deregistered for this UE, and shall release all stored information for these public user identity bound to the respective user and remove the public user identity from the list of the public user identities that are registered for the user.

If all public user identities, that were registered by the user using its private user identity, have been deregistered, the P-CSCF, will receive from the S-CSCF a NOTIFY request that may include the Subscription-State header set to "terminated", as described in subclause 5.4.2.1.2. If the Subscription-State header was not set to "terminated", the P-CSCF may either unsubscribe to the reg event package of the user or let the subscription expire.

NOTE 1: Upon receipt of a NOTIFY request with the Subscription-State header set to "terminated", the P-CSCF considers the subscription to the reg event package terminated (i.e. as if the P-CSCF had sent a SUBSCRIBE request with an Expires header containing a value of zero).

NOTE 2: There may be public user identities which are implicitly registered within the registrar (S-CSCF) of the user upon registration of one public user identity. The procedures in this subclause provide a mechanism to inform the P-CSCF about these implicitly registered public user identities.

5.2.5 Deregistration

5.2.5.1 User-initiated deregistration

When the P-CSCF receives a 200 (OK) response to a REGISTER request (sent according to subclause 5.2.2) sent by this UE, then the P-CSCF shall check the value of the Expires header field and/or expires parameter in the Contact header field. When the value of the Expires header field or expires parameter equals zero, then the P-CSCF shall:

- 1) remove the public user identity found in the To header field, and all the associated public user identities, from the registered public user identities list belonging to this UE and all related stored information; and
- 2) check if the UE has left any other registered public user identity. When all of the public user identities that were registered by this UE are deregistered, the P-CSCF shall delete any security associations or TLS sessions towards the UE, after the server transaction (as defined in RFC 3261 [26]) pertaining to this deregistration terminates.

NOTE 1: Upon receipt of a NOTIFY request with all <registration> element(s) having their state attribute set to "terminated" (i.e. all public user identities are deregistered) and the Subscription-State header set to "terminated", the P-CSCF considers the subscription to the reg event package terminated (i.e. as if the P-CSCF had sent a SUBSCRIBE request with an Expires header containing a value of zero).

NOTE 2: There is no requirement to distinguish a REGISTER request relating to a registration from that relating to a deregistration. For administration reasons the P-CSCF may distinguish such requests, however this has no impact on the SIP procedures.

NOTE 3: When the P-CSCF has sent the 200 (OK) response for the REGISTER request of the only public user identity currently registered with its associated set of implicitly registered public user identities (i.e. no other is registered), the P-CSCF removes the security association or TLS session established between the P-CSCF and the UE, if present. Therefore further SIP signalling (e.g. the NOTIFY request containing the deregistration event) will not reach the UE.

5.2.5.2 Network-initiated deregistration

Upon receipt of a NOTIFY request on the dialog which was generated during subscription to the reg event package of the UE, as described in subclause 5.2.3, including one or more <registration> element(s) which were registered by the UE with either:

- the state attribute set to "terminated"; or
- the state attribute set to "active" and the state attribute within the <contact> sub-element belonging to this UE set to "terminated", and the event attribute within the <contact> sub-element belonging to this UE set to "rejected" or "deactivated";

the P-CSCF shall remove all stored information for these public user identities for this UE and remove these public user identities from the list of the public user identities that are registered for the user.

Upon receipt of a NOTIFY request with all <registration> element(s) having their state attribute set to "terminated" (i.e. all public user identities are deregistered) and the Subscription-State header set to "terminated" or when all public user identities of the UE have been deregistered, the P-CSCF shall shorten any security associations towards the UE.

NOTE 1: The security association between the P-CSCF and the UE is shortened to a value that will allow the NOTIFY request containing the deregistration event to reach the UE.

NOTE 2: When the P-CSCF receives the NOTIFY request with Subscription-State header containing the value of "terminated", the P-CSCF considers the subscription to the reg event package terminated (i.e. as if the P-CSCF had sent a SUBSCRIBE request to the S-CSCF with an Expires header containing a value of zero).

5.2.6 General treatment for all dialogs and standalone transactions excluding the REGISTER method

5.2.6.1 Introduction

The procedures of subclause 5.2.6 and its subclauses are general to all requests and responses, except those for the REGISTER method.

5.2.6.2 Determination of UE-originated or UE-terminated case

Upon receipt of an initial request or a target refresh request or a stand-alone transaction, the P-CSCF shall:

- perform the procedures for the UE-terminating case as described in subclause 5.2.6.4 if the request makes use of the information for UE-terminating calls, which was added to the Path header entry of the P-CSCF during registration (see subclause 5.2.2), e.g. the message is received at a certain port or the topmost Route header contains a specific user part or parameter;
- perform the procedures for the UE-originating case as described in subclause 5.2.6.3 if this information is not used by the request.

5.2.6.3 Requests initiated by the UE

5.2.6.3.1 General for all requests

When the P-CSCF receives from the UE an initial request for a dialog or a request for a standalone transaction, and the request contains a P-Preferred-Identity header that matches one of the registered public user identities, the P-CSCF shall identify the initiator of the request by that public user identity.

Editor's note: It is FFS how the identity procedures are affected when the initial requests originates from a corporate network.

NOTE 1: If no security association was set-up during registration, the P-CSCF identifies the initiator of the request by using the IP association information stored during the registration for which it holds the list of registered public user identities.

When the P-CSCF receives from the UE an initial request for a dialog or a request for a standalone transaction, and a security association or TLS session exists, and the request contains a P-Preferred-Identity header that does not match one of the registered public user identities mapped to the security association or TLS session, or does not contain a P-Preferred-Identity header, the P-CSCF shall identify the initiator of the request by a default public user identity. If there is more than one default public user identity available, the P-CSCF shall randomly select one of them.

When the P-CSCF receives from the UE an initial request for a dialog or a request for a standalone transaction, and no security association or TLS session exists, and the request contains a P-Preferred-Identity header that does not match one of the registered public user identities mapped to the IP association, or does not contain a P-Preferred-Identity header, the P-CSCF shall identify the initiator of the request by a default public user identity. If there is more than one default public user identity available, the P-CSCF shall randomly select one of them.

NOTE 2: If no security association was set-up during registration, the P-CSCF identifies the initiator of the request by using the IP association information stored during the registration for which it holds one or more default public user identities.

NOTE 3: The contents of the From header do not form any part of this decision process.

NOTE 4: The display-name portion of the P-Preferred-Identity header and the registered public user identities is not included in the comparison to determine a match.

5.2.6.3.2 General for all responses

Void.

5.2.6.3.3 Initial request for a dialog

When the P-CSCF receives from the UE an initial request for a dialog, and a Service-Route header list exists for the initiator of the request, the P-CSCF shall:

- 1) remove its own SIP URI from the top of the list of Route headers;
- 2) verify that the resulting list of Route headers matches the list of URIs received in the Service-Route header (during the last successful registration or re-registration). This verification is done on a per URI basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) return a 400 (Bad Request) response; the P-CSCF shall not forward the request, and shall not continue with the execution of steps 2 onwards; or
 - b) replace the preloaded Route header value in the request with the value of the Service-Route header received during the last 200 (OK) response for the last successful registration or reregistration;
- 3) if the P-CSCF is located in the visited network, and local policy requires the application of IBCF capabilities in the visited network towards the home network, select an IBCF in the visited network and add the URI of the selected IBCF to the topmost Route header;

NOTE: It is implementation dependent as to how the P-CSCF obtains the address of the IBCF exit point.

- 4) add its own address to the Via header. The P-CSCF Via header entry is built in a format that contains the port number of the P-CSCF in accordance with the procedures of RFC 3261 [26], and either:
 - a) the P-CSCF FQDN that resolves to the IP address, or
 - b) the P-CSCF IP address;
- 5) when adding its own SIP URI to the Record-Route header, build the P-CSCF SIP URI in a format that contains the port number of the P-CSCF where it awaits subsequent requests from the called party, and either:

- a) the P-CSCF FQDN that resolves to the IP address; or
- b) the P-CSCF IP address;
- 6) remove the P-Preferred-Identity header, if present, and insert a P-Asserted-Identity header with a value, including the display name if previously stored during registration representing the initiator of the request;
- 7) add a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17]; and
- 8) if the request is an INVITE request, save the Contact, CSeq and Record-Route header field values received in the request such that the P-CSCF is able to release the session if needed;

before forwarding the request, based on the topmost Route header, in accordance with the procedures of RFC 3261 [26].

5.2.6.3.4 Responses to an initial request for a dialog

When the P-CSCF receives any 1xx or 2xx response to the above request, the P-CSCF shall:

- 1) store the values received in the P-Charging-Function-Addresses header;
- 2) store the list of Record-Route headers from the received response;
- 3) store the dialog ID and associate it with the private user identity and public user identity involved in the session;
- 4) if a security association or TLS session exists, in the response rewrite its own Record Route entry to its own SIP URI that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;

NOTE: The P-CSCF associates two ports, a protected client port and a protected server port, with each pair of security associations. For details on the selection of the protected port values see 3GPP TS 33.203 [19].

- 5) if SIP digest is used without TLS, in the response rewrite its own Record Route entry to its own SIP URI that contains an unprotected server port number where the P-CSCF expects subsequent requests from the UE; and
- 6) if the response corresponds to an INVITE request, save the Contact, From, To and Record-Route header field values received in the response such that the P-CSCF is able to release the session if needed;

before forwarding the response to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.3.5 Target refresh request for a dialog

When the P-CSCF receives from the UE a target refresh request for a dialog, the P-CSCF shall:

- 1) verify if the request relates to a dialog in which the originator of the request is involved:
 - a) if the request does not relate to an existing dialog in which the originator is involved, then the P-CSCF shall answer the request by sending a 403 (Forbidden) response back to the originator. The P-CSCF will not forward the request. No other actions are required; or
 - b) if the request relates to an existing dialog in which the originator is involved, then the P-CSCF shall continue with the following steps;
- 1A) remove its own SIP URI from the top of the list of Route headers;
- 2) verify that the resulting list of Route headers matches the list of Record-Route headers constructed by inverting the order of the stored list of Record-Route headers and removing its Record-Route header from the list. This verification is done on a per URI basis, not as a whole string. If the verification fails, then the P-CSCF shall either:

- a) return a 400 (Bad Request) response; the P-CSCF shall not forward the request, and shall not continue with the execution of steps 3 onwards; or
 - b) replace the Route header value in the request with the list of Record-Route headers constructed by inverting the order of the stored list of Record-Route headers and removing its Record-Route header from the list;
- 3) add its own address to the Via header. The P-CSCF Via header entry is built in a format that contains the port number of the P-CSCF where it awaits the responses to come, and either:
- a) the P-CSCF FQDN that resolves to the IP address, or
 - b) the P-CSCF IP address;
- 4) when adding its own SIP URI to the Record-Route header, build the P-CSCF SIP URI in a format that contains the port number of the P-CSCF where it awaits subsequent requests from the called party, and either:
- a) the P-CSCF FQDN that resolves to the IP address; or
 - b) the P-CSCF IP address; and
- 5) for INVITE dialogs (i.e. dialogs initiated by an INVITE request), replace the saved Contact and Cseq header filed values received in the request such that the P-CSCF is able to release the session if needed;

NOTE: The replaced Contact header field value is valid only if a 1xx or 2xx response will be received for the request. In other cases the old value is still valid.

before forwarding the request, based on the topmost Route header, in accordance with the procedures of RFC 3261 [26].

5.2.6.3.6 Responses to a target refresh request for a dialog

When the P-CSCF receives a 1xx or 2xx response to the above request, the P-CSCF shall:

- 1) if a security association or TLS session exists, rewrite the the address and port number of its own Record Route entry to the same value as for the response to the initial request for the dialog; and
- 2) replace the saved Contact header value received in the response such that the P-CSCF is able to release the session if needed;

before forwarding the response to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.3.7 Request for a standalone transaction

When the P-CSCF receives from the UE the request for a standalone transaction, and a Service-Route header list exists for the initiator of the request, the P-CSCF shall:

- 1) remove its own SIP URI from the top of the list of Route headers;
- 2) verify that the resulting list of Route headers matches the list of URIs received in the Service-Route header (during the last successful registration or re-registration). This verification is done on a per URI basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) return a 400 (Bad Request) response; the P-CSCF shall not forward the request, and shall not continue with the execution of steps 3 onwards; or
 - b) replace the preloaded Route header value in the request with the one received during the last registration in the Service-Route header of the 200 (OK) response;
- 3) if the P-CSCF is located in the visited network, and local policy requires the application of IBCF capabilities in the visited network towards the home network, select an IBCF in the visited network and add the URI of the selected IBCF to the topmost Route header;

NOTE: It is implementation dependent as to how the P-CSCF obtains the address of the IBCF exit point.

- 4) remove the P-Preferred-Identity header, if present, and insert a P-Asserted-Identity header with a value, including the display name if previously stored during registration, representing the initiator of the request; and

- 5) add a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17];

before forwarding the request, based on the topmost Route header, in accordance with the procedures of RFC 3261 [26].

5.2.6.3.8 Responses to a request for a standalone transaction

When the P-CSCF receives any response to the above request, the P-CSCF shall:

- 1) store the values received in the P-Charging-Function-Addresses header;

before forwarding the response to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.3.9 Subsequent request other than a target refresh request

When the P-CSCF receives from the UE subsequent requests other than a target refresh request (including requests relating to an existing dialog where the method is unknown), the P-CSCF shall:

- 1) verify if the request relates to a dialog in which the originator of the request is involved:
 - a) if the request does not relate to an existing dialog in which the originator is involved, then the P-CSCF shall answer the request by sending a 403 (Forbidden) response back to the originator. The P-CSCF will not forward the request. No other actions are required; or
 - b) if the request relates to an existing dialog in which the originator is involved, then the P-CSCF shall continue with the following steps:
 - 1A) remove its own SIP URI from the top of the list of Route headers;
 - 2) verify that the resulting list of Route headers matches the list of Record-Route headers constructed by inverting the order of the stored list of Record-Route headers and removing its Record-Route header from the list. This verification is done on a per URI basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) return a 400 (Bad Request) response; the P-CSCF shall not forward the request, and shall not continue with the execution of steps 3 onwards; or
 - b) replace the Route header value in the request with the list of Record-Route headers constructed by inverting the order of the stored list of Record-Route headers and removing its Record-Route header from the list;
 - 3) for dialogs that are not INVITE dialogs, add a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17]; and
 - 4) for INVITE dialogs, replace the saved Cseq header value received in the request such that the P-CSCF is able to release the session if needed;

before forwarding the request, (based on the topmost Route header,) in accordance with the procedures of RFC 3261 [26].

5.2.6.3.10 Responses to a subsequent request other than a target refresh request

Void

5.2.6.3.11 Request for an unknown method that does not relate to an existing dialog

When the P-CSCF receives from the UE the request for an unknown method (that does not relate to an existing dialog), and a Service-Route header list exists for the initiator of the request, the P-CSCF shall:

- 1) verify that the list of URIs received in the Service-Route header (during the last successful registration or re-registration) is included, preserving the same order, as a subset of the preloaded Route headers in the received request. This verification is done on a per URI basis, not as a whole string. If the verification fails, then the P-CSCF shall either:

- a) return a 400 (Bad Request) response; the P-CSCF shall not forward the request, and shall not continue with the execution of steps 2 onwards; or
 - b) replace the Route header value in the request with the one received during the last registration in the Service-Route header of the 200 (OK) response;
- 2) if the P-CSCF is located in the visited network, and local policy requires the application of IBCF capabilities in the visited network towards the home network, then the P-CSCF shall select an IBCF in the visited network and add the URI of the selected IBCF to the topmost Route header; and

NOTE: It is implementation dependent as to how the P-CSCF obtains the address of the IBCF exit point.

- 3) remove the P-Preferred-Identity header, if present, and insert a P-Asserted-Identity header with a value, including the display name if previously stored during registration, representing the initiator of the request;

before forwarding the request, based on the topmost Route header, in accordance with the procedures of RFC 3261 [26].

5.2.6.3.12 Responses to a request for an unknown method that does not relate to an existing dialog

Void

5.2.6.4 Requests terminated by the UE

5.2.6.4.1 General for all requests

Void

5.2.6.4.2 General for all responses

Void

5.2.6.4.3 Initial request for a dialog

When the P-CSCF receives, destined for the UE, an initial request for a dialog, prior to forwarding the request, the P-CSCF shall:

- 1) if an indication has been received from the PCRF that the signalling bearer to the UE is lost, and has not recovered, reject the request by sending 503 (Service Unavailable) response);

NOTE 1: The signalling bearer can be considered as recovered by the P-CSCF when the registration timer expires in P-CSCF and the user is de-registered from the IM CN subsystem, a new REGISTER request from the UE is received providing an indication to the P-CSCF that the signalling bearer to that user has become available or a P-CSCF implementation dependent function which discovers that the signalling bearer is available to the UE.

Editor's note: Which value to be used in the 503 Retry-After header requires further study.

- 2) convert the list of Record-Route header values into a list of Route header values and save this list of Route headers;
- 3) if the request is an INVITE request, save a copy of the Contact, CSeq and Record-Route header field values received in the request such that the P-CSCF is able to release the session if needed;
- 4) if a security association or TLS session exists, when adding its own SIP URI to the top of the list of Record-Route headers and save the list, build the P-CSCF SIP URI in a format that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;

- 5) if SIP digest is used without TLS, when adding its own SIP URI to the top of the list of Record-Route headers and saving the list, build the P-CSCF URI in a format that contains an unprotected server port number where the P-CSCF expects subsequent requests from the UE;
- 6) if a security association or TLS session exists, when adding its own address to the top of the received list of Via header and save the list, build the P-CSCF Via header entry in a format that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;

NOTE 2: The P-CSCF associates two ports, a protected client port and a protected server port, with each pair of security associations or TLS session. For details of the usage of the two ports see 3GPP TS 33.203 [19].

- 7) if SIP digest is used without TLS, when adding its own address to the top of the received list of Via headers and saving the list, build the P-CSCF Via header entry in a format that contains an unprotected server port number where the P-CSCF expects responses to the current request from the UE;
- 8) store the values received in the P-Charging-Function-Addresses header;
- 9) store the icid parameter received in the P-Charging-Vector header; and
- 10) save a copy of the P-Called-Party-ID header;

before forwarding the request to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.4.4 Responses to an initial request for a dialog

When the P-CSCF receives any 1xx or 2xx response to the above request, the P-CSCF shall:

- 1) remove the P-Preferred-Identity header, if present, and insert a P-Asserted-Identity header with the saved public user identity from the P-Called-Party-ID header that was received in the request, plus the display name if previously stored during registration, representing the initiator of the response;
- 2) verify that the list of Via headers matches the saved list of Via headers received in the request corresponding to the same dialog, including the P-CSCF via header value. This verification is done on a per Via header value basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Via header values with those received in the request;
- 3) verify that the list of URIs received in the Record-Route header of the request corresponding to the same dialog is included, preserving the same order, as a subset of the Record-Route header list of this response. This verification is done on a per URI basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Record-Route header values with those received in the request, and if a security association or TLS session exists, add its own Record-Route entry with its own SIP URI with the port number where it awaits subsequent requests from the calling party and either:
 - the P-CSCF FQDN that resolves to its IP address; or
 - the P-CSCF IP address; andremove the comp parameter.

If the verification is successful, the P-CSCF shall rewrite its own Record-Route entry to its SIP URI in a format that contains the port number where it awaits subsequent requests from the calling party and either:

- the P-CSCF FQDN that resolves to its IP address; or

- the P-CSCF IP address; and
- remove the comp parameter;
- 4) store the dialog ID and associate it with the private user identity and public user identity involved in the session; and
- 5) if the response corresponds to an INVITE request, save the Contact, To, From and Record-Route header field value received in the response such that the P-CSCF is able to release the session if needed;

before forwarding the response in accordance with the procedures of RFC 3261 [26].

When the P-CSCF receives any other response to the above request, the P-CSCF shall:

- 1) verify that the list of Via headers matches the saved list of Via headers received in the request corresponding to the same dialog, including the P-CSCF via header value. This verification is done on a per Via header value basis, not as a whole string. If these lists do not match, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Via header values with those received in the request;

before forwarding the response in accordance with the procedures of RFC 3261 [26].

5.2.6.4.5 Target refresh request for a dialog

When the P-CSCF receives, destined for the UE, a target refresh request for a dialog, prior to forwarding the request, the P-CSCF shall:

- 1) if a security association or TLS session exists, add its own address to the top of the received list of Via header and save the list. The P-CSCF Via header entry is built in a format that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;

NOTE 1: The P-CSCF associates two ports, a protected client port and a protected server port, with each pair of security associations or TLS session. For details of the usage of the two ports see 3GPP TS 33.203 [19].

- 2) if SIP digest is used without TLS, when adding its own address to the top of the received list of Via headers and saving the list, build the P-CSCF Via header entry in a format that contains an unprotected server port number where the P-CSCF expects responses to the current request from the UE;
- 3) if a security association or TLS session exists, when adding its own SIP URI to the top of the list of Record-Route headers and save the list, build the P-CSCF SIP URI in a format that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;
- 4) if SIP digest is used without TLS, when adding its own SIP URI to the top of the list of Record-Route headers and saving the list, build the P-CSCF URI in a format that contains an unprotected server port number where the P-CSCF expects subsequent requests from the UE;
- 5) for INVITE dialogs, replace the saved Contact and Cseq header field values received in the request such that the P-CSCF is able to release the session if needed; and

NOTE 2: The replaced Contact header field value is valid only if a 1xx or 2xx response will be received for the request. In other cases the old value is still valid.

before forwarding the request to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.4.6 Responses to a target refresh request for a dialog

When the P-CSCF receives a 1xx or 2xx response to the above request, the P-CSCF shall:

- 1) verify that the list of Via headers matches the saved list of Via headers received in the request corresponding to the same dialog, including the P-CSCF via header value. This verification is done on a per Via header value basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Via header values with those received in the request;
- 2) if a security association or TLS session exists, rewrite the address and port number of its own Record-Route entry to the same value as for the response to the initial request for the dialog and remove the comp parameter; and
- 3) replace the saved Contact header field value received in the response such that the P-CSCF is able to release the session if needed;

before forwarding the response in accordance with the procedures of RFC 3261 [26].

When the P-CSCF receives any other response to the above request, the P-CSCF shall:

- 1) verify that the list of Via headers matches the saved list of Via headers received in the request corresponding to the same dialog, including the P-CSCF via header value. This verification is done on a per Via header value basis, not as a whole string. If the verification fails, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Via header values with those received in the request; and
- 2) if a security association or TLS session exists, rewrite the IP address and the port number of its own Record-Route entry to the IP address and the port number where it awaits subsequent requests from the calling party and remove the comp parameter;

before forwarding the response in accordance with the procedures of RFC 3261 [26].

5.2.6.4.7 Request for a standalone transaction

When the P-CSCF receives, destined for the UE, a request for a standalone transaction, or a request for an unknown method (that does not relate to an existing dialog), prior to forwarding the request, the P-CSCF shall:

- 1) if an indication has been received from the PCRF that the signalling bearer to the UE is lost, and has not recovered, reject the request by sending 503 (Service Unavailable) response);

NOTE 1: The signalling bearer can be considered as recovered by the P-CSCF when the registration timer expires in P-CSCF and the user is de-registered from the IM CN subsystem, a new REGISTER request from the UE is received providing an indication to the P-CSCF that the signalling bearer to that user has become available or a P-CSCF implementation dependent function which discovers that the signalling bearer is available to the UE.

Editor's note: Which value to be used in the 503 Retry-After header requires further study.

- 2) if a security association or TLS session exists, add its own address to the top of the received list of Via header and save the list. The P-CSCF Via header entry is built in a format that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;

NOTE 2: The P-CSCF associates two ports, a protected client port and a protected server port, with each pair of security associations or TLS session. For details of the usage of the two ports see 3GPP TS 33.203 [19].

- 3) when adding its own address to the top of the received list of Via headers and saving the list, build the P-CSCF Via header entry in a format that contains an unprotected server port number where the P-CSCF expects responses to the current request from the UE;
- 4) store the values received in the P-Charging-Function-Addresses header;
- 5) store the icid parameter received in the P-Charging-Vector header; and
- 6) save a copy of the P-Called-Party-ID header;

before forwarding the request to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.4.8 Responses to a request for a standalone transaction

When the P-CSCF receives any response to the above request, the P-CSCF shall:

- 1) verify that the list of Via headers matches the saved list of Via headers received in the request corresponding to the same dialog, including the P-CSCF via header value. This verification is done on a per Via header value basis, not as a whole string. If these lists do not match, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Via header values with those received in the request; and
- 2) remove the P-Preferred-Identity header, if present, and insert an P-Asserted-Identity header with the saved public user identity from the P-Called-Party-ID header of the request, plus the display name if previously stored during registration, representing the initiator of the response;

before forwarding the response in accordance with the procedures of RFC 3261 [26].

5.2.6.4.9 Subsequent request other than a target refresh request

When the P-CSCF receives, destined for the UE, a subsequent request for a dialog that is not a target refresh request (including requests relating to an existing dialog where the method is unknown), prior to forwarding the request, the P-CSCF shall:

- 1) if a security association or TLS session exists, add its own address to the top of the received list of Via header and save the list. The P-CSCF Via header entry is built in a format that contains the protected server port number of the security association or TLS session established from the UE to the P-CSCF and either:
 - a) the P-CSCF FQDN that resolves to the IP address of the security association or TLS session established from the UE to the P-CSCF; or
 - b) the P-CSCF IP address of the security association or TLS session established from the UE to the P-CSCF;

NOTE: The P-CSCF associates two ports, a protected client port and a protected server port, with each pair of security associations or TLS session. For details of the usage of the two ports see 3GPP TS 33.203 [19].

- 2) when adding its own address to the top of the received list of Via headers and saving the list, build the P-CSCF Via header entry in a format that contains an unprotected server port number where the P-CSCF expects responses to the current request from the UE;
- 3) store the icid parameter from P-Charging-Vector header; and
- 4) for INVITE dialogs, replace the saved Cseq header value received in the request such that the P-CSCF is able to release the session if needed;

before forwarding the request to the UE in accordance with the procedures of RFC 3261 [26].

5.2.6.4.10 Responses to a subsequent request other than a target refresh request

When the P-CSCF receives any response to the above request, the P-CSCF shall:

- 1) verify that the list of Via headers matches the saved list of Via headers received in the request corresponding to the same dialog, including the P-CSCF via header value. This verification is done on a per Via header value basis, not as a whole string. If these lists do not match, then the P-CSCF shall either:
 - a) discard the response; or
 - b) replace the Via header values with those received in the request;

before forwarding the response in accordance with the procedures of RFC 3261 [26].

5.2.6.4.11 Request for an unknown method that does not relate to an existing dialog

Void.

5.2.6.4.12 Responses to a request for an unknown method that does not relate to an existing dialog

Void.

5.2.7 Initial INVITE

5.2.7.1 Introduction

In addition to following the procedures for initial requests defined in subclause 5.2.6, initial INVITE requests also follow the procedures of this subclause.

5.2.7.2 UE-originating case

When the P-CSCF receives from the UE an INVITE request, the P-CSCF may require the periodic refreshment of the session to avoid hung states in the P-CSCF. If the P-CSCF requires the session to be refreshed, then the P-CSCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

The P-CSCF shall respond to all INVITE requests with a 100 (Trying) provisional response.

If received from the IP-CAN, the P-CSCF shall also include the access-network-charging-info parameter (e.g. received via the PCRF, over the Rx or Gx interfaces) in the P-Charging-Vector header in the first request originated by the UE that traverses the P-CSCF, as soon as the charging information is available in the P-CSCF, e.g., after the local resource reservation is complete. Typically, this first request is an UPDATE request if the remote UA supports the "integration of resource management in SIP" extension or a re-INVITE request if the remote UA does not support the "integration of resource management in SIP" extension. See subclause 5.2.7.4 for further information on the access network charging information.

5.2.7.3 UE-terminating case

When the P-CSCF receives an INVITE request destined for the UE the P-CSCF may require the periodic refreshment of the session to avoid hung states in the P-CSCF. If the P-CSCF requires the session to be refreshed, then the P-CSCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it in order to make it work.

When the P-CSCF receives an initial INVITE request destined for the UE, it will contain the Contact URI of the UE in the Request-URI, and a single preloaded Route header. The received initial INVITE request will also have a list of

Record-Route headers. Prior to forwarding the initial INVITE request to the URI found in the Request-URI, the P-CSCF shall respond to all INVITE requests with a 100 (Trying) provisional response.

If received from the IP-CAN, the P-CSCF shall also include the access-network-charging-info parameter (e.g. received via the PCRF, over the Rx or Gx interfaces) in the P-Charging-Vector header in the first request or response originated by the UE that traverses the P-CSCF, as soon as the charging information is available in the P-CSCF e.g., after the local resource reservation is complete. Typically, this first response is a 180 (Ringing) or 200 (OK) response if the remote UA supports the "integration of resource management in SIP" extension, or a re-INVITE request if the remote UA does not support the "integration of resource management in SIP" extension. See subclause 5.2.7.4 for further information on the access network charging information.

5.2.7.4 Access network charging information

The P-CSCF shall include the access-network-charging-info parameter within the P-Charging-Vector header as described in subclause 7.2A.5.

5.2.8 Call release

5.2.8.1 P-CSCF-initiated call release

5.2.8.1.1 Cancellation of a session currently being established

Upon receipt of an indication that radio coverage is no longer available for a multimedia session currently being established (e.g. abort session request from PCRF), the P-CSCF shall cancel that dialog by applying the following steps:

- 1) if the P-CSCF serves the calling user of the session, send out a CANCEL request to cancel the INVITE request towards the terminating UE that includes a Reason header containing a 503 (Service Unavailable) status code according to the procedures described in RFC 3261 [26] and RFC 3326 [34A]; and
- 2) if the P-CSCF serves the called user of the session, send out a 503 (Service Unavailable) response to the received INVITE request.

Upon receipt of an indication that QoS resources are no longer available for a multimedia session currently being established (e.g. abort session request from PCRF), the P-CSCF shall cancel that dialog by responding to the original INVITE request with a 503 (Service Unavailable) response, and by sending out a CANCEL request to the INVITE request towards the terminating UE that includes a Reason header containing a 503 (Service Unavailable) status code according to the procedures described in RFC 3261 [26] and RFC 3326 [34A].

5.2.8.1.2 Release of an existing session

Upon receipt of an indication that the radio/bearer interface resources are no longer available or the signalling bearer is lost to the UE for a session (e.g. abort session request from PCRF) or upon detecting that the SDP offer conveyed in a SIP response contained parameters which are not allowed according to the local policy (as specified in the subclause 6.2), the P-CSCF shall release the respective dialog by applying the following steps:

- 1) if the P-CSCF serves the calling user of the session, then the P-CSCF shall generate a BYE request based on the information saved for the related dialog, including:
 - a Request-URI, set to the stored Contact header provided by the called user;
 - a To header, set to the To header value as received in the 200 (OK) response for the initial INVITE request;
 - a From header, set to the From header value as received in the initial INVITE request;
 - a Call-ID header, set to the Call-Id header value as received in the initial INVITE request;
 - a CSeq header, set to the current CSeq value stored for the direction from the calling to the called user, incremented by one;
 - a Route header, set to the routing information towards the called user as stored for the dialog;

- a Reason header that contains:
 - a 503 (Service Unavailable) response code, if radio/bearer interface resources are no longer available; or
 - a 503 (Service Unavailable) response code, if the signalling bearer is lost to the UE; or
 - a 488 (Not Acceptable Here) response code, if a SDP offer conveyed in a SIP response contained parameters which are not allowed according to the local policy; and
 - further headers, based on local policy.
- 2) If the P-CSCF serves the called user of the session, then the P-CSCF shall generate a BYE request based on the information saved for the related dialog, including:
- a Request-URI, set to the stored Contact header provided by the calling user;
 - a To header, set to the From header value as received in the initial INVITE request;
 - a From header, set to the To header value as received in the 200 (OK) response for the initial INVITE request;
 - a Call-ID header, set to the Call-Id header value as received in the initial INVITE request;
 - a CSeq header, set to the current CSeq value stored for the direction from the called to the calling user, incremented by one;
 - a Route header, set to the routing information towards the calling user as stored for the dialog;
 - a Reason header that contains:
 - a 503 (Service Unavailable) response code, if radio/bearer interface resources are no longer available; or
 - a 488 (Not Acceptable Here) response code, if SDP payload contained parameters which are not allowed according to the local policy; and
 - further headers, based on local policy.
- 3) send the so generated BYE request towards the indicated user.
- 4) upon receipt of the 2xx responses for the BYE request, shall delete all information related to the dialog and the related multimedia session.

5.2.8.1.3 Abnormal cases

Upon receipt of a request on a dialog for which the P-CSCF initiated session release, the P-CSCF shall terminate this received request and answer it with a 481 (Call/Transaction Does Not Exist) response.

5.2.8.1.4 Release of the existing dialogs due to registration expiration and deletion of the security association or TLS session

If there are still active dialogs associated with the user after the security associations or TLS sessions were deleted, the P-CSCF shall discard all information pertaining to these dialogs without performing any further SIP transactions with the peer entities of the P-CSCF.

NOTE: If the interface between the P-CSCF and the IP-CAN is supported, the P-CSCF will also indicate (e.g. via the Rx or Gx interface) that the session has been terminated.

5.2.8.2 Call release initiated by any other entity

When the P-CSCF receives a 2xx response for a BYE request matching an existing dialog, then the P-CSCF shall delete all the stored information related to the dialog.

5.2.8.3 Session expiration

If the P-CSCF requested the session to be refreshed periodically, and the P-CSCF got the indication that the session will be refreshed, when the session timer expires, the P-CSCF shall delete all the stored information related to the dialog.

NOTE: If the interface between the P-CSCF and the IP-CAN is supported, the P-CSCF will also indicate to the IP-CAN (e.g. via the Rx or Gx interface), that the session has terminated.

5.2.9 Subsequent requests

5.2.9.1 UE-originating case

The P-CSCF shall respond to all reINVITE requests with a 100 (Trying) provisional response.

For a reINVITE request or UPDATE request from the UE within the same dialog, the P-CSCF shall include the updated access-network-charging-info parameter from P-Charging-Vector header when sending the SIP request to the S-CSCF. See subclause 5.2.7.4 for further information on the access network charging information.

5.2.9.2 UE-terminating case

The P-CSCF shall respond to all reINVITE requests with a 100 (Trying) provisional response.

For a reINVITE request or UPDATE request destined towards the UE within the same dialog, when the P-CSCF sends 200 (OK) response (to the INVITE request or UPDATE request) towards the S-CSCF, the P-CSCF shall include the updated access-network-charging-info parameter in the P-Charging-Vector header. See subclause 5.2.7.4 for further information on the access network charging information.

5.2.10 Emergency service

5.2.10.1 General

If the P-CSCF belongs to a network where the registration is not required to obtain emergency service, the P-CSCF shall accept any unprotected request on the IP address and port advertised to the UE during the P-CSCF discovery procedure. The P-CSCF shall also accept any unprotected request on the same IP address and the default port as specified in RFC 3261 [26].

The P-CSCF can handle emergency session and other requests from both a registered user as well as an unregistered user. Certain networks only allow emergency session from registered users.

NOTE 1: If only emergency setup from registered users is allowed, a request from an unregistered user is ignored since it is received outside of the security association, TLS session or IP association.

The P-CSCF can handle emergency session establishment within a non-emergency registration.

The P-CSCF shall not subscribe to the reg event package for any emergency public user identity.

The P-CSCF shall store a configurable list of local emergency service identifiers, i.e. emergency numbers and the emergency service URN, which are valid for the operator to which the P-CSCF belongs to. In addition to that, the P-CSCF shall store a configurable list of roaming partners' emergency service identifiers.

NOTE 2: The emergency service URN are common to all networks, although subtypes may either not necessarily be in use, or a different set of subtypes is in use. The above requirements do not apply to subtypes of the emergency service URN.

Access technology specific procedures are described in each access technology specific annex to determine whether the initial request for a dialog or standalone transaction or an unknown method is destined for a PSAP.

NOTE 3: Depending on local operator policy, the P-CSCF has the capability to reject requests relating to specific methods in accordance with RFC 3261 [26], as an alternative to the functionality described above.

5.2.10.2 General treatment for all dialogs and standalone transactions excluding the REGISTER method – requests from an unregistered user

If the P-CSCF receives an initial request for a dialog or standalone transaction, or an unknown method for an unregistered user on the IP address and the unprotected port advertised to the UE during the P-CSCF discovery or the SIP default port, the P-CSCF shall inspect the Request URI independent of values of possible entries in the received Route headers for known emergency service identifiers, i.e. emergency numbers and the emergency service URN from the configurable lists.

If the P-CSCF detects that the Request-URI of the initial request for a dialog or standalone transaction, or unknown method matches one of the emergency service identifiers in any of these lists, the P-CSCF shall:

- 1) include in the Request-URI an emergency service URN, i.e. a service URN with a top-level service type of "sos" in accordance with draft-ietf-ecrit-service-urn [69]. An additional sub-service type can be added if information on the type of emergency service is known. The entry in the Request-URI that the P-CSCF includes may either be:
 - as received in the Request URI from the UE in accordance with draft-ietf-ecrit-service-urn [69]; or
 - as deduced from the Request-URI received from the UE;
- 2) select an E-CSCF and add the URI of the selected E-CSCF to the topmost Route header; and

NOTE: How the list of E-CSCF is obtained by the P-CSCF is implementation dependent.

- 3) execute the procedure described in subclause 5.2.6.3.3, subclause 5.2.6.3.7, subclause 5.2.6.3.11 and subclause 5.2.7.2, as appropriate except for:
 - verifying the preloaded route against the received Service-Route header;
 - removing the P-Preferred-Identity header; and
 - inserting a P-Asserted-Identity header.

When the P-CSCF receives any 1xx or 2xx response to the above requests, the P-CSCF shall execute the appropriate procedure for the type of request described in subclause 5.2.6.3.4, subclause 5.2.6.3.8, and subclause 5.2.6.3.12, except that the P-CSCF may rewrite the port number of its own Record-Route entry to an unprotected port where the P-CSCF wants to receive the subsequent incoming requests from the UE belonging to this dialog.

If the P-CSCF does not receive any response to the initial request for a dialog or standalone transaction or unknown method (including its retransmissions); or receives a 3xx response or 480 (Temporarily Unavailable) response to an INVITE request, the P-CSCF shall select a new IBCF or E-CSCF and forward the request.

When the P-CSCF receives a target refresh request from the UE for a dialog, the P-CSCF shall execute the procedure described in subclause 5.2.6.3.5.

When the P-CSCF receives from the UE subsequent requests other than a target refresh request (including requests relating to an existing dialog where the method is unknown), the P-CSCF shall execute the procedure described in subclause 5.2.6.3.9.

When the P-CSCF receives any 1xx or 2xx response to the above requests, the P-CSCF shall execute the appropriate procedure for the type of request described in subclause 5.2.6.3.5 or subclause 5.2.6.3.9.

5.2.10.2A General treatment for all dialogs and standalone transactions excluding the REGISTER method – requests to an unregistered user

When the P-CSCF receives, destined for the UE, a target refresh request for a dialog, prior to forwarding the request, the P-CSCF shall execute the procedure described in step 5, the paragraph of subclause 5.2.6.4.5.

When the P-CSCF receives a 1xx or 2xx response to the above request the P-CSCF shall execute the procedure described in subclause 5.2.6.4.6.

When the P-CSCF receives any other response to the above request the P-CSCF shall execute the procedure described in step 1) to 2) in the paragraph of subclause 5.2.6.4.6 describing when the P-CSCF receives any other response to a target request.

When the P-CSCF receives, destined for the UE, a subsequent request for a dialog that is not a target refresh request (including requests relating to an existing dialog where the method is unknown), prior to forwarding the request, the P-CSCF shall execute the procedure described in steps 3 and 4 of subclause 5.2.6.4.9 describing when a P-CSCF receives a subsequent request.

When the P-CSCF receives any other response to the above request the P-CSCF shall execute the procedure described in step 1 in the paragraph of subclause 5.2.6.4.10 describing when the P-CSCF receives any other response to a subsequent request.

5.2.10.3 General treatment for all dialogs and standalone transactions excluding the REGISTER method after emergency registration

If the P-CSCF receives an initial request for a dialog, or a standalone transaction, or an unknown method, for a registered user, and if a security association or TLS session exists, the request is received the security association or TLS session that was created during the emergency registration, the P-CSCF shall inspect the Request URI independent of values of possible entries in the received Route headers for known emergency service identifiers, i.e. emergency numbers and the emergency service URN from these configurable lists.

If the P-CSCF detects that the Request-URI of the initial request for a dialog, or a standalone transaction, or an unknown method does not match any one of the emergency service identifiers in any of these lists, the P-CSCF shall reject the request by returning a 403 (Forbidden) response to the UE.

If the P-CSCF detects that the Request-URI of the initial request for a dialog, or a standalone transaction, or an unknown method matches one of the emergency service identifiers in any of these lists, the P-CSCF shall:

- 1) include in the Request-URI an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69], if necessary, and execute the procedure described in step 4, 5, 6, and 7, in subclause 5.2.6.3.3, subclause 5.2.6.3.7, subclause 5.2.6.3.11 and subclause 5.2.7.2, as appropriate. An additional sub-service type can be added if information on the type of emergency service is known. The entry in the Request-URI that the P-CSCF includes may either be:
 - as received from the UE in the Request URI in accordance with draft-ietf-ecrit-service-urn [69]; or
 - as deduced from the Request-URI received from the UE.
- 2) if the request contains a Contact header field containing a GRUU the P-CSCF shall save the GRUU received in the Contact header field of the request and associate it with the UE IP address and UE protected server port, for the security association on which the request was received such that the P-CSCF is able to route target refresh request containing that GRUU in the Request-URI; and

Editor's note: A change is required to the above paragraph to cater for requests received when SIP digest or SIP digest or NASS-IMS bundled authentication with TLS is in use.

In addition the P-CSCF shall execute the procedures as specified in subclause 5.2 with the following additions:

- 3) the P-CSCF shall:
 - if the registered emergency public user identity is included in the P-Preferred-Identity header, remove the P-Preferred-Identity header from the received request and insert a P-Asserted-Identity header that includes the emergency public user identity that was present in the P-Preferred-Identity header. Add a second P-Asserted identity header that contains the tel URI associated with the emergency public user identity. If the tel URI associated with the registered emergency public user identity is included in the P-Preferred-Identity header, check the validity of the tel URI, remove the P-Preferred-Identity header and insert a P-Asserted-Identity header that includes the tel URI that was present in the P-Preferred-Identity header. Add a second P-Asserted-Identity header that contains the emergency public user identity; and
 - select an E-CSCF and add the URI of the selected E-CSCF to the topmost Route header.

NOTE: It is implementation dependant as to how the P-CSCF obtains the list of E-CSCFs.

If the P-CSCF does not receive any response to the INVITE request (including its retransmissions); or receives a 3xx response or 480 (Temporarily Unavailable) response to an INVITE request, the P-CSCF shall select a new E-CSCF and forward the INVITE request.

When the P-CSCF receives a target refresh request for a dialog with the Request-URI containing a GRUU the P-CSCF shall:

- obtain the UE IP address and UE protected server port related to the GRUU contained in the Request-URI and rewrite the Request-URI with that UE IP address and UE protected server port; and
- perform the steps in subclause 5.2.6.4.5 for when the P-CSCF receives, destined for the UE, a target refresh request for a dialog.

5.2.10.4 General treatment for all dialogs and standalone transactions excluding the REGISTER method - non-emergency registration

If the P-CSCF receives an initial request for a dialog, or a standalone transaction, or an unknown method, for a registered user the P-CSCF shall inspect the Request URI independent of values of possible entries in the received Route headers for known emergency service identifiers, i.e. emergency numbers and the emergency service URN from these configurable lists. If the P-CSCF detects that the Request-URI of the initial request for a dialog, or a standalone transaction, or an unknown method matches one of the emergency service identifiers in any of these lists, the P-CSCF shall:

- 0) determine the geographical location of the UE. Access technology specific procedures are described in each access technology specific annex. If the UE is roaming or the P-CSCF is in a different network than the UE's home operator's network, then the P-CSCF:
 - shall reject the request by returning a 380 (Alternative Service) response to the UE;
 - shall assume that the UE supports version 1 of the XML Schema for the IM CN subsystem XML body if support for the 3GPP IMS XML body in the Accept header is not indicated; and
 - shall include in the 380 (Alternative Service) response:
 - a Content-Type header field with the value set to associated MIME type of the 3GPP IMS XML body as described in subclause 7.6.1.

The body shall contain:

NOTE 1: Roaming is when a UE is in a geographic area that is outside the serving geographic area of the home IM CN subsystem.

- a) an <alternative-service> element, set to the parameters of the alternative service;
- b) a <type> child element, set to "emergency" to indicate that it was an emergency call;
- c) a <reason> child element, set to an operator configurable reason; and
- d) an <action> child element, set to "emergency-registration" if the request included an emergency service URN in the Request-URI.

NOTE 2: Emergency service URN in the request-URI indicates for the network that the emergency call attempt is recognized by the UE.

- 1) include in the Request-URI an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69], if necessary, and execute the procedure described in step 3, 4, 5, 6, and 7, in subclause 5.2.6.3.3, subclause 5.2.6.3.7, subclause 5.2.6.3.11 and subclause 5.2.7.2, as appropriate. An additional sub-service type can be added if information on the type of emergency service is known. The entry in the Request-URI that the P-CSCF includes may either be:
 - as received from the UE in the Request URI in accordance with draft-ietf-ecrit-service-urn [69]; or
 - as deduced from the Request-URI received from the UE; and
- 2) if the request contains a Contact header field containing a GRUU the P-CSCF shall save the GRUU received in the Contact header field of the request and associate it with the UE IP address and UE protected server port, for the security association on which the request was received such that the P-CSCF is able to route target refresh request containing that GRUU in the Request-URI.

Editor's note: A change is required to the above paragraph to cater for requests received when SIP digest or SIP digest with TLS is in use.

In addition the P-CSCF shall execute the procedures as specified in subclause 5.2 with the following additions:

- 3) the P-CSCF shall:
 - if the public user identity included in the P-Preferred-Identity header matches one of the registered public user identities, remove the P-Preferred-Identity header from the received request and insert a P-Asserted-Identity header that includes the public user identity that was present in the P-Preferred-Identity header. Add a second P-Asserted identity header that contains the tel URI associated with the public user identity. If the tel URI associated with one of the registered public user identities is included in the P-Preferred-Identity header, check the validity of the tel URI, remove the P-Preferred-Identity header and insert a P-Asserted-Identity header that includes the tel URI that was present in the P-Preferred-Identity header. Add a second P-Asserted-Identity header that contains a public user identity associated with the tel URI;
 - select an E-CSCF and add the URI of the selected E-CSCF to the topmost Route header.

NOTE 3: It is implementation dependant as to how the P-CSCF obtains the list of E-CSCFs.

If the P-CSCF does not receive any response to the INVITE request (including its retransmissions); or receives a 3xx response or 480 (Temporarily Unavailable) response to an INVITE request, the P-CSCF shall select a new E-CSCF and forward the INVITE request.

When the P-CSCF receives a target refresh request for a dialog with the Request-URI containing a GRUU the P-CSCF shall:

- obtain the UE IP address and UE protected server port related to the GRUU contained in the Request-URI and rewrite the Request-URI with that UE IP address and UE protected server port; and

Editor's note: A change is required to the above paragraph to cater for requests received when SIP digest or SIP digest with TLS is in use.

- perform the steps in subclause 5.2.6.4 for when the P-CSCF receives, destined for the UE, a target refresh request for a dialog.

5.2.10.5 Abnormal cases

If the IM CN subsystem to where the P-CSCF belongs to is not capable to handle emergency sessions or due to local policy does not handle emergency sessions or only handles certain type of emergency session request or does not support emergency sessions for either the geographical location of the UE is located or the IP-CAN to which the UE is attached, the P-CSCF shall not forward the INVITE request. The P-CSCF:

- shall respond to the INVITE request with a 380 (Alternative Service) response;
- shall assume that the UE supports version 1 of the XML Schema for the IM CN subsystem XML body if support for the 3GPP IMS XML body in the Accept header is not indicated; and
- shall include in the 380 (Alternative Service) response:
 - a Content-Type header field with the value set to associated MIME type of the 3GPP IMS XML body as described in subclause 7.6.1.

The body shall contain:

- a) an <alternative-service> element, set to the parameters of the alternative service;
- b) a <type> child element, set to "emergency" to indicate that it was an emergency call;
- c) a <reason> child element, set to an operator configurable reason; and
- d) an <action> child element, set to "emergency-registration" if the request included an emergency service URN in the Request-URI.

NOTE 1: Emergency service URN in the request-URI indicates for the network that the emergency call attempt is recognized by the UE.

NOTE 2: Some networks only allow session requests with a Request-URI containing an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69].

5.2.11 Void

5.3 Procedures at the I-CSCF

5.3.1 Registration procedure

5.3.1.1 General

During the registration procedure the I-CSCF shall behave as a stateful proxy.

5.3.1.2 Normal procedures

When the I-CSCF receives a REGISTER request, the I-CSCF shall verify whether or not it has arrived from a trusted domain. If the request has not arrived from a trusted domain, the I-CSCF shall complete the processing of the request by responding with 403 (Forbidden) response. Otherwise, the I-CSCF starts the user registration status query procedure to the HSS as specified in 3GPP TS 29.228 [14].

NOTE 1: The I-CSCF can find out whether the request arrived from a trusted domain or not, from the procedures described in 3GPP TS 33.210 [19A].

NOTE 2: Different UEs, each with its own private user identity, can register the same shared public user identity. Registrations of all public user identities belonging to these UEs are directed to the same S-CSCF as described in 3GPP TS 29.228 [14].

Prior to performing the user registration status query procedure to the HSS, the I-CSCF decides which HSS to query, possibly as a result of a query to the Subscription Locator Functional (SLF) entity as specified in 3GPP TS 29.228 [14]. As a result of the query the I-CSCF gets the Redirect-Host AVP.

If the user registration status query response from the HSS includes a valid SIP URI, the I-CSCF shall:

- 1) replace the Request-URI of the received REGISTER request with the SIP URI received from the HSS in the Server-Name AVP;
- 2) optionally include the received Redirect-Host AVP value in the P-User-Database header as defined in RFC 4457 [82]; and
- 3) forward the REGISTER request to the indicated S-CSCF.

NOTE 3: The P-User-Database header can be included only if the I-CSCF can assume (e.g. based on local configuration) that the receiving S-CSCF will be able to process the header.

If the user registration status query response from the HSS includes a list of capabilities, the I-CSCF shall:

- 1) select a S-CSCF that fulfils the indicated mandatory capabilities – if more than one S-CSCFs fulfils the indicated mandatory capabilities the S-CSCF which fulfils most of the possibly additionally indicated optional capabilities;
- 2) replace the Request-URI of the received REGISTER request with the URI of the S-CSCF;
- 3) optionally, include the received Redirect-Host AVP value in the P-User-Database header as defined in RFC 4457 [82]; and
- 4) forward the REGISTER request to the selected S-CSCF.

NOTE 4: The P-User-Database header can be included only if the I-CSCF can assume (e.g. based on local configuration) that the receiving S-CSCF will be able to process the header.

When the I-CSCF receives a 2xx response to a REGISTER request, the I-CSCF shall proxy the 2xx response to the P-CSCF.

5.3.1.3 Abnormal cases

In the case of SLF query, if the SLF does not send HSS address to the I-CSCF, the I-CSCF shall send back a 403 (Forbidden) response to the UE.

If the HSS sends a negative response to the user registration status query request, the I-CSCF shall send back a 403 (Forbidden) response.

If the user registration status query procedure cannot be completed, e.g. due to time-out or incorrect information from the HSS, the I-CSCF shall send back a 480 (Temporarily Unavailable) response to the UE.

If a selected S-CSCF:

- does not respond to the REGISTER request and its retransmissions by the I-CSCF; or
- sends back a 3xx response or 480 (Temporarily Unavailable) response to a REGISTER request;

and:

- the REGISTER request did not include an "integrity-protected" parameter in the Authorization header; or
- did include an "integrity-protected" parameter with a value different from "yes" in the Authorization header;

then:

- if the I-CSCF has received the list of capabilities from the HSS, the I-CSCF shall select a new S-CSCF as described in subclause 5.3.1.2, based on the capabilities indicated from the HSS. The newly selected S-CSCF shall not be one of any S-CSCFs selected previously during this same registration procedure; or
- if the I-CSCF has received a valid SIP URI from the HSS because the S-CSCF is already assigned to other UEs sharing the same public user identity, it will request the list of capabilities from the HSS and, on receiving these capabilities, the I-CSCF shall select a new S-CSCF as described in subclause 5.3.1.2, based on the capabilities indicated from the HSS. The newly selected S-CSCF shall not be one of any S-CSCFs selected previously during this same registration procedure.

If a selected S-CSCF does not respond to a REGISTER request and its retransmissions by the I-CSCF and the REGISTER request did include an Authorization header with the "integrity-protected" parameter set to a value other than "no", the I-CSCF shall send back a 504 (Server Time-Out) response to the user, in accordance with the procedures in RFC 3261 [26].

If the I-CSCF cannot select a S-CSCF which fulfils the mandatory capabilities indicated by the HSS, the I-CSCF shall send back a 600 (Busy Everywhere) response to the user.

5.3.2 Initial requests

5.3.2.1 Normal procedures

The I-CSCF may behave as a stateful proxy for initial requests.

Upon receipt of a request, the I-CSCF shall perform the originating procedures as described in subclause 5.3.2.1A if the topmost Route header of the request contains the "orig" parameter. Otherwise, the I-CSCF shall continue with the rest of the procedures of this subclause.

When the I-CSCF receives a request, the I-CSCF shall verify whether it has arrived from a trusted domain or not. If the request has arrived from a non trusted domain, then the I-CSCF shall remove all P-Charging-Vector headers and all P-Charging-Function-Addresses headers the request may contain.

NOTE 1: The I-CSCF can find out whether the request arrived from a trusted domain or not, from the procedures described in 3GPP TS 33.210 [19A].

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the I-CSCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE 2: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

The I-CSCF shall discard the P-Profile Key header, if the I-CSCF receives the Profile Key header in a SIP request or response.

When the I-CSCF receives, destined for a server user or a PSI, an initial request for a dialog or standalone transaction the I-CSCF shall:

- 1) if the Request-URI includes:
 - a) a pres: or an im: URI, then translate the pres: or im: URI to a public user identity and replace the Request-URI of the incoming request with that public user identity; or
 - b) a SIP-URI that is not a GRUU and with the user part starting with a + and the user parameter equals "phone" then replace the Request-URI with a tel-URI with the user part of the SIP-URI in the telephone-subscriber element in the tel-URI, and carry forward the tel-URI parameters that may be present in the Request-URI; or
 - c) a SIP URI that is a GRUU, then obtain the public user identity from the Request-URI and use it for location query procedure to the HSS. When forwarding the request, the I-CSCF shall not modify the Request-URI of the incoming request;

NOTE 3: If the Request-URI is a GRUU with the user part starting with a + and the user parameter equals "phone", the I-CSCF builds a tel URI from the user part and uses it only to query the HSS. Subsequently, when the I-CSCF forwards the request to the S-CSCF, it will not modify the Request-URI.

NOTE 4: SRV records have to be advertised in DNS pointing to the I-CSCF for pres: and im: queries.

- 2) remove a Route header, if present; and
- 3) check if the domain name of the Request-URI matches with one of the PSI subdomains configured in the I-CSCF. If the match is successful, the I-CSCF resolves the Request-URI by an internal DNS mechanism into the IP address of the AS hosting the PSI and does not start the user location query procedure. Otherwise, the I-CSCF will start the user location query procedure to the HSS as specified in 3GPP TS 29.228 [14] for the called PSI or user, indicated in or derived from the Request-URI. Prior to performing the user location query procedure to the HSS, the I-CSCF decides which HSS to query, possibly as a result of a query to the Subscription Locator Functional (SLF) entity as specified in 3GPP TS 29.228 [14].

When the I-CSCF receives any response to such a request, the I-CSCF shall store the value of the term-ioi parameter received in the P-Charging-Vector header, if present.

NOTE 5: Any received term-ioi parameter will be a type 3 term-ioi. The type 3 term-ioi identifies the service provider from which the response was sent.

When the I-CSCF receives an INVITE request, the I-CSCF may require the periodic refreshment of the session to avoid hung states in the I-CSCF. If the I-CSCF requires the session to be refreshed, then the I-CSCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 6: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

In case the I-CSCF is able to resolve the Request-URI into the IP address of the AS hosting the PSI, then the I-CSCF shall:

- 1) store the value of the icid parameter received in the P-Charging-Vector header and retain the icid parameter in the P-Charging-Vector header. If no icid parameter was found, then create a new, globally unique value for the icid parameter and insert it into the P-Charging-Vector header; and

- 2) forward the request directly to the AS hosting the PSI.

Upon successful user location query, when the response contains the URI of the assigned S-CSCF, the I-CSCF shall:

- 1) insert the URI received from the HSS as the topmost Route header;
- 2) store the value of the icid parameter received in the P-Charging-Vector header and retain the icid parameter in the P-Charging-Vector header. If no icid parameter was found, then create a new, globally unique value for the icid parameter and insert it into the P-Charging-Vector header. The I-CSCF shall add a type 3 orig-ioi parameter before the received orig-ioi parameter. The I-CSCF shall set the type 3 orig-ioi parameter to a value that identifies the sending network of the request. The I-CSCF shall not include the type 3 term-ioi parameter;
- 3) optionally, include the received Redirect-Host AVP value in the P-User-Database header as defined in RFC 4457 [82]; and
- 4) forward the request based on the topmost Route header.

NOTE 7: The P-User-Database header can be included only if the I-CSCF can assume (e.g. based on local configuration) that the receiving S-CSCF will be able to process the header.

Upon successful user location query, when the response contains information about the required S-CSCF capabilities, the I-CSCF shall:

- 1) select a S-CSCF according to the method described in 3GPP TS 29.228 [14];
- 2) insert the URI of the selected S-CSCF as the topmost Route header field value;
- 3) execute the procedure described in step 2 and 3 in the above paragraph (upon successful user location query, when the response contains the URI of the assigned S-CSCF);
- 4) optionally, include the received Redirect-Host AVP value in the P-User-Database header as defined in RFC 4457 [82];
- 5) if the Wildcarded PSI value is received from the HSS in the Wildcarded-PSI AVP and the I-CSCF supports the the SIP P-Profile-Key private header extension, include the wildcarded PSI value in the P-Profile-Key header as defined in RFC 5002 [97]; and
- 6) forward the request to the selected S-CSCF.

NOTE 8: The P-User-Database header can be included only if the I-CSCF can assume (e.g. based on local configuration) that the receiving S-CSCF will be able to process the header.

Upon an unsuccessful user location query when the response from the HSS indicates that the user does not exist, and if the Request-URI is a tel URI containing a public telecommunications number as specified in RFC 3966 [22], the I-CSCF may support a local configuration option that indicates whether or not request routing is to be attempted. If the local configuration option indicates that request routing is to be attempted, then the I-CSCF shall perform one of the following procedures based on local operator policy:

- 1) forward the request to the transit functionality for subsequent routing; or
- 2) invoke the portion of the transit functionality that translates the public telecommunications number contained in the Request-URI to a routeable SIP URI, and process the request based on the result, as follows:
 - a) if the translation fails, the request may be forwarded to a BGCF or any other appropriate entity (e.g. a MRFC to play an announcement) in the home network, or the I-CSCF may send an appropriate SIP response to the originator, such as 404 (Not Found) or 604 (Does not exist anywhere). When forwarding the request to a BGCF or any other appropriate entity, the I-CSCF shall leave the original Request-URI containing the tel URI unmodified;
 - i) additional procedures apply if the I-CSCF supports NP capabilities and these capabilities are enabled by local policy, and the database used for translation from an international public telecommunications number to a SIP URI also provides NP data (for example, based on the PSTN Enumservice as defined by RFC 4769 [114] or other appropriate data bases). If the above translation from an international public telecommunications number to a SIP URI failed, but NP data was obtained from the database, then the I-CSCF shall update the tel-URI in the Request-URI with the obtained NP data, prior to forwarding the request to the BGCF or other appropriate entity.

The URI is updated by the I-CSCF by adding the NP parameters defined by RFC 4694 [112] to the tel-URI in the Request-URI: an "npdi" tel-URI parameter is added to indicate that NP data retrieval has been performed, and if the number is ported, an "rn" tel-URI parameter is added to identify the ported-to routeing number. The I-CSCF shall perform these procedures if the tel-URI in the received Request-URI does not contain an "npdi" tel-URI parameter. In addition, the I-CSCF may, based on local policy, perform these procedures when the tel-URI in the received Request-URI contains an "npdi" tel-URI parameter indicating that the NP data has been previously obtained; or

NOTE 9: The I-CSCF might need to update NP data added by a previous network if the previous network's NP database did not contain the local ported data for the called number.

- b) if this translation succeeds, then replace the Request-URI with the routeable SIP URI and process the request as follows:
 - determine the destination address (e.g. DNS access) using the URI placed in the topmost Route header if present, otherwise based on the Request-URI. If the destination requires interconnect functionalities (e.g. the destination address is of an IP address type other than the IP address type used in the IM CN subsystem), the I-CSCF shall forward the request to the destination address via an IBCF in the same network;
 - if network hiding is needed due to local policy, put the address of the IBCF to the topmost route header; and
 - route the request based on SIP routeing procedures.

Upon an unsuccessful user location query when the response from the HSS indicates that the user does not exist, and if local operator policy does not indicate that request routeing is to be attempted, then, the I-CSCF shall return an appropriate unsuccessful SIP response. This response may be a 404 (Not found) or 604 (Does not exist anywhere) in the case the user is not a user of the home network.

Upon an unsuccessful user location query when the response from the HSS indicates that the user is not registered and no services are provided for such a user, the I-CSCF shall return an appropriate unsuccessful SIP response. This response may be a 480 (Temporarily unavailable) response if the user is recognized as a valid user, but is not registered at the moment and it does not have services for unregistered users.

When the I-CSCF receives an initial request for a dialog or standalone transaction, that contains a single Route header pointing to itself, the I-CSCF shall determine from the entry in the Route header whether it needs to do HSS query. In case HSS query is needed, then the I-CSCF shall:

- 1) remove its own SIP URI from the topmost Route header; and
- 2) route the request based on the Request-URI header field.

When the I-CSCF receives an initial request for a dialog or standalone transaction containing more than one Route header, the I-CSCF shall:

- 1) remove its own SIP URI from the topmost Route header; and
- 2) forward the request based on the topmost Route header.

NOTE 10: In accordance with SIP the I-CSCF can add its own routeable SIP URI to the top of the Record-Route header to any request, independently of whether it is an initial request. The P-CSCF will ignore any Record-Route header that is not in the initial request of a dialog.

When the I-CSCF receives a response to an initial request (e.g. 183 (Session Progress) response or 2xx response), the I-CSCF shall store the values from the P-Charging-Function-Addresses header, if present. If the next hop is outside of the current network, then the I-CSCF shall remove the P-Charging-Function-Addresses header prior to forwarding the message.

When the I-CSCF, upon sending an initial INVITE request to the S-CSCF, receives a 305 (Use Proxy) response from the S-CSCF, the I-CSCF shall forward the initial INVITE request to the SIP URI indicated in the Contact field of the 305 (Use Proxy) response, as specified in RFC 3261 [26].

5.3.2.1A Originating procedures for requests containing the "orig" parameter

The procedures of this subclause apply for requests received at the I-CSCF when the topmost Route header of the request contains the "orig" parameter.

The I-CSCF shall verify for all requests whether they arrived from a trusted domain or not. If the request arrived from a non trusted domain, then the I-CSCF shall respond with 403 (Forbidden) response.

If the request arrived from a trusted domain, the I-CSCF shall perform the procedures below.

NOTE 1: The I-CSCF can find out whether the request arrived from a trusted domain or not, from the procedures described in 3GPP TS 33.210 [19A].

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the I-CSCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE 2 The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When the I-CSCF receives an initial request for a dialog or standalone transaction the I-CSCF will start the user location query procedure to the HSS as specified in 3GPP TS 29.228 [14] for the calling user, indicated in the P-Asserted-Identity header. Prior to performing the user location query procedure to the HSS, the I-CSCF decides which HSS to query, possibly as a result of a query to the Subscription Locator Functional (SLF) entity as specified in 3GPP TS 29.228 [14].

When the I-CSCF receives an INVITE request, the I-CSCF may require the periodic refreshment of the session to avoid hung states in the I-CSCF. If the I-CSCF requires the session to be refreshed, the I-CSCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 3: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

When the response for user location query contains information about the required S-CSCF capabilities, the I-CSCF shall select a S-CSCF according to the method described in 3GPP TS 29.228 [14].

If the user location query was successful, the I-CSCF shall:

- 1) insert the URI of the S-CSCF - either received from the HSS, or selected by the I-CSCF based on capabilities - as the topmost Route header appending the "orig" parameter to the URI of the S-CSCF;
- 2) store the value of the icid parameter received in the P-Charging-Vector header and retain the icid parameter in the P-Charging-Vector header. If no icid parameter was found, then create a new, globally unique value for the icid parameter and insert it into the P-Charging-Vector header;
- 3) optionally, include the received Redirect-Host AVP value in the P-User-Database header as defined in draft-camarillo-sipping-user-database [82]; and
- 4) forward the request based on the topmost Route header.

NOTE 4: The P-User-Database header can be included only if the I-CSCF can assume (e.g. based on local configuration) that the receiving S-CSCF will be able to process the header.

Upon an unsuccessful user location query, the I-CSCF shall return an appropriate unsuccessful SIP response. This response may be a 404 (Not found) response or 604 (Does not exist anywhere) response in the case the user is not a user of the home network.

When the I-CSCF receives any response to the above request, and forwards it to AS, the I-CSCF shall:

- store the values from the P-Charging-Function-Addresses header, if present. If the next hop is outside of the current network, then the I-CSCF shall remove the P-Charging-Function-Addresses header prior to forwarding the message; and
- insert a P-Charging-Vector header containing the type 3 orig-ioi parameter, if received in the request, and a type 3 term-ioi parameter in the response. The I-CSCF shall set the type 3 term-ioi parameter to a value that identifies the sending network of the response and the type 3 orig-ioi parameter is set to the previously received value of type 3 orig-ioi.

5.3.2.2 Abnormal cases

In the case of SLF query, if the SLF does not send HSS address to the I-CSCF, the I-CSCF shall send back a 404 (Not Found) response to the UE.

If the I-CSCF receives a negative response to the user location query, the I-CSCF shall send back a 404 (Not Found) response.

If the I-CSCF receives a CANCEL request and if the I-CSCF finds an internal state indicating a pending Cx transaction with the HSS, the I-CSCF:

- shall answer the CANCEL with a 200 OK; and
- shall answer the original request with a 487 Request Terminated.

NOTE: The I-CSCF will discard any later arriving (pending) Cx answer message from the HSS.

With the exception of 305 (Use Proxy) responses, the I-CSCF may recurse on a 3xx response only when the domain part of the URI contained in the 3xx response is in the same domain as the I-CSCF. For the same cases, if the URI is an IP address, the I-CSCF shall only recurse if the IP address is known locally to be a address that represents the same domain as the I-CSCF.

5.3.3 Void

5.3.3.1 Void

5.3.3.2 Void

5.3.3.3 Void

5.3.4 Void

5.4 Procedures at the S-CSCF

5.4.1 Registration and authentication

5.4.1.1 Introduction

The S-CSCF shall determine based on the contents of the REGISTER request whether procedure for IMS-AKA authentication are to be performed or not:

- if the REGISTER request contains an Authorization header field with the "integrity-protected" parameter set to "yes" or "no", the S-CSCF shall perform the initial registration procedures with IMS-AKA authentication described in subclause 5.4.1.2.1A;

Editor's note: separate bullet items are required pointing to the other authentication mechanisms in subclauses 5.4.1.2.1B, 5.4.1.2.1C and 5.4.1.2.1D. This is dependent on input from 3GPP SA3 in 3GPP TS 33.203.

The S-CSCF shall act as the SIP registrar for all UAs belonging to the IM CN subsystem and with public user identities.

Subclause 5.4.1.2 through subclause 5.4.1.7 define S-CSCF procedures for SIP registration that do not relate to emergency. All registration requests are first screened according to the procedures of subclause 5.4.8.2 to see if they do relate to an emergency public user identity.

For all SIP registrations identified:

- as relating to an emergency; or
- if priority is supported, as containing an authorised Resource-Priority header;

the S-CSCF shall give priority over other registrations. This allows special treatment of such registrations.

NOTE: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

The S-CSCF shall support the use of the Path and Service-Route header. The S-CSCF shall also support the Require and Supported headers. The Path header is only applicable to the REGISTER request and its 200 (OK) response. The Service-Route header is only applicable to the 200 (OK) response of REGISTER. The S-CSCF shall not act as a redirect server for REGISTER requests.

The network operator defines minimum and maximum times for each registration. These values are provided within the S-CSCF.

The procedures for notification concerning automatically registered public user identities of a user are described in subclause 5.4.2.1.2.

In case a device performing address and/or port number conversions is provided by a NA(P)T or NA(P)T-PT, the S-CSCF may need to modify the SIP signalling according to the procedures described in annex K if both a reg-id and instance ID parameter are present in the received contact header as described in draft-ietf-outbound [92].

5.4.1.2 Initial registration and user-initiated reregistration

5.4.1.2.1 Unprotected REGISTER

NOTE 1: Any REGISTER request sent unprotected by the UE with the "integrity-protected" parameter in the Authorization header set to "no" is considered to be an initial registration. A 200 (OK) final response to such a request will only be sent back after the S-CSCF receives a correct authentication challenge response in a REGISTER request that is sent integrity protected.

Editor's note: Determining unprotected REGISTER requests for SIP digest needs to be added.

NOTE 2: A REGISTER with Expires header value equal to zero should always be received protected. However, it is possible that in error conditions a REGISTER with Expires header value equal to zero may be received unprotected. In that instance the procedures below will be applied.

Upon receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no", for a user identity linked to a private user identity that has previously registered one or more public user identities, the S-CSCF shall:

- 1) perform the procedure for receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no", for the received public user identity; and
- 2) if the authentication that concludes the initial registration has been successful, and there are public user identities belonging to this user that have been previously registered and the previous registrations have not expired, the S-CSCF shall perform the network initiated deregistration procedure for the previously registered public user identities belonging to this user excluding the public user identity being registered (as described in subclause 5.4.1.5).

NOTE 3: The S-CSCF will inform the HSS that the previously registered public user identities, excluding the public user identity being registered, have been deregistered.

NOTE 4: Contact related to emergency registration is not affected. S-CSCF is not able deregister contact related to emergency registration and will not delete that.

When SIP digest is supported for this private user identity, upon receipt of a REGISTER request without an "integrity-protected" parameter, for an already registered public user identity linked to the same private user identity and contact information (e.g. UE re-registers over same network when digest authentication is used without TLS), the S-CSCF shall challenge the request by performing the SIP digest authentication steps (i.e. selecting an authentication vector and challenging the user by sending a 401 (Unauthorized response) described in this subclause for a non-registered user.

When S-CSCF receives a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no" and a non-empty response directive, the S-CSCF shall ignore the value of the response directive.

Upon receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no", which is not for an already registered public user identity linked to the same private user identity, the S-CSCF shall:

- 1) identify the user by the public user identity as received in the To header and the private user identity as received in the username field in the Authorization header of the REGISTER request;
- 2) check if the P-Visited-Network header is included in the REGISTER request, and if it is included identify the visited network by the value of this header;
- 3) select an authentication vector for the user. If no authentication vector for this user is available, after the S-CSCF has performed the Cx Multimedia Authentication procedure with the HSS, as described in 3GPP TS 29.228 [14], the S-CSCF shall select an authentication vector as described in 3GPP TS 33.203 [19].

Prior to performing Cx Multimedia Authentication procedure with the HSS, the S-CSCF decides which HSS to query, possibly as a result of a query to the Subscription Locator Functional (SLF) entity as specified in 3GPP TS 29.228 [14] or use the value as received in the P-User-Database header in the REGISTER request as defined in RFC 4457 [82];

NOTE 5: The HSS address received in the response to SLF query or as a value of P-User-Database header can be used to address the HSS of the public user identity in further queries.

NOTE 6: At this point the S-CSCF informs the HSS, that the user currently registering will be served by the S-CSCF by passing its SIP URI to the HSS. This will be used by the HSS to direct all subsequent incoming initial requests for a dialog or standalone transactions destined for this user to this S-CSCF.

NOTE 7: When passing its SIP URI to the HSS, the S-CSCF may include in its SIP URI the transport protocol and the port number where it wants to be contacted.

- 4) store the icid parameter received in the P-Charging-Vector header;
- 5) challenge the user by generating a 401 (Unauthorized) response for the received REGISTER request appropriate to the security mechanism in use;
- 6) send the so generated 401 (Unauthorized) response towards the UE; and,
- 7) start timer reg-await-auth which guards the receipt of the next REGISTER request.

If the received REGISTER request indicates that the challenge sent previously by the S-CSCF to the UE was deemed to be invalid by the UE, the S-CSCF shall stop the timer reg-await-auth and proceed as described in the subclause 5.4.1.2.3.

5.4.1.2.1A Challenge with IMS AKA as security mechanism

On sending a 401 (Unauthorized) response to an unprotected REGISTER request, the S-CSCF shall populate the header field as follows:

- 1) a WWW-Authenticate header which transports:
 - a globally unique name of the S-CSCF in the realm field;
 - the RAND and AUTN parameters and optional server specific data for the UE in the nonce field;
 - the security mechanism, which is AKAv1-MD5, in the algorithm field;

- the IK (Integrity Key) parameter for the P-CSCF in the ik field (see subclause 7.2A.1); and
- the CK (Cipher Key) parameter for the P-CSCF in the ck field (see subclause 7.2A.1).

The S-CSCF shall store the RAND parameter used in the 401 (Unauthorized) response for future use in case of a resynchronisation. If a stored RAND already exists in the S-CSCF, the S-CSCF shall overwrite the stored RAND with the RAND used in the most recent 401 (Unauthorized) response.

5.4.1.2.1B Challenge with SIP digest as security mechanism

On sending a 401 (Unauthorized) response to an unprotected REGISTER request, the S-CSCF shall populate the header field as follows:

- 1) a WWW-Authenticate header as defined in RFC 2617 [21], which transports:
 - a protection domain in the realm field;
 - a domain field;
 - a nonce field (generated by the S-CSCF);
 - an algorithm field; if the algorithm value is not provided in the authentication vector, it shall have the value "MD5"; and
 - a qop field; if the qop value is not provided in the authentication vector, it shall contain the value "auth".

5.4.1.2.1C Challenge with SIP digest with TLS as security mechanism

The procedures for subclause 5.4.1.2.1B apply.

5.4.1.2.1D Initial registration and user-initiated reregistration for NASS-IMS bundled authentication

Editor's note: Can this text be consolidated with other text elsewhere in subclause 5.4.1.2.1.

Upon receipt of a REGISTER request that is determined to be NASS-IMS bundled authentication, for a user identity linked to a private user identity that has a registered public user identity but with a new contact address, the S-CSCF shall:

- 1) perform the procedure for receipt of a REGISTER request without the "integrity-protected" parameter in the Authorization header or without the Authorization header, for the received public user identity; and
- 2) if the authentication has been successful, and there are public user identities belonging to this user that have been previously registered with an old contact address different from the one received in the REGISTER request and if the previous registration have not expired, the S-CSCF shall perform the network initiated deregistration procedure for the previously registered public user identities and the associated old contact address as described in subclause 5.4.1.5.

NOTE 3: Contact related to emergency registration is not affected. S-CSCF is not able deregister contact related to emergency registration and will not delete that.

Upon receipt of a REGISTER request without the "integrity-protected" parameter in the Authorization header or without an Authorization header, which is not for an already registered public user identity linked to the same private user identity, the S-CSCF shall:

- 1) identify the user by the public user identity as received in the To header of the REGISTER request and if the Authorization header is present, the private user identity as received in the Authorization header of the REGISTER request;
- 2) check if the P-Visited-Network header is included in the REGISTER request, and if it is included identify the visited network by the value of this header;

- 3) check whether one or more Line-Identifiers previously received over the Cx interface, and stored as a result of a Cx Multimedia Authentication procedure with the HSS, are available for the user. If not, the S-CSCF shall perform the Cx Multimedia Authentication procedure with the HSS, as described in 3GPP TS 29.228 [14].

Prior to performing Cx Multimedia Authentication procedure with the HSS, the S-CSCF decides which HSS to query, possibly as a result of a query to the Subscription Locator Functional (SLF) entity as specified in 3GPP TS 29.228 [14] or use the value as received in the P-User-Database header in the REGISTER request as defined in RFC 4457 [82];

NOTE 1: The HSS address received in the response to SLF query or as a value of P-User-Database header can be used to address the HSS of the public user identity in further queries.

NOTE 2: At this point the S-CSCF informs the HSS, that the user currently registering will be served by the S-CSCF by passing its SIP URI to the HSS. This will be indicated by the HSS for all further incoming requests to this user, in order to direct all these requests directly to this S-CSCF.

NOTE 3: When passing its SIP URI to the HSS, the S-CSCF may include in its SIP URI the transport protocol and the port number where it wants to be contacted.

- 4) store the icid parameter received in the P-Charging-Vector header;
- 5) In the particular case where the S-CSCF received via the Cx interface one or more Line-Identifiers, compare each of the "dsl-location" parameter of the P-Access-Network-Info header field (if present and if it includes the "network-provided" parameter),
 - if one of these match, the user shall be considered authenticated and the S-CSCF behave as described in step 5) to 13) of subclause 5.4.1.2.2,
 - otherwise i.e. if these do not match the S-CSCF shall return a 403 (Forbidden) response to the REGISTER request; and
- 6) if no Line-Identifier is received over the Cx interface, send a 500 (Server Internal Error) response to the REGISTER request.

Upon receipt of a REGISTER request without the "integrity-protected" parameter in the Authorization header or without an Authorization header, for an already registered public user identity linked to the same private user identity, and for existing contact information, the S-CSCF shall behave as described in subclause 5.4.1.2.2D.

In the case that the expiration timer from the UE is too short to be accepted by the S-CSCF, the S-CSCF shall:

- reject the REGISTER request with a 423 (Interval Too Brief) response, containing a Min-Expires header with the minimum registration time the S-CSCF will accept.

On receiving a failure response to one of the third-party REGISTER requests, based on the information in the Filter Criteria the S-CSCF may:

- abort sending third-party REGISTER requests; and
- initiate network-initiated deregistration procedure.

If the Filter Criteria does not contain instruction to the S-CSCF regarding the failure of the contact to the AS, the S-CSCF shall not initiate network-initiated deregistration procedure.

In the case that the REGISTER request from the UE contains multiple SIP URIs which are different addresses as Contact header entries, the S-CSCF shall store:

- the entry in the Contact header with the highest "q"; or
- an entry decided by the S-CSCF based on local policy;

and include the stored entry in the 200 (OK) response.

In the case that the REGISTER request from the UE contains multiple SIP URIs which are the same addresses with the same "q" value as Contact header entries, the S-CSCF shall not store multiple entries with the same "q" value but store one of the entries with the same "q" value based on local policy along with any entries that have different "q" values and include only the stored entries in the 200 (OK) response.

NOTE 4: The UE can register multiple SIP URIs in the Contact header simultaneously, provided they all contain the same IP address and port number. In this case the S-CSCF behaviour is as defined RFC 3261 [26] (i.e. multiple Contact header entries are bound to the public user identity in the To header and are returned in the 200 (OK) response).

Editor's Note: It is anticipated that the above requirement will be reevaluated due to the work on related work items in Rel-8.

5.4.1.2.2 Protected REGISTER with IMS AKA as a security mechanism

Upon receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "yes", the S-CSCF shall identify the user by the public user identity as received in the To header and the private user identity as received in the Authorization header of the REGISTER request, and:

In the case that there is no authentication currently ongoing for this user (i.e. no timer reg-await-auth is running):

- 1) check if the user needs to be reauthenticated.

The S-CSCF may require authentication of the user for any REGISTER request, and shall always require authentication for REGISTER requests received without the "integrity-protected" parameter in the Authorization header set to "yes".

If the user needs to be reauthenticated, the S-CSCF shall proceed with the procedures as described for the unprotected REGISTER in subclause 5.4.1.2.1, beginning with step 3). If the user does not need to be reauthenticated, the S-CSCF shall proceed with the following steps in this paragraph; and

- 2) check whether an Expires timer is included in the REGISTER request and its value. If the Expires header indicates a zero value, the S-CSCF shall perform the deregistration procedures as described in subclause 5.4.1.4. If the Expires header does not indicate zero, the S-CSCF shall check whether the public user identity received in the To header is already registered. If it is not registered, the S-CSCF shall proceed beginning with step 5 below. Otherwise, the S-CSCF shall proceed beginning with step 6 below.

In the case that a timer reg-await-auth is running for this user the S-CSCF shall:

- 1) check if the Call-ID of the request matches with the Call-ID of the 401 (Unauthorized) response which carried the last challenge. The S-CSCF shall only proceed further if the Call-IDs match.
- 2) stop timer reg-await-auth;
- 3) check whether an Authorization header is included, containing:
 - a) the private user identity of the user in the username field;
 - b) the algorithm which is AKAv1-MD5 in the algorithm field; and
 - c) the authentication challenge response needed for the authentication procedure in the response field.

The S-CSCF shall only proceed with the following steps in this paragraph if the authentication challenge response was included;

- 4) check whether the received authentication challenge response and the expected authentication challenge response (calculated by the S-CSCF using XRES and other parameters as described in RFC 3310 [49]) match. The XRES parameter was received from the HSS as part of the Authentication Vector. The S-CSCF shall only proceed with the following steps if the challenge response received from the UE and the expected response calculated by the S-CSCF match;
- 5) after performing the Cx Server Assignment procedure with the HSS, as described in 3GPP TS 29.228 [14], store the following information in the local data:
 - a) the list of public user identities, including the registered own public user identity and its associated set of implicitly registered public user identities and wildcarded public user identities due to the received REGISTER request. Each public user identity is identified as either barred or non-barred; and,
 - b) all the service profile(s) corresponding to the public user identities being registered (explicitly or implicitly), including initial Filter Criteria(the initial Filter Criteria for the Registered and common parts

is stored and the unregistered part is retained for possible use later - in the case of the S-CSCF is retained if the user becomes unregistered);

NOTE 1: There might be more than one set of initial Filter Criteria received because some implicitly registered public user identities that are part of the same implicit registration set belong to different service profiles.

6) update registration bindings:

- a) bind to each non-barred registered public user identity all registered contact information including all header parameters contained in the Contact header and all associated URI parameters, with the exception of the URI "pub-gruu" and "temp-gruu" parameters as specified in draft-ietf-sip-gruu [93], and store information for future use;
- b) for each binding that contains a +sip.instance header parameter, assign a new temporary GRUU, as specified in subclause 5.4.7A.3.

NOTE 2: There might be more than one contact information available for one public user identity.

NOTE 3: The barred public user identities are not bound to the contact information.

7) check whether a Path header was included in the REGISTER request and construct a list of preloaded Route headers from the list of entries in the received Path header. The S-CSCF shall preserve the order of the preloaded Route headers and bind them to the contact information that was received in the REGISTER message;

NOTE 4: If this registration is a reregistration or an initial registration (i.e., there are previously registered public user identities belonging to the user that have not been deregistered or expired), then a list of pre-loaded Route headers will already exist. The new list replaces the old list.

- 8) determine the duration of the registration by checking the value of the Expires header in the received REGISTER request. The S-CSCF may reduce the duration of the registration due to local policy or send back a 423 (Interval Too Brief) response specifying the minimum allowed time for registration;
- 9) store the icid parameter received in the P-Charging-Vector header;
- 10) if an orig-voi parameter is received in the P-Charging-Vector header, store the value of the received orig-voi parameter;

NOTE 5: Any received orig-voi parameter will be a type 1 orig-voi. The type 1 orig-voi identifies the network from which the request was sent.

11) create a 200 (OK) response for the REGISTER request.

5.4.1.2.2A Protected REGISTER with SIP digest as a security mechanism

Upon receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "tls-pending", "tls-yes", "ip-assoc-pending", or "ip-assoc-yes", or an Authorization header with no "integrity-protected" parameter, the S-CSCF shall identify the user by the public user identity as received in the To header and the private user identity as received in the Authorization header of the REGISTER request, and:

In the case that there is no authentication currently ongoing for this user (i.e. no timer reg-await-auth is running):

- 1) check if the user needs to be reauthenticated. The S-CSCF may require authentication of the user for any REGISTER request, and shall always require authentication for REGISTER requests received without the "integrity-protected" parameter in the Authorization header set to "tls-yes".

If the user needs to be reauthenticated and the REGISTER did not include an Authorization header with a digest response, the S-CSCF shall proceed with the authentication procedures as described for the initial REGISTER in subclause 5.4.1.2.1 and subclause 5.4.1.2.1B.

If the user needs to be reauthenticated and the REGISTER included an Authorization header with a digest response, the S-CSCF shall proceed with the authentication procedures as described for the initial REGISTER in subclause 5.4.1.2.1 and subclause 5.4.1.2.1B and include the stale field with value TRUE in the WWW-Authenticate header.

In the case that the user does not need to be reauthenticated and a timer reg-await-auth is running for this user the S-CSCF shall:

- 1) in the case the algorithm is MD5, check the following additional fields:
 - a realm field matching the realm field in the authentication challenge;
 - an algorithm field which matches the algorithm sent in the authentication challenge;
 - nonce field matching the nonce field in the authentication challenge;
 - a digest-uri matching the SIP Request URI;
 - a cnonce field; and
 - a nonce-count field.

The S-CSCF shall only proceed with the following steps in this paragraph if the authentication challenge response was included; and

- 2) check whether the received authentication challenge response and the expected authentication challenge response match. The expected response is calculated by the S-CSCF as described in RFC 2617 [21] using the H(A1) value provided by the HSS;

If the received authentication challenge response and the expected authentication challenge response match, then the UE is considered authenticated. If the UE is considered authenticated, and if the integrity-protected parameter in the Authorization header is set to the value "tls-pending" or "tls-yes", then the S-CSCF shall associate the registration with the local state of "tls-protected".

NOTE: The S-CSCF can have a local security policy to treat messages other than initial REGISTER messages, messages relating to emergency services, and error messages, differently depending on whether the registration is associated with the state "tls-protected".

When creating a 200 (OK) for the REGISTER request, the S-CSCF shall store the nonce-count value in the received REGISTER request and include an Authentication-Info header containing the fields described in RFC 2617 [21] as follows:

- a nextnonce field if the S-CSCF requires a new nonce for subsequent authentication responses from the UE;
- a message-qop field matching the qop in Authorization header sent by the UE;
- a response-auth field with a response-digest calculated as described in RFC 2617 [21];
- a cnonce field matching the cnonce in the Authorization header sent by the UE; and
- a nonce-count field matching the nonce-count in the Authorization header sent by the UE.

5.4.1.2.2B Protected REGISTER with SIP digest with TLS as a security mechanism

The procedures for subclause 5.4.1.2.2A apply.

5.4.1.2.2C NASS-IMS bundled authentication as a security mechanism

There is no protected REGISTER when NASS-IMS bundled authentication is used as a security mechanism. The procedures of subclause 5.4.1.2.1D apply to all REGISTER requests.

5.4.1.2.2D Successful registration

If a 200 (OK) response is to be sent to a protected REGISTER request, the S-CSCF shall, in addition to any contents identified elsewhere in subclause 5.4.1.2, include:

- a) the list of received Path headers;
- b) a P-Associated-URI header containing the list of the registered public user identity and its associated set of implicitly registered public user identities and wildcarded public user identities. The first URI in the list of

public user identities supplied by the HSS to the S-CSCF will indicate the default public user identity to be used by the S-CSCF. The public user identity indicated as the default public user identity must be a registered public user identity. The S-CSCF shall place the default public user identity as the first entry in the list of URIs present in the P-Associated-URI header. The default public user identity will be used by the P-CSCF in conjunction with the procedures for the P-Asserted-Identity header, as described in subclause 5.2.6.3. If the S-CSCF received a display name from the HSS for a public user identity, then the S-CSCF shall populate the P-Associated-URI header entry for that public identity with the associated display name. The S-CSCF shall not add a barred public user identity to the list of URIs in the P-Associated-URI header;

NOTE 1: The P-Associated-URI header lists only the public user identity and its associated set of implicitly registered public user identities and wildcarded public user identities that have been registered, rather than the list of user's URIs that may be either registered or unregistered as specified in the RFC 3455 [52]. If the registered public user identity which is not barred does not have any other associated public user identities or wildcarded public user identities, the P-Associated-URI header lists only the registered public user identity itself, rather than an empty P-Associated-URI header as specified in RFC 3455 [52].

- c) a Service-Route header containing:
 - the SIP URI identifying the S-CSCF containing an indication that requests routed via the service route (i.e. from the P-CSCF to the S-CSCF) are treated as for the UE-originating case. This indication may e.g. be in a URI parameter, a character string in the user part of the URI or be a port number in the URI; and,
 - if network topology hiding is required a SIP URI identifying an IBCF as the topmost entry;
- d) a P-Charging-Function-Addresses header containing the values received from the HSS if the P-CSCF is in the same network as the S-CSCF. It can be determined if the P-CSCF is in the same network as the S-CSCF by the contents of the P-Visited-Network-ID header field included in the REGISTER request;
- e) a P-Charging-Vector header containing the orig-ioi parameter, if received in the REGISTER request and a type 1 term-ioi parameter. The S-CSCF shall set the type 1 term-ioi parameter to a value that identifies the sending network of the response and the orig-ioi parameter is set to the previously received value of orig-ioi;
- f) a Contact header listing all contact addresses for this public user identity, including all saved header and URI parameters (including all ICSI values and IARI values) received in the Contact header field of the REGISTER request, and
- g) gruus in the Contact header. If the REGISTER request contained a Required or Supported header containing the value "gruu" then for each contact address in the contact header that has a +sip.instance header parameter, add "pub-gruu" and "temp-gruu" header parameters. The values of these parameters shall contain, respectively, the public GRUU and the most recently assigned temporary GRUU representing (as specified in subclause 5.4.7A) the association between the public user identity from the To header in the REGISTER request and the instance ID contained in the +sip.instance parameter.

NOTE 2: There might be other contact addresses available, that other UEs have registered for the same public user identity.

and send the so created 200 (OK) response to the UE.

For all service profiles in the implicit registration set, the S-CSCF shall send a third-party REGISTER request, as described in subclause 5.4.1.7, to each AS that matches the Filter Criteria of the service profile from the HSS for the REGISTER event; and,

NOTE 3: If this registration is a reregistration, the Filter Criteria already exists in the local data.

NOTE 4: If the same AS matches the Filter Criteria of several service profiles for the event of REGISTER request, then the AS will receive several third-party REGISTER requests. Each of these requests will include a public user identity from the corresponding service profile.

The S-CSCF shall consider the public user identity being registered to be bound to the contact address specified in the Contact header for the duration indicated in the Expires header.

5.4.1.2.3 Abnormal cases - general

In the case that the expiration timer from the UE is too short to be accepted by the S-CSCF, the S-CSCF shall:

- reject the REGISTER request with a 423 (Interval Too Brief) response, containing a Min-Expires header with the minimum registration time the S-CSCF will accept.

On receiving a failure response to one of the third-party REGISTER requests, based on the information in the Filter Criteria the S-CSCF may:

- abort sending third-party REGISTER requests; and
- initiate network-initiated deregistration procedure.

If the Filter Criteria does not contain instruction to the S-CSCF regarding the failure of the contact to the AS, the S-CSCF shall not initiate network-initiated deregistration procedure.

In the case that the REGISTER request from the UE contains multiple SIP URIs which are different addresses as Contact header entries, the S-CSCF shall store:

- the entry in the Contact header with the highest qvalue; or
- an entry decided by the S-CSCF based on local policy;

and include the stored entry in the 200 (OK) response.

In the case that the REGISTER request from the UE contains multiple SIP URIs which are the same addresses with the same "q" value as Contact header entries, the S-CSCF shall not store multiple entries with the same "q" value but store one of the entries with the same "q" value based on local policy along with any entries that have different "q" values and include only the stored entries in the 200 (OK) response.

NOTE 1: The UE can register multiple SIP URIs in the Contact header simultaneously, provided they all contain the same IP address and port number. In this case the S-CSCF behaviour is as defined RFC 3261 [26] (i.e. multiple Contact header entries are bound to the public user identity in the To header and are returned in the 200 (OK) response).

Editor's Note: It is anticipated that the above requirement will be reevaluated due to the work on related work items in Rel-8.

NOTE 2: If the timer reg-await-auth expires, the S-CSCF will consider the authentication to have failed. If the public user identity was already registered, the S-CSCF will leave it registered, as described in 3GPP TS 33.203 [19].

In the case that the S-CSCF receives a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "yes", for which the public user identity received in the To header and the private user identity received in the Authorization header of the REGISTER request do not match to any registered user at this S-CSCF, the S-CSCF shall:

- respond with a 500 (Server Internal Error) response to the UE.

NOTE 3: This error is not raised if there is a match on the private user identity, but no match on the public user identity.

For any error response, the S-CSCF shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the REGISTER request and a type 1 term-ioi parameter. The S-CSCF shall set the type 1 term-ioi parameter to a value that identifies the sending network of the response and the orig-ioi parameter is set to the previously received value of orig-ioi.

NOTE 4: Any previously received orig-ioi parameter will be a type 1 orig-ioi. The type 1 orig-ioi identifies the visited network of the registered user.

5.4.1.2.3A Abnormal cases – IMS AKA as security mechanism

In the case that the REGISTER request, that contains the authentication challenge response from the UE does not match with the expected REGISTER request (e.g. wrong Call-Id or authentication challenge response) and the request has the "integrity-protected" parameter in the Authorization header set to "yes", the S-CSCF shall:

- send a 403 (Forbidden) response to the UE. The S-CSCF shall consider this authentication attempt as failed. The S-CSCF shall not update the registration state of the subscriber.

NOTE 1: If the UE was registered before, it stays registered until the registration expiration time expires.

In the case that the REGISTER request, which was supposed to carry the response to the challenge, contains an empty response directive (i.e. no authentication challenge response) and no AUTS parameters indicating that the MAC parameter was invalid in the challenge, the S-CSCF shall:

- respond with a 403 (Forbidden) response to the UE. The S-CSCF shall not update the registration state of the subscriber.

NOTE 2: If the UE was registered before, it stays registered until the registration expiration time expires.

In the case that the REGISTER request from the UE containing an AUTS directive, indicating that the SQN was deemed to be out of range by the UE), the S-CSCF will fetch new authentication vectors from the HSS. In order to indicate a resynchronisation, the S-CSCF shall include the AUTS directive received from the UE and the stored RAND, when fetching the new authentication vectors. On receipt of the new authentication vectors from the HSS, the S-CSCF shall either:

- send a 401 (Unauthorized) response to initiate a further authentication attempt, using these new vectors; or
- respond with a 403 (Forbidden) response if the authentication attempt is to be abandoned. The S-CSCF shall not update the registration state of the subscriber.

NOTE 3: If the UE was registered before, it stays registered until the registration expiration time expires.

NOTE 4: Since the UE responds only to two consecutive invalid challenges, the S-CSCF will send a 401 (Unauthorized) response that contains a new challenge only twice.

NOTE 5: In the case of an AUTS directive being present in the REGISTER request, the response directive in the same REGISTER request will not be taken into account by the S-CSCF.

5.4.1.2.3B Abnormal cases – SIP digest as security mechanism

In the case that the REGISTER request, that contains the authentication challenge response from the UE does not match with the expected REGISTER request (e.g. wrong Call-Id or authentication challenge response) and the request has the "integrity-protected" parameter in the Authorization header set to either "tls-pending", "tls-yes", "ip-assoc-pending", or "ip-assoc-yes", the S-CSCF shall do one of the following:

- send a 403 (Forbidden) response to the UE. The S-CSCF shall consider this authentication attempt as failed. The S-CSCF shall not update the registration state of the subscriber; or
- rechallenge the user by issuing a 401 (Unauthorized) response including a challenge as per the authentication procedures described in subclause 5.4.1.2.1B.

NOTE 1: If the UE was registered before, it stays registered until the registration expiration time expires.

In the case that the REGISTER request from the UE contains an invalid nonce with a valid challenge response for that nonce (indicating that the client knows the correct username/password), or when the nonce-count value sent by the UE is not the expected value, the S-CSCF shall:

- send a 401 (Unauthorized) response to initiate a further authentication attempt with a fresh nonce and the stale parameter set to true.

In the case that the S-CSCF receives a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "tls-pending", "tls-yes", "ip-assoc-pending", or "ip-assoc-yes", for which the public user identity received in the To header and the private user identity received in the Authorization header of the REGISTER request do not match to any registered or initial registration pending user at this S-CSCF, the S-CSCF shall:

- respond with a 500 (Server Internal Error) response to the UE.

NOTE 2: This error is not raised if there is a match on the private user identity, but no match on the public user identity.

5.4.1.2.3C Abnormal cases – SIP digest as security mechanism

The procedures for subclause 5.4.1.2.3B apply.

5.4.1.2.3D Abnormal cases – NASS-IMS bundled authentication as security mechanism

There are no abnormal cases for NASS-IMS bundled authentication.

5.4.1.3 Authentication and reauthentication

Authentication and reauthentication is performed by the registration procedures as described in subclause 5.4.1.2.

5.4.1.4 User-initiated deregistration

When S-CSCF receives a REGISTER request with the Expires header field containing the value zero, the S-CSCF shall:

- if IMS AKA is in use as the security mechanism, check whether the "integrity-protected" parameter in the Authorization header field set to "yes", indicating that the REGISTER request was received integrity protected. The S-CSCF shall only proceed with the following steps if the "integrity-protected" parameter is set to "yes";
- if SIP digest or SIP digest with TLS is in use as a security mechanism, check whether the "integrity-protected" parameter in the Authorization header field set to "yes" or "tls=yes", indicating that the REGISTER request was received integrity protected. If the "integrity-protected" parameter is not present the S-CSCF shall ensure authentication is performed as described in subclause 5.4.1.2.1 (and consequently subclause 5.4.1.2.2) if local policy requires. The S-CSCF shall only proceed with the following steps if the "integrity-protected" parameter is set to "yes", "tls=yes", or the required authentication is successfully performed if required by local policy;
- if NASS-IMS bundled authentication is in use as a security mechanism, the S-CSCF shall only proceed with the following steps if the "integrity-protected" parameter in the Authorization header field does not exist or without an Authorization header, and one or more Line-Identifiers previously received over the Cx interface, stored as a result of a Cx Multimedia Authentication procedure with the HSS, are available for the user;

Editor's note: Redrafting of above bullet required.

- release all dialogs that include this user, where the dialogs were initiated by this UE with the same public user identity found in the To header field that was received in the REGISTER request or with one of the implicitly registered public user identities by applying the steps listed in subclause 5.4.5.1.2. However:
 - if the dialog that was established by the UE subscribing to the reg event package used the public user identity that is going to be deregistered; and
 - this dialog is the only remaining dialog used for subscription to reg event package;

then the S-CSCF shall not release this dialog;

- if this public user identity was registered only by this UE, deregister the public user identity found in the To header field together with the implicitly registered public user identities. Otherwise, the S-CSCF will only remove the contact address that was registered by this UE;

NOTE: If the UE sends a REGISTER request with the value "*" in the Contact header and the value zero in the Expires header, the S-CSCF will only remove the contact address that was registered by this UE identified with its private user identity.

- for all service profiles in the implicit registration set send a third-party REGISTER request, as described in subclause 5.4.1.7, to each AS that matches the Filter Criteria of the service profile from the HSS for the REGISTER event; and
- if this is a deregistration request for the only public user identity currently registered with its associated set of implicitly registered public user identities (i.e. no other is registered) and there are still active multimedia sessions that includes this user, where the session was initiated with the public user identity currently registered or with one of the implicitly registered public user identities, release each of these multimedia sessions by applying the steps listed in subclause 5.4.5.1.2. Only dialogs associated to the multimedia sessions originated or terminated towards the registered user shall be released.

If all public user identities of the UE are deregistered, then the S-CSCF may consider the UE and P-CSCF subscriptions to the reg event package cancelled (i.e. as if the UE had sent a SUBSCRIBE request with an Expires header containing a value of zero).

If the Authorization header of the REGISTER request contained an "integrity-protected" parameter set to the value "no", the S-CSCF shall apply the procedures described in subclause 5.4.1.2.1.

On completion of the above procedures in this subclause and of the Cx Server Assignment procedure with the HSS, as described in 3GPP TS 29.228 [14], for one or more public user identities, the S-CSCF shall update or remove those public user identities, their registration state and the associated service profiles from the local data (based on operators' policy the S-CSCF can request of the HSS to either be kept or cleared as the S-CSCF allocated to this subscriber).

5.4.1.5 Network-initiated deregistration

NOTE 1: A network-initiated deregistration event that occurs at the S-CSCF may be received from the HSS or may be an internal event in the S-CSCF.

Prior to initiating the network-initiated deregistration for the only currently registered public user identity and its associated set of implicitly registered public user identities and wildcarded public user identities that have been registered with the same contact (i.e. no other public user identity is registered with this contact) while there are still active multimedia sessions belonging to this contact, the S-CSCF shall release only the multimedia sessions belonging to this contact as described in the following paragraph. The multimedia sessions for the same public user identity, if registered with another contact remain unchanged.

Prior to initiating the network-initiated deregistration while there are still active multimedia sessions that are associated with this user and contact, the S-CSCF shall release none, some or all of these multimedia sessions by applying the steps listed in subclause 5.4.5.1.2 under the following conditions:

- when the S-CSCF does not expect the UE to reregister (i.e. S-CSCF will set the event attribute within the <contact> element to "rejected" for the NOTIFY request, as described below), the S-CSCF shall release all sessions that are associated with the public user identities being deregistered, which includes the implicitly registered public user identities.
- when the S-CSCF expects the UE to reregister (i.e. S-CSCF will set the event attribute within the <contact> element to "deactivated" for the NOTIFY request, as described below), the S-CSCF shall only release sessions that currently include the user, where the session was initiated with the one of the public user identities being deregistered, which includes the implicitly registered public user identities.

When a network-initiated deregistration event occurs for one or more public user identities that are bound to one or more contacts, the S-CSCF shall send a NOTIFY request to all subscribers that have subscribed to the respective reg event package. For each NOTIFY request, the S-CSCF shall:

- 1) set the Request-URI and Route header to the saved route information during subscription;
- 2) set the Event header to the "reg" value;
- 3) in the body of the NOTIFY request, include as many <registration> elements as many public user identities the S-CSCF is aware of the user owns;
- 4) set the aor attribute within each <registration> element to one public user identity:
 - a) set the <uri> sub-element inside the <contact> sub-element of each <registration> element to the contact address provided by the UE;
 - b) if the public user identity:
 - i) has been deregistered then:
 - set the state attribute within the <registration> element to "terminated";
 - set the state attribute within the <contact> element to "terminated"; and
 - set the event attribute within the <contact> element to "deactivated" if the S-CSCF expects the UE to reregister or "rejected" if the S-CSCF does not expect the UE to reregister; or

- ii) has been kept registered then:
 - I) set the state attribute within the <registration> element to "active";
 - II) set the state attribute within the <contact> element to:
 - for the contact address to be removed set the state attribute within the <contact> element to "terminated", and event attribute element to "deactivated" if the S-CSCF expects the UE to reregister or "rejected" if the S-CSCF does not expect the UE to reregister; or
 - for the contact address which remain unchanged, if any, leave the <contact> element unmodified, and if the contact has been assigned GRUUs set the <pub-gruu> and <temp-gruu> sub-elements of the <contact> element as specified in draft-ietf-sipping-gruu-reg-event [94] and include the <unknown-param> sub-element within each <contact> to any additional header parameters contained in the Contact header of the REGISTER request according to RFC 3680 [43]; and

NOTE 2: There might be more than one contact information available for one public user identity. When deregistering this UE, the S-CSCF will only modify the <contact> elements that were originally registered by this UE using its private user identity. The <contact> elements of the same public user identity, if registered by another UE using different private user identities remain unchanged.

- 5) add a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17].

The S-CSCF shall only include the non-barred public user identities in the NOTIFY request.

When sending a final NOTIFY request with all <registration> element(s) having their state attribute set to "terminated" (i.e. all public user identities have been deregistered or expired), the S-CSCF shall also terminate the subscription to the registration event package by setting the Subscription-State header to the value of "terminated".

Also, for all service profiles in the implicit registration set the S-CSCF shall send a third-party REGISTER request, as described in subclause 5.4.1.7, to each AS that matches the Filter Criteria of the service profile from the HSS as if a equivalent REGISTER request had been received from the user deregistering that public user identity, or combination of public user identities.

In case of the deregistration of the old contact information when the UE is roaming, registration is done in a new network and the previous registration has not expired, on completion of the above procedures, the S-CSCF shall remove the registration information related to the old contact from the local data.

Otherwise, on completion of the above procedures for one or more public user identities linked to the same private user identity, the S-CSCF shall deregister those public user identities and the associated implicitly registered public user identities. On completion of the Cx Server Assignment procedure with the HSS, as described in 3GPP TS 29.228 [14], the S-CSCF shall update or remove those public user identities linked to the same private user identity, their registration state and the associated service profiles from the local data (based on operators' policy the S-CSCF can request of the HSS to either be kept or cleared as the S-CSCF allocated to this subscriber). On the completion of the Cx Registration-Termination procedure with the HSS, as described in 3GPP TS 29.228 [14], the S-CSCF shall remove those public user identities, their registration state and the associated service profiles from the local data.

5.4.1.6 Network-initiated reauthentication

The S-CSCF may request a subscriber to reauthenticate at any time, based on a number of possible operator settable triggers as described in subclause 5.4.1.2.

If the S-CSCF is informed that a private user identity needs to be re-authenticated, the S-CSCF shall generate a NOTIFY request on all dialogs which have been established due to subscription to the reg event package of that user. For each NOTIFY request the S-CSCF shall:

- 1) set the Request-URI and Route header to the saved route information during subscription;
- 2) set the Event header to the "reg" value;
- 3) in the body of the NOTIFY request, include as many <registration> elements as many public user identities the S-CSCF is aware of the user owns:

- a) set the <uri> sub-element inside the <contact> sub-element of each <registration> element to the contact address provided by the UE;
- b) set the aor attribute within each <registration> element to one public user identity;
- c) set the state attribute within each <registration> element to "active";
- d) set the state attribute within each <contact> element to "active";
- e) set the event attribute within each <contact> element that was registered by this UE to "shortened";
- f) set the expiry attribute within each <contact> element that was registered by this UE to an operator defined value; and
- g) set the <pub-gruu> and <temp-gruu> sub-elements within each <contact> element as specified in subclause 5.4.2.1.2; and

NOTE 1: There might be more than one contact information available for one public user identity. The S-CSCF will only modify the <contact> elements that were originally registered by this UE using its private user identity. The S-CSCF will not modify the <contact> elements for the same public user identity, if registered by another UE using different private user identity.

- 4) set a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17].

Afterwards the S-CSCF shall wait for the user to reauthenticate (see subclause 5.4.1.2).

NOTE 2: Network initiated re-authentication may occur due to internal processing within the S-CSCF.

The S-CSCF shall only include the non-barred public user identities in the NOTIFY request.

When generating the NOTIFY request, the S-CSCF shall shorten the validity of all registration lifetimes associated with this private user identity to an operator defined value that will allow the user to be re-authenticated.

5.4.1.7 Notification of Application Servers about registration status

During registration, the S-CSCF shall include a P-Access-Network-Info header and a P-Visited-Network-ID header (as received in the REGISTER request from the UE) in the 3rd-party REGISTER sent towards the ASs, if the AS is part of the trust domain. If the AS is not part of the trust domain, the S-CSCF shall not include any P-Access-Network-Info header or P-Visited-Network-ID header. The S-CSCF shall not include a P-Access-Network-Info header in any responses to the REGISTER request.

If the registration procedure described in subclauses 5.4.1.2, 5.4.1.4 or 5.4.1.5 (as appropriate) was successful, the S-CSCF shall send a third-party REGISTER request to each AS with the following information:

- a) the Request-URI, which shall contain the AS's SIP URI;
- b) the From header, which shall contain the S-CSCF's SIP URI;
- c) the To header, which shall contain a non-barred public user identity belonging to the service profile of the processed Filter Criteria. It may be either a public user identity as contained in the REGISTER request received from the UE or one of the implicitly registered public user identities in the service profile, as configured by the operator;

NOTE 1: For the whole implicit registration set only one public user identity per service profile appears in the third-party REGISTER requests. Thus, based on third-party REGISTER requests only, the ASs will not have complete information on the registration state of each public user identity in the implicit registration set. The only way to have a complete and continuously updated information (even upon administrative change in subscriber's profile) is to subscribe to the reg event package.

- d) the Contact header, which shall contain the S-CSCF's SIP URI;
- e) for initial registration and user-initiated reregistration (subclause 5.4.1.2), the Expires header, which shall contain the same value that the S-CSCF returned in the 200 (OK) response for the REGISTER request received from the UE;

- f) for user-initiated deregistration (subclause 5.4.1.4) and network-initiated deregistration (subclause 5.4.1.5), the Expires header, which shall contain the value zero;
- g) for initial registration and user-initiated reregistration (subclause 5.4.1.2), a message body, if there is Filter Criteria indicating the need to include HSS provided data for the REGISTER event (e.g. HSS may provide AS specific data to be included in the third-party REGISTER). If there is a service information XML element provided in the HSS Filter Criteria for an AS (see 3GPP TS 29.228 [14]), then the S-CSCF shall include it in the message body of the REGISTER request within the <service-info> XML element as described in subclause 7.6. For the messages including the IM CN subsystem XML body, the S-CSCF shall set the value of the Content-Type header to include the MIME type specified in subclause 7.6;
- h) for initial registration and user-initiated reregistration, the P-Charging-Vector header, which shall contain the same icid parameter that the S-CSCF received in the original REGISTER request from the UE and add a type 3 orig-ioi parameter before the received orig-ioi parameter. The S-CSCF shall set the type 3 orig-ioi parameter to a value that identifies the sending network of the request. The S-CSCF shall not include the type 3 term-ioi parameter;
- i) for initial registration and user-initiated reregistration, a P-Charging-Function-Addresses header, which shall contain the values received from the HSS if the message is forwarded within the S-CSCF home network; and
- j) in case the original received REGISTER request contained a P-User-Database header and the AS belongs to the same operator as the S-CSCF, optionally a P-User-Database header which shall contain the received value.

When the S-CSCF receives any response to a third-party REGISTER request, the S-CSCF shall store the value of the term-ioi parameter received in the P-Charging-Vector header, if present.

NOTE 2: Any received term-ioi parameter will be a type 3 term-ioi. The type 3 term-ioi identifies the service provider from which the response was sent.

If the S-CSCF fails to receive a SIP response or receives a 408 (Request Timeout) response or a 5xx response to a third-party REGISTER, the S-CSCF shall:

- if the default handling defined in the filter criteria indicates the value "SESSION_CONTINUED" as specified in 3GPP TS 29.228 [14] or no default handling is indicated, no further action is needed; and
- if the default handling defined in the filter criteria indicates the value "SESSION_TERMINATED" as specified in 3GPP TS 29.228 [14], the S-CSCF shall, for a currently registered public user identity, initiate the network-initiated deregistration as described in subclause 5.4.1.5.

5.4.1.8 Service profile updates

NOTE 1: The S-CSCF can receive an update of subscriber data notification on the Cx interface, from the HSS, which can affect the stored information about served public user identities. According to 3GPP TS 29.228 [14], the changes are guaranteed not to affect the default public user identity within the registration implicit set.

When receiving a Push-Profile-Request (PPR) from the HSS (as described in 3GPP TS 29.228 [14]), modifying the service profile of served public user identities, the S-CSCF shall

- 1) if the modification consists in the addition of a new non-barred public user identity to an implicit set, or in the change of status from barred to non-barred for a public user identity already in the implicit set, add the public user identity to the list of registered, non-barred public user identities;
- 2) if the modification consists in the deletion or in the change of status from non-barred to barred of a public user identity in an implicit set, remove the public user identity from the list of registered, non-barred public user identities;

NOTE 2: As the S-CSCF checks the barring status of the public user identity on receipt of a initial request for a dialog, or a standalone transaction, the above procedures have no impact on transactions or dialogs already in progress and are effective only for new transactions and dialogs.

- 3) if the modification consists of deletion of a public user identity from an implicit registration set while there are active multimedia session belonging to this public user identity and contact, the S-CSCF shall perform the

network initiated deregistration procedures as described in sub-clause 5.4.1.5 and skip synchronization of the UE and IM CN entities as described in step 4; and

- 4) synchronize with the UE and IM CN entities, by either:
 - performing the procedures for notification of the reg-event subscribers about registration state, as described in subclause 5.4.2.1.2; or
 - triggering the UE to re-register, by shortening the life time of the current registration, as described in subclause 5.4.1.6, e.g. when a new trigger point of Register method is added in the iFCs.

5.4.2 Subscription and notification

5.4.2.1 Subscriptions to S-CSCF events

5.4.2.1.1 Subscription to the event providing registration state

When an incoming SUBSCRIBE request addressed to S-CSCF arrives containing the Event header with the reg event package, the S-CSCF shall:

- 1) check if, based on the local policy, the request was generated by a subscriber who is authorised to subscribe to the registration state of this particular user. The authorized subscribers include:
 - all public user identities this particular user owns, that the S-CSCF is aware of, and which are not-barred;
 - all the entities identified by the Path header (i.e. the P-CSCF to which this user is attached to); and
 - all the ASs listed in the initial filter criteria that are part of the trust domain; and

NOTE 1: The S-CSCF finds the identity for authentication of the subscription in the P-Asserted-Identity header received in the SUBSCRIBE request.

- 2) store the value of the orig-ioi parameter received in the P-Charging-Vector header if present; and

NOTE 2: Any received orig-ioi parameter will be a type 3 orig-ioi. The type 3 orig-ioi identifies the service provider from which the request was sent.

- 3) generate a 2xx response acknowledging the SUBSCRIBE request and indicating that the authorised subscription was successful as described in RFC 3680 [43]. The S-CSCF shall populate the header fields as follows:
 - an Expires header, set to either the same or a decreased value as the Expires header in SUBSCRIBE request; and
 - if the request originated from an ASs listed in the initial filter criteria, a P-Charging-Vector header containing the orig-ioi parameter, if received in the SUBSCRIBE request, and a type 3 term-ioi. The S-CSCF shall set the type 3 term-ioi parameter to a value that identifies the sending network of the response and the orig-ioi parameter is set to the previously received value of orig-ioi.

The S-CSCF may set the Contact header to an identifier uniquely associated to the SUBSCRIBE request and generated within the S-CSCF, that may help the S-CSCF to correlate refreshes for the SUBSCRIBE.

NOTE 3: The S-CSCF could use such unique identifiers to distinguish between UEs, when two or more users, holding a shared subscription, register under the same public user identity.

Afterwards the S-CSCF shall perform the procedures for notification about registration state as described in subclause 5.4.2.1.2.

For any final response that is not a 2xx response, the S-CSCF shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the SUBSCRIBE request and a type 3 term-ioi. The S-CSCF shall set the type 3 term-ioi parameter to a value that identifies the sending network of the response and the orig-ioi parameter is set to the previously received value of orig-ioi.

When the S-CSCF receives a subscription refresh request for a dialog that was established by the UE subscribing to the reg event package, the S-CSCF shall accept the request irrespective if the user's public user identity specified in the SUBSCRIBE request is either registered or has been deregistered.

5.4.2.1.2 Notification about registration state

The S-CSCF shall send a NOTIFY request:

- when an event pertaining to the user occurs. In this case the NOTIFY request is sent on all dialogs which have been established due to subscription to the reg event package of that user; and
- as specified in RFC 3265 [28].

When sending a NOTIFY request, the S-CSCF shall not use the default filtering policy as specified in RFC 3680 [43], i.e. the S-CSCF shall always include in every NOTIFY request the state information of all registered public user identities of the user (i.e. the full state information).

NOTE 1: Contact information related to emergency registration is not included.

When generating NOTIFY requests, the S-CSCF shall not preclude any valid reg event package parameters in accordance with RFC 3680 [43].

For each NOTIFY request triggered by an event and on all dialogs which have been established due to subscription to the reg event package of that user, the S-CSCF shall:

- 1) set the Request-URI and Route header to the saved route information during subscription;
- 2) set the Event header to the "reg" value;
- 3) in the body of the NOTIFY request, include one <registration> elements for each public user identity that the S-CSCF is aware the user owns.

If the user shares one or more public user identities with other users, any contact addresses registered by other users of the shared public user identity shall be included in the NOTIFY request;

- 4) for each <registration> element:
 - a) set the aor attribute to one public user identity;
 - b) set the <uri> sub-element inside each <contact> sub-element of the <registration> element to the contact address provided by the respective UE as follows:
 - I) if the aor attribute of the <registration> element contains a SIP URI, then for each contact address that contains a +sip.instance header parameter, include <pub-gruu> and <temp-gruu> sub-elements within the corresponding <contact> element. The S-CSCF shall set the contents of these elements as specified in draft-ietf-sipping-gruu-reg-event [94]; or
 - II) if the aor attribute of the <registration> element contains a tel-URI, determine its alias SIP URI and then include a copy of the <pub-gruu> and <temp-gruu> sub-elements from that equivalent element; and
 - c) if the public user identity set in step a):
 - I) has been deregistered either by the UE or the S-CSCF (i.e. there is no active contact belonging to this user left) then:
 - set the state attribute within the <registration> element to "terminated";
 - set the state attribute within each <contact> element belonging to this user to "terminated"; and
 - set the event attribute within each <contact> element to "deactivated", "expired", "unregistered", "rejected" or "probation" according to RFC 3680 [43].

If the public user identity has been deregistered for this user and this deregistration has already been indicated in the NOTIFY request, and no new registration for this user has occurred, its <registration> element shall not be included in the subsequent NOTIFY requests; or

- II) has been registered by the UE (i.e. it has not been previously registered) then:
- set the <unknown-param> element to any additional header parameters contained in the contact header of the REGISTER request according to RFC 3680 [43];
 - set the state attribute within the <registration> element to "active"; and
 - set the state attribute within the <contact> element belonging to this user to "active"; and set the event attribute within this <contact> element to "registered"; or
- III) has been re-registered (i.e. it has been previously registered) then:
- set the state attribute within the <registration> element to "active";
 - set the <unknown-param> element to any additional header parameters contained in the contact header of the REGISTER request according to RFC 3680 [43];
 - for contact addresses to be registered: set the state attribute within the <contact> element to "active"; and set the event attribute within the <contact> element to "registered"; or
 - for contact addresses to be re-registered, set the state attribute within the <contact> element to "active"; and set the event attribute within the <contact> element to "refreshed" or "shortened" according to RFC 3680 [43]; or
 - for contact addresses that remain unchanged, if any, leave the <contact> element unmodified (i.e. the event attribute within the <contact> element includes the last event that caused the transition to the respective state); or
- IV) has been automatically registered or registered by the S-CSCF, and has not been previously automatically registered:
- set the <unknown-param> element to any additional header parameters contained in the contact header of the original REGISTER request according to RFC 3680 [43];
 - set the state attribute within the <registration> element to "active";
 - set the state attribute within the <contact> element to "active"; and
 - set the event attribute within the <contact> element to "created"; and
- V) is hosted (unregistered case) at the S-CSCF:
- set the state attribute within the <registration> element to "terminated";
 - set the state attribute within each <contact> element to "terminated"; and
 - set the event attribute within each <contact> element to "unregistered".

The S-CSCF shall also terminate the subscription to the registration event package by setting the Subscription-State header to the value of "terminated"; and

NOTE 2: The value of "init" for the state attribute within the <registration> element is not used.

- 5) set the P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17] and a type 3 orig-ioi parameter. The S-CSCF shall set the type 3 orig-ioi parameter to a value that identifies the sending network of the request. The S-CSCF shall not include the type 3 term-ioi parameter.

NOTE 3: When sending a NOTIFY request to a subscriber subscribing or unsubscribing to the reg event package, or when the S-CSCF terminates the subscription, the event attribute within the <contact> element includes the last event that caused the transition to the respective state.

The S-CSCF shall only include the non-barred public user identities in the NOTIFY request.

EXAMPLE: If sip:user1_public1@home1.net is registered, the public user identity sip:user1_public2@home1.net can automatically be registered. Therefore the entries in the body of the NOTIFY request look like:

```
<?xml version="1.0"?>
<reginfo xmlns="urn:ietf:params:xml:ns:reginfo"
  version="0" state="full">
  <registration aor="sip:user1_public1@home1.net" id="as9"
    state="active">
    <contact id="76" state="active" event="registered">
      <uri>sip:[5555::aaa:bbb:ccc:ddd]</uri>
      <unknown-param name="audio"/>
    </contact>
  </registration>
  <registration aor="sip:user1_public2@home1.net" id="as10"
    state="active">
    <contact id="86" state="active" event="created">
      <uri>sip:[5555::aaa:bbb:ccc:ddd]</uri>
      <unknown-param name="audio"/>
    </contact>
  </registration>
</reginfo>
```

When sending a final NOTIFY request with all <registration> element(s) having their state attribute set to "terminated" (i.e. all public user identities have been deregistered, expired or are hosted (unregistered case) at the S-CSCF), the S-CSCF shall also terminate the subscription to the registration event package by setting the Subscription-State header to the value of "terminated".

When all of a UE's contact addresses have been deregistered (i.e. there is no <contact> element set to "active" for this UE), the S-CSCF shall consider subscription to the reg event package belonging to the UE cancelled (i.e. as if the UE had sent a SUBSCRIBE request with an Expires header containing a value of zero).

The S-CSCF shall only include the non-barred public user identities in the NOTIFY request.

When the S-CSCF receives any response to the NOTIFY request, the S-CSCF shall store the value of the term-ioi parameter received in the P-Charging-Vector header, if present.

NOTE 4: Any received term-ioi parameter will be a type 3 term-ioi. The type 3 term-ioi identifies the service provider from which the response was sent.

5.4.3 General treatment for all dialogs and standalone transactions excluding requests terminated by the S-CSCF

5.4.3.1 Determination of UE-originated or UE-terminated case

Upon receipt of an initial request or a target refresh request or a stand-alone transaction, the S-CSCF shall:

- perform the procedures for the UE-originating case as described in subclause 5.4.3.2 if the request makes use of the information for UE-originating calls, which was added to the Service-Route header entry of the S-CSCF during registration (see subclause 5.4.1.2), e.g. the message is received at a certain port or the topmost Route header contains a specific user part or parameter; or,
- perform the procedures for the UE-originating case as described in subclause 5.4.3.2 if the topmost Route header of the request contains the "orig" parameter. The S-CSCF shall remove the "orig" parameter from the topmost Route header; or,
- perform the procedures for the UE-terminating case as described in subclause 5.4.3.3 if this information is not used by the request.

5.4.3.2 Requests initiated by the served user

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the S-CSCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE 1 The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When performing SIP digest plus IP address check or SIP digest plus proxy authentication, when the S-CSCF receives from the served user an initial request for a dialog or a request for a standalone transaction, the S-CSCF may perform the steps in subclause 5.4.3.6 to challenge the request based on local policy.

NOTE 2: If the user registration is associated with the state "tls-protected", then the execution of Proxy-Authentication as described in subclause 5.4.3.6 is still possible, although it is unlikely this would add additional security provided the P-CSCF is trusted. Thus, in most cases the state "tls-protected" will be reason for the S-CSCF to not desire Proxy-Authentication for this user.

When the S-CSCF receives from the served user or from a PSI an initial request for a dialog or a request for a standalone transaction, and the request is received either from a functional entity within the same trust domain or contains a valid original dialog identifier (see step 3) or the dialog identifier (From, To and Call-ID header fields) relates to an existing request processed by the S-CSCF, then prior to forwarding the request, the S-CSCF shall:

- 1) determine whether the request contains a barred public user identity in the P-Asserted-Identity header field of the request or not. In case the said header field contains a barred public user identity for the user, then the S-CSCF shall reject the request by generating a 403 (Forbidden) response. Otherwise, continue with the rest of the steps;

NOTE 3: If the P-Asserted-Identity header field contains a barred public user identity, then the message has been received, either directly or indirectly, from a non-compliant entity which should have had generated the content with a non-barred public user identity.

- 1A) if the Contact is a GRUU, but is not valid as defined in subclause 5.4.7A.4, then return a 4xx response as specified in draft-ietf-sip-gruu [93];
- 2) store the value of the orig-ioi parameter received in the P-Charging-Vector header if present, and remove it from any forwarded request;

NOTE 4: Any received orig-ioi parameter will be a type 3 orig-ioi. The type 3 orig-ioi identifies the service provider from which the request was sent (AS initiating a session on behalf of a user or a PSI);

- 3) check if an original dialog identifier that the S-CSCF previously placed in a Route header is present in the topmost Route header of the incoming request. If not present, the S-CSCF shall build an ordered list of initial filter criteria based on the public user identity in the P-Asserted-Identity header of the received request as described in 3GPP TS 23.218 [5]. If present, the request has been sent from an AS in response to a previously sent request, an ordered list of initial filter criteria already exists and the S-CSCF shall not change the ordered list of initial filter criteria even if the AS has changed the P-Asserted-Identity header;
- 4) remove its own SIP URI from the topmost Route header;
- 4A) if there was an original dialog identifier present in the topmost Route header of the incoming request and the request is received from a functional entity within the same trust domain and contains a P-Asserted-Service header field, continue the procedure with step 5;
- 4B) if the request contains a P-Preferred-Service header field, check whether the ICSI value contained in the P-Preferred-Service header field is part of the set of the subscribed services for the served user and determine whether the contents of the request (e.g. SDP media capabilities, Content-Type header field) match the ICSI for the subscribed service:
 - a) if not, as an operator option, the S-CSCF may reject the request by generating a 403 (Forbidden) response. Otherwise remove the P-Preferred-Service header field and continue with the rest of the steps; and
 - b) if so, then include a P-Asserted-Service header field in the request containing the ICSI value contained in the P-Preferred-Service header field, remove the P-Preferred-Service header field, and continue the procedure with step 5;

- 4C) if the request does not contain a P-Preferred-Service header field, check whether the contents of the request match a subscribed service for each and any of the subscribed services for the served user:
- a) if not, as an operator option, the S-CSCF may reject the request by generating a 403 (Forbidden) response; and
 - b) if so, and if the request is related to an IMS communication service and the IMS communication service requires the use of an ICSI value then select an ICSI value for the related IMS communication service and include a P-Asserted-Service header field in the request containing the selected ICSI value; and
 - c) if so, and if the request is related to an IMS communication service and the IMS communication service does not require the use of an ICSI value then continue without including an ICSI value; and
 - d) if so, and if the request does not relate to an IMS communication service (or if the S-CSCF is unable to unambiguously determine the service being requested but decides to allow the session to continue) then continue without including an ICSI value;
- 5) check whether the initial request matches the any unexecuted initial filter criteria. If there is a match, then the S-CSCF shall select the first matching unexecuted initial filter criteria from the ordered list of initial filter criteria and the S-CSCF shall:
- a) insert the AS URI to be contacted into the Route header as the topmost entry followed by its own URI populated as specified in the subclause 5.4.3.4;
 - b) if the AS is located outside the trust domain then the S-CSCF shall remove the access-network-charging-info parameter in the P-Charging-Vector header from the request that is forwarded to the AS; if the AS is located within the trust domain, then the S-CSCF shall retain the access-network-charging-info parameter in the P-Charging-Vector header in the request that is forwarded to the AS; and
 - c) insert a type 3 orig-ioi parameter before the received orig-ioi parameters in the P-Charging-Vector header. The S-CSCF shall set the type 3 orig-ioi parameter to a value that identifies the sending network of the request. The S-CSCF shall not include the type 3 term-ioi parameter;

NOTE 5: Depending on the result of processing the filter criteria the S-CSCF might contact one or more AS(s) before processing the outgoing Request-URI.

NOTE 6: An AS can activate or deactivate its own filter criteria via the Sh interface. As the S-CSCF checks initial filter criteria only on receipt of an initial request for a dialog, or a standalone transaction, a modified service profile will have no impact on transactions or dialogs already in progress and the modified profile will be effective only for new transactions and dialogs. If the S-CSCF receives a modification of the iFC during their execution, then it should not update the stored initial Filter Criteria until the iFC related to the initial request have been completely executed.

- 6) if there was no original dialog identifier present in the topmost Route header of the incoming request store the value of the icid parameter received in the P-Charging-Vector header and retain the icid parameter in the P-Charging-Vector header. Optionally, the S-CSCF may generate a new, globally unique icid and insert the new value in the icid parameter of the P-Charging-Vector header when forwarding the message. If the S-CSCF creates a new icid, then it is responsible for maintaining the two icid values in the subsequent messaging;
- 7) in step 5, if the initial request did not match any unexecuted initial filter criteria (i.e. the request is not forwarded to an AS), insert an orig-ioi parameter into the P-Charging-Vector header. The S-CSCF shall set the type 2 orig-ioi parameter to a value that identifies the sending network. The S-CSCF shall not include the type 2 term-ioi parameter;
- 8) insert a P-Charging-Function-Addresses header populated with values received from the HSS if the request does not contain a Charging-Function-Addresses header field and the message is forwarded within the S-CSCF home network, including towards AS;
- 9) if there was no original dialog identifier present in the topmost Route header of the incoming request and if the S-CSCF has knowledge that the SIP URI contained in the received P-Asserted-Identity header is an alias SIP URI for a tel URI, add a second P-Asserted-Identity header containing this tel-URI, including the display name associated with the tel URI, if available. If the P-Asserted-Identity header contains only a tel URI, the S-CSCF shall add a second P-Asserted-Identity header containing a SIP URI. The added SIP URI shall contain in the user part a "+" followed by the international public telecommunication number contained in tel URI, and user's

home domain name in the hostport part. The added SIP URI shall contain the same value in the display name as contained in the tel URI. The S-CSCF shall also add a user parameter equals "phone" to the SIP URI;

NOTE 7: The S-CSCF recognizes that a given SIP URI is an alias SIP URI of a tel URI, since this grouping is sent from the HSS (see 3GPP TS 29.228 [14]). If tel URI is shared URI so is the alias SIP URI.

10) if the request is not forwarded to an AS and if the outgoing Request-URI is:

- a SIP URI with the user part starting with a + and the user parameter equals "phone", and if configured per local operator policy, the S-CSCF shall perform the procedure described here. Local policy can dictate whether this procedure is performed for all domains of the SIP URI, only if the domain belongs to the home network, or not at all. If local policy indicates that the procedure is to be performed, then the S-CSCF shall translate the international public telecommunications number contained in the user part of the SIP URI (see RFC 3966 [22]) to a globally routeable SIP URI using either an ENUM/DNS translation mechanism with the format specified in RFC 3761 [24], or any other available database. Database aspects of ENUM are outside the scope of the present document. An S-CSCF that implements the additional routing functionality described in annex I may forward the request without attempting translation. If a translation is in fact performed and it succeeds, the S-CSCF shall update the Request-URI with the globally routeable SIP URI either returned by ENUM/DNS or obtained from any other available database. If this translation fails, the request may be forwarded to a BGCF or any other appropriate entity (e.g. a MRFC to play an announcement) in the originator's home network or the S-CSCF may send an appropriate SIP response to the originator. When forwarding the request to a BGCF or any other appropriate entity, the S-CSCF shall leave the original Request-URI containing the SIP URI with user parameter equals phone unmodified. If the request is forwarded, the S-CSCF shall remove the access-network-charging-info parameter from the P-Charging-Vector header prior to forwarding the message;
- a tel URI in the international format, the S-CSCF shall translate the E.164 address (see RFC 3966 [22]) to a globally routeable SIP URI using either an ENUM/DNS translation mechanism with the format specified in RFC 3761 [24], or any other available database. Database aspects of ENUM are outside the scope of the present document. An S-CSCF that implements the additional routing functionality described in Annex I may forward the request without attempting translation. If this translation is in fact performed and it succeeds, the S-CSCF shall update the Request-URI with the globally routeable SIP URI returned by ENUM/DNS. If this translation fails, the request may be forwarded to a BGCF or any other appropriate entity (e.g a MRFC to play an announcement) in the originator's home network or the S-CSCF may send an appropriate SIP response to the originator. When forwarding the request to a BGCF or any other appropriate entity, the S-CSCF shall leave the original Request-URI containing the tel URI unmodified. If the request is forwarded, the S-CSCF shall remove the access-network-charging-info parameter from the P-Charging-Vector header prior to forwarding the message;
- a tel URI in non-international format (i.e. the local service number analysis and handling is either failed in the appropriate AS or the request has not been forwarded to AS for local service number analysis and handling at all), either forward the request to a BGCF or any other appropriate entity (e.g a MRFC to play an announcement) in the originator's home network or send an appropriate SIP response to the originator; and
- a pres URI or an im URI, the S-CSCF shall forward the request as specified in RFC 3861 [63]. In this case, the S-CSCF shall not modify the received Request-URI.

Additional procedures apply if the S-CSCF supports NP capabilities and these capabilities are enabled by local policy, and the database used for translation from an international public telecommunications number to a SIP URI also provides NP data (for example, based on the PSTN Enumservice as defined by RFC 4769 [114] or other appropriate data bases) . If the above translation from an international public telecommunications number to a SIP URI failed, but NP data was obtained from the database and there is no "npdi" parameter in the received request, then the S-CSCF shall, based on operator policy, update the URI in the Request-URI with the obtained NP data, prior to forwarding the request to the BGCF or other appropriate entity. If the received request already contains a tel-URI "npdi" parameter, then the S-CSCF may update the URI with the obtained NP data. The URI is updated by the S-CSCF by adding NP parameters defined by RFC 4694 [112]. If the Request-URI is a tel-URI, then an "npdi" tel-URI parameter is added to indicate that NP data retrieval has been performed, and if the number is ported, an "rn" tel-URI parameter is added to identify the ported-to routing number. If the Request-URI is in the form of a SIP URI user=phone, the "npdi" and "rn" tel-URI parameters are added as described above to the userinfo part of the SIP URI;

- 11) determine the destination address (e.g. DNS access) using the URI placed in the topmost Route header if present, otherwise based on the Request-URI. If the destination requires interconnect functionalities (e.g. the destination address is of an IP address type other than the IP address type used in the IM CN subsystem), the S-CSCF shall forward the request to the destination address via an IBCF in the same network;
- 12) if network hiding is needed due to local policy, put the address of the IBCF to the topmost route header;
- 13) in case of an initial request for a dialog:
 - a) determine the need for GRUU processing. GRUU processing is required if:
 - an original dialog identifier that the S-CSCF previously placed in a Route header is not present in the topmost Route header of the incoming request (this means the request is not returning after having been sent to an AS), and
 - the contact address contains a valid GRUU as specified in subclause 5.4.7A.4.
 - b) if GRUU processing is not required and the initial request originated from a served user, then determine the need to record-route for other reasons:
 - if the request is routed to an AS which is part of the trust domain, the S-CSCF can decide whether to record-route or not. The decision is configured in the S-CSCF using any information in the received request that may otherwise be used for the initial filter criteria. If the request is record-routed the S-CSCF shall create a Record-Route header containing its own SIP URI; or
 - if the request is routed elsewhere, create a Record-Route header containing its own SIP URI;

NOTE 8: For requests originated from a PSI the S-CSCF can decide whether to record-route or not based on operator policy.

- c) if GRUU processing is required, the S-CSCF shall create a Record-Route header containing its own SIP URI;
- d) if GRUU processing is required, the S-CSCF shall save an indication that GRUU-routing is to be performed for in-dialog requests that reach the S-CSCF because of the Record-route header added in step c);

NOTE 9: The manner of representing the GRUU-routing indication is a private matter for the S-CSCF. The indication is used during termination processing of in-dialog requests to cause the S-CSCF to replace a Request-URI containing a GRUU with the corresponding registered contact address. It can be saved using values in the Record-Route header, or in dialog state.

- 14) based on the destination user (Request-URI), remove the P-Access-Network-Info header and the access-network-charging-info parameter in the P-Charging-Vector header prior to forwarding the message;
- 15) route the request based on SIP routing procedures; and
- 16) if the request is an INVITE request, save the Contact, Cseq and Record-Route header field values received in the request such that the S-CSCF is able to release the session if needed.

When the S-CSCF receives, an initial request for a dialog or a request for a standalone transaction, from an AS acting on behalf of an unregistered user, the S-CSCF shall:

- 1) execute the procedures described in the steps 1, 2, 3, 4, 4A, 4B, 4C, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 in the above paragraph (when the S-CSCF receives, from a registered served user, an initial request for a dialog or a request for a standalone transaction).

NOTE 10: When the S-CSCF does not have the user profile, before executing the actions as listed above, it initiates the S-CSCF Registration/deregistration notification with the purpose of downloading the relevant user profile (i.e. for unregistered user) and informs the HSS that the user is unregistered. The S-CSCF will assess triggering of services for the unregistered user, as described in 3GPP TS 29.228 [14].

If the S-CSCF fails to receive a SIP response or receives a 408 (Request Timeout) response or a 5xx response from the AS, the S-CSCF shall:

- if the default handling defined in the filter criteria indicates the value "SESSION_CONTINUED" as specified in 3GPP TS 29.228 [14] or no default handling is indicated, execute the procedure from step 5; and
- if the default handling defined in the filter criteria indicates the value "SESSION_TERMINATED" as specified in 3GPP TS 29.228 [14], either forward the received response or, if the request is an initial INVITE request, send a 408 (Request Timeout) response or a 5xx response towards the served UE as appropriate (without verifying the matching of filter criteria of lower priority and without proceeding for further steps).

If the S-CSCF receives any final response from the AS, the S-CSCF shall forward the response towards the served UE (without verifying the matching of filter criteria of lower priority and without proceeding for further steps).

When the S-CSCF receives any response to the above request, the S-CSCF may:

- 1) apply any privacy required by RFC 3323 [33] and RFC 3325 [34] to the P-Asserted-Identity header.

NOTE 11: The P-Asserted-Identity header would normally only be expected in 1xx or 2xx responses.

NOTE 12: The optional procedure above is in addition to any procedure for the application of privacy at the edge of the trust domain specified by RFC 3325 [34].

When the S-CSCF receives any response to the above request containing a term-ioi parameter, the S-CSCF shall store the value of the received term-ioi parameter received in the P-Charging-Vector header, if present, and remove all received ioi parameters from the forwarded response if next hop is not an AS.

NOTE 13: Any received term-ioi parameter will be a type 2 term-ioi or type 3 term-ioi. The term-ioi parameter identifies the sending network of the response message.

When the S-CSCF receives any response to the above request, and forwards it to AS, the S-CSCF shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the request, and a type 3 term-ioi parameter in the response. The S-CSCF shall set the type 3 term-ioi parameter to a value that identifies the sending network of the response and the type 3 orig-ioi parameter is set to the previously received value of type 3 orig-ioi.

When the S-CSCF receives any 1xx or 2xx response to the initial request for a dialog, if the response corresponds to an INVITE request, the S-CSCF shall save the Contact and Record-Route header field values in the response in order to be able to release the session if needed.

When the S-CSCF, upon sending an initial INVITE request that includes an IP address in the SDP offer (in "c=" parameter), receives an error response indicating that the IP address type is not supported, (e.g., the S-CSCF receives the 488 (Not Acceptable Here) with 301 Warning header indicating "incompatible network address format"), the S-CSCF shall either:

- fork the initial INVITE request to the IBCF; or
- process the error response and forward it using the Via header.

When the S-CSCF receives from the served user a target refresh request for a dialog, prior to forwarding the request the S-CSCF shall:

- 0A) if the dialog is related to an IMS communication service determine whether the contents of the request (e.g. SDP media capabilities, Content-Type header field) match the IMS communication service as received as the ICSI value in the P-Asserted-Service header in the initial request. As an operator option, if the contents of the request do not match the IMS communication service the S-CSCF may reject the request by generating a status code reflecting which added contents are not matching. Otherwise, continue with the rest of the steps;
- 1) remove its own URI from the topmost Route header;
- 2) create a Record-Route header containing its own SIP URI;
- 3) for INVITE dialogs (i.e. dialogs initiated by an INVITE request), save the Contact and Cseq header field values received in the request such that the S-CSCF is able to release the session if needed;
- 4) in case the request is routed towards the destination user (Request-URI) or in case the request is routed to an AS located outside the trust domain, remove the access-network-charging-info parameter in the P-Charging-Vector header; and
- 5) route the request based on the topmost Route header.

When the S-CSCF receives any 1xx or 2xx response to the target refresh request for an INVITE dialog, the S-CSCF shall replace the saved Contact header field values in the response such that the S-CSCF is able to release the session if needed.

When the S-CSCF receives from the served user a subsequent request other than a target refresh request for a dialog, prior to forwarding the request the S-CSCF shall:

- 1) remove its own URI from the topmost Route header;
- 2) in case the request is routed towards the destination user (Request-URI) or in case the request is routed to an AS located outside the trust domain, remove the access-network-charging-info parameter in the P-Charging-Vector header; and
- 3) route the request based on the topmost Route header.

With the exception of 305 (Use Proxy) responses, the S-CSCF shall not recurse on 3xx responses.

5.4.3.3 Requests terminated at the served user

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the S-CSCF shall give priority over other transactions or dialogs. This allows special treatment such transactions or dialogs.

NOTE 1: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When the S-CSCF receives, destined for a statically pre-configured PSI or a registered served user, an initial request for a dialog or a request for a standalone transaction, prior to forwarding the request, the S-CSCF shall:

- 1) check if an original dialog identifier that the S-CSCF previously placed in a Route header is present in the topmost Route header of the incoming request.
 - If present, the request has been sent from an AS in response to a previously sent request.
 - If not present, it indicates that the request is visiting the S-CSCF for the first time and in this case the S-CSCF shall determine whether the request contains a barred public user identity in the Request-URI of the request or not. In case the Request-URI contains a barred public user identity for the user, then the S-CSCF shall reject the request by generating a 404 (Not Found) response. Otherwise, the S-CSCF shall save the Request-URI from the request and continue with the rest of the steps;
- 2) remove its own URI from the topmost Route header;
- 2A) if there was no original dialog identifier present in the topmost Route header of the incoming request build an ordered list of initial filter criteria based on the public user identity in the Request-URI of the received request as described in 3GPP TS 23.218 [5].

NOTE 2: When the S-CSCF does not have the user profile, before executing the actions as listed above, it initiates the S-CSCF Registration/deregistration notification with the purpose of downloading the relevant user profile (i.e. for unregistered user) and informs the HSS that the user is unregistered. The S-CSCF will assess triggering of services for the unregistered user, as described in 3GPP TS 29.228 [14].

- 3) if there was an original dialog identifier present in the topmost Route header of the incoming request then check whether the Request-URI matches the saved Request-URI. The Request-URI and saved Request-URI are considered a match if the Request-URI is equal to the saved value of the Request-URI, or if the Request-URI is a public GRUU and the saved value of the Request-URI is a temporary GRUU and both the public and temporary GRUUs represent the same public user identity and instance ID. If there is no match, then the S-CSCF shall:
 - a) if the request is an INVITE request, save the Contact, CSeq and Record-Route header field values received in the request such that the S-CSCF is able to release the session if needed; and

- b) forward the request based on the topmost Route header or if not available forward the request based on the Request-URI (routing based on Request-URI is specified in steps 7 and 10 through 14 from subclause 5.4.3.2) and skip the following steps.
- 3A) if the Request-URI is a GRUU, but is not valid as defined in subclause 5.4.7A.4, then return a 4xx response as specified in draft-ietf-sip-gruu [93];
- 3B) if the Request-URI contains a public GRUU and the saved value of the Request URI is a temporary GRUU, then replace the Request-URI with the saved value of the Request-URI;
- 3C) if the request contains a P-Asserted-Service header field check whether the IMS communication service identified by the ICSI value contained in the P-Asserted-Service header field is allowed by the subscribed services for the served user:
- a) if so, continue from step 4; and
- b) if not, as an operator option, the S-CSCF may reject the request by generating a 403 (Forbidden) response. Otherwise, remove the P-Asserted-Service header field and continue with the rest of the steps;
- 3D) if the request does not contain a P-Asserted-Service header field check if the contents of the request matches a subscribed service (e.g. SDP media capabilities, Content-Type header field) for each and any of the subscribed services for the served user:
- a) if not, as an operator option, the S-CSCF may reject the request by generating a 403 (Forbidden) response. Otherwise, continue with the rest of the steps; and
- b) if so, and if the request is related to an IMS communication service and the IMS communication service requires the use of an ICSI value then include a P-Asserted-Service header field in the request containing the ICSI value for the related IMS communication service, and use it as a header field in the initial request when matching initial filter criteria in step 4; and
- c) if so, and if the request is related to an IMS communication service and the IMS communication service does not require the use of an ICSI value then continue without including an ICSI value; and
- d) if so, and if the request does not relate to an IMS communication service (or if the S-CSCF is unable to unambiguously determine the service being requested but decides to allow the session to continue) then continue without including an ICSI value;
- 4) check whether the initial request matches any unexecuted initial filter criteria based on the public user identity identified by the Request-URI in the priority order and apply the filter criteria on the SIP method as described in 3GPP TS 23.218 [5] subclause 6.5. If there is a match, then the S-CSCF shall select the first matching unexecuted initial filter criteria and:
- if the Request-URI is a temporary GRUU as defined in section 5.4.7A.3, then replace the Request-URI with the public GRUU that is associated with the temporary GRUU (i.e. the public GRUU representing the same public user identity and instance ID as the temporary GRUU);
 - insert the AS URI to be contacted into the Route header as the topmost entry followed by its own URI populated as specified in the subclause 5.4.3.4; and
 - insert a type 3 orig-ioi parameter in the P-Charging-Vector header. The type 3 orig-ioi parameter identifies the sending network of the request message before the received orig-ioi. The S-CSCF shall not include the type 3 term-ioi parameter;

NOTE 3: Depending on the result of the previous process, the S-CSCF can contact one or more AS(s) before processing the outgoing Request-URI.

NOTE 4: If the Request-URI of the received terminating request contains a temporary GRUU, then step 4 replaces the Request-URI with the associated public GRUU before invoking the AS, and step 3B restores the original temporary GRUU when the request is returned from the AS.

NOTE 5: An AS can activate or deactivate its own filter criteria via the Sh interface. As the S-CSCF checks initial filter criteria only on receipt of an initial request for a dialog, or a standalone transaction, a modified service profile will have no impact on transactions or dialogs already in progress and the modified profile will be effective only for new transactions and dialogs. If the S-CSCF receives a modification of the iFC during their execution, then it should not update the stored initial Filter Criteria until the iFC related to the initial request have been completely executed.

- 5) if there was no original dialog identifier present in the topmost Route header of the incoming request insert a P-Charging-Function-Addresses header field, if not present, populated with values received from the HSS if the message is forwarded within the S-CSCF home network, including towards AS;
- 6) if there was no original dialog identifier present in the topmost Route header of the incoming request store the value of the icid parameter received in the P-Charging-Vector header and retain the icid parameter in the P-Charging-Vector header;
- 7) if there was no original dialog identifier present in the topmost Route header of the incoming request store the value of the orig-ioi parameter received in the P-Charging-Vector header, if present, and remove all received ioi parameters from the forwarded request if next hop is not an AS;

NOTE 6: Any received orig-ioi parameter will be a type 2 orig-ioi. or type 3 orig-ioi. The type 2 orig-ioi parameter identifies the sending network of the request message.

- 8) in the case there are no Route headers in the request, create a target set of potential routes from the the list of preloaded routes saved during registration or re-registration as described in subclause 5.4.1.2, as follows:
 - a) if the Request-URI is a valid GRUU as defined in subclause 5.4.7A.4, then the target set is determined by following the procedures for Request Targeting specified in draft-ietf-sip-gruu [93], using the public user identity and instance ID derived from the GRUU using the procedures of subclause 5.4.7A;
 - b) if the Request-URI is not a GRUU, then the target set is all the registered contacts saved for the destination public user identity;
- 9) if necessary perform the caller preferences to callee capabilities matching according to RFC 3841 [56B] to the target set;

NOTE 7: This might eliminate entries and reorder the target set.

- 10) in case there are no Route headers in the request:
 - a) if there is more than one route in the target set determined in steps 8) and 9) above:
 - if the fork directive in the Request Disposition header was set to "no-fork", use the contact with the highest qvalue parameter when building the Request-URI. In case no qvalue parameters were provided, the S-CSCF shall decide locally what contact address to be used when building the Request-URI; otherwise
 - fork the request or perform sequential search based on the relative preference indicated by the qvalue parameter of the Contact header in the original REGISTER request, as described in RFC 3261 [26]. In case no qvalue parameters were provided, then the S-CSCF determine the contact address to be used when building the Request-URI as directed by the Request Disposition header as described in RFC 3841 [56B]. If the Request-Disposition header is not present, the S-CSCF shall decide locally whether to fork or perform sequential search among the contact addresses;
 - in case that no route is chosen, return a 480 (Temporarily unavailable) response or another appropriate unsuccessful SIP response and terminate these procedures.
 - b) build a Request-URI with the contents of the Contact URI from the chosen route determined in the previous step;
 - c) insert a P-Called-Party-ID SIP header field containing the contents of the Request-URI received in the request unless the Request-URI contains a temporary GRUU in which case insert the public GRUU in the P-Called-Party-ID;
 - d) build the Route header field with the Path values from the chosen route; and

- e) save the Request-URI and the total number of Record-route headers as part of the dialog request state.

NOTE 8: For each initial dialog request terminated at a served user two pieces of state are maintained to assist in processing GRUUs: the chosen contact address to which the request is routed; and the position of an entry for the S-CSCF in the Record-Route header that will be responsible for GRUU translation, if needed (the position is the number of entries in the list before the entry was added). The entry will be added in step 5) of the below procedures for handling S-CSCF receipt any 1xx or 2xx response to the initial request for a dialog. The S-CSCF can record-route multiple times, but only one of those (the last) will be responsible for gruu translation at the terminating end.

- 11) if the request is an INVITE request, save the Contact, CSeq and Record-Route header field values received in the request such that the S-CSCF is able to release the session if needed;
- 12) optionally, apply any privacy required by RFC 3323 [33] and RFC 3325 [34] to the P-Asserted-Identity header and privacy required by RFC 4244 [66];

NOTE 9: The optional procedure above is in addition to any procedure for the application of privacy at the edge of the trust domain specified by RFC 3325 [34].

- 13) in case of an initial request for a dialog, either:
 - if the request is routed to an AS which is part of the trust domain, the S-CSCF can decide whether to record-route or not. The decision is configured in the S-CSCF using any information in the received request that may otherwise be used for the initial filter criteria. If the request is record-routed the S-CSCF shall create a Record-Route header containing its own SIP URI; or
 - if the request is routed elsewhere, create a Record-Route header containing its own SIP URI;

13A) if the request is routed to the P-CSCF remove the P-User-Database header if present; and

- 14) forward the request based on the topmost Route header.

If the S-CSCF fails to receive a SIP response or receives a 408 (Request Timeout) response or a 5xx response from the AS, the S-CSCF shall:

- if the default handling defined in the filter criteria indicates the value "SESSION_CONTINUED" as specified in 3GPP TS 29.228 [14] or no default handling is indicated, execute the procedure from step 4; and
- if the default handling defined in the filter criteria indicates the value "SESSION_TERMINATED" as specified in 3GPP TS 29.228 [14], either forward the received response or, if the request is an initial INVITE request, send a 408 (Request Timeout) response or a 5xx response towards the originating UE as appropriate (without verifying the matching of filter criteria of lower priority and without proceeding for further steps).

If the S-CSCF receives any final response from the AS, the S-CSCF shall forward the response towards the originating UE (without verifying the matching of filter criteria of lower priority and without proceeding for further steps).

When the S-CSCF receives any response to the above request and forwards it to AS, the S-CSCF shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the request, and a type 3 term-ioi parameter in the response. The S-CSCF shall set the type 3 term-ioi parameter to a value that identifies the sending network of the response and the orig-ioi parameter is set to the previously received value of orig-ioi.

NOTE 10: Any received term-ioi parameter will be a type 3 term-ioi. The term-ioi parameter identifies the service provider from which the response was sent.

When the S-CSCF receives, destined for an unregistered user, an initial request for a dialog or a request for a standalone transaction, the S-CSCF shall:

- 1) Void.
- 2) execute the procedures described in 1, 2, 3, 3C, 3D, 4, 5, 6, 7, 11, 13 and 14 in the above paragraph (when the S-CSCF receives, destined for the registered served user, an initial request for a dialog or a request for a standalone transaction).
- 3) In case that no more AS needs to be contacted, then S-CSCF shall return an appropriate unsuccessful SIP response. This response may be a 480 (Temporarily unavailable) and terminate these procedures.

NOTE 11: When the S-CSCF does not have the user profile, before executing the actions as listed above, it initiates the S-CSCF Registration/deregistration notification with the purpose of downloading the relevant user profile (i.e. for unregistered user) and informs the HSS that the user is unregistered. The S-CSCF will assess triggering of services for the unregistered user, as described in 3GPP TS 29.228 [14]. When requesting the user profile the S-CSCF can include the information in the P-Profile-Key header in S-CSCF Registration/deregistration notification.

Prior to performing S-CSCF Registration/Deregistration procedure with the HSS, the S-CSCF decides which HSS to query, possibly as a result of a query to the Subscription Locator Functional (SLF) entity as specified in 3GPP TS 29.228 [14] or use the value as received in the P-User-Database header in the initial request for a dialog or a request for a standalone transaction as defined in RFC 4457 [82]. The HSS address received in the response to SLF query can be used to address the HSS of the public user identity with further queries.

When the S-CSCF receives any 1xx or 2xx response to the initial request for a dialog (whether the user is registered or not), the S-CSCF shall:

- 1) if the response corresponds to an INVITE request, save the Contact and Record-Route header field values in the response such that the S-CSCF is able to release the session if needed;
- 2) if the response is not forwarded to an AS (i.e. the response is related to a request that was matched to the first executed initial filter criteria), insert a type 2 term-ioi parameter in the P-Charging-Vector header of the outgoing response. The type 2 term-ioi is set to a value that identifies the sending network of the response and the orig-ioi parameter is set to the previously received value of orig-ioi. Values of orig-ioi and term-ioi in the received response are removed;
- 3) in the case where the S-CSCF has knowledge that the SIP URI contained in the received P-Asserted-Identity header is an alias SIP URI for a tel URI, the S-CSCF shall add a second P-Asserted-Identity header containing this tel URI, including the display name associated with the tel URI, if available. If the P-Asserted-Identity header contains only a tel URI, the S-CSCF shall add a second P-Asserted-Identity header containing a SIP URI. The added SIP URI shall contain in the user part a "+" followed by the international public telecommunication number contained in tel URI, and user's home domain name in the hostport part. The added SIP URI shall contain the same value in the display name as contained in the tel URI. The S-CSCF shall also add a user parameter equals "phone" to the SIP URI;
- 4) in case the response is sent towards the originating user, the S-CSCF may retain the P-Access-Network-Info header based on local policy rules and the destination user (Request-URI); and
- 5) save an indication that GRUU routing is to be performed for subsequent requests sent within this same dialog if:
 - a) there is a record-route position saved as part of the initial dialog request state; and
 - b) the contact address in the response is a valid GRUU as specified in subclause 5.4.7A.4.

NOTE 12: There could be several responses returned for a single request, and the decision to insert or modify the Record-Route needs to be applied to each. But a response might also return to the S-CSCF multiple times as it is routed back through AS. The S-CSCF will take this into account when carrying out step 5) to ensure that the information is stored only once.

When the S-CSCF receives a response to a request for a standalone transaction (whether the user is registered or not), in the case where the S-CSCF has knowledge that the SIP URI contained in the received P-Asserted-Identity header is an alias SIP URI for a tel URI, the S-CSCF shall add a second P-Asserted-Identity header containing this tel URI, including the display name associated with the tel URI, if available. If the P-Asserted-Identity header contains only a tel URI, the S-CSCF shall add a second P-Asserted-Identity header containing a SIP URI. The added SIP URI shall contain in the user part a "+" followed by the international public telecommunication number contained in tel URI, and user's home domain name in the hostport part. The added SIP URI shall contain the same value in the display name as contained in the tel URI. The S-CSCF shall also add a user parameter equals "phone" to the SIP URI. In case the response is forwarded to an AS that is located within the trust domain, the S-CSCF shall retain the access-network-charging-info parameter in the P-Charging-Vector header; otherwise, the S-CSCF shall remove the access-network-charging-info parameter in the P-Charging-Vector header.

When the S-CSCF receives the 200 (OK) response for a standalone transaction request, the S-CSCF shall:

- 1) insert a P-Charging-Function-Addresses header populated with values received from the HSS if the message is forwarded within the S-CSCF home network, including towards an AS; and
- 2) if the response is not forwarded to an AS (i.e. the response is related to a request that was matched to the first executed initial filter criteria), insert a type 2 term-ioi parameter in the P-Charging-Vector header of the outgoing response. The type 2 term-ioi is set to a value that identifies the sending network of the response and the type 2 orig-ioi parameter is set to the previously received value of orig-ioi.

NOTE 13: If the S-CSCF forked the request of a stand alone transaction to multiple UEs and receives multiple 200 (OK) responses, the S-CSCF will select and return only one 200 (OK) response. The criteria that the S-CSCF employs when selecting the 200 (OK) response is based on the operator's policy (e.g. return the first 200 (OK) response that was received).

When the S-CSCF receives, destined for a served user, a target refresh request for a dialog, prior to forwarding the request, the S-CSCF shall:

- 0) if the dialog is related to an IMS communication service determine whether the contents of the request (e.g. SDP media capabilities, Content-Type header field) match the IMS communication service as received as the ICSI value in the P-Asserted-Service header in the initial request. As an operator option, if the contents of the request do not match the IMS communication service the S-CSCF may reject the request by generating a status code reflecting which added contents are not matching. Otherwise, continue with the rest of the steps;
- 1) if the incoming request is received on a dialog for which GRUU routing is to be performed and the Request-URI is not the GRUU for this dialog, then return a response of 400 (Bad Request).
- 2) if the incoming request is received on a dialog for which GRUU routing is to be performed and the Request-URI contains the GRUU for this dialog then the S-CSCF shall:
 - perform the procedures for Request Targeting specified in draft-ietf-sip-gruu [93], using the public user identity and instance ID derived from the Request-URI, as specified in subclause 5.4.7A;
 - if no contact can be selected, return a response of 480 (Temporarily Unavailable).
- 3) remove its own URI from the topmost Route header;
- 4) for INVITE dialogs (i.e. dialogs initiated by an INVITE request), save the Contact and Cseq header field values received in the request such that the S-CSCF is able to release the session if needed;
- 5) create a Record-Route header containing its own SIP URI; and
- 6) forward the request based on the topmost Route header.

When the S-CSCF receives any 1xx or 2xx response to the target refresh request for a dialog (whether the user is registered or not), the S-CSCF shall:

- 1) for INVITE dialogs, replace the saved Contact header field values in the response such that the S-CSCF is able to release the session if needed; and
- 2) in case the response is forwarded to an AS that is located within the trust domain, the S-CSCF shall retain the access-network-charging-info parameter in the P-Charging-Vector header; otherwise, the S-CSCF shall remove the access-network-charging-info parameter in the P-Charging-Vector header.

When the S-CSCF receives, destined for the served user, a subsequent request other than target refresh request for a dialog, prior to forwarding the request, the S-CSCF shall:

- 1) if the incoming request is received on a dialog for which GRUU routing is to be performed and the Request-URI is not the GRUU for this dialog, then return a response of 400 (Bad Request).
- 2) if the incoming request is received on a dialog for which GRUU routing is to be performed and the Request-URI contains the GRUU for this dialog then the S-CSCF shall:
 - perform the procedures for Request Targeting specified in draft-ietf-sip-gruu [93], using the public user identity and instance ID derived from the Request-URI, as specified in subclause 5.4.7A;
 - if no contact can be selected, return a response of 480 (Temporarily Unavailable).

- 3) remove its own URI from the topmost Route header; and
- 4) forward the request based on the topmost Route header.

When the S-CSCF receives a response to a subsequent request other than target refresh request for a dialog, in case the response is forwarded to an AS that is located within the trust domain, the S-CSCF shall retain the access-network-charging-info parameter from the P-Charging-Vector header; otherwise, the S-CSCF shall remove the access-network-charging-info parameter from the P-Charging-Vector header.

With the exception of 305 (Use Proxy) responses, the S-CSCF shall not recurse on 3xx responses.

5.4.3.4 Original dialog identifier

The original dialog identifier is an implementation specific token that the S-CSCF encodes into the own S-CSCF URI in a Route header, prior to forwarding the request to an AS. This is possible because the S-CSCF is the only entity that creates and consumes the value.

The token may identify the original dialog of the request, so in case an AS acting as a B2BUA changes the dialog, the S-CSCF is able to identify the original dialog when the request returns to the S-CSCF. In a case of a standalone transaction, the token indicates that the request has been sent to the S-CSCF from an AS in response to a previously sent request. The token can be encoded in different ways, such as e.g., a character string in the user-part of the S-CSCF URI, a parameter in the S-CSCF URI or port number in the S-CSCF URI.

The S-CSCF shall ensure that the value chosen is unique so that the S-CSCF may recognize the value when received in a subsequent message of one or more dialogs and make the proper association between related dialogs that pass through an AS.

5.4.3.5 Void

5.4.3.6 SIP digest authentication procedures for all SIP request methods initiated by the UE excluding REGISTER

5.4.3.6.1 General

When the S-CSCF receives from the UE a request (excluding REGISTER), and SIP digest or SIP digest with TLS is supported and in use for this UE, the S-CSCF may perform the following steps if authentication of SIP request methods initiated by the UE excluding REGISTER is desired:

- 1) The S-CSCF shall identify the user by the public user identity as received in the P-Asserted-Identity header;
- 2) If the public user identity does not match one of the registered public user identities, and the public user identity does not match one of the registered wildcarded public user identities, the S-CSCF may reject the request with a 400 (Bad Request) response or silently discard the request;
- 3) If the request does not contain a Proxy-Authorization header or the Proxy-Authorization header does not contain a digest response, the S-CSCF shall:
 - a) challenge the user by generating a 407 (Proxy Authentication Required) response for the received request, including a Proxy-Authenticate header as defined in RFC 2617 [21], which includes:
 - a protection domain in the realm field;
 - a domain field;
 - a nonce field generated by the S-CSCF;
 - an algorithm field; if the algorithm value is not provided in the authentication vector, it shall have the value "MD5"; and
 - a qop field; if the qop value is not provided in the authentication vector, it shall have the value "auth".
 - b) send the so generated 407 (Proxy Authentication Required) response towards the UE; and,

- c) retain the nonce and initialize the corresponding nonce count to a value of 1.
- 4) If the request contains a Proxy-Authorization header, the S-CSCF shall:
- a) check whether the Proxy-Authorization header contains:
- the private user identity of the user in the username field;
 - an algorithm field which matches the algorithm field in the authentication challenge (i.e. MD5);
 - a response field with the authentication challenge response;
 - a realm field matching the realm field in the authentication challenge;
 - nonce field matching the expected nonce from either a recent authentication challenge or a more recent nextnonce sent in an Authentication-Info header;
 - a digest-uri matching the SIP Request URI;
 - a cnonce field; and
 - a nonce-count field with a value that equals the nonce-count expected by the S-CSCF. The S-CSCF may choose to accept a nonce-count which is greater than the expected nonce-count only if the S-CSCF uses this nonce-count once authentication is successful (and increments it for any subsequent authentication responses).

If any of the above checks do not succeed, the S-CSCF shall proceed as described in subclause 5.4.3.6.2, and skip the remainder of this procedure.

- b) check whether the received authentication challenge response and the expected authentication challenge response match. The S-CSCF shall compute the expected digest response as described in RFC 2617 [21] using the H(A1) value contained within the authentication vector, and other digest parameters (i.e. nonce, cnonce, nonce-count, qop).

In the case where the digest response does not match the expected digest response calculated by the S-CSCF, the S-CSCF shall consider the authentication attempt as failed and do one of the following:

- 1) rechallenge the user by issuing a 407 (Proxy Authentication Required) response including a challenge as per procedures described in this subclause; or
- 2) reject the request by issuing a 403 (Forbidden) response; or
- 3) reject the request without sending a response.

In the case the digest response matches the expected digest response calculated by the S-CSCF, the S-CSCF shall include a corresponding Proxy-Authentication-Info header in any 2xx response which is associated with this request (i.e. within same SIP dialog or transaction). The Proxy-Authentication-Info header shall contain the following fields described in RFC 2617 [21]:

- a nextnonce field if the S-CSCF requires a new nonce for subsequent authentication responses from the UE;
- a message-qop field matching the qop in the Proxy-Authorization header sent by the UE;
- a response-auth field with a response-digest calculated as described in RFC 2617 [21];
- a cnonce field matching the cnonce in the last Authorization header sent by the UE; and
- a nonce-count field matching the nonce-count in the Authorization header sent by the UE.

In the case the digest response matches the expected digest response calculated by the S-CSCF, the S-CSCF shall consider the identity of the user verified and the request authenticated.

Editor's Note: The Proxy-Authentication-Info header is not currently defined in RFC 3261 [26]. The progress of this issue in the IETF will need to be evaluated and a decision made on whether to include this feature in Release 8 of this specification.

In the case where the digest response matches the expected digest response calculated by the S-CSCF, the S-CSCF shall consider the identity of the user verified and the request authenticated and continue with the procedures as described in subclause 5.4.3.

5.4.3.6.2 Abnormal cases

In the case that SIP digest is used and the request from the UE contains an invalid nonce with a valid challenge response for that nonce (indicating that the client knows the correct username/password), or when the nonce-count value sent by the UE is not the expected value, or when the Proxy-Authentication header does not include the correct parameters, the S-CSCF shall:

- send a 407 (Proxy Authentication Required) response to initiate a further authentication attempt with a fresh nonce and the stale parameter set to true.

5.4.4 Call initiation

5.4.4.1 Initial INVITE

When the S-CSCF receives an INVITE request, either from the served user or destined to the served user, the S-CSCF may require the periodic refreshment of the session to avoid hung states in the S-CSCF. If the S-CSCF requires the session to be refreshed, the S-CSCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 1: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

When the S-CSCF receives an initial INVITE request destined for the served user, the S-CSCF shall either:

- a) examine the SDP offer (the "c=" parameter) to detect if it contains an IP address type that is not supported by the IM CN subsystem; or
- b) process the initial INVITE request without examining the SDP.

NOTE 2: If the SDP offer contained an IP address type that is not supported by the IM CN subsystem, the S-CSCF will receive the 488 (Not Acceptable Here) response with 301 Warning header indicating "incompatible network address format".

Subsequently, when the S-CSCF detects that the SDP offer contained an IP address type that is not supported by the IM CN subsystem (i.e., either case a) or b)), the S-CSCF shall either:

- return a 305 (Use Proxy) response to the I-CSCF with the Contact field containing the SIP URI of the IBCF, or
- forward the initial INVITE request to the IBCF. When forwarding the initial INVITE request, the S-CSCF shall not insert its SIP URI into the Record-Route header.

5.4.4.2 Subsequent requests

5.4.4.2.1 UE-originating case

When the S-CSCF receives any 1xx or 2xx response, the S-CSCF shall insert a P-Charging-Function-Addresses header populated with values received from the HSS if the message is forwarded within the S-CSCF home network, including towards AS.

When the S-CSCF receives the request containing the access-network-charging-info parameter in the P-Charging-Vector, the S-CSCF shall store the access-network-charging-info parameter from the P-Charging-Vector header. The S-CSCF shall retain access-network-charging-info parameter in the P-Charging-Vector header when the request is forwarded to an AS. However, the S-CSCF shall not include the access-network-charging-info parameter in the P-Charging-Vector header when the request is forwarded outside the home network of the S-CSCF.

When the S-CSCF receives any request or response (excluding ACK requests and CANCEL requests and responses) related to a UE-originated dialog or standalone transaction, the S-CSCF may insert previously saved values into P-Charging-Vector and P-Charging-Function-Addresses headers before forwarding the message within the S-CSCF home network, including towards AS.

5.4.4.2.2 UE-terminating case

When the S-CSCF receives the any 1xx or 2xx response, the S-CSCF shall insert a P-Charging-Function-Addresses header populated with values received from the HSS if the message is forwarded within the S-CSCF home network, including towards AS.

When the S-CSCF receives 180 (Ringing) or 200 (OK) (to INVITE) responses containing the access-network-charging-info parameter in the P-Charging-Vector, the S-CSCF shall store the access-network-charging-info parameter from the P-Charging-Vector header. The S-CSCF shall retain the access-network-charging-info parameter in the P-Charging-Vector header when the response is forwarded to an AS. However, the S-CSCF shall not include the access-network-charging-info parameter in the P-Charging-Vector header when the response is forwarded outside the home network of the S-CSCF.

When the S-CSCF receives any request or response (excluding ACK requests and CANCEL requests and responses) related to a UE-terminated dialog or standalone transaction, the S-CSCF may insert previously saved values into P-Charging-Vector and P-Charging-Function-Addresses headers before forwarding the message within the S-CSCF home network, including towards AS.

5.4.5 Call release

5.4.5.1 S-CSCF-initiated session release

5.4.5.1.1 Cancellation of a session currently being established

Upon receipt of a network internal indication to release a session which is currently being established, the S-CSCF shall cancel the related dialogs by sending the CANCEL request according to the procedures described in RFC 3261 [26].

5.4.5.1.2 Release of an existing session

Upon receipt of a network internal indication to release an existing multimedia session, the S-CSCF shall:

- 1) generate the first BYE request for the called user based on the information saved for the related dialog, including:
 - a Request-URI, set to the stored Contact header provided by the called user;
 - a To header, set to the To header value as received in the 200 OK response for the initial INVITE request;
 - a From header, set to the From header value as received in the initial INVITE request;
 - a Call-ID header, set to the Call-Id header value as received in the initial INVITE request;
 - a CSeq header, set to the CSeq value that was stored for the direction from the calling to the called user, incremented by one;
 - a Route header, set to the routing information towards the called user as stored for the dialog;
 - a Reason header that contains proper SIP response code;
 - further headers, based on local policy.
- 2) generate the second BYE request for the calling user based on the information saved for the related dialog, including:
 - a Request-URI, set to the stored Contact header provided by the calling user;
 - a To header, set to the From header value as received in the initial INVITE request;
 - a From header, set to the To header value as received in the 200 OK response for the initial INVITE request;
 - a Call-ID header, set to the Call-Id header value as received in the initial INVITE request;

- a CSeq header, set to the CSeq value that was stored for the direction from the called to the calling user, incremented by one – if no CSeq value was stored for that session the S-CSCF shall generate and apply a random number within the valid range for CSeqs;
 - a Route header, set to the routing information towards the calling user as stored for the dialog;
 - a Reason header that contains proper SIP response code;
 - further headers, based on local policy.
- 3) if the S-CSCF serves the calling user, treat the first BYE request as if received directly from the calling user, i.e. send it to internal service control and based on the outcome further on towards the called user;
 - 4) if the S-CSCF serves the calling user, send the second BYE request directly to the calling user.
 - 5) if the S-CSCF serves the called user, send the first BYE request directly to the called user;
 - 6) if the S-CSCF serves the called user, treat the second BYE request as if received directly from the called user, i.e. shall send it to internal service control and based on the outcome further on towards to the calling user.

Upon receipt of the 2xx responses for both BYE requests, the S-CSCF shall release all information related to the dialog and the related multimedia session.

5.4.5.1.2A Release of the existing dialogs due to registration expiration

When the registration lifetime of the only public user identity currently registered with its associated set of implicitly registered public user identities (i.e. no other is registered) expires while there are still active multimedia sessions that includes this user, where the session was initiated with the public user identity currently registered or with one of the implicitly registered public user identities, the S-CSCF shall release each of these multimedia sessions by applying the steps listed in the subclause 5.4.5.1.2. Only dialogs associated to the multimedia sessions originated or terminated towards the registered user shall be released.

5.4.5.1.3 Abnormal cases

Upon receipt of a request on a dialog for which the S-CSCF initiated session release, the S-CSCF shall terminate the received request and answer it with a 481 (Call/Transaction Does Not Exist) response.

5.4.5.2 Session release initiated by any other entity

Upon receipt of a 2xx response for a BYE request matching an existing dialog, the S-CSCF shall delete all the stored information related to the dialog.

5.4.5.3 Session expiration

If the S-CSCF requested the session to be refreshed periodically, and the S-CSCF got the indication that the session will be refreshed, when the session timer expires, the S-CSCF shall delete all the stored information related to the dialog.

5.4.6 Call-related requests

5.4.6.1 ReINVITE

5.4.6.1.1 Determination of served user

Void.

5.4.6.1.2 UE-originating case

For a reINVITE request or UPDATE request from the UE within the same dialog, the S-CSCF shall store the updated access-network-charging-info parameter from P-Charging-Vector header in the received SIP request. The S-CSCF shall retain the access-network-charging-info parameter in the P-Charging-Vector header when the request is forwarded to an

AS. However, the S-CSCF shall not include the access-network-charging-info parameter in the P-Charging-Vector header when the request is forwarded outside the home network of the S-CSCF.

For a reINVITE request from the UE, if the request is to be forwarded to an AS that is located within the trust domain, the S-CSCF shall retain the access-network-charging-info parameter from the P-Charging-Vector header; otherwise, the S-CSCF shall remove the access-network-charging-info parameter from the P-Charging-Vector header.

5.4.6.1.3 UE-terminating case

For a reINVITE request or UPDATE request destined towards the UE within the same dialog, when the S-CSCF receives the 200 (OK) response (to the INVITE request or UPDATE request), the S-CSCF shall store the updated access-network-charging-info parameter from the P-Charging-Vector header. The S-CSCF shall retain the access-network-charging-info parameter in the P-Charging-Vector header when the response is forwarded to the AS. However, the S-CSCF shall not include the access-network-charging-info parameter in the P-Charging-Vector header when the 200 (OK) response is forwarded outside the home network of the S-CSCF.

For any SIP response to an INVITE request, if the response is to be forwarded to an AS that is located within the trust domain, the S-CSCF shall retain the access-network-charging-info parameter from the P-Charging-Vector header; otherwise, the S-CSCF shall remove the access-network-charging-info parameter from the P-Charging-Vector header.

5.4.7 Void

5.4.7A GRUU management

5.4.7A.1 Overview of GRUU operation

The S-CSCF provides a service of assigning and translating GRUUs for use by registered UEs. This is conducted as specified in draft-ietf-sip-gruu [93] and draft-ietf-sipping-gruu-reg-event [94]. Two kinds of GRUUs are assigned: public GRUUs and temporary GRUUs.

Each assigned GRUU represents an association between a public user identity and an instance ID provided by a registering UE. It is used to address a particular UE that possesses the instance ID and registers with the public user identity. The GRUU also denotes a contact address registered with a public user identity when the contact address has a "+sip.instance" header parameter containing the the GRUU instance ID.

The S-CSCF issues GRUUs as part of the registration process, and also reports GRUUs as part of notifications for subscriptions to the "reg" event package. The S-CSCF always issues GRUUs in pairs – a public GRUU and a temporary GRUU. In case of implicit registration the S-CSCF assigns a unique public GRUU and a unique temporary GRUU for each public user identity.

5.4.7A.2 Representation of public GRUUs

Each public GRUU shall conform to all requirements specified in draft-ietf-sip-gruu [93].

The S-CSCF constructs a public GRUU by adding a "gr" URI parameter to a public user identity. The "gr" parameter serves as an indicator that the URI is in fact a GRUU and carries a value that encodes the instance ID.

By default, the value of the "gr" parameter is a copy of the value of the "sip.instance" header parameter from a Contact address registered with the S-CSCF, with escaping of special characters as specified in RFC3261 [26]. A different representation of the instance ID may be specified for specific forms of instance ID.

Editor's Note: The specification of such additional specific representations of the instance ID is FFS.

The public GRUU for a particular association of public user identity and instance ID is persistent. The same public GRUU will be returned each time a registration is performed with a particular pair of public user identity and instance ID.

5.4.7A.3 Representation of temporary GRUUs

Each temporary GRUU shall conform to all requirements specified in draft-ietf-sip-gruu [93].

Because of the limited lifetime of an temporary GRUU, only the S-CSCF that created a temporary GRUU is required to understand how to translate that GRUU to the corresponding public user identity and instance ID.

The specific representation of a temporary GRUU may be decided by each S-CSCF implementation. Temporary GRUUs must route to the assigning S-CSCF without requiring each assigned GRUU to be stored in the HSS.

The S-CSCF may choose a representation of temporary GRUUs that requires no extra state to be retained, such as that specified in draft-ietf-sip-gruu [93]. Alternatively, the S-CSCF may choose a stateful representation. This is an implementation choice.

NOTE: One possible implementation is for the S-CSCF to have a statically configured wildcard PSI that routes to it, with each temporary GRUU being encoded so that it matches the wildcard.

5.4.7A.4 GRUU recognition and validity

The S-CSCF shall be able to recognize those GRUUs it has assigned, verify their validity, and extract the associated public user identity and instance ID. This is true for both public GRUUs and temporary GRUUs.

GRUUs are distinguished from other URIs by the presence of a "gr" URI parameter. Public GRUUs are distinguished from temporary GRUUs by the presence of a value for the "gr" URI parameter.

The instance ID is derived from a public GRUU by decoding the value of the "gr" parameter in conformance with the encoding rules specified in sub-clause 5.4.7A.2. The public user identity is extracted from a public GRUU by removing the "gr" URI parameter.

The S-CSCF can recognize a public GRUU as valid if the derived instance ID is a syntactically correct URN, and the derived public user identity compares equal, according to the comparison rules of RFC3261 [26], to a public user identity active within the S-CSCF.

The public user identity and instance ID are derived from a temporary GRUU via implementation specific means consistent with the way temporary GRUUs are constructed. The validity of a temporary GRUU shall be determined in conformance with draft-ietf-sip-gruu [93], and is determined using implementation specific means.

5.4.8 Emergency service

5.4.8.1 General

S-CSCF shall handle the emergency registration as per the needs of the normal registration.

5.4.8.2 Initial emergency registration or user-initiated emergency reregistration

When the S-CSCF receives a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no" and the To header includes an emergency public user identity the S-CSCF shall perform the actions as specified in subclause 5.4.1.2.1 with the following additions:

- if the emergency user identity is linked to a private user identity that has a registered emergency public user identity but with a new contact address, and the authentication has been successful and if the previous emergency registration has not expired, the S-CSCF shall delete the previous contact information. Contacts related to non-emergency registration shall not be deregistered.

Editor's note: A change is needed to the above text to cover the additional parameters used by SIP digest with and without TLS and for NASS-IMS bundled authentication.

When the S-CSCF receives a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "yes", the S-CSCF shall identify the user by the emergency public user identity as received in the To header and the private user identity as received in the Authorization header of the REGISTER request the S-CSCF shall perform the actions as specified in subclause 5.4.1.2.2 with the following additions:

- the S-CSCF shall not include a Service-Route in the 200 (OK) to the REGISTER request;
- the S-CSCF shall not include a temporary GRUU in the 200 (OK) to the REGISTER request;

- store the Path header and the contact information including all header parameters contained in the Contact header. The S-CSCF shall use the Path header and the contact information obtained during the emergency registration to build a preloaded Route header values for the emergency dialogs destined for the UE;

NOTE 1: The Path header and contact information used for the emergency dialogs destined for the UE and obtained during the emergency registration can be different than the Path header used for the non-emergency communication and obtained during the non-emergency registration.

NOTE 2: If the previous emergency registration with different contact information or emergency Path header has not expired, the S-CSCF will not perform the network initiated deregistration procedure for the previous emergency registration, but will let it expire.

- the S-CSCF shall not send any third-party REGISTER requests to any AS; and
- determine the duration of the registration by checking the value of the Expires header in the received REGISTER request and based on local policy.

NOTE 3: The value of the emergency registration time is subject to national regulation and can be subject to roaming agreements.

5.4.8.3 User-initiated emergency deregistration

When S-CSCF receives a REGISTER request with the Expires header field containing the value zero and the To header includes an emergency public user identity as specified in 3GPP TS 23.003 [3], the S-CSCF shall reject the REGISTER request by sending a 501 (Not Implemented) response.

NOTE: The UE cannot deregister its emergency public user identity.

5.4.8.4 Network-initiated emergency deregistration

The S-CSCF shall not perform a network-initiated emergency deregistration for an emergency public user identity.

5.4.8.5 Network-initiated emergency reauthentication

The S-CSCF shall not reauthenticate an emergency public user identity.

5.4.8.6 Subscription to the event providing registration state

If a S-CSCF receives a SUBSCRIBE request addressed to S-CSCF containing the Event header with the reg event package with a emergency public user identity in the To header, the S-CSCF shall reject the SUBSCRIBE request for the reg-event package by sending a 489 (Bad Event) response.

5.4.8.7 Notification of the registration state

The S-CSCF shall not send a NOTIFY request addressed to an emergency public user identity regarding its subscription state.

When the user performs an emergency registration or when the emergency registration expires, the S-CSCF shall not send a NOTIFY request to the subscribers to the reg event package of the respective user.

The emergency public user identities shall not be included in the NOTIFY requests sent to the subscribers to the reg event package of the user.

5.5 Procedures at the MGCF

5.5.1 General

The MGCF, although acting as a UA, does not initiate any registration of its associated addresses. These are assumed to be known by peer-to-peer arrangements within the IM CN subsystem. Therefore table A.4/1 and dependencies on that major capability shall not apply.

The use of the Path and Service-Route headers shall not be supported by the MGCF.

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the MGCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When the MGCF sends any request or response related to a dialog, the MGCF may insert previously saved values into P-Charging-Vector and P-Charging-Function-Addresses headers before sending the message.

The MGCF shall use a GRUU referring to itself (as specified in draft-ietf-sip-gruu [93]) when inserting a contact address in a dialog establishing or target refreshing SIP message. This specification does not define how GRUUs are created by the MGCF; they can be provisioned by the operator or obtained by any other mechanism. A GRUU used by the MGCF when establishing a dialog shall remain valid for the lifetime of the dialog.

The MGCF shall handle requests addressed to its currently valid GRUUs when received outside of the dialog in which the GRUU was provided.

EXAMPLE: Upon receipt of an INVITE request addressed to a GRUU assigned to a dialog it has active, and containing a Replaces header referencing that dialog, the MGCF will be able to establish the new call replacing the old one.

The MGCF may support retrieval of NP data, subject to local policy. The interface used at the MGCF to retrieve the NP data is out of scope of this specification. Retrieval of NP data is relevant only if the Request-URI contains an international public telecommunications number. For requests from the IM CN subsystem network, if the Request-URI contains a tel-URI with an "npdi" tel-URI parameter, as defined in RFC 4694 [112], NP data has been obtained previously and NP data retrieval is not needed, but still may still be performed if required by local policy. If NP data is retrieved by the MGCF, and the request is routed to the IM CN subsystem, the MGCF shall add the tel-URI NP parameters to the Request-URI as defined in RFC 4694 [112]: an "npdi" tel-URI parameter is added to indicate that NP data retrieval has been performed, and if the number is ported, an "rn" tel-URI parameter is added to identify the ported-to routing number.

The MGCF NP procedures also apply when the request contains a Request-URI in the form of a SIP URI user=phone, where the "npdi" and "rn" tel-URI parameters are contained in the userinfo part of the SIP URI.

The MGCF supports as a network option the inclusion of the XML MIME schema for PSTN. In cases where the XML MIME for PSTN is included the Content-Type header is set to "application/vnd.etsi.pstn+xml" and the Content-Disposition to "signal" with the "handling" parameter set to "optional".

5.5.2 Subscription and notification

Void.

5.5.3 Call initiation

5.5.3.1 Initial INVITE

5.5.3.1.1 Calls originated from circuit-switched networks

When the MGCF receives an indication of an incoming call from a circuit-switched network, the MGCF shall:

- 1) generate an INVITE request:
 - set the Request-URI to the "tel" format using an E.164 address or to the "sip" format using an E164 address in the user portion and set user=phone;

NOTE 1: Details how to set the host portion are out of scope of the document. However, when a SIP URI is used the host portion needs to be part of the domain name space owned by the I-CSCF

- set the Supported header to "100rel" (see RFC 3312 [30] as updated by RFC 4032 [64]);
- include an P-Asserted-Identity header, including the display name if available, depending on corresponding information in the circuit-switched network;
- create a new, globally unique value for the icid parameter and insert it into the P-Charging-Vector header; and
- insert a type 2 orig-ioi parameter into the P-Charging-Vector header. The MGCF shall set the type 2 orig-ioi parameter to a value that identifies the sending network in which the MGCF resides and the type 2 term-ioi parameter shall not be included.

When the MGCF receives a 1xx or 2xx response to an initial request for a dialog, the MGCF shall store the value of the received term-ioi parameter received in the P-Charging-Vector header, if present.

NOTE 2: Any received term-ioi parameter will be a type 2 term-ioi. The type 2 term-ioi parameter identifies the sending network of the response message.

Based upon local policy, the MGCF may support preferred circuit carrier access (RFC 4694 [112]) and preferred circuit carrier selection (draft-yu-tel-dai [113]). If such routeing is applicable for the call, the MGCF shall perform the interworking of the carrier identification code and dial around indication from the circuit switched signalling protocol as described in 3GPP TS 29.163 [11B]. The "cic" and "dai" tel-URI parameters are added in the tel-URI or in the userinfo part of the SIP URI with user=phone Request-URI in accordance with the RFC 4694 [112] and draft-yu-tel-dai [113].

If resource priority in accordance with RFC 4412 [116] is required for a dialog, then the MGCF shall include the Resource-Priority header field in all requests associated with that dialog.

5.5.3.1.2 Calls terminating in circuit-switched networks

When the MGCF receives an initial INVITE request with Supported header indicating "100rel", the MGCF shall:

- 1) store the value of the orig-ioi parameter received in the P-Charging-Vector header, if present;

NOTE: Any received orig-ioi parameter will be a type 2 orig-ioi. The orig-ioi parameter identifies the sending network of the request message.

- 2) send a 100 (Trying) response;
- 3) after a matching codec is found or no codec is required at the MGW, send 183 "Session Progress" response:
 - set the Require header to the value of "100rel";
 - store the values received in the P-Charging-Function-Addresses header;
 - store the value of the icid parameter received in the P-Charging-Vector header; and
 - insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the initial INVITE request and a type 2 term-ioi. The MGCF shall set the type 2 term-ioi parameter to a value that identifies the network in which the MGCF resides and the orig-ioi parameter is set to the previously received value of orig-ioi.

If a codec is required and the MGCF does not find an available matching codec at the MGW for the received initial INVITE request, the MGCF shall:

- send 503 (Service Unavailable) response if the type of codec was acceptable but none were available; or
- send 488 (Not Acceptable Here) response if the type of codec was not supported, and may include SDP in the message body to indicate the codecs supported by the MGCF/MGW.

Based upon local policy, the MGCF may support preferred circuit carrier access (RFC 4694 [112]) and preferred circuit carrier selection (draft-yu-tel-dai [113]), if such routeing is applicable for the call.

NOTE: Interworking of the "cic" and "dai" tel-URI parameters, if present in a tel-URI or in the userinfo part of a SIP URI with user=phone Request-URI, to the circuit switched signalling protocol is described in 3GPP TS 29.163 [11B].

The MGCF may support resource priority in accordance with RFC 4412 [116] if required for a dialog. The priority level indicated in the Resource-Priority header field included in the received request shall be used in a compatible namespace in the circuit-switched network.

5.5.3.2 Subsequent requests

5.5.3.2.1 Calls originating in circuit-switched networks

When the MGCF receives 183 (Session Progress) response to an INVITE request, the MGCF shall:

- store the values received in the P-Charging-Function-Addresses header.

The MGCF shall send an UPDATE request when the following conditions are fulfilled:

- conditions as specified in 3GPP TS 29.163 [11B]; and
- the MGCF receives 200 (OK) response to a PRACK request

5.5.3.2.2 Calls terminating in circuit-switched networks

When the MGCF receives an indication of a ringing for the called party of outgoing call to a circuit-switched network, the MGCF shall:

- send 180 (Ringing) response to the UE.

When the MGCF receives an indication of answer for the called party of outgoing call to a circuit-switched network, the MGCF shall:

- send 200 (OK) response to the UE. The 200 (OK) response shall include an P-Asserted-Identity header if corresponding information is received from the circuit-switched network.

5.5.4 Call release

5.5.4.1 Call release initiated by a circuit-switched network

When the MGCF receives an indication of call release from a circuit-switched network, the MGCF shall:

- send a BYE request to the UE.

5.5.4.2 IM CN subsystem initiated call release

NOTE: The release of a call towards the circuit-switched network additionally requires signalling procedures other than SIP in the MGCF that are outside the scope of this document.

5.5.4.3 MGW-initiated call release

When the MGCF receives an indication from the MGW that the bearer was lost, the MGCF shall:

- send a BYE request towards the UE; and
- may include Error-Info header with a pointer to additional information indicating that bearer was lost.

5.5.5 Call-related requests

5.5.5.1 ReINVITE

5.5.5.1.1 Calls originating from circuit-switched networks

Void.

5.5.5.1.2 Calls terminating in circuit-switched networks

When the MGCF receives a reINVITE request for hold/resume operation, the MGCF shall:

- send 100 (Trying) response;
- after performing interaction with MGW to hold/resume the media flow, send 200 (OK) response.

5.5.6 Further initial requests

When the MGCF responds to an OPTIONS request with a 200 (OK) response, the MGCF may include a message body with an indication of the DTMF capabilities and supported codecs of the MGCF/MGW.

NOTE: The detailed interface for requesting MGCF/MGW capabilities is not specified in this version of the document. Other solutions can be used in the interim.

5.6 Procedures at the BGCF

5.6.1 General

The use of the Path and Service-Route headers shall not be supported by the BGCF.

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the BGCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When the BGCF receives any request or response (excluding ACK requests and CANCEL requests and responses) related to a dialog or standalone transaction, the BGCF may insert previously saved values into P-Charging-Vector and P-Charging-Function-Addresses headers before forwarding the message.

With the exception of 305 (Use Proxy) responses, the BGCF may recurse on a 3xx response only when the domain part of the URI contained in the 3xx response is in the same domain as the BGCF. For the same cases, if the URI is an IP address, the BGCF shall only recurse if the IP address is known locally to be an address that represents the same domain as the BGCF.

5.6.2 Common BGCF procedures

When determining where to route the received request, the originating BGCF may use the information obtained from other protocols or any other available databases.

The BGCF may support retrieval of NP data as part of the procedures to determine where to route the request. Retrieval of NP data by the BGCF is subject to local policy. Retrieval of NP data is relevant only if the Request-URI contains an international public telecommunications number. The interface used at the BGCF to retrieve the NP data is out of scope of this specification. If the Request-URI contains a tel-URI with an "npdi" tel-URI parameter, as defined in

RFC 4694 [112], NP data has been obtained previously and NP data retrieval is only performed if required by local policy. If NP data is retrieved by the BGCF, the BGCF shall add the tel-URI NP parameters to the Request-URI as defined in RFC 4694 [112]: an "npdi" tel-URI parameter is added to indicate that NP data retrieval has been performed, and if the number is ported, an "rn" tel-URI parameter is added to identify the ported-to routing number. The "rn" tel-URI parameter may be used by the BGCF for routing the request.

The BGCF NP procedures also apply when the request contains a Request-URI in the form of a SIP URI user=phone, where the "npdi" and "rn" tel-URI parameters are contained in the userinfo part of the SIP URI.

When the BGCF receives a request, the BGCF shall forward the request:

- to an MGCF within its own network; or
- to another network containing a BGCF, or I-CSCF; or
- where the request is for another network, to an IBCF in its own network, if local policy requires IBCF capabilities towards another network; or
- where the Ici interface is used to interconnect two networks and the destination network is beyond such interface, to an IBCF in its own network..

When forwarding the request to the next hop, the BGCF may leave the received Request-URI unmodified.

The BGCF need not Record-Route the INVITE request. While the next entity may be a MGCF acting as a UA, the BGCF shall not apply the procedures of RFC 3323 [33] relating to privacy. The BGCF shall store the values received in the P-Charging-Function-Addresses header. The BGCF shall store the value of the icid parameter received in the P-Charging-Vector header and retain the icid parameter in the P-Charging-Vector header.

NOTE 1: The means by which the decision is made to forward to an MGCF or to another network is outside the scope of the present document, but may be by means of a lookup to an external database, or may be by data held internally to the BGCF.

If the BGCF supports carrier routing, then the BGCF shall support the following procedures, based on local policy:

- a) if the BGCF is configured to populate an operator configured preassigned carrier into a tel-URI contained in the Request-URI, and a preassigned carrier is required for this call, then the BGCF shall include the "cic" tel-URI parameter in the Request-URI identifying the preassigned carrier (as described in RFC 4694 [112]). The BGCF shall also populate the "dai" tel-URI parameter (as described in draft-yu-tel-dai [113]) to identify how the "cic" parameter was obtained; or
- b) if the BGCF is configured to populate the freephone carrier ID, and a freephone carrier is required for this call, then the BGCF shall include the "cic" tel-URI parameter in the Request-URI identifying the freephone carrier (as described in RFC 4694 [112]).

The BGCF carrier routing procedures also apply when the Request-URI is in the form of a SIP URI user=phone, where the "dai" and "cic" tel-URI parameters are contained in the userinfo part of the SIP URI.

1) The BGCF shall not add the "cic" or "dai" tel-URI parameter values in the Request-URI if the parameter(s) already exist in the tel-URI.

NOTE 2: Local policy should be able to control the interaction and precedence between routing on "cic" parameter versus routing based on "rn" parameter.

NOTE 3: The means to configure the BGCF with the pre-assigned carrier is outside the scope of this document.

When the BGCF receives an INVITE request, if the BGCF inserts its own Record-Route header, the BGCF may require the periodic refreshment of the session to avoid hung states in the BGCF. If the BGCF requires the session to be refreshed, the BGCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 4: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

5.7 Procedures at the Application Server (AS)

5.7.1 Common Application Server (AS) procedures

5.7.1.1 Notification about registration status

The AS may support the REGISTER method in order to discover the registration status of the user. If a REGISTER request arrives and the AS supports the REGISTER method, the AS shall store the Expires parameter from the request and generate a 200 (OK) response or an appropriate failure response. For the success case, the 200 (OK) response shall contain Expires value equal to the value received in the REGISTER request. The AS shall store the values received in P-Charging-Function-Addresses header. Also, the AS shall store the values of the icid parameter and orig-ioi parameter if present in the P-Charging-Vector header from the REGISTER request. The AS shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the REGISTER request and a type 3 term-ioi parameter in the response to REGISTER. The AS shall set the type 3 term-ioi parameter to a value that identifies the service provider from which the response is sent and the orig-ioi parameter is set to the previously received value of orig-ioi.

Upon receipt of a third-party REGISTER request, the AS may subscribe to the reg event package for the public user identity registered at the user's registrar (S-CSCF) as described in RFC 3680 [43].

On sending a SUBSCRIBE request, the AS shall populate the header fields as follows:

- a) a Request URI set to the resource to which the AS wants to be subscribed to, i.e. to a SIP URI that contains the public user identity of the user that was received in the To header field of the third-party REGISTER request;
- b) a From header field set to the AS's SIP URI;
- c) a To header field, set to a SIP URI that contains the public user identity of the user that was received in the To header field of the third-party REGISTER request;
- d) an Event header set to the "reg" event package;
- e) a P-Asserted-Identity header field set to the SIP URI of the AS; and

NOTE 1: The S-CSCF expects the SIP URI used in the P-Asserted-Identity header to correspond to the SIP URI, which identified this AS in the initial filter criteria of the user to whose registration state the AS subscribes to.

- f) a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17] and a type 3 orig-ioi parameter. The type 3 orig-ioi identifies the service provider from which the request is sent. The AS shall not include the type 3 term-ioi parameter.

Upon receipt of a 2xx response to the SUBSCRIBE request, the AS shall store the information for the so established dialog and the expiration time as indicated in the Expires header of the received response.

Upon receipt of any response, the AS shall store the value of the term-ioi parameter received in the P-Charging-Vector header if present.

NOTE 2: Any received term-ioi parameters will be any type term-ioi but includes the adjacent network term ioi in first position. The first term-ioi identifies the network operator from which the response was originated for a release 5 S-CSCF and the network operator from which the request was sent otherwise.

NOTE 3: Upon receipt of a NOTIFY request with all <registration> element(s) having their state attribute set to "terminated" (i.e. all public user identities are deregistered) and the Subscription-State header set to "terminated", the AS considers the subscription to the reg event package terminated, i.e. as if the AS had sent a SUBSCRIBE request with an Expires header containing a value of zero.

Upon receipt of a NOTIFY request, the AS shall store the value of the orig-ioi parameters if present in the P-Charging-Vector header. The AS shall insert a P-Charging-Vector header in the response to the NOTIFY request containing the orig-ioi parameter, if received in the NOTIFY request and a type 3 term-ioi. The AS shall set the type 3 term-ioi parameter to a value that identifies the service provider from which the response is sent and the orig-ioi parameter is set to the previously received value of orig-ioi.

5.7.1.2 Extracting charging correlation information

When an AS receives an initial request for a dialog or a request (excluding ACK requests and CANCEL requests and responses) for a standalone transaction, the AS shall store the values received in the P-Charging-Vector header, e.g. orig-voi parameter, if present, and icid parameter, and retain the P-Charging-Vector header in the message. The AS shall store the values received in the P-Charging-Function-Addresses header and retain the P-Charging-Function-Addresses header in the message.

When an AS sends any request or response related to a dialog or standalone transaction, the AS may insert previously saved values into the P-Charging-Vector and P-Charging-Function-Addresses headers before sending the message.

5.7.1.3 Access-Network-Info and Visited-Network-ID

The AS may receive in any request or response (excluding ACK requests and CANCEL requests and responses) information about the served user access network. The AS may receive information about the served user core network in REGISTER requests from S-CSCF. This information is contained in the P-Access-Network-Info header and P-Visited-Network-ID header. The AS can use the headers to provide an appropriate service to the user.

5.7.1.4 User identify verification at the AS

The procedures at the AS to accomplish user identity verification are described with the help of figure 5-1.

NOTE: Different means can be used to represent or transport the credentials. Such mechanisms are subject to operator policy and can e.g. include the P-Asserted-Identity header, the Authorization header or other mechanisms not specified by 3GPP TS 24.229.

When the AS receives a SIP initial or standalone request, excluding REGISTER request, that does not contain credentials, the AS shall:

- a) if a Privacy header is present in the initial or standalone request and the Privacy header value is set to "id" or "user", then the user and the request are considered as anonymous, and no further actions are required. The AS shall consider the request as authenticated;
- b) if there is no Privacy header present in the initial or standalone request, or if the Privacy header contains a value other than "id" or "user", then the AS shall check for the presence of a P-Asserted-Identity header in the initial or standalone request. Two cases exist:
 - i) the initial or standalone request contains a P-Asserted-Identity header. This is typically the case when the user is located inside a trusted domain as defined by subclause 4.4. In this case, the AS is aware of the identity of the user and no extra actions are needed. The AS shall consider the request as authenticated.
 - ii) the initial or standalone request does not contain a P-Asserted-Identity header. This is typically the case when the user is located outside a trusted domain as defined by subclause 4.4. In this case, the AS does not have a verified identity of the user. The AS shall check the From header of the initial or standalone request. If the From header value in the initial or standalone request is set to "Anonymous" as specified in RFC 3261 [26], then the user and the request are considered as anonymous and no further actions are required. If the From header value does not indicate anonymity, then the AS shall challenge the user by issuing a 401 (Unauthorized) response including a challenge as per procedures described in RFC 3261 [26].

When the AS receives a SIP initial or standalone request that contains credentials but it does not contain a P-Asserted-Identity header the AS shall check the correctness of the credentials as follows:

- a) If the credentials are correct, then the AS shall consider the identity of the user verified, and the AS shall consider the request as authenticated;
- b) If the credentials are not correct, the AS may either rechallenge the user by issuing a 401 (Unauthorized) response including a challenge as per procedures described in RFC 3261 [26] (up to a predetermined maximum number of times predefined in the AS configuration data), or consider the user as anonymous. If the user is considered anonymous, the AS shall consider the request as authenticated.

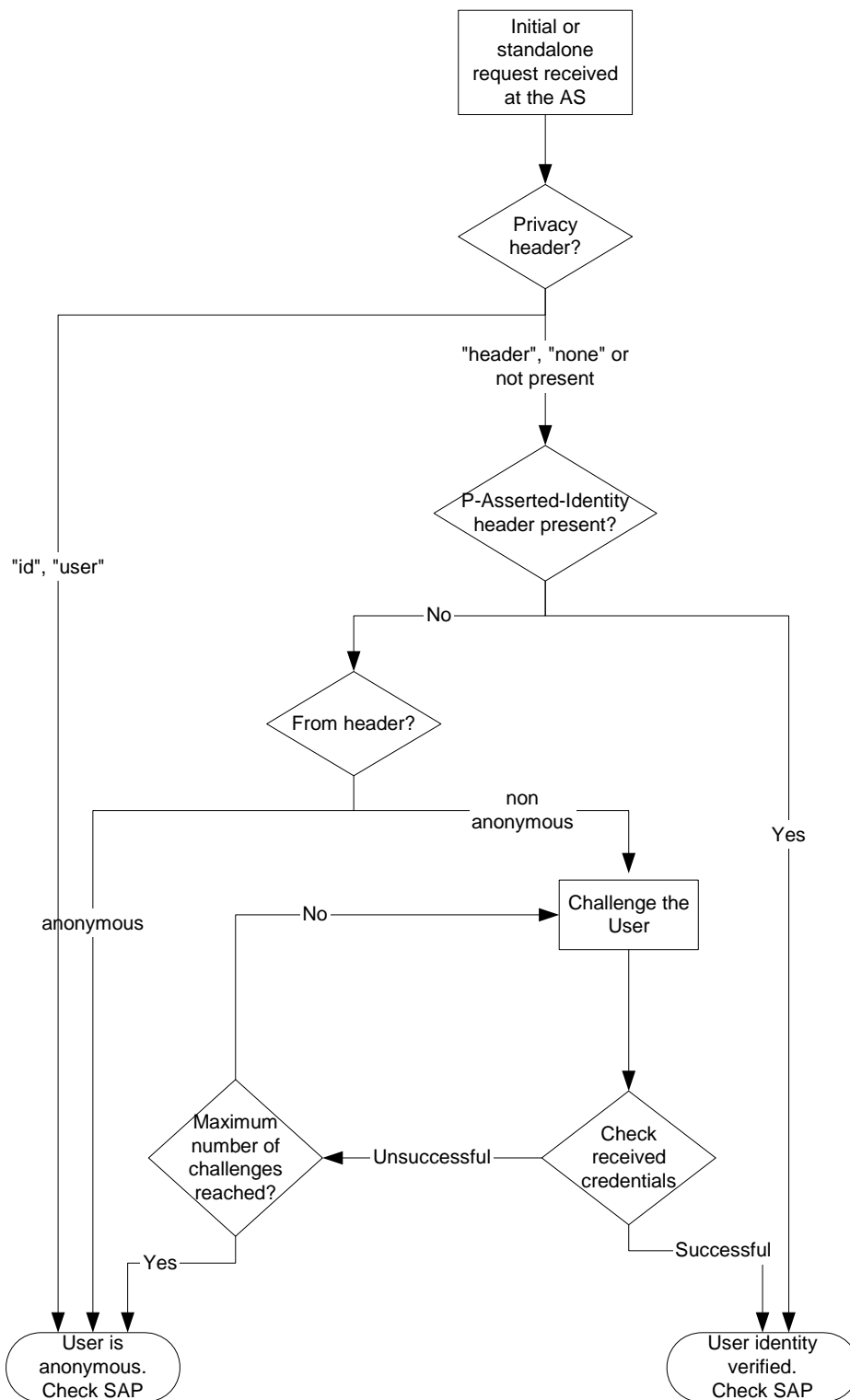


Figure 5-1: User identity verification flow at the AS

5.7.1.5 Request authorization

Once the AS have tried to verify the identity of the user, the AS either has a verified identity of the user or it considers the user as anonymous.

If the user is considered anonymous, the AS shall check whether the authorization policy defined for this request allows anonymous requests. If anonymous requests are allowed, then the AS can proceed with the requested functionality, otherwise, the AS shall not proceed with the requested functionality.

If the user is identified by an identity, the AS shall apply the authorization policy related to the requested functionality to detect whether the particular user is allowed to request the functionality. The authorization policy may require a verified identity of a user.

If the request is authorized then the AS shall continue with the procedures as defined for that request.

If the request is not authorized, the AS shall either:

- reject the request according to the procedures defined for that request e.g., by issuing a 403 (Forbidden) response; or
- send a 2xx final response if the authorization policy requires to deny the requested functionality, whilst appearing to the user as if the request has been granted.

5.7.1.6 Event notification throttling

If the AS has a local configuration information limiting the rate at which notification generation is allowed, then the AS shall take that information into account. Such local configuration information could be e.g. the shortest time period between issuing consecutive NOTIFY requests.

5.7.1.7 Local numbering

5.7.1.7.1 Interpretation of the numbers in a non-international format

If home operator's local policy defines a prefix string(s) to enable subscribers to differentiate dialling a geo-local number and/or a home-local number and if the phone number in a non-international format in the Request URI includes such a prefix, the AS shall interpret the received number in a non-international format as a geo-local number or as a home-local number according to the prefix.

If the phone number in a non-international format in the Request URI includes a "phone-context" parameter, the AS shall:

- 1) if the "phone-context" parameter contains access technology information or the home domain name prefixed by the "geo-local." string, interpret it as a geo-local number;
- 2) if the "phone-context" parameter contains the home domain name, interpret it as a home-local number; or
- 3) if the "phone-context" parameter contains any other value, apply general procedures for translation.

If the phone number in a non-international format in the Request URI includes both operator defined prefix and a "phone-context" parameter and those information are contradictory, the AS shall ignore either the prefix or the "phone-context" parameter according to operator policy.

If the phone number in a non-international format in the Request URI does not include either a phone-context parameter or an operator defined prefix, the AS shall interpret the phone number in a non-international format either as a geo-local number or as a home-local number according to operator policy.

NOTE: Operator must ensure that service setting dialling strings do not reach local numbering AS by setting appropriately the precedences of the initial filter criteria.

5.7.1.7.2 Translation of the numbers in a non-international format

When an AS receives a request having a geo-local number in a non-international format in the Request URI, the AS shall use the "phone-context" parameter to determine the visited access network, if "phone-context" parameter in the

Request-URI is available. If "phone-context" parameter in the Request-URI is not available, the AS may determine the visited access network based on P-Access-Network-Info header, if it is available in the received request, or by means outside the scope of this document.

If the visited access network is determined the AS shall attempt to determine whether the geo-local number is used to access a service in the visited network or the local addressing plan of the visited network and translate the received geo-local number to a globally routeable SIP URI or an international tel URI:

NOTE 1: During the translation the AS can contact an entity in the visited access network for getting the needed information. The protocol and procedures for this is outside the scope of this specification.

When an AS receives a request having a home-local number in a non-international format in the Request URI, the AS shall determine whether the home-local number is used to access a service or the local addressing plan and translate the received home-local number to a globally routeable SIP URI or an international tel URI:

When an AS receives a request having any other number in a non-international format in the Request URI, the AS shall attempt to determine whether it is used to access a service in the third network or the local addressing plan of the third network and translate the received number in a non-international format to a globally routeable SIP URI or an international tel URI:

NOTE 2: The AS can translate the tel URI to a SIP URI by including the 'telephone-subscriber' part of the received tel URI to the user part of the SIP URI and setting the domain name of the SIP URI to indicate the domain name of the network of the phone number based on the received "phone-context" parameter;

If the translation at the AS fails, the AS shall either send an appropriate SIP response or route the request based on the topmost Route header, based on local policy.

5.7.1.8 GRUU assignment and usage

It is possible for an AS to use a GRUU referring to itself when inserting a contact address in a dialog establishing or target refreshing SIP message. When using a GRUU, the AS shall do so in conformance with draft-ietf-sip-gruu [93].

This specification does not define how GRUUs are created by the AS; they can be provisioned by the operator or obtained by any other mechanism. The GRUU shall remain valid for the time period in which features addressed to it remain meaningful.

The AS shall handle requests addressed to its currently valid GRUUs when received outside of the dialog in which the GRUU was provided.

EXAMPLE: Upon receipt of an INVITE request addressed to a GRUU assigned to a dialog it has active, and containing a Replaces header referencing that dialog, the AS will be able to establish the new call replacing the old one, if that is appropriate for the features being provided by the AS.

When an AS is acting as a routing B2BUA (as defined in subclause 5.7.5) it may provide a contact address that is not a GRUU when the contact address in the incoming message that is being replaced is not a GRUU. In all other cases the AS shall use a GRUU.

When an AS acts as UA or Initiating B2BUA it may provide a contact address that is not a GRUU in cases where it can ascertain that valid requests that could result from the use of that contact and follow the usage rules of draft-ietf-sip-gruu [93] will reach the element. In all other cases a GRUU shall be used.

An AS acting as a UA or an initiating or routing B2BUA on behalf of a public user identity can provide a GRUU in the contact address referring to itself as described above. When the AS provides a GRUU on behalf of a user, subsequent dialog-initiating requests sent to that GRUU will be routed directly to the AS, thus bypassing terminating services assigned to the user. If the AS wishes to have terminating services applied for the user, the AS may generate a new terminating request addressed to a public GRUU associated with the public user identity of the user.

NOTE 1: If the AS wishes to have terminating services applied when the public user identity on whose behalf the AS is acting is unregistered, then the options available to the AS depend on whether or not the subscriber has ever previously registered with the IM CN subsystem. In the case where the public user identity had previously registered with the IM CN subsystem, then the AS can use the most recently allocated public GRUU if available. In the case where the user has never registered with the IM CN subsystem, then the AS can use the public user identity itself.

NOTE 2: Once terminating services have been applied, it is assumed that the terminating S-CSCF will route the request back to this AS via the initial filter criteria. In order for this to work, the initial filter criteria of the target user need to be configured so that the AS is invoked at the appropriate time relative to other terminating ASs (say, after the required terminating services have been applied). The mechanism to ensure that the AS is invoked by the initial filter criteria at the appropriate time is outside the scope of this specification (e.g. the user's filter criteria could be statically configured to invoke the AS at the correct time, or the AS could use the Dynamic Service Activation Information mechanism to activate the appropriate filter criteria).

When an AS acts as a UA or an initiating or routing B2BUA, and is originating or terminating a request on behalf of a public user identity, and privacy is required, the AS shall ensure that any GRUU provided in the contact address in the request does not reveal the public user identity of the user.

5.7.1.9 Use of ICSI and IARI values

Based on service logic, an AS can validate an ICSI value received in an Accept-Contact header or received in a P-Asserted-Service header and reject the request if necessary.

A trusted AS may insert a P-Asserted-Service header field in a request for a new dialog or standalone transaction. An untrusted AS may insert a P-Preferred-Service header field in a request for a new dialog or standalone transaction. If the request is related to an IMS communication service that requires the use of an ICSI then the AS:

- shall include the ICSI value (coded as specified in subclause 7.2A.8.2), for the IMS communication service that is related to the request in either a P-Asserted-Service header field or a P-Preferred-Service header field depending whether the AS is trusted or not according to draft-draze-sipping-service-identification [121].

When an AS that is acting as a UA or initiating B2BUA or routing B2BUA sends an initial request for a dialog or a request for a standalone transaction, the AS may include an Accept-Contact header field containing an ICSI value (coded as specified in subclause 7.2A.8.2) and zero or more IARI values (coded as specified in subclause 7.2A.9.2) that are related to the request in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3841 [56B] if the ICSI or IARIs for the IMS communication service are known. The AS may:

- include the received ICSI and IARI values;
- replace or remove received ICSI and IARI values; or
- include new ICSI and IARI values.

When the AS acting as a UA or initiating B2BUA or routing B2BUA sends a SIP request or a SIP response related to an IMS communication service, the AS may include in the Contact header field in a g.3gpp.app_ref feature tag zero or more ICSI values (coded as specified in subclause 7.2A.8.2) and zero or more IARI values (coded as specified in subclause 7.2A.9.2), for the IMS communication service, that are related to the request as defined in subclause 7.9.2 and RFC 3840 [62]. The AS may:

- include the received ICSI and IARI values;
- replace or remove received ICSI values; or
- include new ICSI and IARI values.

5.7.1.10 Carrier selection

An AS may play a role in support of carrier selection as defined in RFC 4694 [112] and draft-yu-tel-dai [113].

NOTE 1: In general, ASs do not need to support carrier selection, Rather a specific AS or a few ASs in a network will be used for carrier selection,

When an AS that supports carrier selection receives an initial request with a Request-URI in the form of a tel-URI that contains a "dai" tel-URI parameter inserted by the UE, the AS shall remove the "dai" parameter.

When an AS that supports carrier selection receives an initial request with a Request-URI in the form of a tel-URI that contains a "cic" tel-URI parameter inserted by the UE as defined in draft-yu-tel-dai [113], and if configured per operator policy, the AS may validate the value of the "cic" parameter. If an AS that supports carrier selection determines the "cic" parameter received in the initial request to be valid, as configured per operator policy, the AS shall insert the

appropriate value of the "dai" tel-URI parameter as defined in draft-yu-tel-dai [113]. If an AS supports carrier selection and determines the "cic" parameter received in the initial request to be invalid, then the AS shall remove the "cic" parameter and process the request as if no "cic" had been received from the UE.

When an AS that support carrier selection receives an initial request with a Request-URI in the form of a tel-URI, the AS may, based on operator policy, insert an appropriate value for the "cic" and "dai" tel-URI parameters as defined in RFC 4694 [112] and draft-yu-tel-dai [113].

NOTE 2: For example, the AS that supports preferred carrier could insert a "cic" tel-URI parameter that identifies the originating user's preassigned carrier, or the carrier assigned to a called freephone number.

When an AS that support carrier selection receives an initial request with a Request-URI in the form of a SIP URI user=dialstring (see RFC 4967 [103]), the AS may translate the SIP URI to a valid tel-URI or a valid SIP URI user=phone comprising a userinfo part containing the tel-URI and a domain matching the domain of the original SIP URI user=dialstring. If the received SIP URI user=dialstring is successfully converted, then the AS shall replace the Request-URI with the newly created tel-URI or SIP URI user=phone. The AS shall then process the request as if it had arrived from the UE containing this tel-URI or SIP URI user=phone in the Request-URI.

NOTE 3: This specification does not make any assumptions regarding how these procedures are mapped to ASs; whether all procedures are supported by a single AS or spread across multiple ASs. However, this specification does assume that the responsibility for ensuring that the UE complies with the carrier selection procedures defined in RFC 4694 [112] and draft-yu-tel-dai [113] will be performed by a single AS (e.g. remove "dai" and validate "cic"), and the filter criteria will be configured so that this AS is invoked before other ASs that have carrier selection responsibilities.

The AS carrier selection procedures also apply when the request contains a Request-URI in the form of a SIP URI user=phone, where the "dai" and "cic" tel-URI parameters are contained in the userinfo part of the SIP URI.

5.7.2 Application Server (AS) acting as terminating UA, or redirect server

When acting as a terminating UA the AS shall behave as defined for a UE in subclause 5.1.4, with the exceptions identified in this subclause.

The AS, although acting as a UA, does not initiate any registration of its associated addresses. These are assumed to be known by peer-to-peer arrangements within the IM CN subsystem.

An AS acting as redirect server shall propagate any received IM CN subsystem XML message body in the redirected message.

When an AS acting as a terminating UA generates a subsequent request that does not relate to an INVITE dialog, the AS shall insert a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17].

When the AS acting as terminating UA receives an initial request for a dialog or a request for a standalone transaction, the AS shall store the value of the orig-ioi parameters received in the P-Charging-Vector header if present.

NOTE: received orig-ioi parameters will be any type orig-ioi but includes the adjacent network term ioi in first position. The first orig-ioi identifies the network operator from which the request was originated for a release 5 S-CSCF and the network operator from which the request was sent otherwise.

When the AS acting as terminating UA generates a response to an initial request for a dialog or a request for a standalone transaction, the AS shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the request and a type 3 term-ioi. The AS shall set the type 3 term-ioi parameter to a value that identifies the service provider from which the response is sent and the orig-ioi parameter is set to the previously received value of orig-ioi.

If resource priority in accordance with RFC 4412 [116] is required for a dialog, then the AS shall include the Resource-Priority header field in all requests associated with that dialog.

Editor's Note: Additional usage scenarios of the Resource-Priority header field might not be covered by the mechanisms described above or might need additional action in other functional entities.

5.7.3 Application Server (AS) acting as originating UA

In order to support an AS acting as an originating UA, the AS has to be within the same trust domain as the S-CSCF to which requests will be sent.

When acting as an originating UA the AS shall behave as defined for a UE in subclause 5.1.3, with the exceptions identified in this subclause.

The AS, although acting as a UA, does not initiate any registration of its associated addresses. These are assumed to be known by peer-to-peer arrangements within the IM CN subsystem.

When an AS acting as an originating UA generates an initial request for a dialog or a request for a standalone transaction, the AS shall insert a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17] and a type 3 orig-ioi. The AS shall set the type 3 orig-ioi parameter to a value that identifies the service provider from which the request is sent. The AS shall not include the type 3 term-ioi parameter.

NOTE 1: The AS can retrieve CCF and/or ECF addresses from HSS on Sh interface.

When the AS acting as an originating UA receives any response to an initial request for a dialog or a request for a standalone transaction, the AS shall store the value of the term-ioi parameter received in the P-Charging-Vector header if present.

NOTE 2: Any received term-ioi parameter will be a type 3 term-ioi. The type 3 term-ioi identifies the network operator from which the response was sent.

When an AS acting as an originating UA generates a subsequent request that does not relate to an INVITE dialog, the AS shall insert a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17].

The AS shall extract charging function addresses from any P-Charging-Function-Addresses header that is received in any 1xx or 2xx responses to the requests.

The AS may also indicate that the proxies should not fork the request by including a "no-fork" directive within the Request-Disposition header in the request as described in RFC 3841 [56B].

When sending an initial request on behalf of a PSI that is hosted by the AS, the AS shall:

- insert a Request-URI as determined by the service logic;
- insert a P-Asserted-Identity containing the PSI;
- if the AS is not able to resolve the next hop address by itself or the operator policy does not allow it, insert a Route header pointing either to the S-CSCF where the PSI is hosted, or to the entry point of the home network of the PSI or to the transit function. The AS shall append the "orig" parameter to the URI in the topmost Route header; and

NOTE 3: The address of the S-CSCF hosting the PSI can be obtained by querying the HSS on the Sh interface.

NOTE 4: AS can only send the initial request to the entry point of the home network of the PSI only if the AS can assume (e.g. based on local configuration) that the receiving entry point will be able to process the request as an originating request.

- if the AS is able to resolve the next hop address by itself and the operator policy allows it, forward the originating request directly to the destination without involving any S-CSCF in the originating IM CN subsystem.

When sending an initial request on behalf of a public user identity, the AS shall:

- insert a Request-URI as determined by the service logic;
- insert a P-Asserted-Identity containing the public user identity;
- if the AS intends to send the originating request to the home network of the public user identity or the operator policy requires it, insert a Route header pointing to the S-CSCF where the public user identity on whose behalf the request is generated is registered or hosted (unregistered case) or to the entry point of the public user identity's network. The AS shall append the "orig" parameter to the URI in the topmost Route header; and

NOTE 5: The address of the S-CSCF can be obtained either by querying the HSS on the Sh interface or during third-party registration.

NOTE 6: AS can send the initial request to the entry point of the public user identity's network or to the entry point of the home network of the PSI only if the AS can assume (e.g. based on local configuration) that the receiving entry point will be able to process the request as an originating request.

- if the AS intends to send the originating request directly to the terminating network and the operator policy allows it, forward the originating request directly to the destination without involving any S-CSCF in the originating IM CN subsystem.

When sending an initial request to a served public user identity, the AS shall insert:

- a Request-URI containing the served public user identity;
- a P-Asserted-Identity as determined by the service logic (e.g. the URI of the AS or the URI of the entity that triggered the SIP request, if the sending of the initial request is triggered by a non-SIP request); and
- a Route header pointing to the S-CSCF where the public user identity to whom the request is generated is registered or hosted (unregistered case) or to the entry point of the public user identity's network. The AS shall not append the "orig" parameter to the URI in the topmost Route header.

NOTE 7: The address of the S-CSCF can be obtained either by querying the HSS on the Sh interface or during third-party registration.

The AS can indicate privacy of the P-Asserted-Identity in accordance with RFC 3323 [33], and the additional requirements contained within RFC 3325 [34].

Where privacy is required, in any initial request for a dialog or request for a standalone transaction, the AS shall set the From header to "Anonymous" as specified in RFC 3261 [26].

NOTE 8: The contents of the From header cannot be relied upon to be modified by the network based on any privacy specified by the user either within the AS indication of privacy or by network subscription or network policy. Therefore the AS includes the value "Anonymous" whenever privacy is explicitly required.

If resource priority in accordance with RFC 4412 [116] is required for a dialog, then the AS shall include the Resource-Priority header field in all requests associated with that dialog.

Editor's Note: Additional usage scenarios of the Resource-Priority header field might not be covered by the mechanisms described above or might need additional action in other functional entities.

5.7.4 Application Server (AS) acting as a SIP proxy

When the AS acting as a SIP proxy receives a request from the S-CSCF, prior to forwarding the request, the AS shall:

- remove its own URI from the topmost Route header; and
- after executing the required services, route the request based on the topmost Route header.

The AS may modify the SIP requests based on service logic, prior to forwarding the request back to the S-CSCF.

The AS shall not fork the request if the fork-directive in the Request-Disposition header is set to "no-fork" as described in RFC 3841 [56B].

An AS acting as a SIP proxy shall propagate any received IM CN subsystem XML message body in the forwarded message.

When the AS acting as a SIP proxy receives an initial request for a dialog or a request for a standalone transaction, the AS shall store the value of the orig-ioi parameter received in the P-Charging-Vector header if present. The AS shall remove the orig-ioi parameter from the forwarded request.

NOTE: Any received orig-ioi parameters will be any type orig-ioi but includes the adjacent network term ioi in first position. The first orig-ioi identifies the network operator from which the request was originated for a release 5 S-CSCF and the network operator from which the request was sent otherwise.

When the AS acting as a SIP proxy generates a response to an initial request for a dialog or a request for a standalone transaction, the AS shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the request and a type 3 term-ioi. The AS shall set the type 3 term-ioi parameter to a value that identifies the service provider from which the response is sent and the orig-ioi parameter is set to the previously received value of orig-ioi. Any values of orig-ioi or term-ioi received in any response that is being forwarded are not used.

5.7.5 Application Server (AS) performing 3rd party call control

5.7.5.1 General

The AS performing 3rd party call control acts as a B2BUA. There are two kinds of 3rd party call control:

- Routing B2BUA: an AS receives a request, terminates it and generates a new request, which is based on the received request.
- Initiating B2BUA: an AS initiates two requests, which are logically connected together at the AS, or an AS receives a request and initiates a new request that is logically connected but unrelated to the incoming request from the originating user (e.g. the P-Asserted-Identity of the incoming request is changed by the AS).

When the AS receives a terminated call and generates a new call, and dependent on whether the service allows the AS to change the P-Asserted-Identity for outgoing requests compared with the incoming request, the AS will select appropriate kind of 3rd party call control.

The B2BUA AS will internally map the message headers between the two dialogs that it manages. It is responsible for correlating the dialog identifiers and will decide when to simply translate a message from one dialog to the other, or when to perform other functions. These decisions are specific to each AS and are outside the scope of the present document.

The AS, although acting as a UA, does not initiate any registration of its associated addresses. These are assumed to be known by peer-to-peer arrangements within the IM CN subsystem.

For standalone transactions, when the AS is acting as a Routing B2BUA, the AS shall copy the remaining Route header(s) unchanged from the received request for a standalone transaction to the new request for a standalone transaction.

When the AS receives a Replaces header within an initial request for a dialog, the AS should check, whether the AS acts as a routing B2BUA for the dialog identified in the Replaces header. The AS should:

- if the AS acts as routing B2BUA for the dialog indicated in the Replaces header, include in the forwarded request a Replaces header, indicating the dialog on the outgoing side that corresponds to the dialog identified in the received Replaces header; or
- if the AS does not act as a routing B2BUA for the dialog indicated in the Replaces header, include in the forwarded request the Replaces header as received in the incoming request.

When the AS acting as a routing B2BUA receives an initial request for a dialog or a request for a standalone transaction, the AS shall:

- store the value of the orig-ioi parameter received in the P-Charging-Vector header if present; and
- remove the orig-ioi parameter from the forwarded request.

NOTE: Any received orig-ioi parameters will be any type orig-ioi but includes the adjacent network term ioi in first position. The first orig-ioi identifies the network operator from which the request was originated for a release 5 S-CSCF and the network operator from which the request was sent otherwise.

When the AS acting as a routing B2BUA generates a response to an initial request for a dialog or a request for a standalone transaction, the AS shall insert a P-Charging-Vector header containing the orig-ioi parameter, if received in the request and a type 3 term-ioi. The AS shall set the type 3 term-ioi parameter to a value that identifies the service provider from which the response is sent and the orig-ioi parameter is set to the previously received value of orig-ioi. Any values of orig-ioi or term-ioi received in any response that is being forwarded are not used.

If resource priority in accordance with RFC 4412 [116] is required for a dialog, then the AS shall include the Resource-Priority header field in all requests associated with that dialog.

Editor's Note: Additional usage scenarios of the Resource-Priority header field might not be covered by the mechanisms described above or might need additional action in other functional entities.

5.7.5.2 Call initiation

5.7.5.2.1 Initial INVITE

When the AS acting as a Routing B2BUA receives an initial INVITE request, the AS shall:

- 1) remove its own SIP URI from the topmost Route header of the received INVITE request;
- 2) perform the AS specific functions. See 3GPP TS 23.218 [5];
- 3) if successful, generate and send a new INVITE request to establish a new dialog;
- 4) copy the remaining Route header(s) unchanged from the received INVITE request to the new INVITE request;
- 5) copy the P-Asserted-Identity to the outgoing request;
- 6) if a Route header is present, route the new INVITE request based on the topmost Route header; and

NOTE 1: The topmost Route header of the received INVITE request will contain the AS's SIP URI. The following Route header will contain the SIP URI of the S-CSCF.

- 7) if no Route header is present (e.g. the AS may be acting on behalf of a PSI):
 - a) insert a Route header pointing either to the S-CSCF where the PSI is hosted or to the entry point of the home network of the PSI or to the transit function, if the AS is not able to resolve the next hop address by itself or the operator policy requires it; or
 - b) forward the originating request directly to the destination without involving any S-CSCF in the originating IM CN subsystem, if the AS is able to resolve the next hop address by itself, and the operator policy allows it.

NOTE 2: The address of the S-CSCF hosting the PSI can be obtained by querying the HSS on the Sh interface.

When the AS is acting as an Initiating B2BUA, the AS shall apply the procedures described in subclause 5.7.3 for any outgoing requests. The AS shall either set the icid parameter in the P-Charging-Vector header to be the same as received or different.

NOTE 3: The AS can retrieve CCF and/or ECF addresses from HSS on Sh interface.

5.7.5.2.2 Subsequent requests

Void.

5.7.5.3 Call release

5.7.5.4 Call-related requests

An AS may initiate a call release. See 3GPP TS 23.218 [5] for possible reasons. The AS shall simultaneously send the BYE request for both dialogs managed by the B2BUA.

5.7.5.5 Further initial requests

When the AS is acting as an Initiating B2BUA the AS shall apply the procedures described in subclause 5.7.3 for both requests. The AS shall either set the icid parameter in the P-Charging-Vector header to be the same as received or different.

5.7.6 Void

5.8 Procedures at the MRFC

5.8.1 General

Although the MRFC is acting as a UA, it is outside the scope of this specification how the MRFC associated addresses are made known to other entities.

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the MRFC shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE: This special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When the MRFC sends any request or response (excluding ACK requests and CANCEL requests and responses) related to a dialog or standalone transaction, the MRFC may insert previously saved values into P-Charging-Vector and P-Charging-Function-Addresses headers before sending the message.

The MRFC shall use a GRUU referring to itself (as specified in draft-ietf-sip-gruu [93]) when inserting a contact address in a dialog establishing or target refreshing SIP message. This specification does not define how GRUUs are created by the MRFC; they can be provisioned by the operator or obtained by any other mechanism. A GRUU used by the MRFC when establishing a dialog shall remain valid for the lifetime of the dialog.

The MRFC shall handle requests addressed to its currently valid GRUUs when received outside of the dialog in which the GRUU was provided.

EXAMPLE: Upon receipt of an INVITE request addressed to a GRUU assigned to a dialog it has active, and containing a Replaces header referencing that dialog, the MRFC will be able to establish the new call replacing the old one.

5.8.2 Call initiation

5.8.2.1 Initial INVITE

5.8.2.1.1 MRFC-terminating case

5.8.2.1.1.1 Introduction

The MRFC shall provide a P-Asserted-Identity header in a response to the initial request for a dialog, or any response for a standalone transaction. It is a matter of network policy whether the MRFC expresses privacy according to RFC 3323 [33] with such responses.

When the MRFC receives an initial INVITE request, the MRFC shall store the values received in the P-Charging-Vector header, e.g. icid parameter. The MRFC shall store the values received in the P-Charging-Function-Addresses header.

5.8.2.1.1.2 Tones and announcements

The MRFC can receive INVITE requests to set up a session to play tones and announcements. The MRFC acts as terminating UA in this case.

When the MRFC receives an INVITE request with an indicator for a tone or announcement, the MRFC shall:

- send 100 (Trying) response.

NOTE: The detailed interfaces for requesting tones and announcements are not specified in this version of the document. Other solutions can be used in the interim.

5.8.2.1.1.3 Ad-hoc conferences

The MRFC can receive INVITE requests to set up an ad-hoc conferencing session (e.g. Multiparty Call) or to add parties to the conference. The MRFC acts as terminating UA in this case.

When the MRFC receives an INVITE request with an indicator to initiate ad hoc conferencing, the MRFC shall:

- send 100 (Trying) response; and
- after the MRFP indicates that the conference resources are available, send 200 (OK) response with an MRFC conference identifier. If the MRFC chooses to send a 183 (Session Progress) response prior to the 200 (OK), then the conference identifier may also be included in the 183 (Session Progress) response.

When the MRFC receives an INVITE request with an indicator to add a party to an existing ad hoc conference (i.e. MRFC conference identifier), the MRFC shall:

- send 100 Trying response; and
- after the MRFP indicates that the conferencing request is granted, send 200 OK response with the MRFC conference identifier. If the MRFC chooses to send a 183 Session Progress response prior to the 200 OK, then the conference identifier may also be included in the 183 Session Progress response.

NOTE: The detailed interface for requesting ad-hoc conferencing sessions is not specified in this version of the document. Other solutions can be used in the interim.

5.8.2.1.1.4 Transcoding

The MRFC may receive INVITE requests to set up transcoding between endpoints with incompatible codecs. The MRFC acts as terminating UA in this case.

When the MRFC receives an INVITE request with an indicator for transcoding and a codec is supplied in SDP, the MRFC shall:

- send 100 (Trying) response; and
- after the MRFP indicates that the transcoding request is granted, send 200 (OK) response.

When the MRFC receives an INVITE request with an indicator for transcoding but no SDP, the MRFC shall:

- send 183 (Session Progress) response with list of codecs supported by the MRFC/MRFP.

5.8.2.1.2 MRFC-originating case

The MRFC shall provide a P-Asserted-Identity header in an initial request for a dialog, or any request for a standalone transaction. It is a matter of network policy whether the MRFC expresses privacy according to RFC 3323 [33] with such requests.

When an MRFC generates an initial request for a dialog or a request for a standalone transaction, the MRFC shall insert a P-Charging-Vector header with the icid parameter populated as specified in 3GPP TS 32.260 [17].

5.8.2.2 Subsequent requests

5.8.2.2.1 Tones and announcements

When the MRFC receives an ACK request for a session, this may be considered as an event to direct the MRFP to start the playing of a tone or announcement.

5.8.3 Call release

5.8.3.1 S-CSCF-initiated call release

5.8.3.1.1 Tones and announcements

When the MRFC receives a BYE request for a session, the MRFC directs the MRFP to stop the playing of a tone or announcement.

5.8.3.2 MRFC-initiated call release

5.8.3.2.1 Tones and announcements

When the MRFC has a timed session to play tones and announcements and the time expires, the MRFC shall:

- send a BYE request towards the UE.

When the MRFC is informed by the MRFP that tone or announcement resource has been released, the MRFC shall:

- send a BYE request towards the UE.

5.8.2.2.2 Transcoding

When the MRFC receives a PRACK request (in response to the 183 (Session Progress) response) with an indicator for transcoding and codec supplied in SDP, the MRFC shall:

- after the MRFP indicates that the transcoding request is granted, send 200 (OK) response.

5.8.4 Call-related requests

5.8.4.1 ReINVITE

5.8.4.1.1 MRFC-terminating case

5.8.4.1.1.1 Ad-hoc conferences

The MRFC can receive reINVITE requests to modify an ad-hoc conferencing session (e.g. Multiparty Call) for purposes of floor control and for parties to leave and rejoin the conference.

When the MRFC receives a reINVITE request, the MRFC shall:

- send 100 (Trying) response; and
- after the MRFP indicates that the conferencing request is granted, send 200 (OK) response with the MRFC conference identifier. If the MRFC chooses to send a 183 (Session Progress) response prior to the 200 OK, then the conference identifier may also be included in the 183 (Session Progress) response.

NOTE: The detailed interface for requesting ad-hoc conferencing sessions is not specified in this version of the document. Other solutions can be used in the interim.

5.8.4.1.2 MRFC-originating case

Void.

5.8.4.2 REFER

5.8.4.2.1 MRFC-terminating case

Void.

5.8.4.2.2 MRFC-originating case

Void.

5.8.4.2.3 REFER initiating a new session

Void.

5.8.4.2.4 REFER replacing an existing session

Void.

5.8.4.3 INFO

Void.

5.8.5 Further initial requests

When the MRFC responds to an OPTIONS request with a 200 (OK) response, the MRFC may include a message body with an indication of the supported tones/announcement packages, DTMF capabilities, supported codecs and conferencing options of the MRFC/MRFP.

NOTE: The detailed interface for requesting MRFC/MRFP capabilities is not specified in this version of the document. Other solutions can be used in the interim.

5.9 Void

5.9.1 Void

5.10 Procedures at the IBCF

5.10.1 General

As specified in 3GPP TS 23.228 [7] border control functions may be applied between two IM CN subsystems or between an IM CN subsystem and other SIP-based multimedia networks based on operator preference. The IBCF may act both as an entry point and as an exit point for a network. If it processes a SIP request received from other network it functions as an entry point (see subclause 5.10.2) and it acts as an exit point whenever it processes a SIP request sent to other network (see subclause 5.10.3).

The functionalities of the IBCF include:

- network configuration hiding (see subclause 5.10.4);
- application level gateway (see subclause 5.10.5);
- transport plane control, i.e. QoS control (see subclause 5.10.5);
- screening of SIP signalling (see subclause 5.10.6); and
- inclusion of an IWF if appropriate.

NOTE: The functionalities performed by the IBCF are configured by the operator, and it is network specific.

5.10.2 IBCF as an exit point

5.10.2.1 Registration

When IBCF receives a REGISTER request, the IBCF shall:

- 1) if network topology hiding is required, then apply the encryption procedures for the Path header as described in subclause 5.10.4.1;
- 2) if network topology hiding is required or IBCF is configured to perform application level gateway and/or transport plane control functionalities, then the IBCF shall add its own routeable SIP URI to the top of the Path header; and

NOTE 1: The IBCF can include in the inserted SIP URI an indicator that identifies the direction of subsequent requests received by the IBCF i.e., from the S-CSCF towards the P-CSCF, to identify the UE-terminating case. The IBCF can encode this indicator in different ways, such as, e.g., a unique parameter in the URI, a character string in the username part of the URI, or a dedicated port number in the URI.

NOTE 2: Any subsequent request that includes the direction indicator (in the Route header) or arrives at the dedicated port number, indicates that the request was sent by the S-CSCF towards the P-CSCF.

NOTE 3: In accordance with the procedures described in RFC 3608 [38], an IBCF does not insert its own routeable SIP URI to the Service-Route header.

- 3) select an entry point of the home network and forward the request to that entry point.

If the selected entry point:

- does not respond to the REGISTER request and its retransmissions by the IBCF; or
- sends back a 3xx response or 480 (Temporarily Unavailable) response to a REGISTER request;

the IBCF shall select a new entry point and forward the original REGISTER request.

NOTE 4: The list of the entry points can be either obtained as specified in RFC 3263 [27A] or provisioned in the IBCF. The entry point can be an IBCF or an I-CSCF.

If the IBCF fails to forward the REGISTER request to any entry point, the IBCF shall send back a 504 (Server Time-Out) response to the P-CSCF, in accordance with the procedures in RFC 3261 [26].

5.10.2.1A General

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the IBCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

5.10.2.2 Initial requests

Upon receipt of any request, except the REGISTER method, the IBCF shall:

- 1) if the request is an INVITE request, respond with a 100 (Trying) provisional response;
- 2) if the request is an INVITE request and the IBCF is configured to perform application level gateway and/or transport plane control functionalities, save the Contact, CSeq and Record-Route header field values received in the request such that the IBCF is able to release the session if needed;
- 3) if network topology hiding is required, apply the procedures as described in subclause 5.10.4;
- 4) if screening of SIP signalling is required, apply the procedures as described in subclause 5.10.6;
- 5) if IBCF processes a request without a pre-defined route (e.g. the subscription to reg event package originated by the P-CSCF), select an entry point of the home network and forward the request to that entry point;

NOTE 1: The list of the entry points can be either obtained as specified in RFC 3263 [27A] or provisioned in the IBCF. The entry point can be an IBCF or an I-CSCF.

- 6) store the values from the P-Charging-Function-Addresses header, if present; and
- 7) remove some of the parameters from the P-Charging-Vector or the header itself, depending on operator policy, if present; and
- 8) remove the P-Charging-Function-Addresses headers, if present, prior to forwarding the message.

When the IBCF receives an INVITE request, the IBCF may require the periodic refreshment of the session to avoid hung states in the IBCF. If the IBCF requires the session to be refreshed, the IBCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 2: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

When the IBCF receives a response to the initial request and network topology hiding is required, then the IBCF shall apply the procedures as described in subclause 5.10.4.

When the IBCF receives a response to the initial request and screening of SIP signalling is applied, then the IBCF shall apply the procedures as described in subclause 5.10.6.

5.10.2.3 Subsequent requests

Upon receipt of any request, except the REGISTER method, the IBCF shall:

- 1) if the request is an INVITE request, respond with a 100 (Trying) provisional response;
- 2) if the request is a target refresh request and the IBCF is configured to perform application level gateway and/or transport plane control functionalities, save the Contact and CSeq header field values received in the request such that the IBCF is able to release the session if needed;
- 3) if the subsequent request is other than a target refresh request (including requests relating to an existing dialog where the method is unknown) and the IBCF is configured to perform application level gateway and/or transport plane control functionalities, save the Contact and CSeq header field values received in the request such that the IBCF is able to release the session if needed;
- 4) if network topology hiding is required, apply the procedures as described in subclause 5.10.4; and
- 5) if screening of SIP signalling is required, apply the procedures as described in subclause 5.10.6.

When the IBCF receives a response to the subsequent request and network topology hiding is required, then the IBCF shall apply the procedures as described in subclause 5.10.4.

When the IBCF receives a response to the subsequent request and screening of SIP signalling is required, then the IBCF shall apply the procedures as described in subclause 5.10.6.

5.10.2.4 IBCF-initiated call release

If the IBCF provides transport plane control functionality and receives an indication of a transport plane related error the IBCF may:

- 1) generate a BYE request for the terminating side based on information saved for the related dialog; and
- 2) generate a BYE request for the originating side based on the information saved for the related dialog.

NOTE: Transport plane related errors can be indicated from e.g. TrGW, or PCRF. The protocol for indicating transport plane related errors to the IBCF is out of scope of this specification.

Upon receipt of the 2xx responses for both BYE requests, the IBCF shall release all information related to the dialog and the related multimedia session.

5.10.3 IBCF as an entry point

5.10.3.1 Registration

When IBCF receives a REGISTER request, the IBCF shall:

- 1) verify if it arrived from a trusted domain or not. If the request arrived from an untrusted domain, respond with 403 (Forbidden) response;

NOTE 1: The IBCF can find out whether the request arrived from a trusted domain or not, from the procedures described in 3GPP TS 33.210 [19A].

- 2) if network topology hiding, or screening of SIP signalling, is required or IBCF is configured to perform application level gateway and/or transport plane control functionalities, add its own routeable SIP URI to the top of the Path header; and

NOTE 2: The IBCF can include in the inserted SIP URI an indicator that identifies the direction of subsequent requests received by the IBCF i.e., from the S-CSCF towards the P-CSCF, to identify the UE-terminating case. The IBCF can encode this indicator in different ways, such as, e.g., a unique parameter in the URI, a character string in the username part of the URI, or a dedicated port number in the URI.

NOTE 3: Any subsequent request that includes the direction indicator (in the Route header) or arrives at the dedicated port number, indicates that the request was sent by the S-CSCF towards the P-CSCF.

NOTE 4: In accordance with the procedures described in RFC 3608 [38], an IBCF does not insert its own routable SIP URI to the Service-Route header.

- 3) If IBCF is colocated with an I-CSCF, or it has a preconfigured I-CSCF to be contacted, forward the request to that I-CSCF. Otherwise select an I-CSCF and forward the request to that I-CSCF.

NOTE 5: The selection of an I-CSCF can lead to additional delays.

If the selected I-CSCF:

- does not respond to the REGISTER request and its retransmissions by the IBCF; or
- sends back a 3xx response or 480 (Temporarily Unavailable) response to a REGISTER request;

the IBCF shall select a new I-CSCF and forward the original REGISTER request.

NOTE 5: The list of the I-CSCFs can be either obtained as specified in RFC 3263 [27A] or provisioned in the IBCF.

If the IBCF fails to forward the REGISTER request to any I-CSCF, the IBCF shall send back a 504 (Server Time-Out) response towards the P-CSCF, in accordance with the procedures in RFC 3261 [26].

5.10.3.1A General

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the IBCF shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE: The special treatment can include filtering, higher priority processing, routeing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

5.10.3.2 Initial requests

Upon receipt of any request, except the REGISTER request, the IBCF shall verify whether the request is arrived from a trusted domain or not. If the request arrived from an untrusted domain, then the IBCF shall:

- if the topmost Route header of the request contains the "orig" parameter, respond with 403 (Forbidden) response. Otherwise,
- remove all P-Charging-Vector headers and all P-Charging-Function-Addresses headers the request may contain.

Upon receipt of any request, except the REGISTER request, the IBCF shall:

- 1) if the request is an INVITE request, then respond with a 100 (Trying) provisional response;
- 2) if the request is an INVITE request and the IBCF is configured to perform application level gateway and/or transport plane control functionalities, then the IBCF shall save the Contact, CSeq and Record-Route header field values received in the request such that the IBCF is able to release the session if needed;
- 3) if network topology hiding is required, then apply the procedures as described in subclause 5.10.4; and
- 4) If IBCF receives an initial request for a dialog or standalone transaction, that contains a single Route header pointing to itself, and it is co-located with an I-CSCF, or it has a preconfigured I-CSCF to be contacted, then forward the request to that I-CSCF. Otherwise select an I-CSCF and forward the request to that I-CSCF. If the single Route header of the request contains the "orig" parameter, the IBCF shall insert the "orig" parameter to the URI of the I-CSCF.

NOTE 1: The selection of an I-CSCF can lead to additional delays.

When the IBCF receives an INVITE request, the IBCF may require the periodic refreshment of the session to avoid hung states in the IBCF. If the IBCF requires the session to be refreshed, the IBCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

When the IBCF receives a response to an initial request (e.g. 183 or 2xx), the IBCF shall:

- 1) store the values from the P-Charging-Function-Addresses header, if present;
- 2) remove the P-Charging-Function-Addresses header prior to forwarding the message; and
- 3) if network topology hiding is required, then the IBCF shall apply the procedures as described in subclause 5.10.4.

5.10.3.3 Subsequent requests

Upon receipt of any request, except the REGISTER method, the IBCF shall:

- 1) if the request is an INVITE request, then respond with a 100 (Trying) provisional response;
- 2) if the request is a target refresh request and the IBCF is configured to perform application level gateway and/or transport plane control functionalities, then the IBCF shall save the Contact and CSeq header field values received in the request such that the IBCF is able to release the session if needed;
- 3) if the subsequent request is other than a target refresh request (including requests relating to an existing dialog where the method is unknown) and the IBCF is configured to perform application level gateway and/or transport plane control functionalities, then the IBCF shall save the Contact and CSeq header field values received in the request such that the IBCF is able to release the session if needed; and
- 4) if network topology hiding is required, then apply the procedures as described in subclause 5.10.4.

When the IBCF receives a response to the subsequent request and network topology hiding is required, then the IBCF shall apply the procedures as described in subclause 5.10.4.

5.10.3.4 IBCF-initiated call release

If the IBCF provides transport plane control functionality and receives an indication of a transport plane related error the IBCF may:

- 1) generate a BYE request for the terminating side based on information saved for the related dialog; and
- 2) generate a BYE request for the originating side based on the information saved for the related dialog.

NOTE: Transport plane related errors can be indicated from e.g. TrGW or PCRF. The protocol for indicating transport plane related errors to the IBCF is out of scope of this specification.

Upon receipt of the 2xx responses for both BYE requests, the IBCF shall release all information related to the dialog and the related multimedia session.

5.10.4 THIG functionality in the IBCF

5.10.4.1 General

NOTE 1: THIG functionality is performed in I-CSCF in Release-5 and Release-6 and is compatible with the procedures specified in this subclause.

The following procedures shall only be applied if network topology hiding is required by the network. The network requiring network topology hiding is called the hiding network.

NOTE 2: Requests and responses are handled independently therefore no state information is needed for that purpose within an IBCF.

The IBCF shall apply network topology hiding to all headers which reveal topology information, such as Via, Route, Record-Route, Service-Route, and Path.

Upon receiving an incoming REGISTER request for which network topology hiding has to be applied and which includes a Path header, the IBCF shall add the routeable SIP URI of the IBCF to the top of the Path header. The IBCF may include in the inserted SIP URI an indicator that identifies the direction of subsequent requests received by the IBCF i.e., from the S-CSCF towards the P-CSCF, to identify the UE-terminating case. The IBCF may encode this indicator in different ways, such as, e.g., a unique parameter in the URI, a character string in the username part of the URI, or a dedicated port number in the URI.

NOTE 3: Any subsequent request that includes the direction indicator (in the Route header) or arrives at the dedicated port number, indicates that the request was sent by the S-CSCF towards the P-CSCF.

Upon receiving an incoming initial request for which network topology hiding has to be applied and which includes a Record-Route header, the IBCF shall add its own routeable SIP URI to the top of the Record-Route header.

5.10.4.2 Encryption for network topology hiding

Upon receiving an outgoing request/response from the hiding network the IBCF shall perform the encryption for network topology hiding purposes, i.e. the IBCF shall:

- 1) use the whole header values which were added by one or more specific entity of the hiding network as input to encryption, besides the UE entry;
- 2) not change the order of the headers subject to encryption when performing encryption;
- 3) use for one encrypted string all received consecutive header entries subject to encryption, regardless if they appear in separate consecutive headers or if they are consecutive entries in a comma separated list in one header;
- 4) construct a hostname that is the encrypted string;
- 5) append a "tokenized-by" parameter and set it to the value of the encrypting network's name, after the constructed hostname;
- 6) form one valid entry for the specific header out of the resulting NAI, e.g. prepend "SIP/2.0/UDP" for Via headers or "sip:" for Path, Service-Route, Route and Record-Route headers;
- 7) if the IBCF encrypted an entry in the Route header, then it also inserts its own URI before the topmost encrypted entry; and

- 8) if the IBCF encrypted an entry in the Via header, then it also inserts its own URI before the topmost encrypted entry.

NOTE 1: Even if consecutive entries of the same network in a specific header are encrypted, they will result in only one encrypted header entry. For example:

```
Via: SIP/2.0/UDP ibcf1.home1.net;lr,
     SIP/2.0/UDP Token( SIP/2.0/UDP scscf1.home1.net;lr,
                       SIP/2.0/UDP pcscf1.home1.net;lr);
                       tokenized-by=home1.net,
     SIP/2.0/UDP [5555::aaa:bbb:ccc:ddd]
```

NOTE 2: If multiple entries of the same network are within the same type of headers, but they are not consecutive, then these entries will be tokenized to different strings. For example:

```
Record-Route: sip:ibcf1.home1.net;lr,
              sip:Token(sip:scscf1.home1.net;lr);tokenized-by=home1.net,
              sip:as1.foreign.net;lr,
              sip:Token(sip:scscf1.home1.net;lr,
                       sip:pcscf1.home1.net;lr);tokenized-by=home1.net
```

NOTE 3: If request will return to the hiding network (e.g. after visiting an AS), then the URI of IBCF is inserted. For example:

```
Route: sip:as1.foreign.net;lr,
       sip:ibcf1.home1.net;lr,
       sip:Token(sip:scscf1.home1.net;lr);tokenized-by=home1.net
```

5.10.4.3 Decryption for network topology hiding

Upon receiving and incoming requests/response to the hiding network the IBCF shall perform the decryption for network topology hiding purposes, i.e. the IBCF shall:

- 1) identify hostnames encrypted by the network this IBCF belongs to within all headers of the incoming message;
- 2) use those hostnames that carry the identification of the hiding network within the value of the "tokenized-by" parameter as input to decryption;
- 3) use as encrypted string the hostname which follows the sent-protocol (for Via Headers, e.g. "SIP/2.0/UDP") or the URI scheme (for Route and Record-Route Headers, e.g. "sip:");
- 4) replace all content of the received header which carries encrypted information with the entries resulting from decryption.

EXAMPLE: An encrypted entry to a Via header that looks like:

```
Via: SIP/2.0/UDP Token(SIP/2.0/UDP scscf1.home1.net;lr,
                      SIP/2.0/UDP pcscf1.home1.net;lr);tokenized-by=home1.net
```

will be replaced with the following entries:

```
Via: SIP/2.0/UDP scscf1.home1.net;lr, SIP/2.0/UDP pcscf1.home1.net;lr
```

NOTE: Motivations for these decryption procedures are e.g. to allow the correct routing of a response through the hiding network, to enable loop avoidance within the hiding network, or to allow the entities of the hiding network to change their entries within e.g. the Record-Route header.

5.10.5 IMS-ALG functionality in the IBCF

The IBCF shall only apply the following procedures if application level gateway functionality is required by the network.

The IBCF acts as a B2BUA when it performs IMS-ALG functionality. As an IMS-ALG, the IBCF will internally map the message headers between the two dialogs that it manages. It is responsible for correlating the dialog identifiers and will decide when to simply translate a message from one dialog to the other, or when to perform other functions. The IBCF, although acting as a UA, does not initiate any registration of its associated addresses. These are assumed to be known by peer-to-peer arrangements within the IM CN subsystem.

When the IBCF receives an initial INVITE request from another SIP network, i.e. the IBCF acts as an entry point, the IBCF shall generate a new initial INVITE request and forward it to the I-CSCF. In case the initial INVITE request is received from own network, i.e. the IBCF acts as an exit point, the IBCF shall generate a new initial INVITE request and forward it to the entry point of the other network.

An IBCF may provide a contact address that is not a GRUU when the contact address in the incoming message that is being replaced is not a GRUU. In all other cases the IBCF shall use a GRUU. When using a GRUU, the IBCF shall do so in conformance with draft-ietf-sip-gruu [93].

This specification does not define how GRUUs are created by the IBCF; they can be provisioned by the operator or obtained by any other mechanism. The GRUU shall remain valid for the time period in which features addressed to it remain meaningful.

The IBCF shall handle requests addressed to its currently valid GRUUs when received outside of the dialog in which the GRUU was provided.

EXAMPLE: Upon receipt of an INVITE request addressed to a GRUU assigned to a dialog it has active, and containing a Replaces header referencing that dialog, the IBCF will be able to establish the new call replacing the old one.

The internal function of the IBCF as an IMS-ALG is defined in 3GPP TS 29.162 [11A].

5.10.6 Screening of SIP signalling

5.10.6.1 General

The IBCF may act as a B2BUA when it performs screening of SIP signalling functionality. In this case the B2BUA behaviour of the IBCF shall comply with the description given in subclause 5.10.5 for the IMS-ALG functionality.

NOTE: Many headers are intended for end-to-end operation; removal of such headers will impact the intended end-to-end operation between the end users. Additionally the IM CN subsystem does not preclude security mechanisms covering SIP headers; any such removal can prevent validation of all headers covered by the security mechanism.

5.10.6.2 IBCF procedures for SIP headers

If specified by local policy rules, the IBCF may omit or modify any received SIP headers prior to forwarding SIP messages, with the following exceptions.

As a result of any screening policy adopted, the IBCF should not modify at least the following headers which would cause misoperation of the IM CN subsystem:

- Authorization; and
- WWW-Authenticate.

Where the IBCF appears in the path between the UE and the S-CSCF, some headers are involved in the registration and authentication of the user. As a result of any screening policy adopted as part of normal operation, e.g. where the request or response is forwarded on, the IBCF should not modify as part of the registration procedure at least the following headers:

- Path; and
- Service-Route.

NOTE 1: If the IBCF modifies SIP information elements (SIP headers, SIP message bodies) other than as specified by SIP procedures (e.g., RFC 3261 [26]) caution needs to be taken that SIP functionality (e.g., routing using Route, Record-Route and Via) is not impacted in a way that could create interoperability problems with networks that assume that this information is not modified.

NOTE 2: Where operator requirements can be achieved by configuration hiding, then these procedures can be used in preference to screening.

The IBCF may add, remove, or modify, the P-Early-Media header within forwarded SIP requests and responses according to procedures in RFC 5009 [109].

NOTE 3: The IBCF can use the header for the gate control procedures, as described in 3GPP TS 29.214 [13D]. In the presence of early media for multiple dialogs due to forking, if the IBCF is able to identify the media associated with a dialog, (i.e., if symmetric RTP is used by the UE and the IBCF can use the remote SDP information to determine the source of the media) the IBCF can selectively open the gate corresponding to an authorized early media flow for the selected media.

When the IBCF, located in the home network, receives a SIP request from another entity within the same trust domain, the IBCF may police the ICSI value contained in the P-Asserted-Service header field.

5.10.6.3 IBCF procedures for SIP message bodies

If IP address translation (NA(P)T or IP version interworking) occurs on the user plane, the IBCF shall modify SDP according to the annex F and G as appropriate;

Additionally, the IBCF may take the followings action upon SIP message bodies:

- 1) examine the length of a SIP message body and if required by local policy, take an appropriate action (e.g. forward the message body transparently, reject the request, remove the body);
- 2) examine the characteristics of the message body (i.e. check the values of any Content-Type, Content-Disposition, and Content-Language headers), take an appropriate action defined by local policy (e.g. forward the body unchanged, remove the body, reject the call); and
- 3) examine the content of SIP bodies, and take appropriate action defined by local policy (e.g. forward the body unchanged, remove the body, reject the call).

5.11 Procedures at the E-CSCF

5.11.1 General

The PSAP may either be directly connected to the IM CN subsystem or via the PSTN.

The E-CSCF retrieves a PSAP URI, based on the location of the UE. The PSAP URI can be retrieved from LRF or from local configuration. The PSAP address will either point to a PSAP connected to the IM CN subsystem or to a PSAP connected to the PSTN.

If the E-CSCF fails to select a PSAP based on the received location information contained in an INVITE request, the E-CSCF can interrogate an LRF or an external server in order to retrieve location information.

NOTE 1: The protocol used between an E-CSCF and an LRF and between an E-CSCF and an external server is not specified in this version of the specification.

5.11.2 UE originating case

The E-CSCF may either forward the call to a PSAP in the IP network or forward the call to a PSAP in the PSTN. In the latter case the call will pass a BGCF and a MGCF before entering the PSTN.

Upon receipt of an initial request for a dialog, or a standalone transaction, or an unknown method including a Request-URI with an emergency service URN, i.e. a service URN with a top-level service type of "sos" as specified in draft-ietf-ecrit-service-urn [69], or an emergency number the E-CSCF shall:

- 1) remove its own SIP URI from the topmost Route header;
- 2) if the PSAP is the next hop, store the value of the icid parameter received in the P-Charging-Vector header and remove the received information in the P-Charging-Vector header, else keep the P-Charging-Vector if the next hop is an exit IBCF or a BGCF;
- 3) if the PSAP is the next hop remove the P-Charging-Function-Addresses headers, if present, else keep the P-Charging-Function-Addresses headers if the next hop is an exit IBCF or a BGCF;

- 4) if an IBCF or BGCF is the next hop insert a type 2 orig-ioi parameter into the P-Charging-Vector header. The E-CSCF shall set the type 2 orig-ioi parameter to a value that identifies the sending network. The E-CSCF shall not include the term-ioi parameter;
- 5) get location information as
 - geographical location information received as a location object from a message body with the content type application/pidf+xml in accordance with draft-ietf-sip-location-conveyance [89]; and
 - location identifier as derived from the P-Access-Network-Info header, if available.

NOTE 1: The E-CSCF can request location information from an LRF. The protocol used to retrieve the location information from the LRF is not specified in this version of the specification.

NOTE 2: As an alternative to retrieve location information from the LRF the E-CSCF can also request location information from an external server. The address to the external server can be received in the Geolocation header as specified in draft-ietf-sip-location-conveyance [89]. The protocol used to retrieve the location information from the external server is not specified in this version of the specification.

- 6) select, based on location information and optionally type of emergency service:
 - a PSAP connected to the IM CN subsystem network and add the PSAP URI to the topmost Route header; or

NOTE 3: The E-CSCF conveys the P-Access-Network-Info header containing the location identifier, if defined for the access type as specified in subclause 7.2A.4, to the PSAP.

- a PSAP in the PSTN, add the BGCF URI to the topmost Route header and add a PSAP URI in tel URI format to the Request-URI with an entry used in the PSTN/CS domain to address the PSAP;

NOTE 4: The E-CSCF conveys the P-Access-Network-Info header containing the location identifier, if defined for the access type as specified in subclause 7.2A.4, towards the MGCF. The MGCF can translate the location information if included in INVITE (i.e. both the geographical location information in PIDF-LO and the location identifier in the P-Access-Network-Info header) into ISUP signalling, see 3GPP TS 29.163 [11B].

NOTE 5: The E-CSCF can request location information and routing information from the LRF. The E-CSCF can for example send the location identifier to LRF and LRF maps the location identifier into the corresponding geographical location information that LRF sends to E-CSCF. The LRF can invoke an RDF to convert the location information into a proper PSAP/EC URI. Both the location information and the PSAP URI are returned to the E-CSCF.

NOTE 6: The way the E-CSCF determines the next hop address when the PSAP address is a tel URI is implementation dependent.

- 7) if the E-CSCF receives a reference number from the LRF the E-CSCF shall include the reference number in the P-Asserted-Identity header;

NOTE 7: The reference number is used in the communication between the PSAP and LRF.

- 8) if due to local policy or if the PSAP requires interconnect functionalities (e.g. PSAP address is of an IP address type other than the IP address type used in the IM CN subsystem), put the address of the IBCF to the topmost route header, in order to forward the request to the PSAP via an IBCF in the same network;
- 9) create a Record-Route header containing its own SIP URI
- 10) if the request is an INVITE request, save the Contact, Cseq and Record-Route header field values received in the request such that the E-CSCF is able to release the session if needed; and
- 11) route the request based on SIP routing procedures.

Editor's Note: It needs to be investigated whether the E-CSCF also needs (under specific circumstances) to release an emergency session.

NOTE 8: Depending on local operator policy, the E-CSCF has the capability to reject requests relating to specific methods in accordance with RFC 3261 [26], as an alternative to the functionality described above.

Upon receipt of an initial request for a dialog, a standalone transaction, or an unknown method, that does not include a Request-URI with an emergency service URN or an emergency number, the E-CSCF shall reject the call by sending a 403 (Forbidden) response.

When the E-CSCF receives the request containing the access-network-charging-info parameter in the P-Charging-Vector, the E-CSCF shall store the access-network-charging-info parameter from the P-Charging-Vector header. The E-CSCF shall retain access-network-charging-info parameter in the P-Charging-Vector header.

When the E-CSCF receives any request or response (excluding ACK requests and CANCEL requests and responses) related to a UE-originated dialog or standalone transaction, the E-CSCF may insert previously saved values into P-Charging-Vector and P-Charging-Function-Addresses headers before forwarding the message.

When the E-CSCF receives an INVITE request from the UE, the E-CSCF may require the periodic refreshment of the session to avoid hung states in the E-CSCF. If the E-CSCF requires the session to be refreshed, the E-CSCF shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 9: Requesting the session to be refreshed requires support by at least the UE or the PSAP or MGCF. This functionality cannot automatically be granted, i.e. at least one of the involved UAs needs to support it in order to make it work.

6 Application usage of SDP

6.1 Procedures at the UE

6.1.1 General

The "integration of resource management and SIP" extension is hereafter in this subclause referred to as "the precondition mechanism" and is defined in RFC 3312 [30] as updated by RFC 4032 [64].

In order to authorize the media streams, the P-CSCF and S-CSCF have to be able to inspect the SDP payloads. Hence, the UE shall not encrypt the SDP payloads.

During session establishment procedure, SIP messages shall only contain SDP payload if that is intended to modify the session description, or when the SDP payload must be included in the message because of SIP rules described in RFC 3261 [26].

For "video" and "audio" media types that utilize the RTP/RTCP, the UE shall specify the proposed bandwidth for each media stream utilizing the "b=" media descriptor and the "AS" bandwidth modifier in the SDP.

If the media line in the SDP indicates the usage of RTP/RTCP, and if the RTCP bandwidth level for the session is different than the default RTCP bandwidth as specified in RFC 3556 [56], then in addition to the "AS" bandwidth modifier in the media-level "b=" line, the UE shall include two media-level "b=" lines, one with the "RS" bandwidth modifier and the other with the "RR" bandwidth modifier as described in RFC 3556 [56] to specify the required bandwidth allocation for RTCP.

For other media streams the "b=" media descriptor may be included. The value or absence of the "b=" parameter will affect the assigned QoS which is defined in or 3GPP 29.213 [13C].

NOTE 1: In a two-party session where both participants are active, the RTCP receiver reports are not sent, therefore, the RR bandwidth modifier will typically get the value of zero.

The UE shall include the MIME subtype "telephone-event" in the "m=" media descriptor in the SDP for audio media flows that support both audio codec and DTMF payloads in RTP packets as described in RFC 2833 [23].

The UE shall inspect the SDP contained in any SIP request or response, looking for possible indications of grouping of media streams according to RFC 3524 [54] and perform the appropriate actions for IP-CAN bearer establishment for media according to IP-CAN specific procedures (see subclause B.2.2.5 for IP-CAN implemented using GPRS).

If resource reservation is needed, the UE shall start reserving its local resources whenever it has sufficient information about the media streams, media authorization and used codecs available.

NOTE 2: Based on this resource reservation can, in certain cases, be initiated immediately after the sending or receiving of the initial SDP offer.

In order to fulfil the QoS requirements of one or more media streams, the UE may re-use previously reserved resources. In this case the local preconditions related to the media stream, for which resources are re-used, shall be indicated as met.

If an IP-CAN bearer is rejected or modified, the UE shall, if the SDP is affected, update the remote SIP entity according to RFC 3261 [26] and RFC 3311 [29].

NOTE 3: The UE can use one IP address for signalling (and specify it in the Contact header) and different IP address(es) for media (and specify it in the "c=" parameter of the SDP).

If the UE wants to transport media streams with TCP and there are no specific alternative negotiation mechanisms defined for that particular application, then the UE shall support the procedures and the SDP rules specified in RFC 4145 [83].

6.1.2 Handling of SDP at the originating UE

An INVITE request generated by a UE shall contain a SDP offer and at least one media description. The SDP offer shall reflect the calling user's terminal capabilities and user preferences for the session. The UE shall order the SDP offer with the most preferred codec listed first.

If the desired QoS resources for one or more media streams have not been reserved at the UE when constructing the SDP offer, the UE shall:

- indicate the related local preconditions for QoS as not met, using the segmented status type, as defined in RFC 3312 [30] and RFC 4032 [64], as well as the strength-tag value "mandatory" for the local segment and the strength-tag value "optional" for the remote segment, if the UE supports the precondition mechanism (see subclause 5.1.3.1); and,
- set the related media streams to inactive, by including an "a=inactive" line, according to the procedures described in RFC 4566 [39], unless the UE knows that the precondition mechanism is supported by the remote UE.

NOTE 1: When setting the media streams to the inactive mode, the UE can include in the first SDP offer the proper values for the RS and RR modifiers and associate bandwidths to prevent the receiving of the RTCP packets, and not send any RTCP packets.

If the desired QoS resources for one or more media streams are available at the UE when the SDP offer is sent, the UE shall indicate the related local preconditions as met, using the segmented status type, as defined in RFC 3312 [30] and RFC 4032 [64], as well as the strength-tag value "mandatory" for the local segment and the strength-tag value "optional" for the remote segment, if the UE supports the precondition mechanism (see subclause 5.1.3.1).

NOTE 2: If the originating UE does not support the precondition mechanism it will not include any precondition information in SDP.

Upon generating the SDP offer for an INVITE request generated after receiving a 488 (Not Acceptable Here) response, as described in subclause 5.1.3.1, the UE shall include SDP payload containing a subset of the allowed media types, codecs and other parameters from the SDP payload of all 488 (Not Acceptable Here) responses related to the same session establishment attempt (i.e. a set of INVITE requests used for the same session establishment). The UE shall order the codecs in the SDP payload according to the order of the codecs in the SDP payload of the 488 (Not Acceptable Here) response.

NOTE 3: The UE can attempt a session establishment through multiple networks with different policies and potentially can need to send multiple INVITE requests and receive multiple 488 (Not Acceptable Here) responses from different CSCF nodes. The UE therefore takes into account the SDP contents of all the 488 (Not Acceptable Here) responses received related to the same session establishment when building a new INVITE request.

Upon confirming successful local resource reservation, the UE shall create a SDP offer in which:

- the related local preconditions are set to met, using the segmented status type, as defined in RFC 3312 [30] and RFC 4032 [64]; and

- the media streams previously set to inactive mode are set to active (sendrecv, sendonly or recvonly) mode.

Upon receiving an SDP answer, which includes more than one codec for one or more media streams, the UE shall send an SDP offer at the first possible time, selecting only one codec per media stream.

6.1.3 Handling of SDP at the terminating UE

Upon receipt of an initial SDP offer in which no precondition information is available, the terminating UE shall in the SDP answer:

- if, prior to sending the SDP answer the desired QoS resources have been reserved at the terminating UE, set the related media streams the in the SDP answer to:
 - active mode, if the offered media streams were not listed as inactive; or
 - inactive mode, if the offered media streams were listed as inactive.

If the terminating UE had previously set one or more media streams to inactive mode and the QoS resources for those media streams are now ready, the UE shall set the media streams to active mode by applying the procedures described in RFC 4566 [39] with respect to setting the direction of media streams.

Upon sending a SDP answer to an SDP offer (which included one or more media lines which was offered with several codecs) the terminating UE shall select exactly one codec per payload and indicate only the selected codec for the related media stream.

NOTE 1: A SDP media line can indicate several different payloads. For example a media line indicating an audio media type can indicate several codecs for the audio stream as well as the MIME subtype "telephone-event" for DTMF payload.

Upon sending a SDP answer to an SDP offer, with the SDP answer including one or more media streams for which the originating side did indicate its local preconditions as not met, if the precondition mechanism is supported by the terminating UE, the terminating UE shall indicate its local preconditions and request the confirmation for the result of the resource reservation at the originating end point.

NOTE 2: If the terminating UE does not support the precondition mechanism it will ignore any precondition information received from the originating UE.

Upon receiving an initial INVITE request, that includes the SDP offer containing an IP address type (in the "c=" parameter) that is not supported by the UE, the UE shall respond with the 488 (Not Acceptable Here) response with 301 Warning header indicating "incompatible network address format".

NOTE 3: Upon receiving an initial INVITE request, that includes an SDP offer containing connection addresses (in the "c=" parameter) equal to zero, the UE will select the media streams that is willing to accept for the session, reserve the QoS resources for accepted media streams, and include its valid connection address in the SDP answer.

6.2 Procedures at the P-CSCF

When the P-CSCF receives any SIP request containing an SDP offer, the P-CSCF shall examine the media parameters in the received SDP. If the P-CSCF finds any media parameters which are not allowed on the network by local policy or if available by bandwidth authorisation limitation information coming from the IP-CAN (e.g. via PCRF), the P-CSCF shall return a 488 (Not Acceptable Here) response containing SDP payload. This SDP payload contains either all the media types, codecs and other SDP parameters which are allowed according to the local policy, or, based on configuration by the operator of the P-CSCF, a subset of these allowed parameters. This subset may depend on the content of the received SIP request. The P-CSCF shall build the SDP payload in the 488 (Not Acceptable Here) response in the same manner as a UAS builds the SDP in a 488 (Not Acceptable Here) response as specified in RFC 3261 [26]. The P-CSCF shall order the SDP payload with the most preferred codec listed first. If the SDP offer is encrypted, the P-CSCF may reject the request.

When the P-CSCF receives a SIP response different from 200 (OK) response containing SDP offer, the P-CSCF shall not examine the media parameters in the received SDP offer, but the P-CSCF shall rather check the succeeding request containing the SDP answer for this offer, and if necessary (i.e. the SDP answer reduced by the UE still breaches local policy, or if available by bandwidth authorisation limitation information coming from the IP-CAN, e.g. via PCRF), the

P-CSCF shall return a 488 (Not Acceptable Here) response containing the local policy allowed SDP payload. If the SDP answer is encrypted, the P-CSCF may reject the succeeding request.

When the P-CSCF receives a 200 (OK) response containing SDP offer, the P-CSCF shall examine the media parameters in the received SDP. If the P-CSCF finds any media parameters which are not allowed on the network by local policy or if available by bandwidth authorisation limitation information coming from the IP-CAN (e.g. via PCRF), the P-CSCF shall forward the SDP offer and on the receipt of the ACK request containing the SDP answer, the P-CSCF shall immediately terminate the session as described in subclause 5.2.8.1.2. If the SDP offer is encrypted, the P-CSCF shall forward the SDP offer and on the receipt of the ACK request containing the SDP answer, it may immediately terminate the session as described in subclause 5.2.8.1.2.

In case a device performing address and/or port number conversions is provided by a NA(P)T or NA(P)T-PT controlled by the P-CSCF, or by a hosted NAT, the P-CSCF may need to modify the media connection data in SDP bodies according to the procedures described in annex F and/or annex G.

The P-CSCF shall apply and maintain the same policy within the SDP from the initial request or response containing SDP and throughout the complete SIP session.

The P-CSCF may inspect, if present, the "b=RS" and "b=RR" lines in order to find out the bandwidth allocation requirements for RTP.

6.3 Procedures at the S-CSCF

When the S-CSCF receives any SIP request containing an SDP offer, the S-CSCF shall examine the media parameters in the received SDP. If the S-CSCF finds any media parameters which are not allowed based on local policy or subscription (i.e. the information in the instances of the Core Network Service Authorization class in the service profile, described in 3GPP TS 29.228 [14]), the S-CSCF shall return a 488 (Not Acceptable Here) response containing SDP payload. This SDP payload contains either all the media types, codecs and other SDP parameters which are allowed according to the local policy and users subscription or, based on configuration by the operator of the S-CSCF, a subset of these allowed parameters. This subset may depend on the content of the received SIP request. The S-CSCF shall build the SDP payload in the 488 (Not Acceptable Here) response in the same manner as a UAS builds the SDP in a 488 (Not Acceptable Here) response as specified in RFC 3261 [26]. If the SDP offer is encrypted, the S-CSCF may reject the request.

When the S-CSCF receives a SIP response different from 200 (OK) response containing SDP offer, the S-CSCF shall not examine the media parameters in the received SDP offer, but the S-CSCF shall rather check the succeeding request containing the SDP answer for this offer, and if necessary (i.e. the SDP answer reduced by the UE still breaches local policy), the S-CSCF shall return a 488 (Not Acceptable Here) response containing the local policy allowed SDP payload. If the SDP answer is encrypted, the S-CSCF may reject the succeeding request.

When the S-CSCF receives a 200 (OK) response containing SDP offer, the S-CSCF shall examine the media parameters in the received SDP. If the S-CSCF finds any media parameters which are not allowed based on local policy or subscription (i.e. the information in the instances of the Core Network Service Authorization class in the service profile, described in 3GPP TS 29.228 [14]), the S-CSCF shall forward the SDP offer and on the receipt of the ACK request containing the SDP answer, the S-CSCF shall immediately terminate the session as described in subclause 5.4.5.1.2. If the SDP offer is encrypted, the S-CSCF shall forward the SDP offer and on the receipt of the ACK request containing the SDP answer, it may immediately terminate the session as described in subclause 5.4.5.1.2.

6.4 Procedures at the MGCF

6.4.1 Calls originating from circuit-switched networks

The usage of SDP by the MGCF is the same as its usage by the UE, as defined in the subclause 6.1 and A.3.2, with the following exception:

- in an initial SDP offer the MGCF shall not use the "inactive" attribute when the local preconditions are met; and
- in an INVITE request generated by a MGCF, the MGCF shall indicate the current status of the local precondition.

When sending an SDP, the MGCF shall not include the "i=", "u=", "e=", "p=", "r=", and "z=" descriptors in the SDP, and the MGCF shall ignore them when received in the SDP.

When the MGCF generates and sends an INVITE request for a call originating in a circuit-switched network, the MGCF shall:

- populate the SDP with the codecs supported by the associated MGW (see 3GPP TS 26.235 [10] for the supported codecs); and
- in order to support DTMF, populate the SDP with MIME subtype "telephone-event" as described in RFC 2833 [23].

When the MGCF receives 183 (Session Progress) response to an INVITE request, the MGCF shall:

- check that a supported codec has been indicated in the SDP.

6.4.2 Calls terminating in circuit-switched networks

The usage of SDP by the MGCF is the same as its usage by the UE, as defined in the subclause 6.1 and A.3.2, with the following exception:

- When the MGCF sends a 183 (Session Progress) response with SDP payload, the MGCF shall only request confirmation for the result of the resource reservation at the originating end point if there are any remaining unfulfilled preconditions.

When sending an SDP, the MGCF shall not include the "i=", "u=", "e=", "p=", "r=", and "z=" descriptors in the SDP, and the MGCF shall ignore them when received in the SDP.

When the MGCF receives an initial INVITE request, the MGCF shall:

- check for a codec that matches the requested SDP, which may include the MIME subtype "telephone-event" as described in RFC 2833 [23].

When the MGCF generates and sends a 183 (Session Progress) response to an initial INVITE request, the MGCF shall:

- set SDP indicating the selected codec, which may include the MIME subtype "telephone-event" as described in RFC 2833 [23].

6.5 Procedures at the MRFC

Void.

6.6 Procedures at the AS

Since an AS may provide a wide range of different services, procedures for the SDP usage for an AS acting as originating UA, terminating UA or third-party call control role are dependent on the service provided to the UA and on the capabilities on the remote UA. There is no special requirements regarding the usage of the SDP, except the requirements for the SDP capabilities described in the following paragraphs and clause A.3:

- 1) Providing that an INVITE request generated by an AS contains SDP payload, the AS has the capability of reflecting the originating AS's capabilities, desired QoS and precondition requirements for the session in the SDP payload.
- 2) When the AS sends a 183 (Session Progress) response with SDP payload including one or more "m=" media types, it has the capability of requesting confirmation for the result of the resource reservation at the originating endpoint.

6.7 Procedures at the IMS-ALG functionality

When the IBCF acts as an IMS-ALG, it makes procedures as for an originating UA and terminating UA. The IMS-ALG acts as a B2BUA. The treatment of the SDP information between originating UA and terminating UA is described in 3GPP TS 29.162 [11A].

7 Extensions within the present document

7.1 SIP methods defined within the present document

There are no SIP methods defined within the present document over and above those defined in the referenced IETF specifications.

7.2 SIP headers defined within the present document

7.2.0 General

There are no SIP headers defined within the present document over and above those defined in the referenced IETF specifications.

7.2.1 Void

7.2.2 Void

7.2.3 Void

7.2.4 Void

7.2.5 Void

7.2.6 Void

7.2.7 Void

7.2.8 Void

7.2.9 Void

7.2.10 Void

7.2A Extensions to SIP headers defined within the present document

7.2A.1 Extension to WWW-authenticate header

7.2A.1.1 Introduction

This extension defines a new authentication parameter (auth-param) for the WWW-Authenticate header used in a 401 (Unauthorized) response to the REGISTER request. For more information, see RFC 2617 [21] subclause 3.2.1.

7.2A.1.2 Syntax

The syntax for for auth-param is specified in table 7.4.

Table 7.4: Syntax of auth-param

| | |
|---------------|------------------------------------|
| auth-param | = 1#(integrity-key / cipher-key) |
| integrity-key | = "ik" EQUAL ik-value |
| cipher-key | = "ck" EQUAL ck-value |
| ik-value | = LDQUOTE *(HEXDIG) RDQUOTE |
| ck-value | = LDQUOTE *(HEXDIG) RDQUOTE |

7.2A.1.3 Operation

This authentication parameter will be used in a 401 (Unauthorized) response in the WWW-authenticate header during UE authentication procedure as specified in subclause 5.4.1.

The S-CSCF appends the integrity-key parameter (directive) to the WWW.-Authenticate header in a 401 (Unauthorized) response. The P-CSCF stores the integrity-key value and removes the integrity-key parameter from the header prior to forwarding the response to the UE.

The S-CSCF appends the cipher-key parameter (directive) to the WWW-Authenticate header in a 401 (Unauthorized) response. The P-CSCF removes the cipher-key parameter from the header prior to forwarding the response to the UE. In the case ciphering is used, the P-CSCF stores the cipher-key value.

7.2A.2 Extension to Authorization header

7.2A.2.1 Introduction

This extension defines a new auth-param for the Authorization header used in REGISTER requests. For more information, see RFC 2617 [21] subclause 3.2.2.

7.2A.2.2 Syntax

The syntax of auth-param for the Authorization header is specified in table 7.5.

Table 7.5: Syntax of auth-param for Authorization header

| | |
|------------|--|
| auth-param | = "integrity-protected" EQUAL ("yes" / "no" / "tls-pending" / "tls-yes" / "ip-assoc-pending" / "ip-assoc-yes") |
|------------|--|

7.2A.2.3 Operation

This authentication parameter is inserted by the P-CSCF in the Authorization header of all the REGISTER requests received from the UE. The value of the "integrity protected" field in the auth-param parameter is set as specified in subclause 5.2.2. This information is used by S-CSCF to decide whether to challenge the REGISTER request or not, as specified in subclause 5.4.1.

The values in the "integrity-protected" field are defined as follows:

- "yes": indicates that a REGISTER request received in the P-CSCF is protected using an IPsec security association and IMS AKA is used as authentication scheme.
- "no": indicates that a REGISTER request received in the P-CSCF is not protected using an IPsec security association and IMS AKA is used as authentication scheme, i.e. this is an initial REGISTER request with the Authorization header not containing a challenge response.

"tls=yes": indicates that a REGISTER request is received in the P-CSCF protected over a TLS connection and the Session ID, IP address and port for the TLS connection are already bound to a private user identity. The S-CSCF will decide whether or not to challenge such a REGISTER request based on its policy. This is used in case of SIP digest with TLS.

"tls-pending": indicates that a REGISTER request is received in the P-CSCF protected over a TLS connection and the Session ID, IP address and port for the TLS connection are not yet bound to a private user identity. The S-CSCF shall challenge such a REGISTER request if it does not contain an Authorization header with a challenge response or if the verification of the challenge response fails. This is used in case of SIP digest with TLS.

"ip-assoc=yes": indicates that a REGISTER request received in the P-CSCF does map to an existing IP association in case SIP digest is used without TLS.

"ip-assoc-pending": indicates that a REGISTER request received in the P-CSCF does not map to an existing IP association, and does contain a challenge response in case SIP digest is used without TLS.

NOTE 1: In case of SIP digest is used with TLS, but the REGISTER request was not received over TLS, the P-CSCF does not include an "integrity-protected" field in the auth-param to indicate that an initial REGISTER request was received not over an existing TLS session. The S-CSCF will always challenge such a REGISTER request.

NOTE 2: In case of SIP digest is used without TLS, but the REGISTER request was not received over TLS, the P-CSCF does not include an "integrity-protected" field in the auth-param to indicate that the REGISTER request does not map to an existing IP association, and does not contain a challenge response. The S-CSCF will always challenge such a REGISTER request.

NOTE 3: The value "yes" is also used when an initial REGISTER request contains an Authorization header with a challenge response as in this case the IPsec association is already in use, and its use by the UE implicitly authenticates the UE. This is a difference to TLS case where the use of TLS alone does not yet implicitly authenticates the UE. Hence in the TLS case, for an initial REGISTER request containing an Authorization header with a challenge response the value "tls-pending" and not "tls=yes" is used.

7.2A.3 Tokenized-by parameter definition (various headers)

7.2A.3.1 Introduction

The tokenized-by parameter is an extension parameter appended to encrypted entries in various SIP headers as defined in subclause 5.10.4.

7.2A.3.2 Syntax

The syntax for the tokenized-by parameter is specified in table 7.6:

Table 7.6: Syntax of tokenized-by-param

```
rr-param = tokenized-by-param / generic-param
via-params = via-ttl / via-maddr / via-
received / via-branch / tokenized-by-param / via-extension
"tokenized-by" EQUAL hostname
```

The BNF for uri-parameter is taken from IETF RFC 3261 [26] and modified accordingly.

7.2A.3.3 Operation

The tokenized-by parameter is appended by IBCF (THIG) after all encrypted strings within SIP headers when network configuration hiding is active. The value of the parameter is the domain name of the network which encrypts the information.

7.2A.4 P-Access-Network-Info header

7.2A.4.1 Introduction

The P-Access-Network-Info header is extended to include specific information relating to particular access technologies.

7.2A.4.2 Syntax

The syntax of the P-Access-Network-Info header is described in RFC 3455 [52]. There are additional coding rules for this header depending on the type of IP-CAN, according to access technology specific descriptions.

Table 7.6A describes the 3GPP-specific extended syntax of the P-Access-Network-Info header field defined in RFC 3455 [52].

Table 7.6A: Syntax of extended P-Access-Network-Info header

| | |
|-----------------------|--|
| P-Access-Network-Info | = 'P-Access-Network-Info' HCOLON access-net-spec *(COMMA access-net-spec) |
| access-net-spec | = access-type [SEMI np] *(SEMI access-info) |
| access-type | = "IEEE-802.11" / "IEEE-802.11a" / "IEEE-802.11b" / "IEEE-802.11g" / "3GPP-GERAN" / "3GPP-UTRAN-FDD" / "3GPP-UTRAN-TDD" / "ADSL" / "ADSL2" / "ADSL2+" / "RADSL" / "SDSL" / "HDSL" / "HDSL2" / "G.SHDSL" / "VDSL" / "IDSL" / "3GPP2-1X" / "3GPP2-1X-HRPD" / "3GPP2-UMB" / "DOCSIS" / token |
| np | = "network-provided" |
| access-info | = cgi-3gpp / utran-cell-id-3gpp / dsl-location / i-wlan-node-id / ci-3gpp2 / extension-access-info |
| extension-access-info | = gen-value |
| cgi-3gpp | = "cgi-3gpp" EQUAL (token / quoted-string) |
| utran-cell-id-3gpp | = "utran-cell-id-3gpp" EQUAL (token / quoted-string) |
| i-wlan-node-id | = "i-wlan-node-id" EQUAL (token / quoted-string) |
| dsl-location | = "dsl-location" EQUAL (token / quoted-string) |
| ci-3gpp2 | = "ci-3gpp2" EQUAL (token / quoted-string) |

The presence of the "np" parameter indicates a P-Access-Network-Info header is provided by the P-CSCF. The content can differ from a P-Access-Network-Info header without this parameter which is provided by the UE.

7.2A.4.3 Additional coding rules for P-Access-Network-Info header

The P-Access-Network-Info header is populated with the following contents:

- 1) the access-type field set to one of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b", "IEEE-802.11g", "ADSL", "ADSL2", "ADSL2+", "RADSL", "SDSL", "HDSL", "HDSL2", "G.SHDSL", "VDSL", "IDSL", or "DOCSIS" as appropriate to the access technology in use.
- 2) if the access type field is set to "3GPP-GERAN", a cgi-3gpp parameter set to the Cell Global Identity obtained from lower layers of the UE. The Cell Global Identity is a concatenation of MCC, MNC, LAC and CI (as described in 3GPP TS 23.003 [3]). The value of "cgi-3gpp" parameter is therefore coded as a text string as follows:

Starting with the most significant bit, MCC (3 digits), MNC (2 or 3 digits depending on MCC value), LAC (fixed length code of 16 bits using full hexadecimal representation) and CI (fixed length code of 16 bits using a full hexadecimal representation);

- 3) if the access type field is equal to "3GPP-UTRAN-FDD", or "3GPP-UTRAN-TDD", a "utran-cell-id-3gpp" parameter set to a concatenation of the MCC, MNC, LAC (as described in 3GPP TS 23.003 [3]) and the UMTS Cell Identity (as described in 3GPP TS 25.331 [9A]), obtained from lower layers of the UE, and is coded as a text string as follows:

Starting with the most significant bit, MCC (3 digits), MNC (2 or 3 digits depending on MCC value), LAC (fixed length code of 16 bits using full hexadecimal representation) and UMTS Cell Identity (fixed length code of 28 bits using a full hexadecimal representation);

- 4) if the access type field is set to "3GPP2-1X", a ci-3gpp2 parameter set to the ASCII representation of the hexadecimal value of the string obtained by the concatenation of SID (16 bits), NID (16 bits), PZID (8 bits) and BASE_ID (16 bits) (see 3GPP2 C.S0005-D [85]) in the specified order. The length of the ci-3gpp2 parameter shall be 14 hexadecimal characters. The hexadecimal characters (A through F) shall be coded using the uppercase ASCII characters. If the MS does not know the values for any of the above parameters, the MS shall use the value of 0 for that parameter. For example, if the SID is unknown, the MS shall represent the SID as 0x0000;

NOTE 1: The SID value is represented using 16 bits as supposed to 15 bits as specified in 3GPP2 C.S0005-D [85].

EXAMPLE: If SID = 0x1234, NID = 0x5678, PZID = 0x12, BASE_ID = 0xFFFF, the ci-3gpp2 value is set to the string "1234567812FFFF".

- 5) if the access type field is set to "3GPP2-1X-HRPD", a ci-3gpp2 parameter set to the ASCII representation of the hexadecimal value of the string obtained by the concatenation of Sector ID (128 bits) and Subnet length (8 bits) (see 3GPP2 C.S0024-A [86]) in the specified order. The length of the ci-3gpp2 parameter shall be 34 hexadecimal characters. The hexadecimal characters (A through F) shall be coded using the uppercase ASCII characters;

EXAMPLE: If the Sector ID = 0x123412341234123412341234123412341234, Subnet length = 0x11, the ci-3gpp2 value is set to the string "12341234123412341234123412341234123411".

- 6) if the access type field is set to "3GPP2-UMB" 3GPP2 C.S0084-000 [86A], a ci-3gpp2 parameter is set to the ASCII representation of the hexadecimal value of the Sector ID (128 bits) defined in 3GPP2 C.S0084-000 [86A]. The length of the ci-3gpp2 parameter shall be 32 hexadecimal characters. The hexadecimal characters (A through F) shall be coded using the uppercase ASCII characters.

EXAMPLE: If the Sector ID = 0x123412341234123412341234123412341234, the ci-3gpp2 value is set to the string "12341234123412341234123412341234".

- 7) if the access-type field set to one of "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b" or "IEEE-802.11g", an "i-wlan-node-id" parameter is set to the ASCII representation of the hexadecimal value of the AP's MAC address without any delimiting characters.

EXAMPLE: If the AP's MAC address = 00-0C-F1-12-60-28, then i-wlan-node-id is set to the string "000cf1126028".

- 8) if the access-type field is set to one of "ADSL", "ADSL2", "ADSL2+", "RADSL", "SDSL", "HDSL", "HDSL2", "G.SHDSL", "VDSL", "IDSL", the access-info field shall contain a dsl-location parameter obtained from the CLF (see NASS functional architecture); and
- 9) if the access-type field set to "DOCSIS", the access info parameter is set to a null value. This release of this specification does not define values for use in this parameter.

NOTE 2: The "cgi-3gpp", the "utran-cell-id-3gpp", the "ci-3gpp2", the "i-wlan-node-id", and the "dsl-location" parameters described above among other usage also constitute the location identifiers that are used for emergency services.

7.2A.5 P-Charging-Vector header

7.2A.5.1 Introduction

The P-Charging-Vector header field is extended to include specific charging correlation information needed for IM CN subsystem functional entities.

7.2A.5.2 Syntax

7.2A.5.2.1 General

The syntax of the P-Charging-Vector header field is described in RFC 3455 [52]. There may be additional coding rules for this header depending on the type of IP-CAN, according to access technology specific descriptions.

Table 7.6B describes 3GPP-specific extensions to the P-Charging-Vector header field defined in RFC 3455 [52].

Table 7.6B: Syntax of extensions to P-Charging-Vector header

```

access-network-charging-info = (gprs-charging-info / i-wlan-charging-info / xdsl-charging-info /
    packetcable-charging-info / icn-charging-info / generic-param)
gprs-charging-info = ggsn SEMI auth-token [SEMI pdp-info-hierarchy] *(SEMI extension-param)
ggsn = "ggsn" EQUAL gen-value
pdp-info-hierarchy = "pdp-info" EQUAL LDQUOT pdp-info *(COMMA pdp-info) RDQUOT
pdp-info = pdp-item SEMI pdp-sig SEMI gcid [SEMI flow-id]
pdp-item = "pdp-item" EQUAL DIGIT
pdp-sig = "pdp-sig" EQUAL ("yes" / "no")
gcid = "gcid" EQUAL 1*HEXDIG
auth-token = "auth-token" EQUAL 1*HEXDIG
flow-id = "flow-id" EQUAL "(" "{" 1*DIGIT COMMA 1*DIGIT "}" *(COMMA "{" 1*DIGIT COMMA 1*DIGIT
    "}")")"
extension-param = token [EQUAL token]
i-wlan-charging-info = "pdg"
xdsl-charging-info = bras SEMI auth-token [SEMI xDSL-bearer-info] *(SEMI extension-param)
bras = "bras" EQUAL gen-value
xDSL-bearer-info = "dsl-bearer-info" EQUAL LDQUOT dsl-bearer-info *(COMMA dsl-bearer-info) RDQUOT
dsl-bearer-info = dsl-bearer-item SEMI dsl-bearer-sig SEMI dslcid [SEMI flow-id]
dsl-bearer-item = "dsl-bearer-item" EQUAL DIGIT
dsl-bearer-sig = "dsl-bearer-sig" EQUAL ("yes" / "no")
dslcid = "dslcid" EQUAL 1*HEXDIG
packetcable-charging-info = packetcable [SEMI bcid]
packetcable = "packetcable-multimedia"
bcid = "bcid" EQUAL 1*48(HEXDIG)
icn-charging-info = icn-bcp *(SEMI itid) [SEMI extension-param]
icn-bcp = "icn-bcp" EQUAL gen-value
itid = itc-sig SEMI itc-id SEMI *(flow-id)
itc-sig = "itc-sig" EQUAL ("yes" / "no")
itc-id = "itc-id" EQUAL gen-value
flow-id = "flow-id" EQUAL gen-value
extension-param = token [EQUAL (token | quoted-string)]

```

The access-network-charging-info parameter is an instance of generic-param from the current charge-params component of P-Charging-Vector header.

The access-network-charging-info parameter includes alternative definitions for different types access networks. The description of these parameters are given in the subsequent subclauses.

The access network charging information is not included in the P-Charging-Vector for SIP signalling that is not associated with a session.

When the access network charging information is included in the P-Charging-Vector and necessary information is not available from the IP-CAN (e.g. via Gx/Rx interface) reference points then null or zero values are included.

For type 1 and type 3 IOIs, the generating SIP entity shall express the orig-ioi and term-ioi parameters in the format of a quoted string as specified in RFC 3455 [52] with a specific string prefix being "Type 1" and "Type 3" respectively to indicate the type of IOI. For the type 2 IOI, no string prefix is used. The receiving SIP entity does not perform syntactic checking of the contents of the IOI parameter (the IOI parameter is passed unmodified to charging entities).

7.2A.5.2.2 GPRS as IP-CAN

GPRS is the initially supported access network (gprs-charging-info parameter). For GPRS there are the following components to track: GGSN address (ggsn parameter), media authorization token (auth token parameter), and a pdp-info parameter that contains the information for one or more PDP contexts. In this release the media authorization token is set to zero. The pdp-info contains one or more pdp-item values followed by a collection of parameters (pdp-sig, gcid, and flow-id). The value of the pdp-item is a unique number that identifies each of the PDP-related charging information within the P-Charging-Vector header. Each PDP context has an indicator if it is an IM CN subsystem signalling PDP context (pdp-sig parameter), an associated GPRS Charging Identifier (gcid parameter), and a identifier (flow-id parameter). The flow-id parameter contains a sequence of curly bracket delimited flow identifier tuples that identify associated m-lines and relative order of port numbers in an m-line within the SDP from the SIP signalling to which the PDP context charging information applies. For a complete description of the semantics of the flow-id parameter see 3GPP TS 29.214 [13D] Annex B. The gcid, ggsn address and flow-id parameters are transferred from the GGSN to the P-CSCF via the PCRF over the Rx interface (see 3GPP TS 29.214 [13D] and Gx interface (see 3GPP TS 29.212 [13B])).

The gcid value is received in binary format at the P-CSCF (see 3GPP TS 29.214 [13D]). The P-CSCF shall encode it in hexadecimal format before include it into the gcid parameter. On receipt of this header, a node receiving a gcid shall decode from hexadecimal into binary format.

The access network charging information is not included in the P-Charging-Vector for SIP signalling that is not associated with a multimedia session. The access network charging information may be unavailable for sessions that use a general purpose PDP context (for both SIP signalling and media) or that do not require media authorisation.

7.2A.5.2.3 I-WLAN as IP-CAN

The access-network-charging-info parameter is an instance of generic-param from the current charge-params component of P-Charging-Vector header.

This version of the specification defines the use of "pdg" for inclusion in the P-Charging-Vector header. No other extensions are defined for use in I-WLAN in this version of the specification.

7.2A.5.2.4 xDSL as IP-CAN

The access-network-charging-info parameter is an instance of generic-param from the current charge-params component of P-Charging-Vector header. The access-network-charging-info parameter includes alternative definitions for different types of access networks. This subclause defines the components of the xDSL instance of the access-network-charging-info.

For xDSL, there are the following components to track: BRAS address (bras parameter), media authorization token (auth-token parameter), and a set of dsl-bearer-info parameters that contains the information for one or more xDSL bearers.

The dsl-bearer-info contains one or more dsl-bearer-item values followed by a collection of parameters (dsl-bearer-sig, dslcid, and flow-id). The value of the dsl-bearer-item is a unique number that identifies each of the dsl-bearer-related charging information within the P-Charging-Vector header. Each dsl-bearer-info has an indicator if it is an IM CN subsystem signalling dsl-bearer (dsl-bearer-sig parameter), an associated DSL Charging Identifier (dslcid parameter), and a identifier (flow-id parameter). The flow-id parameter contains a sequence of curly bracket delimited flow identifier tuples that identify associated m-lines and relative order of port numbers in an m-line within the SDP from the SIP signalling to which the dsl-bearer charging information applies. For a complete description of the semantics of the flow-id parameter see 3GPP TS 29.214 [13D].

The format of the dslcid parameter is identical to that of ggsn parameter. On receipt of this header, a node receiving a dslcid shall decode from hexadecimal into binary format.

For a dedicated dsl-bearer for SIP signalling, i.e. no media stream requested for a session, then there is no authorisation activity or information exchange over the Rx and Gx interfaces. Since there are no dslcid, media authorization token or flow identifiers in this case, the dslcid and media authorization token are set to zero and no flow identifier parameters are constructed by the PCRF.

7.2A.5.2.5 DOCSIS as IP-CAN

The access-network-charging-info parameter is an instance of generic-param from the current charge-params component of P-Charging-Vector header. The access-network-charging-info parameter includes alternative definitions for different types of access networks. This subclause defines the components of the cable instance of the access-network-charging-info. Cable access is based upon the architecture defined by Data Over Cable Service Interface Specification (DOCSIS).

The billing correlation identifier (bcid) uniquely identifies the PacketCable DOCSIS bearer resources associated with the session within the cable operator's network for the purposes of billing correlation. To facilitate the correlation of session and bearer accounting events, a correlation ID that uniquely identifies the resources associated with a session is needed. This is accomplished through the use of the bcid as generated by the PacketCable Multimedia network. This bcid is returned to the P-CSCF within the response to a successful resource request.

The bcid is specified in RFC 3603 [74A]. This identifier is chosen to be globally unique within the system for a window of several months. Consistent with RFC 3603 [74A], the BCID must be encoded as a hexadecimal string of up to 48 characters. Leading zeroes may be suppressed.

If the bcid value is received in binary format by the P-CSCF from the IP-CAN, the P-CSCF shall encode it in hexadecimal format before including it into the bcid parameter. On receipt of this header, a node using a bcid will normally decode from hexadecimal into binary format.

7.2A.5.2.6 cdma2000 packet data subsystem as IP-CAN

The specific extensions to the P-Charging-Vector header field defined in RFC 3455 [52] when the access network is cdma2000 packet data subsystem are: the icn-charging-info parameter contains one icn-bcp child parameter and one or more child itid parameters. The icn-bcp parameter, identifies the point of attachment where UE has attached itself to the cdma2000 packet data subsystem. The icn-bcp parameter is conveyed to the P-CSCF by the cdma2000 packet data subsystem. Each itid child parameter within icn-charging-info corresponds to one IP-CAN bearer that was established by the cdma2000 packet data subsystem for the UE. Each itid parameter contains an indicator if it is an IP-CAN subsystem signalling IP-CAN bearer (itc-sig parameter), an associated IP-CAN charging identifier (itc-id parameter), and one or more flow identifiers (flow-id parameter) that identify associated m-lines within the SDP from the SIP signalling. These parameters are transferred from the cdma2000 packet data subsystem to the P-CSCF over the respective interface.

For an IP-CAN bearer that is only used for SIP signalling, i.e. no media stream requested for a session, then there is no authorisation activity or information exchange with the P-CSCF over the respective cdma2000 interfaces. Since there is no itc-id, or flow identifiers in this case, the itc-id is set to zero and no flow identifier parameters are constructed by the P-CSCF.

7.2A.5.3 Operation

The operation of this header is described in subclauses 5.2, 5.3, 5.4, 5.5, 5.6, 5.7 and 5.8.

7.2A.6 Orig parameter definition

7.2A.6.1 Introduction

The "orig" parameter is a uri-parameter intended to:

- tell the S-CSCF that it has to perform the originating services instead of terminating services;
- tell the I-CSCF that it has to perform originating procedures.

7.2A.6.2 Syntax

The syntax for the orig parameter is specified in table 7.7:

Table 7.7: Syntax of orig parameter

```
uri-parameter = transport-param / user-param / method-param / ttl-param / maddr-param / lr-param /
               orig / other-param
orig = "orig"
```

The BNF for uri-parameter is taken from IETF RFC 3261 [26] and modified accordingly.

7.2A.6.3 Operation

The orig parameter is appended to the address of the S-CSCF, I-CSCF or IBCF by the ASs, when those initiate requests on behalf of the user. The S-CSCF will run originating services whenever the orig parameter is present next to its address. The I-CSCF will run originating procedures whenever the orig parameter is present next to its address. The IBCF will preserve the "orig" parameter in the topmost Route header.

7.2A.7 Extension to Security-Client, Security-Server and Security-Verify headers

7.2A.7.1 Introduction

This extension defines new parameters for the Security-Client, Security-Server and Security-Verify headers.

7.2A.7.2 Syntax

The syntax for the Security-Client, Security-Server and Security-Verify headers is defined in IETF RFC 3329. The additional syntax is defined in Annex H of 3GPP TS 33.203 [19].

7.2A.7.3 Operation

The operation of the additional parameters for the Security-Client, Security-Server and Security-Verify headers is defined in Annex H of 3GPP TS 33.203 [19].

7.2A.8 IMS Communication Service Identifier (ICSI)

7.2A.8.1 Introduction

The ICSI is defined to fulfil the requirements as stated in 3GPP TS 23.228 [7].

7.2A.8.2 Coding of the ICSI

This parameter is coded as a URN. The ICSI URN may be included as:

- a tag-value within the g.3gpp.app_ref media feature tag as defined in subclause 7.9.2 and RFC 3840 [62], in which case those characters of the URN that are not part of the tag-value definition in RFC 3840 [62] shall be represented in the percent encoding as defined in RFC 3986 [124]; or
- as a value of the P-Preferred-Service or P-Asserted-Service header fields as defined draft-draze-sipping-service-identification [121].

A list of the URNs containing ICSI values registered by 3GPP can be found at <http://www.3gpp.org/tb/Other/URN/URN.htm>

An example of an ICSI for a 3GPP defined IMS communication service is:

```
urn:urn-xxx:3gpp-service.ims.icsi.mmtel
```

An example of a g.3gpp.app_ref media feature tag containing an ICSI for a 3GPP defined IMS communication service is:

```
g.3gpp.app_ref="urn%3Aurn-xxx%3A3gpp-service.ims.icsi.mmtel"
```

An example of an ICSI for a 3GPP defined IMS communication service in a P-Preferred-Service header field is

```
P-Preferred-Service: urn:urn-xxx:3gpp-service.ims.icsi.mmtel
```

An example of an ICSI for a 3GPP defined IMS communication service in a P-Asserted-Service header field is

```
P-Asserted-Service: urn:urn-xxx:3gpp-service.ims.icsi.mmtel
```

Editor's note: urn-xxx will be allocated a number when it is registered with IANA.

7.2A.9 IMS Application Reference Identifier (IARI)

7.2A.9.1 Introduction

The IARI is defined to fulfil the requirements as stated in 3GPP TS 23.228 [7].

7.2A.9.2 Coding of the IARI

This parameter is coded as a URN. The IARI URN may be included as a tag-value within the g.3gpp.app_ref media feature tag as defined in subclause 7.9.2 and RFC 3840 [62], in which case those characters of the URN that are not part of the tag-value definition in RFC 3840 [62] shall be represented in the percent encoding as defined in RFC 3986 [124].

A list of the URNs containing IARI values registered by 3GPP can be found at <http://www.3gpp.org/tb/Other/URN/URN.htm>

An example of a g.3gpp.app_ref media feature tag containing an IARI is:

```
g.3gpp.app_ref="urn%3Aurn-xxx%3A3gpp-application.ims.iari.game-v1"
```

An example of a g.3gpp.app_ref media feature tag containing an ICSI and an IARI is:

```
g.3gpp.app_ref="urn%3Aurn-xxx%3A3gpp-service.ims.icsi.mmtel,urn%3Aurn-xxx%3A3gpp-application.ims.iari.game-v1"
```

Editor's note: urn-xxx will be allocated a number when it is registered with IANA.

7.2A.10 Phone-context parameter

7.2A.10.1 Introduction

The "phone-context" parameter indicates that the UE uses local service number in the Request-URI.

7.2A.10.2 Syntax

The syntax of the "phone-context" parameter is described in RFC 3966 [22]. There are additional coding rules for this parameter depending on the type of IP-CAN, according to access technology specific descriptions.

7.2A.10.3 Additional coding rules for phone-context parameter

In case the current IP-CAN is indicated in the phone-context the entities inserting the "phone-context" parameter shall populate the "phone-context" parameter with the following contents:

- 1) if the IP-CAN is GPRS, then the "phone-context" parameter is a domain name. It is constructed from the MCC, the MNC and the home network domain name by concatenating the MCC, MNC, and the string "gprs" as domain labels before the home network domain name;

EXAMPLE: If MCC = 216, MNC = 01, then the "phone-context" parameter is set to '216.01.gprs.home1.net'.

- 2) if the IP-CAN is I-WLAN, then the "phone-context" parameter is a domain name. It is constructed from the SSID, AP's MAC address, and the home network domain name by concatenating the SSID, AP's MAC address, and the string "i-wlan" as domain labels before the home network domain name;

EXAMPLE: If SSID = BU-Airport, AP's MAC = 00-0C-F1-12-60-28, and home network domain name is "home1.net", then the "phone-context" parameter is set to the string "bu-airport.000cf1126028.i-wlan.home1.net".

- 3) if the IP-CAN is xDSL, then the "phone-context" parameter is a domain name. It is constructed from the dsl-location (see subclause 7.2A.4) and the home network domain name by concatenating the dsl-location and the string "xdsl" as domain labels before the home network domain name;
- 4) if the IP-CAN is DOCSIS, then the "phone-context" parameter is based on data configured locally in the UE; and
- 5) if the access network information is not available in the UE, then the "phone-context" parameter is set to the home network domain name preceded by the string "geo-local".

In case the home domain is indicated in the phone-context, the "phone-context" parameter is set to the home network domain name (as it is used to address the SIP REGISTER request, see subclause 5.1.1.1A or subclause 5.1.1.1B).

In case the "phone-context" parameter indicates a network other than the home network or the visited access network, the "phone-context" parameter is set according to RFC 3966 [22].

7.3 Option-tags defined within the present document

There are no option-tags defined within the present document over and above those defined in the referenced IETF specifications.

7.4 Status-codes defined within the present document

There are no status-codes defined within the present document over and above those defined in the referenced IETF specifications.

7.5 Session description types defined within the present document

There are no session description types defined within the present document over and above those defined in the referenced IETF specifications.

7.6 3GPP IM CN subsystem XML body

7.6.1 General

This subclause contains the 3GPP IM CN Subsystem XML body in XML format. The 3GPP IM CN Subsystem XML shall be valid against the 3GPP IM CN Subsystem XML schema defined in table 7.7A.

Any SIP User Agent or proxy may insert or remove the 3GPP IM CN subsystem XML body or parts of it, as required, in any SIP message. The 3GPP IM CN subsystem XML body shall not be forwarded outside a 3GPP network.

The associated MIME type with the 3GPP IMS XML body is "application/3gpp-ims+xml".

7.6.2 Document Type Definition

The XML Schema, is defined in table 7.7A.

Table 7.7A: IM CN subsystem XML body, XML Schema

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
  attributeFormDefault="unqualified" version="1">
  <xs:complexType name="tIMS3GPP">
    <xs:sequence>
      <xs:choice>
        <xs:element name="alternative-service" type="tAlternativeService"/>
        <xs:element name="service-info" type="xs:string"/>
      </xs:choice>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="version" type="xs:decimal" use="required"/>
    <xs:anyAttribute/>
  </xs:complexType>
  <xs:complexType name="tAlternativeService">
    <xs:sequence>
      <xs:element name="type" type="tType"/>
      <xs:element name="reason" type="xs:string"/>
      <xs:element name="action" type="tAction" minOccurs="0"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute/>
  </xs:complexType>
  <xs:complexType name="tType">
    <xs:sequence>
      <xs:element name="emergency" minOccurs="0" maxOccurs="1">
        <xs:complexType/>
      </xs:element>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute/>
  </xs:complexType>
  <xs:complexType name="tAction">
    <xs:sequence>
      <xs:element name="emergency-registration" minOccurs="0" maxOccurs="1">
        <xs:complexType/>
      </xs:element>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute/>
  </xs:complexType>
  <xs:element name="ims-3gpp" type="tIMS3GPP"/>
</xs:schema>

```

7.6.3 XML Schema description

This subclause describes the elements of the IMS Document Type Definition as defined in table 7.7A.

- <ims-3gpp>: This is the root element of the IMS XML body. It shall always be present. XML instance documents of future versions of the XML Schema in table 7.7A shall be valid against the XML Schema in table 7.7A in this document. XML instance documents of the XML Schema in table 7.7A in the present document shall have a version attribute value, part of the ims-3gpp element, that is equal to the value of the XML Schema version described in the present document.
- <service-info>: the transparent element received from the HSS for a particular trigger point are placed within this optional element.
- <alternative-service>: in the present document, the alternative service is used as a response for an attempt to establish an emergency session within the IM CN subsystem. The element describes an alternative service where the call should success. The alternative service is described by the type of service information. A possible reason cause why an alternative service is suggested may be included.

The <alternative-service> element contains a <type> element that indicates the type of alternative service and an <action> element, an optional element.

The <type> element contains only the value "emergency" in the present document.

The <action> element contains only the value "emergency-registration" in the present document.

The <reason> element contains an explanatory text with the reason why the session setup has been redirected. A UE may use this information to give an indication to the user.

7.7 SIP timers

The timers defined in RFC 3261 [26] need modification in some cases to accommodate the delays introduced by the air interface processing and transmission delays. Table 7.8 shows recommended values for IM CN subsystem.

Table 7.8 lists in the first column, titled "SIP Timer" the timer names as defined in RFC 3261 [26].

The second column, titled "value to be applied between IM CN subsystem elements" lists the values recommended for network elements e.g. P-CSCF, S-CSCF, MGCF, when communicating with each other i.e. when no air interface leg is included. These values are identical to those recommended by RFC 3261 [26].

The third column, titled "value to be applied at the UE" lists the values recommended for the UE, when in normal operation the UE generates requests or responses containing a P-Access-Network-Info header which included a value of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b", or "IEEE-802.11g". These are modified when compared to RFC 3261 [26] to accommodate the air interface delays. In all other cases, the UE should use the values specified in RFC 3261 [26] as indicated in the second column of table 7.8.

The fourth column, titled "value to be applied at the P-CSCF toward a UE" lists the values recommended for the P-CSCF when an air interface leg is traversed, and which are used on all SIP transactions on a specific security association where the security association was established using a REGISTER request containing a P-Access-Network-Info header which included a value of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a" or "IEEE-802.11b", or "IEEE-802.11g". These are modified when compared to RFC 3261 [26]. In all other cases, the P-CSCF should use the values specified in RFC 3261 [26] as indicated in the second column of table 7.8.

The final column reflects the timer meaning as defined in RFC 3261 [26].

Table 7.8: SIP timers

| SIP Timer | Value to be applied between IM CN subsystem elements | Value to be applied at the UE | Value to be applied at the P-CSCF toward a UE | Meaning |
|-----------|--|----------------------------------|---|--|
| T1 | 500ms default | 2s default | 2s default | RTT estimate |
| T2 | 4s | 16s | 16s | The maximum retransmit interval for non-INVITE requests and INVITE responses |
| T4 | 5s | 17s | 17s | Maximum duration a message will remain in the network |
| Timer A | initially T1 | initially T1 | initially T1 | INVITE request retransmit interval, for UDP only |
| Timer B | 64*T1 | 64*T1 | 64*T1 | INVITE transaction timeout timer |
| Timer C | > 3min | > 3 min | > 3 min | proxy INVITE transaction timeout |
| Timer D | > 32s for UDP 0s for TCP/SCTP | >128s 0s for TCP/SCTP | >128s 0s for TCP/SCTP | Wait time for response retransmits |
| Timer E | initially T1 | initially T1 | initially T1 | non-INVITE request retransmit interval, UDP only |
| Timer F | 64*T1 | 64*T1 | 64*T1 | non-INVITE transaction timeout timer |
| Timer G | initially T1 | initially T1 | initially T1 | INVITE response retransmit interval |
| Timer H | 64*T1 | 64*T1 | 64*T1 | Wait time for ACK receipt. |
| Timer I | T4 for UDP 0s for TCP/SCTP | T4 for UDP 0s for TCP/SCTP | T4 for UDP 0s for TCP/SCTP | Wait time for ACK retransmits |
| Timer J | 64*T1 for UDP 0s for TCP/SCTP | 64*T1 for UDP 0s for TCP/SCTP | 64*T1 for UDP 0s for TCP/SCTP | Wait time for non-INVITE request retransmits |
| Timer K | T4 for UDP 0s for TCP/SCTP | T4 for UDP 0s for TCP/SCTP | T4 for UDP 0s for TCP/SCTP | Wait time for response retransmits |

7.8 IM CN subsystem timers

Table 7.9 shows recommended values for timers specific to the IM CN subsystem.

Table 7.9: IM CN subsystem

| Timer | Value to be applied at the UE | Value to be applied at the P-CSCF | Value to be applied at the S-CSCF | Meaning |
|----------------|-------------------------------|-----------------------------------|-----------------------------------|---|
| reg-await-auth | not applicable | not applicable | 4 minutes | The timer is used by the S-CSCF during the authentication procedure of the UE. For detailed usage of the timer see subclause 5.4.1.2. The authentication procedure may take in the worst case as long as 2 times Timer F. The IM CN subsystem value for Timer F is 128 seconds. |

NOTE: The UE and the P-CSCF use the value of the reg-await-auth timer to set the SIP level lifetime of the temporary set of security associations.

7.9 Media feature tags defined within the current document

7.9.1 General

This subclause describes the media feature tag definitions that are applicable for the 3GPP IM CN subsystem.

7.9.2 Definition of media feature tag g.3gpp.app_ref

Media feature-tag name: g.3gpp.app_ref.

ASN.1 Identifier: New assignment by IANA.

Editor's note: The media feature-tag name is to be registered with IANA.

Summary of the media feature indicated by this tag: Each value of the Application Reference media feature-tag indicates the software applications supported by the agent. The values for this tag equal the IMS communication Service Identifier (ICSI) and IMS Application Reference Identifier (IARI) values supported by the agent.

The Application Reference media feature tag is defined to fulfil the requirements for forking to an appropriate UE when multiple UEs are registered and dispatch to an appropriate application within the UE based upon the IMS communication Service Identifier (ICSI) and IMS Application Reference Identifier (IARI) values as stated in 3GPP TS 23.228 [7].

Multiple tag-values can be included in the Application Reference media feature-tag.

Values appropriate for use with this feature-tag: Token with an equality relationship.

The feature-tag is intended primarily for use in the following applications, protocols, services, or negotiation mechanisms:

This feature-tag is most useful in a communications application, for describing the capabilities of a device, such as a phone or PDA.

Examples of typical use: Routing an IMS Communication Session to a device that supports a particular software application or understands a particular service.

Related standards or documents:

3GPP TS 24.229: "IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP), stage 3"

Security Considerations: Security considerations for this media feature-tag are discussed in subclause 11.1 of RFC 3840 [6].

8 SIP compression

8.1 SIP compression procedures at the UE

8.1.1 SIP compression

If in normal operation the UE generates requests or responses containing a P-Access-Network-Info header which included a value of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b" or "IEEE-802.11g", then the UE shall support:

- SigComp as specified in RFC 3320 [32] and as updated by RFC 4896 [118]; and
- the additional requirements specified in draft-ietf-rohc-sigcomp-sip [79], with the exception that the State Memory Size of at least 4096 bytes shall be a minimum value.

If in normal operation the UE generates requests or responses containing a P-Access-Network-Info header which included a value of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b" or "IEEE-802.11g", then the UE may support:

- the negative acknowledgement mechanism specified in RFC 4077 [65A].

When using SigComp the UE shall send compressed SIP messages in accordance with RFC 3486 [55]. When the UE will create the compartment is implementation specific, but the compartment shall not be created until a set of security associations are set up. The compartment shall finish when the UE is deregistered. State creations and announcements shall be allowed only for messages received in a security association.

NOTE: Exchange of bytetimes during registration will prevent unnecessary delays during session setup.

If the UE supports SigComp:

- the UE shall support the SIP dictionary specified in RFC 3485 [42] and as updated by RFC 4896 [118]. If compression is enabled, the UE shall use the dictionary to compress the first message; and
- if the UE supports the presence user agent or watcher roles as specified in table A.3A/2 and table A.3A/4, the UE may support the presence specific dictionary specified in draft-garcia-simple-presence-dictionary [119].

8.1.2 Compression of SIP requests and responses transmitted to the P-CSCF

If in normal operation the UE generates requests or responses containing a P-Access-Network-Info header which included a value of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b" or "IEEE-802.11g", then the UE should compress the requests and responses transmitted to the P-CSCF according to subclause 8.1.1. In other cases where SigComp is supported, it need not.

NOTE 1: Compression of SIP messages is an implementation option. However, compression is strongly recommended.

NOTE 2: In an IP-CAN where compression support is mandatory, the UE may send even the first message compressed. Sigcomp provides mechanisms to allow the UE to know if state has been created in the P-CSCF or not.

8.1.3 Decompression of SIP requests and responses received from the P-CSCF

If the UE supports SigComp, then the UE shall decompress the compressed requests and responses received from the P-CSCF according to subclause 8.1.1.

If the UE detects a decompression failure at the P-CSCF, the recovery mechanism is implementation specific.

8.2 SIP compression procedures at the P-CSCF

8.2.1 SIP compression

The P-CSCF shall support:

- SigComp as specified in RFC 3320 [32] and as updated by RFC 4896 [118]; and
- the additional requirements specified in draft-ietf-rohc-sigcomp-sip [79], with the exception that the State Memory Size of at least 4096 bytes shall be a minimum value.

The P-CSCF may support:

- the negative acknowledgement mechanism specified in RFC 4077 [65A].

When using SigComp the P-CSCF shall send compressed SIP messages in accordance with RFC 3486 [55]. When the P-CSCF will create the compartment is implementation specific, but the compartment shall not be created until a set of security associations are set up. The compartment shall finish when the UE is deregistered. State creations and announcements shall be allowed only for messages received in a security association.

The P-CSCF:

- shall support the SIP dictionary specified in RFC 3485 [42] and as updated by RFC 4896 [118]. If compression is enabled, the P-CSCF shall use the dictionary to compress the first message; and
- may support the presence specific dictionary specified in draft-garcia-simple-presence-dictionary [119].

NOTE: Exchange of bytecodes during registration will prevent unnecessary delays during session setup.

8.2.2 Compression of SIP requests and responses transmitted to the UE

The P-CSCF should compress the requests and responses transmitted to the UE according to subclause 8.2.1.

For all SIP transactions on a specific security association where the security association was established using a REGISTER request from the UE containing a P-Access-Network-Info header which included a value of "3GPP-GERAN", "3GPP-UTRAN-FDD", "3GPP-UTRAN-TDD", "3GPP2-1X", "3GPP2-1X-HRPD", "3GPP2-UMB", "IEEE-802.11", "IEEE-802.11a", "IEEE-802.11b" or "IEEE-802.11g" then the P-CSCF should compress the requests and responses transmitted to the UE according to subclause 8.2.1. In other cases where SigComp is supported, it need not.

NOTE: Compression of SIP messages is an implementation option. However, compression is strongly recommended.

8.2.3 Decompression of SIP requests and responses received from the UE

The P-CSCF shall decompress the compressed requests and responses received from the UE according to subclause 8.2.1.

If the P-CSCF detects a decompression failure at the UE, the recovery mechanism is implementation specific.

9 IP-Connectivity Access Network aspects when connected to the IM CN subsystem

9.1 Introduction

A UE accessing the IM CN subsystem and the IM CN subsystem itself utilises the services supported by the IP-CAN to provide packet-mode communication between the UE and the IM CN subsystem. General requirements for the UE on the use of these packet-mode services are specified in this clause.

Possible aspects particular to each IP-CAN is described separately for each IP-CAN.

9.2 Procedures at the UE

9.2.1 Connecting to the IP-CAN and P-CSCF discovery

Prior to communication with the IM CN subsystem, the UE shall:

- a) establish a connection with the IP-CAN;
- b) obtain an IP address using either the standard IETF protocols (e.g., DHCP or IPCP) or a protocol that is particular to the IP-CAN technology that the UE is utilising. The obtained IP address shall be fixed throughout the period the UE is connected to the IM CN subsystem, i.e. from the initial registration and at least until the last deregistration; and
- c) acquire a P-CSCF address(es).

The UE may acquire an IP address via means other than the DHCP. In this case, upon acquiring an IP address, the UE shall request the configuration information (that includes the DNS and P-CSCF addresses) from the DHCP server through a single request and reply exchanged with the DHCP server.

The methods for acquiring a P-CSCF address(es) are:

- I. Employ Dynamic Host Configuration Protocol for IPv4 RFC 2131 [40A] or for IPv6 (DHCPv6) RFC 3315 [40], the DHCP options for SIP servers RFC 3319 [41] and the DHCP options for Domain Name Servers (DNS) RFC 3646 [56C] in case of IPv6 and RFC 3361 [35A] in case of IPv4).

The UE shall either:

- in the DHCP query, request a list of SIP server domain names of P-CSCF(s) and the list of Domain Name Servers (DNS); or
 - request a list of SIP server IP addresses of P-CSCF(s).
- II. Obtain the P-CSCF address(es) by employing a procedure that the IP-CAN technology supports. (e.g. GPRS).
 - III. The UE may use pre-configured P-CSCF address(es) (IP address or domain name).

When acquiring a P-CSCF address(es) the UE can freely select either method I or II or III.

The UE may also request a DNS Server IP address(es) as specified in RFC 3315 [40] and RFC 3646 [56C] or RFC 2131 [40A].

9.2.2 Handling of the IP-CAN

The means to ensure that appropriate resources are available for the media flow(s) on the IP-CAN(s) related to a SIP session is dependant on the characteristics for each IP-CAN, and is described separately for each IP-CAN in question.

GPRS is described in annex B. I-WLAN is described in annex D. xDSL is described in annex E. DOCSIS is described in Annex H. cdma2000 packet data subsystem is described in Annex M. If a particular handling of the IP-CAN is needed for emergency calls, this is described in the annex for each access technology.

9.2.3 Special requirements applying to forked responses

Since the UE does not know that forking has occurred until a second provisional response arrives, the UE will request the radio/bearer resources as required by the first provisional response. For each subsequent provisional response that may be received, different alternative actions may be performed depending on the requirements in the SDP answer:

- the UE has sufficient radio/bearer resources to handle the media specified in the SDP of the subsequent provisional response, or
- the UE must request additional radio/bearer resources to accommodate the media specified in the SDP of the subsequent provisional response.

NOTE 1: When several forked responses are received, the resources requested by the UE is the "logical OR" of the resources indicated in the multiple responses to avoid allocation of unnecessary resources. The UE does not request more resources than proposed in the original INVITE request.

NOTE 2: When service-based local policy is applied, the UE receives the same authorization token for all forked requests/responses related to the same SIP session.

When the first final 200 (OK) response for the INVITE request is received for one of the early dialogues, the UE proceeds to set up the SIP session using the radio/bearer resources required for this session. Upon the reception of the first final 200 (OK) response for the INVITE request, the UE shall release all unneeded radio/bearer resources.

Annex A (normative): Profiles of IETF RFCs for 3GPP usage

A.1 Profiles

A.1.1 Relationship to other specifications

This annex contains a profile to the IETF specifications which are referenced by this specification, and the PICS proformas underlying profiles do not add requirements to the specifications they are proformas for.

This annex provides a profile specification according to both the current IETF specifications for SIP, SDP and other protocols (as indicated by the "RFC status" column in the tables in this annex) which are referenced by this specification and to the 3GPP specifications using SIP (as indicated by the "Profile status" column in the tables in this annex).

In the "RFC status" column the contents of the referenced specification takes precedence over the contents of the entry in the column.

In the "Profile status" column, there are a number of differences from the "RFC status" column. Where these differences occur, these differences take precedence over any requirements of the IETF specifications. Where specification concerning these requirements exists in the main body of the present document, the main body of the present document takes precedence.

Where differences occur in the "Profile status" column, the "Profile status" normally gives more strength to a "RFC status" and is not in contradiction with the "RFC status", e.g. it may change an optional "RFC status" to a mandatory "Profile status". If the "Profile status" weakens the strength of a "RFC status" then additionally this will be indicated by further textual description in the present document.

For all IETF specifications that are not referenced by this document or that are not mentioned within the 3GPP profile of SIP and SDP, the generic rules as defined by RFC 3261 [26] and in addition the rules in clauses 5 and 6 of this specification apply, e.g..

- a proxy which is built in accordance to this specification passes on any unknown method, unknown header field or unknown header parameter after applying procedures such as filtering, insertion of P-Asserted-Identity header, etc.;
- an UA which is built in accordance to this specification will
 - handle received unknown methods in accordance to the procedures defined in RFC 3261 [26], e.g. respond with a 501 (Not Implemented) response; and
 - handle unknown header fields and unknown header parameters in accordance to the procedures defined in RFC 3261 [26], e.g. respond with a 420 (Bad Extension) if an extension identified by an option tag in the Require header of the received request is not supported by the UA.

A.1.2 Introduction to methodology within this profile

This subclause does not reflect dynamic conformance requirements but static ones. In particular, a condition for support of a PDU parameter does not reflect requirements about the syntax of the PDU (i.e. the presence of a parameter) but the capability of the implementation to support the parameter.

In the sending direction, the support of a parameter means that the implementation is able to send this parameter (but it does not mean that the implementation always sends it).

In the receiving direction, it means that the implementation supports the whole semantic of the parameter that is described in the main part of this specification.

As a consequence, PDU parameter tables in this subclause are not the same as the tables describing the syntax of a PDU in the reference specification, e.g. RFC 3261 [26] tables 2 and 3. It is not rare to see a parameter which is optional in the syntax but mandatory in subclause below.

The various statii used in this subclause are in accordance with the rules in table A.1.

Table A.1: Key to status codes

| Status code | Status name | Meaning |
|-------------|-----------------------|--|
| m | mandatory | the capability shall be supported. It is a static view of the fact that the conformance requirements related to the capability in the reference specification are mandatory requirements. This does not mean that a given behaviour shall always be observed (this would be a dynamic view), but that it shall be observed when the implementation is placed in conditions where the conformance requirements from the reference specification compel it to do so. For instance, if the support for a parameter in a sent PDU is mandatory, it does not mean that it shall always be present, but that it shall be present according to the description of the behaviour in the reference specification (dynamic conformance requirement). |
| o | optional | the capability may or may not be supported. It is an implementation choice. |
| n/a | not applicable | it is impossible to use the capability. No answer in the support column is required. |
| x | prohibited (excluded) | It is not allowed to use the capability. This is more common for a profile. |
| c <integer> | conditional | the requirement on the capability ("m", "o", "n/a" or "x") depends on the support of other optional or conditional items. <integer> is the identifier of the conditional expression. |
| o.<integer> | qualified optional | for mutually exclusive or selectable options from a set. <integer> is the identifier of the group of options, and the logic of selection of the options. |
| i | irrelevant | capability outside the scope of the given specification. Normally, this notation should be used in a base specification ICS proforma only for transparent parameters in received PDUs. However, it may be useful in other cases, when the base specification is in fact based on another standard. |

In the context of this specification the "i" status code mandates that the implementation does not change the content of the parameter. It is an implementation option if the implementation acts upon the content of the parameter (e.g. by setting filter criteria to known or unknown parts of parameters in order to find out the route a message has to take).

It must be understood, that this 3GPP SIP profile does not list all parameters which an implementation will treat as indicated by the status code "irrelevant". In general an implementation will pass on all unknown messages, header fields and header parameters, as long as it can perform its normal behaviour.

The following additional comments apply to the interpretation of the tables in this Annex.

NOTE 1: The tables are constructed according to the conventional rules for ICS proformas and profile tables.

NOTE 2: The notation (either directly or as part of a conditional) of "m" for the sending of a parameter and "i" for the receipt of the same parameter, may be taken as indicating that the parameter is passed on transparently, i.e. without modification. Where a conditional applies, this behaviour only applies when the conditional is met.

A.1.3 Roles

Table A.2: Roles

| Item | Roles | Reference | RFC status | Profile status |
|-------|---|-----------|------------|----------------|
| 1 | User agent | [26] | o.1 | o.1 |
| 2 | Proxy | [26] | o.1 | o.1 |
| o.1: | It is mandatory to support exactly one of these items. | | | |
| NOTE: | For the purposes of the present document it has been chosen to keep the specification simple by the tables specifying only one role at a time. This does not preclude implementations providing two roles, but an entirely separate assessment of the tables shall be made for each role. | | | |

Table A.3: Roles specific to this profile

| Item | Roles | Reference | RFC status | Profile status |
|-------|---|-----------|------------|----------------|
| 1 | UE | 5.1 | n/a | o.1 |
| 2 | P-CSCF | 5.2 | n/a | o.1 |
| 3 | I-CSCF | 5.3 | n/a | o.1 |
| 3A | void | | | |
| 4 | S-CSCF | 5.4 | n/a | o.1 |
| 5 | BGCF | 5.6 | n/a | o.1 |
| 6 | MGCF | 5.5 | n/a | o.1 |
| 7 | AS | 5.7 | n/a | o.1 |
| 7A | AS acting as terminating UA, or redirect server | 5.7.2 | n/a | c2 |
| 7B | AS acting as originating UA | 5.7.3 | n/a | c2 |
| 7C | AS acting as a SIP proxy | 5.7.4 | n/a | c2 |
| 7D | AS performing 3rd party call control | 5.7.5 | n/a | c2 |
| 8 | MRFC | 5.8 | n/a | o.1 |
| 9 | IBCF | 5.10 | n/a | o.1 |
| 9A | IBCF (THIG) | 5.10.4 | n/a | c4 |
| 9B | IBCF (IMS-ALG) | 5.10.5 | n/a | c4 |
| 9C | IBCF (Screening of SIP signalling) | 5.10.6 | n/a | c4 |
| 10 | Additional routeing functionality | Annex I | n/a | c3 |
| 11 | E-CSCF | 5.11 | n/a | o.1 |
| c2: | IF A.3/7 THEN o.2 ELSE n/a - - AS. | | | |
| c3: | IF A.3/3 OR A.3/4 OR A.3/5 OR A.3/6 OR A.3/9 THEN o ELSE o.1 - - I-CSCF, S-CSCF, BGCF, MGCF, IBCF. | | | |
| c4: | IF A.3/9 THEN o.3 ELSE n/a - - IBCF. | | | |
| o.1: | It is mandatory to support exactly one of these items. | | | |
| o.2: | It is mandatory to support at least one of these items. | | | |
| o.3: | It is mandatory to support at least one of these items. | | | |
| NOTE: | For the purposes of the present document it has been chosen to keep the specification simple by the tables specifying only one role at a time. This does not preclude implementations providing two roles, but an entirely separate assessment of the tables shall be made for each role. | | | |

Table A.3A: Roles specific to additional capabilities

| Item | Roles | Reference | RFC status | Profile status |
|---------|---|------------------------|------------|----------------|
| 1 | Presence server | 3GPP TS 24.141 [8A] | n/a | c1 |
| 2 | Presence user agent | 3GPP TS 24.141 [8A] | n/a | c2 |
| 3 | Resource list server | 3GPP TS 24.141 [8A] | n/a | c3 |
| 4 | Watcher | 3GPP TS 24.141 [8A] | n/a | c4 |
| 11 | Conference focus | 3GPP TS 24.147 [8B] | n/a | c5 |
| 12 | Conference participant | 3GPP TS 24.147 [8B] | n/a | c6 |
| 21 | CSI user agent | 3GPP TS 24.279 [8E] | n/a | c7 |
| 22 | CSI application server | 3GPP TS 24.279 [8E] | n/a | c8 |
| 31 | Messaging application server | 3GPP TS 24.247 [8F] | n/a | c5 |
| 32 | Messaging list server | 3GPP TS 24.247 [8F] | n/a | c5 |
| 33 | Messaging participant | 3GPP TS 24.247 [8F] | n/a | c2 |
| c1: | IF A.3/7A AND A.3/7B THEN o ELSE n/a - - AS acting as terminating UA, or redirect server and AS acting as originating UA. | | | |
| c2: | IF A.3/1 THEN o ELSE n/a - - UE. | | | |
| c3: | IF A.3/7A THEN o ELSE n/a - - AS acting as terminating UA, or redirect server. | | | |
| c4: | IF A.3/1 OR A.3/7B THEN o ELSE n/a - - UE or AS acting as originating UA. | | | |
| c5: | IF A.3/7D AND A.3/4 AND A.3/8 THEN o ELSE n/a - - AS performing 3rd party call control and S-CSCF and MRFC (note 2). | | | |
| c6: | IF A.3/1 OR A.3A/11 THEN o ELSE n/a - - UE or conference focus. | | | |
| c7: | IF A.3/1 THEN o ELSE n/a - - UE. | | | |
| c8: | IF A.3/7D THEN o ELSE n/a - - CSI AS performing 3rd party call control. | | | |
| NOTE 1: | For the purposes of the present document it has been chosen to keep the specification simple by the tables specifying only one role at a time. This does not preclude implementations providing two roles, but an entirely separate assessment of the tables shall be made for each role. | | | |
| NOTE 2: | The functional split between the MRFC and the conferencing AS is out of scope of this document and they are assumed to be collocated. | | | |

Table A.3B: Roles with respect to access technology

| Item | Value used in P-Access-Network-Info header | Reference | RFC status | Profile status |
|------|---|-----------|------------|----------------|
| 1 | 3GPP-GERAN | [52] 4.4 | o | c1 |
| 2 | 3GPP-UTRAN-FDD | [52] 4.4 | o | c1 |
| 3 | 3GPP-UTRAN-TDD | [52] 4.4 | o | c1 |
| 4 | 3GPP2-1X | [52] 4.4 | o | c1 |
| 5 | 3GPP2-1X-HRPD | [52] 4.4 | o | c1 |
| 6 | 3GPP2-UMB | [52] 4.4 | o | c1 |
| 11 | IEEE-802.11 | [52] 4.4 | o | c1 |
| 12 | IEEE-802.11a | [52] 4.4 | o | c1 |
| 13 | IEEE-802.11b | [52] 4.4 | o | c1 |
| 14 | IEEE-802.11g | [52] 4.4 | o | c1 |
| 21 | ADSL | [52] 4.4 | o | c1 |
| 22 | ADSL2 | [52] 4.4 | o | c1 |
| 23 | ADSL2+ | [52] 4.4 | o | c1 |
| 24 | RADSL | [52] 4.4 | o | c1 |
| 25 | SDSL | [52] 4.4 | o | c1 |
| 26 | HDSL | [52] 4.4 | o | c1 |
| 27 | HDSL2 | [52] 4.4 | o | c1 |
| 28 | G.SHDSL | [52] 4.4 | o | c1 |
| 29 | VDSL | [52] 4.4 | o | c1 |
| 30 | IDSL | [52] 4.4 | o | c1 |
| 41 | DOCSIS | [52] 4.4 | o | c1 |
| c1: | If A.3/1 OR A.3/2 THEN o.1 ELSE n/a. | | | |
| o.1: | It is mandatory to support at least one of these items. | | | |

A.2 Profile definition for the Session Initiation Protocol as used in the present document

A.2.1 User agent role

A.2.1.1 Introduction

This subclause contains the ICS proforma tables related to the user role. They need to be completed only for UA implementations:

Prerequisite: A.2/1 - - user agent role.

A.2.1.2 Major capabilities

Editor's note: it needs to be checked whether it should be explicitly clarified that the IBCF (IMS-ALG) is transparent to some presence or conference extensions.

Table A.4: Major capabilities

| Item | Does the implementation support | Reference | RFC status | Profile status |
|------|--|------------------------|------------|----------------|
| | Capabilities within main protocol | | | |
| 1 | client behaviour for registration? | [26] subclause 10.2 | o | c3 |
| 2 | registrar? | [26] subclause 10.3 | o | c4 |
| 2A | registration of multiple contacts for a single address of record | [26] 10.2.1.2, 16.6 | o | o |
| 2B | initiating a session? | [26] subclause 13 | o | o |
| 2C | initiating a session which require local and/or remote resource reservation? | [27] | o | c43 |
| 3 | client behaviour for INVITE requests? | [26] subclause 13.2 | c18 | c18 |
| 4 | server behaviour for INVITE requests? | [26] subclause 13.3 | c18 | c18 |
| 5 | session release? | [26] subclause 15.1 | c18 | c18 |
| 6 | timestamping of requests? | [26] subclause 8.2.6.1 | o | o |
| 7 | authentication between UA and UA? | [26] subclause 22.2 | c34 | c34 |
| 8 | authentication between UA and registrar? | [26] subclause 22.2 | o | c74 |
| 8A | authentication between UA and proxy? | [26] 20.28, 22.3 | o | c75 |
| 9 | server handling of merged requests due to forking? | [26] 8.2.2.2 | m | m |
| 10 | client handling of multiple responses due to forking? | [26] 13.2.2.4 | m | m |
| 11 | insertion of date in requests and responses? | [26] subclause 20.17 | o | o |
| 12 | downloading of alerting information? | [26] subclause 20.4 | o | o |
| | Extensions | | | |
| 13 | the SIP INFO method? | [25] | o | n/a |
| 14 | reliability of provisional responses in SIP? | [27] | c19 | c44 |
| 15 | the REFER method? | [36] | o | c33 |
| 16 | integration of resource management and SIP? | [30] [64] | c19 | c44 |
| 17 | the SIP UPDATE method? | [29] | c5 | c44 |
| 19 | SIP extensions for media authorization? | [31] | o | c14 |
| 20 | SIP specific event notification? | [28] | o | c13 |
| 21 | the use of NOTIFY to establish a dialog? | [28] 4.2 | o | n/a |
| 22 | acting as the notifier of event information? | [28] | c2 | c15 |
| 23 | acting as the subscriber to event information? | [28] | c2 | c16 |
| 24 | session initiation protocol extension header field for registering non-adjacent contacts? | [35] | o | c6 |
| 25 | private extensions to the Session Initiation Protocol (SIP) for network asserted identity within trusted networks? | [34] | o | m |
| 26 | a privacy mechanism for the Session Initiation Protocol (SIP)? | [33] | o | m |
| 26A | request of privacy by the inclusion of a Privacy header indicating any privacy option? | [33] | c9 | c11 |
| 26B | application of privacy based on the received Privacy header? | [33] | c9 | n/a |
| 26C | passing on of the Privacy header transparently? | [33] | c9 | c12 |
| 26D | application of the privacy option "header" such that those headers which cannot be completely expunged of identifying information without the assistance of intermediaries are obscured? | [33] 5.1 | c10 | c27 |
| 26E | application of the privacy option "session" such that anonymization for the session(s) initiated by this message | [33] 5.2 | c10 | c27 |

| | | | | |
|-----|---|-----------|-----|--------------|
| | occurs? | | | |
| 26F | application of the privacy option "user" such that user level privacy functions are provided by the network? | [33] 5.3 | c10 | c27 |
| 26G | application of the privacy option "id" such that privacy of the network asserted identity is provided by the network? | [34] 7 | c10 | n/a |
| 26H | application of the privacy option "history" such that privacy of the History-Info header is provided by the network? | [66] 7.2 | c37 | c37 |
| 27 | a messaging mechanism for the Session Initiation Protocol (SIP)? | [50] | o | c7 |
| 28 | session initiation protocol extension header field for service route discovery during registration? | [38] | o | c17 |
| 29 | compressing the session initiation protocol? | [55] | o | c8 |
| 30 | private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP)? | [52] | o | m |
| 31 | the P-Associated-URI header extension? | [52] 4.1 | c21 | c22 |
| 32 | the P-Called-Party-ID header extension? | [52] 4.2 | c21 | c23 |
| 33 | the P-Visited-Network-ID header extension? | [52] 4.3 | c21 | c24 |
| 34 | the P-Access-Network-Info header extension? | [52] 4.4 | c21 | c25 |
| 35 | the P-Charging-Function-Addresses header extension? | [52] 4.5 | c21 | c26 |
| 36 | the P-Charging-Vector header extension? | [52] 4.6 | c21 | c26 |
| 37 | security mechanism agreement for the session initiation protocol? | [48] | o | c20 |
| 38 | the Reason header field for the session initiation protocol? | [34A] | o | c68 |
| 38A | use of the Reason header field in Session Initiation Protocol (SIP) responses? | [130] | o | c82 |
| 39 | an extension to the session initiation protocol for symmetric response routing? | [56A] | o | c62 |
| 40 | caller preferences for the session initiation protocol? | [56B] | C29 | c29 |
| 40A | the proxy-directive within caller-preferences? | [56B] 9.1 | o.5 | o.5 |
| 40B | the cancel-directive within caller-preferences? | [56B] 9.1 | o.5 | o.5 |
| 40C | the fork-directive within caller-preferences? | [56B] 9.1 | o.5 | c28 |
| 40D | the recurse-directive within caller-preferences? | [56B] 9.1 | o.5 | o.5 |
| 40E | the parallel-directive within caller-preferences? | [56B] 9.1 | o.5 | c28 |
| 40F | the queue-directive within caller-preferences? | [56B] 9.1 | o.5 | o.5 |
| 41 | an event state publication extension to the session initiation protocol? | [70] | o | c30 |
| 42 | SIP session timer? | [58] | c19 | c19 |
| 43 | the SIP Referred-By mechanism? | [59] | o | c33 |
| 44 | the Session Initiation Protocol (SIP) "Replaces" header? | [60] | c19 | c38 (note 1) |
| 45 | the Session Initiation Protocol (SIP) "Join" header? | [61] | c19 | c19 (note 1) |

| | | | | |
|-----|---|------------|-----|--------------|
| 46 | the callee capabilities? | [62] | o | c35 |
| 47 | an extension to the session initiation protocol for request history information? | [66] | o | o |
| 48 | Rejecting anonymous requests in the session initiation protocol? | [67] | o | o |
| 49 | session initiation protocol URIs for applications such as voicemail and interactive voice response | [68] | o | o |
| 50 | Session Initiation Protocol's (SIP) non-INVITE transactions? | [84] | m | m |
| 51 | the P-User-Database private header extension? | [82] 4 | o | o |
| 52 | a uniform resource name for services | [69] | n/a | c39 |
| 53 | obtaining and using GRUUs in the Session Initiation Protocol (SIP) | [93] | o | c40 (note 2) |
| 54 | an extension to the session initiation protocol for request cpc information? | [95] | o | c41 |
| 55 | the Stream Control Transmission Protocol (SCTP) as a Transport for the Session Initiation Protocol (SIP)? | [96] | o | c42 |
| 56 | the SIP P-Profile-Key private header extension? | [97] | n/a | n/a |
| 57 | managing client initiated connections in SIP? | [92] | o | c45 |
| 58 | indicating support for interactive connectivity establishment in SIP? | [102] | o | c46 |
| 59 | multiple-recipient MESSAGE requests in the session initiation protocol? | [104] | c47 | c48 |
| 60 | SIP location conveyance | [89] | o | c49 |
| 61 | referring to multiple resources in the session initiation protocol? | [105] | c50 | c50 |
| 62 | conference establishment using request-contained lists in the session initiation protocol? | [106] | c51 | c52 |
| 63 | subscriptions to request-contained resource lists in the session initiation protocol? | [107] | c53 | c53 |
| 64 | dialstring parameter for the session initiation protocol uniform resource identifier? | [103] | o | c19 |
| 65 | the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular? | [111] | o | c60 |
| 66 | the SIP P-Early-Media private header extension for authorization of early media? | [109] 8 | o | c58 |
| 67 | number portability parameters for the "tel" URI? | [112] | o | c54 |
| 67A | assert or process carrier indication? | [112] | o | c55 |
| 67B | local number portability? | [112] | o | c57 |
| 68 | DAI Parameter for the "tel" URI? | [113] | o | c56 |
| 69 | extending the session initiation protocol Reason header for preemption events | [115] | c69 | c69 |
| 70 | communications resource priority for the session initiation protocol? | [116] | o | c70 |
| 70A | inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol? | [116] 4.2 | c72 | c72 |
| 70B | inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol? | [116] 4.2 | c72 | c72 |
| 70C | resource priority namespace of DSN (Defense switched network)? | [116] 10.2 | c71 | n/a |
| 70D | resource priority namespace of DSRN | [116] 10.3 | c71 | n/a |

| | | | | |
|-----|---|------------|-----|-----|
| | (Defense RED switched network)? | | | |
| 70E | resource priority namespace of Q735? | [116] 10.4 | c71 | n/a |
| 70F | resource priority namespace of ETS (Government Emergency Telecommunications Service)? | [116] 10.5 | c71 | n/a |
| 70G | resource priority namespace of WPS (Wireless priority service)? | [116] 10.6 | c71 | c73 |
| 71 | addressing an amplification vulnerability in session initiation protocol forking proxies? | [117] | n/a | n/a |
| 72 | the remote application identification of applying signaling compression to SIP | [79] 9.1 | o | c8 |
| 73 | a session initiation protocol media feature tag for MIME application sub-types? | [120] | o | c59 |
| 74 | Identification of communication services in the session initiation protocol? | [121] | o | c61 |
| 75 | a framework for consent-based communications in SIP | [125] | c76 | c76 |
| 75A | a relay within the framework for consent-based communications in SIP | [125] | c77 | c78 |
| 75B | a recipient within the framework for consent-based communications in SIP | [125] | c80 | c79 |
| 76 | transporting user to user information for call centers using SIP? | [126] | o | c81 |

| | |
|------|---|
| c2: | IF A.4/20 THEN o.1 ELSE n/a - - SIP specific event notification extension. |
| c3: | IF A.3/1 OR A.3/4 THEN m ELSE n/a - - UE or S-CSCF functional entity. |
| c4: | IF A.3/4 THEN m ELSE IF A.3/7 THEN o ELSE n/a - - S-CSCF or AS functional entity. |
| c5: | IF A.4/16 THEN m ELSE o - - integration of resource management and SIP extension. |
| c6: | IF A.3/4 OR A.3/1 THEN m ELSE n/a - - S-CSCF or UE. |
| c7: | IF A.3/1 OR A.3/4 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/9B THEN m ELSE n/a - - UA or S-CSCF or AS acting as terminating UA or AS acting as originating UA or AS performing 3 rd party call control or IBCF (IMS-ALG). |
| c8: | IF A.3/1 THEN (IF (A.3B/1 OR A.3B/2 OR A.3B/3 OR A.3B/4 OR A.3B/5 OR A.3B/6 OR A.3B/11 OR A.3B/12 OR A.3B/13 OR A.3B/14) THEN m ELSE o) ELSE n/a - - UE behaviour (based on P-Access-Network-Info usage). |
| c9: | IF A.4/26 THEN o.2 ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c10: | IF A.4/26B THEN o.3 ELSE n/a - - application of privacy based on the received Privacy header. |
| c11: | IF A.3/1 OR A.3/6 THEN o ELSE IF A.3/9B THEN m ELSE n/a - - UE or MGCF, IBCF (IMS-ALG). |
| c12: | IF A.3/7D THEN m ELSE n/a - - AS performing 3rd-party call control. |
| c13: | IF A.3/1 OR A.3/2 OR A.3/4 OR A.3/9B THEN m ELSE o - - UE or S-CSCF or IBCF (IMS-ALG). |
| c14: | IF A.3/1 AND A.4/2B THEN m ELSE IF A.3/2 THEN o ELSE n/a - - UE and initiating sessions or P-CSCF. |
| c15: | IF A.4/20 AND (A.3/4 OR A.3/9B) THEN m ELSE o - - SIP specific event notification extensions and S-CSCF or IBCF (IMS-ALG). |
| c16: | IF A.4/20 AND (A.3/1 OR A.3/2 OR A.3/9B) THEN m ELSE o - - SIP specific event notification extension and UE or P-CSCF or IBCF (IMS-ALG). |
| c17: | IF A.3/1 or A.3/4 THEN m ELSE n/a - - UE or S-CSCF. |
| c18: | IF A.4/2B THEN m ELSE n/a - - initiating sessions. |
| c19: | IF A.4/2B THEN o ELSE n/a - - initiating sessions. |
| c20: | IF A.3/1 THEN m ELSE n/a - - UE behaviour. |
| c21: | IF A.4/30 THEN o.4 ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP). |
| c22: | IF A.4/30 AND (A.3/1 OR A.3/4) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and S-CSCF or UA. |
| c23: | IF A.4/30 AND A.3/1 THEN o ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and UE. |
| c24: | IF A.4/30 AND A.3/4) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and S-CSCF. |
| c25: | IF A.4/30 AND (A.3/1 OR A.3/4 OR A.3/7A OR A.3/7D OR A.3/9B) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and UE, S-CSCF or AS acting as terminating UA or AS acting as third-party call controller or IBCF (IMS-ALG). |
| c26: | IF A.4/30 AND (A.3/6 OR A.3/7A OR A.3/7B or A.3/7D) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and MGCF, AS acting as a terminating UA, or AS acting as an originating UA, or AS acting as third-party call controller. |
| c27: | IF A.3/7D THEN o ELSE x - - AS performing 3rd party call control. |
| c28: | IF A.3/1 THEN m ELSE o.5 - - UE. |
| c29: | IF A.4/40A OR A.4/40B OR A.4/40C OR A.4/40D OR A.4/40E OR A.4/40F THEN m ELSE n/a - - support of any directives within caller preferences for the session initiation protocol. |
| c30: | IF A.3A/1 OR A.3A/2 THEN m ELSE IF A.3/1 THEN o ELSE n/a - - presence server, presence user agent, UE, AS. |
| c33: | IF A.3/9B OR A.3A/11 OR A.3A/12 OR A.4/44 THEN m ELSE o - - IBCF (IMS-ALG) or conference focus or conference participant or the Session Initiation Protocol (SIP) "Replaces" header. |
| c34: | IF A.4/44 OR A.4/45 OR A.3/9B THEN m ELSE n/a - - the Session Initiation Protocol (SIP) "Replaces" header or the Session Initiation Protocol (SIP) "Join" header or IBCF (IMS-ALG). |
| c35: | IF A.3/4 OR A.3/9B OR A.3A/21 OR A.3A/22 THEN m ELSE IF (A.3/1 OR A.3/6 OR A.3/7 OR A.3/8) THEN o ELSE n/a - - S-CSCF or IBCF (IMS-ALG) functional entities or CSI user agent or CSI application server, UE or MGCF or AS or MRFC functional entity. |
| c37: | IF A.4/47 THEN o.3 ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c38: | IF A.4/2B AND (A.3A/11 OR A.3A/12 OR A.3/7D) THEN m ELSE IF A.4/2B THEN o ELSE n/a - - initiating sessions, conference focus, conference participant, AS performing 3rd party call control. |
| c39: | IF A.3/1 THEN m ELSE n/a - - UE. |
| c40: | IF A.3/4 OR A.3/1 THEN m ELSE IF (A.3/7A OR A.3/7B OR A.3/7D) THEN o ELSE n/a - - S-CSCF, UE, AS, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control. |
| c41: | IF A.3/2 OR A.3/3 OR A.3/4 OR A.3.5 OR A.3/6 OR A.3/7 OR A.3/8 OR A.3/9 THEN o ELSE n/a - - cpc URI parameter. |
| c42: | IF A.3/1 n/a ELSE o - - UE. |
| c43: | IF A.4/2B THEN o ELSE n/a - - initiating sessions. |
| c44: | IF A.4/2C THEN m ELSE o - - initiating a session which require local and/or remote resource reservation. |
| c45: | IF A.3/1 OR A.3/4 THEN o ELSE n/a - - UE, S-CSCF. |
| c46: | IF A.3/1 OR A.3/4 THEN o ELSE n/a - - UE, S-CSCF. |
| c47: | IF A.4/27 THEN o ELSE n/a - - a messaging mechanism for the Session Initiation Protocol (SIP). |

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| c48: | IF A.3A/32 AND A.4/27 THEN m ELSE IF A.4/27 THEN o ELSE n/a - - messaging list server, a messaging mechanism for the Session Initiation Protocol (SIP). |
| c49: | IF A.3/1 OR A.3/9B THEN m ELSE o - - UE, IBCF (IMS-ALG). |
| c50: | IF A.4/15 THEN o ELSE n/a - - the REFER method. |
| c51: | IF A.4/2B THEN o ELSE n/a - - initiating a session. |
| c52: | IF A.3A/11 AND A.4/2B THEN m ELSE IF A.4/2B THEN o ELSE n/a - - conference focus, initiating a session. |
| c53: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification. |
| c54: | IF A.3/1 OR A.3/6 OR A.3/7A OR A.3/7D THEN o, ELSE n/a - - UE, MGCF, AS acting as originating UA, AS performing 3rd party call control. |
| c55: | IF A.4/67 THEN m ELSE n/a - - number portability parameters for the "tel" URI. |
| c56: | IF A.3/6 OR A.3/7B OR A.3/7D THEN o, ELSE n/a - - MGCF, AS acting as originating UA, AS performing 3rd party call control. |
| c57: | IF A.4/67 THEN m ELSE n/a - - number portability parameters for the 'tel' URI. |
| c58: | IF A.3/9B OR A.3/6 THEN m ELSE o - - IBCF (IMS-ALG), MGCF. |
| c59: | IF (A.3/4 THEN m ELSE IF (A.3/1 OR A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/8) THEN o ELSE n/a - - S-CSCF, UE, MGCF, AS, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, or MRFC. |
| c60: | IF A.3/9B THEN m ELSE IF A.3/1 OR A.3/7A OR A.3/7B OR A.3/7D THEN o ELSE n/a - - IBCF (IMS-ALG), UE, AS acting as terminating UA, AS acting as originating UA, AS performing 3 rd party call control. |
| c61: | IF (A.3/1 OR A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/8 OR A.3/9B) THEN o ELSE n/a - - UE, MGCF, AS, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, or MRFC or IBCF (IMS-ALG). |
| c62: | IF A.3/1 THEN o ELSE n/a - - UE. |
| c68: | IF A.4/69 THEN m ELSE o - - extending the session initiation protocol Reason header for preemption events and Q.850 causes. |
| c69: | IF A.4/70C OR A.4/70D OR A.4/70E THEN m ELSE o - - resource priority namespace of DSN (Defense switched network), resource priority namespace of DSRN (Defence RED switched network), resource priority namespace of Q735. |
| c70: | IF A.3/9B THEN m ELSE IF A.3/1 OR A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D THEN o ELSE n/a - - IBCF (IMS-ALG), UE, MGCF, AS, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control. |
| c71: | IF A.4/70 THEN o ELSE n/a - - communications resource priority for the session initiation protocol. |
| c72: | IF A.4/70 THEN o ELSE n/a - - communications resource priority for the session initiation protocol |
| c73: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| c74: | IF A.3/4 OR A.3/1 THEN o ELSE n/a. - - S-CSCF or UE. |
| c75: | IF A.3/1 THEN o ELSE n/a. - - UE. |
| c76: | IF A.4/75A OR A.4/75B THEN m ELSE n/a - - a relay within the framework for consent-based communications in SIP, a recipient within the framework for consent-based communications in SIP. |
| c77: | IF A.4/59 OR A.4/61 OR A.4/62 OR A.4/63 THEN m ELSE o - - multiple-recipient MESSAGE requests in the session initiation protocol, referring to multiple resources in the session initiation protocol, conference establishment using request-contained lists in the session initiation protocol, subscriptions to request-contained resource lists in the session initiation protocol. |
| c78: | IF (A.4/59 OR A.4/61 OR A.4/62 OR A.4/63) AND (A.3A/11 OR A.3A/31) THEN m ELSE o - - multiple-recipient MESSAGE requests in the session initiation protocol, referring to multiple resources in the session initiation protocol, conference establishment using request-contained lists in the session initiation protocol, subscriptions to request-contained resource lists in the session initiation protocol, conference focus, messaging application server. |
| c79: | IF A.3/9B OR (A.3/1 AND (A.4/2B OR A.4/15 OR A.4/20 OR A.4/27)) THEN m ELSE IF A.3/6 OR A.3/7A OR A.3/7D THEN o ELSE n/a - - IBCF (IMS-ALG), UE, initiating a session, the REFER method, SIP specific event notification, a messaging mechanism for the Session Initiation Protocol (SIP), AS acting as terminating UA, or redirect server, AS performing 3rd party call control. |
| c80: | IF A.4/2B OR A.4/15 OR A.4/20 OR A.4/27 THEN m ELSE n/a - - initiating a session, the REFER method, SIP specific event notification, a messaging mechanism for the Session Initiation Protocol (SIP). |
| c81: | IF A.3/1 OR A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D THEN o ELSE IF A.3/9B THEN m ELSE n/a - - UE, MGCF, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, IBCF (IMS-ALG). |
| c82: | IF A.3/6 THEN m ELSE n/a - - MGCF. |
| o.1: | At least one of these capabilities is supported. |
| o.2: | At least one of these capabilities is supported. |
| o.3: | At least one of these capabilities is supported. |
| o.4: | At least one of these capabilities is supported. |
| o.5: | At least one of these capabilities is supported. |
| o.6: | It is mandatory to support at least one of these items. |

NOTE 1: Void

NOTE 2: If a UE is unable to become engaged in a service that potentially requires the ability to identify and interact with a specific UE even when multiple UEs share the same single Public User Identity then the UE support can be "o" instead of "m". Examples include telemetry applications, where point-to-point communication is desired between two users.

Editor's Note: In table A.4, additional usage scenarios of the Resource-Priority header field might not be covered by the condition c70. They might need additional action in other functional entities.

Editors Note: Additional work on UUS maybe needed in IETF.

Prerequisite A.5/20 - - SIP specific event notification

Table A.4A: Supported event packages

| Item | Does the implementation support | Subscriber | | | Notifier | | |
|------|--|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | reg event package? | [43] | c1 | c3 | [43] | c2 | c4 |
| 1A | reg event package extension for GRUUs? | [94] | c1 | c25 | [94] | c2 | c4 |
| 2 | refer package? | [36] 3 | c13 | c13 | [36] 3 | c13 | c13 |
| 3 | presence package? | [74] 6 | c1 | c5 | [74] 6 | c2 | c6 |
| 4 | eventlist with underlying presence package? | [75], [74] 6 | c1 | c7 | [75], [74] 6 | c2 | c8 |
| 5 | presence.wininfo template-package? | [72] 4 | c1 | c9 | [72] 4 | c2 | c10 |
| 6 | ua-profile package? | [77] 3 | c1 | c11 | [77] 3 | c2 | c12 |
| 7 | conference package? | [78] 3 | c1 | c21 | [78] 3 | c1 | c22 |
| 8 | message-summary package? | [65] | c1 | c23 | [65] 3 | c2 | c24 |
| 9 | poc-settings package | [110] | c1 | c26 | [110] | c2 | c27 |
| c1: | IF A.4/23 THEN o ELSE n/a - - acting as the subscriber to event information. | | | | | | |
| c2: | IF A.4/22 THEN o ELSE n/a - - acting as the notifier of event information. | | | | | | |
| c3: | IF A.3/1 OR A.3/2 THEN m ELSE IF A.3/7 THEN o ELSE n/a - - UE, P-CSCF, AS. | | | | | | |
| c4: | IF A.3/4 THEN m ELSE n/a - - S-CSCF. | | | | | | |
| c5: | IF A.3A/3 OR A.3A/4 THEN m ELSE IF A.4/23 THEN o ELSE n/a - - resource list server or watcher, acting as the subscriber to event information. | | | | | | |
| c6: | IF A.3A/1 THEN m ELSE IF A.4/22 THEN o ELSE n/a - - presence server, acting as the notifier of event information. | | | | | | |
| c7: | IF A.3A/4 THEN m ELSE IF A.4/23 THEN o ELSE n/a - - watcher, acting as the subscriber to event information. | | | | | | |
| c8: | IF A.3A/3 THEN m ELSE IF A.4/22 THEN o ELSE n/a - - resource list server, acting as the notifier of event information. | | | | | | |
| c9: | IF A.3A/2 THEN m ELSE IF A.4/23 THEN o ELSE n/a - - presence user agent, acting as the subscriber to event information. | | | | | | |
| c10: | IF A.3A/1 THEN m ELSE IF A.4/22 THEN o ELSE n/a - - presence server, acting as the notifier of event information. | | | | | | |
| c11: | IF A.3A/2 OR A.3A/4 THEN o ELSE IF A.4/23 THEN o ELSE n/a - - presence user agent or watcher, acting as the subscriber to event information. | | | | | | |
| c12: | IF A.3A/1 OR A.3A/3 THEN m ELSE IF A.4/22 THEN o ELSE n/a - - presence server or resource list server, acting as the notifier of event information. | | | | | | |
| c13: | IF A.4/15 THEN m ELSE n/a - - the REFER method. | | | | | | |
| c21: | IF A.3A/12 THEN m ELSE IF A.4/23 THEN o ELSE n/a - - conference participant or acting as the subscriber to event information. | | | | | | |
| c22: | IF A.3A/11 THEN m ELSE IF A.4/22 THEN o ELSE n/a - - conference focus or acting as the notifier of event information. | | | | | | |
| c23: | IF (A.3/1 OR A.3/7A OR A.3/7B) AND A.4/23 THEN o ELSE n/a - - UE, AS acting as terminating UA, or redirect server, AS acting as originating UA all as subscriber of event information. | | | | | | |
| c24: | IF (A.3/1 OR A.3/7A OR A.3/7B) AND A.4/22 THEN o ELSE n/a - - UE, AS acting as terminating UA, or redirect server, AS acting as originating UA all as notifier of event information. | | | | | | |
| c25: | IF A.4A/1 THEN (IF A.3/1 AND A.4/53 THEN m ELSE o) ELSE n/a - - reg event package, UE, reg event package extension for GRUUs. | | | | | | |
| c26: | IF (A.3/7B OR A.3/1) AND (A.4/23 OR A.4/41) THEN o ELSE n/a - - AS acting as originating UA, UE ,acting as the subscriber to event information, an event state publication extension to the session initiation protocol. | | | | | | |
| c27: | IF (A.4/22 OR A.4/41) AND A.3/1 THEN o ELSE n/a - - UE, acting as the notifier of event information, an event state publication extension to the session initiation protocol. | | | | | | |

A.2.1.3 PDUs

Table A.5: Supported methods

| Item | PDU | Sending | | | Receiving | | |
|------|--|-------------|------------|----------------|-------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | ACK request | [26] 13 | c10 | c10 | [26] 13 | c11 | c11 |
| 2 | BYE request | [26] 15.1 | c12 | c12 | [26] 15.1 | c12 | c12 |
| 3 | BYE response | [26] 15.1 | c12 | c12 | [26] 15.1 | c12 | c12 |
| 4 | CANCEL request | [26] 9 | m | m | [26] 9 | m | m |
| 5 | CANCEL response | [26] 9 | m | m | [26] 9 | m | m |
| 8 | INVITE request | [26] 13 | c10 | c10 | [26] 13 | c11 | c11 |
| 9 | INVITE response | [26] 13 | c11 | c11 | [26] 13 | c10 | c10 |
| 9A | MESSAGE request | [50] 4 | c7 | c7 | [50] 7 | c7 | c7 |
| 9B | MESSAGE response | [50] 4 | c7 | c7 | [50] 7 | c7 | c7 |
| 10 | NOTIFY request | [28] 8.1.2 | c4 | c4 | [28] 8.1.2 | c3 | c3 |
| 11 | NOTIFY response | [28] 8.1.2 | c3 | c3 | [28] 8.1.2 | c4 | c4 |
| 12 | OPTIONS request | [26] 11 | m | m | [26] 11 | m | m |
| 13 | OPTIONS response | [26] 11 | m | m | [26] 11 | m | m |
| 14 | PRACK request | [27] 6 | c5 | c5 | [27] 6 | c5 | c5 |
| 15 | PRACK response | [27] 6 | c5 | c5 | [27] 6 | c5 | c5 |
| 15A | PUBLISH request | [70] 11.1.3 | c20 | c20 | [70] 11.1.3 | c20 | c20 |
| 15B | PUBLISH response | [70] 11.1.3 | c20 | c20 | [70] 11.1.3 | c20 | c20 |
| 16 | REFER request | [36] 3 | c1 | c1 | [36] 3 | c1 | c1 |
| 17 | REFER response | [36] 3 | c1 | c1 | [36] 3 | c1 | c1 |
| 18 | REGISTER request | [26] 10 | c8 | c8 | [26] 10 | c9 | c9 |
| 19 | REGISTER response | [26] 10 | c9 | c9 | [26] 10 | c8 | c8 |
| 20 | SUBSCRIBE request | [28] 8.1.1 | c3 | c3 | [28] 8.1.1 | c4 | c4 |
| 21 | SUBSCRIBE response | [28] 8.1.1 | c4 | c4 | [28] 8.1.1 | c3 | c3 |
| 22 | UPDATE request | [29] 6.1 | c6 | c6 | [29] 6.2 | c6 | c6 |
| 23 | UPDATE response | [29] 6.2 | c6 | c6 | [29] 6.1 | c6 | c6 |
| c1: | IF A.4/15 THEN m ELSE n/a -- the REFER method extension. | | | | | | |
| c3: | IF A.4/23 THEN m ELSE n/a -- recipient for event information. | | | | | | |
| c4: | IF A.4/22 THEN m ELSE n/a -- notifier of event information. | | | | | | |
| c5: | IF A.4/14 THEN m ELSE n/a -- reliability of provisional responses extension. | | | | | | |
| c6: | IF A.4/17 THEN m ELSE n/a -- the SIP update method extension. | | | | | | |
| c7: | IF A.4/27 THEN m ELSE n/a -- the SIP MESSAGE method. | | | | | | |
| c8: | IF A.4/1 THEN m ELSE n/a -- client behaviour for registration. | | | | | | |
| c9: | IF A.4/2 THEN m ELSE n/a -- registrar. | | | | | | |
| c10: | IF A.4/3 THEN m ELSE n/a -- client behaviour for INVITE requests. | | | | | | |
| c11: | IF A.4/4 THEN m ELSE n/a -- server behaviour for INVITE requests. | | | | | | |
| c12: | IF A.4/5 THEN m ELSE n/a -- session release. | | | | | | |
| c20: | IF A.4/41 THEN m ELSE n/a. | | | | | | |

A.2.1.4 PDU parameters

A.2.1.4.1 Status-codes

Table A.6: Supported status-codes

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | 100 (Trying) | [26] 21.1.1 | c21 | c21 | [26] 21.1.1 | c11 | c11 |
| 101 | 1xx response | [26] 21.1 | p21 | p21 | [26] 21.1 | p21 | p21 |
| 101A | 18x response | [26] 21.1 | p21 | p21 | [26] 21.1 | p21 | p21 |
| 2 | 180 (Ringing) | [26] 21.1.2 | c2 | c2 | [26] 21.1.2 | c1 | c1 |
| 3 | 181 (Call Is Being Forwarded) | [26] 21.1.3 | c2 | c2 | [26] 21.1.3 | c1 | c1 |
| 4 | 182 (Queued) | [26] 21.1.4 | c2 | c2 | [26] 21.1.4 | c1 | c1 |
| 5 | 183 (Session Progress) | [26] 21.1.5 | c1 | c1 | [26] 21.1.5 | c1 | c1 |
| 102 | 2xx response | [26] 21.2 | p22 | p22 | [26] 21.1 | p22 | p22 |
| 6 | 200 (OK) | [26] 21.2.1 | m | m | [26] 21.2.1 | m | m |
| 7 | 202 (Accepted) | [28] 8.3.1 | c3 | c3 | [28] 8.3.1 | c3 | c3 |
| 103 | 3xx response | [26] 21.3 | p23 | p23 | [26] 21.1 | p23 | p23 |
| 8 | 300 (Multiple Choices) | [26] 21.3.1 | m | m | [26] 21.3.1 | m | m |
| 9 | 301 (Moved Permanently) | [26] 21.3.2 | m | m | [26] 21.3.2 | m | m |
| 10 | 302 (Moved Temporarily) | [26] 21.3.3 | m | m | [26] 21.3.3 | m | m |
| 11 | 305 (Use Proxy) | [26] 21.3.4 | m | m | [26] 21.3.4 | m | m |
| 12 | 380 (Alternative Service) | [26] 21.3.5 | m | m | [26] 21.3.5 | m | m |
| 104 | 4xx response | [26] 21.4 | p24 | p24 | [26] 21.4 | p24 | p24 |
| 13 | 400 (Bad Request) | [26] 21.4.1 | m | m | [26] 21.4.1 | m | m |
| 14 | 401 (Unauthorized) | [26] 21.4.2 | o | c12 | [26] 21.4.2 | m | m |
| 15 | 402 (Payment Required) | [26] 21.4.3 | n/a | n/a | [26] 21.4.3 | n/a | n/a |
| 16 | 403 (Forbidden) | [26] 21.4.4 | m | m | [26] 21.4.4 | m | m |
| 17 | 404 (Not Found) | [26] 21.4.5 | m | m | [26] 21.4.5 | m | m |
| 18 | 405 (Method Not Allowed) | [26] 21.4.6 | m | m | [26] 21.4.6 | m | m |
| 19 | 406 (Not Acceptable) | [26] 21.4.7 | m | m | [26] 21.4.7 | m | m |
| 20 | 407 (Proxy Authentication Required) | [26] 21.4.8 | o | o | [26] 21.4.8 | m | m |
| 21 | 408 (Request Timeout) | [26] 21.4.9 | c2 | c2 | [26] 21.4.9 | m | m |
| 22 | 410 (Gone) | [26] 21.4.10 | m | m | [26] 21.4.10 | m | m |
| 22A | 412 (Conditional Request Failed) | [70] 11.2.1 | c20 | c20 | [70] 11.2.1 | c20 | c20 |
| 23 | 413 (Request Entity Too Large) | [26] 21.4.11 | m | m | [26] 21.4.11 | m | m |
| 24 | 414 (Request-URI Too Large) | [26] 21.4.12 | m | m | [26] 21.4.12 | m | m |
| 25 | 415 (Unsupported Media Type) | [26] 21.4.13 | m | m | [26] 21.4.13 | m | m |
| 26 | 416 (Unsupported URI Scheme) | [26] 21.4.14 | m | m | [26] 21.4.14 | m | m |
| 26A | 417 (Unknown Resource Priority) | [116] 4.6.2 | c24 | c24 | [116] 4.6.2 | c24 | c24 |
| 27 | 420 (Bad Extension) | [26] 21.4.15 | m | c13 | [26] 21.4.15 | m | m |
| 28 | 421 (Extension Required) | [26] 21.4.16 | o | | [26] 21.4.16 | i | i |
| 28A | 422 (Session Interval Too Small) | [58] 6 | c7 | c7 | [58] 6 | c7 | c7 |
| 29 | 423 (Interval Too Brief) | [26] 21.4.17 | c4 | c4 | [26] 21.4.17 | m | m |
| 29A | 424 (Bad Location Information) | [89] 3.3 | c23 | c23 | [89] 3.3 | c23 | c23 |
| 29B | 429 (Provide Referrer Identity) | [59] 5 | c8 | c8 | [59] 5 | c9 | c9 |
| 29C | 430 (Flow Failed) | [92] 11 | n/a | n/a | [92] 11 | c22 | c22 |
| 29D | 433 (Anonymity Disallowed) | [67] 4 | c14 | c14 | [67] 4 | c14 | c14 |
| 29E | 470 (Consent Needed) | [125] 5.9.2 | c26 | c26 | [125] 5.9.2 | c27 | c27 |
| 30 | 480 (Temporarily Unavailable) | [26] 21.4.18 | m | m | [26] 21.4.18 | m | m |

| Item | Header | Sending | | | Receiving | | |
|------|---------------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 31 | 481 (Call/Transaction Does Not Exist) | [26] 21.4.19 | m | m | [26] 21.4.19 | m | m |
| 32 | 482 (Loop Detected) | [26] 21.4.20 | m | m | [26] 21.4.20 | m | m |
| 33 | 483 (Too Many Hops) | [26] 21.4.21 | m | m | [26] 21.4.21 | m | m |
| 34 | 484 (Address Incomplete) | [26] 21.4.22 | o | o | [26] 21.4.22 | m | m |
| 35 | 485 (Ambiguous) | [26] 21.4.23 | o | o | [26] 21.4.23 | m | m |
| 36 | 486 (Busy Here) | [26] 21.4.24 | m | m | [26] 21.4.24 | m | m |
| 37 | 487 (Request Terminated) | [26] 21.4.25 | m | m | [26] 21.4.25 | m | m |
| 38 | 488 (Not Acceptable Here) | [26] 21.4.26 | m | m | [26] 21.4.26 | m | m |
| 39 | 489 (Bad Event) | [28] 7.3.2 | c3 | c3 | [28] 7.3.2 | c3 | c3 |
| 40 | 491 (Request Pending) | [26] 21.4.27 | m | m | [26] 21.4.27 | m | m |
| 41 | 493 (Undecipherable) | [26] 21.4.28 | m | m | [26] 21.4.28 | m | m |
| 41A | 494 (Security Agreement Required) | [48] 2 | c5 | c5 | [48] 2 | c6 | c6 |
| 105 | 5xx response | [26] 21.5 | p25 | p25 | [26] 21.5 | p25 | p25 |
| 42 | 500 (Internal Server Error) | [26] 21.5.1 | m | m | [26] 21.5.1 | m | m |
| 43 | 501 (Not Implemented) | [26] 21.5.2 | m | m | [26] 21.5.2 | m | m |
| 44 | 502 (Bad Gateway) | [26] 21.5.3 | o | o | [26] 21.5.3 | m | m |
| 45 | 503 (Service Unavailable) | [26] 21.5.4 | m | m | [26] 21.5.4 | m | m |
| 46 | 504 (Server Time-out) | [26] 21.5.5 | m | m | [26] 21.5.5 | m | m |
| 47 | 505 (Version not supported) | [26] 21.5.6 | m | m | [26] 21.5.6 | m | m |
| 48 | 513 (Message Too Large) | [26] 21.5.7 | m | m | [26] 21.5.7 | m | m |
| 49 | 580 (Precondition Failure) | [30] 8 | | | [30] 8 | | |
| 106 | 6xx response | [26] 21.6 | p26 | p26 | [26] 21.6 | p26 | p26 |
| 50 | 600 (Busy Everywhere) | [26] 21.6.1 | m | m | [26] 21.6.1 | m | m |
| 51 | 603 (Decline) | [26] 21.6.2 | c10 | c10 | [26] 21.6.2 | m | m |
| 52 | 604 (Does Not Exist Anywhere) | [26] 21.6.3 | m | m | [26] 21.6.3 | m | m |
| 53 | 606 (Not Acceptable) | [26] 21.6.4 | m | m | [26] 21.6.4 | m | m |

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| c1: | IF A.5/9 THEN m ELSE n/a - - INVITE response. | | | | | | |
| c2: | IF A.5/9 THEN o ELSE n/a - - INVITE response. | | | | | | |
| c3: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c4: | IF A.5/19 OR A.5/21 THEN m ELSE n/a - - REGISTER response or SUBSCRIBE response. | | | | | | |
| c5: | IF A.4/37 AND A.4/2 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol and registrar. | | | | | | |
| c6: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |
| c7: | IF A.4/42 AND (A.5/9 OR A.5/23) THEN m ELSE n/a - - the SIP session timer AND (INVITE response OR UPDATE response). | | | | | | |
| c8: | IF A.4/43 AND A.5/17 THEN o ELSE n/a - - the SIP Referred-By mechanism and REFER response. | | | | | | |
| c9: | IF A.4/43 AND A.5/17 THEN m ELSE n/a - - the SIP Referred-By mechanism and REFER response. | | | | | | |
| c10: | IF A.4/44 THEN m ELSE o - - the Session Initiation Protocol (SIP) "Replaces" header. | | | | | | |
| c11: | IF A.5/3 OR A.5/9 OR A.5/9B OR A.5/11 OR A.5/13 OR A.5/15 OR A.5/15B OR A.5/17 OR A.5/19 OR A.5/21 OR A.5/23 THEN m ELSE n/a - - BYE response or INVITE response or MESSAGE response or NOTIFY response or OPTIONS response or PRACK response or PUBLISH response or REFER response or REGISTER response or SUBSCRIBE response or UPDATE response. | | | | | | |
| c12: | IF A.3/4 THEN m ELSE o - - S-CSCF. | | | | | | |
| c13: | IF A.3/1 OR A.3/2 OR A.3/4 THEN m ELSE o - - UE, P-CSCF, S-CSCF. | | | | | | |
| c14: | IF A.4/48 THEN m ELSE n/a - - rejecting anonymous requests in the session initiation protocol. | | | | | | |
| c20: | IF A.4/41 THEN m ELSE n/a - - an event state publication extension to the session initiation protocol. | | | | | | |
| c21: | IF A.5/3 OR A.5/9 OR A.5/9B OR A.5/11 OR A.5/13 OR A.5/15 OR A.5/15B OR A.5/17 OR A.5/19 OR A.5/21 OR A.5/23 THEN o ELSE n/a - - BYE response or INVITE response or MESSAGE response or NOTIFY response or OPTIONS response or PRACK response or PUBLISH response or REFER response or REGISTER response or SUBSCRIBE response or UPDATE response. | | | | | | |
| c22: | IF A.4/57 THEN m ELSE n/a - - managing client initiated connections in SIP. | | | | | | |
| c23: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c24: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |
| c26: | IF A.4/75B THEN m ELSE n/a - - a recipient within the framework for consent-based communications in SIP. | | | | | | |
| c27: | IF A.4/75A THEN m ELSE n/a - - a relay within the framework for consent-based communications in SIP. | | | | | | |
| p21: | A.6/2 OR A.6/3 OR A.6/4 OR A.6/5 - - 1xx response. | | | | | | |
| p22: | A.6/6 OR A.6/7 - - 2xx response. | | | | | | |
| p23: | A.6/8 OR A.6/9 OR A.6/10 OR A.6/11 OR A.6/12 - - 3xx response. | | | | | | |
| p24: | A.6/13 OR A.6/14 OR A.6/15 OR A.6/16 OR A.6/17 OR A.6/18 OR A.6/19 OR A.6/20 OR A.6/21 OR A.6/22 OR A.6/22A OR A.6/23 OR A.6/24 OR A.6/25 OR A.6/26 OR A.6/26A OR A.6/27 OR A.6/28 OR A.6/28A OR A.6/29 OR A.6/29A OR A.6/29B OR A.6/29C OR A.6/29D OR A.6/29E OR A.6/30 OR A.6/31 OR A.6/32 OR A.6/33 OR A.6/34 OR A.6/35 OR A.6/36 OR A.6/436 OR A.6/38 OR A.6/39 OR A.6/40 OR A.6/41 OR A.6/41A. - 4xx response. | | | | | | |
| p25: | A.6/42 OR A.6/43 OR A.6/44 OR A.6/45 OR A.6/46 OR A.6/47 OR A.6/48 OR A.6/49 - - 5xx response | | | | | | |
| p26: | A.6/50 OR A.6/51 OR A.6/52 OR A.6/53 - - 6xx response. | | | | | | |

A.2.1.4.2 ACK method

Prerequisite A.5/1 – ACK request

Table A.7: Supported headers within the ACK request

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c9 | c9 | [56B] 9.2 | c10 | c10 |
| 2 | Allow-Events | [28] 7.2.2 | c1 | c1 | [28] 7.2.2 | c2 | c2 |
| 3 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 4 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 7 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 8 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 9 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 10 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 11 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 12 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 13 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 14 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 15 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 15A | Privacy | [33] 4.2 | c6 | n/a | [33] 4.2 | c6 | n/a |
| 16 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 17 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 17A | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c8 | c8 |
| 17B | Reject-Contact | [56B] 9.2 | c9 | c9 | [56B] 9.2 | c10 | c10 |
| 17C | Request-Disposition | [56B] 9.1 | c9 | c9 | [56B] 9.1 | c10 | c10 |
| 18 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 18A | Resource-Priority | [116] 3.1 | c11 | c11 | [116] 3.1 | c11 | c11 |
| 19 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 20 | Timestamp | [26] 20.38 | c7 | c7 | [26] 20.38 | m | m |
| 21 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 22 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | m | m |
| 23 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c2: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | | |
| c4: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c5: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. | | | | | | |
| c6: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c7: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. | | | | | | |
| c8: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c9: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c10: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c11: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/1 – ACK request

Table A.8: Supported message bodies within the ACK request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.3 BYE method

Prerequisite A.5/2 - - BYE request

Table A.9: Supported headers within the BYE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c18 | c18 | [56B] 9.2 | c22 | c22 |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 3A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 4 | Allow-Events | [28] 7.2.2 | c1 | c1 | [28] 7.2.2 | c2 | c2 |
| 5 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 8 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 9 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 14 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 14A | Geolocation | [89] 3.2 | c23 | c23 | [89] 3.2 | c23 | c23 |
| 15 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 16 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 16A | P-Access-Network-Info | [52] 4.4 | c9 | c10 | [52] 4.4 | c9 | c11 |
| 16B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c6 | c6 |
| 16C | P-Charging-Function-Addresses | [52] 4.5 | c13 | c14 | [52] 4.5 | c13 | c14 |
| 16D | P-Charging-Vector | [52] 4.6 | c12 | n/a | [52] 4.6 | c12 | n/a |
| 16E | P-Preferred-Identity | [34] 9.2 | c6 | x | [34] 9.2 | n/a | n/a |
| 16F | Privacy | [33] 4.2 | c7 | n/a | [33] 4.2 | c7 | c7 |
| 17 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 18 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 18A | Reason | [34A] 2 | c17 | c21 | [34A] 2 | c24 | c24 |
| 19 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 19A | Referred-By | [59] 3 | c19 | c19 | [59] 3 | c20 | c20 |
| 19B | Reject-Contact | [56B] 9.2 | c18 | c18 | [56B] 9.2 | c22 | c22 |
| 19C | Request-Disposition | [56B] 9.1 | c18 | c18 | [56B] 9.1 | c22 | c22 |
| 20 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 20A | Resource-Priority | [116] 3.1 | c25 | c25 | [116] 3.1 | c25 | c25 |
| 21 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 21A | Security-Client | [48] 2.3.1 | c15 | c15 | [48] 2.3.1 | n/a | n/a |
| 21B | Security-Verify | [48] 2.3.1 | c16 | c16 | [48] 2.3.1 | n/a | n/a |
| 22 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| 23 | Timestamp | [26] 20.38 | c8 | c8 | [26] 20.38 | m | m |
| 24 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 25 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 25A | User-to-User | [126] 5 | c26 | c26 | [126] 5 | c26 | c26 |
| 26 | Via | [26] 20.42 | m | m | [20] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c2: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c3: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c4: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c5: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c6: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c7: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c8: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. |
| c9: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c10: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. |
| c11: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. |
| c12: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c13: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c14: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c15: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note). |
| c16: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c17: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c18: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c19: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c20: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c21: | IF A.3/2 THEN m ELSE IF A.4/38 THEN o ELSE n/a - - P-CSCF, the Reason header field for the session initiation protocol. |
| c22: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c23: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. |
| c24: | IF A.4/38 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c25: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. |
| c26: | IF A.4/76 THEN o ELSE n/a - - transporting user to user information for call centers using SIP. |
| NOTE: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. |

Prerequisite A.5/2 - - BYE request

Table A.10: Supported message bodies within the BYE request

| Item | Header | Sending | | | Receiving | | |
|------|--|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: | IF A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/9B THEN o ELSE n/a - - MGCF, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, IBCF (IMS-ALG). | | | | | | |

Table A.11: Void

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.11A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/3 - - BYE response for all remaining status-codes

Table A.12: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c11 | c11 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c12 | c12 | [89] 3.2 | c12 | c12 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 10A | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c6 |
| 10B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c9 | c10 | [52] 4.5 | c9 | c10 |
| 10D | P-Charging-Vector | [52] 4.6 | c8 | n/a | [52] 4.6 | c8 | n/a |
| 10E | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 10F | Privacy | [33] 4.2 | c4 | n/a | [33] 4.2 | c4 | c4 |
| 10G | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 10H | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 12B | User-to-User | [126] 5 | c13 | c13 | [126] 5 | c13 | c13 |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | o (note) | o (note) | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c10: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed). | | | | | | |
| c12: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c13: | IF A.4/76 THEN o ELSE n/a - - transporting user to user information for call centers using SIP. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.13: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c5 | c5 | [116] 3.2 | c5 | c5 |
| 0B | Allow-Events | [28] 7.2.2 | c3 | c3 | [28] 7.2.2 | c4 | c4 |
| 1 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 4 | Supported | [26] 20.37 | o | m | [26] 20.37 | m | m |

| | |
|-----|--|
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c3: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c4: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c5: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.13A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.14: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|---|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0B | Contact | [26] 20.10 | o (note) | o | [26] 20.10 | m | m |
| NOTE: RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | | |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.15: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.16: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.17: Void

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/19 - - Additional for 407 (Proxy Authentication Required) response

Table A.18: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 6 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/3 - - BYE response

Prerequisite A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.19: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.19A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.20: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/3 - - BYE response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.20A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.21: Void

Prerequisite A.5/3 - - BYE response

Table A.22: Supported message bodies within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.4 CANCEL method

Prerequisite A.5/4 - - CANCEL request

Table A.23: Supported headers within the CANCEL request

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c9 | c9 | [56B] 9.2 | c11 | c11 |
| 5 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 8 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 9 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 10 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 11 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 12 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 14 | Privacy | [33] 4.2 | c6 | n/a | [33] 4.2 | c6 | n/a |
| 15 | Reason | [34A] 2 | c7 | c10 | [34A] 2 | c12 | c12 |
| 16 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 17 | Reject-Contact | [56B] 9.2 | c9 | c9 | [56B] 9.2 | c11 | c11 |
| 17A | Request-Disposition | [56B] 9.1 | c9 | c9 | [56B] 9.1 | c11 | c11 |
| 17B | Resource-Priority | [116] 3.1 | c13 | c13 | [116] 3.1 | c13 | c13 |
| 18 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 19 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| 20 | Timestamp | [26] 20.38 | c8 | c8 | [26] 20.38 | m | m |
| 21 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 22 | User-Agent | [26] 20.41 | o | | [26] 20.41 | o | |
| 23 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c3: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | | |
| c4: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c6: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c7: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c8: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. | | | | | | |
| c9: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c10: | IF A.3/2 THEN m ELSE IF A.4/38 THEN o ELSE n/a - - P-CSCF, the Reason header field for the session initiation protocol. | | | | | | |
| c11: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c12: | IF A.4/38 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c13: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/4 - - CANCEL request

Table A.24: Supported message bodies within the CANCEL request

| Item | Header | Sending | | | Receiving | | |
|------|--|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: | IF A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/9B THEN o ELSE n/a - - MGCF, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, IBCF (IMS-ALG). | | | | | | |

Prerequisite A.5/5 - - CANCEL response for all status-codes

Table A.25: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|-------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 5A | Privacy | [33] 4.2 | c3 | n/a | [33] 4.2 | c3 | n/a |
| 6 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 7 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 8 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 9 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/5 - - CANCEL response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.26: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| 2 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 4 | Supported | [26] 20.37 | o | m | [26] 20.37 | m | m |
| c1: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/5 - - CANCEL response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.26A: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Table A.27: Void

Prerequisite A.5/5 - - CANCEL response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.28: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.30: Void

Prerequisite A.5/5 - - CANCEL response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.30A: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/5 - - CANCEL response

Table A.31: Supported message bodies within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.5 COMET method

Void

A.2.1.4.6 INFO method

Void

A.2.1.4.7 INVITE method

Prerequisite A.5/8 - - INVITE request

Table A.46: Supported headers within the INVITE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------------------|------------|----------------|------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c24 | c24 | [56B] 9.2 | c32 | c32 |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 4 | Alert-Info | [26] 20.4 | o | o | [26] 20.4 | c1 | c1 |
| 5 | Allow | [26] 20.5, [26] 5.1 | o (note 1) | o | [26] 20.5, [26] 5.1 | m | m |
| 6 | Allow-Events | [28] 7.2.2 | c2 | c2 | [28] 7.2.2 | c2 | c2 |
| 8 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 9 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 10 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 11 | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 12 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 13 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 14 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 15 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 16 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 17 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 18 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 19 | Expires | [26] 20.19 | o | o | [26] 20.19 | o | o |
| 20 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 20A | Geolocation | [89] 3.2 | c33 | c33 | [89] 3.2 | c33 | c33 |
| 20B | History-Info | [66] 4.1 | c31 | c31 | [66] 4.1 | c31 | c31 |
| 21 | In-Reply-To | [26] 20.21 | o | o | [26] 20.21 | o | o |
| 21A | Join | [61] 7.1 | c30 | c30 | [61] 7.1 | c30 | c30 |
| 22 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 23 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 23A | Min-SE | [58] 5 | c26 | c26 | [58] 5 | c25 | c25 |
| 24 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 24A | P-Access-Network-Info | [52] 4.4 | c15 | c16 | [52] 4.4 | c15 | c17 |
| 24B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c7 | c7 |
| 24C | P-Asserted-Service | [121] 4.1 | n/a | n/a | [121] 4.1 | c38 | c38 |
| 24D | P-Called-Party-ID | [52] 4.2 | x | x | [52] 4.2 | c13 | c13 |
| 24E | P-Charging-Function-Addresses | [52] 4.5 | c20 | c21 | [52] 4.5 | c20 | c21 |
| 24F | P-Charging-Vector | [52] 4.6 | c18 | c19 | [52] 4.6 | c18 | c19 |
| 24G | P-Early-Media | [109] 8 | c34 | c34 | [109] 8 | c34 | c34 |
| 25 | P-Media-Authorization | [31] 5.1 | n/a | n/a | [31] 5.1 | c11 | c12 |
| 25A | P-Preferred-Identity | [34] 9.2 | c7 | c5 | [34] 9.2 | n/a | n/a |
| 25B | P-Preferred-Service | [121] 4.2 | c37 | c36 | [121] 4.2 | n/a | n/a |
| 25C | P-Profile-Key | [97] 5 | n/a | n/a | [97] 5 | n/a | n/a |
| 25D | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | n/a | n/a |
| 25E | P-Visited-Network-ID | [52] 4.3 | x (note 3) | x | [52] 4.3 | c14 | n/a |
| 26 | Priority | [26] 20.26 | o | o | [26] 20.26 | o | o |
| 26A | Privacy | [33] 4.2 | c9 | c9 | [33] 4.2 | c9 | c9 |
| 27 | Proxy-Authorization | [26] 20.28 | c6 | c6 | [26] 20.28 | n/a | n/a |
| 28 | Proxy-Require | [26] 20.29 | o (note 2) | o (note 2) | [26] 20.29 | n/a | n/a |

| Item | Header | Sending | | | Receiving | | |
|------|---------------------|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 28A | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c8 | c8 |
| 29 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | m | m |
| 30 | Referred-By | [59] 3 | c27 | c27 | [59] 3 | c28 | c28 |
| 31 | Reject-Contact | [56B] 9.2 | c24 | c24 | [56B] 9.2 | c32 | c32 |
| 31A | Replaces | [60] 6.1 | c29 | c29 | [60] 6.1 | c29 | c29 |
| 31B | Reply-To | [26] 20.31 | o | o | [26] 20.31 | o | o |
| 31B | Request-Disposition | [56B] 9.1 | c24 | c24 | [56B] 9.1 | c32 | c32 |
| 32 | Require | [26] 20.32 | o | m | [26] 20.32 | m | m |
| 32A | Resource-Priority | [116] 3.1 | c35 | c35 | [116] 3.1 | c35 | c35 |
| 33 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 33A | Security-Client | [48] 2.3.1 | c22 | c22 | [48] 2.3.1 | n/a | n/a |
| 33B | Security-Verify | [48] 2.3.1 | c23 | c23 | [48] 2.3.1 | n/a | n/a |
| 33C | Session-Expires | [58] 4 | c25 | c25 | [58] 4 | c25 | c25 |
| 34 | Subject | [26] 20.36 | o | o | [26] 20.36 | o | o |
| 35 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| 36 | Timestamp | [26] 20.38 | c10 | c10 | [26] 20.38 | m | m |
| 37 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 37A | Trigger-Consent | [125] 5.11.2 | c39 | c39 | [125] 5.11.2 | c40 | c40 |
| 38 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 38A | User-to-User | [126] 5 | c41 | c41 | [126] 5 | c41 | c41 |
| 39 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| Item | Header | Sending | | | Receiving | | |
|---------|---|---------|---|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| c1: | IF A.4/12 THEN m ELSE n/a | -- | downloading of alerting information. | | | | |
| c2: | IF A.4/20 THEN m ELSE n/a | -- | SIP specific event notification extension. | | | | |
| c3: | IF A.4/7 THEN m ELSE n/a | -- | authentication between UA and UA. | | | | |
| c4: | IF A.4/11 THEN o ELSE n/a | -- | insertion of date in requests and responses. | | | | |
| c5: | IF A.3/1 AND A.4/25 THEN o ELSE n/a | -- | UE and private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | |
| c6: | IF A.4/8A THEN m ELSE n/a | -- | authentication between UA and proxy. | | | | |
| c7: | IF A.4/25 THEN o ELSE n/a | -- | private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | |
| c8: | IF A.4/38 THEN o ELSE n/a | -- | the Reason header field for the session initiation protocol. | | | | |
| c9: | IF A.4/26 THEN o ELSE n/a | -- | a privacy mechanism for the Session Initiation Protocol (SIP). | | | | |
| c10: | IF A.4/6 THEN o ELSE n/a | -- | timestamping of requests. | | | | |
| c11: | IF A.4/19 THEN m ELSE n/a | -- | SIP extensions for media authorization. | | | | |
| c12: | IF A.3/1 THEN m ELSE n/a | -- | UE. | | | | |
| c13: | IF A.4/32 THEN o ELSE n/a | -- | the P-Called-Party-ID extension. | | | | |
| c14: | IF A.4/33 THEN o ELSE n/a | -- | the P-Visited-Network-ID extension. | | | | |
| c15: | IF A.4/34 THEN o ELSE n/a | -- | the P-Access-Network-Info header extension. | | | | |
| c16: | IF A.4/34 AND A.3/1 THEN m ELSE n/a | -- | the P-Access-Network-Info header extension and UE. | | | | |
| c17: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a | -- | the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | |
| c18: | IF A.4/36 THEN o ELSE n/a | -- | the P-Charging-Vector header extension. | | | | |
| c19: | IF A.4/36 THEN m ELSE n/a | -- | the P-Charging-Vector header extension. | | | | |
| c20: | IF A.4/35 THEN o ELSE n/a | -- | the P-Charging-Function-Addresses header extension. | | | | |
| c21: | IF A.4/35 THEN m ELSE n/a | -- | the P-Charging-Function-Addresses header extension. | | | | |
| c22: | IF A.4/37 THEN o ELSE n/a | -- | security mechanism agreement for the session initiation protocol (note 4). | | | | |
| c23: | IF A.4/37 THEN m ELSE n/a | -- | security mechanism agreement for the session initiation protocol. | | | | |
| c24: | IF A.4/40 THEN o ELSE n/a | -- | caller preferences for the session initiation protocol. | | | | |
| c25: | IF A.4/42 THEN m ELSE n/a | -- | the SIP session timer. | | | | |
| c26: | IF A.4/42 THEN o ELSE n/a | -- | the SIP session timer. | | | | |
| c27: | IF A.4/43 THEN m ELSE n/a | -- | the SIP Referred-By mechanism. | | | | |
| c28: | IF A.4/43 THEN o ELSE n/a | -- | the SIP Referred-By mechanism. | | | | |
| c29: | IF A.4/44 THEN m ELSE n/a | -- | the Session Initiation Protocol (SIP) "Replaces" header. | | | | |
| c30: | IF A.4/45 THEN m ELSE n/a | -- | the Session Initiation Protocol (SIP) "Join" header. | | | | |
| c31: | IF A.4/47 THEN m ELSE n/a | -- | an extension to the session initiation protocol for request history information. | | | | |
| c32: | IF A.4/40 THEN m ELSE n/a | -- | caller preferences for the session initiation protocol. | | | | |
| c33: | IF A.4/60 THEN m ELSE n/a | -- | SIP location conveyance. | | | | |
| c34: | IF A.4/66 THEN m ELSE n/a | -- | The SIP P-Early-Media private header extension for authorization of early media. | | | | |
| c35: | IF A.4/70 THEN m ELSE n/a | -- | communications resource priority for the session initiation protocol. | | | | |
| c36: | IF A.3/1 AND A.4/74 THEN o ELSE n/a | -- | UE and identification of communication services in the session initiation protocol | | | | |
| c37: | IF A.4/74 THEN o ELSE n/a | -- | Identification of communication services in the session initiation protocol | | | | |
| c38: | IF A.4/74 THEN m ELSE n/a | -- | Identification of communication services in the session initiation protocol. | | | | |
| c39: | IF A.4/75A THEN m ELSE n/a | -- | a relay within the framework for consent-based communications in SIP. | | | | |
| c40: | IF A.4/75B THEN m ELSE n/a | -- | a recipient within the framework for consent-based communications in SIP. | | | | |
| c41: | IF A.4/76 THEN o ELSE n/a | -- | transporting user to user information for call centers using SIP. | | | | |
| o.1: | At least one of these shall be supported. | | | | | | |
| NOTE 1: | RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |
| NOTE 2: | No distinction has been made in these tables between first use of a request on a From/To/Call-ID combination, and the usage in a subsequent one. Therefore the use of "o" etc. above has been included from a viewpoint of first usage. | | | | | | |
| NOTE 3: | The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. | | | | | | |
| NOTE 4: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. | | | | | | |

Prerequisite A.5/8 - - INVITE request

Table A.47: Supported message bodies within the INVITE request

| Item | Header | Sending | | | Receiving | | |
|------|--|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: | IF A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/9B THEN o ELSE n/a - - MGCF, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, IBCF (IMS-ALG). | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.48: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|--|----------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | | |

Prerequisite A.5/9 - - INVITE response for all remaining status-codes

Table A.49: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|----------------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c12 | c12 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 8 ^a | Expires | [26] 20.19 | o | o | [26] 20.19 | o | o |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c14 | c14 | [89] 3.2 | c14 | c14 |
| 9B | History-Info | [66] 4.1 | c13 | c13 | [66] 4.1 | c13 | c13 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 11 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 11A | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 11B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 11C | P-Charging-Function-Addresses | [52] 4.5 | c10 | c11 | [52] 4.5 | c11 | c11 |
| 11D | P-Charging-Vector | [52] 4.6 | c8 | c9 | [52] 4.6 | c8 | c9 |
| 11E | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 11F | Privacy | [33] 4.2 | c4 | c4 | [33] 4.2 | c4 | c4 |
| 11G | Reply-To | [26] 20.31 | o | o | [26] 20.31 | o | o |
| 11H | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 11I | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 12 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 13 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 13A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 13B | User-to-User | [126] 5 | c15 | c15 | [126] 5 | c15 | c15 |
| 14 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 15 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.6/6 OR A.6/18 THEN m ELSE o - - 200 (OK), 405 (Method Not Allowed). | | | | | | |
| c13: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c14: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c15: | IF A.4/76 THEN o ELSE n/a - - transporting user to user information for call centers using SIP. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/101A - - Additional for 18x response

Table A.50: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Contact | [26] 20.10 | o | m | [26] 20.10 | m | m |
| 5 | P-Answer-State | [111] | c13 | c13 | [111] | c13 | c13 |
| 5A | P-Early-Media | [109] 8 | c14 | c14 | [109] 8 | c14 | c14 |
| 6 | P-Media-Authorization | [31] 5.1 | n/a | n/a | [31] 5.1 | c11 | c12 |
| 9 | Rseq | [27] 7.1 | c2 | m | [27] 7.1 | c3 | m |
| c2: | IF A.4/14 THEN o ELSE n/a - - reliability of provisional responses in SIP. | | | | | | |
| c3: | IF A.4/14 THEN m ELSE n/a - - reliability of provisional responses in SIP. | | | | | | |
| c11: | IF A.4/19 THEN m ELSE n/a - - SIP extensions for media authorization. | | | | | | |
| c12: | IF A.3/1 THEN m ELSE n/a - - UE. | | | | | | |
| c13: | IF A.4/65 THEN m ELSE n/a - - the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular. | | | | | | |
| c14: | IF A.4/66 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.51: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 1B | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 1C | Accept-Resource-Priority | [116] 3.2 | c15 | c15 | [116] 3.2 | c15 | c15 |
| 2 | Allow-Events | [28] 7.2.2 | c3 | c3 | [28] 7.2.2 | c4 | c4 |
| 4 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 6 | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 7 | P-Answer-State | [111] | c14 | c14 | [111] | c14 | c14 |
| 8 | P-Media-Authorization | [31] 5.1 | n/a | n/a | [31] 5.1 | c11 | c12 |
| 9 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | m | m |
| 10 | Session-Expires | [58] 4 | c13 | c13 | [58] 4 | c13 | c13 |
| 13 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. | | | | | | |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | | |
| c3: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c4: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c11: | IF A.4/19 THEN m ELSE n/a - - SIP extensions for media authorization. | | | | | | |
| c12: | IF A.3/1 THEN m ELSE n/a - - UE. | | | | | | |
| c13: | IF A.4/42 THEN m ELSE n/a - - the SIP session timer. | | | | | | |
| c14: | IF A.4/65 THEN m ELSE n/a - - the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular. | | | | | | |
| c15: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.51A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.52: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Contact | [26] 20.10 | o (note 1) | o | [26] 20.10 | m | m |
| NOTE: The strength of this requirement is RECOMMENDED rather than OPTIONAL. | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.53: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Proxy-Authenticate | [26] 20.27 | c3 | c3 | [26] 20.27 | c3 | c3 |
| 13 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | | |
| c2: IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | | |
| c3: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 600 (Busy Everywhere), 603 (Decline) response

Table A.54: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.55: Void

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.56: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 11 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.57: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.57A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.58: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 10 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.58A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/28A - - Additional for 422 (Session Interval Too Small) response

Table A.58B: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|--|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Min-SE | [58] 5 | c1 | c1 | [58] 5 | c1 | c1 |
| c1: IF A.4/42 THEN o ELSE n/a - - the SIP session timer. | | | | | | | |

Table A.59: Void

Table A.60: Void

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/29E - - Additional for 470 (Consent Needed) response

Table A.60A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|-------------|------------|----------------|-------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/45 - - 503 (Service Unavailable)

Table A.61: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | m |

Prerequisite A.5/9 - - INVITE response

Prerequisite: A.6/17 OR A.6/22 OR A.6/29D OR A.6/30 OR A.6/34 OR A.6/36 OR A.6/42 OR A.6/44 - - Additional for 404 (Not Found), 410 (Gone), 433(Anonymity Disallowed), 480(Temporarily not available), 484 (Address Incomplete), 486 (Busy Here), 500 (Internal Server Error), 502 (Busy Everywhere) response

Table A.61A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Reason | [130] | o | c1 | [130] | o | c1 |
| c1: IF A.4/38A THEN o ELSE n/a - - use of the Reason header field in Session Initiation Protocol (SIP) responses? | | | | | | | |

Prerequisite A.5/9 - - INVITE response

Table A.62: Supported message bodies within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|--|---------------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: IF A.3/6 OR A.3/7A OR A.3/7B OR A.3/7D OR A.3/9B THEN o ELSE n/a - - MGCF, AS acting as terminating UA, or redirect server, AS acting as originating UA, AS performing 3rd party call control, IBCF (IMS-ALG). | | | | | | | |

A.2.1.4.7A MESSAGE method

Prerequisite A.5/9A - - MESSAGE request

Table A.62A: Supported headers within the MESSAGE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c24 | c24 | [56B] 9.2 | c28 | c28 |
| 1A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 2 | Allow-Events | [28] 7.2.2 | c1 | c1 | [28] 7.2.2 | c2 | c2 |
| 3 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 4 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 5 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 6 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 7 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 8 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 9 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 10 | Content-Type | [26] 20.15 | m | m | [26] 29.15 | m | m |
| 11 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 12 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 13 | Expires | [26] 20.19 | o | o | [26] 20.19 | o | o |
| 14 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 14A | Geolocation | [89] 3.2 | c29 | c29 | [89] 3.2 | c29 | c29 |
| 14B | History-Info | [66] 4.1 | c27 | c27 | [66] 4.1 | c27 | c27 |
| 15 | In-Reply-To | [26] 20.21 | o | o | [26] 20.21 | o | o |
| 16 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 17 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 18 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 18A | P-Access-Network-Info | [52] 4.4 | c15 | c16 | [52] 4.4 | c15 | c16 |
| 18B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c11 | c11 |
| 18C | P-Asserted-Service | [121] 4.1 | n/a | n/a | [121] 4.1 | c33 | c33 |
| 18D | P-Called-Party-ID | [52] 4.2 | x | x | [52] 4.2 | c13 | c13 |
| 18E | P-Charging-Function-Addresses | [52] 4.5 | c20 | c21 | [52] 4.5 | c20 | c21 |
| 18F | P-Charging-Vector | [52] 4.6 | c18 | c19 | [52] 4.6 | c18 | c19 |
| 18G | P-Preferred-Identity | [34] 9.2 | c11 | c7 | [34] 9.2 | n/a | n/a |
| 18H | P-Preferred-Service | [121] 4.2 | c32 | c31 | [121] 4.2 | n/a | n/a |
| 18I | P-Profile-Key | [97] 5 | n/a | n/a | [97] 5 | n/a | n/a |
| 18J | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | n/a | n/a |
| 18K | P-Visited-Network-ID | [52] 4.3 | x (note 1) | x | [52] 4.3 | c14 | n/a |
| 19 | Priority | [26] 20.26 | o | o | [26] 20.26 | o | o |
| 19A | Privacy | [33] 4.2 | c12 | c12 | [33] 4.2 | c12 | c12 |
| 20 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 21 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 21A | Reason | [34A] 2 | c6 | c6 | [34A] 2 | c6 | c6 |
| 22 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 22A | Referred-By | [59] 3 | c25 | c25 | [59] 3 | c26 | c26 |
| 23 | Reject-Contact | [56B] 9.2 | c24 | c24 | [56B] 9.2 | c28 | c28 |
| 23A | Reply-To | [26] 20.31 | o | o | [26] 20.31 | o | o |
| 23B | Request-Disposition | [56B] 9.1 | c24 | c24 | [56B] 9.1 | c28 | c28 |
| 24 | Require | [26] 20.32 | c8 | o | [26] 20.32 | m | m |
| 24A | Resource-Priority | [116] 3.1 | c30 | c30 | [116] 3.1 | c30 | c30 |
| 25 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 25A | Security-Client | [48] 2.3.1 | c22 | c22 | [48] 2.3.1 | n/a | n/a |
| 25B | Security-Verify | [48] 2.3.1 | c23 | c23 | [48] 2.3.1 | n/a | n/a |
| 26 | Subject | [26] 20.35 | o | o | [26] 20.36 | o | o |
| 27 | Supported | [26] 20.37 | c9 | m | [26] 20.37 | m | m |
| 28 | Timestamp | [26] 20.38 | c10 | c10 | [26] 20.38 | m | m |
| 29 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 29A | Trigger-Consent | [125] 5.11.2 | c34 | c34 | [125] 5.11.2 | c35 | c35 |
| 30 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 31 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| Item | Header | Sending | | | Receiving | | |
|---|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| c1: | IF A.4/20 THEN o ELSE n/a -- SIP specific event notification extension. | | | | | | |
| c2: | IF A.4/20 THEN m ELSE n/a -- SIP specific event notification extension. | | | | | | |
| c3: | IF A.4/7 THEN m ELSE n/a -- authentication between UA and UA. | | | | | | |
| c4: | IF A.4/11 THEN o ELSE n/a -- insertion of date in requests and responses. | | | | | | |
| c5: | IF A.4/8A THEN m ELSE n/a -- authentication between UA and proxy. | | | | | | |
| c6: | IF A.4/38 THEN o ELSE n/a -- the Reason header field for the session initiation protocol. | | | | | | |
| c7: | IF A.3/1 AND A.4/25 THEN o ELSE n/a -- UE and private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c8: | IF A.4/14 THEN o.1 ELSE o -- Reliable transport. | | | | | | |
| c9: | IF IF A.4/14 THEN o.1 ELSE o -- support of reliable transport. | | | | | | |
| c10: | IF A.4/6 THEN o ELSE n/a -- timestamping of requests. | | | | | | |
| c11: | IF A.4/25 THEN o ELSE n/a -- private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c12: | IF A.4/26 THEN o ELSE n/a -- a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c13: | IF A.4/32 THEN o ELSE n/a -- the P-Called-Party-ID extension. | | | | | | |
| c14: | IF A.4/33 THEN o ELSE n/a -- the P-Visited-Network-ID extension. | | | | | | |
| c15: | IF A.4/34 THEN o ELSE n/a -- the P-Access-Network-Info header extension. | | | | | | |
| c16: | IF A.4/34 AND A.3/1 THEN m ELSE n/a -- the P-Access-Network-Info header extension and UE. | | | | | | |
| c17: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a -- the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c18: | IF A.4/36 THEN o ELSE n/a -- the P-Charging-Vector header extension. | | | | | | |
| c19: | IF A.4/36 THEN m ELSE n/a -- the P-Charging-Vector header extension. | | | | | | |
| c20: | IF A.4/35 THEN o ELSE n/a -- the P-Charging-Function-Addresses header extension. | | | | | | |
| c21: | IF A.4/35 THEN m ELSE n/a -- the P-Charging-Function-Addresses header extension. | | | | | | |
| c22: | IF A.4/37 THEN o ELSE n/a -- security mechanism agreement for the session initiation protocol (note 2). | | | | | | |
| c23: | IF A.4/37 THEN m ELSE n/a -- security mechanism agreement for the session initiation protocol. | | | | | | |
| c24: | IF A.4/40 THEN o ELSE n/a -- caller preferences for the session initiation protocol. | | | | | | |
| c25: | IF A.4/43 THEN m ELSE n/a -- the SIP Referred-By mechanism. | | | | | | |
| c26: | IF A.4/43 THEN o ELSE n/a -- the SIP Referred-By mechanism. | | | | | | |
| c27: | IF A.4/47 THEN m ELSE n/a -- an extension to the session initiation protocol for request history information. | | | | | | |
| c28: | IF A.4/40 THEN m ELSE n/a -- caller preferences for the session initiation protocol. | | | | | | |
| c29: | IF A.4/60 THEN m ELSE n/a -- SIP location conveyance. | | | | | | |
| c30: | IF A.4/70A THEN m ELSE n/a -- inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |
| c31: | IF A.3/1 AND A.4/74 THEN o ELSE n/a -- UE and Identification of communication services in the session initiation protocol | | | | | | |
| c32: | IF A.4/74 THEN o ELSE n/a -- Identification of communication services in the session initiation protocol. | | | | | | |
| c33: | IF A.4/74 THEN m ELSE n/a -- Identification of communication services in the session initiation protocol. | | | | | | |
| c34: | IF A.4/75A THEN m ELSE n/a -- a relay within the framework for consent-based communications in SIP. | | | | | | |
| c35: | IF A.4/75B THEN m ELSE n/a -- a recipient within the framework for consent-based communications in SIP. | | | | | | |
| NOTE 1: The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. | | | | | | | |
| NOTE 2: Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. | | | | | | | |

Prerequisite A.5/9A -- MESSAGE request

Table A.62B: Supported message bodies within the MESSAGE request

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | permission document | [125] 5.4 | c1 | c1 | [125] 5.4 | c2 | c2 |
| c1: | IF A.4/75A THEN m ELSE n/a -- a relay within the framework for consent-based communications in SIP. | | | | | | |
| c2: | IF A.4/75B THEN m ELSE n/a -- a recipient within the framework for consent-based communications in SIP. | | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.62BA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/9B - - MESSAGE response for all remaining status-codes

Table A.62C: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|---------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c12 | c12 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 3 | Content-Disposition | [26] 20.11 | o (note 1) | o (note 1) | [26] 20.11 | m (note 1) | m (note 1) |
| 4 | Content-Encoding | [26] 20.12 | o (note 1) | o (note 1) | [26] 20.12 | m (note 1) | m (note 1) |
| 5 | Content-Language | [26] 20.13 | o (note 1) | o (note 1) | [26] 20.13 | m (note 1) | m (note 1) |
| 6 | Content-Length | [26] 20.14 | m (note 1) | m (note 1) | [26] 20.14 | m (note 1) | m (note 1) |
| 7 | Content-Type | [26] 20.15 | m (note 1) | m (note 1) | [26] 20.15 | m (note 1) | m (note 1) |
| 8 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 9 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9A | Expires | [26] 20.19 | o | o | [26] 20.19 | o | o |
| 10 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 10A | Geolocation | [89] 3.2 | c14 | c14 | [89] 3.2 | c14 | c14 |
| 10B | History-Info | [66] 4.1 | c13 | c13 | [66] 4.1 | c13 | c13 |
| 11 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 12 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 12A | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 12B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 12C | P-Charging-Function-Addresses | [52] 4.5 | c10 | c11 | [52] 4.5 | c10 | c11 |
| 12D | P-Charging-Vector | [52] 4.6 | c8 | c9 | [52] 4.6 | c8 | c9 |
| 12E | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 12F | Privacy | [33] 4.2 | c4 | c4 | [33] 4.2 | c4 | c4 |
| 12G | Reply-To | [26] 20.31 | o | o | [26] 20.31 | o | o |
| 12H | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 13 | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 14 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 15 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 16 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 17 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 18 | Warning | [26] 20.43 | o | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed). | | | | | | |
| c13: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c14: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE 1: | RFC 3428 [50] clause 7 states that all 2xx class responses to a MESSAGE request must not include any body, therefore for 2xx responses to the MESSAGE request the values on Sending side for "RFC status" and "Profile status" are "x", the values for Receiving side for "RFC status" and "Profile Status" are "n/a". RFC 3261 [26] subclause 7.4 states that all responses may contain bodies, therefore for all responses to the MESSAGE request other than 2xx responses, the values on Sending side for "RFC status" and "Profile status" are "o", the values for Receiving side for "RFC status" and "Profile Status" are "m". | | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.62D: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c5 | c5 | [116] 3.2 | c5 | c5 |
| 1 | Allow-Events | [28] 7.2.2 | c3 | c3 | [28] 7.2.2 | c4 | c4 |
| 2 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 4 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. | | | | | | |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | | |
| c3: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c4: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c5: | IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.62DA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/103 - - Additional for 3xx or 485 (Ambiguous) response

Table A.62E: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|---|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Contact | [26] 20.10 | o (note) | o | [26] 20.10 | m | m |
| NOTE: The strength of this requirement is RECOMMENDED rather than OPTIONAL. | | | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.62F: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.62G: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.62H: Void

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.62I: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|---|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 6 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: | | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.62J: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|--|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 | | At least one of these capabilities is supported. | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.62JA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.62K: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.62L: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Table A.62M: Void

Prerequisite A.5/9B - - MESSAGE response

Prerequisite: A.6/29E - - Additional for 470 (Consent Needed) response

Table A.62MA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|-------------|------------|----------------|-------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.5/9B - - MESSAGE response

Table A.62N: Supported message bodies within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.8 NOTIFY method

Prerequisite A.5/10 - - NOTIFY request

Table A.63: Supported headers within the NOTIFY request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c19 | c19 | [56B] 9.2 | c23 | c23 |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 3A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 4 | Allow-Events | [28] 7.2.2 | c1 | c1 | [28] 7.2.2 | c2 | c2 |
| 5 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6A | Call-Info | [26] 20.9 | o | o | [26] 20.9 | c25 | c25 |
| 6B | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 7 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 8 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 9 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 14 | Event | [28] 7.2.1 | m | m | [28] 7.2.1 | m | m |
| 15 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 15A | Geolocation | [89] 3.2 | c24 | c24 | [89] 3.2 | c24 | c24 |
| 15B | History-Info | [66] 4.1 | c22 | c22 | [66] 4.1 | c22 | c22 |
| 16 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 17 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 17A | P-Access-Network-Info | [52] 4.4 | c10 | c11 | [52] 4.4 | c10 | c12 |
| 17B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c6 | c6 |
| 17C | P-Charging-Function-Addresses | [52] 4.5 | c14 | c15 | [52] 4.5 | c14 | c15 |
| 17D | P-Charging-Vector | [52] 4.6 | c13 | n/a | [52] 4.6 | c13 | n/a |
| 17E | P-Preferred-Identity | [34] 9.2 | c6 | x | [34] 9.2 | n/a | n/a |
| 17F | Privacy | [33] 4.2 | c7 | n/a | [33] 4.2 | c7 | c7 |
| 18 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 19 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 19A | Reason | [34A] 2 | c18 | c18 | [34A] 2 | c18 | c18 |
| 20 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | c9 | c9 |
| 20A | Referred-By | [59] 3 | c20 | c20 | [59] 3 | c21 | c21 |
| 20B | Reject-Contact | [56B] 9.2 | c19 | c19 | [56B] 9.2 | c23 | c23 |
| 20C | Request-Disposition | [56B] 9.1 | c19 | c19 | [56B] 9.1 | c23 | c23 |
| 21 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 22A | Resource-Priority | [116] 3.1 | c29 | c29 | [116] 3.1 | c29 | c29 |
| 22B | Security-Client | [48] 2.3.1 | c16 | c16 | [48] 2.3.1 | n/a | n/a |
| 22C | Security-Verify | [48] 2.3.1 | c17 | c17 | [48] 2.3.1 | n/a | n/a |
| 22 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 23 | Subscription-State | [28] 8.2.3 | m | m | [28] 8.2.3 | m | m |
| 24 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| 25 | Timestamp | [26] 20.38 | c8 | c8 | [26] 20.38 | m | m |
| 26 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 27 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 28 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 29 | Warning | [26] 20.43 | o | o | [26] 20.43 | o | o |

| | |
|-------|---|
| c1: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c2: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c3: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c4: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c5: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c6: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c7: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c8: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. |
| c9: | IF A.4/15 OR A.4/20 THEN m ELSE n/a - - the REFER method extension or SIP specific event notification extension. |
| c10: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c11: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. |
| c12: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. |
| c13: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c14: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c15: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c16: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note). |
| c17: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c18: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c19: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c20: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c21: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c22: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c23: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c24: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. |
| c25: | IF A.4/63 THEN m ELSE o - - subscriptions to request-contained resource lists in the session initiation protocol. |
| c29: | IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. |
| NOTE: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. |

Prerequisite A.5/10 - - NOTIFY request

Table A.64: Supported message bodies within the NOTIFY request

| Item | Header | Sending | | | Receiving | | |
|------|--|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | sipfrag | [37] 2 | c1 | c1 | [37] | c1 | c1 |
| c1: | IF A.4/15 THEN m ELSE o - - the REFER method extension | | | | | | |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.64A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/11 - - NOTIFY response for all remaining status-codes

Table A.65: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c12 | c12 | [89] 3.2 | c12 | c12 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 10A | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 10B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c9 | c10 | [52] 4.5 | c9 | c10 |
| 10D | P-Charging-Vector | [52] 4.6 | c8 | n/a | [52] 4.6 | c8 | n/a |
| 10E | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 10F | Privacy | [33] 4.2 | c4 | n/a | [33] 4.2 | c4 | c4 |
| 10G | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 10H | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c10: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed). | | | | | | |
| c12: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE: | RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.66: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c6 | c6 | [116] 3.2 | c6 | c6 |
| 0B | Allow-Events | [28] 7.2.2 | c4 | c4 | [28] 7.2.2 | c5 | c5 |
| 1 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 1A | Contact | [26] 20.10 | o | o | [26] 20.10 | m | m |
| 2 | Record-Route | [26] 20.30 | c3 | c3 | [26] 20.30 | c3 | c3 |
| 5 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |

| | |
|-----|---|
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c3: | IF A.4/15 OR A.4/20 THEN m ELSE n/a - - the REFER method extension or SIP specific event notification extension. |
| c4: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c5: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c6: | IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.66A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/103 - - Additional for 3xx response

Table A.67: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.68: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.69: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.70: Void

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.71: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c3 | c3 | [26] 20.27 | c3 | c3 |
| 6 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c3: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.72: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.72A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/27 - - Addition for 420 (Bad Extension) response

Table A.73: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.73A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.74: Void

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/35 - - Additional for 485 (Ambiguous) response

Table A.74A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | o | o | [26] 20.10 | m | m |

Prerequisite A.5/11 - - NOTIFY response

Prerequisite: A.6/39 - - Additional for 489 (Bad Event) response

Table A.75: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | m | m |

Prerequisite A.5/11 - - NOTIFY response

Table A.76: Supported message bodies within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.9 OPTIONS method

Prerequisite A.5/12 - - OPTIONS request

Table A.77: Supported headers within the OPTIONS request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c21 | c21 | [56B] 9.2 | c26 | c26 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | m | m |
| 3A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 4 | Allow-Events | [28] 7.2.2 | c24 | c24 | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7 | c2 | c2 | [26] 20.7 | c2 | c2 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 8 | Contact | [26] 20.10 | o | o | [26] 20.10 | o | o |
| 9 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 10 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 11 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 12 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 13 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 14 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 15 | Date | [26] 20.17 | c3 | c3 | [26] 20.17 | m | m |
| 16 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 16A | Geolocation | [89] 3.2 | c27 | c27 | [89] 3.2 | c27 | c27 |
| 16B | History-Info | [66] 4.1 | c25 | c25 | [66] 4.1 | c25 | c25 |
| 17 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 18 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 19 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 19A | P-Access-Network-Info | [52] 4.4 | c11 | c12 | [52] 4.4 | c11 | c13 |
| 19B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c6 | c6 |
| 19C | P-Asserted-Service | [121] 4.1 | n/a | n/a | [121] 4.1 | c30 | c30 |
| 19D | P-Called-Party-ID | [52] 4.2 | x | x | [52] 4.2 | c9 | c9 |
| 19E | P-Charging-Function-Addresses | [52] 4.5 | c16 | c17 | [52] 4.5 | c16 | c17 |
| 19F | P-Charging-Vector | [52] 4.6 | c14 | c15 | [52] 4.6 | c14 | c15 |
| 19G | P-Preferred-Identity | [34] 9.2 | c6 | c4 | [34] 9.2 | n/a | n/a |
| 19H | P-Preferred-Service | [121] 4.2 | c29 | c28 | [121] 4.2 | n/a | n/a |
| 19I | P-Profile-Key | [97] 5 | n/a | n/a | [97] 5 | n/a | n/a |
| 19J | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | n/a | n/a |
| 19K | P-Visited-Network-ID | [52] 4.3 | x (note 2) | x | [52] 4.3 | c10 | n/a |
| 19L | Privacy | [33] 4.2 | c8 | c8 | [33] 4.2 | c8 | c8 |
| 20 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 21 | Proxy-Require | [26] 20.29 | o | o (note 1) | [26] 20.29 | n/a | n/a |
| 21A | Reason | [34A] 2 | c20 | c20 | [34A] 2 | c20 | c20 |
| 22 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 22A | Referred-By | [59] 3 | c22 | c22 | [59] 3 | c23 | c23 |
| 22B | Reject-Contact | [56B] 9.2 | c21 | c21 | [56B] 9.2 | c26 | c26 |
| 22C | Request-Disposition | [56B] 9.1 | c21 | c21 | [56B] 9.1 | c26 | c26 |
| 23 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 23A | Resource-Priority | [116] 3.1 | c33 | c33 | [116] 3.1 | c33 | c33 |
| 24 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 24A | Security-Client | [48] 2.3.1 | c18 | c18 | [48] 2.3.1 | n/a | n/a |
| 24B | Security-Verify | [48] 2.3.1 | c19 | c19 | [48] 2.3.1 | n/a | n/a |
| 25 | Supported | [26] 20.37 | c6 | c6 | [26] 20.37 | m | m |
| 26 | Timestamp | [26] 20.38 | c7 | c7 | [26] 20.38 | m | m |
| 27 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 28 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 29 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|---------|---|
| c1: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c3: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c4: | IF A.3/1 AND A.4/25 THEN o ELSE n/a - - UE and private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c5: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c6: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c7: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. |
| c8: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c9: | IF A.4/32 THEN o ELSE n/a - - the P-Called-Party-ID extension. |
| c10: | IF A.4/33 THEN o ELSE n/a - - the P-Visited-Network-ID extension. |
| c11: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c12: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. |
| c13: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. |
| c14: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c15: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c16: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c17: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c18: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note 3). |
| c19: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c20: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c21: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c22: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c23: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c24: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c25: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c26: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c27: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. |
| c28: | IF A.3/1 AND A.4/74 THEN o ELSE n/a - - UE and Identification of communication services in the session initiation protocol. |
| c29: | IF A.4/74 THEN o ELSE n/a - - Identification of communication services in the session initiation protocol. |
| c30: | IF A.4/74 THEN m ELSE n/a - - Identification of communication services in the session initiation protocol. |
| c33: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| NOTE 1: | No distinction has been made in these tables between first use of a request on a From/To/Call-ID combination, and the usage in a subsequent one. Therefore the use of "o" etc. above has been included from a viewpoint of first usage. |
| NOTE 2: | The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. |
| NOTE 3: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. |

Prerequisite A.5/12 - - OPTIONS request

Table A.78: Supported message bodies within the OPTIONS request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.79: Void

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.79A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/13 - - OPTIONS response for all remaining status-codes

Table A.80: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c12 | c12 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c14 | c14 | [89] 3.2 | c14 | c14 |
| 9B | History-Info | [66] 4.1 | c13 | c13 | [66] 4.1 | c13 | c13 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 11 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 11A | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 11B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 11C | P-Charging-Function-Addresses | [52] 4.5 | c10 | c11 | [52] 4.5 | c10 | c11 |
| 11D | P-Charging-Vector | [52] 4.6 | c8 | c9 | [52] 4.6 | c8 | c9 |
| 11E | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 11F | Privacy | [33] 4.2 | c4 | c4 | [33] 4.2 | c4 | c4 |
| 11G | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 11H | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 12 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 13 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 13A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 14 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 15 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.6/6 OR A.6/18 THEN m ELSE o - - 200 (OK), 405 (Method Not Allowed). | | | | | | |
| c13: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c14: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE: | RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.81: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | m | m |
| 1A | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | m | m |
| 1B | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | m | m |
| 1C | Accept-Resource-Priority | [116] 3.2 | c14 | c14 | [116] 3.2 | c14 | c14 |
| 2 | Allow-Events | [28] 7.2.2 | c3 | c3 | [28] 7.2.2 | c4 | c4 |
| 3 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 5 | Contact | [26] 20.10 | o | | [26] 20.10 | o | |
| 8 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. | | | | | | |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | | |
| c3: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c4: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c14: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.81A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.82: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|-------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Contact | [26] 20.10 | o (note) | o | [26] 20.10 | m | m |
| NOTE: | RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.83: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 10 | WWW-Authenticate | [26] 20.44 | o | | [26] 20.44 | o | |
| c1: | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response.

Table A.84: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.85: Void

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.86: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|---|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: | | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.87: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|--|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 | | At least one of these capabilities is supported. | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.87A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.88: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 7 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/13 - - OPTIONS response

Prerequisite: A.6/28 OR A.6/41A - - Additional 421 (Extension Required), 494 (Security Agreement Required) response

Table A.88A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.89: Void

Prerequisite A.5/13 - - OPTIONS response

Table A.90: Supported message bodies within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.10 PRACK method

Prerequisite A.5/14 - - PRACK request

Table A.91: Supported headers within the PRACK request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c15 | c15 | [56B] 9.2 | c18 | c18 |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 3A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 4 | Allow-Events | [28] 7.2.2 | c1 | c1 | [28] 7.2.2 | c2 | c2 |
| 5 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 8 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 9 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 14 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 15 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 16 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 16A | P-Access-Network-Info | [52] 4.4 | c9 | c10 | [52] 4.4 | c9 | c11 |
| 16B | P-Charging-Function-Addresses | [52] 4.5 | c13 | c14 | [52] 4.5 | c13 | c14 |
| 16C | P-Charging-Vector | [52] 4.6 | c12 | n/a | [52] 4.6 | c12 | n/a |
| 16D | Privacy | [33] 4.2 | c6 | n/a | [33] 4.2 | c6 | n/a |
| 17 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 18 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 19 | Rack | [27] 7.2 | m | m | [27] 7.2 | m | m |
| 19A | Reason | [34A] 2 | c7 | c7 | [34A] 2 | c7 | c7 |
| 20 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 20A | Referred-By | [59] 3 | c16 | c16 | [59] 3 | c17 | c17 |
| 20B | Reject-Contact | [56B] 9.2 | c15 | c15 | [56B] 9.2 | c18 | c18 |
| 20C | Request-Disposition | [56B] 9.1 | c15 | c15 | [56B] 9.1 | c18 | c18 |
| 21 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 21A | Resource-Priority | [116] 3.1 | c33 | c33 | [116] 3.1 | c33 | c33 |
| 22 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 23 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| 24 | Timestamp | [26] 20.38 | c8 | c8 | [26] 20.38 | m | m |
| 25 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 26 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 27 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|------|--|
| c1: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c2: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c3: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c4: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c5: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c6: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c7: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c8: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. |
| c9: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c10: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. |
| c11: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. |
| c12: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c13: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c14: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c15: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c16: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c17: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c18: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c33: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |

Prerequisite A.5/14 - - PRACK request

Table A.92: Supported message bodies within the PRACK request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.93: Void

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.93A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/15 - - PRACK response for all remaining status-codes

Table A.94: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c9 | c9 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 10A | P-Access-Network-Info | [52] 4.4 | c3 | c4 | [52] 4.4 | c3 | c5 |
| 10B | P-Charging-Function-Addresses | [52] 4.5 | c7 | c8 | [52] 4.5 | c7 | c8 |
| 10C | P-Charging-Vector | [52] 4.6 | c6 | n/a | [52] 4.6 | c6 | n/a |
| 10D | P-Early-Media | [109] 8 | c10 | c10 | [109] 8 | c10 | c10 |
| 10E | Privacy | [33] 4.2 | c2 | n/a | [33] 4.2 | c2 | n/a |
| 10F | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 10G | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c3: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c4: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c5: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c6: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c7: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c8: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c9: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed) | | | | | | |
| c10: | IF A.4/66 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |
| NOTE: | RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.95: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c14 | c14 | [116] 3.2 | c14 | c14 |
| 0B | Allow-Events | [28] 7.2.2 | c3 | c3 | [28] 7.2.2 | c4 | c4 |
| 0C | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 0D | P-Early-Media | [109] 8 | c5 | c5 | [109] 8 | c5 | c5 |
| 3 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |

| | |
|------|--|
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c3: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c4: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c5: | IF A.4/66 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. |
| c14: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.95A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.96: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|---|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | o (note) | o | [26] 20.10 | m | m |
| NOTE: RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | | |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.97: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response.

Table A.98: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.99: Void

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.100: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 6 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.101: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.101A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.102: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/15 - - PRACK response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.102A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.103: Void

Prerequisite A.5/15 - - PRACK response

Table A.104: Supported message bodies within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.10A PUBLISH method

Prerequisite A.5/15A – PUBLISH request

Table A.104A: Supported headers within the PUBLISH request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|-----------------------------|------------|----------------|-----------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c28 | c28 |
| 2 | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 3 | Allow-Events | [26] 7.2.2 | c1 | c1 | [26] 7.2.2 | c2 | c2 |
| 4 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 5 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 7 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 8 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 9 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 14 | Event | [70] 4, 6 | m | m | [70] 4, 6 | m | m |
| 15 | Expires | [26] 20.19, [70] 4, 5, 6 | o | o | [26] 20.19, [70] 4, 5, 6 | m | m |
| 16 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 17 | In-Reply-To | [26] 20.21 | o | o | [26] 20.21 | o | o |
| 17A | History-Info | [66] 4.1 | c27 | c27 | [66] 4.1 | c27 | c27 |
| 18 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 19 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 20 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 21 | P-Access-Network-Info | [52] 4.4 | c15 | c16 | [52] 4.4 | c15 | c17 |
| 22 | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c11 | c11 |
| 22A | P-Asserted-Service | [121] 4.1 | n/a | n/a | [121] 4.1 | c31 | c31 |
| 23 | P-Called-Party-ID | [52] 4.2 | x | x | [52] 4.2 | c13 | c13 |
| 24 | P-Charging-Function-Addresses | [52] 4.5 | c20 | c21 | [52] 4.5 | c20 | c21 |
| 25 | P-Charging-Vector | [52] 4.6 | c18 | c19 | [52] 4.6 | c18 | c19 |
| 26 | P-Preferred-Identity | [34] 9.2 | c11 | c7 | [34] 9.2 | n/a | n/a |
| 26A | P-Preferred-Service | [121] 4.2 | c29 | c30 | [121] 4.2 | n/a | n/a |
| 26B | P-Profile-Key | [97] 5 | n/a | n/a | [97] 5 | n/a | n/a |
| 26C | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | n/a | n/a |
| 27 | P-Visited-Network-ID | [52] 4.3 | x (note 3) | x | [52] 4.3 | c14 | n/a |
| 28 | Priorità | [26] 20.26 | o | o | [26] 20.26 | o | o |
| 29 | Privacy | [33] 4.2 | c12 | c12 | [33] 4.2 | c12 | c12 |
| 30 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 31 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 32 | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c8 | c8 |
| 33 | Reject-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c28 | c28 |
| 33A | Referred-By | [59] 3 | c25 | c25 | [59] 3 | c26 | c26 |
| 34 | Request-Disposition | [56B] 9.1 | c22 | c22 | [56B] 9.1 | c28 | c28 |
| 35 | Reply-To | [26] 20.31 | o | o | [26] 20.31 | o | o |
| 36 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 36A | Resource-Priority | [116] 3.1 | c29 | c29 | [116] 3.1 | c29 | c29 |
| 37 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 38 | Security-Client | [48] 2.3.1 | c9 | c9 | [48] 2.3.1 | n/a | n/a |
| 39 | Security-Verify | [48] 2.3.1 | c10 | c10 | [48] 2.3.1 | n/a | n/a |
| 40 | SIP-If-Match | [70] 11.3.2 | o | o | [70] 11.3.2 | m | m |
| 41 | Subject | [26] 20.36 | o | o | [26] 20.36 | o | o |
| 42 | Supported | [26] 20.37, [26] 7.1 | o | o | [26] 20.37, [26] 7.1 | m | m |
| 43 | Timestamp | [26] 20.38 | c6 | c6 | [26] 20.38 | m | m |

| | | | | | | | |
|---------|---|------------|---|---|------------|---|---|
| 44 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 45 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 46 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/20 THEN o ELSE n/a -- SIP specific event notification extension. | | | | | | |
| c2: | IF A.4/20 THEN m ELSE n/a -- SIP specific event notification extension. | | | | | | |
| c3: | IF A.4/7 THEN m ELSE n/a -- authentication between UA and UA. | | | | | | |
| c4: | IF A.4/11 THEN o ELSE n/a -- insertion of date in requests and responses. | | | | | | |
| c5: | IF A.4/8A THEN m ELSE n/a -- authentication between UA and proxy. | | | | | | |
| c6: | IF A.4/6 THEN o ELSE n/a -- timestamping of requests. | | | | | | |
| c7: | IF A.3/1 AND A.4/25 THEN o ELSE n/a -- UE and private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c8: | IF A.4/38 THEN o ELSE n/a -- the Reason header field for the session initiation protocol. | | | | | | |
| c9: | IF A.4/37 THEN o ELSE n/a -- security mechanism agreement for the session initiation protocol (note 1). | | | | | | |
| c10: | IF A.4/37 THEN m ELSE n/a -- security mechanism agreement for the session initiation protocol. | | | | | | |
| c11: | IF A.4/25 THEN o ELSE n/a -- private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c12: | IF A.4/26 THEN o ELSE n/a -- a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c13: | IF A.4/32 THEN o ELSE n/a -- the P-Called-Party-ID extension. | | | | | | |
| c14: | IF A.4/33 THEN o ELSE n/a -- the P-Visited-Network-ID extension. | | | | | | |
| c15: | IF A.4/34 THEN o ELSE n/a -- the P-Access-Network-Info header extension. | | | | | | |
| c16: | IF A.4/34 AND A.3/1 THEN m ELSE n/a -- the P-Access-Network-Info header extension and UE. | | | | | | |
| c17: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a -- the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c18: | IF A.4/36 THEN o ELSE n/a -- the P-Charging-Vector header extension. | | | | | | |
| c19: | IF A.4/36 THEN m ELSE n/a -- the P-Charging-Vector header extension. | | | | | | |
| c20: | IF A.4/35 THEN o ELSE n/a -- the P-Charging-Function-Addresses header extension. | | | | | | |
| c21: | IF A.4/35 THEN m ELSE n/a -- the P-Charging-Function-Addresses header extension. | | | | | | |
| c22: | IF A.4/40 THEN o ELSE n/a -- caller preferences for the session initiation protocol. | | | | | | |
| c25: | IF A.4/43 THEN m ELSE n/a -- the SIP Referred-By mechanism. | | | | | | |
| c26: | IF A.4/43 THEN o ELSE n/a -- the SIP Referred-By mechanism. | | | | | | |
| c27: | IF A.4/47 THEN m ELSE n/a -- an extension to the session initiation protocol for request history information. | | | | | | |
| c28: | IF A.4/40 THEN m ELSE n/a -- caller preferences for the session initiation protocol. | | | | | | |
| c29: | IF A.4/70B THEN m ELSE n/a -- inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |
| c30: | IF A.3/1 AND A.4/74 THEN o ELSE n/a -- UE and Identification of communication services in the session initiation protocol. | | | | | | |
| c31: | IF A.4/74 THEN o ELSE n/a -- Identification of communication services in the session initiation protocol. | | | | | | |
| c32: | IF A.4/74 THEN m ELSE n/a -- Identification of communication services in the session initiation protocol. | | | | | | |
| NOTE 1: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. | | | | | | |
| NOTE 2: | The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. | | | | | | |

Prerequisite A.5/15A -- PUBLISH request

Table A.104B: Supported message bodies within the PUBLISH request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.104BA: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/15B - - PUBLISH response for all remaining status-codes

Table A.104C: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c12 | c12 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Call-Info | [26] 24.9 | o | o | [26] 24.9 | m | m |
| 3 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 4 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 5 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 6 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 7 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 8 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 9 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 10 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 10A | History-Info | [66] 4.1 | c13 | c13 | [66] 4.1 | c13 | c13 |
| 11 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 12 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 13 | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 14 | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 15 | P-Charging-Function-Addresses | [52] 4.5 | c10 | c11 | [52] 4.5 | c10 | c11 |
| 16 | P-Charging-Vector | [52] 4.6 | c8 | c9 | [52] 4.6 | c8 | c9 |
| 17 | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 18 | Privacy | [33] 4.2 | c4 | c4 | [33] 4.2 | c4 | c4 |
| 19 | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 20 | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 21 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 22 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 23 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 24 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 25 | Warning | [26] 20.43 | o | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed). | | | | | | |
| c13: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/7 - - Additional for 200 (OK) response

Table A.104D: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------------|--------------------------------|------------|----------------|--------------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c3 | c3 | [116] 3.2 | c3 | c3 |
| 2 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 3 | Expires | [26] 20.19, [70] 4, 5, 6 | m | m | [26] 20.19, [70] 4, 5, 6 | m | m |
| 4 | SIP-Etag | [70] 11.3.1 | m | m | [70] 11.3.1 | m | m |
| 5 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. c2: IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. c3: IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.104DA: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.104E: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Contact | [26] 20.10 | o | o | [26] 20.10 | m | m |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/8 OR A.6/9 OR A.6/10 OR A.6/11 OR A.6/12 – Additional for 401 (Unauthorized) response

Table A.104F: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 5 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.104G: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.104H: Void

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.104I: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|---|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 5 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: | | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.104J: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|--|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 | | At least one of these capabilities is supported. | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.104JA: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.104K: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.104L: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/29 - - Additional for 423 (Interval Too Brief) response

Table A.104M: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|--------------------------|------------|----------------|--------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Min-Expires | [26] 20.23, [70] 5, 6 | m | m | [26] 20.23, [70] 5, 6 | m | m |

Table A.104N: Void

Prerequisite A.5/15B - - PUBLISH response

Prerequisite: A.6/39 - - Additional for 489 (Bad Event) response

Table A.104O: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Allow-Events | [28] 8.2.2 | m | m | [28] 8.2.2 | m | m |

Prerequisite A.5/15B - - PUBLISH response

Table A.104P: Supported message bodies within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.11 REFER method

Prerequisite A.5/16 - - REFER request

Table A.105: Supported headers within the REFER request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|-------------------------|------------|----------------|-------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 0B | Accept-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c25 | c25 |
| 0C | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 1 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 1A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 2 | Allow-Events | [28] 7.2.2 | c1 | c1 | [28] 7.2.2 | c2 | c2 |
| 3 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 4 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 5 | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 5A | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 5B | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 5C | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 6 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 7 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 8 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 9 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 10 | Expires | [26] 20.19 | o | o | [26] 20.19 | o | o |
| 11 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 11A | Geolocation | [89] 3.2 | c26 | c26 | [89] 3.2 | c26 | c26 |
| 11B | History-Info | [66] 4.1 | c24 | c24 | [66] 4.1 | c24 | c24 |
| 12 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 13 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 14 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 14A | P-Access-Network-Info | [52] 4.4 | c12 | c13 | [52] 4.4 | c12 | c14 |
| 14B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c8 | c8 |
| 14C | P-Asserted-Service | [121] 4.1 | n/a | n/a | [121] 4.1 | c29 | c29 |
| 14D | P-Called-Party-ID | [52] 4.2 | x | x | [52] 4.2 | c10 | c10 |
| 14E | P-Charging-Function-Addresses | [52] 4.5 | c17 | c18 | [52] 4.5 | c17 | c18 |
| 14F | P-Charging-Vector | [52] 4.6 | c15 | c16 | [52] 4.6 | c15 | c16 |
| 14G | P-Preferred-Identity | [34] 9.2 | c8 | c7 | [34] 9.2 | n/a | n/a |
| 14H | P-Preferred-Service | [121] 4.2 | c28 | c27 | [121] 4.2 | n/a | n/a |
| 14I | P-Profile-Key | [97] 5 | n/a | n/a | [97] 5 | n/a | n/a |
| 14J | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | n/a | n/a |
| 14K | P-Visited-Network-ID | [52] 4.3 | x (note 1) | x | [52] 4.3 | c11 | n/a |
| 14L | Privacy | [33] 4.2 | c9 | c9 | [33] 4.2 | c9 | c9 |
| 15 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 16 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 16A | Reason | [34A] 2 | c21 | c21 | [34A] 2 | c21 | c21 |
| 17 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | m | m |
| 18 | Refer-To | [36] 3 | m | m | [36] 3 | m | m |
| 18A | Referred-By | [59] 3 | c23 | c23 | [59] 3 | c23 | c23 |
| 18B | Reject-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c25 | c25 |
| 18C | Request-Disposition | [56B] 9.1 | c22 | c22 | [56B] 9.1 | c25 | c25 |
| 19 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 19A | Resource-Priority | [116] 3.1 | c33 | c33 | [116] 3.1 | c33 | c33 |
| 20 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 20A | Security-Client | [48] 2.3.1 | c19 | c19 | [48] 2.3.1 | n/a | n/a |
| 20B | Security-Verify | [48] 2.3.1 | c20 | c20 | [48] 2.3.1 | n/a | n/a |
| 21 | Supported | [26] 20.37, [26] 7.1 | o | o | [26] 20.37, [26] 7.1 | m | m |
| 22 | Timestamp | [26] 20.38 | c6 | c6 | [26] 20.38 | m | m |
| 23 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 23A | Trigger-Consent | [125] 5.11.2 | c34 | c34 | [125] 5.11.2 | c35 | c35 |

| | | | | | | | |
|---|---|------------|---|---|------------|---|---|
| 24 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 25 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/20 THEN o ELSE n/a -- SIP specific event notification extension. | | | | | | |
| c2: | IF A.4/20 THEN m ELSE n/a -- SIP specific event notification extension. | | | | | | |
| c3: | IF A.4/7 THEN m ELSE n/a -- authentication between UA and UA. | | | | | | |
| c4: | IF A.4/11 THEN o ELSE n/a -- insertion of date in requests and responses. | | | | | | |
| c5: | IF A.4/8A THEN m ELSE n/a -- authentication between UA and proxy. | | | | | | |
| c6: | IF A.4/6 THEN o ELSE n/a -- timestamping of requests. | | | | | | |
| c7: | IF A.3/1 AND A.4/25 THEN o ELSE n/a -- UE and private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c8: | IF A.4/25 THEN o ELSE n/a -- private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c9: | IF A.4/26 THEN o ELSE n/a -- a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c10: | IF A.4/32 THEN o ELSE n/a -- the P-Called-Party-ID extension. | | | | | | |
| c11: | IF A.4/33 THEN o ELSE n/a -- the P-Visited-Network-ID extension. | | | | | | |
| c12: | IF A.4/34 THEN o ELSE n/a -- the P-Access-Network-Info header extension. | | | | | | |
| c13: | IF A.4/34 AND A.3/1 THEN m ELSE n/a -- the P-Access-Network-Info header extension and UE. | | | | | | |
| c14: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a -- the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c15: | IF A.4/36 THEN o ELSE n/a -- the P-Charging-Vector header extension. | | | | | | |
| c16: | IF A.4/36 THEN m ELSE n/a -- the P-Charging-Vector header extension. | | | | | | |
| c17: | IF A.4/35 THEN o ELSE n/a -- the P-Charging-Function-Addresses header extension. | | | | | | |
| c18: | IF A.4/35 THEN m ELSE n/a -- the P-Charging-Function-Addresses header extension. | | | | | | |
| c19: | IF A.4/37 THEN o ELSE n/a -- security mechanism agreement for the session initiation protocol (note 2). | | | | | | |
| c20: | IF A.4/37 THEN m ELSE n/a -- security mechanism agreement for the session initiation protocol. | | | | | | |
| c21: | IF A.4/38 THEN o ELSE n/a -- the Reason header field for the session initiation protocol. | | | | | | |
| c22: | IF A.4/40 THEN o ELSE n/a -- caller preferences for the session initiation protocol. | | | | | | |
| c23: | IF A.4/43 THEN m ELSE n/a -- the SIP Referred-By Mechanism. | | | | | | |
| c24: | IF A.4/47 THEN m ELSE n/a -- an extension to the session initiation protocol for request history information. | | | | | | |
| c25: | IF A.4/40 THEN m ELSE n/a -- caller preferences for the session initiation protocol. | | | | | | |
| c26: | IF A.4/60 THEN m ELSE n/a -- SIP location conveyance. | | | | | | |
| c27: | IF A.3/1 AND A.4/74 THEN o ELSE n/a -- UE and Identification of communication services in the session initiation protocol. | | | | | | |
| c28: | IF A.4/74 THEN o ELSE n/a -- Identification of communication services in the session initiation protocol. | | | | | | |
| c29: | IF A.4/74 THEN m ELSE n/a -- Identification of communication services in the session initiation protocol. | | | | | | |
| c33: | IF A.4/70 THEN m ELSE n/a -- communications resource priority for the session initiation protocol. | | | | | | |
| c34: | IF A.4/75A THEN m ELSE n/a -- a relay within the framework for consent-based communications in SIP. | | | | | | |
| c35: | IF A.4/75B THEN m ELSE n/a -- a recipient within the framework for consent-based communications in SIP. | | | | | | |
| NOTE 1: The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. | | | | | | | |
| NOTE 2: Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. | | | | | | | |

Prerequisite A.5/16 -- REFER request

Table A.106: Supported message bodies within the REFER request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.107: Void

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.107A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/17 - - REFER response for all remaining status-codes

Table A.108: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c12 | c12 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Contact | [26] 20.10 | c13 | c13 | [26] 20.10 | m | m |
| 1B | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 2 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 3 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 4 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 5 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 6 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 7 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 8 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 8A | Geolocation | [89] 3.2 | c15 | c15 | [89] 3.2 | c15 | c15 |
| 8B | History-Info | [66] 4.1 | c14 | c14 | [66] 4.1 | c14 | c14 |
| 9 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 10 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 10A | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 10B | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c10 | c11 | [52] 4.5 | c10 | c11 |
| 10D | P-Charging-Vector | [52] 4.6 | c8 | c9 | [52] 4.6 | c8 | c9 |
| 10E | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 10F | Privacy | [33] 4.2 | c4 | c4 | [33] 4.2 | c4 | c4 |
| 10G | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 10H | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed) | | | | | | |
| c13: | IF A.6/102 THEN m ELSE o - - 2xx response. | | | | | | |
| c14: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c15: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.109: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c12 | c12 | [116] 3.2 | c12 | c12 |
| 1 | Allow-Events | [28] 7.2.2 | c3 | c3 | [28] 7.2.2 | c4 | c4 |
| 2 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 5 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | m | m |
| 8 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. c2: IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. c3: IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. c4: IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. c12: IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.109A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Table A.110: Void

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.111: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 10 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.112: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.113: Void

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.114: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.115: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.115A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.116: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.116A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.117: Void

Prerequisite A.5/17 - - REFER response

Prerequisite: A.6/29E - - Additional for 470 (Consent Needed) response

Table A.117A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|----------------|------------|----------------|----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.5/17 - - REFER response

Table A.118: Supported message bodies within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.12 REGISTER method

Prerequisite A.5/18 - - REGISTER request

Table A.119: Supported headers within the REGISTER request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 3A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 4 | Allow-Events | [28] 7.2.2 | c27 | c27 | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7, [49] | c2 | c29 | [26] 20.7, [49] | m | c22 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 8 | Contact | [26] 20.10 | o | m | [26] 20.10 | m | m |
| 9 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 10 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 11 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 12 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 13 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 14 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 15 | Date | [26] 20.17 | c3 | c3 | [26] 20.17 | m | m |
| 16 | Expires | [26] 20.19 | o | o | [26] 20.19 | m | m |
| 17 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 17A | Geolocation | [89] 3.2 | c31 | c31 | [89] 3.2 | c31 | c31 |
| 17B | History-Info | [66] 4.1 | c28 | c28 | [66] 4.1 | c28 | c28 |
| 18 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 19 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 20 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 20A | P-Access-Network-Info | [52] 4.4 | c12 | c13 | [52] 4.4 | c12 | c14 |
| 20B | P-Charging-Function-Addresses | [52] 4.5 | c17 | c18 | [52] 4.5 | c17 | c18 |
| 20C | P-Charging-Vector | [52] 4.6 | c15 | c16 | [52] 4.6 | c15 | c16 |
| 20D | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | c30 | c30 |
| 20E | P-Visited-Network-ID | [52] 4.3 | x (note 2) | x | [52] 4.3 | c10 | c11 |
| 20FE | Path | [35] 4 | c4 | c5 | [35] 4 | m | c6 |
| 20GF | Privacy | [33] 4.2 | c9 | n/a | [33] 4.2 | c9 | n/a |
| 21 | Proxy-Authorization | [26] 20.28 | c8 | c8 | [26] 20.28 | n/a | n/a |
| 22 | Proxy-Require | [26] 20.29 | o | o (note 1) | [26] 20.29 | n/a | n/a |
| 22A | Reason | [34A] 2 | c23 | c23 | [34A] 2 | c23 | c23 |
| 22B | Referred-By | [59] 3 | c25 | c25 | [59] 3 | c26 | c26 |
| 22C | Request-Disposition | [56B] 9.1 | c24 | c24 | [56B] 9.1 | n/a | n/a |
| 23 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 23A | Resource-Priority | [116] 3.1 | c32 | c32 | [116] 3.1 | c32 | c32 |
| 24 | Route | [26] 20.34 | o | n/a | [26] 20.34 | n/a | n/a |
| 24A | Security-Client | [48] 2.3.1 | c19 | c20 | [48] 2.3.1 | n/a | n/a |
| 24B | Security-Verify | [48] 2.3.1 | c20 | c20 | [48] 2.3.1 | c21 | n/a |
| 25 | Supported | [26] 20.37 | o | c29 | [26] 20.37 | m | m |
| 26 | Timestamp | [26] 20.38 | c7 | c7 | [26] 20.38 | c7 | c7 |
| 27 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 28 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 29 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|---|--|
| c1: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c2: | IF A.4/8 THEN m ELSE n/a - - authentication between UA and registrar. |
| c3: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c4: | IF A.4/24 THEN o ELSE n/a - - session initiation protocol extension header field for registering non-adjacent contacts. |
| c5: | IF A.4/24 THEN x ELSE n/a - - session initiation protocol extension header field for registering non-adjacent contacts. |
| c6: | IF A.3/4 THEN m ELSE n/a. - - S-CSCF. |
| c7: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. |
| c8: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c9: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c10: | IF A.4/33 THEN o ELSE n/a - - the P-Visited-Network-ID extension. |
| c11: | IF A.4/33 THEN m ELSE n/a - - the P-Visited-Network-ID extension. |
| c12: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c13: | IF A.4/34 AND (A.3/1 OR A.3/4) THEN o ELSE n/a - - the P-Access-Network-Info header extension and UE or S-CSCF. |
| c14: | IF A.4/34 AND (A.3/4 OR A.3/7A) THEN m ELSE n/a - - the P-Access-Network-Info header extension and S-CSCF or AS acting as terminating UA. |
| c15: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c16: | IF A.4/36 OR A.3/4 THEN m ELSE n/a - - the P-Charging-Vector header extension (including S-CSCF as registrar). |
| c17: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c18: | IF A.4/35 OR A.3/4 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension (including S-CSCF as registrar). |
| c19: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note 3). |
| c20: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c21: | IF A.4/37 AND A.4/2 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol and registrar. |
| c22: | IF A.3/4 THEN m ELSE n/a - - S-CSCF. |
| c23: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c24: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c25: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c26: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c27: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c28: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c29: | IF A.3/1 THEN m ELSE o - - UE. |
| c30: | IF A.4/48 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c31: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. |
| c32: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. |
| NOTE 1: No distinction has been made in these tables between first use of a request on a From/To/Call-ID combination, and the usage in a subsequent one. Therefore the use of "o" etc. above has been included from a viewpoint of first usage. | |
| NOTE 2: The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. | |
| NOTE 3: Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. | |

Prerequisite A.5/18 - - REGISTER request

Table A.120: Supported message bodies within the REGISTER request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.121: Void

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.121A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/19 - - REGISTER response for all remaining status-codes

Table A.122: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c8 | c8 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c10 | c10 | [89] 3.2 | c10 | c10 |
| 9B | History-Info | [66] 4.1 | c9 | c9 | [66] 4.1 | c9 | c9 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 11 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 11A | P-Access-Network-Info | [52] 4.4 | c3 | n/a | [52] 4.4 | c3 | n/a |
| 11B | P-Charging-Function-Addresses | [52] 4.5 | c6 | c7 | [52] 4.5 | c6 | c7 |
| 11C | P-Charging-Vector | [52] 4.6 | c4 | c5 | [52] 4.6 | c4 | c5 |
| 11D | Privacy | [33] 4.2 | c2 | n/a | [33] 4.2 | c2 | n/a |
| 11E | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 11F | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 12 | Timestamp | [26] 20.38 | c2 | c2 | [26] 20.38 | m | m |
| 13 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 13A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 14 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 15 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c3: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c4: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c5: | IF A.4/36 OR A.3/4 THEN m ELSE n/a - - the P-Charging-Vector header extension (including S-CSCF as registrar). | | | | | | |
| c6: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c7: | IF A.4/35 OR A.3/4 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension (including S-CSCF as registrar). | | | | | | |
| c8: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed). | | | | | | |
| c9: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c10: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.123: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | | [26] 20.1 | o | |
| 1A | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 1B | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 1C | Accept-Resource-Priority | [116] 3.2 | c14 | c14 | [116] 3.2 | c14 | c14 |
| 2 | Allow-Events | [28] 7.2.2 | c12 | c12 | [28] 7.2.2 | c13 | c13 |
| 3 | Authentication-Info | [26] 20.6 | c6 | c6 | [26] 20.6 | c7 | c7 |
| 5 | Contact | [26] 20.10 | o | o | [26] 20.10 | m | m |
| 5A | P-Associated-URI | [52] 4.1 | c8 | c9 | [52] 4.1 | c10 | c11 |
| 6 | Path | [35] 4 | c3 | c3 | [35] 4 | c4 | c4 |
| 8 | Service-Route | [38] 5 | c5 | c5 | [38] 5 | c5 | c5 |
| 9 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: | IF (A.3/4 AND A.4/2) THEN m ELSE n/a. - - S-CSCF acting as registrar. | | | | | | |
| c2: | IF A.3/4 OR A.3/1 THEN m ELSE n/a. - - S-CSCF or UE. | | | | | | |
| c3: | IF A.4/24 THEN m ELSE n/a - - session initiation protocol extension header field for registering non-adjacent contacts. | | | | | | |
| c4: | IF A.4/24 THEN o ELSE n/a - - session initiation protocol extension header field for registering non-adjacent contacts. | | | | | | |
| c5: | IF A.4/28 THEN m ELSE n/a - - session initiation protocol extension header field for service route discovery during registration. | | | | | | |
| c6: | IF A.4/8 THEN o ELSE n/a - - authentication between UA and registrar. | | | | | | |
| c7: | IF A.4/8 THEN m ELSE n/a - - authentication between UA and registrar. | | | | | | |
| c8: | IF A.4/2 AND A.4/31 THEN m ELSE n/a - - P-Associated-URI header extension and registrar. | | | | | | |
| c9: | IF A.3/1 AND A.4/31 THEN m ELSE n/a - - P-Associated-URI header extension and S-CSCF. | | | | | | |
| c10: | IF A.4/31 THEN o ELSE n/a - - P-Associated-URI header extension. | | | | | | |
| c11: | IF A.4/31 AND A.3/1 THEN m ELSE n/a - - P-Associated-URI header extension and UE. | | | | | | |
| c12: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c13: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c14: | IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.123A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.124: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Contact | [26] 20.10 | o (note) | o | [26] 20.10 | m | m |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.125: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | c1 | x | [26] 20.27 | c1 | x |
| 6 | Security-Server | [48] 2 | x | x | [48] 2 | n/a | c2 |
| 10 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: IF A.4/8 THEN m ELSE n/a - - support of authentication between UA and registrar. | | | | | | | |
| c2: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.126: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.127: Void

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.128: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Proxy-Authenticate | [26] 20.27 | c1 | x | [26] 20.27 | c1 | x |
| 9 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/8 THEN m ELSE n/a - - support of authentication between UA and registrar. | | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.129: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.129A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|--|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.130: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.130A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c2 | c2 | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |
| c2: IF A.4/37 AND A.4/2 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol and registrar. | | | | | | | |

Prerequisite A.5/19 - - REGISTER response

Prerequisite: A.6/29 - - Additional for 423 (Interval Too Brief) response

Table A.131: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Min-Expires | [26] 20.23 | m | m | [26] 20.23 | m | m |

Table A.132: Void

Prerequisite A.5/19 - - REGISTER response

Table A.133: Supported message bodies within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.13 SUBSCRIBE method

Prerequisite A.5/20 - - SUBSCRIBE request

Table A.134: Supported headers within the SUBSCRIBE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c26 | c26 |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 3A | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 4 | Allow-Events | [28] 7.2.2 | o | o | [28] 7.2.2 | m | m |
| 5 | Authorization | [26] 20.7 | c3 | c3 | [26] 20.7 | c3 | c3 |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6A | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 7 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 8 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 9 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | c4 | c4 | [26] 20.17 | m | m |
| 14 | Event | [28] 7.2.1 | m | m | [28] 7.2.1 | m | m |
| 15 | Expires | [26] 20.19 | o (note 1) | o (note 1) | [26] 20.19 | m | m |
| 16 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 16A | Geolocation | [89] 3.2 | c27 | c27 | [89] 3.2 | c27 | c27 |
| 16B | History-Info | [66] 4.1 | c25 | c25 | [66] 4.1 | c25 | c25 |
| 17 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 18 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 18A | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 18B | P-Access-Network-Info | [52] 4.4 | c12 | c13 | [52] 4.4 | c12 | c14 |
| 18C | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c6 | c6 |
| 18D | P-Asserted-Service | [121] 4.1 | n/a | n/a | [121] 4.1 | c32 | c32 |
| 18E | P-Called-Party-ID | [52] 4.2 | x | x | [52] 4.2 | c10 | c10 |
| 18F | P-Charging-Function-Addresses | [52] 4.5 | c17 | c18 | [52] 4.5 | c17 | c18 |
| 18G | P-Charging-Vector | [52] 4.6 | c15 | c16 | [52] 4.6 | c15 | c16 |
| 18H | P-Preferred-Identity | [34] 9.2 | c6 | c7 | [34] 9.2 | n/a | n/a |
| 18I | P-Preferred-Service | [121] 4.2 | c31 | c30 | [121] 4.2 | n/a | n/a |
| 18J | P-Profile-Key | [97] 5 | n/a | n/a | [97] 5 | n/a | n/a |
| 18K | P-User-Database | [82] 4 | n/a | n/a | [82] 4 | n/a | n/a |
| 18L | P-Visited-Network-ID | [52] 4.3 | x (note 2) | x | [52] 4.3 | c11 | n/a |
| 18M | Privacy | [33] 4.2 | c9 | c9 | [33] 4.2 | c9 | c9 |
| 19 | Proxy-Authorization | [26] 20.28 | c5 | c5 | [26] 20.28 | n/a | n/a |
| 20 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 20A | Reason | [34A] 2 | c21 | c21 | [34A] 2 | c21 | c21 |
| 21 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | m | m |
| 21A | Referred-By | [59] 3 | c23 | c23 | [59] 3 | c24 | c24 |
| 21B | Reject-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c26 | c26 |
| 21C | Request-Disposition | [56B] 9.1 | c22 | c22 | [56B] 9.1 | c26 | c26 |
| 22 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 22A | Resource-Priority | [116] 3.1 | c29 | c29 | [116] 3.1 | c29 | c29 |
| 23 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 23A | Security-Client | [48] 2.3.1 | c19 | c19 | [48] 2.3.1 | n/a | n/a |
| 23B | Security-Verify | [48] 2.3.1 | c20 | c20 | [48] 2.3.1 | n/a | n/a |
| 24 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| 25 | Timestamp | [26] 20.38 | c8 | c8 | [26] 20.38 | m | m |
| 26 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 26A | Trigger-Consent | [125] 5.11.2 | c33 | c33 | [125] 5.11.2 | c34 | c34 |
| 27 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 28 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|---|--|
| c3: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c4: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c5: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c6: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c7: | IF A.3/1 AND A.4/25 THEN o ELSE n/a - - UE and private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c8: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. |
| c9: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c10: | IF A.4/32 THEN o ELSE n/a - - the P-Called-Party-ID extension. |
| c11: | IF A.4/33 THEN o ELSE n/a - - the P-Visited-Network-ID extension. |
| c12: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c13: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. |
| c14: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. |
| c15: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c16: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c17: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c18: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c19: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note 3). |
| c20: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c21: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c22: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c23: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c24: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c25: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c26: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c27: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. |
| c29: | IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. |
| c30: | IF A.3/1 AND A.4/74 THEN o ELSE n/a - - UE and Identification of communication services in the session initiation protocol. |
| c31: | IF A.4/74 THEN o ELSE n/a - - Identification of communication services in the session initiation protocol. |
| c32: | IF A.4/74 THEN m ELSE n/a - - Identification of communication services in the session initiation protocol. |
| c33: | IF A.4/75A THEN m ELSE n/a - - a relay within the framework for consent-based communications in SIP. |
| c34: | IF A.4/75B THEN m ELSE n/a - - a recipient within the framework for consent-based communications in SIP. |
| NOTE 1: The strength of this requirement is RECOMMENDED rather than OPTIONAL. | |
| NOTE 2: The strength of this requirement in RFC 3455 [52] is SHOULD NOT, rather than MUST NOT. | |
| NOTE 3: Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. | |

Prerequisite A.5/20 - - SUBSCRIBE request

Table A.135: Supported message bodies within the SUBSCRIBE request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.135A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response for all remaining status-codes

Table A.136: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c12 | c12 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c14 | c14 | [89] 3.2 | c14 | c14 |
| 9B | History-Info | [66] 4.1 | c13 | c13 | [66] 4.1 | c13 | c13 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 10A | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 10B | P-Access-Network-Info | [52] 4.4 | c5 | c6 | [52] 4.4 | c5 | c7 |
| 10C | P-Asserted-Identity | [34] 9.1 | n/a | n/a | [34] 9.1 | c3 | c3 |
| 10D | P-Charging-Function-Addresses | [52] 4.5 | c10 | c11 | [52] 4.5 | c10 | c11 |
| 10E | P-Charging-Vector | [52] 4.6 | c8 | c9 | [52] 4.6 | c8 | c9 |
| 10F | P-Preferred-Identity | [34] 9.2 | c3 | x | [34] 9.2 | n/a | n/a |
| 10G | Privacy | [33] 4.2 | c4 | c4 | [33] 4.2 | c4 | c4 |
| 10H | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 10I | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | c2 | c2 |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/25 THEN o ELSE n/a - - private extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c5: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c6: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c7: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c8: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed). | | | | | | |
| c13: | IF A.4/47 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c14: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.137: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c5 | c5 | [116] 3.2 | c5 | c5 |

| | | | | | | | |
|-----|---------------------|---|----|----|------------|----|----|
| 0B | Allow-Events | [28] 7.2.2 | o | o | [28] 7.2.2 | m | m |
| 1 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 1A | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 2 | Expires | [26] 20.19 | m | m | [26] 20.19 | m | m |
| 4 | Require | [26] 20.32 | m | m | [26] 20.32 | m | m |
| 6 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: | | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. | | | | | |
| c2: | | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | |
| c5: | | IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.137A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.138: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|-------|---------|---|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m (note) | m | [26] 20.10 | m | m |
| NOTE: | | The strength of this requirement is RECOMMENDED rather than MANDATORY for a 485 response. | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.139: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|---|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: | | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480 (Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.140: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | o | | [26] 20.33 | o | |

Table A.141: Void

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.142: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 6 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.143: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| 6 | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.143A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.144: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.144A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/29 - - Additional for 423 (Interval Too Brief) response

Table A.145: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Min-Expires | [26] 20.23 | m | m | [26] 20.23 | m | m |

Table A.146: Void

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/29E - - Additional for 470 (Consent Needed) response

Table A.146A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|-------------|------------|----------------|-------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.5/21 - - SUBSCRIBE response

Prerequisite: A.6/39 - - Additional for 489 (Bad Event) response

Table A.147: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | m | m |

Table A.148: Void

Prerequisite A.5/21 - - SUBSCRIBE response

Table A.149: Supported message bodies within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.1.4.14 UPDATE method

Prerequisite A.5/22 - - UPDATE request

Table A.150: Supported headers within the UPDATE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 1A | Accept-Contact | [56B] 9.2 | c20 | c20 | [56B] 9.2 | c24 | c24 |
| 2 | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 4 | Allow | [26] 20.5 | o | o | [26] 20.5 | m | m |
| 5 | Allow-Events | [28] 7.2.2 | c2 | c2 | [28] 7.2.2 | c3 | c3 |
| 6 | Authorization | [26] 20.7 | c4 | c4 | [26] 20.7 | c4 | c4 |
| 7 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 8 | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 9 | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 10 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 11 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 12 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 13 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 14 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 15 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 16 | Date | [26] 20.17 | c5 | c5 | [26] 20.17 | m | m |
| 17 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 17A | Geolocation | [89] 3.2 | c25 | c25 | [89] 3.2 | c25 | c25 |
| 18 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | n/a | n/a |
| 19 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 19A | Min-SE | [58] 5 | c21 | c21 | [58] 5 | c21 | c21 |
| 20 | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 20A | P-Access-Network-Info | [52] 4.4 | c11 | c12 | [52] 4.4 | c11 | c13 |
| 20B | P-Charging-Function-Addresses | [52] 4.5 | c16 | c17 | [52] 4.5 | c16 | c17 |
| 20C | P-Charging-Vector | [52] 4.6 | c14 | c15 | [52] 4.6 | c14 | c15 |
| 20D | P-Early-Media | [109] 8 | c26 | c26 | [109] 8 | c26 | c26 |
| 20E | Privacy | [33] 4.2 | c6 | n/a | [33] 4.2 | c6 | n/a |
| 21 | Proxy-Authorization | [26] 20.28 | c10 | c10 | [26] 20.28 | n/a | n/a |
| 22 | Proxy-Require | [26] 20.29 | o | n/a | [26] 20.29 | n/a | n/a |
| 22A | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c8 | c8 |
| 23 | Record-Route | [26] 20.30 | n/a | n/a | [26] 20.30 | n/a | n/a |
| 23A | Referred-By | [59] 3 | c22 | c22 | [59] 3 | c23 | c23 |
| 23B | Reject-Contact | [56B] 9.2 | c20 | c20 | [56B] 9.2 | c24 | c24 |
| 23C | Request-Disposition | [56B] 9.1 | c20 | c20 | [56B] 9.1 | c24 | c24 |
| 24 | Require | [26] 20.32 | o | o | [26] 20.32 | m | m |
| 24A | Resource-Priority | [116] 3.1 | c33 | c33 | [116] 3.1 | c33 | c33 |
| 25 | Route | [26] 20.34 | m | m | [26] 20.34 | n/a | n/a |
| 25A | Security-Client | [48] 2.3.1 | c18 | c18 | [48] 2.3.1 | n/a | n/a |
| 25B | Security-Verify | [48] 2.3.1 | c19 | c19 | [48] 2.3.1 | n/a | n/a |
| 25C | Session-Expires | [58] 4 | c21 | c21 | [58] 4 | c21 | c21 |
| 26 | Supported | [26] 20.37 | o | o | [26] 20.37 | m | m |
| 27 | Timestamp | [26] 20.38 | c9 | c9 | [26] 20.38 | m | m |
| 28 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 29 | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 30 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c2: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. |
| c3: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. |
| c4: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. |
| c5: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. |
| c6: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c8: | IF A.4/38 THEN o ELSE n/a - - the Reason header field for the session initiation protocol. |
| c9: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. |
| c10: | IF A.4/8A THEN m ELSE n/a - - authentication between UA and proxy. |
| c11: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c12: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. |
| c13: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. |
| c14: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c15: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c16: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c17: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c18: | IF A.4/37 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note). |
| c19: | IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c20: | IF A.4/40 THEN o ELSE n/a - - caller preferences for the session initiation protocol. |
| c21: | IF A.4/42 THEN m ELSE n/a - - the SIP session timer. |
| c22: | IF A.4/43 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c23: | IF A.4/43 THEN o ELSE n/a - - the SIP Referred-By mechanism. |
| c24: | IF A.4/40 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c25: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. |
| c26: | IF A.4/66 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. |
| c33: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| NOTE: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. Use of this header in this method is not appropriate to the security mechanism defined by 3GPP TS 33.203 [19]. |

Prerequisite A.5/22 - - UPDATE request

Table A.151: Supported message bodies within the UPDATE request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/1 - - Additional for 100 (Trying) response

Table A.151A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |

Prerequisite A.5/23 - - UPDATE response for all remaining status-codes

Table A.152: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | c11 | c11 | [26] 20.5 | m | m |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | o | o | [26] 20.9 | o | o |
| 1B | Contact | [26] 20.10 | o | o | [26] 20.10 | o | o |
| 2 | Content-Disposition | [26] 20.11 | o | o | [26] 20.11 | m | m |
| 3 | Content-Encoding | [26] 20.12 | o | o | [26] 20.12 | m | m |
| 4 | Content-Language | [26] 20.13 | o | o | [26] 20.13 | m | m |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | m | m |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c13 | c13 | [89] 3.2 | c13 | c13 |
| 10 | MIME-Version | [26] 20.24 | o | o | [26] 20.24 | m | m |
| 10A | Organization | [26] 20.25 | o | o | [26] 20.25 | o | o |
| 10B | P-Access-Network-Info | [52] 4.4 | c4 | c5 | [52] 4.4 | c4 | c6 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c9 | c10 | [52] 4.5 | c9 | c10 |
| 10D | P-Charging-Vector | [52] 4.6 | c7 | c8 | [52] 4.6 | c7 | c8 |
| 10E | Privacy | [33] 4.2 | c3 | n/a | [33] 4.2 | c3 | n/a |
| 10F | Require | [26] 20.31 | m | m | [26] 20.31 | m | m |
| 10G | Server | [26] 20.35 | o | o | [26] 20.35 | o | o |
| 11 | Timestamp | [26] 20.38 | c12 | c12 | [26] 20.38 | c2 | c2 |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | o | o | [26] 20.41 | o | o |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | o (note) | o | [26] 20.43 | o | o |
| c1: | IF A.4/11 THEN o ELSE n/a - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.4/6 THEN m ELSE n/a - - timestamping of requests. | | | | | | |
| c3: | IF A.4/26 THEN o ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c4: | IF A.4/34 THEN o ELSE n/a - - the P-Access-Network-Info header extension. | | | | | | |
| c5: | IF A.4/34 AND A.3/1 THEN m ELSE n/a - - the P-Access-Network-Info header extension and UE. | | | | | | |
| c6: | IF A.4/34 AND (A.3/7A OR A.3/7D) THEN m ELSE n/a - - the P-Access-Network-Info header extension and AS acting as terminating UA or AS acting as third-party call controller. | | | | | | |
| c7: | IF A.4/36 THEN o ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c8: | IF A.4/36 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.4/35 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c10: | IF A.4/35 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.6/18 THEN m ELSE o - - 405 (Method Not Allowed) | | | | | | |
| c12: | IF A.4/6 THEN o ELSE n/a - - timestamping of requests. | | | | | | |
| c13: | IF A.4/60 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| NOTE: | For a 488 (Not Acceptable Here) response, RFC 3261 [26] gives the status of this header as SHOULD rather than OPTIONAL. | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/102 - - Additional for 2xx response

Table A.153: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept | [26] 20.1 | o | o | [26] 20.1 | m | m |
| 0B | Accept-Encoding | [26] 20.2 | o | o | [26] 20.2 | m | m |
| 0C | Accept-Language | [26] 20.3 | o | o | [26] 20.3 | m | m |
| 0D | Accept-Resource-Priority | [116] 3.2 | c14 | c14 | [116] 3.2 | c14 | c14 |
| 1 | Allow-Events | [28] 7.2.2 | c4 | c4 | [28] 7.2.2 | c5 | c5 |

| | | | | | | | |
|------|--|------------|----|----|------------|----|----|
| 2 | Authentication-Info | [26] 20.6 | c1 | c1 | [26] 20.6 | c2 | c2 |
| 3 | Contact | [26] 20.10 | m | m | [26] 20.10 | m | m |
| 3A | P-Early-Media | [109] 8 | c6 | c6 | [109] 8 | c6 | c6 |
| 4 | Session-Expires | [58] | c3 | c3 | [58] | c3 | c3 |
| 6 | Supported | [26] 20.37 | m | m | [26] 20.37 | m | m |
| c1: | IF A.4/7 THEN o ELSE n/a - - authentication between UA and UA. | | | | | | |
| c2: | IF A.4/7 THEN m ELSE n/a - - authentication between UA and UA. | | | | | | |
| c3: | IF A.4/42 THEN m ELSE n/a - - the SIP session timer | | | | | | |
| c4: | IF A.4/20 THEN o ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c5: | IF A.4/20 THEN m ELSE n/a - - SIP specific event notification extension. | | | | | | |
| c6: | IF A.4/66 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |
| c14: | IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/103 OR A.6/104 OR A.6/105 OR A.6/106 - - Additional for 3xx – 6xx response

Table A.153A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | o | o | [26] 20.18 | o | o |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/103 OR A.6/35 - - Additional for 3xx, 485 (Ambiguous) response

Table A.154: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Contact | [26] 20.10 | o | o | [26] 20.10 | o | o |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/14 - - Additional for 401 (Unauthorized) response

Table A.154A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | m | m |
| c1: | IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/17 OR A.6/23 OR A.6/30 OR A.6/36 OR A.6/42 OR A.6/45 OR A.6/50 OR A.6/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.155: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Retry-After | [26] 20.33 | o | o | [26] 20.33 | o | o |

Table A.156: Void

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.157: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | c1 | c1 | [26] 20.27 | c1 | c1 |
| 8 | WWW-Authenticate | [26] 20.44 | o | o | [26] 20.44 | o | o |
| c1: IF A.4/7 THEN m ELSE n/a - - support of authentication between UA and UA. | | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/25 - - Additional for 415 (Unsupported Media Type) response

Table A.158: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|--|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | o.1 | o.1 | [26] 20.1 | m | m |
| 2 | Accept-Encoding | [26] 20.2 | o.1 | o.1 | [26] 20.2 | m | m |
| 3 | Accept-Language | [26] 20.3 | o.1 | o.1 | [26] 20.3 | m | m |
| o.1 At least one of these capabilities is supported. | | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.158A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.4/70 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/27 - - Additional for 420 (Bad Extension) response

Table A.159: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 7 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | m | m |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/28 OR A.6/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.159A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | x | x | [48] 2 | c1 | c1 |
| c1: IF A.4/37 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.5/23 - - UPDATE response

Prerequisite: A.6/28A - - Additional for 422 (Session Interval Too Small) response

Table A.159B: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|--|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Min-SE | [58] 5 | c1 | c1 | [58] 5 | c1 | c1 |
| c1: IF A.4/42 THEN m ELSE n/a - - the SIP session timer. | | | | | | | |

Table A.160: Void

Prerequisite A.5/23 - - UPDATE response

Table A.161: Supported message bodies within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2 Proxy role

A.2.2.1 Introduction

This subclause contains the ICS proforma tables related to the proxy role. They need to be completed only for proxy implementations.

Prerequisite: A.2/2 - - proxy role

A.2.2.2 Major capabilities

Table A.162: Major capabilities

| Item | Does the implementation support | Reference | RFC status | Profile status |
|------|---|------------------|------------|----------------|
| | Capabilities within main protocol | | | |
| 3 | initiate session release? | [26] 16 | x | c27 |
| 4 | stateless proxy behaviour? | [26] 16.11 | o.1 | c29 |
| 5 | stateful proxy behaviour? | [26] 16.2 | o.1 | c28 |
| 6 | forking of initial requests? | [26] 16.1 | c1 | c31 |
| 7 | support of indication of TLS connections in the Record-Route header on the upstream side? | [26] 16.7 | o | n/a |
| 8 | support of indication TLS connections in the Record-Route header on the downstream side? | [26] 16.7 | o | n/a |
| 8A | authentication between UA and proxy? | [26] 20.28, 22.3 | o | c85 |
| 9 | insertion of date in requests and responses? | [26] 20.17 | o | o |
| 10 | suppression or modification of alerting information data? | [26] 20.4 | o | o |
| 11 | reading the contents of the Require header before proxying the request or response? | [26] 20.32 | o | o |
| 12 | adding or modifying the contents of the Require header before proxying the REGISTER request or response | [26] 20.32 | o | m |
| 13 | adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER? | [26] 20.32 | o | o |
| 14 | being able to insert itself in the subsequent transactions in a dialog (record-routing)? | [26] 16.6 | o | c2 |
| 15 | the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing? | [26] 16.7 | c3 | c3 |
| 16 | reading the contents of the Supported header before proxying the response? | [26] 20.37 | o | o |
| 17 | reading the contents of the Unsupported header before proxying the 420 response to a REGISTER? | [26] 20.40 | o | m |
| 18 | reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER? | [26] 20.40 | o | o |
| 19 | the inclusion of the Error-Info header in 3xx - 6xx responses? | [26] 20.18 | o | o |
| 19A | reading the contents of the Organization header before proxying the request or response? | [26] 20.25 | o | o |
| 19B | adding or concatenating the Organization header before proxying the request or response? | [26] 20.25 | o | o |
| 19C | reading the contents of the Call-Info header before proxying the request or response? | [26] 20.9 | o | o |
| 19D | adding or concatenating the Call-Info header before proxying the request or response? | [26] 20.9 | o | o |
| 19E | delete Contact headers from 3xx responses prior to relaying the response? | [26] 20 | o | o |
| | Extensions | | | |

| | | | | |
|-----|--|-----------|-----|-----|
| 20 | the SIP INFO method? | [25] | o | o |
| 21 | reliability of provisional responses in SIP? | [27] | o | i |
| 22 | the REFER method? | [36] | o | o |
| 23 | integration of resource management and SIP? | [30] [64] | o | i |
| 24 | the SIP UPDATE method? | [29] | c4 | i |
| 26 | SIP extensions for media authorization? | [31] | o | c7 |
| 27 | SIP specific event notification | [28] | o | i |
| 28 | the use of NOTIFY to establish a dialog | [28] 4.2 | o | n/a |
| 29 | Session Initiation Protocol Extension Header Field for Registering Non-Adjacent Contacts | [35] | o | c6 |
| 30 | extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks | [34] | o | m |
| 30A | act as first entity within the trust domain for asserted identity | [34] | c5 | c8 |
| 30B | act as subsequent entity within trust network that can route outside the trust network | [34] | c5 | c9 |
| 31 | a privacy mechanism for the Session Initiation Protocol (SIP) | [33] | o | m |
| 31A | request of privacy by the inclusion of a Privacy header | [33] | n/a | n/a |
| 31B | application of privacy based on the received Privacy header | [33] | c10 | c12 |
| 31C | passing on of the Privacy header transparently | [33] | c10 | c13 |
| 31D | application of the privacy option "header" such that those headers which cannot be completely expunged of identifying information without the assistance of intermediaries are obscured? | [33] 5.1 | x | x |
| 31E | application of the privacy option "session" such that anonymization for the session(s) initiated by this message occurs? | [33] 5.2 | n/a | n/a |
| 31F | application of the privacy option "user" such that user level privacy functions are provided by the network? | [33] 5.3 | n/a | n/a |
| 31G | application of the privacy option "id" such that privacy of the network asserted identity is provided by the network? | [34] 7 | c11 | c12 |
| 31H | application of the privacy option "history" such that privacy of the History-Info header is provided by the network? | [66] 7.2 | c34 | c34 |
| 32 | Session Initiation Protocol Extension Header Field for Service Route Discovery During Registration | [38] | o | c30 |
| 33 | a messaging mechanism for the Session Initiation Protocol (SIP) | [50] | o | m |
| 34 | Compressing the Session Initiation Protocol | [55] | o | c7 |
| 35 | private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP)? | [52] | o | m |
| 36 | the P-Associated-URI header extension? | [52] 4.1 | c14 | c15 |
| 37 | the P-Called-Party-ID header extension? | [52] 4.2 | c14 | c16 |
| 38 | the P-Visited-Network-ID header extension? | [52] 4.3 | c14 | c17 |

| | | | | |
|-----|--|-----------|-----|-----|
| 39 | reading, or deleting the P-Visited-Network-ID header before proxying the request or response? | [52] 4.3 | c18 | n/a |
| 41 | the P-Access-Network-Info header extension? | [52] 4.4 | c14 | c19 |
| 42 | act as first entity within the trust domain for access network information? | [52] 4.4 | c20 | c21 |
| 43 | act as subsequent entity within trust network for access network information that can route outside the trust network? | [52] 4.4 | c20 | c22 |
| 44 | the P-Charging-Function-Addresses header extension? | [52] 4.5 | c14 | m |
| 44A | adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response? | [52] 4.6 | c25 | c26 |
| 45 | the P-Charging-Vector header extension? | [52] 4.6 | c14 | m |
| 46 | adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response? | [52] 4.6 | c23 | c24 |
| 47 | security mechanism agreement for the session initiation protocol? | [48] | o | c7 |
| 48 | the Reason header field for the session initiation protocol | [34A] | o | c78 |
| 48A | use of the Reason header field in Session Initiation Protocol (SIP) responses? | [130] | o | o |
| 49 | an extension to the session initiation protocol for symmetric response routing | [56A] | o | m |
| 50 | caller preferences for the session initiation protocol? | [56B] | c33 | c33 |
| 50A | the proxy-directive within caller-preferences? | [56B] 9.1 | o.4 | o.4 |
| 50B | the cancel-directive within caller-preferences? | [56B] 9.1 | o.4 | o.4 |
| 50C | the fork-directive within caller-preferences? | [56B] 9.1 | o.4 | c32 |
| 50D | the recurse-directive within caller-preferences? | [56B] 9.1 | o.4 | o.4 |
| 50E | the parallel-directive within caller-preferences? | [56B] 9.1 | o.4 | c32 |
| 50F | the queue-directive within caller-preferences? | [56B] 9.1 | o.4 | o.4 |
| 51 | an event state publication extension to the session initiation protocol? | [70] | o | m |
| 52 | SIP session timer? | [58] | o | o |
| 53 | the SIP Referred-By mechanism? | [59] | o | o |
| 54 | the Session Initiation Protocol (SIP) "Replaces" header? | [60] | o | o |
| 55 | the Session Initiation Protocol (SIP) "Join" header? | [61] | o | o |
| 56 | the callee capabilities? | [62] | o | o |
| 57 | an extension to the session initiation protocol for request history information? | [66] | o | o |
| 58 | Rejecting anonymous requests in the session initiation protocol? | [67] | o | o |
| 59 | session initiation protocol URIs for applications such as voicemail and interactive voice response | [68] | o | o |
| 60 | the P-User-Database private header extension? | [82] | o | o |
| 61 | Session initiation protocol's non-INVITE transactions? | [83] | m | m |
| 62 | a uniform resource name for services | [69] | n/a | c35 |

| | | | | |
|-----|---|------------|-----|-----------|
| 63 | obtaining and using GRUUs in the Session Initiation Protocol (SIP) | [93] | o | c36 |
| 64 | an extension to the session initiation protocol for request cpc information? | [95] | o | c37 |
| 65 | the Stream Control Transmission Protocol (SCTP) as a Transport for the Session Initiation Protocol (SIP)? | [96] | o | o (note2) |
| 66 | the SIP P-Profile-Key private header extension? | [97] | o | c41 |
| 66A | making the first query to the database in order to populate the P-Profile-Key header? | [97] | c38 | c39 |
| 66B | using the information in the P-Profile-Key header? | [97] | c38 | c40 |
| 67 | managing client initiated connections in SIP? | [92] 11 | o | c42 |
| 69 | multiple-recipient MESSAGE requests in the session initiation protocol | [104] | n/a | n/a |
| 70 | SIP location conveyance? | [89] | o | m |
| 70A | addition or modification of location in a SIP method? | [89] | c44 | c45 |
| 70B | passes on locations in SIP method without modification? | [89] | c44 | c46 |
| 71 | referring to multiple resources in the session initiation protocol? | [105] | n/a | n/a |
| 72 | conference establishment using request-contained lists in the session initiation protocol? | [106] | n/a | n/a |
| 73 | subscriptions to request-contained resource lists in the session initiation protocol? | [107] | n/a | n/a |
| 74 | dialstring parameter for the session initiation protocol uniform resource identifier? | [103] | o | n/a |
| 75 | the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular? | [111] | o | c60 |
| 76 | the SIP P-Early-Media private header extension for authorization of early media? | [109] 8 | o | c51 |
| 77 | number portability parameters for the "tel" URI? | [112] | o | c47 |
| 77A | assert or process carrier indication? | [112] | o | c48 |
| 77B | local number portability? | [112] | o | c50 |
| 78 | DAI parameter for the "tel" URI? | [113] | o | c49 |
| 79 | extending the session initiation protocol Reason header for preemption events | [115] | c79 | c79 |
| 80 | communications resource priority for the session initiation protocol? | [116] | o | c80 |
| 80A | inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol? | [116] 4.2 | c82 | c82 |
| 80B | inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol? | [116] 4.2 | c82 | c82 |
| 80C | resource priority namespace of DSN (Defense switched network)? | [116] 10.2 | c81 | n/a |
| 80D | resource priority namespace of DSRN (Defense RED switched network)? | [116] 10.3 | c81 | n/a |
| 80E | resource priority namespace of Q735? | [116] 10.4 | c81 | n/a |
| 80F | resource priority namespace of ETS (Government Emergency Telecommunications Service)? | [116] 10.5 | c81 | n/a |
| 80G | resource priority namespace of WPS | [116] 10.6 | c81 | c83 |

| | | | | |
|-----|---|----------|-----|-----|
| | (Wireless priority service)? | | | |
| 81 | addressing an amplification vulnerability in session initiation protocol forking proxies? | [117] | c52 | c52 |
| 82 | the remote application identification of applying signaling compression to SIP | [79] 9.1 | o | c7 |
| 83 | a session initiation protocol media feature tag for MIME application sub-types? | [120] | o | c53 |
| 84 | identification of communication services in the session initiation protocol? | [121] | o | c54 |
| 84A | act as authentication entity within the trust domain for asserted service? | [121] | c55 | c56 |
| 85 | a framework for consent-based communications in SIP? | [125] | o | m |
| 86 | transporting user to user information for call centers using SIP? | [126] | o | c84 |

| | |
|------|---|
| c1: | IF A.162/5 THEN o ELSE n/a - - stateful proxy behaviour. |
| c2: | IF A.3/2 OR A.3/9A OR A.3/4 THEN m ELSE o - - P-CSCF, IBCF (THIG) or S-CSCF. |
| c3: | IF (A.162/7 AND NOT A.162/8) OR (NOT A.162/7 AND A.162/8) THEN m ELSE IF A.162/14 THEN o ELSE n/a - - TLS interworking with non-TLS else proxy insertion. |
| c4: | IF A.162/23 THEN m ELSE o - - integration of resource management and SIP. |
| c5: | IF A.162/30 THEN o ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c6: | IF A.3/2 OR A.3/9A THEN m ELSE n/a - - P-CSCF or IBCF (THIG). |
| c7: | IF A.3/2 THEN m ELSE n/a - - P-CSCF. |
| c8: | IF A.3/2 AND A.162/30 THEN m ELSE n/a - - P-CSCF and extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c9: | IF A.3/2 AND A.162/30 THEN m ELSE IF A.3/7C AND A.162/30 THEN o ELSE n/a - - S-CSCF or AS acting as proxy and extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks (NOTE 1). |
| c10: | IF A.162/31 THEN o.2 ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c11: | IF A.162/31B THEN o ELSE x - - application of privacy based on the received Privacy header. |
| c12: | IF A.162/31 AND A.3/4 THEN m ELSE n/a - - S-CSCF. |
| c13: | IF A.162/31 AND (A.3/2 OR A.3/3 OR A.3/7C OR A.3/9A) THEN m ELSE n/a - - P-CSCF or I-CSCF or AS acting as a SIP proxy or IBCF (THIG). |
| c14: | IF A.162/35 THEN o.3 ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP). |
| c15: | IF A.162/35 AND (A.3/2 OR A.3/3 OR A.3/9A) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and P-CSCF or I-CSCF or IBCF (THIG). |
| c16: | IF A.162/35 AND (A.3/2 OR A.3/3 OR A.3/4 OR A.3/9A) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and P-CSCF or I-CSCF or S-CSCF or IBCF (THIG). |
| c17: | IF A.162/35 AND (A.3/2 OR A.3/3 OR A.3/9A) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and P-CSCF or I-CSCF or IBCF (THIG). |
| c18: | IF A.162/38 THEN o ELSE n/a - - the P-Visited-Network-ID header extension. |
| c19: | IF A.162/35 AND (A.3/2 OR A.3.3 OR A.3/4 OR A.3/7) THEN m ELSE n/a - - private header extensions to the session initiation protocol for the 3rd-Generation Partnership Project (3GPP) and P-CSCF, I-CSCF, S-CSCF, AS acting as a proxy. |
| c20: | IF A.162/41 THEN o ELSE n/a - - the P-Access-Network-Info header extension. |
| c21: | IF A.162/41 AND A.3/2 THEN m ELSE n/a - - the P-Access-Network-Info header extension and P-CSCF. |
| c22: | IF A.162/41 AND A.3/4 THEN m ELSE n/a - - the P-Access-Network-Info header extension and S-CSCF. |
| c23: | IF A.162/45 THEN o ELSE n/a - - the P-Charging-Vector header extension. |
| c24: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c25: | IF A.162/44 THEN o ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c26: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function Addresses header extension. |
| c27: | IF A.3/2 OR A.3/4 THEN m ELSE x - - P-CSCF or S-CSCF. |
| c28: | IF A.3/2 OR A.3/3 OR A.3/4 THEN m ELSE o.8 - - P-CSCF or I-CSCF or S-CSCF. |
| c29: | IF A.3/2 OR A.3/4 THEN n/a ELSE IF A.3/3 THEN o ELSE o.8 - - P-CSCF or S-CSCF or I-CSCF. |
| c30: | IF A.3/2 o ELSE i - - P-CSCF. |
| c31: | IF A.3/4 THEN m ELSE x - - S-CSCF. |
| c32: | IF A.3/4 THEN m ELSE o.4 - - S-CSCF. |
| c33: | IF A.162/50A OR A.162/50B OR A.162/50C OR A.162/50D OR A.162/50E OR A.162/50F THEN m ELSE n/a - - support of any directives within caller preferences for the session initiation protocol. |
| c34: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c35: | IF A.3/2 OR A.3/11 THEN m ELSE n/a - - P-CSCF, E-CSCF. |
| c36: | IF A.3/4 THEN m ELSE n/a - - S-CSCF. |
| c37: | IF A.3/2 OR A.3/3 OR A.3/4 OR A.3.5 OR A.3/6 OR A.3/7 OR A.3/8 OR A.3/9A THEN o ELSE n/a - - cpc URI parameter. |
| c38: | IF A.162/66 THEN o ELSE n/a - - the SIP P-Profile-Key private header. |
| c39: | IF A.162/66 AND (A.3/3 OR A.3/9A) THEN m ELSE n/a - - the SIP P-Profile-Key private header, I-CSCF or IBCF (THIG). |

| | |
|---------|--|
| c40: | IF A.162/66 AND A.3/4 THEN m ELSE n/a - - the SIP P-Profile-Key private header, S-CSCF. |
| c41: | IF A.3/3 OR A.3/4 OR A.3/9A THEN o ELSE n/a - - I-CSCF or S-CSCF or IBCF (THIG). |
| c42: | IF A.3/2 OR A.3/4 THEN o ELSE n/a - - P-CSCF, S-CSCF. |
| c44: | IF A.162/70 THEN o.5 ELSE n/a - - SIP location conveyance. |
| c45: | IF A.162/70 AND A.3/11 THEN m ELSE IF A.162/70 AND A.3/7C THEN o.6 ELSE n/a - - SIP location conveyance, E-CSCF, AS acting as a SIP proxy. |
| c46: | IF A.162/70 AND A.3/2 OR A.3/3 OR A.3/5 OR A.3/10 THEN m ELSE IF A.162/70 AND A.3/7C THEN o.6 ELSE n/a - - SIP location conveyance, P-CSCF, I-CSCF, S-CSCF, BGCF, additional routing functionality. |
| c47: | IF A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C THEN o ELSE n/a - - I-CSCF, S-CSCF, BGCF, AS acting as a SIP proxy. |
| c48: | IF A.162/77 THEN m ELSE n/a - - number portability parameters for the "tel" URI. |
| c49: | IF A.3/5 OR A.3/7C THEN o ELSE n/a - - BGCF, AS acting as a SIP proxy. |
| c50: | IF A.162/77 THEN m ELSE n/a - - number portability parameters for the 'tel' URI. |
| c51: | IF A.3/2 THEN m ELSE o - - P-CSCF. |
| c52: | IF A.162/6 THEN m ELSE o - - forking of initial requests. |
| c53: | IF A.3/4 THEN m ELSE n/a - - S-CSCF. |
| c54: | IF A.3/3 OR A.3/4 OR A.3/7 OR A.3/2 OR A.3/9A THEN m ELSE n/a - - I-CSCF, S-CSCF, BGCF, P-CSCF, IBCF (THIG). |
| c55: | IF A.162/84 THEN o ELSE n/a - - identification of communication services in the session initiation protocol. |
| c56: | IF A.3/4 AND A.162/84 THEN m ELSE n/a - - S-CSCF and identification of communication services in the session initiation protocol. |
| c60: | IF A.3/2 OR A.3/3 OR A.3/4 THEN o ELSE n/a - - P=CSCF, I-CSCF, S-CSCF. |
| c78: | IF A.162/79 THEN m ELSE o - - extending the session initiation protocol Reason header for preemption events. |
| c79: | IF A.162/80C OR A.162/80D OR A.162/80E THEN m ELSE o - - resource priority namespace of DSN (Defense switched network), resource priority namespace of DSRN (Defence RED switched network), resource priority namespace of Q735. |
| c80: | IF A.3/2 OR A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C OR A.3/9A OR A.3/10 THEN o ELSE n/a - - P-CSCF, I-CSCF, S-CSCF, BGCF, AS acting as proxy, IBCF (THIG), additional routing functionality. |
| c81: | IF A.162/80 THEN o.7 ELSE n/a - - communications resource priority for the session initiation protocol. |
| c82: | IF A.162/80 THEN o ELSE n/a - - communications resource priority for the session initiation protocol. |
| c83: | IF A.162/80 THEN o ELSE n/a - - communications resource priority for the session initiation protocol. |
| c84: | A.3/2 OR A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C OR A.3/9A OR A.3/10 OR A.3/11 THEN o ELSE n/a - - P-CSCF, I-CSCF, S-CSCF, BGCF, AS acting as proxy, IBCF (THIG), additional routing functionality, E-CSCF. |
| c85: | IF A.3/4 THEN o ELSE x - - S-CSCF. |
| o.1: | It is mandatory to support at least one of these items. |
| o.2: | It is mandatory to support at least one of these items. |
| o.3: | It is mandatory to support at least one of these items. |
| o.4: | At least one of these capabilities is supported. |
| o.5: | It is mandatory to support exactly one of these items. |
| o.6: | It is mandatory to support exactly one of these items. |
| o.7: | It is mandatory to support at least one of these items. |
| o.8: | It is mandatory to support at least one of these items. |
| NOTE 1: | An AS acting as a proxy may be outside the trust domain, and therefore not able to support the capability for that reason; in this case it is perfectly reasonable for the header to be passed on transparently, as specified in the PDU parts of the profile. |
| NOTE 2: | Not applicable over Gm reference point (UE – P-CSCF). |

Editors Note: Additional work on UUS maybe needed in IETF

A.2.2.3 PDUs

Table A.163: Supported methods

| Item | PDU | Sending | | | Receiving | | |
|------|---|-------------|------------|----------------|-------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | ACK request | [26] 13 | m | m | [26] 13 | m | m |
| 2 | BYE request | [26] 16 | m | m | [26] 16 | m | m |
| 3 | BYE response | [26] 16 | m | m | [26] 16 | m | m |
| 4 | CANCEL request | [26] 16.10 | m | m | [26] 16.10 | m | m |
| 5 | CANCEL response | [26] 16.10 | m | m | [26] 16.10 | m | m |
| 8 | INVITE request | [26] 16 | m | m | [26] 16 | m | m |
| 9 | INVITE response | [26] 16 | m | m | [26] 16 | m | m |
| 9A | MESSAGE request | [50] 4 | c5 | c5 | [50] 7 | c5 | c5 |
| 9B | MESSAGE response | [50] 4 | c5 | c5 | [50] 7 | c5 | c5 |
| 10 | NOTIFY request | [28] 8.1.2 | c3 | c3 | [28] 8.1.2 | c3 | c3 |
| 11 | NOTIFY response | [28] 8.1.2 | c3 | c3 | [28] 8.1.2 | c3 | c3 |
| 12 | OPTIONS request | [26] 16 | m | m | [26] 16 | m | m |
| 13 | OPTIONS response | [26] 16 | m | m | [26] 16 | m | m |
| 14 | PRACK request | [27] 6 | c6 | c6 | [27] 6 | c6 | c6 |
| 15 | PRACK response | [27] 6 | c6 | c6 | [27] 6 | c6 | c6 |
| 15A | PUBLISH request | [70] 11.1.1 | c20 | c20 | [70] 11.1.1 | c20 | c20 |
| 15B | PUBLISH response | [70] 11.1.1 | c20 | c20 | [70] 11.1.1 | c20 | c20 |
| 16 | REFER request | [36] 3 | c1 | c1 | [36] 3 | c1 | c1 |
| 17 | REFER response | [36] 3 | c1 | c1 | [36] 3 | c1 | c1 |
| 18 | REGISTER request | [26] 16 | m | m | [26] 16 | m | m |
| 19 | REGISTER response | [26] 16 | m | m | [26] 16 | m | m |
| 20 | SUBSCRIBE request | [28] 8.1.1 | c3 | c3 | [28] 8.1.1 | c3 | c3 |
| 21 | SUBSCRIBE response | [28] 8.1.1 | c3 | c3 | [28] 8.1.1 | c3 | c3 |
| 22 | UPDATE request | [29] 7 | c4 | c4 | [29] 7 | c4 | c4 |
| 23 | UPDATE response | [29] 7 | c4 | c4 | [29] 7 | c4 | c4 |
| c1: | IF A.162/22 THEN m ELSE n/a - - the REFER method. | | | | | | |
| c3: | IF A.162/27 THEN m ELSE n/a - - SIP specific event notification. | | | | | | |
| c4: | IF A.162/24 THEN m ELSE n/a - - the SIP UPDATE method. | | | | | | |
| c5: | IF A.162/33 THEN m ELSE n/a - - the SIP MESSAGE method. | | | | | | |
| c6: | IF A.162/21 THEN m ELSE n/a - - reliability of provisional responses. | | | | | | |
| c20: | IF A.4/51 THEN m ELSE n/a | | | | | | |

A.2.2.4 PDU parameters

A.2.2.4.1 Status-codes

Table A.164: Supported-status codes

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------------|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | 100 (Trying) | [26] 21.1.1 | c1 | c1 | [26] 21.1.1 | c2 | c2 |
| 101 | 1xx response | [26] 21.1 | p21 | p21 | [26] 21.1 | p21 | p21 |
| 101A | 18x response | [26] 21.1 | p21 | p21 | [26] 21.1 | p21 | p21 |
| 2 | 180 (Ringing) | [26] 21.1.2 | c3 | c3 | [26] 21.1.2 | c3 | c3 |
| 3 | 181 (Call Is Being Forwarded) | [26] 21.1.3 | c3 | c3 | [26] 21.1.3 | c3 | c3 |
| 4 | 182 (Queued) | [26] 21.1.4 | c3 | c3 | [26] 21.1.4 | c3 | c3 |
| 5 | 183 (Session Progress) | [26] 21.1.5 | c3 | c3 | [26] 21.1.5 | c3 | c3 |
| 102 | 2xx response | [26] 21.2 | p22 | p22 | [26] 21.1 | p22 | p22 |
| 6 | 200 (OK) | [26] 21.2.1 | m | m | [26] 21.2.1 | i | m |
| 7 | 202 (Accepted) | [28] 8.3.1 | c4 | c4 | [28] 8.3.1 | c4 | c4 |
| 103 | 3xx response | [26] 21.3 | p23 | p23 | [26] 21.1 | p23 | p23 |
| 8 | 300 (Multiple Choices) | [26] 21.3.1 | m | m | [26] 21.3.1 | i | i |
| 9 | 301 (Moved Permanently) | [26] 21.3.2 | m | m | [26] 21.3.2 | i | i |
| 10 | 302 (Moved Temporarily) | [26] 21.3.3 | m | m | [26] 21.3.3 | i | i |
| 11 | 305 (Use Proxy) | [26] 21.3.4 | m | m | [26] 21.3.4 | i | i |
| 12 | 380 (Alternative Service) | [26] 21.3.5 | m | m | [26] 21.3.5 | i | i |
| 104 | 4xx response | [26] 21.4 | p24 | p24 | [26] 21.4 | p24 | p24 |
| 13 | 400 (Bad Request) | [26] 21.4.1 | m | m | [26] 21.4.1 | i | i |
| 14 | 401 (Unauthorized) | [26] 21.4.2 | m | m | [26] 21.4.2 | i | c10 |
| 15 | 402 (Payment Required) | [26] 21.4.3 | n/a | n/a | [26] 21.4.3 | n/a | n/a |
| 16 | 403 (Forbidden) | [26] 21.4.4 | m | m | [26] 21.4.4 | i | i |
| 17 | 404 (Not Found) | [26] 21.4.5 | m | m | [26] 21.4.5 | i | i |
| 18 | 405 (Method Not Allowed) | [26] 21.4.6 | m | m | [26] 21.4.6 | i | i |
| 19 | 406 (Not Acceptable) | [26] 21.4.7 | m | m | [26] 21.4.7 | i | i |
| 20 | 407 (Proxy Authentication Required) | [26] 21.4.8 | m | m | [26] 21.4.8 | i | i |
| 21 | 408 (Request Timeout) | [26] 21.4.9 | c3 | c3 | [26] 21.4.9 | i | i |
| 22 | 410 (Gone) | [26] 21.4.10 | m | m | [26] 21.4.10 | i | i |
| 22A | 412 (Conditional Request Failed) | [70] 11.2.1 | c20 | c20 | [70] 11.2.1 | c19 | c19 |
| 23 | 413 (Request Entity Too Large) | [26] 21.4.11 | m | m | [26] 21.4.11 | i | i |
| 24 | 414 (Request-URI Too Large) | [26] 21.4.12 | m | m | [26] 21.4.12 | i | i |
| 25 | 415 (Unsupported Media Type) | [26] 21.4.13 | m | m | [26] 21.4.13 | i | i |

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 26 | 416 (Unsupported URI Scheme) | [26] 21.4.14 | m | m | [26] 21.4.14 | i | i |
| 26A | 417 (Unknown Resource Priority) | [116] 4.6.2 | c25 | c25 | [116] 4.6.2 | c25 | c25 |
| 27 | 420 (Bad Extension) | [26] 21.4.15 | m | m | [26] 21.4.15 | i | i |
| 28 | 421 (Extension Required) | [26] 21.4.16 | m | m | [26] 21.4.16 | i | i |
| 28A | 422 (Session Interval Too Small) | [58] 6 | c8 | c8 | [58] 6 | c8 | c8 |
| 29 | 423 (Interval Too Brief) | [26] 21.4.17 | c5 | c5 | [26] 21.4.17 | c6 | c6 |
| 29A | 424 (Bad Location Information) | [89] 3.3 | c23 | c23 | [89] 3.3 | c24 | c24 |
| 29B | 429 (Provide Referrer Identity) | [59] 5 | c9 | c9 | [59] 5 | c9 | c9 |
| 29C | 430 (Flow Failed) | [92] 11 | o | c21 | [92] 11 | m | c22 |
| 29D | 433 (Anonymity Disallowed) | [67] 4 | c14 | c14 | [67] 4 | c14 | c14 |
| 29E | 470 (Consent Needed) | [125] 5.9.2 | c26 | c26 | [125] 5.9.2 | c27 | c27 |
| 30 | 480 (Temporarily not available) | [26] 21.4.18 | m | m | [26] 21.4.18 | i | i |
| 31 | 481 (Call /Transaction Does Not Exist) | [26] 21.4.19 | m | m | [26] 21.4.19 | i | i |
| 32 | 482 (Loop Detected) | [26] 21.4.20 | m | m | [26] 21.4.20 | i | i |
| 33 | 483 (Too Many Hops) | [26] 21.4.21 | m | m | [26] 21.4.21 | i | i |
| 34 | 484 (Address Incomplete) | [26] 21.4.22 | m | m | [26] 21.4.22 | i | i |
| 35 | 485 (Ambiguous) | [26] 21.4.23 | m | m | [26] 21.4.23 | i | i |
| 36 | 486 (Busy Here) | [26] 21.4.24 | m | m | [26] 21.4.24 | i | i |
| 37 | 487 (Request Terminated) | [26] 21.4.25 | m | m | [26] 21.4.25 | i | i |
| 38 | 488 (Not Acceptable Here) | [26] 21.4.26 | m | m | [26] 21.4.26 | i | i |
| 39 | 489 (Bad Event) | [28] 7.3.2 | c4 | c4 | [28] 7.3.2 | c4 | c4 |
| 40 | 491 (Request Pending) | [26] 21.4.27 | m | m | [26] 21.4.27 | i | i |
| 41 | 493 (Undecipherable) | [26] 21.4.28 | m | m | [26] 21.4.28 | i | i |
| 41A | 494 (Security Agreement Required) | [48] 2 | c7 | c7 | [48] 2 | n/a | n/a |
| 105 | 5xx response | [26] 21.5 | p25 | p25 | [26] 21.5 | p25 | p25 |
| 42 | 500 (Internal Server Error) | [26] 21.5.1 | m | m | [26] 21.5.1 | i | i |
| 43 | 501 (Not Implemented) | [26] 21.5.2 | m | m | [26] 21.5.2 | i | i |
| 44 | 502 (Bad Gateway) | [26] 21.5.3 | m | m | [26] 21.5.3 | i | i |
| 45 | 503 (Service Unavailable) | [26] 21.5.4 | m | m | [26] 21.5.4 | i | i |
| 46 | 504 (Server Time-out) | [26] 21.5.5 | m | m | [26] 21.5.5 | i | i |
| 47 | 505 (Version not supported) | [26] 21.5.6 | m | m | [26] 21.5.6 | i | i |
| 48 | 513 (Message Too Large) | [26] 21.5.7 | m | m | [26] 21.5.7 | i | i |
| 49 | 580 (Precondition Failure) | [30] 8 | m | m | [30] 8 | i | i |
| 106 | 6xx response | [26] 21.6 | p26 | p26 | [26] 21.6 | p26 | p26 |
| 50 | 600 (Busy Everywhere) | [26] 21.6.1 | m | m | [26] 21.6.1 | i | i |
| 51 | 603 (Decline) | [26] | m | m | [26] | i | i |

| Item | Header | Sending | | | Receiving | | |
|------|--|----------------|------------|----------------|----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| | | 21.6.2 | | | 21.6.2 | | |
| 52 | 604 (Does Not Exist Anywhere) | [26] 21.6.3 | m | m | [26] 21.6.3 | i | i |
| 53 | 606 (Not Acceptable) | [26] 21.6.4 | m | m | [26] 21.6.4 | i | i |
| c1: | IF A.163/3 OR A.163/9 OR A.163/9B OR A.163/11 OR A.163/13 OR A.163/15 OR A.163/15B OR A.163/17 OR A.163/19 OR A.163/21 OR A.163/23 AND A.162/5 THEN m ELSE n/a - - BYE response or INVITE response or MESSAGE response or NOTIFY response or OPTIONS response or PRACK response or PUBLISH response or REFER response or REGISTER response or SUBSCRIBE response or UPDATE response, stateful proxy. | | | | | | |
| c2: | IF A.163/3 OR A.163/9 OR A.163/9B OR A.163/11 OR A.163/13 OR A.163/15 OR A.163/15B OR A.163/17 OR A.163/19 OR A.163/21 OR A.163/23 THEN (IF A.162/5 THEN m ELSE i) ELSE n/a - - BYE response or INVITE response or MESSAGE response or NOTIFY response or OPTIONS response or PRACK response or PUBLISH response or REFER response or REGISTER response or SUBSCRIBE response or UPDATE response, stateful proxy. | | | | | | |
| c3: | IF A.163/9 THEN m ELSE n/a - - INVITE response. | | | | | | |
| c4: | IF A.162/27 THEN m ELSE n/a - - SIP specific event notification. | | | | | | |
| c5: | IF A.163/19 OR A.163/21 THEN m ELSE n/a - - REGISTER response or SUBSCRIBE response. | | | | | | |
| c6: | IF A.163/19 OR A.163/21 THEN i ELSE n/a - - REGISTER response or SUBSCRIBE response. | | | | | | |
| c7: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |
| c8: | IF A.162/52 THEN m ELSE n/a - - the SIP session timer. | | | | | | |
| c9: | IF A.162/53 AND A.163/17 THEN m ELSE n/a - - the SIP Referred-By mechanism and REFER response. | | | | | | |
| c10: | IF A.3/2 THEN m ELSE i - - P-CSCF. | | | | | | |
| c14: | IF A.162/58 THEN m ELSE n/a - - rejecting anonymous requests in the session initiation protocol. | | | | | | |
| c19: | IF A.162/51 THEN i ELSE n/a - - an event state publication extension to the session initiation protocol. | | | | | | |
| c20: | IF A.162/51 THEN m ELSE n/a - - an event state publication extension to the session initiation protocol. | | | | | | |
| c21: | IF A.4/57 AND A.3/2 THEN o ELSE n/a - - managing client initiated connections in SIP, P-CSCF. | | | | | | |
| c22: | IF A.4/57 AND A.3/4 THEN m ELSE i - - managing client initiated connections in SIP, S-CSCF. | | | | | | |
| c23: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c24: | IF A.162/70 THEN i ELSE n/a - - SIP location conveyance. | | | | | | |
| c25: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |
| c26: | IF A.162/85 THEN m ELSE n/a - - a framework for consent-based communications in SIP. | | | | | | |
| c27: | IF A.162/85 THEN i ELSE n/a - - a framework for consent-based communications in SIP. | | | | | | |
| p21: | A.164/2 OR A.164/3 OR A.164/4 OR A.164/5 - - 1xx response | | | | | | |
| p22: | A.164/6 OR A.164/7 - - 2xx response | | | | | | |
| p23: | A.164/8 OR A.164/9 OR A.164/10 OR A.164/11 OR A.164/12 OR A.164/13 - - 3xx response | | | | | | |
| p24: | A.164/14 OR A.164/15 OR A.164/16 OR A.164/17 OR A.164/18 OR A.164/19 OR A.164/20 OR A.164/21 OR A.164/22 OR A.164/22A OR A.164/23 OR A.164/24 OR A.164/25 OR A.164/26 OR A.164/26A OR A.164/27 OR A.164/28 OR A.164/28A OR A.164/29 OR A.164/29A OR A.164/29B OR A.164/29C OR A.164/29D OR A.164/29E OR A.164/30 OR A.164/31 OR A.164/32 OR A.164/33 OR A.164/34 OR A.164/35 OR A.164/36 OR A.164/436 OR A.164/38 OR A.164/39 OR A.164/40 OR A.164/41 OR A.164/41A. - - 4xx response | | | | | | |
| p25: | A.164/42 OR A.164/43 OR A.164/44 OR A.164/45 OR A.164/46 OR A.164/47 OR A.164/48 OR A.164/49 - - 5xx response | | | | | | |
| p26: | A.164/50 OR A.164/51 OR A.164/52 OR A.164/53 - - 6xx response | | | | | | |

A.2.2.4.2 ACK method

Prerequisite A.163/1 - - ACK request

Table A.165: Supported headers within the ACK request

| Item | Header | Sending | | | Receiving | | |
|-------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c10 | c10 | [56B] 9.2 | c11 | c11 |
| 2 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 3 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 4 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 7 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 8 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 9 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 10 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c3 |
| 11 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 12 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 13 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 14 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 15 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c3 |
| 15A | Privacy | [33] 4.2 | c6 | c6 | [33] 4.2 | c7 | c7 |
| 16 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c4 | c4 |
| 17 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 17A | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c9 | c9 |
| 17B | Reject-Contact | [56B] 9.2 | c10 | c10 | [56B] 9.2 | c11 | c11 |
| 17C | Request-Disposition | [56B] 9.1 | c10 | c10 | [56B] 9.1 | c11 | c11 |
| 18 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 18A | Resource-Priority | [116] 3.1 | c12 | c12 | [116] 3.1 | c12 | c47 |
| 19 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 20 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 21 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 22 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 23 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c3: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. | | | | | | |
| c4: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. | | | | | | |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c6: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c7: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c8: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c9: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c10: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c11: | IF A.162/50 THEN i ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c12: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. | | | | | | |

Prerequisite A.163/1 - - ACK request

Table A.166: Supported message bodies within the ACK request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.3 BYE method

Prerequisite A.163/2 - - BYE request

Table A.167: Supported headers within the BYE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c23 | c23 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 3A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 4 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c3 |
| 8 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c3 |
| 9 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c3 |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c3 |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 14 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 14A | Geolocation | [89] 3.2 | c26 | c26 | [89] 3.2 | c27 | c27 |
| 15 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 16 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c3 |
| 16A | P-Access-Network-Info | [52] 4.4 | c13 | c13 | [52] 4.4 | c14 | c14 |
| 16B | P-Asserted-Identity | [34] 9.1 | c9 | c9 | [34] 9.1 | c10 | c10 |
| 16C | P-Charging-Function-Addresses | [52] 4.5 | c17 | c17 | [52] 4.5 | c18 | c18 |
| 16D | P-Charging-Vector | [52] 4.6 | c15 | n/a | [52] 4.6 | c16 | n/a |
| 16E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c8 | n/a |
| 16F | Privacy | [33] 4.2 | c11 | c11 | [33] 4.2 | c12 | c12 |
| 17 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c4 | c4 |
| 18 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 18A | Reason | [34A] 2 | c20 | c20 | [34A] 2 | c21 | c21 |
| 19 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 19A | Referred-By | [59] 3 | c24 | c24 | [59] 3 | c25 | c25 |
| 19B | Reject-Contact | [56B] 9.2 | c22 | c22 | [56B] 9.2 | c23 | c23 |
| 19C | Request-Disposition | [56B] 9.1 | c22 | c22 | [56B] 9.1 | c23 | c23 |
| 20 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 20A | Resource-Priority | [116] 3.1 | c28 | c28 | [116] 3.1 | c28 | c28 |
| 21 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 21A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c19 | c19 |
| 21B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c19 | c19 |
| 22 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 23 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 24 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 25 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 25A | User-to-User | [126] 5 | c29 | c29 | [126] 5 | c30 | c30 |
| 26 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. |
| c4: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN o ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c9: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c10: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c11: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c12: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c13: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c14: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c15: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c16: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c17: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c18: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c19: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c20: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c21: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c22: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c23: | IF A.162/50 THEN i ELSE n/a - - caller preferences for the session initiation protocol. |
| c24: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c25: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c26: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c27: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c28: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. |
| c29: | IF A.162/86 THEN m - - transporting user to user information for call centers using SIP. |
| c30: | IF A.162/86 THEN i - - transporting user to user information for call centers using SIP. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/2 - - BYE request

Table A.168: Supported message bodies within the BYE request

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: | A.3/2 OR A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C OR A.3/9A OR A.3/10 OR A.3/11 THEN o ELSE n/a - - P-CSCF, I-CSCF, S-CSCF, BGCF, AS acting as proxy, IBCF (THIG), additional routing functionality, E-CSCF. | | | | | | |

Table A.169: Void

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.169A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/3 - - BYE response

Table A.170: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c2 |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c2 |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c2 |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c2 |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c15 | c15 | [89] 3.2 | c16 | c16 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c2 |
| 10A | P-Access-Network-Info | [52] 4.4 | c12 | c12 | [52] 4.4 | c13 | c13 |
| 10B | P-Asserted-Identity | [34] 9.1 | c4 | c4 | [34] 9.1 | c5 | c5 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c10 | c10 | [52] 4.5 | c11 | c11 |
| 10D | P-Charging-Vector | [52] 4.6 | c8 | n/a | [52] 4.6 | c9 | n/a |
| 10E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c3 | n/a |
| 10F | Privacy | [33] 4.2 | c6 | c6 | [33] 4.2 | c7 | c7 |
| 10G | Require | [26] 20.32 | m | m | [26] 20.32 | c14 | c14 |
| 10H | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 12B | User-to-User | [126] 5 | c17 | c17 | [126] 5 | c18 | c18 |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. | | | | | | |
| c3: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. | | | | | | |
| c4: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c5: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. | | | | | | |
| c6: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c7: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c8: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c13: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c14: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c15: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c16: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. | | | | | | |
| c17: | IF A.162/86 THEN m - - transporting user to user information for call centers using SIP. | | | | | | |
| c18: | IF A.162/86 THEN i - - transporting user to user information for call centers using SIP. | | | | | | |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.171: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c4 | c4 | [116] 3.2 | c4 | c4 |
| 0B | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | i | c1 |
| 1 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 2 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 5 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN o ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.171A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/3 - BYE response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.172: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.173: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.174: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.175: Void

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.176: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.177: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.177A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.178: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | |

Prerequisite A.163/3 - - BYE response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.178A: Supported headers within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Table A.179: Void

Prerequisite A.163/3 - - BYE response

Table A.180: Supported message bodies within the BYE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.4 CANCEL method

Prerequisite A.163/4 - - CANCEL request

Table A.181: Supported headers within the CANCEL request

| Item | Header | Sending | | | Receiving | | |
|-------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c10 | c10 | [56B] 9.2 | c11 | c11 |
| 5 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 8 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 9 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 10 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 11 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 12 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 14 | Privacy | [33] 4.2 | c3 | c3 | [33] 4.2 | c4 | c4 |
| 15 | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c9 | c9 |
| 16 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 17 | Reject-Contact | [56B] 9.2 | c10 | c10 | [56B] 9.2 | c11 | c11 |
| 17A | Request-Disposition | [56B] 9.1 | c10 | c10 | [56B] 9.1 | c11 | c11 |
| 17B | Resource-Priority | [116] 3.1 | c12 | c12 | [116] 3.1 | c12 | c12 |
| 18 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 19 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 20 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 21 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 22 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 23 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c3: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c4: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. | | | | | | |
| c7: | IF A.162/14 THEN o ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. | | | | | | |
| c8: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c9: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c10: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c11: | IF A.162/50 THEN i ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c12: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. | | | | | | |

Prerequisite A.163/4 - - CANCEL request

Table A.182: Supported message bodies within the CANCEL request

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: | A.3/2 OR A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C OR A.3/9A OR A.3/10 OR A.3/11 THEN o ELSE n/a - - P-CSCF, I-CSCF, S-CSCF, BGCF, AS acting as proxy, IBCF (THIG), additional routing functionality, E-CSCF. | | | | | | |

Prerequisite A.163/5 - - CANCEL response for all status-codes

Table A.183: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 5A | Privacy | [33] 4.2 | c2 | c2 | [33] 4.2 | c3 | c3 |
| 6 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 7 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7A | User-Agent | [26] 20.41 | o | | [26] 20.41 | o | |
| 8 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 9 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c3: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |

Prerequisite A.163/5 - - CANCEL response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.184: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c4 | c4 | [116] 3.2 | c4 | c4 |
| 2 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 4 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c3: | IF A.162/15 THEN o ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/5 - - CANCEL response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.184A: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Table A.185: Void

Prerequisite A.163/5 - - CANCEL response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.186: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Prerequisite A.163/5 - - CANCEL response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.186A: Supported headers within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Table A.188: Void

Prerequisite A.163/5 - - CANCEL response

Table A.189: Supported message bodies within the CANCEL response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.5 COMET method

Void

A.2.2.4.6 INFO method

Void

A.2.2.4.7 INVITE method

Prerequisite A.163/8 - - INVITE request

Table A.204: Supported headers within the INVITE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|-------------|------------|----------------|-------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c34 | c34 | [56B] 9.2 | c34 | c35 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 4 | Alert-Info | [26] 20.4 | c2 | c2 | [26] 20.4 | c3 | c3 |
| 5 | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 6 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 8 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 9 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 10 | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c12 | c12 |
| 11 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 12 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c6 |
| 13 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c6 |
| 14 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c6 |
| 15 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 16 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c6 |
| 17 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 18 | Date | [26] 20.17 | m | m | [26] 20.17 | c4 | c4 |
| 19 | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 20 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 20A | Geolocation | [89] 3.2 | c47 | c47 | [89] 3.2 | c48 | c48 |
| 20B | History-Info | [66] 4.1 | c43 | c43 | [66] 4.1 | c43 | c43 |
| 21 | In-Reply-To | [26] 20.21 | m | m | [26] 20.21 | i | i |
| 21A | Join | [61] 7.1 | c41 | c41 | [61] 7.1 | c42 | c42 |
| 22 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 23 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c6 |
| 23A | Min-SE | [58] 5 | o | o | [58] 5 | o | o |
| 24 | Organization | [26] 20.25 | m | m | [26] 20.25 | c5 | c5 |
| 24A | P-Access-Network-Info | [52] 4.4 | c28 | c28 | [52] 4.4 | c29 | c30 |
| 24B | P-Asserted-Identity | [34] 9.1 | c15 | c15 | [34] 9.1 | c16 | c16 |
| 24C | P-Asserted-Service | [121] 4.1 | c53 | c53 | [121] 4.1 | c54 | c54 |
| 24D | P-Called-Party-ID | [52] 4.2 | c19 | c19 | [52] 4.2 | c20 | c21 |
| 24E | P-Charging-Function-Addresses | [52] 4.5 | c26 | c27 | [52] 4.5 | c26 | c27 |
| 24F | P-Charging-Vector | [52] 4.6 | c24 | c24 | [52] 4.6 | c25 | c25 |
| 24G | P-Early-Media | [109] 8 | o | c50 | [109] 8 | o | c51 |
| 25 | P-Media-Authorization | [31] 5.1 | c9 | x | [31] 5.1 | n/a | n/a |
| 25A | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c14 | c14 |
| 25B | P-Preferred-Service | [121] 4.2 | x | x | [121] 4.2 | c52 | c52 |
| 25B | P-Profile-Key | [97] 5 | c45 | c45 | [97] 5 | c46 | c46 |
| 25C | P-User-Database | [82] 4 | c44 | c44 | [82] 4 | c44 | c44 |
| 25D | P-Visited-Network-ID | [52] 4.3 | c22 | n/a | [52] 4.3 | c23 | n/a |
| 26 | Priority | [26] 20.26 | m | m | [26] 20.26 | i | i |
| 26A | Privacy | [33] 4.2 | c17 | c17 | [33] 4.2 | c18 | c18 |
| 27 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c13 | c13 |
| 28 | Proxy-Require | [26] 20.29, | m | m | [26] 20.29, | m | m |

| Item | Header | Sending | | | Receiving | | |
|------|---------------------|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| | | [34] 4 | | | [34] 4 | | |
| 28A | Reason | [34A] 2 | c32 | c32 | [34A] 2 | c33 | c33 |
| 29 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c11 | c11 |
| 30 | Referred-By | [59] 3 | c37 | c37 | [59] 3 | c38 | c38 |
| 31 | Reject-Contact | [56B] 9.2 | c34 | c34 | [56B] 9.2 | c34 | c35 |
| 31A | Replaces | [60] 6.1 | c39 | c39 | [60] 6.1 | c40 | c40 |
| 31B | Reply-To | [26] 20.31 | m | m | [26] 20.31 | i | i |
| 31B | Request-Disposition | [56B] 9.1 | c34 | c34 | [56B] 9.1 | c34 | c34 |
| 32 | Require | [26] 20.32 | m | m | [26] 20.32 | c7 | c7 |
| 32A | Resource-Priority | [116] 3.1 | c49 | c49 | [116] 3.1 | c49 | c49 |
| 33 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 33A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c31 | c31 |
| 33B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c31 | c31 |
| 33C | Session-Expires | [58] 4 | c36 | c36 | [58] 4 | c36 | c36 |
| 34 | Subject | [26] 20.36 | m | m | [26] 20.36 | i | i |
| 35 | Supported | [26] 20.37 | m | m | [26] 20.37 | c8 | c8 |
| 36 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 37 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 37A | Trigger-Consent | [125] 5.11.2 | c55 | c55 | [125] 5.11.2 | c56 | c56 |
| 38 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 38A | User-to-User | [126] 5 | c57 | c57 | [126] 5 | c58 | c58 |
| 39 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c2: | IF A.162/10 THEN n/a ELSE m - - suppression or modification of alerting information data. | | | | | | |
| c3: | IF A.162/10 THEN m ELSE i - - suppression or modification of alerting information data. | | | | | | |
| c4: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c5: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. | | | | | | |
| c6: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. | | | | | | |
| c7: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c8: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. | | | | | | |
| c9: | IF A.162/26 THEN m ELSE n/a - - SIP extensions for media authorization. | | | | | | |
| c11: | IF A.162/14 THEN m ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. | | | | | | |
| c12: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. | | | | | | |
| c13: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. | | | | | | |
| c14: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. | | | | | | |
| c15: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c16: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. | | | | | | |
| c17: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c18: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c19: | IF A.162/37 THEN m ELSE n/a - - the P-Called-Party-ID header extension. | | | | | | |
| c20: | IF A.162/37 THEN i ELSE n/a - - the P-Called-Party-ID header extension. | | | | | | |
| c21: | IF A.162/37 AND A.3/2 THEN m ELSE IF A.162/37 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Called-Party-ID header extension and P-CSCF or (I-CSCF or IBCF (THIG)). | | | | | | |
| c22: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. | | | | | | |
| c23: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. | | | | | | |
| c24: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c25: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c26: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c27: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c28: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c29: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c30: | IF A.162/43 OR (A.162/41 AND A.3/2) THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension (with or without P-CSCF). | | | | | | |
| c31: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |
| c32: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c33: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. | | | | | | |
| c34: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. | | | | | | |
| c35: | IF A.162/50 AND A.4/3 THEN m ELSE IF A.162/50 AND NOT A.4/3 THEN i ELSE n/a - - caller preferences for the session initiation protocol, and S-CSCF. | | | | | | |
| c36: | IF A.162/52 THEN m ELSE n/a - - the SIP session timer. | | | | | | |
| c37: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. | | | | | | |
| c38: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. | | | | | | |
| c39: | IF A.162/54 THEN m ELSE n/a - - the Session Initiation Protocol (SIP) "Replaces" header. | | | | | | |
| c40: | IF A.162/54 THEN i ELSE n/a - - the Session Initiation Protocol (SIP) "Replaces" header. | | | | | | |
| c41: | IF A.162/55 THEN m ELSE n/a - - the Session Initiation Protocol (SIP) "Join" header. | | | | | | |
| c42: | IF A.162/55 THEN i ELSE n/a - - the Session Initiation Protocol (SIP) "Join" header. | | | | | | |
| c43: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c44: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. | | | | | | |
| c45: | IF A.162/66A THEN m ELSE n/a - - making the first query to the database in order to populate the P-Profile-Key header. | | | | | | |

| Item | Header | Sending | | | Receiving | | |
|-------|--|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| c46: | IF A.162/66B THEN m ELSE n/a - - using the information in the P-Profile-Key header. | | | | | | |
| c47: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c48: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. | | | | | | |
| c49: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |
| c50: | IF A.162/76 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |
| c51: | IF A.162/76 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - P-CSCF, using the information in the P-Early-Media header. | | | | | | |
| c52: | IF A.162/84A THEN m ELSE n/a - - act as authentication entity within the trust domain for asserted service. | | | | | | |
| c53: | IF A.162/84 THEN m ELSE n/a - - identification of communication services in the session initiation protocol. | | | | | | |
| c54: | IF A.162/84 OR A.162/30B THEN m ELSE i - - identification of communication services in the session initiation protocol or subsequent entity within trust network that can route outside the trust network. | | | | | | |
| c55: | IF A.162/85 THEN m ELSE n/a - - a framework for consent-based communications in SIP. | | | | | | |
| c56: | IF A.162/85 THEN i ELSE n/a - - a framework for consent-based communications in SIP. | | | | | | |
| c57: | IF A.162/86 THEN m - - transporting user to user information for call centers using SIP. | | | | | | |
| c58: | IF A.162/86 THEN i - - transporting user to user information for call centers using SIP. | | | | | | |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. | | | | | | |

Prerequisite A.163/8 - - INVITE request

Table A.205: Supported message bodies within the INVITE request

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: | A.3/2 OR A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C OR A.3/9A OR A.3/10 OR A.3/11 THEN o ELSE n/a - - P-CSCF, I-CSCF, S-CSCF, BGCF, AS acting as proxy, IBCF (THIG), additional routing functionality, E-CSCF. | | | | | | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.206: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/9 - - INVITE response for all remaining status-codes

Table A.207: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c4 | c4 |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c3 |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c3 |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c3 |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c3 |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 8A | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | History-Info | [66] 4.1 | c17 | c17 | [66] 4.1 | c17 | c17 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c3 |
| 11 | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 11A | P-Access-Network-Info | [52] 4.4 | c14 | c14 | [52] 4.4 | c15 | c15 |
| 11B | P-Asserted-Identity | [34] 9.1 | c6 | c6 | [34] 9.1 | c7 | c7 |
| 11C | P-Charging-Function-Addresses | [52] 4.5 | c12 | c12 | [52] 4.5 | c13 | c13 |
| 11D | P-Charging-Vector | [52] 4.6 | c10 | c10 | [52] 4.6 | c11 | c11 |
| 11E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c5 | n/a |
| 11F | Privacy | [33] 4.2 | c8 | c8 | [33] 4.2 | c9 | c9 |
| 11G | Reply-To | [26] 20.31 | m | m | [26] 20.31 | i | i |
| 11H | Require | [26] 20.32 | m | m | [26] 20.32 | c16 | c16 |
| 11I | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 12 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 13 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 13A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 13B | User-to-User | [126] 5 | c20 | c20 | [126] 5 | c21 | c21 |
| 14 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 15 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |

| | |
|------|---|
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c3: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. |
| c4: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c5: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c6: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c7: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c8: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c9: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c10: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c11: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c12: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c13: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c14: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c15: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c16: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c17: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c18: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c19: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c20: | IF A.162/86 THEN m - - transporting user to user information for call centers using SIP. |
| c21: | IF A.162/86 THEN i - - transporting user to user information for call centers using SIP. |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/101A - - Additional for 18x response

Table A.208: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 5 | P-Answer-State | [111] | c13 | c13 | [111] | c14 | c14 |
| 5A | P-Early-Media | [109] 8 | o | c11 | [109] 8 | o | c12 |
| 6 | P-Media-Authorization | [31] 5.1 | c9 | x | [31] 5.1 | n/a | n/a |
| 9 | Rseq | [27] 7.1 | m | m | [27] 7.1 | i | i |
| 11 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c9: | IF A.162/26 THEN m ELSE n/a - - SIP extensions for media authorization. | | | | | | |
| c11: | IF A.162/76 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |
| c12: | IF A.162/76 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - P-CSCF, using the information in the P-Early-Media header. | | | | | | |
| c13: | IF A.162/75 THEN m ELSE n/a - - the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular. | | | | | | |
| c14: | IF A.162/75 THEN i ELSE n/a - - the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular. | | | | | | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.209: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 1B | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 1C | Accept-Resource-Priority | [116] 3.2 | c12 | c12 | [116] 3.2 | c12 | c12 |
| 2 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 4 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 6 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 7 | P-Answer-State | [111] | c13 | c13 | [111] | c14 | c14 |
| 8 | P-Media-Authorization | [31] 5.1 | c9 | x | [31] 5.1 | n/a | n/a |
| 9 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 10 | Session-Expires | [58] 4 | c11 | c11 | [58] 4 | c11 | c11 |
| 13 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/14 THEN m ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. | | | | | | |
| c9: | IF A.162/26 THEN m ELSE n/a - - SIP extensions for media authorization. | | | | | | |
| c11: | IF A.162/52 THEN m ELSE n/a - - the SIP session timer. | | | | | | |
| c12: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |
| c13: | IF A.162/75 THEN m ELSE n/a - - the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular. | | | | | | |
| c14: | IF A.162/75 THEN i ELSE n/a - - the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular. | | | | | | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.209A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.210: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.211: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 15 | WWW-Authenticate | [26] 20.44 | o | | [26] 20.44 | o | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 600 (Busy Everywhere), 603 (Decline) response

Table A.212: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |
| 12 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

Table A.213: Void

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.214: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 11 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.215: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.215A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.216: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 10 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.216A: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Prerequisite A.16/9 - - INVITE response

Prerequisite: A.164/28A - - Additional for 422 (Session Interval Too Small) response

Table A.216B: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|--|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Min-SE | [58] 5 | c1 | c1 | [58] 5 | c1 | c1 |
| c1: IF A.162/52 THEN m ELSE n/a - - the SIP session timer. | | | | | | | |

Table A.217: Void

Table A.217A: Void

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/29E - - Additional for 470 (Consent Needed) response

Table A.217AA: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|----------------|------------|----------------|----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/45 - - 503 (Service Unavailable)

Table A.217B: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Prerequisite A.163/9 - - INVITE response

Prerequisite: A.164/17 OR A.164/22 OR A.164/29D OR A.164/30 OR A.166/34 OR A.164/36 OR A.164/42 OR A.164/44 - - Additional for 404 (Not Found), 410 (Gone), 433 (Anonymity Disallowed), 480 (Temporarily not available), 484 (Address Incomplete) 486 (Busy Here), 500 (Internal Server Error), 502 (Bad Gateway) response

Table A.217C: Supported headers within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Reason | [130] | o | c1 | [130] | o | c1 |
| c1: IF A.162/48A THEN o ELSE n/a - - use of the Reason header field in Session Initiation Protocol (SIP) responses. | | | | | | | |

Prerequisite A.163/9 - - INVITE response

Table A.218: Supported message bodies within the INVITE response

| Item | Header | Sending | | | Receiving | | |
|---|---------------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | XML Schema for PSTN | [11B] | | c1 | [11B] | | c1 |
| c1: A.3/2 OR A.3/3 OR A.3/4 OR A.3/5 OR A.3/7C OR A.3/9A OR A.3/10 OR A.3/11 THEN o ELSE n/a - - P- | | | | | | | |

CSCF, I-CSCF, S-CSCF, BGCF, AS acting as proxy, IBCF (THIG), additional routing functionality, E-CSCF.

A.2.2.4.7A MESSAGE method

Prerequisite A.163/9A - - MESSAGE request

Table A.218A: Supported headers within the MESSAGE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c28 | c28 | [56B] 9.2 | c28 | c29 |
| 1A | Allow | [26] 20.5 | m | m | [50] 10 | i | i |
| 2 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 3 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 4 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 5 | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c4 | c4 |
| 6 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 7 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 8 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 9 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 10 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 11 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 12 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 13 | Expires | [26] 20.19 | m | m | [26] 20.19 | l | i |
| 14 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 14A | Geolocation | [89] 3.2 | c36 | c36 | [89] 3.2 | c37 | c37 |
| 14B | History-Info | [66] 4.1 | c32 | c32 | [66] 4.1 | c32 | c32 |
| 15 | In-Reply-To | [26] 20.21 | m | m | [50] 10 | i | i |
| 16 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 17 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 18 | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 18A | P-Access-Network-Info | [52] 4.4 | c23 | c23 | [52] 4.4 | c24 | c24 |
| 18B | P-Asserted-Identity | [34] 9.1 | c10 | c10 | [34] 9.1 | c11 | c11 |
| 18C | P-Asserted-Service | [121] 4.1 | c40 | c40 | [121] 4.1 | c41 | c41 |
| 18D | P-Called-Party-ID | [52] 4.2 | c14 | c14 | [52] 4.2 | c15 | c16 |
| 18E | P-Charging-Function-Addresses | [52] 4.5 | c21 | c21 | [52] 4.5 | c22 | c22 |
| 18F | P-Charging-Vector | [52] 4.6 | c19 | c19 | [52] 4.6 | c20 | c20 |
| 18G | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c9 | c9 |
| 18H | P-Preferred-Service | [121] 4.2 | x | x | [121] 4.2 | c39 | c39 |
| 18I | P-Profile-Key | [97] 5 | c34 | c34 | [97] 5 | c35 | c35 |
| 18J | P-User-Database | [82] 4 | c33 | c33 | [82] 4 | c33 | c33 |
| 18K | P-Visited-Network-ID | [52] 4.3 | c17 | n/a | [52] 4.3 | c18 | n/a |
| 19 | Priority | [26] 20.26 | m | m | [26] 20.26 | i | i |
| 19A | Privacy | [33] 4.2 | c12 | c12 | [33] 4.2 | c13 | c13 |
| 20 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c8 | c8 |
| 21 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 21A | Reason | [34A] 2 | c26 | c26 | [34A] 2 | c27 | c27 |
| 22 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 22A | Referred-By | [59] 3 | c30 | c30 | [59] 3 | c31 | c31 |
| 23 | Reject-Contact | [56B] 9.2 | c28 | c28 | [56B] 9.2 | c28 | c29 |
| 23A | Reply-To | [26] 20.31 | m | m | [26] 20.31 | i | i |
| 23B | Request-Disposition | [56B] 9.1 | c28 | c28 | [56B] 9.1 | c28 | c28 |
| 24 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 24A | Resource-Priority | [116] 3.1 | c38 | c38 | [116] 3.1 | c38 | c38 |
| 25 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 25A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c25 | c25 |
| 25B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c25 | c25 |
| 26 | Subject | [26] 20.36 | m | m | [26] 20.36 | i | i |
| 27 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 28 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 29 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 29A | Trigger-Consent | [125] 5.11.2 | c42 | c42 | [125] 5.11.2 | c43 | c43 |
| 30 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 31 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN o ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c9: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c10: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c11: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c12: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c13: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c14: | IF A.162/37 THEN m ELSE n/a - - the P-Called-Party-ID header extension. |
| c15: | IF A.162/37 THEN i ELSE n/a - - the P-Called-Party-ID header extension. |
| c16: | IF A.162/37 AND A.3/2 THEN m ELSE IF A.162/37 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Called-Party-ID header extension and P-CSCF or (I-CSCF or IBCF (THIG)). |
| c17: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. |
| c18: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. |
| c19: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c20: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c21: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c22: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c23: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c24: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c25: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c26: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c27: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c28: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c29: | IF A.162/50 AND A.4/3 THEN m ELSE IF A.162/50 AND NOT A.4/3 THEN i ELSE n/a - - caller preferences for the session initiation protocol, and S-CSCF. |
| c30: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c31: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c32: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c33: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c34: | IF A.162/66A THEN m ELSE n/a - - making the first query to the database in order to populate the P-Profile-Key header. |
| c35: | IF A.162/66B THEN m ELSE n/a - - using the information in the P-Profile-Key header. |
| c36: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c37: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c38: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. |
| c39: | IF A.162/84A THEN m ELSE n/a - - act as authentication entity within the trust domain for asserted service. |
| c40: | IF A.162/84 THEN m ELSE n/a - - identification of communication services in the session initiation protocol. |
| c41: | IF A.162/84 OR A.162/30B THEN m ELSE i - - identification of communication services in the session initiation protocol or subsequent entity within trust network that can route outside the trust network. |
| c42: | IF A.162/85 THEN m ELSE n/a - - a framework for consent-based communications in SIP. |
| c43: | IF A.162/85 THEN i ELSE n/a - - a framework for consent-based communications in SIP. |

NOTE: c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY.

Prerequisite A.163/9A - - MESSAGE request

Table A.218B: Supported message bodies within the MESSAGE request

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | permission document | [125] 5.4 | c1 | c1 | [125] 5.4 | c2 | c2 |
| c1: | IF A.162/85 THEN m ELSE n/a - - a framework for consent-based communications in SIP. | | | | | | |
| c2: | IF A.162/85 THEN i ELSE n/a - - a framework for consent-based communications in SIP. | | | | | | |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.218BA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/9B - - MESSAGE response for all remaining status-codes

Table A.218C: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c3 | c3 |
| 3 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 4 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 5 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 6 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 7 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 8 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 9 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9A | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 10 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 10A | Geolocation | [89] 3.2 | c17 | c17 | [89] 3.2 | c18 | c18 |
| 10B | History-Info | [66] 4.1 | c16 | c16 | [66] 4.1 | c16 | c16 |
| 11 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 12 | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 12A | P-Access-Network-Info | [52] 4.4 | c13 | c13 | [52] 4.4 | c14 | c14 |
| 12B | P-Asserted-Identity | [34] 9.1 | c5 | c5 | [34] 9.1 | c6 | c6 |
| 12C | P-Charging-Function-Addresses | [52] 4.5 | c11 | c11 | [52] 4.5 | c12 | c12 |
| 12D | P-Charging-Vector | [52] 4.6 | c9 | n/a | [52] 4.6 | c10 | n/a |
| 12E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c4 | n/a |
| 12F | Privacy | [33] 4.2 | c7 | c7 | [33] 4.2 | c8 | c8 |
| 12G | Reply-To | [26] 20.31 | m | m | [26] 20.31 | i | i |
| 12H | Require | [26] 20.32 | m | m | [26] 20.32 | c15 | c15 |
| 13 | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 14 | Timestamp | [26] 20.38 | i | i | [26] 20.38 | i | i |
| 15 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 16 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 17 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 18 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |

| | |
|------|---|
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c3: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c4: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c5: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c6: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c7: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c8: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c9: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c10: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c11: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c12: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c13: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c14: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c15: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c16: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c17: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c18: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.218D: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c4 | c4 | [116] 3.2 | c4 | c4 |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 2 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 4 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 6 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN o ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.218DA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.218E: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.218F: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.218G: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.218H: Void

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.218I: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type)

Table A.218J: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.218JA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.218K: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | |

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.218L: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Table A.218M: Void

Prerequisite A.163/9B - - MESSAGE response

Prerequisite: A.164/29E - - Additional for 470 (Consent Needed) response

Table A.218MA: Supported headers within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|----------------|------------|----------------|----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.163/9B - - MESSAGE response

Table A.218N: Supported message bodies within the MESSAGE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.8 NOTIFY method

Prerequisite A.163/10 - - NOTIFY request

Table A.219: Supported headers within the NOTIFY request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c21 | c21 | [56B] 9.2 | c22 | c22 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 3A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 4 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6A | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c28 | c28 |
| 6B | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 7 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 8 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 9 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 14 | Event | [28] 7.2.1 | m | m | [28] 7.2.1 | m | m |
| 15 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 15A | Geolocation | [89] 3.2 | c26 | c26 | [89] 3.2 | c27 | c27 |
| 15B | History-Info | [66] 4.1 | c25 | c25 | [66] 4.1 | c25 | c25 |
| 16 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 17 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 17A | P-Access-Network-Info | [52] 4.4 | c16 | c16 | [52] 4.4 | c17 | c17 |
| 17B | P-Asserted-Identity | [34] 9.1 | c8 | c8 | [34] 9.1 | c9 | c9 |
| 17C | P-Charging-Function-Addresses | [52] 4.5 | c14 | c14 | [52] 4.5 | c15 | c15 |
| 17D | P-Charging-Vector | [52] 4.6 | c12 | n/a | [52] 4.6 | c13 | n/a |
| 17E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c3 | n/a |
| 17F | Privacy | [33] 4.2 | c10 | c10 | [33] 4.2 | c11 | c11 |
| 18 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c4 | c4 |
| 19 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 19A | Reason | [34A] 2 | c19 | c19 | [34A] 2 | c20 | c20 |
| 20 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 20A | Referred-By | [59] 3 | c23 | c23 | [59] 3 | c24 | c24 |
| 20B | Reject-Contact | [56B] 9.2 | c21 | c21 | [56B] 9.2 | c22 | c22 |
| 20C | Request-Disposition | [56B] 9.1 | c21 | c21 | [56B] 9.1 | c22 | c22 |
| 21 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 22 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 22A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c18 | c18 |
| 22B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c18 | c18 |
| 23 | Subscription-State | [28] 8.2.3 | m | m | [28] 8.2.3 | i | i |
| 24 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 24A | Resource-Priority | [116] 3.1 | c36 | c36 | [116] 3.1 | c36 | c36 |
| 25 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 26 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 27 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 28 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 29 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c4: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN (IF A.162/22 OR A.162/27 THEN m ELSE o) ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog or (the REFER method or SIP specific event notification). |
| c8: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c9: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c10: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c11: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c12: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c13: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c14: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c15: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c16: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c17: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c18: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c19: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c20: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c21: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c22: | IF A.162/50 THEN i ELSE n/a - - caller preferences for the session initiation protocol. |
| c23: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c24: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c25: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c26: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c27: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c28: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c36: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/10 - - NOTIFY request

Table A.220: Supported message bodies within the NOTIFY request

| Item | Header | Sending | | | Receiving | | |
|------|---------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | sipfrag | [37] 2 | m | m | [37] 2 | i | i |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.220A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/11 - - NOTIFY response for all remaining status-codes

Table A.221: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c14 | c14 | [89] 3.2 | c15 | c15 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 10A | P-Access-Network-Info | [52] 4.4 | c11 | c11 | [52] 4.4 | c12 | c12 |
| 10B | P-Asserted-Identity | [34] 9.1 | c3 | c3 | [34] 9.1 | c4 | c4 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c9 | c9 | [52] 4.5 | c10 | c10 |
| 10D | P-Charging-Vector | [52] 4.6 | c7 | n/a | [52] 4.6 | c8 | n/a |
| 10E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c2 | n/a |
| 10F | Privacy | [33] 4.2 | c5 | c5 | [33] 4.2 | c6 | c6 |
| 10G | Require | [26] 20.32 | m | m | [26] 20.32 | c13 | c13 |
| 10H | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. | | | | | | |
| c3: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c4: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. | | | | | | |
| c5: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c6: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c7: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c8: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c10: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c12: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c13: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c14: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c15: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. | | | | | | |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.222: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c4 | c4 | [116] 3.2 | c4 | c4 |
| 0B | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 1 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 1A | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 2 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 5 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN m ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.222A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/103 - - Additional for 3xx response

Table A.223: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.224: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.225: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.226: Void

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.227: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.228: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.228A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.229: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.229A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Table A.230: Void

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/35 - - Additional for 485 (Ambiguous) response

Table A.230A: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|---------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |

Prerequisite A.163/11 - - NOTIFY response

Prerequisite: A.164/39 - - Additional for 489 (Bad Event) response

Table A.231: Supported headers within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|--|--------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| c1: IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | | |
| NOTE: c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. | | | | | | | |

Prerequisite A.163/11 - - NOTIFY response

Table A.232: Supported message bodies within the NOTIFY response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.9 OPTIONS method

Prerequisite A.163/12 - - OPTIONS request

Table A.233: Supported headers within the OPTIONS request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c28 | c28 | [56B] 9.2 | c28 | c29 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 3A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 4 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c4 | c4 |
| 8 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 9 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 10 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 11 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 12 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 13 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 14 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 15 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 16 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 16A | Geolocation | [89] 3.2 | c36 | c36 | [89] 3.2 | c37 | c37 |
| 16B | History-Info | [66] 4.1 | c32 | c32 | [66] 4.1 | c32 | c32 |
| 17 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 18 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 19 | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 19A | P-Access-Network-Info | [52] 4.4 | c23 | c23 | [52] 4.4 | c24 | c24 |
| 19B | P-Asserted-Identity | [34] 9.1 | c10 | c10 | [34] 9.1 | c11 | c11 |
| 19C | P-Asserted-Service | [121] 4.1 | c39 | c39 | [121] 4.1 | c40 | c40 |
| 19D | P-Called-Party-ID | [52] 4.2 | c14 | c14 | [52] 4.2 | c15 | c16 |
| 19E | P-Charging-Function-Addresses | [52] 4.5 | c21 | c21 | [52] 4.5 | c22 | c22 |
| 19F | P-Charging-Vector | [52] 4.6 | c19 | c19 | [52] 4.6 | c20 | c20 |
| 19G | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c9 | c9 |
| 19H | P-Preferred-Service | [121] 4.2 | x | x | [121] 4.2 | c38 | c38 |
| 19I | P-Profile-Key | [97] 5 | c34 | c34 | [97] 5 | c35 | c35 |
| 19J | P-User-Database | [82] 4 | c33 | c33 | [82] 4 | c33 | c33 |
| 19k | P-Visited-Network-ID | [52] 4.3 | c17 | n/a | [52] 4.3 | c18 | n/a |
| 19L | Privacy | [33] 4.2 | c12 | c12 | [33] 4.2 | c13 | c13 |
| 20 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c8 | c8 |
| 21 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 21A | Reason | [34A] 2 | c26 | c26 | [34A] 2 | c27 | c27 |
| 22 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 22A | Referred-By | [59] 3 | c30 | c30 | [59] 3 | c31 | c31 |
| 22B | Reject-Contact | [56B] 9.2 | c28 | c28 | [56B] 9.2 | c28 | c29 |
| 22C | Request-Disposition | [56B] 9.1 | c28 | c28 | [56B] 9.1 | c28 | c28 |
| 23 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 23A | Resource-Priority | [116] 3.1 | c47 | c47 | [116] 3.1 | c47 | c47 |
| 24 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 24A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c25 | c25 |
| 24B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c25 | c25 |
| 25 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 26 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 27 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 28 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 29 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN o ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c9: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c10: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c11: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c12: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c13: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c14: | IF A.162/37 THEN m ELSE n/a - - the P-Called-Party-ID header extension. |
| c15: | IF A.162/37 THEN i ELSE n/a - - the P-Called-Party-ID header extension. |
| c16: | IF A.162/37 AND A.3/2 THEN m ELSE IF A.162/37 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Called-Party-ID header extension and P-CSCF or (I-CSCF or IBCF (THIG)). |
| c17: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. |
| c18: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. |
| c19: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c20: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c21: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c22: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c23: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c24: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c25: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c26: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c27: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c28: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c29: | IF A.162/50 AND A.4/3 THEN m ELSE IF A.162/50 AND NOT A.4/3 THEN i ELSE n/a - - caller preferences for the session initiation protocol, and S-CSCF. |
| c30: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c31: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c32: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c33: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c34: | IF A.162/66A THEN m ELSE n/a - - making the first query to the database in order to populate the P-Profile-Key header. |
| c35: | IF A.162/66B THEN m ELSE n/a - - using the information in the P-Profile-Key header. |
| c36: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c37: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c38: | IF A.162/84A THEN m ELSE n/a - - act as authentication entity within the trust domain for asserted service. |
| c39: | IF A.162/84 THEN m ELSE n/a - - identification of communication services in the session initiation protocol. |
| c40: | IF A.162/84 OR A.162/30B THEN m ELSE i - - identification of communication services in the session initiation protocol or subsequent entity within trust network that can route outside the trust network. |
| c47: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/12 - - OPTIONS request

Table A.234: Supported message bodies within the OPTIONS request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.235: Void

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.235A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/13 - - OPTIONS response for all remaining status-codes

Table A.236: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c3 | c3 |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c17 | c17 | [89] 3.2 | c18 | c18 |
| 9B | History-Info | [66] 4.1 | c16 | c16 | [66] 4.1 | c16 | c16 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 11 | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 11A | P-Access-Network-Info | [52] 4.4 | c13 | c13 | [52] 4.4 | c14 | c14 |
| 11B | P-Asserted-Identity | [34] 9.1 | c5 | c5 | [34] 9.1 | c6 | c6 |
| 11C | P-Charging-Function-Addresses | [52] 4.5 | c11 | c11 | [52] 4.5 | c12 | c12 |
| 11D | P-Charging-Vector | [52] 4.6 | c9 | c9 | [52] 4.6 | c10 | c10 |
| 11E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c4 | n/a |
| 11F | Privacy | [33] 4.2 | c7 | c7 | [33] 4.2 | c8 | c8 |
| 11G | Require | [26] 20.32 | m | m | [26] 20.32 | c15 | c15 |
| 11H | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 12 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 13 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 13A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 14 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 15 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |

| | |
|------|---|
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c3: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c4: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c5: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c6: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c7: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c8: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c9: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c10: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c11: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c12: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c13: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c14: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c15: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c16: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c17: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c18: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.237: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 1B | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 1C | Accept-Resource-Priority | [116] 3.2 | c12 | c12 | [116] 3.2 | c12 | c12 |
| 2 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 3 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 5 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 9 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 12 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN o ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c12: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.237A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.238: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.239: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 10 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.240: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.241: Void

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.242: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.243: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.243A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.244: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|--|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 7 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | | |

Prerequisite A.163/13 - - OPTIONS response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.244A: Supported headers within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.245: Void

Prerequisite A.163/13 - - OPTIONS response

Table A.246: Supported message bodies within the OPTIONS response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.10 PRACK method

Prerequisite A.163/14 - - PRACK request

Table A.247: Supported headers within the PRACK request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c18 | c18 | [56B] 9.2 | c19 | c19 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 3A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 4 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c3 |
| 8 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c3 |
| 9 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c3 |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c3 |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 14 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 15 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 16 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c3 |
| 16A | P-Access-Network-Info | [52] 4.4 | c14 | c14 | [52] 4.4 | c15 | c15 |
| 16B | P-Charging-Function-Addresses | [52] 4.5 | c12 | c12 | [52] 4.5 | c13 | c13 |
| 16C | P-Charging-Vector | [52] 4.6 | c10 | n/a | [52] 4.6 | c11 | n/a |
| 16D | P-Early-Media | [109] 8 | o | c22 | [109] 8 | o | c23 |
| 16E | Privacy | [33] 4.2 | c8 | c8 | [33] 4.2 | c9 | c9 |
| 17 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c4 | c4 |
| 18 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 19 | Rack | [27] 7.2 | m | m | [27] 7.2 | i | i |
| 19A | Reason | [34A] 2 | c16 | c16 | [34A] 2 | c17 | c17 |
| 20 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 20A | Referred-By | [59] 3 | c20 | c20 | [59] 3 | c21 | c21 |
| 20B | Reject-Contact | [56B] 9.2 | c18 | c18 | [56B] 9.2 | c19 | c19 |
| 20C | Request-Disposition | [56B] 9.1 | c18 | c18 | [56B] 9.1 | c19 | c19 |
| 21 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 21A | Resource-Priority | [16] 3.1 | c47 | c47 | [116] 3.1 | c47 | c47 |
| 22 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 23 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 24 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 25 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 26 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 27 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. |
| c4: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN 0 ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c9: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c10: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c11: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c12: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c13: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c14: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c15: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c16: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c17: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c18: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c19: | IF A.162/50 THEN i ELSE n/a - - caller preferences for the session initiation protocol. |
| c20: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c21: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c22: | IF A.162/76 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. |
| c23: | IF A.162/76 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - P-CSCF, using the information in the P-Early-Media header. |
| c47: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/14 - - PRACK request

Table A.248: Supported message bodies within the PRACK request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.249: Void

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.249A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/15 - - PRACK response for all remaining status-codes

Table A.250: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c2 |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c2 |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c2 |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c2 |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c2 |
| 10A | P-Access-Network-Info | [52] 4.4 | c9 | c9 | [52] 4.4 | c10 | c10 |
| 10B | P-Charging-Function-Addresses | [52] 4.5 | c7 | c7 | [52] 4.5 | c8 | c8 |
| 10C | P-Charging-Vector | [52] 4.6 | c5 | n/a | [52] 4.6 | c6 | n/a |
| 10D | Privacy | [33] 4.2 | c3 | c3 | [33] 4.2 | c4 | c4 |
| 10E | Require | [26] 20.32 | m | m | [26] 20.32 | c11 | c11 |
| 10F | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. | | | | | | |
| c3: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c4: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c5: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c6: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c7: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c8: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c9: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c10: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c11: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.251: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 0B | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 0C | Accept-Resource-Priority | [116] 3.2 | c12 | c12 | [116] 3.2 | c12 | c12 |

| | | | | | | | |
|------|---|------------|---|----|------------|----|----|
| 0D | P-Early-Media | [109] 8 | o | c4 | [109] 8 | o | c5 |
| 1 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 4 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN o ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/76 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |
| c5: | IF A.162/76 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - P-CSCF, using the information in the P-Early-Media header. | | | | | | |
| c12: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/3 - - PRACK response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.251A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.252: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.253: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.254: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.255: Void

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.256: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.257: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.257A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/27 - - Addition for 420 (Bad Extension) response

Table A.258: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | |

Prerequisite A.163/15 - - PRACK response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.258A: Supported headers within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.259: Void

Prerequisite A.163/15 - - PRACK response

Table A.260: Supported message bodies within the PRACK response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.10A PUBLISH method

Prerequisite A.163/15A - - PUBLISH request

Table A.260A: Supported headers within the PUBLISH request

| Item | Header | Sending | | | Receiving | | |
|------|-----------------------|--------------------------------|------------|----------------|--------------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Contact | [56B] 9.2 | c28 | c28 | [56B] 9.2 | c28 | c29 |
| 2 | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 3 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c29 | c29 |
| 4 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 5 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6 | Call-Info | [26] 24.9 | m | m | [26] 24.9 | c4 | c4 |
| 7 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 8 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 9 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 14 | Event | [70] 4, 6 | m | m | [70] 4, 6 | m | m |
| 15 | Expires | [26] 20.19, [70] 4, 5, 6 | m | m | [26] 20.19, [70] 4, 5, 6 | i | i |
| 16 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 16A | History-Info | [66] 4.1 | c32 | c32 | [66] 4.1 | c32 | c32 |
| 17 | In-Reply-To | [26] 20.21 | m | m | [26] 20.21 | i | i |
| 18 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 19 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 20 | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 21 | P-Access-Network-Info | [52] 4.4 | c23 | c23 | [52] 4.4 | c24 | c24 |
| 22 | P-Asserted-Identity | [34] 9.1 | c10 | c10 | [34] 9.1 | c11 | c11 |

| | | | | | | | |
|-----|-------------------------------|-----------|-----|-----|-----------|-----|-----|
| 22A | P-Asserted-Service | [121] 4.1 | c38 | c38 | [121] 4.1 | c39 | c39 |
| 23 | P-Called-Party-ID | [52] 4.2 | c14 | c14 | [52] 4.2 | c15 | c16 |
| 24 | P-Charging-Function-Addresses | [52] 4.5 | c21 | c21 | [52] 4.5 | c22 | c22 |
| 25 | P-Charging-Vector | [52] 4.6 | c19 | c19 | [52] 4.6 | c20 | c20 |
| 26 | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c9 | c9 |

| | | | | | | | |
|-----|----------------------|----------------|-----|-----|----------------|-----|-----|
| 26A | P-Preferred-Service | [121] 4.2 | x | x | [121] 4.2 | c37 | c37 |
| 26B | P-Profile-Key | [97] 5 | c34 | c34 | [97] 5 | c35 | c35 |
| 26C | P-User-Database | [82] 4 | c33 | c33 | [82] 4 | c33 | c33 |
| 27 | P-Visited-Network-ID | [52] 4.3 | c17 | n/a | [52] 4.3 | c18 | n/a |
| 28 | Priorità | [26] 20.26 | m | m | [26] 20.26 | i | i |
| 29 | Privacy | [33] 4.2 | c12 | c12 | [33] 4.2 | c13 | c13 |
| 30 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c7 | c7 |
| 31 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 32 | Reason | [34A] 2 | c8 | c8 | [34A] 2 | c1 | c1 |
| 33 | Referred-By | [59] 3 | c30 | c30 | [59] 3 | c31 | c31 |
| 34 | Reject-Contact | [56B] 9.2 | c27 | c27 | [56B] 9.2 | c27 | c28 |
| 34A | Reply-To | [26] 20.31 | m | m | [26] 20.31 | i | i |
| 35 | Request-Disposition | [56B] 9.1 | c27 | c27 | [56B] 9.1 | c27 | c27 |
| 36 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 36A | Resource-Priority | [116] 3.1 | c36 | c36 | [116] 3.1 | c36 | c36 |
| 37 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 38 | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c25 | c25 |
| 39 | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c26 | c26 |
| 40 | SIP-If-Match | [70] 11.3.2 | m | m | [70] 11.3.2 | i | i |
| 41 | Subject | [26] 20.36 | m | m | [26] 20.36 | i | i |
| 42 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 43 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 44 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 45 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 46 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|---------|---|
| c1: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c8: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c9: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c10: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c11: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c12: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c13: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c14: | IF A.162/37 THEN m ELSE n/a - - the P-Called-Party-ID header extension. |
| c15: | IF A.162/37 THEN i ELSE n/a - - the P-Called-Party-ID header extension. |
| c16: | IF A.162/37 AND A.3/2 THEN m ELSE IF A.162/37 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Called-Party-ID header extension and P-CSCF or (I-CSCF or IBCF (THIG)). |
| c17: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. |
| c18: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. |
| c19: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c20: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c21: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c22: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c23: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c24: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c25: | IF A.162/47 THEN o ELSE n/a - - security mechanism agreement for the session initiation protocol (note 1). |
| c26: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c27: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c28: | IF A.162/50 AND A.4/3 THEN m ELSE IF A.162/50 AND NOT A.4/3 THEN i ELSE n/a - - caller preferences for the session initiation protocol, and S-CSCF. |
| c29: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension (note 2). |
| c30: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c31: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c32: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c33: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c34: | IF A.162/66A THEN m ELSE n/a - - making the first query to the database in order to populate the P-Profile-Key header. |
| c35: | IF A.162/66B THEN m ELSE n/a - - using the information in the P-Profile-Key header. |
| c36: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. |
| c37: | IF A.162/84A THEN m ELSE n/a - - act as authentication entity within the trust domain for asserted service. |
| c38: | IF A.162/84 THEN m ELSE n/a - - identification of communication services in the session initiation protocol. |
| c39: | IF A.162/84 OR A.162/30B THEN m ELSE i - - identification of communication services in the session initiation protocol or subsequent entity within trust network that can route outside the trust network. |
| NOTE 1: | Support of this header in this method is dependent on the security mechanism and the security architecture which is implemented. |
| NOTE 2: | c29 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/15A - - PUBLISH request

Table A.260B: Supported message bodies within the PUBLISH request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.260BA: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/15B - - PUBLISH response for all remaining status-codes

Table A.260C: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Call-Info | [26] 24.9 | m | m | [26] 24.9 | c3 | c3 |
| 3 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 4 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 5 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 6 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 7 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 8 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 9 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 10 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 10A | History-Info | [66] 4.1 | c16 | c16 | [66] 4.1 | c16 | c16 |
| 11 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 12 | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 13 | P-Access-Network-Info | [52] 4.4 | c13 | c13 | [52] 4.4 | c14 | c14 |
| 14 | P-Asserted-Identity | [34] 9.1 | c5 | c5 | [34] 9.1 | c6 | c6 |
| 15 | P-Charging-Function-Addresses | [52] 4.5 | c11 | c11 | [52] 4.5 | c12 | c12 |
| 16 | P-Charging-Vector | [52] 4.6 | c9 | n/a | [52] 4.6 | c10 | n/a |
| 17 | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c4 | n/a |
| 18 | Privacy | [33] 4.2 | c7 | c7 | [33] 4.2 | c8 | c8 |
| 19 | Require | [26] 20.32 | m | m | [26] 20.32 | c15 | c15 |
| 20 | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 21 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 22 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 23 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 24 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 25 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. | | | | | | |
| c3: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. | | | | | | |
| c4: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. | | | | | | |
| c5: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c6: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. | | | | | | |
| c7: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c8: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c9: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c11: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c13: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c14: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c15: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c16: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/7 - - Additional for 200 (OK) response

Table A.260D: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--|--------------------------------|------------|----------------|--------------------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c4 | c4 | [116] 3.2 | c4 | c4 |
| 2 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 3 | Expires | [26] 20.19, [70] 4, 5, 6 | m | m | [26] 20.19, [70] 4, 5, 6 | i | i |
| 4 | SIP-Etag | [70] 11.3.1 | m | m | [70] 11.3.1 | i | i |
| 5 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c4: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.260DA: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.260E: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/8 OR A.164/9 OR A.164/10 OR A.164/11 OR A.164/12 - - Additional for 401 (Unauthorized) response

Table A.260F: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 5 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.260G: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.260H: Void

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.260I: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 5 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.260J: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.260JA: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.260K: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|--|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.260L: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/29 - - Additional for 423 (Interval Too Brief) response

Table A.260M: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|-----------------------|------------|----------------|-----------------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Min-Expires | [26] 20.23, [70] 5, 6 | m | m | [26] 20.23, [70] 5, 6 | i | i |

Table A.260N: Void

Prerequisite A.163/15B - - PUBLISH response

Prerequisite: A.164/39 - - Additional for 489 (Bad Event) response

Table A.260O: Supported headers within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Allow-Events | [28] 8.2.2 | m | m | [28] 8.2.2 | i | i |

Prerequisite A.163/17 - - PUBLISH response

Table A.260P: Supported message bodies within the PUBLISH response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.11 REFER method

Prerequisite A.163/16 - - REFER request

Table A.261: Supported headers within the REFER request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 0B | Accept-Contact | [56B] 9.2 | c27 | c27 | [56B] 9.2 | c27 | c28 |
| 0C | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 1 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 1A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 2 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 3 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 4 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 5 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 5A | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 5B | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 5C | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 6 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 7 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 8 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 9 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 10 | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 11 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 11A | Geolocation | [89] 3.2 | c35 | c35 | [89] 3.2 | c36 | c36 |
| 11B | History-Info | [66] 4.1 | c31 | c31 | [66] 4.1 | c31 | c31 |
| 12 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 13 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 14 | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 14A | P-Access-Network-Info | [52] 4.4 | c22 | c22 | [52] 4.4 | c23 | c23 |
| 14B | P-Asserted-Identity | [34] 9.1 | c9 | c9 | [34] 9.1 | c10 | c10 |
| 14C | P-Asserted-Service | [121] 4.1 | c38 | c38 | [121] 4.1 | c39 | c39 |
| 14D | P-Called-Party-ID | [52] 4.2 | c13 | c13 | [52] 4.2 | c14 | c15 |
| 14E | P-Charging-Function-Addresses | [52] 4.5 | c20 | c20 | [52] 4.5 | c21 | c21 |
| 14F | P-Charging-Vector | [52] 4.6 | c18 | c18 | [52] 4.6 | c19 | c19 |
| 14G | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c8 | c8 |
| 14H | P-Preferred-Service | [121] 4.2 | x | x | [121] 4.2 | c37 | c37 |
| 14I | P-Profile-Key | [97] 5 | c33 | c33 | [97] 5 | c34 | c34 |
| 14J | P-User-Database | [82] 4 | c32 | c32 | [82] 4 | c32 | c32 |
| 14K | P-Visited-Network-ID | [52] 4.3 | c16 | n/a | [52] 4.3 | c17 | n/a |
| 14L | Privacy | [33] 4.2 | c11 | c11 | [33] 4.2 | c12 | c12 |
| 15 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c4 | c4 |
| 16 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 16A | Reason | [34A] 2 | c25 | c25 | [34A] 2 | c26 | c26 |
| 17 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 18 | Refer-To | [36] 3 | c3 | c3 | [36] 3 | c4 | c4 |
| 18A | Referred-By | [59] 3 | c29 | c29 | [59] 3 | c30 | c30 |
| 18B | Reject-Contact | [56B] 9.2 | c27 | c27 | [56B] 9.2 | c27 | c28 |
| 18C | Request-Disposition | [56B] 9.1 | c27 | c27 | [56B] 9.1 | c27 | c27 |
| 19 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 19A | Resource-Priority | [116] 3.1 | c47 | c47 | [116] 3.1 | c47 | c47 |
| 20 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 20A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c24 | c24 |
| 20B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c24 | c24 |
| 21 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 22 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 23 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 23A | Trigger-Consent | [125] 5.11.2 | c48 | c48 | [125] 5.11.2 | c49 | c49 |
| 24 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 25 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN m ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c9: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c10: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c11: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c12: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c13: | IF A.162/37 THEN m ELSE n/a - - the P-Called-Party-ID header extension. |
| c14: | IF A.162/37 THEN i ELSE n/a - - the P-Called-Party-ID header extension. |
| c15: | IF A.162/37 AND A.3/2 THEN m ELSE IF A.162/37 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Called-Party-ID header extension and P-CSCF or (I-CSCF or IBCF (THIG)). |
| c16: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. |
| c17: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. |
| c18: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c19: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c20: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c21: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c22: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c23: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c24: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c25: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c26: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c27: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c28: | IF A.162/50 AND A.4/3 THEN m ELSE IF A.162/50 AND NOT A.4/3 THEN i ELSE n/a - - caller preferences for the session initiation protocol, and S-CSCF. |
| c29: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c30: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c31: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c32: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c33: | IF A.162/66A THEN m ELSE n/a - - making the first query to the database in order to populate the P-Profile-Key header. |
| c34: | IF A.162/66B THEN m ELSE n/a - - using the information in the P-Profile-Key header. |
| c35: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c36: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c37: | IF A.162/84A THEN m ELSE n/a - - act as authentication entity within the trust domain for asserted service. |
| c38: | IF A.162/84 THEN m ELSE n/a - - identification of communication services in the session initiation protocol. |
| c39: | IF A.162/84 OR A.162/30B THEN m ELSE i - - identification of communication services in the session initiation protocol or subsequent entity within trust network that can route outside the trust network. |
| c47: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| c48: | IF A.162/85 THEN m ELSE n/a - - a framework for consent-based communications in SIP. |
| c49: | IF A.162/85 THEN i ELSE n/a - - a framework for consent-based communications in SIP. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/16 - - REFER request

Table A.262: Supported message bodies within the REFER request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.263: Void

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.263A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/17 - - REFER response for all remaining status-codes

Table A.264: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 1B | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 2 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 3 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 4 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 5 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 6 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 7 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 8 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 8A | Geolocation | [89] 3.2 | c16 | c16 | [89] 3.2 | c17 | c17 |
| 8B | History-Info | [66] 4.1 | c15 | c15 | [66] 4.1 | c15 | c15 |
| 9 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 10 | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 10A | P-Access-Network-Info | [52] 4.4 | c12 | c12 | [52] 4.4 | c13 | c13 |
| 10B | P-Asserted-Identity | [34] 9.1 | c4 | c4 | [34] 9.1 | c5 | c5 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c10 | c10 | [52] 4.5 | c11 | c11 |
| 10D | P-Charging-Vector | [52] 4.6 | c8 | c8 | [52] 4.6 | c9 | c9 |
| 10E | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c3 | n/a |
| 10F | Privacy | [33] 4.2 | c6 | c6 | [33] 4.2 | c7 | c7 |
| 10G | Require | [26] 20.32 | m | m | [26] 20.32 | c14 | c14 |
| 10H | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |

| | |
|------|---|
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c3: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c4: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c5: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c6: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c7: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c8: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c9: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c10: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c11: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c12: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c13: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c14: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c15: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c16: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c17: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.265: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c12 | c12 | [116] 3.2 | c12 | c12 |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 2 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 5 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 8 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN m ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c12: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.265A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Table A.266: Void

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/8 OR A.164/9 OR A.164/10 OR A.164/11 OR A.164/12 - - Additional for 401 (Unauthorized) response

Table A.267: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 10 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.268: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.269: Void

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.270: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | o | | [26] 20.27 | o | |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.271: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.271A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | | |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.272: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|--|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | | |

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.272A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Table A.273: Void

Prerequisite A.163/17 - - REFER response

Prerequisite: A.164/29E - - Additional for 470 (Consent Needed) response

Table A.273A: Supported headers within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|----------------|------------|----------------|----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.163/17 - - REFER response

Table A.274: Supported message bodies within the REFER response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.12 REGISTER method

Prerequisite A.163/18 - - REGISTER request

Table A.275: Supported headers within the REGISTER request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 3A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 4 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7, [49] | m | m | [26] 20.7, [49] | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 7 | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c2 | c2 |
| 8 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 9 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 10 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 11 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 12 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 13 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 14 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 15 | Date | [26] 20.17 | m | m | [26] 20.17 | m | m |
| 16 | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 17 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 17A | Geolocation | [89] 3.2 | c26 | c26 | [89] 3.2 | c27 | c27 |
| 17B | History-Info | [66] 4.1 | c24 | c24 | [66] 4.1 | c24 | c24 |
| 18 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 19 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 20 | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 20A | P-Access-Network-Info | [52] 4.4 | c16 | c16 | [52] 4.4 | c17 | c17 |
| 20B | P-Charging-Function-Addresses | [52] 4.5 | c14 | c14 | [52] 4.5 | c15 | c15 |
| 20C | P-Charging-Vector | [52] 4.6 | c12 | c12 | [52] 4.6 | c13 | c13 |
| 20D | P-User-Database | [82] 4 | c25 | c25 | [82] 4 | n/a | n/a |
| 20E | P-Visited-Network-ID | [52] 4.3 | c10 | c10 | [52] 4.3 | c11 | c11 |
| 20F | Path | [35] 4.2 | c6 | c6 | [35] 4.2 | c6 | c6 |
| 20G | Privacy | [33] 4.2 | c8 | c8 | [33] 4.2 | c9 | c9 |
| 21 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c7 | c7 |
| 22 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 22A | Reason | [34A] 2 | c19 | c19 | [34A] 2 | c20 | c20 |
| 22B | Referred-By | [59] 3 | c22 | c22 | [59] 3 | c23 | c23 |
| 22C | Request-Disposition | [56B] 9.1 | c21 | c21 | [56B] 9.1 | c21 | c21 |
| 23 | Require | [26] 20.32 | m | m | [26] 20.32 | c4 | c4 |
| 23A | Resource-Priority | [116] 3.1 | c28 | c28 | [116] 3.1 | c28 | c28 |
| 24 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 24A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c18 | c18 |
| 24B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c18 | c18 |
| 25 | Supported | [26] 20.37 | m | m | [26] 20.37 | c5 | c5 |
| 26 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 27 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 28 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 29 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.162/11 OR A.162/12 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c5: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c6: | IF A.162/29 THEN m ELSE n/a - - PATH header support. |
| c7: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c8: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c9: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c10: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. |
| c11: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. |
| c12: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c13: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c14: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c15: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c16: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c17: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c18: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c19: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c20: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c21: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c22: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c23: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c24: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c25: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c26: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c27: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c28: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/18 - - REGISTER request

Table A.276: Supported message bodies within the REGISTER request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Table A.277: Void

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.277A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/19 - - REGISTER response for all remaining status-codes

Table A.278: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c2 | c2 |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | m | m |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c13 | c13 | [89] 3.2 | c14 | c14 |
| 9B | History-Info | [66] 4.1 | c12 | c12 | [66] 4.1 | c12 | c12 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 11 | Organization | [26] 20.25 | m | m | [26] 20.25 | c1 | c1 |
| 11A | P-Access-Network-Info | [52] 4.4 | c9 | c9 | [52] 4.4 | c10 | c10 |
| 11B | P-Charging-Function-Addresses | [52] 4.5 | c7 | c7 | [52] 4.5 | c8 | c8 |
| 11C | P-Charging-Vector | [52] 4.6 | c5 | c5 | [52] 4.6 | c6 | c6 |
| 11D | Privacy | [33] 4.2 | c3 | c3 | [33] 4.2 | c4 | c4 |
| 11E | Require | [26] 20.32 | m | m | [26] 20.32 | c11 | c11 |
| 11F | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 12 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 13 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 13A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 14 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 15 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. | | | | | | |
| c2: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. | | | | | | |
| c3: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c4: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c5: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c6: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c7: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c8: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c9: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c10: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c11: | IF A.162/11 OR A.162/12 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c12: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c13: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c14: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.279: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 1B | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 1C | Accept-Resource-Priority | [116] 3.2 | c11 | c11 | [116] 3.2 | c11 | c11 |
| 2 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 3 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 5 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 5A | P-Associated-URI | [52] 4.1 | c8 | c8 | [52] 4.1 | c9 | c10 |
| 6 | Path | [35] 4.2 | c3 | c3 | [35] 4.2 | c4 | c4 |
| 8 | Service-Route | [38] 5 | c5 | c5 | [38] 5 | c6 | c7 |
| 9 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/29 THEN m ELSE n/a - - Path extension support. | | | | | | |
| c4: | IF A.162/29 THEN i ELSE n/a - - Path extension support. | | | | | | |
| c5: | IF A.162/32 THEN m ELSE n/a - - Service-Route extension support. | | | | | | |
| c6: | IF A.162/32 THEN i ELSE n/a - - Service-Route extension support. | | | | | | |
| c7: | IF A.162/32 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - Service-Route extension and P-CSCF. | | | | | | |
| c8: | IF A.162/36 THEN m ELSE n/a - - the P-Associated-URI extension. | | | | | | |
| c9: | IF A.162/36 THEN i ELSE n/a - - the P-Associated-URI extension. | | | | | | |
| c10: | IF A.162/36 AND A.3/2 THEN m ELSE IF A.162/36 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Associated-URI extension and P-CSCF or I-CSCF or IBCF (THIG). | | | | | | |
| c11: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.171A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.280: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Contact | [26] 20.10 | m | m | [26] 20.10 | c2 | c2 |
| c2: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.281: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|---|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | Security-Server | [48] 2 | x | c1 | [48] 2 | n/a | n/a |
| 10 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |
| c1: IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.282: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 6 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.283: Void

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.284: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 9 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.285: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.285A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80B THEN m ELSE n/a - - inclusion of CANCEL, BYE, REGISTER and PUBLISH in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.286: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|---------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 8 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/17 THEN m ELSE.i | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.286A: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Prerequisite A.163/19 - - REGISTER response

Prerequisite: A.164/29 - - Additional for 423 (Interval Too Brief) response

Table A.287: Supported headers within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Min-Expires | [26] 20.23 | m | m | [26] 20.23 | i | i |

Table A.288: Void

Prerequisite A.163/19 - - REGISTER response

Table A.289: Supported message bodies within the REGISTER response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.13 SUBSCRIBE method

Prerequisite A.163/20 - - SUBSCRIBE request

Table A.290: Supported headers within the SUBSCRIBE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|--------------|------------|----------------|--------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c27 | c27 | [56B] 9.2 | c27 | c28 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 3A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 4 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 5 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 6 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 6A | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 7 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 8 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 9 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 10 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 11 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 12 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 13 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 14 | Event | [28] 7.2.1 | m | m | [28] 7.2.1 | m | m |
| 15 | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 16 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 16A | Geolocation | [89] 3.2 | c35 | c35 | [89] 3.2 | c36 | c36 |
| 16B | History-Info | [66] 4.1 | c31 | c31 | [66] 4.1 | c31 | c31 |
| 17 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 18 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 18A | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 18B | P-Access-Network-Info | [52] 4.4 | c22 | c22 | [52] 4.4 | c23 | c23 |
| 18C | P-Asserted-Identity | [34] 9.1 | c9 | c9 | [34] 9.1 | c10 | c10 |
| 18D | P-Asserted-Service | [121] 4.1 | c39 | c39 | [121] 4.1 | c40 | c40 |
| 18E | P-Called-Party-ID | [52] 4.2 | c13 | c13 | [52] 4.2 | c14 | c15 |
| 18F | P-Charging-Function-Addresses | [52] 4.5 | c20 | c20 | [52] 4.5 | c21 | c21 |
| 18G | P-Charging-Vector | [52] 4.6 | c18 | c18 | [52] 4.6 | c19 | c19 |
| 18H | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c8 | c8 |
| 18I | P-Preferred-Service | [121] 4.2 | x | x | [121] 4.2 | c38 | c38 |
| 18J | P-Profile-Key | [97] 5 | c33 | c33 | [97] 5 | c34 | c34 |
| 18K | P-User-Database | [82] 4 | c32 | c32 | [82] 4 | c32 | c32 |
| 18K | P-Visited-Network-ID | [52] 4.3 | c16 | n/a | [52] 4.3 | c17 | n/a |
| 18M | Privacy | [33] 4.2 | c11 | c11 | [33] 4.2 | c12 | c12 |
| 19 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c4 | c4 |
| 20 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 20A | Reason | [34A] 2 | c25 | c25 | [34A] 2 | c26 | c26 |
| 21 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 21A | Referred-By | [59] 3 | c29 | c29 | [59] 3 | c30 | c30 |
| 21B | Reject-Contact | [56B] 9.2 | c27 | c27 | [56B] 9.2 | c27 | c28 |
| 21C | Request-Disposition | [56B] 9.1 | c27 | c27 | [56B] 9.1 | c27 | c27 |
| 22 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 23 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 23A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c24 | c24 |
| 23B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c24 | c24 |
| 24 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 24A | Resource-Priority | [116] 3.1 | c37 | c37 | [116] 3.1 | c37 | c37 |
| 25 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 26 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 26A | Trigger-Consent | [125] 5.11.2 | c41 | c41 | [125] 5.11.2 | c42 | c42 |
| 27 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 28 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN m ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. |
| c9: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. |
| c10: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. |
| c11: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c12: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c13: | IF A.162/37 THEN m ELSE n/a - - the P-Called-Party-ID header extension. |
| c14: | IF A.162/37 THEN i ELSE n/a - - the P-Called-Party-ID header extension. |
| c15: | IF A.162/37 AND A.3/2 THEN m ELSE IF A.162/37 AND (A.3/3 OR A.3/9A) THEN i ELSE n/a - - the P-Called-Party-ID header extension and P-CSCF or I-CSCF or IBCF (THIG). |
| c16: | IF A.162/38 THEN m ELSE n/a - - the P-Visited-Network-ID header extension. |
| c17: | IF A.162/39 THEN m ELSE i - - reading, or deleting the P-Visited-Network-ID header before proxying the request or response. |
| c18: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c19: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c20: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c21: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c22: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c23: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c24: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c25: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c26: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c27: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c28: | IF A.162/50 AND A.4/3 THEN m ELSE IF A.162/50 AND NOT A.4/3 THEN i ELSE n/a - - caller preferences for the session initiation protocol, and S-CSCF. |
| c29: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c30: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c31: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. |
| c32: | IF A.162/60 THEN m ELSE n/a - - the P-User-Database private header extension. |
| c33: | IF A.162/66A THEN m ELSE n/a - - making the first query to the database in order to populate the P-Profile-Key header. |
| c34: | IF A.162/66B THEN m ELSE n/a - - using the information in the P-Profile-Key header. |
| c35: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c36: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c37: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. |
| c38: | IF A.162/84A THEN m ELSE n/a - - act as authentication entity within the trust domain for asserted service. |
| c39: | IF A.162/84 THEN m ELSE n/a - - identification of communication services in the session initiation protocol. |
| c40: | IF A.162/84 OR A.162/30B THEN m ELSE i - - identification of communication services in the session initiation protocol or subsequent entity within trust network that can route outside the trust network. |
| c41: | IF A.162/85 THEN m ELSE n/a - - a framework for consent-based communications in SIP. |
| c42: | IF A.162/85 THEN i ELSE n/a - - a framework for consent-based communications in SIP. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/20 - - SUBSCRIBE request

Table A.291: Supported message bodies within the SUBSCRIBE request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.291A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response for all remaining status-codes

Table A.292: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | i |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | i |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | i |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | i |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | History-Info | [66] 4.1 | c15 | c15 | [66] 4.1 | c15 | c15 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | i |
| 10A | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 10B | P-Access-Network-Info | [52] 4.4 | c12 | c12 | [52] 4.4 | c13 | c13 |
| 10C | P-Asserted-Identity | [34] 9.1 | c4 | c4 | [34] 9.1 | c5 | c5 |
| 10D | P-Charging-Function-Addresses | [52] 4.5 | c10 | c10 | [52] 4.5 | c11 | c11 |
| 10E | P-Charging-Vector | [52] 4.6 | c8 | c8 | [52] 4.6 | c9 | c9 |
| 10F | P-Preferred-Identity | [34] 9.2 | x | x | [34] 9.2 | c3 | n/a |
| 10G | Privacy | [33] 4.2 | c6 | c6 | [33] 4.2 | c7 | c7 |
| 10H | Require | [26] 20.32 | m | m | [26] 20.32 | c14 | c14 |
| 10I | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. | | | | | | |
| c3: | IF A.162/30A THEN m ELSE n/a - - act as first entity within the trust domain for asserted identity. | | | | | | |
| c4: | IF A.162/30 THEN m ELSE n/a - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks. | | | | | | |
| c5: | IF A.162/30A or A.162/30B THEN m ELSE i - - extensions to the Session Initiation Protocol (SIP) for asserted identity within trusted networks or subsequent entity within trust network that can route outside the trust network. | | | | | | |
| c6: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c7: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c8: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c10: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c12: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c13: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c14: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c15: | IF A.162/57 THEN m ELSE n/a - - an extension to the session initiation protocol for request history information. | | | | | | |
| c16: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c17: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.293: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept-Resource-Priority | [116] 3.2 | c4 | c4 | [116] 3.2 | c4 | c4 |
| 0B | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | i | i |
| 1 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 1A | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 2 | Expires | [26] 20.19 | m | m | [26] 20.19 | i | i |
| 3 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c3 | c3 |
| 6 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c3: | IF A.162/15 THEN m ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.293A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/103 OR A.164/35 - - Additional for 3xx or 485 (Ambiguous) response

Table A.294: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.295: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480 (Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.296: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.297: Void

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.298: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.299: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.299A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80A THEN m ELSE n/a - - inclusion of MESSAGE, SUBSCRIBE, NOTIFY in communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.300: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: | IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.300A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|---|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/29 - - Additional for 423 (Interval Too Brief) response

Table A.301: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Min-Expires | [26] 20.23 | m | m | [26] 20.23 | i | i |

Table A.302: Void

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/29E - - Additional for 470 (Consent Needed) response

Table A.302A: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|----------------|------------|----------------|----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Permission-Missing | [125] 5.9.3 | m | m | [125] 5.9.3 | m | m |

Prerequisite A.163/21 - - SUBSCRIBE response

Prerequisite: A.164/39 - - Additional for 489 (Bad Event) response

Table A.303: Supported headers within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|--|--------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| c1: IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | | |
| NOTE: c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. | | | | | | | |

Table A.303A: Void

Prerequisite A.163/21 - - SUBSCRIBE response

Table A.304: Supported message bodies within the SUBSCRIBE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.2.2.4.14 UPDATE method

Prerequisite A.163/22 - - UPDATE request

Table A.305: Supported headers within the UPDATE request

| Item | Header | Sending | | | Receiving | | |
|------|-------------------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 1A | Accept-Contact | [56B] 9.2 | c21 | c21 | [56B] 9.2 | c22 | c22 |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 4 | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 5 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 6 | Authorization | [26] 20.7 | m | m | [26] 20.7 | i | i |
| 7 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 8 | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c8 | c8 |
| 9 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 10 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | c4 | c4 |
| 11 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | c4 | c4 |
| 12 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | c4 | c4 |
| 13 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 14 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | c4 | c4 |
| 15 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 16 | Date | [26] 20.17 | m | m | [26] 20.17 | c2 | c2 |
| 17 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 17A | Geolocation | [89] 3.2 | c26 | c26 | [89] 3.2 | c27 | c27 |
| 18 | Max-Forwards | [26] 20.22 | m | m | [26] 20.22 | m | m |
| 19 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c4 |
| 19A | Min-SE | [58] 5 | c23 | c23 | [58] 5 | c23 | c23 |
| 20 | Organization | [26] 20.25 | m | m | [26] 20.25 | c3 | c3 |
| 20A | P-Access-Network-Info | [52] 4.4 | c16 | c16 | [52] 4.4 | c17 | c17 |
| 20B | P-Charging-Function-Addresses | [52] 4.5 | c14 | c14 | [52] 4.5 | c15 | c15 |
| 20C | P-Charging-Vector | [52] 4.6 | c12 | c12 | [52] 4.6 | c13 | c13 |
| 20D | P-Early-Media | [109] 8 | o | c28 | [109] 8 | o | c29 |
| 20E | Privacy | [33] 4.2 | c10 | c10 | [33] 4.2 | c11 | c11 |
| 21 | Proxy-Authorization | [26] 20.28 | m | m | [26] 20.28 | c9 | c9 |
| 22 | Proxy-Require | [26] 20.29 | m | m | [26] 20.29 | m | m |
| 22A | Reason | [34A] 2 | c19 | c19 | [34A] 2 | c20 | c20 |
| 23 | Record-Route | [26] 20.30 | m | m | [26] 20.30 | c7 | c7 |
| 23A | Referred-By | [59] 3 | c24 | c24 | [59] 3 | c25 | c25 |
| 23B | Reject-Contact | [56B] 9.2 | c21 | c21 | [56B] 9.2 | c22 | c22 |
| 23C | Request-Disposition | [56B] 9.1 | c21 | c21 | [56B] 9.1 | c22 | c22 |
| 24 | Require | [26] 20.32 | m | m | [26] 20.32 | c5 | c5 |
| 24A | Resource-Priority | [116] 3.1 | c47 | c47 | [116] 3.1 | c47 | c47 |
| 25 | Route | [26] 20.34 | m | m | [26] 20.34 | m | m |
| 25A | Security-Client | [48] 2.3.1 | x | x | [48] 2.3.1 | c18 | c18 |
| 25B | Security-Verify | [48] 2.3.1 | x | x | [48] 2.3.1 | c18 | c18 |
| 25C | Session-Expires | [58] 4 | c23 | c23 | [58] 4 | c23 | c23 |
| 26 | Supported | [26] 20.37 | m | m | [26] 20.37 | c6 | c6 |
| 27 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 28 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 29 | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 30 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |

| | |
|-------|---|
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. |
| c2: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. |
| c3: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. |
| c4: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. |
| c5: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. |
| c6: | IF A.162/16 THEN m ELSE i - - reading the contents of the Supported header before proxying the response. |
| c7: | IF A.162/14 THEN o ELSE i - - the requirement to be able to insert itself in the subsequent transactions in a dialog. |
| c8: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. |
| c9: | IF A.162/8A THEN m ELSE i - - authentication between UA and proxy. |
| c10: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). |
| c11: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. |
| c12: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. |
| c13: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. |
| c14: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. |
| c15: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. |
| c16: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c17: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. |
| c18: | IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. |
| c19: | IF A.162/48 THEN m ELSE n/a - - the Reason header field for the session initiation protocol. |
| c20: | IF A.162/48 THEN i ELSE n/a - - the Reason header field for the session initiation protocol. |
| c21: | IF A.162/50 THEN m ELSE n/a - - caller preferences for the session initiation protocol. |
| c22: | IF A.162/50 THEN i ELSE n/a - - caller preferences for the session initiation protocol. |
| c23: | IF A.162/52 THEN m ELSE n/a - - the SIP session timer. |
| c24: | IF A.162/53 THEN i ELSE n/a - - the SIP Referred-By mechanism. |
| c25: | IF A.162/53 THEN m ELSE n/a - - the SIP Referred-By mechanism. |
| c26: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. |
| c27: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. |
| c28: | IF A.162/76 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. |
| c29: | IF A.162/76 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - P-CSCF, using the information in the P-Early-Media header. |
| c47: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. |
| NOTE: | c1 refers to the UA role major capability as this is the case of a proxy that also acts as a UA specifically for SUBSCRIBE and NOTIFY. |

Prerequisite A.163/22 - - UPDATE request

Table A.306: Supported message bodies within the UPDATE request

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/1 - - Additional for 100 (Trying) response

Table A.306A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 2 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 3 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 4 | Date | [26] 20.17 | c1 | c1 | [26] 20.17 | c2 | c2 |
| 5 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 6 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 7 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| c1: | IF (A.162/9 AND A.162/5) OR A.162/4 THEN m ELSE n/a - - stateful proxy behaviour that inserts date, or stateless proxies. | | | | | | |
| c2: | IF A.162/4 THEN i ELSE m - - Stateless proxy passes on. | | | | | | |

Prerequisite A.163/22 - - UPDATE response for all remaining status-codes

Table A.307: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Allow | [26] 20.5 | m | m | [26] 20.5 | i | i |
| 1 | Call-ID | [26] 20.8 | m | m | [26] 20.8 | m | m |
| 1A | Call-Info | [26] 20.9 | m | m | [26] 20.9 | c4 | c4 |
| 1B | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 2 | Content-Disposition | [26] 20.11 | m | m | [26] 20.11 | i | c3 |
| 3 | Content-Encoding | [26] 20.12 | m | m | [26] 20.12 | i | c3 |
| 4 | Content-Language | [26] 20.13 | m | m | [26] 20.13 | i | c3 |
| 5 | Content-Length | [26] 20.14 | m | m | [26] 20.14 | m | m |
| 6 | Content-Type | [26] 20.15 | m | m | [26] 20.15 | i | c3 |
| 7 | Cseq | [26] 20.16 | m | m | [26] 20.16 | m | m |
| 8 | Date | [26] 20.17 | m | m | [26] 20.17 | c1 | c1 |
| 9 | From | [26] 20.20 | m | m | [26] 20.20 | m | m |
| 9A | Geolocation | [89] 3.2 | c14 | c14 | [89] 3.2 | c15 | c15 |
| 10 | MIME-Version | [26] 20.24 | m | m | [26] 20.24 | i | c3 |
| 10A | Organization | [26] 20.25 | m | m | [26] 20.25 | c2 | c2 |
| 10B | P-Access-Network-Info | [52] 4.4 | c11 | c11 | [52] 4.4 | c12 | c12 |
| 10C | P-Charging-Function-Addresses | [52] 4.5 | c9 | c9 | [52] 4.5 | c10 | c10 |
| 10D | P-Charging-Vector | [52] 4.6 | c7 | n/a | [52] 4.6 | c8 | n/a |
| 10E | Privacy | [33] 4.2 | c5 | c5 | [33] 4.2 | c6 | c6 |
| 10F | Require | [26] 20.32 | m | m | [26] 20.32 | c13 | c13 |
| 10G | Server | [26] 20.35 | m | m | [26] 20.35 | i | i |
| 11 | Timestamp | [26] 20.38 | m | m | [26] 20.38 | i | i |
| 12 | To | [26] 20.39 | m | m | [26] 20.39 | m | m |
| 12A | User-Agent | [26] 20.41 | m | m | [26] 20.41 | i | i |
| 13 | Via | [26] 20.42 | m | m | [26] 20.42 | m | m |
| 14 | Warning | [26] 20.43 | m | m | [26] 20.43 | i | i |
| c1: | IF A.162/9 THEN m ELSE i - - insertion of date in requests and responses. | | | | | | |
| c2: | IF A.162/19A OR A.162/19B THEN m ELSE i - - reading, adding or concatenating the Organization header. | | | | | | |
| c3: | IF A.3/2 OR A.3/4 THEN m ELSE i - - P-CSCF or S-CSCF. | | | | | | |
| c4: | IF A.162/19C OR A.162/19D THEN m ELSE i - - reading, adding or concatenating the Call-Info header. | | | | | | |
| c5: | IF A.162/31 THEN m ELSE n/a - - a privacy mechanism for the Session Initiation Protocol (SIP). | | | | | | |
| c6: | IF A.162/31D OR A.162/31G THEN m ELSE IF A.162/31C THEN i ELSE n/a - - application of the privacy option "header" or application of the privacy option "id" or passing on of the Privacy header transparently. | | | | | | |
| c7: | IF A.162/45 THEN m ELSE n/a - - the P-Charging-Vector header extension. | | | | | | |
| c8: | IF A.162/46 THEN m ELSE IF A.162/45 THEN i ELSE n/a - - adding, deleting, reading or modifying the P-Charging-Vector header before proxying the request or response or the P-Charging-Vector header extension. | | | | | | |
| c9: | IF A.162/44 THEN m ELSE n/a - - the P-Charging-Function-Addresses header extension. | | | | | | |
| c10: | IF A.162/44A THEN m ELSE IF A.162/44 THEN i ELSE n/a - - adding, deleting or reading the P-Charging-Function-Addresses header before proxying the request or response, or the P-Charging-Function-Addresses header extension. | | | | | | |
| c11: | IF A.162/43 THEN x ELSE IF A.162/41 THEN m ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c12: | IF A.162/43 THEN m ELSE IF A.162/41 THEN i ELSE n/a - - act as subsequent entity within trust network for access network information that can route outside the trust network, the P-Access-Network-Info header extension. | | | | | | |
| c13: | IF A.162/11 OR A.162/13 THEN m ELSE i - - reading the contents of the Require header before proxying the request or response or adding or modifying the contents of the Require header before proxying the request or response for methods other than REGISTER. | | | | | | |
| c14: | IF A.162/70 THEN m ELSE n/a - - SIP location conveyance. | | | | | | |
| c15: | IF A.162/70A THEN m ELSE IF A.162/70B THEN i ELSE n/a - - addition or modification of location in a SIP method, passes on locations in SIP method without modification. | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/102 - - Additional for 2xx response

Table A.308: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|---|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 0A | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 0B | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 0C | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |
| 0D | Accept-Resource-Priority | [116] 3.2 | c12 | c12 | [116] 3.2 | c12 | c12 |
| 1 | Allow-Events | [28] 7.2.2 | m | m | [28] 7.2.2 | c1 | c1 |
| 2 | Authentication-Info | [26] 20.6 | m | m | [26] 20.6 | i | i |
| 3 | Contact | [26] 20.10 | m | m | [26] 20.10 | i | i |
| 3A | P-Early-Media | [109] 8 | o | c10 | [109] 8 | o | c11 |
| 4 | Session-Expires | [58] 4 | c4 | c4 | [58] 4 | c4 | c4 |
| 6 | Supported | [26] 20.37 | m | m | [26] 20.37 | i | i |
| c1: | IF A.4/20 THEN m ELSE i - - SIP specific event notification extension. | | | | | | |
| c3: | IF A.162/15 THEN o ELSE i - - the requirement to be able to use separate URIs in the upstream direction and downstream direction when record routing. | | | | | | |
| c4: | IF A.162/52 THEN m ELSE n/a - - the SIP session timer. | | | | | | |
| c10: | IF A.162/76 THEN m ELSE n/a - - the SIP P-Early-Media private header extension for authorization of early media. | | | | | | |
| c11: | IF A.162/76 THEN (IF A.3/2 THEN m ELSE i) ELSE n/a - - P-CSCF, using the information in the P-Early-Media header. | | | | | | |
| c12: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/103 OR A.164/104 OR A.164/105 OR A.164/106 - - Additional for 3xx – 6xx response

Table A.308A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Error-Info | [26] 20.18 | m | m | [26] 20.18 | i | i |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/103 or A.164/35 - - Additional for 3xx, 485 (Ambiguous) response

Table A.309: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 2 | Contact | [26] 20.10 | m | m | [26] 20.10 | c1 | c1 |
| c1: | IF A.162/19E THEN m ELSE i - - deleting Contact headers. | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/14 - - Additional for 401 (Unauthorized) response

Table A.309A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 6 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/17 OR A.164/23 OR A.164/30 OR A.164/36 OR A.164/42 OR A.164/45 OR A.164/50 OR A.164/51 - - Additional for 404 (Not Found), 413 (Request Entity Too Large), 480(Temporarily not available), 486 (Busy Here), 500 (Internal Server Error), 503 (Service Unavailable), 600 (Busy Everywhere), 603 (Decline) response

Table A.310: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 5 | Retry-After | [26] 20.33 | m | m | [26] 20.33 | i | i |

Table A.311: Void

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/20 - - Additional for 407 (Proxy Authentication Required) response

Table A.312: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--------------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 4 | Proxy-Authenticate | [26] 20.27 | m | m | [26] 20.27 | m | m |
| 8 | WWW-Authenticate | [26] 20.44 | m | m | [26] 20.44 | i | i |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/25 - - Additional for 415 (Unsupported Media Type) response

Table A.313: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|-----------------|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept | [26] 20.1 | m | m | [26] 20.1 | i | i |
| 2 | Accept-Encoding | [26] 20.2 | m | m | [26] 20.2 | i | i |
| 3 | Accept-Language | [26] 20.3 | m | m | [26] 20.3 | i | i |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/26A - - Additional for 417 (Unknown Resource-Priority) response

Table A.313A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Accept-Resource-Priority | [116] 3.2 | c1 | c1 | [116] 3.2 | c1 | c1 |
| c1: | IF A.162/80 THEN m ELSE n/a - - communications resource priority for the session initiation protocol. | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/27 - - Additional for 420 (Bad Extension) response

Table A.314: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|--|-------------|------------|------------|----------------|------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 7 | Unsupported | [26] 20.40 | m | m | [26] 20.40 | c3 | c3 |
| c3: IF A.162/18 THEN m ELSE i - - reading the contents of the Unsupported header before proxying the 420 response to a method other than REGISTER. | | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/28 OR A.164/41A - - Additional for 421 (Extension Required), 494 (Security Agreement Required) response

Table A.314A: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|---|-----------------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 3 | Security-Server | [48] 2 | c1 | c1 | [48] 2 | n/a | n/a |
| c1: IF A.162/47 THEN m ELSE n/a - - security mechanism agreement for the session initiation protocol. | | | | | | | |

Prerequisite A.163/23 - - UPDATE response

Prerequisite: A.164/28A - - Additional for 422 (Session Interval Too Small) response

Table A.314B: Supported headers within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|--|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | Min-SE | [58] 5 | c1 | c1 | [58] 5 | c1 | c1 |
| c1: IF A.162/52 THEN m ELSE n/a - - the SIP session timer. | | | | | | | |

Table A.315: Void

Prerequisite A.163/23 - - UPDATE response

Table A.316: Supported message bodies within the UPDATE response

| Item | Header | Sending | | | Receiving | | |
|------|--------|---------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | | | | | | | |

A.3 Profile definition for the Session Description Protocol as used in the present document

A.3.1 Introduction

Void.

A.3.2 User agent role

This subclause contains the ICS proforma tables related to the user agent role. They need to be completed only for UA implementations.

Prerequisite: A.2/1 -- user agent role

A.3.2.1 Major capabilities

Table A.317: Major capabilities

| Item | Does the implementation support | Reference | RFC status | Profile status |
|---------|---|-----------|------------|----------------|
| | Capabilities within main protocol | | | |
| | Extensions | | | |
| 22 | integration of resource management and SIP? | [30] [64] | o | m |
| 23 | grouping of media lines | [53] | c3 | c3 |
| 24 | mapping of media streams to resource reservation flows | [54] | o | c1 |
| 25 | SDP bandwidth modifiers for RTCP bandwidth | [56] | o | o (NOTE 1) |
| 26 | TCP-based media transport in the session description protocol | [83] | o | c2 |
| 27 | interactive connectivity establishment? | [99] | o | c4 |
| 28 | session description protocol format for binary floor control protocol streams? | [108] | o | o |
| c1: | IF A.3/1 THEN m ELSE n/a - - UE role. | | | |
| c2: | IF A.3/1 OR A.3/6 OR A.3/7 THEN o ELSE n/a - - UE, MGCF, AS. | | | |
| c3: | IF A.317/24 THEN m ELSE o - - mapping of media streams to resource reservation flows. | | | |
| c4: | IF A.3/9B THEN m ELSE IF A.3/1 OR A.3/6 THEN o ELSE n/a - - IBCF, UE, MGCF. | | | |
| NOTE 1: | For "video" and "audio" media types that utilise RTP/RTCP, if the RTCP bandwidth level for the session is different than the default RTCP bandwidth as specified in RFC 3556 [56], then, it shall be specified. For other media types, it may be specified. | | | |

A.3.2.2 SDP types

Table A.318: SDP types

| Item | Type | Sending | | | Receiving | | |
|--|---|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| Session level description | | | | | | | |
| 1 | v= (protocol version) | [39] 5.1 | m | m | [39] 5.1 | m | m |
| 2 | o= (owner/creator and session identifier) | [39] 5.2 | m | m | [39] 5.2 | m | m |
| 3 | s= (session name) | [39] 5.3 | m | m | [39] 5.3 | m | m |
| 4 | i= (session information) | [39] 5.4 | o | c2 | [39] 5.4 | m | c3 |
| 5 | u= (URI of description) | [39] 5.5 | o | c4 | [39] 5.5 | o | n/a |
| 6 | e= (email address) | [39] 5.6 | o | c4 | [39] 5.6 | o | n/a |
| 7 | p= (phone number) | [39] 5.6 | o | c4 | [39] 5.6 | o | n/a |
| 8 | c= (connection information) | [39] 5.7 | c5 | c5 | [39] 5.7 | m | m |
| 9 | b= (bandwidth information) | [39] 5.8 | o | o (NOTE 1) | [39] 5.8 | m | m |
| Time description (one or more per description) | | | | | | | |
| 10 | t= (time the session is active) | [39] 5.9 | m | m | [39] 5.9 | m | m |
| 11 | r= (zero or more repeat times) | [39] 5.10 | o | c4 | [39] 5.10 | o | n/a |
| Session level description (continued) | | | | | | | |
| 12 | z= (time zone adjustments) | [39] 5.11 | o | n/a | [39] 5.11 | o | n/a |
| 13 | k= (encryption key) | [39] 5.12 | x | x | [39] 5.12 | n/a | n/a |
| 14 | a= (zero or more session attribute lines) | [39] 5.13 | o | o | [39] 5.13 | m | m |
| Media description (zero or more per description) | | | | | | | |
| 15 | m= (media name and transport address) | [39] 5.14 | o | o | [39] 5.14 | m | m |
| 16 | i= (media title) | [39] 5.4 | o | c2 | [39] 5.4 | o | c3 |
| 17 | c= (connection information) | [39] 5.7 | c1 | c1 | [39] 5.7 | c1 | c1 |
| 18 | b= (bandwidth information) | [39] 5.8 | o | o (NOTE 1) | [39] 5.8 | | |
| 19 | k= (encryption key) | [39] 5.12 | x | x | [39] 5.12 | n/a | n/a |
| 20 | a= (zero or more media attribute lines) | [39] 5.13 | o | o | [39] 5.13 | m | m |
| c1: IF A.318/15 THEN m ELSE n/a. c2: IF A.3A/6 THEN x ELSE o - - MGCF. c3: IF A.3A/6 THEN n/a ELSE m - - MGCF. c4: IF A.3A/6 THEN x ELSE n/a - - MGCF. c5: IF A.318/17 THEN o ELSE m - - "c=" contained in all media description. NOTE 1: For "video" and "audio" media types that utilise RTP/RTCP, it shall be specified. For other media types, it may be specified. | | | | | | | |

Prerequisite A.318/14 OR A.318/20 - - a= (zero or more session/media attribute lines)

Table A.319: zero or more session / media attribute lines (a=)

| Item | Field | Sending | | | Receiving | | |
|------|--|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | category (a=cat) | [39] 6 | c8 | c8 | [39] 6 | c9 | c9 |
| 2 | keywords (a=keywds) | [39] 6 | c8 | c8 | [39] 6 | c9 | c9 |
| 3 | name and version of tool (a=tool) | [39] 6 | c8 | c8 | [39] 6 | c9 | c9 |
| 4 | packet time (a=ptime) | [39] 6 | c10 | c10 | [39] 6 | c11 | c11 |
| 5 | maximum packet time (a=maxptime) | [39] 6, [123] 8 | c10 | c10 | [39] 6, [123] 8 | c11 | c11 |
| 6 | receive-only mode (a=recvonly) | [39] 6 | o | o | [39] 6 | m | m |
| 7 | send and receive mode (a=sendrecv) | [39] 6 | o | o | [39] 6 | m | m |
| 8 | send-only mode (a=sendonly) | [39] 6 | o | o | [39] 6 | m | m |
| 8A | Inactive mode (a=inactive) | [39] 6 | o | o | [39] 6 | m | m |
| 9 | whiteboard orientation (a=orient) | [39] 6 | c10 | c10 | [39] 6 | c11 | c11 |
| 10 | conference type (a=type) | [39] 6 | c8 | c8 | [39] 6 | c9 | c9 |
| 11 | character set (a=charset) | [39] 6 | c8 | c8 | [39] 6 | c9 | c9 |
| 12 | language tag (a=sdplang) | [39] 6 | o | o | [39] 6 | m | m |
| 13 | language tag (a=lang) | [39] 6 | o | o | [39] 6 | m | m |
| 14 | frame rate (a=framerate) | [39] 6 | c10 | c10 | [39] 6 | c11 | c11 |
| 15 | quality (a=quality) | [39] 6 | c10 | c10 | [39] 6 | c11 | c11 |
| 16 | format specific parameters (a=fmtp) | [39] 6 | c10 | c10 | [39] 6 | c11 | c11 |
| 17 | rtpmap attribute (a=rtpmap) | [39] 6 | c10 | c10 | [39] 6 | c11 | c11 |
| 18 | current-status attribute (a=curr) | [30] 5 | c1 | c1 | [30] 5 | c2 | c2 |
| 19 | desired-status attribute (a=des) | [30] 5 | c1 | c1 | [30] 5 | c2 | c2 |
| 20 | confirm-status attribute (a=conf) | [30] 5 | c1 | c1 | [30] 5 | c2 | c2 |
| 21 | media stream identification attribute (a=mid) | [53] 3 | c3 | c3 | [53] 3 | c4 | c4 |
| 22 | group attribute (a=group) | [53] 4 | c5 | c5 | [53] 3 | c6 | c6 |
| 23 | setup attribute (a=setup) | [83] 4 | c7 | c7 | [83] 4 | c7 | c7 |
| 24 | connection attribute (a=connection) | [83] 5 | c7 | c7 | [83] 5 | c7 | c7 |
| 25 | candidate IP addresses (a=candidate) | [99] | c12 | c12 | [99] | c13 | c13 |
| 26 | floor control server determination (a=floorctrl) | [108] 4 | c14 | c14 | [108] 4 | c14 | c14 |
| 27 | conference id (a=confid) | [108] 5 | c14 | c14 | [108] 5 | c14 | c14 |
| 28 | user id (a=userid) | [108] 5 | c14 | c14 | [108] 5 | c14 | c14 |
| 29 | association between streams and floors (a=floorid) | [108] 6 | c14 | c14 | [108] 6 | c14 | c14 |

| | |
|------|--|
| c1: | IF A.317/22 AND A.318/20 THEN o ELSE n/a - - integration of resource management and SIP, media level attribute name "a=". |
| c2: | IF A.317/22 AND A.318/20 THEN m ELSE n/a - - integration of resource management and SIP, media level attribute name "a=". |
| c3: | IF A.317/23 AND A.318/20 THEN o ELSE n/a - - grouping of media lines, media level attribute name "a=". |
| c4: | IF A.317/23 AND A.318/20 THEN m ELSE n/a - - grouping of media lines, media level attribute name "a=". |
| c5: | IF A.317/23 AND A.318/14 THEN o ELSE n/a - - grouping of media lines, session level attribute name "a=". |
| c6: | IF A.317/23 AND A.318/14 THEN m ELSE n/a - - grouping of media lines, session level attribute name "a=". |
| c7: | IF A.317/26 AND A.318/20 THEN m ELSE n/a - - TCP-based media transport in the session description protocol, media level attribute name "a=". |
| c8: | IF A.318/14 THEN o ELSE x - - session level attribute name "a=". |
| c9: | IF A.318/14 THEN m ELSE n/a - - session level attribute name "a=". |
| c10: | IF A.318/20 THEN o ELSE x - - media level attribute name "a=". |
| c11: | IF A.318/20 THEN m ELSE n/a - - media level attribute name "a=". |
| c12: | IF A.317/27 AND A.318/20 THEN o ELSE n/a - - candidate IP addresses, media level attribute name "a=". |
| c13: | IF A.317/27 AND A.318/20 THEN m ELSE n/a - - candidate IP addresses, media level attribute name "a=". |
| c14: | IF A.317/28 AND A.318/20 THEN m ELSE n/a - - session description protocol format for binary floor control protocol streams, media level attribute name "a=". |

A.3.2.3 Void

Table A.320: Void

Table A.321: Void

Table A.322: Void

Table A.323: Void

Table A.324: Void

Table A.325: Void

Table A.326: Void

Table A.327: Void

A.3.2.4 Void

Table A.327A: Void

A.3.3 Proxy role

This subclause contains the ICS proforma tables related to the user role. They need to be completed only for proxy implementations.

Prerequisite: A.2/2 -- proxy role

A.3.3.1 Major capabilities

Table A.328: Major capabilities

| Item | Does the implementation support | Reference | RFC status | Profile status |
|--|--|-----------|------------|----------------|
| Capabilities within main protocol | | | | |
| 0A | application of session policy | 6.2, 6.3 | x | c2 |
| Extensions | | | | |
| 1 | integration of resource management and SIP? | [30] [64] | o | n/a |
| 2 | grouping of media lines | [53] | c3 | x |
| 3 | mapping of media streams to resource reservation flows | [54] | o | x |
| 4 | SDP bandwidth modifiers for RTCP bandwidth | [56] | o | c1 |
| 5 | TCP-based media transport in the session description protocol | [83] | o | c1 |
| 6 | interactive connectivity establishment? | [99] | o | c4 |
| 7 | session description protocol format for binary floor control protocol streams? | [108] | o | o |
| c1: IF A.3/2 THEN m ELSE n/a - - P-CSCF role. | | | | |
| c2: IF A.3/2 OR A.3/4 THEN o ELSE x - P-CSCF, S-CSCF. | | | | |
| c3: IF A.328/3 THEN m ELSE o - - mapping of media streams to resource reservation flows. | | | | |
| c4: IF A.3/2 OR A.3/4 THEN m ELSE n/a - - P-CSCF, S-CSCF. | | | | |

A.3.3.2 SDP types

Table A.329: SDP types

| Item | Type | Sending | | | Receiving | | |
|--|--|-----------|------------|----------------|-----------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| Session level description | | | | | | | |
| 1 | v= (protocol version) | [39] 5.1 | m | m | [39] 5.1 | m | m |
| 2 | o= (owner/creator and session identifier). | [39] 5.2 | m | m | [39] 5.2 | i | i |
| 3 | s= (session name) | [39] 5.3 | m | m | [39] 5.3 | i | i |
| 4 | i= (session information) | [39] 5.4 | m | m | [39] 5.4 | i | i |
| 5 | u= (URI of description) | [39] 5.5 | m | m | [39] 5.5 | i | i |
| 6 | e= (email address) | [39] 5.6 | m | m | [39] 5.6 | i | i |
| 7 | p= (phone number) | [39] 5.6 | m | m | [39] 5.6 | i | i |
| 8 | c= (connection information) | [39] 5.7 | m | m | [39] 5.7 | i | i |
| 9 | b= (bandwidth information) | [39] 5.8 | m | m | [39] 5.8 | i | i |
| Time description (one or more per description) | | | | | | | |
| 10 | t= (time the session is active) | [39] 5.9 | m | m | [39] 5.9 | i | i |
| 11 | r= (zero or more repeat times) | [39] 5.10 | m | m | [39] 5.10 | i | i |
| Session level description (continued) | | | | | | | |
| 12 | z= (time zone adjustments) | [39] 5.11 | m | m | [39] 5.11 | i | i |
| 13 | k= (encryption key) | [39] 5.12 | m | m | [39] 5.12 | i | i |
| 14 | a= (zero or more session attribute lines) | [39] 5.13 | m | m | [39] 5.13 | i | i |
| Media description (zero or more per description) | | | | | | | |
| 15 | m= (media name and transport address) | [39] 5.14 | m | m | [39] 5.14 | m | m |
| 16 | i= (media title) | [39] 5.4 | m | m | [39] 5.4 | i | i |
| 17 | c= (connection information) | [39] 5.7 | m | m | [39] 5.7 | i | i |
| 18 | b= (bandwidth information) | [39] 5.8 | m | m | [39] 5.8 | i | c1 |
| 19 | k= (encryption key) | [39] 5.12 | m | m | [39] 5.12 | i | i |
| 20 | a= (zero or more media attribute lines) | [39] 5.13 | m | m | [39] 5.13 | i | c1 |
| c1: IF A.328/0A THEN m ELSE i - - application of session policy. | | | | | | | |

Prerequisite A.329/14 OR A.329/20 - - a= (zero or more session/media attribute lines)

Table A.330: zero or more session / media attribute lines (a=)

| Item | Field | Sending | | | Receiving | | |
|------|--|-----------------|------------|----------------|-----------------|------------|----------------|
| | | Ref. | RFC status | Profile status | Ref. | RFC status | Profile status |
| 1 | category (a=cat) | [39] 6 | m | m | [39] 6 | i | i |
| 2 | keywords (a=keywds) | [39] 6 | m | m | [39] 6 | i | i |
| 3 | name and version of tool (a=tool) | [39] 6 | m | m | [39] 6 | i | i |
| 4 | packet time (a=ptime) | [39] 6 | m | m | [39] 6 | i | c9 |
| 5 | maximum packet time (a=maxptime) | [39] 6, [123] 8 | m | m | [39] 6, [123] 8 | i | c9 |
| 6 | receive-only mode (a=recvonly) | [39] 6 | m | m | [39] 6 | i | c9 |
| 7 | send and receive mode (a=sendrecv) | [39] 6 | m | m | [39] 6 | i | c9 |
| 8 | send-only mode (a=sendonly) | [39] 6 | m | m | [39] 6 | i | c9 |
| 8A | Inactive mode (a=inactive) | [39] 6 | m | m | [39] 6 | i | c9 |
| 9 | whiteboard orientation (a=orient) | [39] 6 | m | m | [39] 6 | i | c9 |
| 10 | conference type (a=type) | [39] 6 | m | m | [39] 6 | i | i |
| 11 | character set (a=charset) | [39] 6 | m | m | [39] 6 | i | i |
| 12 | language tag (a=sdplang) | [39] 6 | m | m | [39] 6 | i | c9 |
| 13 | language tag (a=lang) | [39] 6 | m | m | [39] 6 | i | c9 |
| 14 | frame rate (a=framerate) | [39] 6 | m | m | [39] 6 | i | c9 |
| 15 | quality (a=quality) | [39] 6 | m | m | [39] 6 | i | c9 |
| 16 | format specific parameters (a=fmtp) | [39] 6 | m | m | [39] 6 | i | c9 |
| 17 | rtpmap attribute (a=rtpmap) | [39] 6 | m | m | [39] 6 | i | c9 |
| 18 | current-status attribute (a=curr) | [30] 5 | m | m | [30] 5 | c2 | c2 |
| 19 | desired-status attribute (a=des) | [30] 5 | m | m | [30] 5 | c2 | c2 |
| 20 | confirm-status attribute (a=conf) | [30] 5 | m | m | [30] 5 | c2 | c2 |
| 21 | media stream identification attribute (a=mid) | [53] 3 | c5 | x | [53] 3 | c6 | x |
| 22 | group attribute (a=group) | [53] 4 | c5 | x | [53] 4 | c6 | x |
| 23 | setup attribute (a=setup) | [83] 4 | c7 | c7 | [83] 4 | c8 | c8 |
| 24 | connection attribute (a=connection) | [83] 5 | c7 | c7 | [83] 5 | c8 | c8 |
| 25 | candidate IP addresses (a=candidate) | [99] | c9 | c9 | [99] | c10 | c10 |
| 26 | floor control server determination (a=floorctrl) | [108] 4 | c11 | c11 | [108] 4 | c12 | c13 |
| 27 | conference id (a=confid) | [108] 5 | c11 | c11 | [108] 5 | c12 | c13 |
| 28 | user id (a=userid) | [108] 5 | c11 | c11 | [108] 5 | c12 | c13 |
| 29 | association between streams and floors (a=floorid) | [108] 6 | c11 | c11 | [108] 6 | c12 | c13 |

| | |
|------|--|
| c2: | IF A.328/1 THEN m ELSE i - - integration of resource management and SIP. |
| c5: | IF A.328/2 THEN m ELSE n/a - - grouping of media lines. |
| c6: | IF A.328/3 THEN m ELSE IF A.328/2 THEN i ELSE n/a - - mapping of media streams to resource reservation flows, grouping of media lines. |
| c7: | IF A.328/5 THEN m ELSE n/a. |
| c8: | IF A.328/5 THEN i ELSE n/a. |
| c9: | IF A.329/20 AND A.328/0A THEN m ELSE i - - media level attribute name "a=" and application of session policy. |
| c9: | IF A.328/6 THEN m ELSE n/a - - interactive connectivity establishment. |
| c10: | IF A.328/1 AND A.328/6 THEN m ELSE IF A.328/6 THEN i ELSE n/a - - integration of resource management and SIP, interactive connectivity establishment. |
| c11: | IF A.328/7 THEN m ELSE n/a - - session description protocol format for binary floor control protocol streams. |
| c12: | IF A.328/7 THEN i ELSE n/a - - session description protocol format for binary floor control protocol streams. |
| c13: | IF A.328/7 AND A.328/0A AND A.329/20 THEN m ELSE IF A.328/7 AND A.329/20 THEN i ELSE n/a - - session description protocol format for binary floor control protocol streams, media level attribute name "a=" and application of session policy. |

A.3.3.3 Void

Table A.331: Void

Table A.332: Void

Table A.333: Void

Table A.334: Void

Table A.335: Void

Table A.336: Void

Table A.337: Void

Table A.338: Void

A.3.3.4 Void

Table A.339: Void

A.4 Profile definition for other message bodies as used in the present document

Void.

Annex B (normative): IP-Connectivity Access Network specific concepts when using GPRS to access IM CN subsystem

B.1 Scope

The present annex defines IP-CAN specific requirements for a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP), where the IP-CAN is General Packet Radio Service (GPRS).

B.2 GPRS aspects when connected to the IM CN subsystem

B.2.1 Introduction

A UE accessing the IM CN subsystem, and the IM CN subsystem itself, utilise the services provided by GPRS to provide packet-mode communication between the UE and the IM CN subsystem.

Requirements for the UE on the use of these packet-mode services are specified in this clause. Requirements for the GGSN in support of this communication are specified in 3GPP TS 29.061 [11], 3GPP TS 29.207 [12] and 3GPP TS 29.212 [13C].

When using the GPRS, each IP-CAN bearer is provided by a PDP context.

B.2.2 Procedures at the UE

B.2.2.1 PDP context activation and P-CSCF discovery

Prior to communication with the IM CN subsystem, the UE shall:

- a) perform a GPRS attach procedure;

Within this step, it is negotiated whether the UE or the GPRS IP-CAN is responsible for establishing the bearer applicable to all PDP contexts within the activated PDP address/APN pair as described in 3GPP TS 24.008 [8].

If the bearer establishment is controlled by the UE the UE starts reserving its local resources whenever it has sufficient information about the media streams, media authorization and used codecs available as specified in 3GPP TS 24.008 [8].

NOTE 1: If the bearer establishment is controlled by the GPRS IP CAN the resource reservation requests are initiated by the GGSN after the P-CSCF has authorised the respective IP flows and provided the QoS requirements over the Rx interface to the PCRF as described in 3GPP TS 29.214 [13D].

- b) ensure that a PDP context used for SIP signalling according to the APN and GGSN selection criteria described in 3GPP TS 23.060 [4] and 3GPP TS 27.060 [10A] is available. This PDP context shall remain active throughout the period the UE is connected to the IM CN subsystem, i.e. from the initial registration and at least until the deregistration. As a result, the PDP context provides the UE with information that makes the UE able to construct an IPv4 or an IPv6 address;

When the bearer establishment is controlled by the UE, the UE shall choose one of the following options when performing establishment of this PDP context:

I. A dedicated PDP context for SIP signalling:

The UE shall indicate to the GGSN that this is a PDP context intended to carry IM CN subsystem-related signalling only by setting the IM CN Subsystem Signalling Flag. The UE may also use this PDP context for DNS and DHCP signalling according to the static packet filters as described in 3GPP TS 29.061 [11]. The UE can also set the Signalling Indication attribute within the QoS IE;

II. A general-purpose PDP context:

The UE may decide to use a general-purpose PDP Context to carry IM CN subsystem-related signaling. The UE shall indicate to the GGSN that this is a general-purpose PDP context by not setting the IM CN Subsystem Signalling Flag. The UE may carry both signalling and media on the general-purpose PDP context. The UE can also set the Signalling Indication attribute within the QoS IE.

NOTE 2: When the bearer establishment is controlled by the GPRS IP-CAN, the GGSN follows the procedures described in 3GPP TS 29.061 [11] in order to establish a dedicated PDP context for SIP signalling.

The UE indicates the IM CN Subsystem Signalling Flag to the GGSN within the Protocol Configuration Options IE of the ACTIVATE PDP CONTEXT REQUEST message or ACTIVATE SECONDARY PDP CONTEXT REQUEST message. Upon successful signalling PDP context establishment the UE receives an indication from GGSN in the form of IM CN Subsystem Signalling Flag within the Protocol Configuration Options IE. If the flag is not received, the UE shall consider the PDP context as a general-purpose PDP context.

The encoding of the IM CN Subsystem Signalling Flag within the Protocol Configuration Options IE is described in 3GPP TS 24.008 [8].

The UE can indicate a request for prioritised handling over the radio interface by setting the Signalling Indication attribute (see 3GPP TS 23.107 [4A]). The general QoS negotiation mechanism and the encoding of the Signalling Indication attribute within the QoS IE are described in 3GPP TS 24.008 [8].

NOTE 3: A general-purpose PDP Context can carry both IM CN subsystem signaling and media, in case the media does not need to be authorized by Policy and Charging control mechanisms as defined in 3GPP TS 29.212 [13C] and Service Based Local Policy mechanisms defined in 3GPP TS 29.207 [12] and the media stream is not mandated by the P-CSCF to be carried in a separate PDP Context.

c) acquire a P-CSCF address(es).

The methods for P-CSCF discovery are:

- I. When using IPv4, employ the Dynamic Host Configuration Protocol (DHCP) RFC 2132 [20F], the DHCPv4 options for SIP servers RFC 3361 [35A], and RFC 3263 [27A] as described in subclause 9.2.1. When using IPv6, employ Dynamic Host Configuration Protocol for IPv6 (DHCPv6) RFC 3315 [40], the DHCPv6 options for SIP servers RFC 3319 [41] and DHCPv6 options for Domain Name Servers (DNS) RFC 3646 [56C] as described in subclause 9.2.1.
- II. Transfer P-CSCF address(es) within the PDP context activation procedure.

The UE shall indicate the request for a P-CSCF address to the GGSN within the Protocol Configuration Options IE of the ACTIVATE PDP CONTEXT REQUEST message or ACTIVATE SECONDARY PDP CONTEXT REQUEST message.

If the GGSN provides the UE with a list of P-CSCF IPv4 or IPv6 addresses in the ACTIVATE PDP CONTEXT ACCEPT message or ACTIVATE SECONDARY PDP CONTEXT ACCEPT message, the UE shall assume that the list is prioritised with the first address within the Protocol Configuration Options IE as the P-CSCF address with the highest priority.

The UE can freely select method I or II for P-CSCF discovery. In case method I is selected and several P-CSCF addresses or FQDNs are provided to the UE, the selection of P-CSCF address or FQDN shall be performed as indicated in RFC 3361 [35A] when using IPv4 or RFC 3319 [41] when using IPv6. If sufficient information for P-CSCF address selection is not available, selection of the P-CSCF address by the UE is implementation specific.

If the UE is designed to use I above, but receives P-CSCF address(es) according to II, then the UE shall either ignore the received address(es), or use the address(es) in accordance with II, and not proceed with the DHCP request according to I.

When using IPv4, the UE may request a DNS Server IPv4 address(es) via RFC 2132 [20F] or by the Protocol Configuration Options IE when activating a PDP context according to 3GPP TS 27.060 [10A].

When using IPv6, the UE may request a DNS Server IPv6 address(es) via RFC 3315 [40] and RFC 3646 [56C] or by the Protocol Configuration Options IE when activating a PDP context according to 3GPP TS 27.060 [10A].

The encoding of the request and response for IPv4 or IPv6 address(es) for DNS server(s) and list of P-CSCF address(es) within the Protocol Configuration Options IE is described in 3GPP TS 24.008 [8].

B.2.2.1A Modification of a PDP context used for SIP signalling

The PDP context shall not be modified from a dedicated PDP context for SIP signalling to a general-purpose PDP context or vice versa. The IM CN Subsystem Signalling Flag shall not be set in the Protocol Configuration Options IE of the MODIFY PDP CONTEXT REQUEST message.

The UE shall not indicate the request for a P-CSCF address to the GGSN within the Protocol Configuration Options IE of the MODIFY PDP CONTEXT REQUEST message. The UE shall ignore P-CSCF address(es) if received from the GGSN in the Protocol Configuration Options IE of the MODIFY PDP CONTEXT RESPONSE message.

B.2.2.1B Re-establishment of the PDP context for SIP signalling

If the dedicated PDP context for SIP signalling is lost due to e.g. a GPRS routing area update procedure and the bearer establishment is controlled by the UE, the UE shall attempt to re-establish the dedicated PDP context for SIP signalling. If this procedure does not succeed, the UE shall deactivate all PDP contexts established as a result of SIP signalling according to the 3GPP TS 24.008 [8].

B.2.2.2 Session management procedures

The existing procedures for session management as described in 3GPP TS 24.008 [8] shall apply while the UE is connected to the IM CN subsystem.

B.2.2.3 Mobility management procedures

The existing procedures for mobility management as described in 3GPP TS 24.008 [8] shall apply while the UE is connected to the IM CN subsystem.

B.2.2.4 Cell selection and lack of coverage

The existing mechanisms and criteria for cell selection as described in 3GPP TS 25.304 [9] and 3GPP TS 44.018 [20] shall apply while the UE is connected to the IM CN subsystem.

B.2.2.5 PDP contexts for media

B.2.2.5.1 General requirements

The UE can establish media streams that belong to different SIP sessions on the same PDP context.

During establishment of a session, the UE establishes data stream(s) for media related to the session. Such data stream(s) may result in activation of additional PDP context(s). Such additional PDP context(s) shall be established as secondary PDP contexts associated to the PDP context used for signalling. Such secondary PDP contexts for media can be established either by the UE or the GGSN.

NOTE: When the UE has to allocate bandwidth for RTP and RTCP in a PDP context, the UE uses the rules as those outlined in 3GPP TS 29.213 [13C].

B.2.2.5.1A Activation or modification of PDP contexts for media by the UE

If the UE receives indication within the SDP according to RFC 3524 [54] that media stream(s) belong to group(s), the media stream(s) shall be set up on separate PDP contexts according to the indication of grouping of media streams. The

UE may freely group media streams to PDP context(s) in case no indication of grouping of media streams is received from the P-CSCF.

If the capabilities of the originating UE prevents it from establishment of additional PDP contexts according to the media grouping attributes given by the P-CSCF in accordance with RFC 3524 [54], the UE will not establish such grouping of media streams. Instead, the originating UE shall negotiate media parameters for the session according to RFC 3264 [27B].

If the capabilities of the terminating UE prevents it from establishment of additional PDP contexts according to the media grouping attributes given by the P-CSCF in accordance with RFC 3524 [54], the UE will not establish such grouping of media streams. Instead, the terminating UE shall the UE shall handle such SDP offers in accordance with RFC 3388 [53].

The UE can receive a media authorization token in the P-Media-Authorization header from the P-CSCF according to RFC 3313 [31]. If a media authorization token is received in the P-Media-Authorization header when a SIP session is initiated, the UE shall:

- either use existing PDP context(s) where another media authorization token is already in use and no indication of grouping of media streams is required; or
- establish separate PDP context(s) for the media; or
- use an existing PDP context where media authorization token is not in use and no indication of grouping of media streams is required.

When a UE modifies a PDP context to indicate a new media authorization token:

- either as a result of establishment of an additional SIP session; or
- modification of media streams for an ongoing SIP session;

the UE shall include all media authorization tokens and all flow identifiers for all ongoing SIP sessions that use this particular PDP context.

If a media authorization token is received in subsequent messages for the same SIP session, the UE shall:

- use the existing PDP context(s) for media;
- modify the existing PDP context(s) for media; or
- establish additional PDP context(s) for media.

If either background or interactive QoS class is needed for the media, then the UE does not need to use the authorization token even if it receives one. In this case the UE may reuse an existing PDP context and it does not need to request PDP context modification unless it needs to modify the QoS.

If existing PDP context(s) where another media authorization token is already in use is re-used for the media, or separate PDP context(s) is established for the media, the UE shall proceed as follows:

- when a SIP session is terminated, the media authorization token is no longer valid and the UE shall not include it in future GPRS session management messages. The UE shall send a MODIFY PDP CONTEXT REQUEST message updating the binding information by deleting the media authorization token and the corresponding flow identifiers that are no longer valid. If a SIP session is terminated and no other SIP sessions are using the PDP context, the UE shall either update the binding information as described above or deactivate the PDP context;
- the UE shall transparently pass the media authorization token received from the P-CSCF in a response to an INVITE request at originating setup or in the INVITE request at terminating setup to the GGSN. The UE shall signal it by inserting it within the Traffic Flow Template IE in the ACTIVATE SECONDARY PDP CONTEXT REQUEST message or the MODIFY PDP CONTEXT REQUEST message;
- to identify to the GGSN which flow(s) (identified by m-lines within the SDP) that are transferred within a particular PDP context, the UE shall set the flow identifier(s) within the Traffic Flow Template IE in the ACTIVATE SECONDARY PDP CONTEXT REQUEST message or the MODIFY PDP CONTEXT REQUEST message. Detailed description of how the flow identifiers are constructed is provided in 3GPP TS 29.207 [12];

- if the UE receives several media authorization tokens from the P-CSCF within the same SIP request or response, the first instance of the media authorization token shall be sent to the GGSN, and subsequent instances are discarded by the UE; and
- the UE shall not include the IM CN Subsystem Signalling Flag when a PDP context for media is established or modified.

The encoding of the media authorization token and the flow identifiers within the Traffic Flow Template IE is described in 3GPP TS 24.008 [8].

B.2.2.5.1B Activation or modification of PDP contexts for media by the GGSN

If the UE receives an activation request from the GGSN for a PDP context which is associated with the PDP context used for signalling, the UE shall, based on the information contained in the Traffic Flow Template IE, correlate the media PDP context with a currently ongoing SIP session establishment or SIP session modification.

If the UE receives a modification request from the GGSN for a PDP context that is used for one or more media streams in an ongoing SIP session, the UE shall:

- 1) modify the related PDP context in accordance with the request received from the GGSN.

B.2.2.5.2 Special requirements applying to forked responses

Since the UE does not know that forking has occurred until a second, provisional response arrives, the UE sets up the PDP context(s) as required by the initial response received. If a subsequent provisional response is received, different alternative actions may be performed depending on the requirements in the SDP answer:

- 1) the bearer requirements of the subsequent SDP can be accommodated by the existing PDP context(s). The UE performs no activation or modification of PDP contexts.
- 2) the subsequent SDP introduces different QoS requirements or additional IP flows. The UE modifies the existing PDP context(s), if necessary, according to subclause B.2.2.5.1A.
- 3) the subsequent SDP introduces one or more additional IP flows. The UE establishes additional PDP context(s) according to subclause B.2.2.5.1A.

NOTE 1: When several forked responses are received, the resources requested by the UE are the "logical OR" of the resources indicated in the multiple responses to avoid allocation of unnecessary resources. The UE does not request more resources than proposed in the original INVITE request.

NOTE 2: When service-based local policy is applied, the UE receives the same authorization token for all forked requests/responses related to the same SIP session.

When a final answer is received for one of the early dialogues, the UE proceeds to set up the SIP session. The UE shall release all the unneeded radio/bearer resources. Therefore, upon the reception of the first final 200 (OK) response for the INVITE request (in addition to the procedures defined in RFC 3261 [26] subclause 13.2.2.4), the UE shall:

- 1) in case PDP context(s) were established or modified as a consequence of the INVITE request and forked provisional responses that are not related to the accepted 200 (OK) response, delete the PDP context(s) or modify the delete the PDP context(s) back to their original state.

B.2.2.5.3 Unsuccessful situations

One of the Go, Gq, Rx and Gx interface related error codes can be received by the UE in the ACTIVATE SECONDARY PDP CONTEXT REJECT message or the MODIFY PDP CONTEXT REJECT message. If the UE receives a Go, Gq, Rx and Gx interface related error code, the UE shall either terminate the session or retransmit the message up to three times. The Go, Gq, Rx and Gx interface related error codes are further specified in 3GPP TS 29.207 [12], 3GPP TS 29.209 [13A], 3GPP TS 29.214 [13D] and 3GPP TS 29.212 [13C].

B.2.2.6 Emergency service

No IP-CAN specific procedures for emergency registration have been defined for GPRS. However, when activating a PDP context to perform emergency registration, based on the conditions in subclause 5.1.6.1 of this specification, the

UE can select an APN that results in selection of a GGSN located in the PLMN to which the UE is attached as described in (see 3GPP TS 23.060 [4]). The procedures for PDP context activation and P-CSCF discovery, as described in subclause B.2.2.1 of this specification apply accordingly.

NOTE 1: The UE discovery of the local APN is not in the scope of this specification, but the UE can get information about such an APN e.g. via local configuration.

In order to find out whether the UE is attached to the home PLMN or to the visited PLMN, the UE shall compare the MCC values derived from its IMSI with the MCC of the PLMN the UE is attached to. If the MCC of the PLMN the UE is attached to does not match with the MCC derived from the IMSI, then for the purpose of emergency calls in the IM CN subsystem the UE shall consider to be attached to a VPLMN.

NOTE 2: In this respect an equivalent HPLMN, as defined in 3GPP TS 23.122 [4C] will be considered as a visited network.

B.2A Usage of SDP

B.2A.1 Impact on SDP offer / answer of activation or modification of PDP contexts for media by the network

If due to the activation of PDP context from the network the related SDP media description needs to be changed the UE shall update the related SDP information by sending a new SDP offer within a SIP request, which is sent over the existing SIP dialog,

If the UE receives a modification request from the network for a PDP context that is used for one or more media streams in an ongoing SIP session, the UE shall:

- 1) if, due to the modification of the PDP context, the related SDP media description need to be changed, update the related SDP information by sending a new SDP offer within a SIP request, that is sent over the existing SIP dialog, and respond to the PDP context modification request.

NOTE: The UE can decide to indicate additional media streams as well as additional or different codecs in the SDP offer than those used in the already ongoing session.

B.3 Application usage of SIP

B.3.1 Procedures at the UE

B.3.1.1 P-Access-Network-Info header

The UE shall always include the P-Access-Network-Info header where indicated in subclause 5.1.

B.3.2 Procedures at the P-CSCF

B.3.2.1 Detecting requests destined for a PSAP

In order to determine whether the initial request for a dialog or standalone transaction or an unknown method is destined for a PSAP the P-CSCF shall compare the MCC field received in the P-Access-Network-Info header against its own MCC code.

B.3.2.2 Location information handling

Void.

B.4 3GPP specific encoding for SIP header extensions

B.4.1 Void

Annex C (normative):

UICC and USIM Aspects for access to the IM CN subsystem

C.1 Scope

This clause describes the UICC and USIM aspects for access to the IM CN subsystem. Additional requirements related to UICC usage for access to the IM CN subsystem are described in 3GPP TS 33.203 [19].

C.2 Derivation of IMS parameters from USIM

In case the UE is loaded with a UICC that contains a USIM application but does not contain an ISIM application, the UE shall:

- generate a private user identity;
- generate a temporary public user identity; and
- generate a home network domain name to address the SIP REGISTER request to.

All these three parameters are derived from the IMSI parameter in the USIM, according to the procedures described in 3GPP TS 23.003 [3]. Also in this case, the UE shall derive new values every time the UICC is changed, and shall discard existing values if the UICC is removed.

NOTE: If there is an ISIM and a USIM application on a UICC, the ISIM application is used for authentication to the IM CN subsystem, as described in 3GPP TS 33.203 [19]. See subclause 5.1.1.1A.

C.3 ISIM Location in 3GPP Systems

For 3GPP systems, if ISIM application is present, it is contained in UICC.

Annex D (normative): IP-Connectivity Access Network specific concepts when using I-WLAN to access IM CN subsystem

D.1 Scope

The present annex defines IP-CAN specific requirements for a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP), where the IP-CAN is Wireless LAN Interworking (I-WLAN).

D.2 I-WLAN aspects when connected to the IM CN subsystem

D.2.1 Introduction

A WLAN UE accessing the IM CN subsystem, and the IM CN subsystem itself, utilise the services provided by I-WLAN to provide packet-mode communication between the WLAN UE and the IM CN subsystem.

Requirements for the WLAN UE on the use of these packet-mode services are specified in this clause. Requirements for the PDG in support of this communication are specified in 3GPP TS 29.161 [11C]. When using the I-WLAN, the IP-CAN bearer is provided by an I-WLAN tunnel.

D.2.2 Procedures at the WLAN UE

D.2.2.1 I-WLAN tunnel activation and P-CSCF discovery

Prior to communication with the IM CN subsystem, the WLAN UE shall:

- a) Perform I-WLAN network selection i.e. gaining 3GPP Direct access as described in 3GPP TS 24.234 [8C] in the access dependent case;
- b) Establish an IKE security association and an IPsec ESP security association (I-WLAN tunnel with the PDG according to the W-APN and PDG selection criteria described in 3GPP TS 24.234 [8C]. The IKE security association and IPsec ESP security association (I-WLAN tunnel) shall remain active throughout the period the WLAN UE is connected to the IM CN subsystem, i.e. from the initial registration and at least until the deregistration.;

The WLAN UE may carry both signalling and media on an IPsec ESP security association.

- c) Acquire a P-CSCF address(es).

The method for P-CSCF discovery is:

When using IPv4, employ the Dynamic Host Configuration Protocol (DHCP) RFC 2132 [20F], the DHCPv4 options for SIP servers RFC 3361 [35A], and RFC 3263 [27A] as described in subclause 9.2.1. When using IPv6, employ Dynamic Host Configuration Protocol for IPv6 (DHCPv6) RFC 3315 [40], the DHCPv6 options for SIP servers RFC 3319 [41] and the DHCP options for Domain Name Servers (DNS) RFC 3646 [56C] as described in subclause 9.2.1.

In case several P-CSCF addresses or FQDNs are provided to the UE, the selection of P-CSCF address or FQDN shall be performed as indicated in RFC 3361 [35A] when using IPv4 or RFC 3319 [41] when using IPv6. If sufficient information for P-CSCF address selection is not available, selection of the P-CSCF address by the WLAN UE is implementation specific.

When using IPv4, the WLAN UE may request a DNS Server IPv4 address(es) via RFC 2132 [20F]. When using IPv6, the WLAN UE may request a DNS Server IPv6 address(es) via RFC 3315 [40] and RFC 3646 [56C].

D.2.2.1A Modification of a I-WLAN tunnel used for SIP signalling

Not applicable.

D.2.2.1B Re-establishment of the I-WLAN tunnel used for SIP signalling

Not applicable.

D.2.2.2 Void

D.2.2.3 Void

D.2.2.4 Void

D.2.2.5 I-WLAN tunnel procedures for media

D.2.2.5.1 General requirements

The WLAN UE can establish media streams that belong to different SIP sessions on the same I-WLAN tunnel.

During establishment of a session, the WLAN UE establishes data streams(s) for media related to the session. Such data stream(s) may result in activation of additional IPsec ESP security associations (I-WLAN tunnels).

If the WLAN UE receives indication within the SDP according to RFC 3524 [54] that media stream(s) belong to group(s), the media stream(s) shall be set up on separate IPSEC ESP security associations (I-WLAN tunnels) according to the indication of grouping of media streams. The WLAN UE may freely group media streams to IPsec ESP security association (I-WLAN tunnel(s)) in case no indication of grouping of media streams is received from the P-CSCF.

If the capabilities of the originating WLAN UE, or operator policy at the PDG prevents the originating WLAN UE from establishment of additional IPsec ESP security associations (I-WLAN tunnels) according to the media grouping attributes given by the P-CSCF in accordance with RFC 3524 [54], the WLAN UE will not establish such grouping of media streams. Instead, the originating WLAN UE shall negotiate media parameters for the session according to RFC 3264 [27B].

If the capabilities of the terminating WLAN UE or operator policy at the PDG prevents the originating WLAN UE from establishment of additional IPsec ESP security associations (I-WLAN tunnels) according to the media grouping attributes given by the P-CSCF in accordance with RFC 3524 [54], the WLAN UE will not establish such grouping of media streams. Instead, the terminating WLAN UE shall handle such SDP offers in accordance with RFC 3388 [53].

The UE can receive a media authorization token in the P-Media-Authorization header from the P-CSCF according to RFC 3313 [31]. If a media authorization token is received in the P-Media-Authorization header when a SIP session is initiated, the UE shall reuse the existing I-WLAN tunnel and ignore the media authorization token.

D.2.2.5.1A Activation or modification of I-WLAN tunnel for media by the UE

Not applicable.

D.2.2.5.1B Activation or modification of I-WLAN tunnel for media by the network

Not applicable.

D.2.2.5.2 Special requirements applying to forked responses

Since the UE is unable to perform bearer modification, forked responses place no special requirements on the UE.

D.2.2.5.3 Unsuccessful situations

Not applicable.

D.2.2.6 Emergency service

The details of network selection to select HPLMN or VPLMN are specified in 3GPP TS 24.234 [8C].

D.3 Application usage of SIP

D.3.1 Procedures at the UE

D.3.1.1 P-Access-Network-Info header

The UE shall always include the P-Access-Network-Info header where indicated in subclause 5.1.

D.3.2 Procedures at the P-CSCF

D.3.2.1 Detecting requests destined for a PSAP

Editor's Note: Determining the location of the I-WLAN AP is FFS.

D.3.2.2 Location information handling

Void.

D.4 3GPP specific encoding for SIP header extensions

Void.

Annex E (normative): IP-Connectivity Access Network specific concepts when using xDSL to access IM CN subsystem

E.1 Scope

The present annex defines IP-CAN specific requirements for a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP), where the IP-CAN is xDSL.

E.2 xDSL aspects when connected to the IM CN subsystem

E.2.1 Introduction

A UE accessing the IM CN subsystem, and the IM CN subsystem itself, utilise the services provided by the xDSL access network to provide packet-mode communication between the UE and the IM CN subsystem.

Requirements for the BRAS in support of this communication are outside the scope of this document and specified elsewhere.

From the UEs perspective, it is assumed that one or more IP-CAN bearer(s) are provided, in the form of connection(s) managed by the DSL modem supporting the UE.

In the first instance, it is assumed that the IP-CAN bearer(s) is (are) statically provisioned between the UE and the BRAS according to the user's subscription.

It is out of the scope of the current Release to specify whether a single IP-CAN bearer is used to convey both signalling and media flows, or whether several PVC connections are used to isolate various types of IP flows (signalling flows, conversational media, non conversational media...).

The end-to-end characteristics of the xDSL IP-CAN bearer depend on the type of regional access network, and on network configuration. The description of the network PVC termination (e.g., located in the DSLAM, in the BRAS...) is out of the scope of this annex.

E.2.2 Procedures at the UE

E.2.2.1 Activation and P-CSCF discovery

xDSL bearer(s) is (are) statically provisioned in the current Release.

Prior to communication with the IM CN subsystem, the UE shall perform a Network Attachment procedure using DHCP mode or PPP mode. When using xDSL, both IPv4 and IPv6 UEs may access the IM CN subsystem. The UE may request a DNS Server IPv4 address(es) via RFC 2132 [20F] or a DNS Server IPv6 address(es) via RFC 3315 [40].

When using IPv4, the UE may acquire a P-CSCF address(es) by using the DHCP (see RFC 2132 [20F]), the DHCPv4 options for SIP servers (see RFC 3361 [35A]), and RFC 3263 [27A].

In case the DHCP server provides several P-CSCF addresses or FQDNs to the UE, the UE shall select the P-CSCF address or FQDN as indicated in RFC 3361 [35A]. If sufficient information for P-CSCF address selection is not available, selection of the P-CSCF address by the UE is implementation specific.

When using IPv6, the UE may acquire a P-CSCF address(es) by using the DHCPv6 (see RFC 3315 [40] and RFC 3646 [56C]), the DHCPv6 options for SIP servers (see RFC 3319 [41]), and RFC 3263 [27H].

In case the DHCP server provides several P-CSCF addresses or FQDNs to the UE, the UE shall select the P-CSCF address or FQDN as indicated in RFC 3319 [41]. If sufficient information for P-CSCF address selection is not available, selection of the P-CSCF address by the UE is implementation specific.

E.2.2.1A Modification of xDSL used for SIP signalling

Not applicable.

E.2.2.1B Re-establishment of the xDSL used for SIP signalling

Not applicable.

E.2.2.2 Void

E.2.2.3 Void

E.2.2.4 Void

E.2.2.5 xDSL bearer(s) for media

E.2.2.5.1 General requirements

The UE can establish media streams that belong to different SIP sessions on the same xDSL bearer.

E.2.2.5.1A Activation or modification of xDSL bearers for media by the UE

If the UE receives indication within the SDP according to RFC 3524 [54] that media stream(s) belong to group(s), and if several xDSL bearers are available to the UE for the session, the media stream(s) may be sent on separate xDSL bearers according to the indication of grouping. The UE may freely group media streams to xDSL bearers in case no indication of grouping is received from the P-CSCF.

If the UE receives media grouping attributes in accordance with RFC 3524 [54] that it cannot provide within the available xDSL bearer(s), then the UE shall handle such SDP offers in accordance with RFC 3388 [53].

The UE can receive a media authorization token in the P-Media-Authorization header from the P-CSCF according to RFC 3313 [31]. If a media authorization token is received in the P-Media-Authorization header when a SIP session is initiated, the UE shall reuse the existing xDSL bearer(s) and ignore the media authorization token.

E.2.2.5.1B Activation or modification of xDSL bearers for media by the network

Not applicable.

E.2.2.5.2 Special requirements applying to forked responses

Since the UE is unable to perform bearer modification, forked responses place no special requirements on the UE.

E.2.2.5.3 Unsuccessful situations

Not applicable.

E.2.2.6 Emergency service

If attached to network via xDSL access technology, the UE shall always consider being attached to its home operator's network for the purpose of emergency calls.

NOTE: In xDSL the UE is unable to receive any indication from the network, that would allow the UE to determine, whether it is currently attached to its home operator's network or to a different network, so the UE assumes itself always attached to the home operator's network when connected via xDSL access technology.

E.3 Application usage of SIP

E.3.1 Procedures at the UE

E.3.1.1 P-Access-Network-Info header

The UE may, but need not, include the P-Access-Network-Info header where indicated in subclause 5.1.

E.3.2 Procedures at the P-CSCF

E.3.2.1 Detecting requests destined for a PSAP

In order to determine whether the initial request for a dialog or standalone transaction or an unknown method is destined for a PSAP the P-CSCF shall check if the location information received in the network provided and/or UE provided "dsl-location" parameter in the P-Access-Network-Info header(s) belongs to a location in the same country.

NOTE 1: If local policy does not require the insertion of P-Access-Network-Info header in the P-CSCF even if it is missing in the received initial request, the P-CSCF can assume that the request is initiated by fixed broadband UE in the same country.

NOTE 2: If the location information in the network provided and UE provided "dsl-location" parameters (in a request that includes two P-Access-Network-Info headers) is contradictory, or the two P-Access-Network-Info headers indicate different access types the P-CSCF ignores either the network provided or the UE provided information according to operator policy.

E.3.2.2 Location information handling

Upon receipt of an initial request for a dialog or standalone transaction or an unknown method, the P-CSCF based on local policy may include a P-Access-Network-Info header. The value of the dsl-location parameter shall be the value as received in the Location-Information header in the User-Data Answer command as specified in ETSI ES 283 035 [98].

NOTE: The way the P-CSCF deduce that the request comes from a UE connected through xDSL access is implementation dependent.

E.4 3GPP specific encoding for SIP header extensions

Void.

Annex F (normative): Additional procedures in support for hosted NAT

NOTE: This subclause describes the mechanism for support of the hosted NAT scenario. This does not preclude other mechanisms but they are out of the scope of this annex.

F.1 Scope

This annex describes the UE and P-CSCF procedures in support of hosted NAT. In this scenario, both the media flows and the SIP signalling both traverse a NA(P)T device located in the customer premises domain. The term "hosted NAT" is used to address this function.

When receiving an initial SIP REGISTER request without integrity protection, the P-CSCF can, determine whether to perform the hosted NAT procedures for the user identified by the REGISTER request by comparing the address information in the top-most SIP Via header with the IP level address information from where the request was received. The P-CSCF will use the hosted NAT procedure only when the address information do not match.

NOTE: There is no need for the P-CSCF to resolve a domain name in the Via header when UDP encapsulated tunnel mode for IPsec is used. The resolution of a domain name in the Via header is not required by RFC 3261 [26].

In order to provide hosted NAT traversal for SIP REGISTER requests without integrity protection and the associated responses, the P-CSCF makes use of the "received" and "rport" header field parameters as described in RFC 3261 [26] and RFC 3581 [56A]. The hosted NAT traversal for protected SIP messages is provided by applying UDP encapsulation to IPsec packets in accordance with RFC 3948 [63A].

Alternatively to the procedures defined in subclause F.2 which are employed to support the hosted NAT scenario where the security solution is based on UDP encapsulated IPsec as defined in 3GPP TS 33.203 [19], subclause F.4 provides procedures for NAT traversal for security solutions that are not defined in 3GPP TS 33.203 [19]. Use of such security solutions is outside the scope of this document.

F.2 Application usage of SIP

F.2.1 UE usage of SIP

F.2.1.1 General

This subclause describes the UE SIP procedures for supporting hosted NAT scenarios. The description enhances the procedures specified in subclause 5.1.

The UE shall support the symmetric response routing mechanism according to RFC 3581 [56A].

F.2.1.2 Registration and authentication

F.2.1.2.1 General

The text in subclause 5.1.1.1 applies without changes

F.2.1.2.1A Parameters contained in the ISIM

The text in subclause 5.1.1.1A applies without changes

F.2.1.2.1B Parameters provisioned to a UE without ISIM or USIM

The text in subclause 5.1.1.1B applies without changes.

F.2.1.2.2 Initial registration

The procedures described in subclause 5.1.1.2.1 apply with the additional procedures described in the present subclause.

NOTE 1: In accordance with the definitions given in subclause 3.1 the IP address acquired initially by the UE in a hosted NAT scenario is the UE private IP address.

On sending a REGISTER request, the UE shall populate the header fields as indicated in subclause 5.1.1.2.1 with the exceptions of subitems c) and d) which are modified as follows

The UE shall populate:

- c) a Contact header according to the following rules: if the REGISTER request is sent without integrity protection, the Contact header shall be set to include SIP URI(s) containing the private IP address of the UE in the hostport parameter or FQDN. If the UE supports GRUU, the UE shall include a +sip.instance parameter containing the instance ID. If the REGISTER request is integrity protected, the UE shall include the public IP address or FQDN in the hostport parameter. The UE shall only use a FQDN in a protected REGISTER request, if it is ensured that the FQDN resolves to the public IP address of the NAT. If the UE supports GRUU, the UE shall include a +sip.instance parameter containing the instance ID. The UE shall include all supported ICSI values (coded as specified in subclause 7.2A.8.2), and IARI values (coded as specified in subclause 7.2A.9.2), for the IMS communication services and IMS applications it intends to use in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3840 [62];

NOTE 2: The UE will learn its public IP address from the received parameter in the topmost Via header in the 401 (Unauthorized) response to the unprotected REGISTER request.

- d) a Via header according to the following rules: if the REGISTER request is sent without integrity protection, the Via header shall be set to include the private IP address or FQDN of the UE in the sent-by field. If the REGISTER request is integrity protected, the UE shall include the public IP address or FQDN in the sent-by field. The UE shall only use a FQDN in a protected REGISTER request, if it is ensured that the FQDN resolves to the public IP address of the NAT;

NOTE 3: If the UE specifies a FQDN in the host parameter in the Contact header and in the sent-by field in the Via header of an unprotected REGISTER request, this FQDN will not be subject to any processing by the P-CSCF or other entities within the IM CN subsystem. The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

If IMS AKA is used as a security mechanism, on sending a REGISTER request, as defined in subclause 5.1.1.2.1, the UE shall additionally populate the header fields as defined in subclause 5.1.1.2.2, with the exceptions of subitems c), and d) which are modified as follows:

- d) the Security-Client header field set to specify the security mechanism the UE supports, the IPsec layer algorithms the UE supports and the parameters needed for the security association setup. The UE shall support the setup of two pairs of security associations as defined in 3GPP TS 33.203 [19]. The syntax of the parameters needed for the security association setup is specified in Annex H of 3GPP TS 33.203 [19]. The UE shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The UE shall support the IPsec layer algorithms for integrity protection and for encryption as defined in 3GPP TS 33.203 [19], and shall announce support for them according to the procedures defined in RFC 3329 [48]. In addition to transport mode the UE shall support UDP encapsulated tunnel mode as per RFC 3948 [63A] and shall announce support for both modes as described in TS 33.203 [19];

When a 401 (Unauthorized) response to a REGISTER is received and this response is received without integrity protection, the procedures described in subclause 5.1.1.2.1 apply with the following additions:

The UE shall check whether a received parameter is present in the topmost Via header.

- If no received parameter is present, the UE shall proceed with the procedures described in subclause 5.1 of the main body of this specification;

- If a received parameter is present, the UE shall verify using the Security-Server header that mode "UDP-enc-tun" is selected. If the verification succeeds the UE shall store the IP address contained in the received parameter as the UE public IP address. If the verification does not succeed the UE shall abort the registration.

In addition, when a 401 (Unauthorized) response to a REGISTER is received (with or without integrity protection) the UE shall behave as described in subclause F.2.1.2.5.

When the UE, that is behind a NAT, receives a 400 (Bad Request) response with 301 Warning header indicating "incompatible network address format" to the unprotected REGISTER request, the UE shall randomly select new values for the protected server port and the protected client port, and perform new initiate registration procedure by sending an unprotected REGISTER request containing the new values in the Security-Client header.

F.2.1.2.3 Initial subscription to the registration-state event package

The procedures described in subclause 5.1.1.3 apply with the additional procedures described in the present subclause.

On sending a SUBSCRIBE request, the UE shall populate the header fields as indicated in subclause 5.1.1.3 with the exception of subitem g) which is modified as follows

The UE shall populate:

- g) a Contact header set to contain the UE public IP address or FQDN. If IMS AKA is being used as a security mechanism the UE shall include the protected server port value as in the initial registration. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT.

NOTE: The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

F.2.1.2.4 User-initiated re-registration

The procedures described in subclause 5.1.1.4.1 apply with the additional procedures described in the present subclause.

On sending a REGISTER request that does not contain a challenge response, the UE shall populate the header fields as indicated in subclause 5.1.1.4.1 with the exception of subitems c) and d) which are modified as follows.

The UE shall populate:

- c) a Contact header set to include SIP URI(s) that contain(s) in the hostport parameter the public IP address of the UE or FQDN, and containing the instance ID of the UE in the +sip.instance parameter, if the UE supports GRUU. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT. The UE shall include all supported ICSI values (coded as specified in subclause 7.2A.8.2), and IARI values (coded as specified in subclause 7.2A.9.2), for the IMS communication services and IMS applications it intends to use in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3840 [62];
- d) a Via header set to include the public IP address or FQDN of the UE in the sent-by field. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;

NOTE 1: The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

When the UE, that is behind a NAT, receives a 400 (Bad Request) response with 301 Warning header indicating "incompatible network address format" to the REGISTER request that does not contain a challenge response, the UE shall randomly select a new value for the protected client port, and send the REGISTER request containing the new values in the Security-Client header.

NOTE 2: The protected server port stays fixed for a UE until all public user identities of the UE have been de-registered.

F.2.1.2.5 Authentication

F.2.1.2.5.1 IMS AKA - general

The procedures of subclause 5.1.1.5.1 apply with with the additional procedures described in the present subclause.

On receiving a 401 (Unauthorized) response to the REGISTER request and the response is deemed to be valid, the UE shall behave as of subclause 5.1.1.5.1 with the exception of subitem 3) which is modified as follows.

The UE shall:

- 3) send another REGISTER request using the temporary set of security associations to protect the message. The header fields are populated as defined for the initial request (see subclause F.2.1.2.2), with the addition that the UE shall include an Authorization header containing the private user identity and the authentication challenge response calculated by the UE using RES and other parameters, as described in RFC 3310 [49]. The UE shall also insert the Security-Client header that is identical to the Security-Client header that was included in the previous REGISTER request (i.e. the REGISTER request that was challenged with the received 401 (Unauthorized) response). The UE shall also insert the Security-Verify header into the request, by mirroring in it the content of the Security-Server header received in the 401 (Unauthorized) response. The UE shall set the Call-ID of the integrity protected REGISTER request which carries the authentication challenge response to the same value as the Call-ID of the 401 (Unauthorized) response which carried the challenge.

Whenever the 200 (OK) response is not received before the temporary SIP level lifetime of the temporary set of security associations expires or a 403 (Forbidden) response is received, the UE shall consider the registration to have failed. The UE shall delete the temporary set of security associations it was trying to establish, and use the old set of security associations. The UE should send an unprotected REGISTER message according to the procedure specified in subclause F.2.1.2.2 if the UE considers the old set of security associations to be no longer active at the P-CSCF.

F.2.1.2.5.2 Void

F.2.1.2.5.3 IMS AKA abnormal cases

The text in subclause 5.1.1.5.3 applies without changes.

F.2.1.2.5.4 SIP digest – general

Not applicable.

F.2.1.2.5.5 SIP digest – abnormal procedures

Not applicable.

F.2.1.2.5.6 SIP digest with TLS – general

Not applicable.

F.2.1.2.5.7 SIP digest with TLS – abnormal procedures

Not applicable.

F.2.1.2.5.8 Abnormal procedures for all security mechanisms

The text in subclause 5.1.1.5.8 applies without changes.

F.2.1.2.5A Network-initiated re-authentication

The text in subclause 5.1.1.5A applies without changes.

F.2.1.2.5B Change of IPv6 address due to privacy

The text in subclause 5.1.1.5B applies without changes.

F.2.1.2.6 User-initiated deregistration

The procedures of subclause 5.1.1.6.1 apply with with the additional procedures described in the present subclause.

On sending a REGISTER request, the UE shall populate the header fields as indicated in subclause 5.1.1.6 with the exception of subitems d) and e) which are modified as follows.

The UE shall populate:

- c) a Contact header set to either the value of "*" or SIP URI(s) that contain(s) in the hostport parameter the IP address of the UE or FQDN; and containing the instance ID of the UE in the +sip.instance parameter, if the UE supports GRUU. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;
- d) a Via header set to include the IP address or FQDN of the UE in the sent-by field. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;

NOTE 1: In case of hosted NAT traversal only the UE public IP addresses are bound to security associations.

NOTE 2: The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

F.2.1.2.7 Network-initiated deregistration

The procedures of subclause 5.1.1.7 apply with with the additional procedures described in the present subclause.

Upon receipt of a NOTIFY request on the dialog which was generated during subscription to the reg event package as described in subclause 5.1.1.3, including one or more <registration> element(s) which were registered by this UE with:

- the state attribute set to "terminated" and the event attribute set to "rejected" or "deactivated"; or
- the state attribute set to "active" and the state attribute within the <contact> element belonging to this UE set to "terminated", and associated event attribute element to "rejected" or "deactivated";

the UE shall remove all registration details relating to these public user identities. In case of a "deactivated" event attribute, the UE shall start the initial registration procedure as described in subclause F.2.1.2.2. In case of a "rejected" event attribute, the UE shall release all dialogs related to those public user identities.

F.2.1.3 Subscription and notification

The text in subclause 5.1.2 applies without changes.

F.2.1.4 Generic procedures applicable to all methods excluding the REGISTER method

F.2.1.4.1 UE originating case

The procedures described in subclause 5.1.2A.1 apply with the additional procedures described in the present subclause.

When the UE sends any request, the requirements in subclause 5.1.2A.1 are replaced by the following requirements.

The UE shall include:

- a Via header set to include the public IP address of the UE or FQDN and the protected server port in the sent-by field. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; and if this is a request for a new dialog, and the request includes a Contact header, then the UE should populate the Contact header as follows:
 - 1) if a public GRUU value (pub-gruu) has been saved associated with the public user identity to be used for this request, and the UE does not indicate privacy of the P-Asserted-Identity, then insert the public GRUU (pub-gruu) value in the Contact header as specified in draft-ietf-sip-gruu [93]; or
 - 2) if a temporary GRUU value (temp-gruu) has been saved associated with the public user identity to be used for this request, and the UE does indicate privacy of the P-Asserted-Identity, then insert the temporary GRUU (temp-gruu) value in the Contact header as specified in draft-ietf-sip-gruu [93].

If this is a request within an existing dialog, and the request includes a Contact header, and the Contact address previously used in the dialog was a GRUU, then the UE should insert the previously used GRUU value in the Contact header as specified in draft-ietf-sip-gruu [93].

If the UE did not insert a GRUU in the Contact header, then the UE shall include the public IP address of the UE or FQDN and the protected server port in the hostport parameter in any Contact header that is otherwise included. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT.

NOTE: The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

The UE shall discard any SIP response that is not integrity protected and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause F.2.1.2.4.

When a SIP transaction times out, i.e. timer B, timer F or timer H expires at the UE, the UE may behave as if timer F expired, as described in subclause F.2.1.2.3.

F.2.1.4.2 UE terminating case

The procedures described in subclause 5.1.2A.2 apply with the additional procedures described in the present subclause.

When the UE sends any response, the requirements in subclause 5.1.2A.1 are replaced by the following requirement.

If the response includes a Contact header, and the response is not sent within an existing dialog, then the UE should populate the Contact header as follows:

- 1) if a public GRUU value (pub-gruu) has been saved associated with the public user identity from the P-Called-Party-ID header, and the UE does not indicate privacy of the P-Asserted-Identity, then insert the public GRUU (pub-gruu) value in the Contact header as specified in draft-ietf-sip-gruu [93]; and
- 2) if a temporary GRUU value (temp-gruu) has been saved associated with the public user identity from the P-Called-Party-ID header, and the UE does indicate privacy of the P-Asserted-Identity, then the UE should insert the temporary GRUU (temp-gruu) value in the Contact header as specified in draft-ietf-sip-gruu [93].

If the UE did not insert a GRUU in the Contact header, then the UE shall:

- include the public IP address of the UE or FQDN and the protected server port in the hostport parameter in any Contact header that is otherwise included. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT.

NOTE: The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

The UE shall discard any SIP request that is not integrity protected and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause F.2.1.2.

F.2.2 P-CSCF usage of SIP

F.2.2.1 Introduction

This subclause describes the SIP procedures for supporting hosted NAT scenarios.

The description enhances the procedures specified in subclause 5.2.

The P-CSCF shall support the symmetric response routing mechanism according to RFC 3581 [56A].

NOTE : Symmetric response routing is used to support hosted NAT and applicable only to initial, unprotected REGISTER requests and corresponding responses.

F.2.2.2 Registration

The procedures described in subclause 5.2.2 apply with the additional procedures described in the present subclause.

When the P-CSCF receives a REGISTER request from the UE, the P-CSCF shall behave as of subclause 5.2.2.1.

If IMS AKA is the security mechanism, when the P-CSCF receives a REGISTER request from the UE, the P-CSCF shall perform the procedures of subclause 5.2.2.2 with the following exception to items 2) and 3):

- 2) in case the REGISTER request was received without integrity protection, then:
 - a) check the existence of the Security-Client header. If the header is not present, then the P-CSCF shall return a suitable 4xx response. If the header is present the P-CSCF shall:
 - in case the UE indicated support for "UDP-enc-tun" then remove and store it.
 - in case the UE does not indicate support for "UDP-enc-tun" then:
 - if the host portion of the sent-by field in the topmost Via header contains an IP address that differs from the source address of the IP packet, silently drop the REGISTER;
 - otherwise continue with procedures as of subclause 5.2.2.

NOTE 1: If the UE does not indicate support for "UDP-enc-tun" and the P-CSCF detects that the UE is located behind a NAT device, then the P-CSCF can just drop the REGISTER to avoid unnecessary signalling traffic.

- b) if the host portion of the sent-by field in the topmost Via header contains a FQDN, or if it contains an IP address that differs from the source address of the IP packet, the P-CSCF shall:
 - add a received parameter in accordance with the procedure defined in RFC 3261 [26]. If the P-CSCF adds a received parameter, the P-CSCF shall also add an rport parameter in accordance with the procedure defined in RFC 3581 [56A]; and
 - check that no any previously registered UE has either the same public IP address (allocated by the NAT and indicated in the Via header) and the protected server port (specified in the Security-Client header) or the same public IP address and the protected client port (specified in the Security-Client header). If there is such UE, the P-CSCF shall return a 400 (Bad Request) response with 301 Warning header indicating "incompatible network address format" to the unprotected REGISTER request. Otherwise, the P-CSCF shall forward the REGISTER request.

NOTE 2: If two UEs are behind the same NAT, the NAT may assign to them the same public IP address (but different NAT's port). Hence, the two respective UE must have different protected server port numbers, and different protected client port numbers.

- 3) in case the REGISTER request was received integrity protected, then the P-CSCF shall:
 - a) check the security association which protected the request. If the security association is a temporary one, the P-CSCF shall:
 - in case the host parameter in the Contact address is in the form of a FQDN, ensure that the given FQDN will resolve (e.g., by reverse DNS lookup) to the IP address bound to the security association;
 - in case the P-CSCF has detected earlier that the UE is located behind a NAT, retrieve port_Uenc from the encapsulating UDP header of the packet received and complete configuration of the temporary set of security associations by configuring port_Uenc in each of the temporary security associations;
 - check whether the request contains a Security-Verify header in addition to a Security-Client header. If there are no such headers, then the P-CSCF shall return a suitable 4xx response. If there are such headers, then the P-CSCF shall compare the content of the Security-Verify header with the content of the Security-Server header sent earlier and the content of the Security-Client header with the content of the Security-Client header received in the challenged REGISTER. If those do not match, then there is a potential man-in-the-middle attack. The request should be rejected by sending a

suitable 4xx response. If the contents match, the P-CSCF shall remove the Security-Verify and the Security-Client header;

- b) if the security association the REGISTER request was received on, is an already established one, then the P-CSCF shall:
- remove the Security-Verify header if it is present;
 - check if the Security-Client header containing new parameter values is present, and:
 - if this header or any required parameter is missing, then the P-CSCF shall return a suitable 4xx response.
 - if this header and the required parameters are present, then the P-CSCF shall check that no any previously registered UE has the same public IP address and the protected client port (specified in the Security-Client header). If there is such UE, the P-CSCF shall return a 400 (Bad Request) response with 301 Warning header indicating "incompatible network address format" to the REGISTER request. Otherwise, the P-CSCF shall remove and store the Security-Client header before forwarding the request to the S-CSCF;

NOTE 3: When sending the protected REGISTER request to the P-CSCF, the UE will not modify the protected server port value, since the protected server port value stays fixed for a UE until all public user identities of the UE have been de-registered.

When the P-CSCF receives a 401 (Unauthorized) response to an unprotected REGISTER request and this response contains a received and rport parameter in the Via header associated with the UE and the UE indicated support for "UDP-enc-tun" IPsec mode, the P-CSCF shall:

- 1) delete any temporary set of security associations established towards the UE;
- 2) remove the CK and IK values contained in the 401 (Unauthorized) response and bind them to the proper private user identity and to the temporary set of security associations which will be setup as a result of this challenge. The P-CSCF shall forward the 401 (Unauthorized) response to the UE if and only if the CK and IK have been removed;
- 3) insert a Security-Server header in the response, containing the P-CSCF security list and the parameters needed for the security association setup, as specified in Annex H of 3GPP TS 33.203 [19]. The P-CSCF shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The P-CSCF shall support the IPSec layer algorithms for integrity protection and for encryption as defined in 3GPP TS 33.203 [19]. The P-CSCF shall indicate "UDP-enc-tun" as the only IPsec mode;
- 4) set up the temporary set of security associations with a temporary SIP level lifetime between the UE and the P-CSCF for the user identified with the private user identity. The P-CSCF shall select UDP encapsulated tunnel mode and shall leave the value for port-Uenc unspecified in each of the temporary security associations. For further details see 3GPP TS 33.203 [19] and RFC 3329 [48]. The P-CSCF shall set the temporary SIP level lifetime for the temporary set of security associations to the value of reg-await-auth timer; and
- 5) send the 401 (Unauthorized) response unprotected to the UE using the mechanisms described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and to the port indicated in the rport parameter of the Via header associated with the UE. In case UDP is used as transport protocol, the P-CSCF shall use the port on which the REGISTER request was received as client port for sending the response back to the UE.

When the P-CSCF receives a 401 (Unauthorized) response to a protected REGISTER request and that REGISTER request was protected by an old set of security associations that use UDP encapsulated tunnel mode, the P-CSCF shall:

- 1) delete any temporary set of security associations established towards the UE;
- 2) remove the CK and IK values contained in the 401 (Unauthorized) response and bind them to the proper private user identity and to the temporary set of security associations which will be setup as a result of this challenge. The P-CSCF shall forward the 401 (Unauthorized) response to the UE if and only if the CK and IK have been removed;
- 3) insert a Security-Server header in the response, containing the P-CSCF security list and the parameters needed for the security association setup, as specified in Annex H of 3GPP TS 33.203 [19]. The P-CSCF shall support

the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The P-CSCF shall support the IPsec layer algorithms for integrity protection and encryption as defined in 3GPP TS 33.203 [19]. The P-CSCF shall indicate "UDP-enc-tun" as the IPsec mode;

- 4) set up the temporary set of security associations with a temporary SIP level lifetime between the UE and the P-CSCF for the user identified with the private user identity. The P-CSCF shall select UDP encapsulated tunnel mode and shall specify the same port_Uenc that was used in the old set of security associations. The P-CSCF shall set the temporary SIP level lifetime for the temporary set of security associations to the value of reg-await-auth timer; and
- 5) send the 401 (Unauthorized) response to the UE using the old set of security associations.

Otherwise, when the P-CSCF receives a 401 (Unauthorized) response to an unprotected REGISTER request and this response does not contain a received and rport parameter or when the P-CSCF receives a 401 (Unauthorized) response to a protected REGISTER request and that REGISTER request was protected by an old set of security associations that do not use UDP encapsulated tunnel mode, the P-CSCF shall proceed as described in subclause 5.2.2.2.

F.2.3 S-CSCF usage of SIP

F.2.3.1 S-CSCF usage of SIP

F.2.3.1.1 Protected REGISTER with IMS AKA as a security mechanism

The procedures at the S-CSCF described in subclause 5.4.1.2.2 apply.

NOTE: When two UEs that are behind the same NAT register their contact addresses, the NAT may assign to them the same public IP address (but different NAT's ports). If these two UEs select the same protected server port number, and register via different P-CSCFs, then they will have the same contact addresses (i.e. same IP address and protected server port). However, any request targeted to either UE will be sent to the respective P-CSCF, hence not causing any ambiguity at the P-CSCF when forwarding the request via NAT.

F.3 Application usage of SDP

F.3.1 UE usage of SDP

The procedures as of subclause 6.1 apply.

F.3.2 P-CSCF usage of SDP

F.3.2.1 Introduction

Subclause F.3.2 describes the SDP related procedures performed by the P-CSCF in support of hosted NAT.

F.3.2.2 Receipt of an SDP offer

When the P-CSCF receives an SDP offer during session establishment, if this offer comes from a UE located behind a hosted NAT, the P-CSCF shall modify the SDP offer by replacing the IP address(es) and port number previously set in the SDP offer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface.

F.3.2.3 Receipt of an SDP answer

When the P-CSCF receives any SDP answer to an SDP offer described in subclause F.3.2.2, if this answer comes from a UE located behind a hosted NAT, the P-CSCF shall modify the SDP answer by replacing the IP address(es) and port number previously set in the SDP answer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface.

F.3.2.4 Change of media connection data

After the session is established, it is possible for both ends of the session to change the media connection data for the session. When the P-CSCF receives a SDP offer/answer coming from a UE located behind a hosted NAT with port number(s) or IP address(es) included, there are three different possibilities:

- IP address(es) or/and port number(s) have been added. In this case, the P-CSCF shall apply the procedures as described in subclause F.3.2.2 and subclause F.3.2.3 as appropriate for those additional IP address(es) or/and port number(s);
- IP address(es) and port number(s) have been reassigned to the end points. In this case, the P-CSCF shall apply the procedures as described in subclause F.3.2.2 and subclause F.3.2.3 as appropriate for those reassigned IP address(es) and port number(s);

NOTE: If necessary, the P-CSCF or IBCF will cause the IMS access gateway to release the resources related to the previously assigned IP address(es) and port number(s).

- no change has been made to the IP address(es) and port number(s). The P-CSCF shall apply procedures described in subclause F.3.2.2 using the previously stored IP address(es) and port number(s).

F.4 P-CSCF usage of SIP in case UDP encapsulated IPsec is not employed

F.4.1 Introduction

This subclause describes the SIP procedures for supporting hosted NAT scenarios in case UDP encapsulated IPsec is not employed. In these scenarios the procedures for NAT traversal must take into account that all SIP requests and responses are not protected by an IPsec security association.

F.4.2 Registration

The procedures described in subclause 5.2.2 apply with the additional procedures described in the present clause.

When the P-CSCF receives a REGISTER request from the UE, the P-CSCF shall add the "received" and "rport" parameters to the Via header set to the source IP address and port of the packet header in accordance with the procedure defined in RFC 3261 [26] and RFC 3581 [56A]. Furthermore, the P-CSCF performs the following actions on the Contact header depending on its content:

- if the Contact header contains a contact address in the form of an IP address (NOTE), the P-CSCF shall save this IP address for the duration of the registration and replace it by the source IP address of the packet containing the REGISTER request before forwarding the message;
- if the Contact header contains more than one contact addresses in the form of an IP address, the P-CSCF shall apply the above procedure to one of those contact addresses by choosing the one with the highest qvalue parameter) and delete any other contact addresses containing an IP address. If the P-CSCF was unable to choose a contact address based on the qvalue, the P-CSCF shall choose one based on local policy and delete any other contact addresses containing an IP address.

NOTE: When the host parameter in the Contact address is in the form of a FQDN, the P-CSCF has to ensure that the given FQDN will resolve (e.g., by reverse DNS lookup) to the IP address and port pointing towards the hosted NAT and bound to this UE.

When the P-CSCF received a response to the above request, if the Contact header contains a contact address in the form of an IP address, the P-CSCF shall replace this IP address by the saved IP address contained in the REGISTER request before forwarding the associated response to the UE.

F.4.3 General treatment for all dialogs and standalone transactions excluding the REGISTER method

F.4.3.1 Introduction

The procedures described in subclause 5.2.6 apply with the additional procedures described in subclause F.4.3.

F.4.3.2 Request initiated by the UE

When the P-CSCF receives an initial request for a dialog or a request for a standalone transaction, the P-CSCF shall add the "received" and "rport" parameters to the Via header set to the source IP address and port in the packet header as defined in RFC 3261 [26] and RFC 3581 [56A]. Furthermore, if the contact address in the Contact header is in the form of an IP address, the P-CSCF shall save this IP address for the duration of the dialog or standalone transaction and replace it by the source IP address of the packet containing the REGISTER request.

When the P-CSCF received a response to the above request, if the Contact header contains a contact address in the form of an IP address, the P-CSCF shall replace this IP address by the saved IP address contained as per the previous paragraph.

F.4.3.3 Request terminated by the UE

When the P-CSCF receives a response to an initial request for a dialog or a request for a standalone transaction, if the contact address in the Contact header is in the form of an IP address, the P-CSCF shall save this IP address for the duration of the dialog or standalone transaction and replace it by the source IP address of the packet containing the REGISTER request.

Annex G (normative): Additional procedures in support of NA(P)T and NA(P)T-PT controlled by the P-CSCF

NOTE: This subclause describes the mechanism for support of NA(P)T and NA(P)T-PT controlled by the P-CSCF scenario defined in 3GPP TS 23.228 [7]. This does not preclude other mechanisms but they are out of the scope of this annex.

G.1 Scope

This annex describes the P-CSCF procedures for supporting the scenario where IP address and/or port conversions occur at the IMS access gateway level in the media path between the UE and the backbone. Two types of address conversions are covered:

- IP version interworking (NA(P)T-PT); and
- IP address/port translation (NA(P)T).

The annex assumes that signalling procedure take place over the Iq interface to enable the P-CSCF to request and retrieve the address bindings reserved in the transport plane.

G.2 P-CSCF usage of SDP

G.2.1 Introduction

The subclause G.2 describes the P-CSCF procedures for supporting IP address and/or port conversions in SDP that occur in the media path between the UE and the backbone.

NOTE: In the particular case of RTP flows, port conversions also apply to the associated RTCP flows.

G.2.2 Receipt of an SDP offer

When the P-CSCF receives any SDP offer during session establishment, the P-CSCF shall modify the SDP offer by replacing the IP address(es) and port number previously set in the SDP offer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface.

G.2.3 Receipt of an SDP answer

When the P-CSCF receives any SDP answer to an SDP offer described in subclause G.2.3, the P-CSCF shall modify the SDP answer by replacing the IP address(es) and port number previously set in the SDP answer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface.

The P-CSCF may receive multiple provisional responses with an SDP answer due to forking of a request before the first final answer is received. For each SDP answer received in such subsequent provisional responses, the P-CSCF shall apply the procedure in this subclause.

G.2.4 Change of media connection data

After the session is established, it is possible for both ends of the session to change the media connection data for the session. When the P-CSCF receives a SDP offer/answer where port number(s) or IP address(es) is/are included, there are three different possibilities:

IP address(es) or/and port number(s) have been added. In this case, the P-CSCF shall apply the procedures as described in subclause G.2.2 or subclause G.2.3 as appropriate for those additional IP address(es) or/and port number(s); or

IP address(es) and port number(s) have been reassigned to the end points. In this case, the P-CSCF shall apply the procedures as described in subclause G.2.2 or subclause G.2.3 as appropriate for those reassigned IP address(es) and port number(s); or

NOTE: If necessary, the P-CSCF or IBCF will cause the IMS access gateway to release the resources related to the previously assigned IP address(es) and port number(s).

no change has been made to the IP address(es) and port number(s). The P-CSCF shall apply procedures described in subclause G.2.2 using the previously stored IP address(es) and port number(s).

Annex H (normative): IP-Connectivity Access Network specific concepts when using DOCSIS to access IM CN subsystem

H.1 Scope

The present annex defines IP-CAN specific requirements for a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP), where the IP-CAN is a DOCSIS cable access network.

DOCSIS (Data Over Cable Service Interface Specification) is a term referring to the ITU-T Recommendation J112 [87] Annex B standard for cable modem systems.

H.2 DOCSIS aspects when connected to the IM CN subsystem

H.2.1 Introduction

A UE accessing the IM CN subsystem, and the IM CN subsystem itself, utilise the services provided by the DOCSIS cable access network to provide packet-mode communication between the UE and the IM CN subsystem.

From the perspective of the UE, the necessary IP-CAN bearer for signalling is transparently available to the UE.

The UE is not directly involved in requests for IP-CAN bearer(s) for media flow(s). The IM CN interacts with the PCRF in the DOCSIS IP-CAN to establish IP-CAN bearer(s) for media flow(s), on behalf of the UE.

H.2.2 Procedures at the UE

H.2.2.1 Activation and P-CSCF discovery

Prior to communication with the IM CN subsystem, the UE shall perform a Network Attachment procedure as defined in the CableLabs PacketCable specifications PKT-TR-ARCH-FRM [88]. When using DOCSIS, both IPv4 and IPv6 UEs may access the IM CN subsystem. The procedures for P-CSCF discovery defined in subclause 9.2.1 of this document apply.

H.2.2.1A Modification of IP-CAN used for SIP signalling

Not applicable.

H.2.2.1B Re-establishment of the IP-CAN used for SIP signalling

Not applicable.

H.2.2.2 Void

H.2.2.3 Void

H.2.2.4 Void

H.2.2.5 Handling of the IP-CAN for media

H.2.2.5.1 General requirements

The UE does not directly request resources for media flow(s).

H.2.2.5.1A Activation or modification of IP-CAN for media by the UE

Not applicable.

H.2.2.5.1B Activation or modification of IP-CAN for media by the network

Not applicable.

H.2.2.5.2 Special requirements applying to forked responses

The UE does not directly request resources for media flow(s). As a result there are no special UE requirements applying to forked responses.

H.2.2.5.3 Unsuccessful situations

Not applicable.

H.2.2.6 Emergency service

If attached to network via DOCSIS access technology, the UE shall always consider being attached to its home operator's network for the purpose of emergency calls.

NOTE: In DOCSIS the UE is unable to receive any indication from the network, that would allow the UE to determine, whether it is currently attached to its home operator's network or to a different network, so the UE assumes itself always attached to the home operator's network when connected via DOCSIS access technology.

H.3 Application usage of SIP

H.3.1 Procedures at the UE

H.3.1.1 P-Access-Network-Info header

If the UE is aware of the access technology, the UE shall include the P-Access-Network-Info header where indicated in subclause 5.1.

H.3.2 Procedures at the P-CSCF

H.3.2.1 Detecting requests destined for a PSAP

If access type field in the P-Access-Network-Info header indicated DOCSIS access the P-CSCF shall assume that the initial request for a dialog or standalone transaction or an unknown method destined for a PSAP is initiated in the same country.

NOTE 1: If local policy does not require the insertion of P-Access-Network-Info header in the P-CSCF even if it is missing in the received initial request, the P-CSCF can assume that the request is initiated by fixed broadband UE in the same country.

NOTE 2: If the network provided and UE provided P-Access-Network-Info headers indicate different access types the P-CSCF ignores the information in either the network provided or the UE provided P-Access-Network-Info header according to operator policy.

H.3.2.2 Location information handling

Upon receipt of an initial request for a dialog or standalone transaction or an unknown method, the P-CSCF based on local policy may include a P-Access-Network-Info header.

NOTE: The way the P-CSCF deduces that the request comes from a UE connected through DOCSIS access is implementation dependent.

H.4 3GPP specific encoding for SIP header extensions

Void.

Annex I (normative): Additional routing capabilities in support of transit traffic in IM CN subsystem

I.1 Scope

Operators may use the IM CN subsystem as a transit network to provide transit functionality for their own CS networks, enterprise networks, or other network operators.

As specified in 3GPP TS 23.228 [7] additional routing functions might reside in a stand-alone entity or might be collocated with the functionality of an MGCF, a BGCF, an I-CSCF, an S-CSCF, or an IBCF.

When collocated with an I-CSCF, the additional routing capabilities may be performed in advance of I-CSCF procedures as specified in subclause 5.3, or after I-CSCF procedures have failed to identify an S-CSCF supporting the user identified by the Request-URI.

When collocated with an MGCF, the generated requests can be routed to an I-CSCF or to possible targets of the routing procedures defined in subclause I.2.

The BGCF procedures specified in subclause 5.6 are a subset of the more general routing procedures provided in this annex.

NOTE: Depending on the host entity for the additional routing functions, the functionality can be accessed as:

- a) the last set of functions on the host before forwarding a request (e.g., on an MGCF, an S-CSCF or an IBCF);
- b) the first set of functions performed by the host entity when receiving a request at the host entity's entry point (e.g., on a BGCF, I-CSCF or IBCF);
- c) a specified point in the logic of the host (e.g., on the I-CSCF at failure to identify an S-CSCF for the Request-URI); or
- d) a set of functions associated with a separate entry point (e.g., at a separate entry point associated with a BGCF, I-CSCF, IBCF or separate function).

I.2 Procedures

The additional routing functionality, or associated functional entity, performing these additional routing procedures should analyse the destination address, and determine whether to route to another network, directly, or via the IBCF, or to the BGCF, or the I-CSCF in its own network. This analysis may use public (e.g., DNS, ENUM) and/or private database lookups, and/or locally configured data and need not modify the Request-URI. In addition, and based upon local policy, the analysis may include the carrier identified by the "cic" tel-URI parameter of the Request-URI and how the carrier was selected as indicated in the "dai" tel-URI parameter of the Request-URI as part of the route determination.

For all SIP transactions identified:

- if priority is supported, as containing an authorised Resource-Priority header, or, if such an option is supported, relating to a dialog which previously contained an authorised Resource-Priority header;

the additional routing functionality shall give priority over other transactions or dialogs. This allows special treatment of such transactions or dialogs.

NOTE 1: The special treatment can include filtering, higher priority processing, routing, call gapping. The exact meaning of priority is not defined further in this document, but is left to national regulation and network configuration.

When provided as a separate function, the network element performing these functions need not Record-Route the INVITE request.

If the additional routing functionality inserts its own Record-Route header, then the additional routing functionality may require the periodic refreshment of the session to avoid hung states. If the network element requires the session to be refreshed, the additional routing functionality shall apply the procedures described in RFC 4028 [58] clause 8.

NOTE 2: Requesting the session to be refreshed requires support by at least one of the UEs. This functionality cannot automatically be granted, i.e. at least one of the involved UEs needs to support it.

When provided as a separate function, the network element performing these functions shall not apply the procedures of RFC 3323 [33] relating to privacy.

Annex J (normative): CPC parameter definition

J.1 Introduction

This annex defines the use of the "CPC" URI parameter for use within SIP URI and Tel URI.

Editor's note: This annex is based on draft-mahy-iptel-cpc-04.txt and can be removed when the internet draft becomes an RFC and the usage of the CPC is allowed for SIP URI. If this solution does not become an RFC, this parameter will be documented in the present document.

The Calling Party's Category is represented as a tel URI parameter. The ABNF syntax is as follows:

```
cpc = cpc-tag "=" cpc-value
cpc-tag = "cpc"
cpc-value
= "ordinary" / "test" / "operator" /
"payphone" / "unknown" /
```

```
genvalue
genvalue = 1*(alphanum / "-" / ".")
```

The Accept-Language header shall be used to express the language of the operator.

The semantics of these Calling Party's Category values are described below:

ordinary: The caller has been identified, and has no special features.

test: This is a test call that has been originated as part of a maintenance procedure.

operator: The call was generated by an operator position.

payphone: The calling station is a payphone.

unknown: The CPC could not be ascertained.

NOTE 1: The choice of CPC values and their use are up to the Service Provider. CPC values can be exchanged across networks if specified in a bilateral agreement between the service providers.

NOTE 2: Additional national/regional CPC values can exist (e.g. prison, police, hotel, hospital, cellular, cellular-roaming., etc.)

J.2 Trust domain

Entities in the IM CN subsystem shall restrict CPC tel URI or SIP URI parameter to specific domains that are trusted and support the CPC parameter. Therefore for the purpose of the CPC parameter within this specification, a trust domain also applies. This trust domain is identical to that of the P-Asserted-Identity.

SIP functional entities within the trust domain will need to take action on the removal of the CPC parameter when the SIP signalling crosses the boundary of the trust domain.

J.3 Procedures at the originating UE

The CPC shall not be populated at the originating UE.

J.4 Procedures at the originating P-CSCF

No special requirement.

J.5 Procedures at the originating S-CSCF

No special requirement.

J.6 Procedures at the I-CSCF

No special requirement.

J.7 Procedures at the IBCF

No special requirement.

J.8 Procedures at the terminating P-CSCF

No special requirement.

J.9 Procedures at the AS at the originating network

The AS may populate the CPC parameter in each initial request for a dialog or a request for a standalone transaction in the tel URI or SIP URI of the P-Asserted-Identity based on their origin source.

Annex K (normative): Additional procedures in support of UE managed NAT traversal

Editor's Note: It is FFS whether the NAT traversal procedures will be documented as shown here in Annex-K, or will be organized in some other manner within this specification (for example, integrated with the procedures in the main body of this specification). Therefore, this annex can be regarded as a temporary place-holder for this material.

Editor's note: Need to cover all reference changes in Annex K in accordance with changes in main body of specification in accordance with the SIP digest and SIP digest with TLS.

K.1 Scope

This annex describes the UE, P-CSCF, and S-CSCF procedures in support of UE managed NAT traversal. In this scenario, both the media flows and the SIP signalling both traverse a NA(P)T device located in the customer premises domain. The term "hosted NAT" is used to address this function. This annex does not consider the case where the NAT is behind the P-CSCF as different NAT traversal procedures are necessary for this architectural scenario.

The procedures described in this subclause of this annex rely on the UE to manage the NAT traversal process. As part of the UE management process, the UE can learn whether it is behind a NAT or not, and choose whether the procedures in this annex are applied or not.

The protection of SIP messages is provided by applying either UDP encapsulation to IPSec packets in accordance with RFC 3948 [63A] and as defined in 3GPP TS 33.203 [19] or by utilizing TLS as defined in 3GPP TS 33.203 [19].

NOTE 1: This annex describes the mechanism for support of UE managed NAT traversal scenario defined in 3GPP TS 23.228 [7]. This does not preclude other mechanisms but they are out of the scope of this annex.

NOTE 2: It is recognized that outbound can be useful for capabilities beyond NAT traversal (e.g. multiple registrations) however this annex does not consider such capabilities at this time. Such capabilities can require additional information elements in the REGISTER request so that the P-CSCF and S-CSCF can distinguish whether to apply procedures as of annex F or annex K.

K.2 Application usage of SIP

K.2.1 Procedures at the UE

K.2.1.1 General

This subclause describes the UE SIP procedures for supporting a UE managed hosted NAT traversal approach. The description enhances the procedures specified in subclause 5.1.

K.2.1.2 Registration and authentication

K.2.1.2.1 General

The text in subclause 5.1.1.1 applies without changes

K.2.1.2.1A Parameters contained in the ISIM

The text in subclause 5.1.1.1A applies without changes

K.2.1.2.1B Parameters provisioned to a UE without ISIM or USIM

The text in subclause 5.1.1.1B applies without changes

K.2.1.2.2 Initial registration

The procedures described in subclause 5.1.1.2 apply with the additional procedures described in the present subclause.

NOTE 1: In accordance with the definitions given in subclause 3.1 the IP address acquired initially by the UE in a hosted NAT scenario is the UE private IP address.

On sending a REGISTER request, the UE shall populate the header fields as indicated in subitems a) through j) of subclause 5.1.1.2 with the exceptions of subitems d), e) and h) which are modified as follows

The UE shall populate:

- d) a Contact header according to the following rules: the Contact header shall be set to include SIP URI(s) containing the private IP address of the UE in the hostport parameter or FQDN. The UE shall also include an instance ID (sip.instance) and reg-id as described in draft-ietf-sip-outbound [92];
- e) a Via header according to the following rules:
 - For UDP, if the REGISTER request is sent without integrity protection, the Via header shall be set to include the private IP address or FQDN of the UE in the sent-by field. If the REGISTER request is integrity protected, the UE shall include the public IP address or FQDN and the protected server port value in the sent-by field. In both cases the UE shall include the rport parameter as defined in RFC 3581 [56A]; or
 - For TCP, if the REGISTER request is sent without integrity protection, the Via header shall be set to include the private IP address or FQDN of the UE in the sent-by field. If the REGISTER request is integrity protected, the UE shall include the public IP address or FQDN;

NOTE 2: The UE will learn its public IP address from the received parameter in the topmost Via header in the 401 (Unauthorized) response to the unprotected REGISTER request.

NOTE 3: If the UE specifies a FQDN in the host parameter in the Contact header and in the sent-by field in the Via header of an unprotected REGISTER request, this FQDN will not be subject to any processing by the P-CSCF or other IMS entities.

- h) the Security-Client header field set to specify the security mechanism the UE supports:
 - for IPsec, the IPsec layer algorithms the UE supports and the parameters needed for the security association setup. The UE shall support the setup of two pairs of security associations as defined in 3GPP TS 33.203 [19]. The syntax of the parameters needed for the security association setup is specified in Annex H of 3GPP TS 33.203 [19]. The UE shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The UE shall support the IPSec layer algorithms for integrity protection and for encryption as defined in 3GPP TS 33.203 [19], and shall announce support for them according to the procedures defined in RFC 3329 [48]. In addition to transport mode the UE shall support UDP encapsulated tunnel mode as per RFC 3948 [63A] and shall announce support for both modes as described in 3GPP TS 33.203 [19]; or
 - if the UE supports TLS, the UE shall support the "tls" security mechanism, as specified in RFC 3329 [48], and the UE shall support TLS ciphersuites as described in 3GPP TS 33.203 [19];

When a 401 (Unauthorized) response to a REGISTER request is received and this response is received without integrity protection, the procedures described in subclause 5.1.1.2 apply with the following additions:

The UE shall check whether a received parameter is present in the topmost Via header.

- if no received parameter is present, or the receive parameter is present and the IP Address contained within matches the IP Address the UE placed in the sent-by field of the Via header, the UE shall proceed with the procedures described in subclause 5.1;
- if a received parameter is present and the IP Address does not match that which the UE placed in the sent-by field of the Via header, the UE is most likely behind a NAT. In this case, the UE shall verify using the

Security-Server header that either the mechanism-name "tls" or "ipsec-3gpp" and the mode "UDP-enc-tun" is selected. If the verification succeeds the UE shall behave as described in subclause K.2.1.2.5 and store the IP address contained in the received parameter as the UE's public IP address. If the verification does not succeed the UE shall abort the registration.

The UE shall check whether the outbound option-tag is present in the supported header.

- If no outbound option-tag is present, the UE shall refrain from registering additional Reg-IDs for the same private identity; or
- If an outbound option-tag is present, the UE may establish an IMS flow set with each discovered P-CSCF.

When a 401 (Unauthorized) response to a REGISTER request is received with integrity protection the UE shall behave as described in subclause K.2.1.2.5.

K.2.1.2.3 Initial subscription to the registration-state event package

The procedures described in subclause 5.1.1.3 apply with the additional procedures described in the present subclause.

On sending a SUBSCRIBE request, the UE shall populate the header fields as indicated in subclause 5.1.1.3 with the exception of subitem g) and with the addition of subitem h) as follows

The UE shall populate:

- g) a Contact header set to include a SIP URI that contains in the hostport parameter the public IP address of the UE or FQDN, the protected server port value bound to the security association or TLS session, and its instance ID (sip.instance), along with an "ob" parameter as described in ietf-sip-outbound [92];
- h) a Via header according to the following rules:
 - For UDP, the UE shall include the public IP address or FQDN and the protected server port value in the sent-by field. The UE shall also include the rport parameter as defined in RFC 3581 [56A]. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; or
 - For TCP, the UE shall include the public IP address or FQDN of the UE in the sent-by field. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;

K.2.1.2.4 User-initiated re-registration

The procedures described in subclause 5.1.1.4 apply with the additional procedures described in the present subclause.

On sending a REGISTER request that does not contain a challenge response, the UE shall populate the header fields as indicated in subclause 5.1.1.4 with the exception of subitems d) and e) which are modified as follows;

The UE shall populate:

- d) a Contact header set to include SIP URI(s) that contain(s) in the hostport parameter the private IP address of the UE or FQDN, the protected server port value bound to the security association or TLS session, its instance ID (sip.instance) along with the same reg-id used for the initial, successful, registration for the given P-CSCF public identity combination as described in draft-ietf-sip-outbound [92]. The UE shall include all supported ICSI values (coded as specified in subclause 7.2A.8.2), and IARI values (coded as specified in subclause 7.2A.9.2), for the IMS communication services and IMS applications it intends to use in a g.3gpp.app_ref feature tag as defined in subclause 7.9.2 and RFC 3840 [62];
- e) a Via header according to the following rules:
 - For UDP, the UE shall include the public IP address or FQDN and the protected server port value in the sent-by field. The UE shall also include the rport parameter as defined in RFC 3581 [56A]. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; or
 - For TCP, the UE shall include the public IP address or FQDN of the UE in the sent-by field. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;

When the timer F expires at the UE, the UE shall:

- 1) stop processing of all ongoing dialogs and transactions associated with that flow and silently discard them locally, and;
- 2) after releasing all IP-CAN bearers used for the transport of media according to the procedures in subclause 9.2.2, the UE shall follow the procedures in draft-ietf-sip-outbound [92] to form a new flow to replace the failed one. When registering to create a new flow to replace the failed one, procedures in subclause 5.1.1.2 apply.

NOTE: These actions may also be triggered as a result of the failure of a STUN keep-alive. It is an implementation option whether these actions are also triggered by other means than expiration of timer F, e.g., based on ICMP messages.

If failed registration attempts occur in the process of creating a new flow, the flow recovery procedures defined in draft-ietf-sip-outbound [86] shall apply.

K.2.1.2.5 Authentication

K.2.1.2.5.1 General

The procedures of subclause 5.1.1.5.1 apply with the additional procedures described in the present subclause.

On receiving a 401 (Unauthorized) response to the REGISTER request and the response is deemed to be valid and signalling security is to be used, the UE shall behave as of subclause 5.1.1.5.1 with the exception of subitem 3) which is modified as follows.

The UE shall:

- 3) send another REGISTER request using the temporary set of security associations or a TLS session to protect the message. The header fields are populated as defined for the initial request (see subclause K.2.1.2.2), with the addition that the UE shall include an Authorization header containing the private user identity and if the algorithm is AKAv1-MD5, the authentication challenge response shall be calculated by the UE using RES and other parameters, as described in RFC 3310 [49]. If the algorithm parameter is MD5, the UE shall calculate SIP digest-response parameters as indicated in RFC 2617 [21] and shall build an Authorization header based on these parameters. The UE shall also insert the Security-Client header that is identical to the Security-Client header that was included in the previous REGISTER request (i.e. the REGISTER request that was challenged with the received 401 (Unauthorized) response). The UE shall also insert the Security-Verify header into the request, by mirroring in it the content of the Security-Server header received in the 401 (Unauthorized) response. The UE shall set the Call-ID of the integrity protected REGISTER request which carries the authentication challenge response to the same value as the Call-ID of the 401 (Unauthorized) response which carried the challenge.

For IPsec, if the 200 (OK) response is not received before the temporary SIP level lifetime of the temporary set of security associations expires or a 403 (Forbidden) response is received, the UE shall consider the registration to have failed. The UE shall delete the temporary set of security associations it was trying to establish, and use the old set of security associations. The UE should send an unprotected REGISTER request according to the procedure specified in subclause K.2.1.2.2 if the UE considers the old set of security associations to be no longer active at the P-CSCF.

On receiving a 403 (Forbidden) response, the UE shall consider the registration to have failed. If performing SIP Digest with TLS, the UE should send an initial REGISTER according to the procedure specified in subclause K.2.1.2. if the UE considers the TLS session to be no longer active at the P-CSCF.

K.2.1.2.5.2 Network initiated re-authentication

The procedures of subclause 5.1.1.5.2 apply with the additional procedures described in the present subclause.

On starting the re-authentication procedure sending a REGISTER request that does not contain a challenge response, the UE shall behave as of subclause 5.1.1.5.2 with the exception of subitem 2) which is modified as follows.

The UE shall:

- 2) start the re-authentication procedures at the appropriate time (as a result of the S-CSCF procedure described in subclause 5.4.1.6) by initiating a re-registration as described in subclause K.2.1.2.4, if required.

K.2.1.2.5.3 Abnormal cases

The text in subclause 5.1.1.5.3 applies without changes.

K.2.1.2.6 Change of IPv6 address due to privacy

The text in subclause 5.1.1.5A applies without changes.

K.2.1.2.7 User-initiated deregistration

The procedures of subclause 5.1.1.6 apply with the additional procedures described in the present subclause.

On sending a REGISTER request, the UE shall populate the header fields as indicated in subclause 5.1.1.6 with the exception of subitems d) and e) which are modified as follows.

The UE shall populate:

- d) a Contact header set to either the value of "*" or SIP URI(s) that contain(s) in the hostport parameter the IP address of the UE or FQDN and the protected server port value bound to the security association or TLS session, its instance ID along with the same Reg-ID used for the initial, successful, registration for the given P-CSCF public identity combination as described in draft-ietf-sip-outbound [92]; The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;
- e) a Via header according to the following rules:
 - For UDP, the UE shall include the public IP address or FQDN and the protected server port value in the sent-by field. The UE shall also include the rport parameter as defined in RFC 3581 [56A]. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; or
 - For TCP, the UE shall include the public IP address or FQDN of the UE in the sent-by field. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT;

NOTE: In case of hosted NAT traversal only the UE public IP addresses are bound to security associations or TLS session.

K.2.1.2.8 Network-initiated deregistration

The procedures of subclause 5.1.1.7 apply with the additional procedures described in the present subclause.

Upon receipt of a NOTIFY request on the dialog which was generated during subscription to the reg event package as described in subclause 5.1.1.3, including one or more <registration> element(s) which were registered by this UE with:

- the state attribute set to "terminated" and the event attribute set to "rejected" or "deactivated"; or
- the state attribute set to "active" and the state attribute within the <contact> element belonging to this UE set to "terminated", and associated event attribute element to "rejected" or "deactivated";

The UE shall remove all registration details relating to these public user identities. In case of a "deactivated" event attribute, the UE shall start the initial registration procedure as described in subclause K.2.1.2.2. In case of a "rejected" event attribute, the UE shall release all dialogs related to those public user identities.

K.2.1.3 Subscription and notification

The text in subclause 5.1.2 applies without changes.

K.2.1.4 Generic procedures applicable to all methods excluding the REGISTER method

K.2.1.4.1 UE originating case

The procedures described in subclause 5.1.2A.1 apply with the additional procedures described in the present subclause.

When the UE sends any request, the requirements in subclause 5.1.2A.1 are extended by the following requirements. The UE shall include:

- a Via header according to the following rules:
 - For UDP, the UE shall include the public IP address or FQDN and the protected server port value in the sent-by field. The UE shall also include the rport parameter as defined in RFC 3581 [56A]. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; or
 - For TCP, the UE shall include the public IP address or FQDN of the UE in the sent-by field. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; and
- if the request contains a Contact header, include a Contact header according to the following rules:
 - if this is a request for a new or existing dialog, and the UE did insert a GRUU in the Contact header, then the UE shall also include its instance ID (sip.instance), and an "ob" parameter as described in draft-ietf-sip-outbound [92]; or
 - if this is a request for a new or existing dialog, and the UE did not insert a GRUU in the Contact header, then the UE shall include the public IP address of the UE or FQDN and the protected server port value bound to the security association or TLS session in the hostport parameter along with its instance ID (sip.instance), and an "ob" parameter as described in draft-ietf-sip-outbound [92]. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT.

NOTE: The means to ensure that the FQDN resolves to the public IP address of the NAT are outside of the scope of this specification. One option for resolving this is local configuration.

The UE shall discard any SIP response that is not integrity protected and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause K.2.1.2.

When a SIP transaction times out, i.e. timer B, timer F or timer H expires at the UE, the UE may behave as if timer F expired, as described in subclause K.2.1.2.4.

K.2.1.4.2 UE terminating case

The procedures described in subclause 5.1.2A.2 apply with the additional procedures described in the present subclause.

When the UE sends any response, the requirements in subclause 5.1.2A.2 are extended by the following requirement. If the UE did not include a GRUU in the Contact header, then the UE shall:

- include the public IP address of the UE or FQDN and the protected server port value bound to the security association or TLS session in the hostport parameter in any Contact header that is otherwise included. The UE shall only use a FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT.

The UE shall discard any SIP request that is not integrity protected and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause K.2.1.2.

K.2.1.5 Maintaining flows and detecting flow failures

STUN Binding Requests are used by the UE as a keep-alive mechanism to maintain NAT bindings for signaling flows (for dialogs outside a registration as well as within a registration) as well as to determine whether a flow (as described in draft-ietf-sip-outbound [92]) is still valid (e.g. a NAT reboot could cause the transport parameters to change). As such, the UE acts as a STUN client and shall follow the requirements defined by draft-ietf-behave-rfc3489bis [100]. Further, when using UDP encapsulated IPsec, the keep-alive capabilities defined within should not be used.

If the UE determines that the flow to a given P-CSCF is no longer valid (the UE does not receive a STUN reply or the reply indicates a new public IP Address) the UE shall consider the flow and any associated security associations invalid and perform the initial Registration procedures defined in K.2.1.2.2.

When a NAT is not present, it may not be desirable to send keep-alive requests (i.e. given battery considerations for wireless UEs). As such, if a UE can reliably determine that a NAT is not present (i.e. by comparing the 'received' and

'rport' parameters in the Via header in the response to the initial un-protected REGISTER request with the locally assigned IP Address and Port) then the UE may not perform the keep-alive procedures.

K.2.1.6 Emergency services

K.2.1.6.1 General

In addition to the procedures in subclause 5.1.6.1, the following additional procedures apply. When receiving and sending requests unprotected, the UE shall transmit and receive all SIP messages using the same IP Port.

K.2.1.6.2 Initial emergency registration

When a UE performs an initial emergency registration the UE shall perform the actions as specified in subclause K.2.1.2.2. The remaining procedures described in subclause 5.1.6.2 apply without modification.

K.2.1.6.2A New initial emergency registration

The text in subclause 5.1.6.2A applies without changes.

K.2.1.5A.3 Initial subscription to the registration-state event package

The text in subclause 5.1.6.3 applies without changes.

K.2.1.6.4 User-initiated emergency reregistration

The UE shall perform user-initiated emergency reregistration as specified in subclause K.2.1.2.4. The remaining procedures described in subclause 5.1.6.4 apply without modification.

K.2.1.6.5 Authentication

The UE shall perform the authentication procedures as specified in subclause K.2.1.2.5.1 and subclause K.2.1.2.5.2. The remaining procedures described in subclause 5.1.6.5 apply without modification.

K.2.1.6.6 User-initiated emergency deregistration

The text in subclause 5.1.6.6 applies without changes.

K.2.1.6.7 Network-initiated emergency deregistration

The text in subclause 5.1.6.7 applies without changes.

K.2.1.5A.8 Emergency session setup

K.2.1.6.8.1 General

The text in subclause 5.1.6.8.1 applies without changes.

K.2.1.6.8.2 Emergency session set-up in case of no registration

The procedures described in subclause 5.1.6.8.2 apply with the additional procedures described in the present subclause.

NOTE 1: In accordance with the definitions given in subclause 3.1 the IP address acquired initially by the UE in a hosted NAT scenario is the UE's private IP address.

On sending a INVITE request, the UE shall populate the header fields as indicated in subitems 1) through 9) of subclause 5.1.6.8.2 with the exceptions of subitem 7) which is modified as follows

The UE shall populate:

- 7) a Via header according to the following rules:
- for UDP, the Via header shall be set to include the private IP address or FQDN of the UE and the unprotected server port value where the UE will receive response to the emergency request in the sent-by field. The UE shall also include the rport parameter as defined in RFC 3581 [56A]; or
 - for TCP, the Via header shall be set to include the private IP address or FQDN of the UE in the sent-by field;

NOTE 2: If the UE specifies a FQDN in the host parameter in the Contact header and in the sent-by field in the Via header, this FQDN will not be subject to any processing by the P-CSCF or other entities of the IM CN subsystem.

When a non-negative response to the INVITE request is received, the UE shall check whether a received parameter is present in the topmost Via header.

- if no received parameter is present, or the receive parameter is present and the IP Address contained within matches the IP address the UE placed in the sent-by field of the Via header, the UE shall proceed with the procedures described in subclause 5.1.6.8.2 of the main body of this specification;
- if a received parameter is present and the IP address does not match that which the UE placed in the sent-by field of the Via header, the UE is most likely behind a NAT. In this case, the UE should maintain the flow to the P-CSCF as described in subclause K.2.1.5 for the duration of the dialog.

NOTE 3: If the UE is behind a NAT, it needs to maintain the NAT bindings between the UE and the P-CSCF to allow for requests from the P-CSCF related to the emergency session.

K.2.1.6.8.3 Emergency session set-up with an emergency registration

After a successful initial emergency registration, the UE shall apply the procedures as specified in subclause K.2.1.4, subclause 5.1.3, and subclause 5.1.4. The remaining procedures described in subclause 5.1.6.8.3 apply without modification.

K.2.1.6.8.4 Emergency session set-up within a non-emergency registration

The UE shall apply the procedures as specified in subclause K.2.1.4, subclause 5.1.3, and subclause 5.1.4. The remaining procedures described in subclause 5.1.6.8.4 apply without modification.

K.2.1.6.9 Emergency session release

The text in subclause 5.1.6.9 applies without changes.

K.2.2 Procedures at the P-CSCF

K.2.2.1 Introduction

This subclause describes the SIP procedures for supporting hosted NAT scenarios.

The description enhances the procedures specified in subclause 5.2.

K.2.2.2 Registration

The procedures described in subclause 5.2.2 apply with the additional procedures described in the present subclause.

When the P-CSCF receives a REGISTER request from the UE, the P-CSCF shall behave as of subclause 5.2.2 with the exception of subitems 1), 5), and 6) which are modified as follows.

The P-CSCF shall:

- 1) insert a Path header in the request including an entry containing:

- the SIP URI identifying the P-CSCF;
- an indication that requests routed in this direction of the path (i.e. from the S-CSCF to the P-CSCF) are expected to be treated as for the mobile-terminating case. This indication may e.g. be in a parameter in the URI, a character string in the user part of the URI, or be a port number in the URI; and
- an IMS flow token and the 'ob' URI parameter;

NOTE 1: The form of the IMS flow token is of local significance to the P-CSCF only and can thus be chosen freely by a P-CSCF implementation.

5) in case the REGISTER request was received without integrity protection, then:

- a) check the existence of the Security-Client header. If the header is not present and signalling security is used, then the P-CSCF shall return a suitable 4xx response. If the header is present the P-CSCF shall:
 - in case the UE indicated support for either "TLS" or "UDP-enc-tun" then remove and store it; or
 - in case the UE does not indicate support for either "TLS" or "UDP-enc-tun" then:
 - if the host portion of the sent-by field in the topmost Via header contains an IP address that differs from the source address of the IP packet, silently drop the REGISTER request;
 - otherwise continue with procedures as of subclause 5.2.2;

NOTE 2: If the UE does not indicate support for either "TLS" or "UDP-enc-tun" and the P-CSCF detects that the UE is located behind a NAT device, then the P-CSCF can just drop the REGISTER request to avoid unnecessary signalling traffic.

- b) if the host portion of the sent-by field in the topmost Via header contains a FQDN, or if it contains an IP address that differs from the source address of the IP packet, the UE is assumed to be behind a NAT and the P-CSCF shall add a received parameter in accordance with the procedure defined in RFC 3261 [26]. If the P-CSCF adds a received parameter, the P-CSCF shall also add an rport parameter in accordance with the procedure defined in RFC 3581 [56A] and remember that the UE is behind a NAT;

6) in case the REGISTER request was received integrity protected, then the P-CSCF shall:

- a) check the security association or TLS session which protected the request. If IPsec is used and the security association is a temporary one, or TLS is used the P-CSCF shall:
 - in case the host parameter in the Contact address is in the form of a FQDN, ensure that the given FQDN will resolve (e.g., by reverse DNS lookup) to the IP address bound to the security association or TLS session;
 - in case the P-CSCF has detected earlier that the UE is located behind a NAT and IPsec is being used, retrieve port_Uenc from the encapsulating UDP header of the packet received and complete configuration of the temporary set of security associations by configuring port_Uenc in each of the temporary security associations;
 - check whether the request contains a Security-Verify header in addition to a Security-Client header. If there are no such headers, then the P-CSCF shall return a suitable 4xx response. If there are such headers, then the P-CSCF shall compare the content of the Security-Verify header with the content of the Security-Server header sent earlier and the content of the Security-Client header with the content of the Security-Client header received in the challenged REGISTER request. If those do not match, then there is a potential man-in-the-middle attack. The request should be rejected by sending a suitable 4xx response. If the contents match, the P-CSCF shall remove the Security-Verify and the Security-Client header;
- b) process the Via header according to the following rules:
 - If the host portion of the sent-by field in the topmost Via header contains a FQDN, or if it contains an IP address that differs from the source address of the IP packet, the P-CSCF shall add a received parameter in accordance with the procedure defined in RFC 3261 [26];
 - If the P-CSCF adds a received parameter and UDP is being used, the P-CSCF shall also add an rport parameter with the UE's protected server port;

When the P-CSCF receives a 401 (Unauthorized) response to an unprotected REGISTER request and the P-CSCF previously determined that the UE is behind a NAT and the UE indicated support for either "UDP-enc-tun" IPsec mode or "tls", the P-CSCF shall:

- 1) delete any temporary set of security associations established towards the UE;
- 2) for IPsec, remove the CK and IK values contained in the 401 (Unauthorized) response and bind them to the proper private user identity and to the temporary set of security associations which will be setup as a result of this challenge. The P-CSCF shall forward the 401 (Unauthorized) response to the UE if and only if the CK and IK have been removed;
- 3) insert a Security-Server header in the response, containing the P-CSCF security list and the parameters needed:
 - for IMS-AKA, the P-CSCF shall support the setup of two pairs of security associations, as defined in 3GPP TS 33.203 [19]. The syntax of the parameters needed of the IPsec security association setup is specified in annex H of 3GPP TS 33.203 [19]. The P-CSCF shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The P-CSCF shall support the IPsec layer algorithms for integrity protection and for encryption as defined in 3GPP TS 33.203 [19]. The P-CSCF shall indicate "UDP-enc-tun" as the only IPsec mode; or
 - for SIP Digest with TLS, the P-CSCF shall support the "tls" security mechanism, as specified in RFC 3329 [48]. If the P-CSCF supports TLS, the P-CSCF shall support TLS ciphersuites as described in 3GPP TS 33.203 [19]. The P-CSCF should use the q value to indicate a preference for TLS;
- 4) for IMS AKA, set up the temporary set of security associations with a temporary SIP level lifetime between the UE and the P-CSCF for the user identified with the private user identity. The P-CSCF shall select UDP encapsulated tunnel mode and shall leave the value for port-Uenc unspecified in each of the temporary security associations. For further details see 3GPP TS 33.203 [19] and RFC 3329 [48]. The P-CSCF shall set the temporary SIP level lifetime for the temporary set of security associations to the value of reg-await-auth timer; and
- 5) send the 401 (Unauthorized) response unprotected to the UE using the mechanisms described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and, in case UDP is used, to the port indicated in the rport parameter (if present) of the Via header associated with the UE. In case TCP is used as transport protocol, the P-CSCF shall use the port on which the REGISTER request was received as client port for sending the response back to the UE.

When the P-CSCF receives a 401 (Unauthorized) response to a protected REGISTER request and the P-CSCF previously determined that the UE is behind a NAT and that REGISTER request was protected by an old set of security associations that use UDP encapsulated tunnel mode, the P-CSCF shall:

- 1) delete any temporary set of security associations established towards the UE;
- 2) remove the CK and IK values contained in the 401 (Unauthorized) response and bind them to the proper private user identity and to the temporary set of security associations which will be setup as a result of this challenge. The P-CSCF shall forward the 401 (Unauthorized) response to the UE if and only if the CK and IK have been removed;
- 3) insert a Security-Server header in the response, containing the P-CSCF security list and the parameters needed for the security association setup, as specified in annex H of 3GPP TS 33.203 [19]. The P-CSCF shall support the "ipsec-3gpp" security mechanism, as specified in RFC 3329 [48]. The P-CSCF shall support the IPsec layer algorithms for integrity protection and encryption as defined in 3GPP TS 33.203 [19]. The P-CSCF shall indicate "UDP-enc-tun" as the IPsec mode;
- 4) set up the temporary set of security associations with a temporary SIP level lifetime between the UE and the P-CSCF for the user identified with the private user identity. The P-CSCF shall select UDP encapsulated tunnel mode and shall specify the same port_Uenc that was used in the old set of security associations. The P-CSCF shall set the temporary SIP level lifetime for the temporary set of security associations to the value of reg-await-auth timer; and
- 5) send the 401 (Unauthorized) response to the UE using the old set of security associations and using the rules for sending responses as described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and to the port indicated in the rport parameter (if present) of the Via header associated with the UE. Otherwise, when the P-CSCF receives a 401

(Unauthorized) response to an unprotected REGISTER request and this response does not contain a received and rport parameter or when the P-CSCF receives a 401 (Unauthorized) response to a protected REGISTER request and that REGISTER request was protected by an old set of security associations that do not use UDP encapsulated tunnel mode, the P-CSCF shall proceed as described in subclause 5.2.2 of the main body of this specification.

K.2.2.3 General treatment for all dialogs and standalone transactions excluding the REGISTER method

K.2.2.3.1 Requests initiated by the UE

The procedures described in subclause 5.2.6.3 apply with the additional procedures described in the present subclause.

When the P-CSCF receives from the UE a request method other than a REGISTER request, and a Service-Route header list exists for the initiator of the request, the requirements are extended by the following requirements.

The P-CSCF shall:

- process the Via header according to the following rules:
 - If the host portion of the sent-by field in the topmost Via header contains a FQDN, or if it contains an IP address that differs from the source address of the IP packet, the P-CSCF shall add a received parameter in accordance with the procedure defined in RFC 3261 [26];
 - If the P-CSCF adds a received parameter and UDP is being used, the P-CSCF shall also add an rport parameter with the UE's protected server port;
- Before forwarding the request, based on the topmost Route header, in accordance with the procedures of RFC 3261 [26], the P-CSCF shall ensure that all signalling during the lifetime of the dialogue is sent over the same IMS flow set as the dialogue initiating request.

NOTE: The suggested way to ensure all signaling is sent over the same IMS flow set is to form an IMS flow token in the same way that a P-CSCF would form this for the Path header and insert this IMS flow token in the user portion of the URI used in the record route header field value.

When the P-CSCF receives a 1xx or 2xx response to the above request, the requirements are extended by the following requirements. The P-CSCF shall:

- forward the response to the UE using the mechanisms described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and, in case UDP is used, to the port indicated in the rport parameter (if present) of the Via header associated with the UE. In case TCP is used, the P-CSCF shall use the port on which the REGISTER request was received as client port for sending the response back to the UE.

K.2.2.3.2 Requests terminated by the UE

The procedures described in subclause 5.2.6.4 apply with the additional procedures described in the present subclause.

When the P-CSCF receives, destined for the UE, a request, the requirements are extended by the following requirements. The P-CSCF shall:

- forward the request to the terminating UE's server port over the appropriate flow within the denoted IMS flow set.

K.2.2.4 STUN server support

To support UE keep-alive procedures, the P-CSCF shall also support the requirements for a STUN server as defined by draft-ietf-behave-rfc3489bis [100]. The STUN server shall use the same signaling port that is used for SIP.

K.2.2.5 Emergency services

K.2.2.5.1 General

In addition to the procedures in subclause 5.2.10.1, the following additional procedures apply. When receiving and sending requests unprotected, the P-CSCF shall transmit and receive all SIP messages using the same IP Port.

K.2.2.5.2 General treatment for all dialogs and standalone transactions excluding the REGISTER method – from an unregistered user

The procedures described in subclause 5.2.10.2 apply with the additional procedures described in the present subclause.

When the P-CSCF receives from the UE a request method other than a REGISTER request, and matches one of the emergency service identifiers in any of these lists, the requirements are extended by the following requirements:

The P-CSCF shall

- process the Via header according to the following rules:
 - if the host portion of the sent-by field in the topmost Via header contains a FQDN, or if it contains an IP address that differs from the source address of the IP packet, the P-CSCF shall add a received parameter in accordance with the procedure defined in RFC 3261 [26]; and
 - if the P-CSCF adds a received parameter and UDP is being used, the P-CSCF shall also add an rport parameter with the port the UEs request came from;
- before forwarding the request, based on the topmost Route header, in accordance with the procedures of RFC 3261 [26], the P-CSCF shall ensure that all signaling during the lifetime of the dialogue is sent over the same IMS flow set as the dialogue initiating request.

NOTE: The suggested way to ensure all signaling is sent over the same IMS flow set is to form an IMS flow token in the same way that a P-CSCF would form this for the Path header and insert this IMS flow token in the user portion of the URI used in the record route header field value.

When the P-CSCF receives a 1xx or 2xx response to the above request, the requirements are extended by the following requirements. The P-CSCF shall:

- forward the response to the UE using the mechanisms described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and, in case UDP is used, to the port indicated in the rport parameter (if present) of the Via header associated with the UE. In case TCP is used, the P-CSCF shall use the port on which the REGISTER request was received as client port for sending the response back to the UE.

K.2.2.5.3 General treatment for all dialogs and standalone transactions excluding the REGISTER method after emergency registration

The procedures described in subclause 5.2.10.3 apply with the additional procedures described in the present subclause.

When the P-CSCF receives from the UE a request method other than a REGISTER request, and matches one of the emergency service identifiers in any of these lists, the requirements are extended by the following requirements:

- the P-CSCF shall follow the procedures described in subclause K.2.2.3.1 and subclause 5.2.7.2.

When the P-CSCF receives a 1xx or 2xx response to the above request, the requirements are extended by the following requirements. The P-CSCF shall:

- forward the response to the UE using the mechanisms described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and, in case UDP is used, to the port indicated in the rport parameter (if present) of the Via header associated with the UE. In case TCP is used as transport protocol, the P-CSCF shall use the port on which the REGISTER request was received as client port for sending the response back to the UE.

K.2.2.5.4 General treatment for all dialogs and standalone transactions excluding the REGISTER method – non-emergency registration

The procedures described in subclause 5.2.10.4 apply with the additional procedures described in the present subclause.

When the P-CSCF receives from the UE a request method other than a REGISTER request, and matches one of the emergency service identifiers in any of these lists, the requirements are extended by the following requirements:

- the P-CSCF shall follow the procedures described in subclause K.2.2.3.1 and subclause 5.2.7.2.

When the P-CSCF receives a 1xx or 2xx response to the above request, the requirements are extended by the following requirements. The P-CSCF shall:

- forward the response to the UE using the mechanisms described in RFC 3261 [26] and RFC 3581 [56A], i.e. the P-CSCF shall send the response to the IP address indicated in the received parameter and, in case UDP is used, to the port indicated in the rport parameter (if present) of the Via header associated with the UE. In case TCP is used as transport protocol, the P-CSCF shall use the port on which the REGISTER request was received as client port for sending the response back to the UE.

K.2.2.5.5 Abnormal cases

The text in subclause 5.2.10.5 applies without changes.

K.2.3 Procedures at the S-CSCF

K.2.3.1 Registration and authentication

K.2.3.1.1 Introduction

The procedures described in subclause 5.4.1.1 apply with the additional procedures described in the present subclause

K.2.3.2 Initial registration and user-initiated re-registration

K.2.3.2.1 Unprotected REGISTER

The procedures described in subclause 5.4.1.2.1 apply with the additional procedures described in the present subclause.

Upon receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no", for a user identity linked to a private user identity that has a registered public user identity but with a new contact address, the S-CSCF shall follow the procedures described in subitem 1) and 2) which is modified as follows:

- 2) if the authentication has been successful and if the previous registration has not expired, the S-CSCF shall determine if the contact address contains a reg-id and instance-id in the received contact header. If the parameters are present, the S-CSCF shall follow the requirements defined in draft-ietf-sip-outbound [92]. If the parameters are not present, the S-CSCF shall perform the network initiated deregistration procedure only for the previous contact information as described in subclause 5.4.1.5.

Upon receipt of a REGISTER request with the "integrity-protected" parameter in the Authorization header set to "no", which is not for an already registered public user identity linked to the same private user identity, the S-CSCF shall follow the procedures described in subitems 1) through 8) with the addition of subitem 6b) which is as follows:

- 6b) if the URI in the first path header field has an "ob" URI parameter, include a Supported header with the 'outbound' option-tag as described in draft-ietf-sip-outbound [92] in the 401 (Unauthorized) response.

K.2.3.2.2 Protected REGISTER

The procedures described in subclause 5.4.1.2.2 apply with the additional procedures described in the present subclause.

Upon receipt of a REGISTER request with the 'integrity-protected' parameter in the Authorization header set to 'yes' or 'tls=yes' and the timer reg-await-auth is running the S-CSCF shall follow the procedures as described in all subitems with the addition of subitem 11) i) which is as follows:

- i) a Supported header with the 'outbound' option-tag as described in draft-ietf-sip-outbound [92] in the 401 (Unauthorized) response;

K.2.3.3 General treatment for all dialogs and standalone transactions excluding requests terminated by the S-CSCF

K.2.3.3.1 Determination of mobile-originated or mobile terminated case

The text in subclause 5.4.3.1 applies without changes

K.2.3.3.2 Requests initiated by the served user

The text in subclause 5.4.3.2 applies without changes

K.2.3.3.3 Requests terminated by the served user

The procedures described in subclause 5.4.3.3 apply with the additional procedures described in the present subclause.

When the S-CSCF receives, destined for a statically pre-configured PSI or a registered served user, an initial request for a dialog or a request for a standalone transaction, prior to forwarding the request, the S-CSCF shall follow all the procedures as describes with the exception of subitem 10) a) which is modified as follows:

- 10) in case there are no Route headers in the request, the S-CSCF shall:
 - a) if there is more than one route in the target set determined in steps 8) and 9) above, the S-CSCF shall:
 - if the fork directive in the Request Disposition header was set to "no-fork", the contact with the highest qvalue parameter shall be used when building the Request-URI. In case no qvalue parameters were provided, the S-CSCF shall decide locally what contact address to be used when building the Request-URI; otherwise
 - fork the request or perform sequential search based on the relative preference indicated by the qvalue parameter of the Contact header in the original REGISTER request, as described in RFC 3261 [26]. In case no qvalue parameters were provided, then the S-CSCF determine the contact address to be used when building the Request-URI as directed by the Request Disposition header as described in RFC 3841 [56B]. If the Request-Disposition header is not present, the S-CSCF shall decide locally whether to fork or perform sequential search among the contact addresses;
 - in case that no route is chosen, the S-CSCF shall return a 480 (Temporarily unavailable) response or another appropriate unsuccessful SIP response and terminate these procedures.
 - Per the rules defined in draft-ietf-sip-outbound [92], the S-SCSF shall not populate the target set with more than one contact with the same AOR and instance-id at a time. If a request for a particular AOR and instance-id fails with a 430 response, the S-CSCF shall replace the failed branch with another target with the same AOR and instance-id, but a different reg-id;
 - If two bindings have the same instance-id and reg-id, it should prefer the contact that was most recently updated;

K.2.4 Procedures at the IBCF

K.2.4.1 General

This subclause describes the IBCF procedures for supporting ICE [99]. The description enhances the procedures specified in subclause 5.10.

K.2.4.2 IBCF as an exit point

K.2.4.2.1 Registration

The text in subclause 5.10.2.1 applies without changes.

K.2.4.2.1A General

The text in subclause 5.10.2.1A applies without changes.

K.2.4.2.2 Initial requests

The text in subclause 5.10.2.2 applies without changes.

K.2.4.2.3 Subsequent requests

The text in subclause 5.10.2.3 applies without changes.

K.2.4.2.4 IBCF-initiated call release

The text in subclause 5.10.2.4 applies without changes.

K.2.4.3 IBCF as an entry point

K.2.4.3.1 Registration

The text in subclause 5.10.3.1 applies without changes.

K.2.4.3.1A General

The text in subclause 5.10.3.1A applies without changes.

K.2.4.3.2 Initial requests

The text in subclause 5.10.3.2 applies without changes.

K.2.4.3.3 Subsequent requests

The text in subclause 5.10.3.3 applies without changes.

K.2.4.3.4 IBCF-initiated call release

The text in subclause 5.10.3.4 applies without changes.

K.2.4.4 THIG functionality in the IBCF

K.2.4.4.1 General

The text in subclause 5.10.4.1 applies without changes.

K.2.4.4.2 Encryption for network topology hiding

The text in subclause 5.10.4.2 applies without changes.

K.2.4.4.3 Decryption for network topology hiding

The text in subclause 5.10.4.3 applies without changes.

K.2.4.5 IMS-ALG functionality in the IBCF

The text in subclause 5.10.5 applies without changes.

K.2.4.6 Screening of SIP signalling

K.2.4.6.1 General

The text in subclause 5.10.6.1 applies without changes.

K.2.4.6.2 IBCF procedures for SIP headers

The text in subclause 5.10.6.2 applies without changes.

K.2.4.6.3 IBCF procedures for SIP message bodies

The text in subclause 5.10.6.3 applies without changes.

K.2.4.7 ICE functionality in the IBCF

K.2.4.7.1 General

This subclause describes procedures of an IBCF to support ICE (draft-ietf-mmusic-ice [99]).

If no TrGW is inserted, an IBCF may transparently pass ICE related SDP attributes to support ICE. The remaining procedures in this subclause K.2.4.7 are only applicable if the IBCF is inserting a TrGW on the media plane.

When the IBCF with attached TrGW receives SDP candidate information from the offerer it shall not forward the candidate information towards the answerer. When the IBCF receives SDP candidate information from the answerer it shall not forward the candidate information towards the offerer. The remaining procedures in subclause K.2.4.7.1 are optional.

NOTE: An IBCF that removes and/or does not provide ICE related SDP attributes (e.g. a=candidate) in the offer/answer exchange will cause the ICE procedures to be aborted and the address and port information in the m and c lines of the SDP offer will be used. If this address and port information contains the relayed candidate address of a STUN Relay server, as recommended by ICE, then an extra media relay server will be used for the session which is not necessary nor desirable.

The IBCF with attached TrGW performs separate ICE procedures towards the offerer and the answerer. The usage of ICE is negotiated separately with the offerer and answerer, and ICE may be applied independently at either side. Furthermore, the IBCF may be configured to apply ICE procedures only towards one network side, e.g. towards the IMS it belongs to.

Since the IBCF is not located behind a NAT, it does not request the TrGW to generate keep-alive messages even when acting as a full ICE entity. The IBCF only requests the TrGW to terminate and generate STUN messages used for the candidate selection procedures.

Since the IBCF is not located behind a NAT the IBCF shall only include host candidates in SDP offers and answers generated by the IBCF.

K.2.4.7.2 IBCF full ICE procedures for UDP based streams

K.2.4.7.2.1 General

This subclause describes the IBCF full ICE procedures for UDP based streams.

K.2.4.7.2.2 IBCF receiving SDP offer

When the IBCF receives an SDP offer including ICE candidate information, the IBCF shall send the candidate information for each UDP based stream received in the SDP offer towards the TrGW. The IBCF shall request the TrGW to reserve media- and STUN resources towards the offerer, based on the candidate information, in order to allow the TrGW to perform the necessary connectivity checks per the ICE procedures.

If the offerer is acting as an ICE controller entity the IBCF shall act as an ICE controlled entity in the direction towards the offerer. If the offerer is acting as an ICE controlled entity the IBCF shall act as an ICE controller entity in the direction towards the offerer.

K.2.4.7.2.3 IBCF sending SDP offer

Prior to sending an SDP offer, the IBCF may choose to apply related ICE procedures, e.g. if it expects to interact with terminals applying procedures as described in subclause K.5.2, and if both the IBCF and TrGW also support ICE procedures. To invoking these ICE procedures, the IBCF shall request the TrGW to reserve media- and STUN resources towards the answerer for each UDP based media stream and include a host candidate attribute for each UDP based stream in the SDP offer, providing the reserved address and port at the TrGW as destination.

The IBCF shall always act as an ICE controller entity towards the answerer.

NOTE: The host candidate address included by the IBCF in the generated SDP offer matches the c- and m line information for the associated UDP stream in the SDP offer.

K.2.4.7.2.4 IBCF receiving SDP answer

When the IBCF receives an SDP answer including ICE candidate information, the IBCF shall send the candidate information for each UDP based stream received in the SDP answer towards the TrGW.

The IBCF shall request the TrGW to perform ICE candidate selection procedures towards the answerer. The IBCF shall request the TrGW to inform the IBCF, for each UDP stream, which candidate pair has been selected towards the answerer, once the candidate selection procedure towards the answerer has finished.

If the TrGW indicates to the IBCF that, for at least one UDP stream, the selected candidate pair does not match the c- and m- line address information for the associated UDP stream, exchanged between the IBCF and the answerer, and the IBCF acts an ICE controller entity towards the answerer, the IBCF shall send a new offer towards the answerer in order to align the c- and m- lines address information with the chosen candidate pair for the associated UDP stream.

K.2.4.7.2.5 IBCF sending SDP answer

When the IBCF generates an SDP answer for an offer that included ICE candidate information, it shall request the TrGW to reserve media- and STUN resources towards the offerer for each UDP based media stream and include an SDP host candidate attribute for each UDP based stream in the SDP answer, providing the reserved address and port at the TrGW as destination.

The host candidate information included by the IBCF in the generated SDP answer shall matche the c- and m line information for the associated UDP stream in the SDP answer.

The IBCF shall request the TrGW to perform ICE candidate selection procedures towards the offerer. The IBCF shall request the TrGW to inform the IBCF, for each UDP stream, which candidate pair has been selected towards the offerer, once the candidate selection procedure towards the answerer has finished.

If the TrGW indicates to the IBCF that the selected candidate pair towards the offerer does not match the c- and m- line address information for the associated UDP stream, exchanged between the IBCF and the offerer, and the IBCF acts an ICE controller entity towards the offerer, the IBCF shall send an offer towards the offerer (which will not act as an answerer) in order to align the c- and m- line address information with the chosen candidate pair for the associated UDP stream.

K.2.4.7.3 IBCF ICE lite procedures for UDP based streams

When the IBCF is using ICE lite procedures for UDP based streams, the IBCF procedures are identical as described in subclause K.2.4.7.2, with the following exceptions:

- The IBCF always acts as an ICE controlled entity towards the offerer and towards the answerer, and;
- The IBCF requests the TrGW to perform ICE lite candidate selection procedures, as defined in ICE

K.2.4.7.4 ICE procedures for TCP based streams

K.2.4.7.4.1 General

The IBCF shall terminate ICE procedures for TCP based streams. Instead the IBCF will initiate the fallback procedures, as defined in draft-ietf-mmusic-ice-tcp-05 [131], and use the mechanism defined in RFC 4145 [83] for establishing TCP based streams.

An entity that supports ICE continues the ICE procedures for UDP based streams, even if no candidates are provided for TCP based streams.

NOTE: The IBCF ICE procedures for TCP based streams are identical no matter whether the IBCF uses full ICE- or ICE lite- procedures for UDP based streams.

Editor's note: The procedures in this subclause are based on the latest discussions in IETF.

K.2.4.7.4.2 IBCF receiving SDP offer

When the IBCF receives an SDP offer, the IBCF shall ignore the candidate attributes for TCP based streams. The IBCF shall not send the candidate information for TCP based streams towards the TrGW.

K.2.4.7.4.3 IBCF sending SDP offer

When the IBCF generates an SDP offer it shall include a "passive" attribute, as defined in RFC 4145 [83], for each TCP based stream, which will cause the answerer to initiate the TCP connections towards the TrGW. The IBCF shall not include any candidate attributes for TCP based streams in the SDP offer.

K.2.4.7.4.4 IBCF receiving SDP answer

Since the IBCF does not include candidates in the SDP offer towards the answerer, there are no ICE specific procedures when the IBCF receives an SDP answer.

NOTE: If the SDP answer contains candidate attributes for TCP based streams, the IBCF simply discards the candidate attributes.

K.2.4.7.4.5 IBCF sending SDP answer

When the IBCF generates an SDP answer it shall include a "passive" attribute, as defined in RFC 4145 [83], for each TCP based stream, which will cause the offerer to initiate the TCP connections towards the TrGW. The IBCF shall not include any candidate attributes for TCP based streams in the SDP answer.

K.3 Application usage of SDP

K.3.1 UE usage of SDP

The procedures as of subclause 6.1 apply.

K.3.2 P-CSCF usage of SDP

K.3.2.1 Introduction

Subclauses K.3.2.2 through K.3.2.4 describe the SDP related procedures performed by the P-CSCF in support of hosted NAT.

K.3.2.2 Receipt of an SDP offer

When the P-CSCF receives an SDP offer during session establishment, if this offer comes from a UE which does not support the procedures defined in subclause K.5.2.1 and is located behind a hosted NAT, the P-CSCF shall modify the SDP offer by replacing the IP Address(es) and port number(s) received in the SDP offer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface.

NOTE: The P-CSCF can determine if the UE supports the ICE procedures covered in section K.5.2.1 by the presence of a=candidate attributes in the SDP.

When the P-CSCF receives an SDP offer during session establishment, if this offer comes from a UE which does support the procedures defined in subclause K.5.2.1 and is located behind a hosted NAT, the P-CSCF may choose to modify the SDP offer by replacing the IP Address(es) and port number(s) received in the SDP offer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface. If the P-CSCF chooses to modify the SDP offer, the P-CSCF shall remove all occurrences of a=candidate attributes in the SDP offer.

K.3.2.3 Receipt of an SDP answer

When the P-CSCF receives any SDP answer to an SDP offer described in subclause K.5.2.1, if this answer comes from a UE which does not support the procedures defined in subclause K.5.2.2 and is located behind a hosted NAT, the P-CSCF shall modify the SDP answer by replacing the IP address(es) and port number(s) received in the SDP answer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface.

NOTE: The P-CSCF can determine if the UE supports the ICE procedures covered in section K.5.2.1 by the presence of a=candidate attributes in the SDP.

When the P-CSCF receives any SDP answer to an SDP offer described in subclause K.5.2.1, if this answer comes from a UE which does support the procedures defined in subclause K.5.2.2 and is located behind a hosted NAT, the P-CSCF may choose to modify the SDP answer by replacing the IP address(es) and port number(s) received in the SDP answer by the IP address(es) and port number(s) received from the IMS access gateway over the Iq interface. If the P-CSCF chooses to modify the SDP answer, the P-CSCF shall remove all occurrences of a=candidate attributes in the SDP offer.

K.3.2.4 Change of media connection data

After the session is established, it is possible for both ends of the session to change the media connection data for the session. When the P-CSCF receives a SDP offer/answer coming from a UE located behind a hosted NAT with port number(s) or IP address(es) included, there are three different possibilities:

- IP address(es) or/and port number(s) have been added. In this case, the P-CSCF shall apply the procedures as described in subclause K.3.2.2 and subclause K.3.2.3 as appropriate for those additional IP address(es) or/and port number(s);
- IP address(es) and port number(s) have been reassigned to the end points. In this case, the P-CSCF shall apply the procedures as described in subclause K.3.2.2 and subclause K.3.2.3 as appropriate for those reassigned IP address(es) and port number(s);

NOTE: If necessary, the P-CSCF or IBCF will cause the IMS access gateway to release the resources related to the previously assigned IP address(es) and port number(s).

- no change has been made to the IP address(es) and port number(s). The P-CSCF shall apply procedures described in subclause K.3.2.2 using the previously stored IP address(es) and port number(s).

K.4 Usage of SIP in case UDP encapsulated IPsec or TLS is not employed

K.4.1 Introduction

The procedures defined in subclauses K.2 and K.3 remain unchanged except as noted below when supporting hosted NAT scenarios in case UDP encapsulated IPsec or TLS is not employed. In these scenarios the procedures for NAT traversal must take into account that all SIP requests and responses are not protected by an IPsec security association.

K.4.2 Procedures at the UE

When SIP Digest is used and TLS is disabled at the UE, the UE shall transmit and receive all SIP messages using the same IP Port.

When forming contact headers, protected server ports are not used and shall be omitted from all contact headers.

When forming a Via header, the UE shall act as follows:

- for UDP, the UE shall include the private IP address or FQDN in the sent-by field. The UE shall also include the rport parameter as defined in RFC 3581 [56A]. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT; or
- for TCP, the UE shall include the private IP address or FQDN of the UE in the sent-by field. The UE shall only use an FQDN, if it is ensured that the FQDN resolves to the public IP address of the NAT.

K.4.3 Procedures at the P-CSCF

When SIP Digest is used and TLS is disabled at the P-CSCF, the P-CSCF shall transmit and receive all SIP messages using the same IP Port.

Additionally, the P-CSCF shall process the Via header according to the following rules:

- if the host portion of the sent-by field in the topmost Via header contains an FQDN, or if it contains an IP address that differs from the source address of the IP packet, the P-CSCF shall add a received parameter in accordance with the procedure defined in RFC 3261 [26];
- if the P-CSCF adds a received parameter and UDP is being used, the P-CSCF shall also add an rport parameter with the port the UEs request came from.

K.5 Application usage of ICE

K.5.1 Introduction

The following subclauses describe a UEs usage of the Interactive Connectivity Establishment (ICE) procedures as documented in draft-ietf-mmusic-ice [99]

K.5.2 UE usage of ICE

K.5.2.1 General

NAT bindings also need to be kept alive for media. draft-ietf-mmusic-ice [99] provides requirements for STUN based keepalive mechanisms. UEs that do not implement the ICE procedures as defined in draft-ietf-mmusic-ice [99] should implement the keepalive procedures defined in draft-ietf-mmusic-ice [99]. In the case where keepalives are required and the other end does not support ICE (such that STUN cannot be used for a keepalive), the UE shall send an empty (no

payload) RTP packet with a payload type of 20 as a keepalive as long as the other end has not negotiated the use of this value. If this value has already been negotiated, then some other unused static payload type from table 5 of RFC 3551 [89] shall be used. When sending an empty RTP packet, the UE shall continue using the sequence number (SSRC) and timestamp as the negotiated RTP stream.

K.5.2.2 Call initiation – UE-origination case

The UE should support the agent requirements for ICE as defined by draft-ietf-mmusic-ice [99] when sending the initial INVITE request. draft-ietf-mmusic-ice [99] provides procedures for:

- 1) Gathering candidate addresses for RTP and RTCP prior to sending the INVITE;
- 2) Encoding the candidate addresses in the SDP that is included with the INVITE;
- 3) Acting as a STUN server to receive binding requests from the remote client when it does connectivity checks;
- 4) Performing connectivity checks on received candidate addresses for RTP and RTCP;
- 5) Determining and possibly selecting a better active address based on the requirements in draft-ietf-mmusic-ice [99];
- 6) Subsequent offer/answer exchanges; and
- 7) Sending media.

When supporting the ICE procedures, the UE shall also support the STUN agent requirements as described in draft-ietf-behave-rfc3489bis [100] in order to gather STUN addresses, the STUN Relay client requirements as described in draft-ietf-behave-turn [101] in order to gather STUN Relay Server addresses and the STUN Server requirements defined in draft-ietf-mmusic-ice [99] as well as the requirements for STUN Servers defined in draft-ietf-behave-rfc3489bis [100] for responding to connectivity checks.

Draft-ietf-mmusic-ice [99] provides an algorithm for determining the priority of a particular candidate. The following additional requirements are provided to the UE:

- 1) The type preference assigned for each type of candidate from least to highest should be: Relayed Transport Address, STUN address, local address; and
- 2) If the UE has a dual IPv4/IPv6 stack, IPv6 addresses may be assigned a higher local preference than IPv4 addresses based on the operator's policy.

Draft-ietf-mmusic-ice [99] provides guidance on choosing the in-use candidate and recommends that a UE choose relayed candidates as the in-use address. The following additional requirements are provided to the UE:

- 1) If a STUN relay server is available, the Relayed Transport Address should be used as the initial active transport address (i.e. as advertised in the m/c lines of the SDP); and
- 2) If a STUN relay server is not available, an address obtained via STUN should be used as the initial active transport address.

Regardless of whether the UE supports the above procedures, the UE shall, upon receipt of an SDP answer with candidate addresses, perform connectivity checks on the candidate addresses as described in draft-ietf-mmusic-ice [99]. In order to perform connectivity checks, the UE shall act as a STUN client as defined in draft-ietf-behave-rfc3489bis [100]. Further, the UE shall also follow the procedures in draft-ietf-mmusic-ice [99] when sending media.

K.5.2.3 Call termination – UE-termination case

The UE should support agent requirements for ICE as defined by draft-ietf-mmusic-ice [99] when receiving an initial INVITE request. draft-ietf-mmusic-ice [99] provides procedures for:

- 1) Gathering candidate addresses for RTP and RTCP prior to sending the answer as described in draft-ietf-mmusic-ice [99];
- 2) Encoding the candidate addresses in the SDP answer as described in draft-ietf-mmusic-ice [99];
- 3) Acting as a STUN server to receive binding requests from the remote client when it does connectivity checks;

- 4) Performing connectivity checks on received candidate addresses for RTP and RTCP;
- 5) Determining and possibly selecting a better active address based on the requirements in draft-ietf-mmusic-ice [99];
- 6) Subsequent offer/answer exchanges; and
- 7) Sending media.

When supporting the ICE procedures, the UE shall also support the STUN agent requirements as described in draft-ietf-behave-rfc3489bis [100] in order to gather STUN addresses, the STUN Relay client requirements as described in draft-ietf-behave-turn [101] in order to gather STUN Relay Server addresses and the STUN Server requirements defined in draft-ietf-mmusic-ice [99] as well as the requirements for STUN Servers defined in draft-ietf-behave-rfc3489bis [100] for responding to connectivity checks.

Draft-ietf-mmusic-ice [99] provides an algorithm for determining the priority of a given candidate. The additional requirements for the UE:

- 1) The priority of candidate addresses from least to highest should be: Relayed Transport Address, STUN address, local address; and
- 2) If the UE has a dual IPv4/IPv6 stack, IPv6 addresses MAY be placed at a higher priority than IPV4 addresses based on the operator's policy.

Draft-ietf-mmusic-ice [99] provides guidance on choosing the in-use candidate and recommends that a UE choose relayed candidates as the in-use address. The following additional requirements are provided to the UE:

- 1) If a STUN relay server is available, the Relayed Transport Address should be used as the initial active transport address (i.e. as advertised in the m/c lines of the SDP); and
- 2) If a STUN relay server is not available, an address obtained via STUN should be used as the initial active transport address.

Regardless of whether the UE supports the above procedures, the UE shall, upon receipt of an SDP offer with candidate addresses, perform connectivity checks on the candidate addresses as described in draft-ietf-mmusic-ice [99]. In order to perform connectivity checks, the UE shall act as a STUN client as defined in draft-ietf-behave-rfc3489bis [100]. Further, the UE shall also follow the procedures in draft-ietf-mmusic-ice [99] when sending media.

Annex L (normative):

Reason header in SIP responses

L.1 Introduction

This annex defines the use of the Reason header in SIP responses in SIP.

Editor's note: This annex is based on draft-jesske-sipping-etsi-ngn-reason [130] and can be removed when the internet draft becomes an RFC and the usage of the Reason header in SIP responses is allowed in SIP. If this solution does not become an RFC, this use of the Reason header will be documented in the present document.

L.2 Trust domain

Entities in the IM CN subsystem shall restrict the Reason header in a SIP response to specific domains that are trusted and support the Reason header in SIP responses. Therefore for the purpose of the Reason header in SIP responses within this specification, a trust domain also applies. This trust domain is identical to that of the P-Asserted-Identity.

SIP functional entities within the trust domain will need to take action on the removal of the Reason header in SIP responses when the SIP signalling crosses the boundary of the trust domain.

L.3 Procedures at the originating UE

No special requirement.

L.4 Procedures at a P-CSCF

No special requirement.

L.5 Procedures at a S-CSCF

No special requirement.

L.6 Procedures at a I-CSCF

No special requirement.

L.7 Procedures at a IBCF

No special requirement.

L.8 Procedures at a terminating AS

No special requirement.

L.9 Procedures at a MGCF

The MGCF may populate the Reason header with a Q.850 cause value. The value of the cause value depends on corresponding information in the circuit-switched network;

L.10 Coding of the Reason header

The Reason header is defined in RFC 3326 [34A].

Annex M (normative): IP-Connectivity Access Network specific concepts when using cdma2000 packet data subsystem to access IM CN subsystem

M.1 Scope

This annex defines IP-CAN specific requirements for call control protocol for use in the IM CN subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP), where the IP-CAN is the cdma2000 packet data subsystem.

M.2 cdma2000 packet data subsystem aspects when connected to the IM CN subsystem

M.2.1 Introduction

A UE accessing the IM CN subsystem utilises the services provided by the cdma2000 packet data subsystem to provide packet-mode communication between the UE and the IM CN subsystem.

Requirements for the UE on the use of these packet-mode services are specified in this subclause. Requirements for the IP-CAN bearer control point (i.e. the point where the UE has attached itself to the the cdma2000 packet data subsystem) support of this communication are specified in 3GPP2 X.S0011-C [127].

M.2.2 Procedures at the UE

M.2.2.1 Establishment of IP-CAN bearer and P-CSCF discovery

Prior to communication with the IM CN subsystem, the UE shall:

- a) establish a connection with the cdma2000 wireless IP network specified in 3GPP2 X.S0011-C [127];
- b) establish an IP-CAN bearer used for SIP signalling. This IP-CAN bearer shall remain active throughout the period the UE is connected to the IM CN subsystem, i.e. from the initial registration and at least until the last deregistration. As a result, the IP-CAN bearer provides the UE with ability to obtain an IP address;

The UE shall choose one of the following options when performing establishment of this IP-CAN bearer:

- I. A dedicated IP-CAN bearer for SIP signalling:

The UE shall indicate to the IP-CAN bearer control point that this is an IP-CAN bearer intended to carry IM CN subsystem-related signalling only. The UE may also use this IP-CAN bearer for DNS and DHCP access.

- II. A general-purpose IP-CAN bearer:

The UE may decide to use a general-purpose IP-CAN bearer to carry IM CN subsystem-related signalling. The UE may carry both signalling and media on the general-purpose IP-CAN bearer.

- c) discover a P-CSCF.

The UE may use pre-configured P-CSCF address(es) (IP address or domain name) or DHCP to discover P-CSCF address(es). If DHCP is used, the following procedures apply:

Upon establishing an IP-CAN bearer, the UE may use the Dynamic Host Configuration Protocol (DHCP) specified in RFC 2131 [40A] or Dynamic Host Configuration Protocol for IPv6 (DHCPv6) specified in RFC 3315 [40] to discover the P-CSCF.

Prior to accessing the DHCP server, the UE shall obtain an IP address via means other than DHCP and DHCPv6, see 3GPP2 X.S0011-C [127]. Hence, if the UE uses DHCP or DHCPv6 for P-CSCF discovery, the UE shall only request the configuration information from the DHCP server through a single request and reply exchanged with the DHCP server.

If the UE uses DHCP for P-CSCF discovery and the UE is unaware of the address of the DHCP Server, the UE shall send the DHCPINFORM using the limited broadcast IP address (i.e., 255.255.255.255) and UDP port 67. If the UE knows the IP address of the DHCP server, the UE shall send the DHCPINFORM to the DHCP server's unicast IP address and UDP port 67. The DHCP server shall send the DHCPACK on the IP address specified in the Client IP Address field of the DHCPINFORM. The DHCP server may include in the DHCPACK the SIP Server DHCP Option specified in RFC 3361 [35A], which carries either a list of IPv4 address(es) of the P-CSCF(s) or a list of DNS fully qualified domain name(s) that can be mapped to one or more P-CSCF(s). If the UE uses DHCPv6 for P-CSCF discovery and the UE is unaware of the address of the DHCP Server, the UE shall send an Information Request using the IPv6 multicast address FF02::1:2 and the UDP port 547. If the UE knows the IP address of the DHCPv6 server, the UE shall send the Information Request message to the DHCPv6 server's unicast IP address and UDP port 547. In the Information Request, the UE may request either one or both the SIP Servers Domain Name List option and the SIP Servers IPv6 Address List option specified in RFC 3319 [41]. The DHCP server shall send the Reply to the IP address specified in the Information-Request. The DHCP server may include in the Reply either one or both the SIP Servers Domain Name List option and the SIP Servers IPv6 Address List option, as requested by the UE.

In case several P-CSCF's IP addresses or domain names are provided to the UE, the UE shall perform P-CSCF selection according to RFC 3361 [35A] or RFC 3319 [41]. The UE shall perform the procedure for the resolution of domain name according to RFC 3263 [27A].

M.2.2.2 IP-CAN bearer control point support of DHCP based P-CSCF discovery

The IP-CAN bearer control point, or Home Agent in case of Mobile IP with reverse tunneling, may forward the packet to one or more local DHCP servers, or relay the packet to a specific DHCP server. The IP-CAN bearer control point, or Home Agent in case of Mobile IP with reverse tunnelling, shall not forward the DHCPINFORM (or Information-Request) to any UE.

NOTE 1: For forwarding the DHCPINFORM or Information-Request, the IP-CAN bearer control point, or Home Agent in case of Mobile IP with reverse tunnelling, does not change the destination IP address of the packet.

NOTE 2: For relaying the DHCPINFORM or Information-Request, the IP-CAN bearer control point, or Home Agent in case of Mobile IP with reverse tunnelling inserts a DHCP server's IP address in the destination IP address field of the packet.

Annex M (informative): Change history

| Change history | | | | | | | | |
|----------------|-------|---------------|----|-----|--|-----|-----|--------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| | | | | | Version 0.0.0 Editor's internal draft | | | |
| | | | | | Version 0.0.1 Editor's internal draft | | | |
| | | | | | Version 0.0.2 Editor's internal draft | | | |
| | | N1-001060 | | | Version 0.0.3 Submitted to CN1 SIP adhoc #1 | | | |
| 19/10/00 | | N1-001109 | | | Version 0.0.4 Reflecting results of initial CN1 discussion | | | |
| 19/10/00 | | N1-001115 | | | Version 0.0.5 Reflecting output of CN1 SIP adhoc#1 discussion | | | |
| 09/11/00 | | | | | Version 0.0.6 Revision to include latest template and styles | | | |
| | | N1-010092 | | | Version 0.0.7 Reflecting updates of some IETF drafts | | | |
| 14/02/01 | | N1-010269 | | | Version 0.0.8 Revision to include temporary annex B incorporating valuable source material | | | |
| 18/03/01 | | N1-010378 rev | | | Version 0.1.0 incorporating results of CN1 discussion at CN1 #16 | | | |
| 12/04/01 | | N1-010737 | | | Version 0.2.0 incorporating results of CN1 discussions at SIP adhoc #4 | | | |
| 11/06/01 | | N1-010935 | | | Version 0.3.0 incorporating results of CN1 discussions at CN1 #16 | | | |
| 23/07/01 | | N1-011103 | | | Version 0.4.0 incorporating results of CN1 discussions at CN1 #18 (agreed documents N1-011028, N1-011050, N1-011055, N1-011056) | | | |
| 12/09/01 | | N1-011385 | | | Version 0.5.0 incorporating results of CN1 discussions at CN1 #19 (agreed documents N1-011109, N1-011152, N1-011195, N1-011312, N1-011319, N1-011343) | | | |
| 04/10/01 | | N1-011470 | | | Version 0.6.0 incorporating results of CN1 discussions at CN1 #19bis (agreed documents N1-011346, N1-011373, N1-011389, N1-011390, N1-011392, N1-011393, N1-011394, N1-011408, N1-011410, N1-011426) | | | |
| 19/10/01 | | N1-011643 | | | Version 0.7.0 incorporating results of CN1 discussions at CN1 #20 (agreed documents N1-011477, N1-011479, N1-011498, N1-011523, N1-011548, N1-011585, N1-011586, N1-011592, N1-011611, N1-011629) | | | |
| 16/11/01 | | N1-011821 | | | Version 0.8.0 incorporating results of CN1 discussions at CN1 #20bis (agreed documents N1-011685, N1-011690, N1-011741, N1-011743, N1-011759, N1-011760, N1-011761, N1-011765c, N1-011767, N1-011769, N1-011770, N1-011771, N1-011774, N1-011777, N1-011779, N1-011780) N1-011712 was agreed but determined to have no impact on the specification at this time. | | | |
| 30/11/01 | | N1-020010 | | | Version 1.0.0 incorporating results of CN1 discussions at CN1 #21 (agreed documents N1-011828, N1-011829, N1-011836, N1-011899 [revision marks not used on moved text - additional change from chairman's report incorporated], implementation of subclause 3.1 editor's note based on discussion of N1-011900 [chairman's report], N1-011905, N1-011984, N1-011985, N1-011986, N1-011988, N1-011989, N1-012012 [excluding points 2 and 16], N1-012013, N1-012014 [excluding point 1], N1-012015, N1-012021, N1-012022, N1-012025, N1-012031, N1-012045, N1-012056, N1-012057) CN1 agreed for presentation for information to CN plenary. | | | |
| 18/01/02 | | N1-020189 | | | Version 1.1.0 incorporating results of CN1 discussions at CN1 SIP ad-hoc (agreed documents N1-020015, N1-020053, N1-020064, N1-020101, N1-020123, N1-020124, N1-020142, N1-020146, N1-020147, N1-020148, N1-020151, N1-020157, N1-020159, N1-020165). Also N1-012000 (agreed at previous meeting) | | | |

| Change history | | | | | | | | |
|----------------|-----------|-----------|-----|-----|--|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| | | | | | required, subclause 5.2.6 to be deleted and this change has been enacted | | | |
| 01/02/02 | | N1-020459 | | | Version 1.2.0 incorporating results of CN1 discussions at CN1 #22 (agreed documents N1-020198, N1-020396, N1-020398, N1-020399, N1-020408, N1-020417, N1-020418, N1-020419, N1-020421, N1-020422, N1-020436, N1-020437, N1-020449) | | | |
| 01/02/02 | | N1-020569 | | | Version 1.2.1 issues to correct cut and paste error in incorporation of Annex B into main document. Affected subclause 5.1.1.3. Change to clause 7 title that was incorrectly applied to subclause 7.2 also corrected. | | | |
| 22/02/02 | | | | | Advanced to version 2.0.0 based on agreement of N1-020515. Version 2.0.0 incorporating results of CN1 discussions at CN1 #22bis (agreed documents N1-020466, N1-020468, N1-020469, N1-020472, N1-020473, N1-020500, N1-020504, N1-020507, N1-020511, N1-020512, N1-020521, N1-020583, N1-020584, N1-020602, N1-020603, N1-020604, N1-020611, N1-020612, N1-020613, N1-020614, N1-020615, N1-020617, N1-020623, N1-020624, N1-020625, N1-020626, N1-020627, N1-020642, N1-020643, N1-020646, N1-020649, N1-020656, N1-020659, N1-020668, N1-020669, N1-020670, N1-020671). In addition N1-020409, agreed at CN1#22 but missed from the previous version, was also implemented. References have been resequenced. | | | |
| 02/03/02 | | | | | Editorial clean-up by ETSI/MCC. | 2.0.0 | 2.0.1 | |
| 11/03/02 | TSG CN#15 | NP-020049 | | | The draft was approved, and 3GPP TS 24.229 was then to be issued in Rel-5 under formal change control. | 2.0.1 | 5.0.0 | |
| 2002-06 | NP-16 | NP-020230 | 004 | 1 | S-CSCF Actions on Authentication Failure | 5.0.0 | 5.1.0 | N1-020903 |
| 2002-06 | NP-16 | NP-020230 | 005 | 2 | Disallow Parallel Registrations | 5.0.0 | 5.1.0 | N1-020959 |
| 2002-06 | NP-16 | NP-020230 | 007 | 1 | Hiding | 5.0.0 | 5.1.0 | N1-020910 |
| 2002-06 | NP-16 | NP-020312 | 008 | 8 | Support for services for unregistered users | 5.0.0 | 5.1.0 | |
| 2002-06 | | | 009 | 1 | Not implemented nor implementable. In the meeting report CN1#24 under doc N1-021513 it is shown that CR095r2 supercedes 009r1 if 095r2 was to be approved in CN#16 (but unfortunately 009r1 was also approved in the the CN#16 draft minutes). | | | N1-020921 |
| 2002-06 | NP-16 | NP-020231 | 019 | | MGCF procedure clarification | 5.0.0 | 5.1.0 | N1-020788 |
| 2002-06 | NP-16 | NP-020231 | 020 | 2 | MGCF procedure error cases | 5.0.0 | 5.1.0 | N1-020960 |
| 2002-06 | NP-16 | NP-020231 | 022 | 1 | Abbreviations clean up | 5.0.0 | 5.1.0 | N1-020949 |
| 2002-06 | NP-16 | NP-020231 | 023 | | Clarification of SIP usage outside IM CN subsystem | 5.0.0 | 5.1.0 | N1-020792 |
| 2002-06 | NP-16 | NP-020314 | 024 | 3 | Replacement of COMET by UPDATE | 5.0.0 | 5.1.0 | |
| 2002-06 | NP-16 | NP-020231 | 025 | 3 | Incorporation of current RFC numbers | 5.0.0 | 5.1.0 | N1-021091 |
| 2002-06 | NP-16 | NP-020231 | 026 | 1 | Clarification of B2BUA usage in roles | 5.0.0 | 5.1.0 | N1-020941 |
| 2002-06 | NP-16 | NP-020231 | 028 | 4 | Determination of MO / MT requests in I-CSCF(THIG) | 5.0.0 | 5.1.0 | N1-021248 |
| 2002-06 | NP-16 | NP-020231 | 030 | 2 | P-CSCF release of an existing session | 5.0.0 | 5.1.0 | N1-021006 |
| 2002-06 | NP-16 | NP-020232 | 031 | 1 | S-CSCF release of an existing session | 5.0.0 | 5.1.0 | N1-020939 |
| 2002-06 | NP-16 | NP-020232 | 033 | 3 | SDP procedure at the UE | 5.0.0 | 5.1.0 | N1-020971 |
| 2002-06 | NP-16 | NP-020232 | 035 | 1 | AS Procedures corrections | 5.0.0 | 5.1.0 | N1-020934 |

| Change history | | | | | | | | |
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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2002-06 | NP-16 | NP-020232 | 036 | 8 | Corrections to SIP Compression | 5.0.0 | 5.1.0 | N1-021499 |
| 2002-06 | NP-16 | NP-020232 | 037 | 1 | Enhancement of S-CSCF and I-CSCF Routing Procedures for interworking with external networks | 5.0.0 | 5.1.0 | N1-020928 |
| 2002-06 | NP-16 | NP-020232 | 041 | 2 | Delivery of IMS security parameters from S-CSCF to the P-CSCF by using proprietary auth-param | 5.0.0 | 5.1.0 | N1-021003 |
| 2002-06 | NP-16 | NP-020232 | 045 | | Cleanup of request / response terminology - clause 5 | 5.0.0 | 5.1.0 | N1-020835 |
| 2002-06 | NP-16 | NP-020232 | 046 | | Cleanup of request / response terminology - clause 6 | 5.0.0 | 5.1.0 | N1-020836 |
| 2002-06 | NP-16 | NP-020232 | 047 | 2 | Simplification of profile tables | 5.0.0 | 5.1.0 | N1-021059 |
| 2002-06 | NP-16 | NP-020232 | 049 | | Forking options | 5.0.0 | 5.1.0 | N1-020839 |
| 2002-06 | NP-16 | NP-020315 | 050 | 1 | Media-Authorization header corrections | 5.0.0 | 5.1.0 | |
| 2002-06 | NP-16 | NP-020233 | 051 | 1 | Clause 5.4 editorials (S-CSCF) | 5.0.0 | 5.1.0 | N1-020950 |
| 2002-06 | NP-16 | NP-020233 | 053 | 2 | Integrity protection signalling from the P-CSCF to the S-CSCF | 5.0.0 | 5.1.0 | N1-021007 |
| 2002-06 | NP-16 | NP-020233 | 054 | | Representing IM CN subsystem functional entities in profile table roles | 5.0.0 | 5.1.0 | N1-020847 |
| 2002-06 | NP-16 | NP-020233 | 055 | | Clause 4 editorials | 5.0.0 | 5.1.0 | N1-020848 |
| 2002-06 | NP-16 | NP-020233 | 056 | | Clause 5.8 editorials (MRFC) | 5.0.0 | 5.1.0 | N1-020849 |
| 2002-06 | NP-16 | NP-020233 | 057 | 1 | Annex A editorials, including precondition additions | 5.0.0 | 5.1.0 | N1-021001 |
| 2002-06 | NP-16 | NP-020233 | 058 | 2 | Representing the registrar as a UA | 5.0.0 | 5.1.0 | N1-021054 |
| 2002-06 | NP-16 | NP-020233 | 059 | | Additional definitions | 5.0.0 | 5.1.0 | N1-020852 |
| 2002-06 | NP-16 | NP-020312 | 060 | 11 | Restructuring of S-CSCF Registration Sections | 5.0.0 | 5.1.0 | |
| 2002-06 | NP-16 | NP-020234 | 061 | 2 | Determination of MOC / MTC at P-CSCF and S-CSCF | 5.0.0 | 5.1.0 | N1-021060 |
| 2002-06 | NP-16 | NP-020234 | 062 | | Correction to the terminating procedures | 5.0.0 | 5.1.0 | N1-020927 |
| 2002-06 | NP-16 | NP-020234 | 063 | | Loose Routing for Network Initiated Call Release Procedures | 5.0.0 | 5.1.0 | N1-020940 |
| 2002-06 | NP-16 | NP-020234 | 064 | | Incorporation of previously agreed corrections to clause 5.2.5.2 (N1-020416) | 5.0.0 | 5.1.0 | N1-021004 |
| 2002-06 | NP-16 | NP-020234 | 065 | | Clause 7.2 editorial corrections | 5.0.0 | 5.1.0 | N1-021005 |
| 2002-06 | NP-16 | NP-020234 | 067 | 2 | S-CSCF routing of MO calls | 5.0.0 | 5.1.0 | N1-021097 |
| 2002-06 | NP-16 | NP-020234 | 068 | 1 | I-CSCF routing of dialog requests | 5.0.0 | 5.1.0 | N1-021078 |
| 2002-06 | NP-16 | NP-020234 | 069 | 2 | Definition of the Tokenised-by parameter | 5.0.0 | 5.1.0 | N1-021096 |
| 2002-06 | NP-16 | NP-020235 | 070 | 3 | SDP procedures at UE | 5.0.0 | 5.1.0 | N1-021453 |
| 2002-06 | NP-16 | NP-020235 | 073 | 2 | Updates to the procedures involving the iFCs, following the Oulu iFC changes | 5.0.0 | 5.1.0 | N1-021440 |
| 2002-06 | NP-16 | NP-020235 | 074 | 1 | Addition of DHCPv6 references to 24.229 | 5.0.0 | 5.1.0 | N1-021086 |
| 2002-06 | NP-16 | NP-020235 | 075 | 1 | Clarification to URL and address assignments | 5.0.0 | 5.1.0 | N1-021083 |
| 2002-06 | NP-16 | NP-020235 | 079 | 3 | Downloading the implicitly registered public user identities from the S-CSCF to P-CSCF | 5.0.0 | 5.1.0 | N1-021510 |
| 2002-06 | NP-16 | NP-020235 | 080 | 3 | Clarification of GPRS aspects | 5.0.0 | 5.1.0 | N1-021486 |
| 2002-06 | NP-16 | NP-020235 | 081 | 2 | Introduction of Subscription Locator Function Interrogation at I-CSCF in 24.229 | 5.0.0 | 5.1.0 | N1-021469 |
| 2002-06 | NP-16 | NP-020235 | 082 | 1 | Introduction of Visited_Network_ID p-header | 5.0.0 | 5.1.0 | N1-021433 |
| 2002-06 | NP-16 | NP-020236 | 084 | 1 | MRFC register addresses | 5.0.0 | 5.1.0 | N1-021434 |
| 2002-06 | NP-16 | NP-020236 | 085 | 1 | MRFC INVITE interface editor's notes | 5.0.0 | 5.1.0 | N1-021470 |
| 2002-06 | NP-16 | NP-020236 | 086 | 1 | MRFC OPTIONS interface editor's notes | 5.0.0 | 5.1.0 | N1-021471 |

| Change history | | | | | | | | |
|----------------|-------|-----------|-----|-----|--|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2002-06 | NP-16 | NP-020236 | 087 | | MRFC PRACK & INFO editor's notes | 5.0.0 | 5.1.0 | N1-021159 |
| 2002-06 | NP-16 | NP-020236 | 088 | 1 | MGCF OPTIONS interface editor's notes | 5.0.0 | 5.1.0 | N1-021472 |
| 2002-06 | NP-16 | NP-020236 | 089 | | MGCF reINVITE editor's notes | 5.0.0 | 5.1.0 | N1-021161 |
| 2002-06 | NP-16 | NP-020237 | 090 | | 3PCC AS editor's notes | 5.0.0 | 5.1.0 | N1-021162 |
| 2002-06 | NP-16 | NP-020237 | 091 | | AS acting as terminating UA editor's notes | 5.0.0 | 5.1.0 | N1-021163 |
| 2002-06 | NP-16 | NP-020237 | 092 | 1 | AS acting as originating UA editor's notes | 5.0.0 | 5.1.0 | N1-021466 |
| 2002-06 | NP-16 | NP-020237 | 093 | 2 | Charging overview clause | 5.0.0 | 5.1.0 | N1-021512 |
| 2002-06 | NP-16 | NP-020237 | 094 | 1 | Procedures for original-dialog-id P-header | 5.0.0 | 5.1.0 | N1-021456 |
| 2002-06 | NP-16 | NP-020237 | 095 | 2 | Procedures for charging-vector P-header | 5.0.0 | 5.1.0 | N1-021513 |
| 2002-06 | NP-16 | NP-020237 | 096 | 1 | Procedures for charging-function-addresses P-header | 5.0.0 | 5.1.0 | N1-021458 |
| 2002-06 | NP-16 | NP-020237 | 097 | 1 | SDP types | 5.0.0 | 5.1.0 | N1-021467 |
| 2002-06 | NP-16 | NP-020237 | 100 | | Removal of State from profile tables | 5.0.0 | 5.1.0 | N1-021173 |
| 2002-06 | NP-16 | NP-020238 | 101 | | Editor's note cleanup - clause 3 | 5.0.0 | 5.1.0 | N1-021174 |
| 2002-06 | NP-16 | NP-020238 | 102 | | Editor's note cleanup - clause 4 | 5.0.0 | 5.1.0 | N1-021175 |
| 2002-06 | NP-16 | NP-020238 | 103 | | Editor's note cleanup - clause 5.1 and deletion of void subclauses | 5.0.0 | 5.1.0 | N1-021176 |
| 2002-06 | NP-16 | NP-020238 | 104 | 1 | Editor's note cleanup - clause 5.2 and deletion of void subclauses | 5.0.0 | 5.1.0 | N1-021487 |
| 2002-06 | NP-16 | NP-020238 | 105 | | Editor's note cleanup - clause 5.3 | 5.0.0 | 5.1.0 | N1-021178 |
| 2002-06 | NP-16 | NP-020238 | 106 | | Editor's note cleanup - clause 5.4 and deletion of void subclauses | 5.0.0 | 5.1.0 | N1-021179 |
| 2002-06 | NP-16 | NP-020238 | 107 | | Editor's note cleanup - clause 5.5 and deletion of void subclauses | 5.0.0 | 5.1.0 | N1-021180 |
| 2002-06 | NP-16 | NP-020238 | 110 | | Editor's note cleanup - clause 6 | 5.0.0 | 5.1.0 | N1-021183 |
| 2002-06 | NP-16 | NP-020238 | 111 | | Editor's note cleanup - clause 9 | 5.0.0 | 5.1.0 | N1-021184 |
| 2002-06 | NP-16 | NP-020239 | 113 | 1 | SIP Default Timers | 5.0.0 | 5.1.0 | N1-021465 |
| 2002-06 | NP-16 | NP-020239 | 114 | 1 | Correction of the subscription to the registration event package | 5.0.0 | 5.1.0 | N1-021436 |
| 2002-06 | NP-16 | NP-020239 | 115 | 1 | Support for ISIMless UICC | 5.0.0 | 5.1.0 | N1-021441 |
| 2002-06 | NP-16 | NP-020239 | 119 | 1 | SIP procedures at UE | 5.0.0 | 5.1.0 | N1-021452 |
| 2002-06 | NP-16 | NP-020239 | 121 | 2 | New requirements in the P-CSCF | 5.0.0 | 5.1.0 | N1-021509 |
| 2002-06 | NP-16 | NP-020239 | 122 | | SDP procedures at MGCF | 5.0.0 | 5.1.0 | N1-021264 |
| 2002-06 | NP-16 | NP-020239 | 124 | 1 | S-CSCF allocation | 5.0.0 | 5.1.0 | N1-021443 |
| 2002-06 | NP-16 | NP-020240 | 129 | 1 | Introduction of P-Access-Network-Info header | 5.0.0 | 5.1.0 | N1-021498 |
| 2002-06 | NP-16 | NP-020240 | 130 | 2 | Usage of Path and P-Service Route | 5.0.0 | 5.1.0 | N1-021508 |
| 2002-06 | NP-16 | NP-020240 | 133 | | Removal of Referred-By header from specification | 5.0.0 | 5.1.0 | N1-021354 |
| 2002-06 | NP-16 | NP-020240 | 134 | | Handling of Record-Route header in profile tables | 5.0.0 | 5.1.0 | N1-021357 |
| 2002-06 | NP-16 | NP-020312 | 135 | 1 | Asserted identities and privacy | 5.0.0 | 5.1.0 | |
| 2002-06 | NP-16 | NP-020240 | 136 | | Removal of caller preferences from specification | 5.0.0 | 5.1.0 | N1-021359 |
| 2002-06 | NP-16 | NP-020240 | 137 | | Substitution of REFER references | 5.0.0 | 5.1.0 | N1-021360 |
| 2002-06 | NP-16 | NP-020240 | 138 | | Removal of session timer from specification | 5.0.0 | 5.1.0 | N1-021361 |

| Change history | | | | | | | | |
|----------------|-------|-----------|-----|-----|--|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2002-09 | NP-17 | NP-020489 | 141 | 2 | Adding MESSAGE to 24.229 | 5.1.0 | 5.2.0 | |
| 2002-09 | NP-17 | NP-020375 | 142 | | Public user identity to use for third party register | 5.1.0 | 5.2.0 | N1-021563 |
| 2002-09 | NP-17 | NP-020375 | 143 | 1 | Replace P-Original-Dialog-ID header with unique data in Route header | 5.1.0 | 5.2.0 | N1-021797 |
| 2002-09 | NP-17 | NP-020375 | 145 | | Synchronize text with latest I-D for P-headers for charging | 5.1.0 | 5.2.0 | N1-021569 |
| 2002-09 | NP-17 | NP-020488 | 146 | 2 | Service profiles and implicitly registered public user identities | 5.1.0 | 5.2.0 | |
| 2002-09 | NP-17 | NP-020376 | 147 | | S-CSCF decides when to include | 5.1.0 | 5.2.0 | N1-021571 |
| 2002-09 | NP-17 | NP-020376 | 148 | | Clean up XML in clause 7.6 | 5.1.0 | 5.2.0 | N1-021572 |
| 2002-09 | NP-17 | NP-020376 | 149 | | Fix clause 5.2.7.4 header | 5.1.0 | 5.2.0 | N1-021573 |
| 2002-09 | NP-17 | NP-020376 | 150 | | Removal of forward reference to non P-CSCF procedures | 5.1.0 | 5.2.0 | N1-021589 |
| 2002-09 | NP-17 | NP-020376 | 151 | | Deregistration of public user identities | 5.1.0 | 5.2.0 | N1-021590 |
| 2002-09 | NP-17 | NP-020376 | 152 | | Reauthentication trigger via other means | 5.1.0 | 5.2.0 | N1-021591 |
| 2002-09 | NP-17 | NP-020487 | 153 | 3 | Registration with integrity protection | 5.1.0 | 5.2.0 | |
| 2002-09 | NP-17 | NP-020485 | 154 | 2 | Explicit listing of need to route response messages | 5.1.0 | 5.2.0 | |
| 2002-09 | NP-17 | NP-020377 | 157 | 1 | Include IP address in ICID | 5.1.0 | 5.2.0 | N1-021816 |
| 2002-09 | NP-17 | NP-020377 | 158 | | Reference updates | 5.1.0 | 5.2.0 | N1-021604 |
| 2002-09 | NP-17 | NP-020377 | 159 | | Abbreviation updates | 5.1.0 | 5.2.0 | N1-021605 |
| 2002-09 | NP-17 | NP-020377 | 163 | 1 | Clarifications of allocation of IP address | 5.1.0 | 5.2.0 | N1-021817 |
| 2002-09 | NP-17 | NP-020377 | 171 | 1 | Verifications at the P-CSCF for subsequent request | 5.1.0 | 5.2.0 | N1-021802 |
| 2002-09 | NP-17 | NP-020377 | 174 | 1 | Clarification of IMS signalling flag | 5.1.0 | 5.2.0 | N1-021781 |
| 2002-09 | NP-17 | NP-020377 | 176 | 1 | Definition of a general-purpose PDP context for IMS | 5.1.0 | 5.2.0 | N1-021783 |
| 2002-09 | NP-17 | NP-020372 | 177 | 2 | Request for DNS IPv6 server address | 5.1.0 | 5.2.0 | N1-021833 |
| 2002-09 | NP-17 | NP-020378 | 178 | | Error cases for PDP context modification | 5.1.0 | 5.2.0 | N1-021679 |
| 2002-09 | NP-17 | NP-020378 | 183 | 1 | Incorporation of draft-ietf-sip-sec-agree-04.txt | 5.1.0 | 5.2.0 | N1-021791 |
| 2002-09 | NP-17 | NP-020378 | 185 | 1 | User Initiated De-registration | 5.1.0 | 5.2.0 | N1-021787 |
| 2002-09 | NP-17 | NP-020378 | 186 | 1 | Mobile initiated de-registration | 5.1.0 | 5.2.0 | N1-021788 |
| 2002-09 | NP-17 | NP-020378 | 187 | 1 | CallID of REGISTER requests | 5.1.0 | 5.2.0 | N1-021786 |
| 2002-09 | NP-17 | NP-020378 | 188 | 1 | Correction to the I-CSCF routing procedures | 5.1.0 | 5.2.0 | N1-021803 |
| 2002-09 | NP-17 | NP-020378 | 189 | 1 | Registration procedures at P-CSCF | 5.1.0 | 5.2.0 | N1-021793 |
| 2002-09 | NP-17 | NP-020378 | 192 | 1 | Corrections related to the P-Access-Network-Info header | 5.1.0 | 5.2.0 | N1-021827 |
| 2002-09 | NP-17 | NP-020378 | 194 | 1 | Chapter to describe the registration event | 5.1.0 | 5.2.0 | N1-021794 |
| 2002-09 | NP-17 | NP-020484 | 196 | | Definition of abbreviation IMS | 5.1.0 | 5.2.0 | |
| 2002-12 | NP-18 | NP-020558 | 140 | 4 | Support of non-IMS forking | 5.2.0 | 5.3.0 | N1-022446 |
| 2002-12 | NP-18 | NP-020565 | 144 | 2 | Identification of supported IETF drafts within this release | 5.2.0 | 5.3.0 | N1-022114 |
| 2002-12 | NP-18 | NP-020558 | 161 | 3 | Clarifications and editorials to SIP profile | 5.2.0 | 5.3.0 | N1-022412 |
| 2002-12 | NP-18 | NP-020558 | 175 | 5 | Clarifications of the binding and media grouping | 5.2.0 | 5.3.0 | N1-022494 |
| 2002-12 | NP-18 | NP-020558 | 179 | 2 | Support of originating requests from Application | 5.2.0 | 5.3.0 | N1-022106 |

| Change history | | | | | | | | |
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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| | | | | | Servers | | | |
| 2002-12 | NP-18 | NP-020558 | 197 | | Wrong references in 4.1 | 5.2.0 | 5.3.0 | N1-021902 |
| 2002-12 | NP-18 | NP-020558 | 198 | | Alignment of the MGCF procedures to RFC 3312 | 5.2.0 | 5.3.0 | N1-021903 |
| 2002-12 | NP-18 | NP-020558 | 199 | 1 | Service Route Header and Path Header interactions | 5.2.0 | 5.3.0 | N1-022080 |
| 2002-12 | NP-18 | NP-020558 | 202 | | Addition of clause 6 though clause 9 references to conformance clause | 5.2.0 | 5.3.0 | N1-021919 |
| 2002-12 | NP-18 | NP-020558 | 203 | 1 | URL and address assignments | 5.2.0 | 5.3.0 | N1-022115 |
| 2002-12 | NP-18 | NP-020559 | 204 | 3 | Fix gprs-charging-info definition and descriptions | 5.2.0 | 5.3.0 | N1-022426 |
| 2002-12 | NP-18 | NP-020559 | 206 | | Alignment of the SDP attributes related to QoS integration with IETF | 5.2.0 | 5.3.0 | N1-021930 |
| 2002-12 | NP-18 | NP-020559 | 207 | 1 | Update of the 3GPP-generated SIP P- headers document references | 5.2.0 | 5.3.0 | N1-022116 |
| 2002-12 | NP-18 | NP-020559 | 208 | 1 | Handling of INVITE requests that do not contain SDP | 5.2.0 | 5.3.0 | N1-022098 |
| 2002-12 | NP-18 | NP-020559 | 209 | 2 | UE Registration | 5.2.0 | 5.3.0 | N1-022471 |
| 2002-12 | NP-18 | NP-020559 | 211 | 1 | Usage of private user identity during registration | 5.2.0 | 5.3.0 | N1-022083 |
| 2002-12 | NP-18 | NP-020559 | 212 | 1 | P-CSCF subscription to the users registration-state event | 5.2.0 | 5.3.0 | N1-022084 |
| 2002-12 | NP-18 | NP-020559 | 213 | 2 | Handling of MT call by the P-CSCF | 5.2.0 | 5.3.0 | N1-022154 |
| 2002-12 | NP-18 | NP-020559 | 215 | | P-CSCF acting as a UA | 5.2.0 | 5.3.0 | N1-021939 |
| 2002-12 | NP-18 | NP-020559 | 216 | 1 | S-CSCF handling of protected registrations | 5.2.0 | 5.3.0 | N1-022085 |
| 2002-12 | NP-18 | NP-020560 | 217 | 1 | S-CSCF handling of subscription to the users registration-state event | 5.2.0 | 5.3.0 | N1-022086 |
| 2002-12 | NP-18 | NP-020560 | 218 | 1 | Determination of MO or MT in I-CSCF | 5.2.0 | 5.3.0 | N1-022102 |
| 2002-12 | NP-18 | NP-020560 | 220 | | Definition of the NAI and RTCP abbreviations | 5.2.0 | 5.3.0 | N1-021944 |
| 2002-12 | NP-18 | NP-020560 | 222 | 4 | Go related error codes in the UE | 5.2.0 | 5.3.0 | N1-022495 |
| 2002-12 | NP-18 | NP-020560 | 223 | 1 | Clarifications on CCF/ECF addresses | 5.2.0 | 5.3.0 | N1-022120 |
| 2002-12 | NP-18 | NP-020560 | 225 | 2 | Clarifications on dedicated PDP Context for IMS signaling | 5.2.0 | 5.3.0 | N1-022156 |
| 2002-12 | NP-18 | NP-020560 | 228 | 3 | Clarifications on the use of charging correlation information | 5.2.0 | 5.3.0 | N1-022425 |
| 2002-12 | NP-18 | NP-020560 | 232 | 1 | Expires information in REGISTER response | 5.2.0 | 5.3.0 | N1-022095 |
| 2002-12 | NP-18 | NP-020560 | 235 | 2 | Indication of successful establishment of Dedicated Signalling PDP context to the UE | 5.2.0 | 5.3.0 | N1-022129 |
| 2002-12 | NP-18 | NP-020560 | 237 | | P-CSCF sending 100 (Trying) Response for reINVITE | 5.2.0 | 5.3.0 | N1-021998 |
| 2002-12 | NP-18 | NP-020561 | 239 | 1 | Correction on P-Asserted-Id, P-Preferred-Id, Remote-Party-ID | 5.2.0 | 5.3.0 | N1-022100 |
| 2002-12 | NP-18 | NP-020561 | 240 | 1 | Clarifications to subclause 9.2.5 | 5.2.0 | 5.3.0 | N1-022137 |
| 2002-12 | NP-18 | NP-020561 | 242 | | ENUM translation | 5.2.0 | 5.3.0 | N1-022020 |
| 2002-12 | NP-18 | NP-020561 | 243 | 1 | AS routing | 5.2.0 | 5.3.0 | N1-022107 |
| 2002-12 | NP-18 | NP-020561 | 245 | 1 | Warning header | 5.2.0 | 5.3.0 | N1-022108 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2002-12 | NP-18 | NP-020561 | 246 | 3 | S-CSCF procedure tidyup | 5.2.0 | 5.3.0 | N1-022497 |
| 2002-12 | NP-18 | NP-020561 | 247 | 1 | P-CSCF procedure tidyup | 5.2.0 | 5.3.0 | N1-022125 |
| 2002-12 | NP-18 | NP-020561 | 248 | 2 | UE procedure tidyup | 5.2.0 | 5.3.0 | N1-022472 |
| 2002-12 | NP-18 | NP-020561 | 249 | 3 | MESSAGE corrections part 1 | 5.2.0 | 5.3.0 | N1-022455 |
| 2002-12 | NP-18 | NP-020561 | 250 | 2 | MESSAGE corrections part 2 | 5.2.0 | 5.3.0 | N1-022456 |
| 2002-12 | NP-18 | NP-020562 | 251 | 2 | Security association clarifications | 5.2.0 | 5.3.0 | N1-022440 |
| 2002-12 | NP-18 | NP-020562 | 252 | 1 | The use of security association by the UE | 5.2.0 | 5.3.0 | N1-022433 |
| 2002-12 | NP-18 | NP-020562 | 253 | 1 | UE integrity protected re-registration | 5.2.0 | 5.3.0 | N1-022434 |
| 2002-12 | NP-18 | NP-020562 | 255 | 3 | Handling of default public user identities by the P-CSCF | 5.2.0 | 5.3.0 | N1-022496 |
| 2002-12 | NP-18 | NP-020562 | 263 | | Fixing ioi descriptions | 5.2.0 | 5.3.0 | N1-022266 |
| 2002-12 | NP-18 | NP-020562 | 264 | 1 | Fix descriptions for ECF/CCF addresses | 5.2.0 | 5.3.0 | N1-022447 |
| 2002-12 | NP-18 | NP-020562 | 266 | 2 | Alignment with draft-ietf-sipping-reg-event-00 and clarification on network initiated deregistration | 5.2.0 | 5.3.0 | N1-022493 |
| 2002-12 | NP-18 | NP-020563 | 267 | 1 | Correction to network initiated re-authentication procedure | 5.2.0 | 5.3.0 | N1-022449 |
| 2002-12 | NP-18 | NP-020563 | 268 | 1 | Registration Expires Timer Default Setting | 5.2.0 | 5.3.0 | N1-022439 |
| 2002-12 | NP-18 | NP-020563 | 269 | 1 | Clarification on Sh interface for charging purposes | 5.2.0 | 5.3.0 | N1-022465 |
| 2002-12 | NP-18 | NP-020563 | 270 | 2 | Clarifications on the scope | 5.2.0 | 5.3.0 | N1-022500 |
| 2002-12 | NP-18 | NP-020563 | 273 | 1 | Add charging info for SUBSCRIBE | 5.2.0 | 5.3.0 | N1-022467 |
| 2002-12 | NP-18 | NP-020563 | 274 | 1 | Profile revisions for RFC 3261 headers | 5.2.0 | 5.3.0 | N1-022413 |
| 2002-12 | NP-18 | NP-020563 | 275 | | Consistency changes for SDP procedures at MGCF | 5.2.0 | 5.3.0 | N1-022345 |
| 2002-12 | NP-18 | NP-020563 | 276 | | Proxy support of PRACK | 5.2.0 | 5.3.0 | N1-022350 |
| 2002-12 | NP-18 | NP-020563 | 277 | | Clarification of transparent handling of parameters in profile | 5.2.0 | 5.3.0 | N1-022351 |
| 2002-12 | NP-18 | NP-020564 | 279 | 1 | Meaning of refresh request | 5.2.0 | 5.3.0 | N1-022444 |
| 2002-12 | NP-18 | NP-020564 | 280 | | Removal of Caller Preferences dependency | 5.2.0 | 5.3.0 | N1-022362 |
| 2002-12 | NP-18 | NP-020564 | 281 | 1 | P-Access-Network-Info clarifications | 5.2.0 | 5.3.0 | N1-022445 |
| 2002-12 | NP-18 | NP-020564 | 282 | | Clarification on use of the From header by the UE | 5.2.0 | 5.3.0 | N1-022370 |
| 2002-12 | NP-18 | NP-020634 | 283 | 2 | Support of comp=sigcomp parameter | 5.2.0 | 5.3.0 | |
| 2002-12 | NP-18 | NP-020668 | 284 | 4 | SDP media policy rejection | 5.2.0 | 5.3.0 | |
| 2002-12 | NP-18 | NP-020567 | 285 | 1 | Fallback for compression failure | 5.2.0 | 5.3.0 | N1-022481 |
| 2002-12 | NP-18 | NP-020564 | 287 | 1 | SA related procedures | 5.2.0 | 5.3.0 | N1-022459 |
| 2002-12 | NP-18 | NP-020568 | 290 | 1 | Emergency Service correction | 5.2.0 | 5.3.0 | N1-022461 |
| 2002-12 | NP-18 | NP-020663 | 278 | 4 | P-CSCF does not strip away headers | 5.2.0 | 5.3.0 | N1-022499 |
| 2002-12 | NP-18 | NP-020557 | 289 | | PCF to PDF | 5.2.0 | 5.3.0 | N1-022387 |
| 2003-03 | NP-19 | NP-030049 | 291 | | Minor correction and consistency changes to general part of profile | 5.3.0 | 5.4.0 | N1-030012 |
| 2003-03 | NP-19 | NP-030049 | 292 | | SIP profile minor correction and consistency | 5.3.0 | 5.4.0 | N1-030013 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| | | | | | changes | | | |
| 2003-03 | NP-19 | NP-030049 | 293 | 1 | Network asserted identity procedure corrections for the UE | 5.3.0 | 5.4.0 | N1-030261 |
| 2003-03 | NP-19 | NP-030049 | 294 | 1 | Asserted identity inclusion in SIP profile | 5.3.0 | 5.4.0 | N1-030300 |
| 2003-03 | NP-19 | NP-030049 | 296 | | Profile references relating to registration | 5.3.0 | 5.4.0 | N1-030023 |
| 2003-03 | NP-19 | NP-030049 | 297 | 2 | Reference corrections | 5.3.0 | 5.4.0 | N1-030301 |
| 2003-03 | NP-19 | NP-030050 | 300 | 1 | 488 message with a subset of allowed media parameters | 5.3.0 | 5.4.0 | N1-030245 |
| 2003-03 | NP-19 | NP-030050 | 301 | 1 | Handling of Emergency Numbers in P-CSCF | 5.3.0 | 5.4.0 | N1-030239 |
| 2003-03 | NP-19 | NP-030050 | 302 | 2 | Correction of the registration state event package | 5.3.0 | 5.4.0 | N1-030268 |
| 2003-03 | NP-19 | NP-030050 | 305 | 2 | User initiated de-registration at P-CSCF | 5.3.0 | 5.4.0 | N1-030295 |
| 2003-03 | NP-19 | NP-030050 | 306 | 2 | Network-initiated deregistration at UE, P-CSCF, and S-CSCF | 5.3.0 | 5.4.0 | N1-030296 |
| 2003-03 | NP-19 | NP-030050 | 307 | 2 | UE deregistration during established dialogs | 5.3.0 | 5.4.0 | N1-030297 |
| 2003-03 | NP-19 | NP-030050 | 308 | 2 | S-CSCF handling of deregistration during established dialogs | 5.3.0 | 5.4.0 | N1-030298 |
| 2003-03 | NP-19 | NP-030050 | 309 | 1 | S-CSCF handling of established dialogs upon deregistration | 5.3.0 | 5.4.0 | N1-030233 |
| 2003-03 | NP-19 | NP-030050 | 310 | 2 | S-CSCF handling of established dialogs upon registration-lifetime expiration | 5.3.0 | 5.4.0 | N1-030299 |
| 2003-03 | NP-19 | NP-030051 | 311 | 1 | P-CSCF handling of established dialogs upon registration-lifetime expiration | 5.3.0 | 5.4.0 | N1-030235 |
| 2003-03 | NP-19 | NP-030051 | 312 | 1 | Correction of Authentication procedure | 5.3.0 | 5.4.0 | N1-030240 |
| 2003-03 | NP-19 | NP-030051 | 313 | | Mixed Path header and Service-Route operation | 5.3.0 | 5.4.0 | N1-030127 |
| 2003-03 | NP-19 | NP-030051 | 315 | 2 | Clarifications on updating the authorization token | 5.3.0 | 5.4.0 | N1-030255 |
| 2003-03 | NP-19 | NP-030051 | 318 | 2 | Consideration of P-CSCF/PDF | 5.3.0 | 5.4.0 | N1-030307 |
| 2003-03 | NP-19 | NP-030051 | 319 | 2 | Clarification on GPRS charging information | 5.3.0 | 5.4.0 | N1-030308 |
| 2003-03 | NP-19 | NP-030051 | 323 | 1 | P-Access-Network-Info procedure corrections for the UE | 5.3.0 | 5.4.0 | N1-030250 |
| 2003-03 | NP-19 | NP-030051 | 324 | 1 | P-Access-Network-Info procedure corrections for the S-CSCF | 5.3.0 | 5.4.0 | N1-030251 |
| 2003-03 | NP-19 | NP-030051 | 326 | 1 | Updating user agent related profile tables | 5.3.0 | 5.4.0 | N1-030260 |
| 2003-03 | NP-19 | NP-030052 | 327 | 2 | Cleanup and clarification to the registration and authentication procedure | 5.3.0 | 5.4.0 | N1-030282 |
| 2003-03 | NP-19 | NP-030052 | 328 | 1 | Corrections to the reg event package | 5.3.0 | 5.4.0 | N1-030230 |
| 2003-03 | NP-19 | NP-030052 | 330 | 2 | Clarifications for setting up separate PDP contexts in case of SBLP | 5.3.0 | 5.4.0 | N1-030288 |
| 2003-03 | NP-19 | NP-030052 | 331 | 2 | Handling of the P-Media-Authorization header | 5.3.0 | 5.4.0 | N1-030289 |
| 2003-03 | NP-19 | NP-030052 | 333 | 3 | Removal of P-Asserted-Identity from clause 7 of 24.229 | 5.3.0 | 5.4.0 | N1-030310 |
| 2003-03 | NP-19 | NP-030052 | 334 | | P-CSCF general procedure corrections | 5.3.0 | 5.4.0 | N1-030182 |
| 2003-03 | NP-19 | NP-030052 | 335 | 2 | Usage of Contact in UE's registration procedure | 5.3.0 | 5.4.0 | N1-030281 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2003-03 | NP-19 | NP-030052 | 337 | | Usage of P-Asserted-Identity for responses | 5.3.0 | 5.4.0 | N1-030193 |
| 2003-03 | NP-19 | NP-030052 | 339 | 2 | Authorization for registration event package | 5.3.0 | 5.4.0 | N1-030285 |
| 2003-03 | NP-19 | NP-030052 | 341 | 1 | P-CSCF subscription to reg event | 5.3.0 | 5.4.0 | N1-030284 |
| 2003-06 | NP-20 | NP-030275 | 295 | 4 | Security agreement inclusion in SIP profile | 5.4.0 | 5.5.0 | N1-030939 |
| 2003-06 | NP-20 | NP-030275 | 322 | 5 | 3GPP P-header inclusion in SIP profile | 5.4.0 | 5.5.0 | N1-030938 |
| 2003-06 | NP-20 | NP-030275 | 332 | 5 | Change of IP address for the UE | 5.4.0 | 5.5.0 | N1-030923 |
| 2003-06 | NP-20 | NP-030275 | 342 | | Removal of the requirement for UE re-authentication initiated by HSS | 5.4.0 | 5.5.0 | N1-030349 |
| 2003-06 | NP-20 | NP-030275 | 343 | 2 | UE behaviour on reception of 420 (Bad Extension) message | 5.4.0 | 5.5.0 | N1-030552 |
| 2003-06 | NP-20 | NP-030275 | 347 | 2 | Handling of DTMF | 5.4.0 | 5.5.0 | N1-030551 |
| 2003-06 | NP-20 | NP-030276 | 348 | 1 | Format of Tel URL in P-Asserted-Id | 5.4.0 | 5.5.0 | N1-030510 |
| 2003-06 | NP-20 | NP-030276 | 349 | | Delete Note on header stripping/SDP manipulation | 5.4.0 | 5.5.0 | N1-030387 |
| 2003-06 | NP-20 | NP-030276 | 354 | 1 | Clarifications on using DNS procedures | 5.4.0 | 5.5.0 | N1-030520 |
| 2003-06 | NP-20 | NP-030276 | 356 | 4 | Addition of procedures at the AS for SDP | 5.4.0 | 5.5.0 | N1-030942 |
| 2003-06 | NP-20 | NP-030276 | 357 | 1 | Usage of P-Associated-URI | 5.4.0 | 5.5.0 | N1-030499 |
| 2003-06 | NP-20 | NP-030276 | 359 | 1 | Network-initiated deregistration at UE and P-CSCF | 5.4.0 | 5.5.0 | N1-030501 |
| 2003-06 | NP-20 | NP-030276 | 360 | 2 | Barred identities | 5.4.0 | 5.5.0 | N1-030550 |
| 2003-06 | NP-20 | NP-030276 | 365 | 1 | PDP context subject to SBLP cannot be reused by other IMS sessions | 5.4.0 | 5.5.0 | N1-030513 |
| 2003-06 | NP-20 | NP-030276 | 368 | 1 | User authentication failure cleanups | 5.4.0 | 5.5.0 | N1-030506 |
| 2003-06 | NP-20 | NP-030277 | 369 | 3 | S-CSCF behavior correction to enable call forwarding | 5.4.0 | 5.5.0 | N1-030931 |
| 2003-06 | NP-20 | NP-030277 | 370 | 1 | SUBSCRIBE request information stored at the P-CSCF and S-CSCF | 5.4.0 | 5.5.0 | N1-030521 |
| 2003-06 | NP-20 | NP-030277 | 371 | 1 | Profile Tables - Transparency | 5.4.0 | 5.5.0 | N1-030858 |
| 2003-06 | NP-20 | NP-030277 | 375 | 1 | Profile Tables - Major Capability Corrections | 5.4.0 | 5.5.0 | N1-030860 |
| 2003-06 | NP-20 | NP-030277 | 376 | 2 | Profile Tables - Deletion of Elements not used in 24.229 | 5.4.0 | 5.5.0 | N1-030921 |
| 2003-06 | NP-20 | NP-030277 | 377 | 1 | Use of the QoS parameter 'signalling information' for a signalling PDP context | 5.4.0 | 5.5.0 | N1-030840 |
| 2003-06 | NP-20 | NP-030277 | 378 | 2 | Deregistration of a PUID (not the last one) | 5.4.0 | 5.5.0 | N1-030919 |
| 2003-06 | NP-20 | NP-030277 | 379 | 2 | 'Last registered public user identity' terminology change | 5.4.0 | 5.5.0 | N1-030920 |
| 2003-06 | NP-20 | NP-030277 | 380 | 1 | Check Integrity Protection for P-Access-Network-Info header | 5.4.0 | 5.5.0 | N1-030881 |
| 2003-06 | NP-20 | NP-030278 | 381 | 1 | PCSCF setting of Integrity protection indicator and checking of Security Verify header | 5.4.0 | 5.5.0 | N1-030882 |
| 2003-06 | NP-20 | NP-030278 | 383 | 1 | Consistent treatment of register and de-register | 5.4.0 | 5.5.0 | N1-030884 |
| 2003-06 | NP-20 | NP-030278 | 384 | 1 | Optionality of sending CK is removed | 5.4.0 | 5.5.0 | N1-030885 |
| 2003-06 | NP-20 | NP-030278 | 385 | 1 | Addition of note and Correction of References regarding security associations and registration | 5.4.0 | 5.5.0 | N1-030886 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2003-06 | NP-20 | NP-030278 | 387 | 1 | Subscription/Registration refresh time | 5.4.0 | 5.5.0 | N1-030887 |
| 2003-06 | NP-20 | NP-030278 | 388 | 1 | Corrections to use of IK | 5.4.0 | 5.5.0 | N1-030863 |
| 2003-06 | NP-20 | NP-030278 | 390 | | Mobile-originating case at UE | 5.4.0 | 5.5.0 | N1-030647 |
| 2003-06 | NP-20 | NP-030278 | 394 | 2 | Re-authentication procedure. | 5.4.0 | 5.5.0 | N1-030917 |
| 2003-06 | NP-20 | NP-030278 | 395 | | Replacement of SIP URL with SIP URI | 5.4.0 | 5.5.0 | N1-030652 |
| 2003-06 | NP-20 | NP-030279 | 397 | 2 | Notification about registration state | 5.4.0 | 5.5.0 | N1-030926 |
| 2003-06 | NP-20 | NP-030279 | 402 | 1 | Handling of P-Asserted ID in MGCF | 5.4.0 | 5.5.0 | N1-030848 |
| 2003-06 | NP-20 | NP-030279 | 404 | 1 | S-CSCF initiated release of calls to circuit switched network | 5.4.0 | 5.5.0 | N1-030873 |
| 2003-06 | NP-20 | NP-030279 | 405 | 2 | Supported Integrity algorithms | 5.4.0 | 5.5.0 | N1-030927 |
| 2003-06 | NP-20 | NP-030279 | 407 | 1 | RFC 3524, Single Reservation Flows | 5.4.0 | 5.5.0 | N1-030851 |
| 2003-06 | NP-20 | NP-030279 | 410 | 1 | Clarification of the S-CSCF's handling of the P-access-network-info header | 5.4.0 | 5.5.0 | N1-030868 |
| 2003-06 | NP-20 | NP-030279 | 411 | 2 | Port numbers in the RR header entries | 5.4.0 | 5.5.0 | N1-030941 |
| 2003-06 | NP-20 | NP-030279 | 412 | 2 | Registration abnormal cases | 5.4.0 | 5.5.0 | N1-030928 |
| 2003-06 | NP-20 | NP-030280 | 415 | | Minor correction to section 5.4.5.1.2 | 5.4.0 | 5.5.0 | N1-030720 |
| 2003-06 | NP-20 | NP-030280 | 417 | 1 | Introduction of RTCP bandwidth | 5.4.0 | 5.5.0 | N1-030872 |
| 2003-06 | NP-20 | NP-030280 | 418 | 1 | Registratin Event - Shortend | 5.4.0 | 5.5.0 | N1-030844 |
| 2003-06 | NP-20 | NP-030280 | 419 | 1 | HSS / S-CSCF text relating to user deregistration | 5.4.0 | 5.5.0 | N1-030845 |
| 2003-06 | NP-20 | NP-030280 | 421 | | Handling of unknown methods at the P-CSCF | 5.4.0 | 5.5.0 | N1-030743 |
| 2003-06 | NP-20 | NP-030280 | 422 | 1 | Definitions and abbreviations update | 5.4.0 | 5.5.0 | N1-030870 |
| 2003-06 | NP-20 | NP-030280 | 423 | | Removal of hanging paragraph | 5.4.0 | 5.5.0 | N1-030752 |
| 2003-06 | NP-20 | NP-030280 | 424 | | Access network charging information | 5.4.0 | 5.5.0 | N1-030753 |
| 2003-06 | NP-20 | NP-030280 | 425 | 1 | UE procedure tidyup | 5.4.0 | 5.5.0 | N1-030871 |
| 2003-06 | NP-20 | NP-030281 | 426 | | P-CSCF procedure tidyup | 5.4.0 | 5.5.0 | N1-030755 |
| 2003-06 | NP-20 | NP-030281 | 427 | | I-CSCF procedure tidyup | 5.4.0 | 5.5.0 | N1-030756 |
| 2003-06 | NP-20 | NP-030281 | 428 | | S-CSCF procedure tidyup | 5.4.0 | 5.5.0 | N1-030757 |
| 2003-06 | NP-20 | NP-030281 | 429 | | BGCF procedure tidyup | 5.4.0 | 5.5.0 | N1-030758 |
| 2003-06 | NP-20 | NP-030281 | 430 | | AS procedure tidyup | 5.4.0 | 5.5.0 | N1-030759 |
| 2003-06 | NP-20 | NP-030281 | 431 | | MRFC procedure tidyup | 5.4.0 | 5.5.0 | N1-030760 |
| 2003-06 | NP-20 | NP-030281 | 434 | 1 | SDP procedure tidyup | 5.4.0 | 5.5.0 | N1-030852 |
| 2003-06 | NP-20 | NP-030281 | 438 | 2 | Profile Tables – Further Corrections | 5.4.0 | 5.5.0 | N1-030935 |
| 2003-06 | NP-20 | NP-030281 | 439 | 3 | AS's subscription for the registration state event package | 5.4.0 | 5.5.0 | N1-030940 |
| 2003-06 | NP-20 | NP-030281 | 440 | | Temporary Public User Identity in re- and de-REGISTER requests | 5.4.0 | 5.5.0 | N1-030792 |
| 2003-09 | NP-21 | NP-030412 | 444 | 2 | All non-REGISTER requests must be integrity protected | 5.5.0 | 5.6.0 | N1-031328 |
| 2003-09 | NP-21 | NP-030412 | 445 | | Download of all service profiles linked to PUID being | 5.5.0 | 5.6.0 | N1-031010 |

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| | | | | | registered and implicitly registered | | | |
| 2003-09 | NP-21 | NP-030412 | 448 | 3 | Authentication at UE | 5.5.0 | 5.6.0 | N1-031326 |
| 2003-09 | NP-21 | NP-030412 | 449 | 1 | Network authentication failure at the UE | 5.5.0 | 5.6.0 | N1-031242 |
| 2003-09 | NP-21 | NP-030412 | 451 | 3 | Handling of security association | 5.5.0 | 5.6.0 | N1-031327 |
| 2003-09 | NP-21 | NP-030412 | 452 | 1 | Re-authentication timer at S-CSCF | 5.5.0 | 5.6.0 | N1-031274 |
| 2003-09 | NP-21 | NP-030412 | 455 | 2 | Authentication failure at S-CSCF | 5.5.0 | 5.6.0 | N1-031285 |
| 2003-09 | NP-21 | NP-030413 | 456 | 2 | Subscription termination sent by the S-CSCF | 5.5.0 | 5.6.0 | N1-031276 |
| 2003-09 | NP-21 | NP-030413 | 457 | | Subscription termination at the P-CSCF | 5.5.0 | 5.6.0 | N1-031032 |
| 2003-09 | NP-21 | NP-030413 | 458 | | Network -initiated deregistration at P-CSCF | 5.5.0 | 5.6.0 | N1-031033 |
| 2003-09 | NP-21 | NP-030349 | 459 | 2 | Notification about registration status at AS | 5.5.0 | 5.6.0 | |
| 2003-09 | NP-21 | NP-030413 | 461 | 1 | Service profile | 5.5.0 | 5.6.0 | N1-031233 |
| 2003-09 | NP-21 | NP-030413 | 466 | 1 | Requirements on Preconditions | 5.5.0 | 5.6.0 | N1-031246 |
| 2003-09 | NP-21 | NP-030413 | 467 | 1 | Call forwarding cleanup | 5.5.0 | 5.6.0 | N1-031238 |
| 2003-09 | NP-21 | NP-030413 | 468 | | Update of references | 5.5.0 | 5.6.0 | N1-031094 |
| 2003-09 | NP-21 | NP-030414 | 470 | 1 | Adding P-Asserted-Identity headers to NE initiated subscriptions | 5.5.0 | 5.6.0 | N1-031314 |
| 2003-09 | NP-21 | NP-030414 | 479 | 1 | Replace USIM by ISIM for user identity storage | 5.5.0 | 5.6.0 | N1-031247 |
| 2003-09 | NP-21 | NP-030414 | 481 | 1 | 24.229 R5 CR: Corrections to Profile Tables | 5.5.0 | 5.6.0 | N1-031248 |
| 2003-09 | NP-21 | NP-030414 | 482 | | 24.229 R5 CR: Setting of SUBSCRIBE expiration time | 5.5.0 | 5.6.0 | N1-031140 |
| 2003-09 | NP-21 | NP-030414 | 483 | 3 | 24.229 R5 CR: Alignment of IMS Compression with RFC 3486 | 5.5.0 | 5.6.0 | N1-031335 |
| 2003-09 | NP-21 | NP-030418 | 465 | 1 | Alignment with TS for policy control over Gq interface | 5.6.0 | 6.0.0 | N1-031267 |
| 2003-09 | NP-21 | NP-030418 | 472 | 1 | I-CSCF procedures for openness | 5.6.0 | 6.0.0 | N1-031304 |
| 2003-09 | NP-21 | NP-030433 | 473 | 3 | Registration from multiple terminals and forking | 5.6.0 | 6.0.0 | |
| 2003-09 | NP-21 | NP-030419 | 480 | 3 | Access Independent IMS | 5.6.0 | 6.0.0 | N1-031333 |
| 2003-12 | NP-22 | NP-030482 | 487 | 1 | Registration amendments in profile | 6.0.0 | 6.1.0 | N1-031627 |
| 2003-12 | NP-22 | NP-030482 | 489 | | Privacy considerations for the UE | 6.0.0 | 6.1.0 | N1-031351 |
| 2003-12 | NP-22 | NP-030476 | 493 | | INVITE dialog amendments in profile | 6.0.0 | 6.1.0 | N1-031359 |
| 2003-12 | NP-22 | NP-030482 | 494 | | Correction of I-CSCF handling of multiple private user identities with same public user identity | 6.0.0 | 6.1.0 | N1-031375 |
| 2003-12 | NP-22 | NP-030476 | 496 | 1 | P-Asserted-Identity in SUBSCRIBE requests | 6.0.0 | 6.1.0 | N1-031632 |
| 2003-12 | NP-22 | NP-030482 | 497 | | Addition of reference to Gq interface | 6.0.0 | 6.1.0 | N1-031378 |
| 2003-12 | NP-22 | NP-030476 | 503 | 2 | Update of HSS information at deregistration | 6.0.0 | 6.1.0 | N1-031720 |
| 2003-12 | NP-22 | NP-030482 | 507 | | Unavailable definitions | 6.0.0 | 6.1.0 | N1-031392 |
| 2003-12 | NP-22 | NP-030476 | 509 | | Reference corrections | 6.0.0 | 6.1.0 | N1-031394 |
| 2003-12 | NP-22 | NP-030484 | 510 | 1 | UICC related changes for IMS commonality and interoperability | 6.0.0 | 6.1.0 | N1-031682 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2003-12 | NP-22 | NP-030484 | 511 | | Interoperability and commonality; definition of scope | 6.0.0 | 6.1.0 | N1-031427 |
| 2003-12 | NP-22 | NP-030484 | 512 | | Interoperability and commonality; addition of terminology | 6.0.0 | 6.1.0 | N1-031428 |
| 2003-12 | NP-22 | NP-030484 | 513 | | Interoperability and commonality; media grouping | 6.0.0 | 6.1.0 | N1-031429 |
| 2003-12 | NP-22 | NP-030484 | 515 | | Interoperability and commonality; charging information | 6.0.0 | 6.1.0 | N1-031431 |
| 2003-12 | NP-22 | NP-030482 | 518 | 1 | Profile support of RFC 3326: The Reason Header Field for the Session Initiation Protocol | 6.0.0 | 6.1.0 | N1-031681 |
| 2003-12 | NP-22 | NP-030482 | 519 | | Profile support of RFC 3581: An Extension to the Session Initiation Protocol (SIP) for Symmetric Response Routing | 6.0.0 | 6.1.0 | N1-031439 |
| 2003-12 | NP-22 | NP-030484 | 522 | 1 | Clause 9 restructuring | 6.0.0 | 6.1.0 | N1-031684 |
| 2003-12 | NP-22 | NP-030477 | 524 | 2 | Correct use of RAND during re-synchronisation failures | 6.0.0 | 6.1.0 | N1-031712 |
| 2003-12 | NP-22 | NP-030478 | 526 | 1 | Correction to description of RES/XRES usage | 6.0.0 | 6.1.0 | N1-031617 |
| 2003-12 | NP-22 | NP-030483 | 529 | | Corrections on charging specification number | 6.0.0 | 6.1.0 | N1-031469 |
| 2003-12 | NP-22 | NP-030581 | 531 | 3 | Corrections on ICID for REGISTER | 6.0.0 | 6.1.0 | |
| 2003-12 | NP-22 | NP-030478 | 543 | 1 | Correction of user initiated re-registration | 6.0.0 | 6.1.0 | N1-031619 |
| 2003-12 | NP-22 | NP-030483 | 551 | 1 | IMS trust domain in Rel 6 | 6.0.0 | 6.1.0 | N1-031622 |
| 2003-12 | NP-22 | NP-030478 | 556 | 1 | P-CSCF and UE handling of Security Associations | 6.0.0 | 6.1.0 | N1-031624 |
| 2003-12 | NP-22 | NP-030483 | 560 | 2 | SDP offer handling in SIP responses in S-CSCF and P-CSCF | 6.0.0 | 6.1.0 | N1-031727 |
| 2003-12 | NP-22 | NP-030483 | 564 | 1 | SIP compression | 6.0.0 | 6.1.0 | N1-031705 |
| 2003-12 | NP-22 | NP-030478 | 566 | | Sending challenge | 6.0.0 | 6.1.0 | N1-031580 |
| 2003-12 | NP-22 | NP-030480 | 568 | 2 | Reg-await-auth timer value | 6.0.0 | 6.1.0 | N1-031716 |
| 2003-12 | NP-22 | NP-030480 | 571 | 1 | Network initiated deregistration | 6.0.0 | 6.1.0 | N1-031707 |
| 2003-12 | NP-22 | NP-030483 | 572 | | Text harmonisation with 3GPP2 | 6.0.0 | 6.1.0 | N1-031589 |
| 2003-12 | NP-22 | NP-030483 | 573 | 1 | Procedures in the absence of UICC | 6.0.0 | 6.1.0 | N1-031680 |
| 2003-12 | NP-22 | NP-030483 | 575 | 1 | P-Access-Network-Info changes | 6.0.0 | 6.1.0 | N1-031683 |
| 2004-03 | NP-23 | NP-040027 | 488 | 3 | Completion of major capabilities table in respect of privacy | 6.1.0 | 6.2.0 | N1-040406 |
| 2004-03 | NP-23 | NP-040027 | 499 | 5 | P-CSCF integrity protection | 6.1.0 | 6.2.0 | N1-040500 |
| 2004-03 | NP-23 | NP-040032 | 578 | 1 | UE requesting no-fork | 6.1.0 | 6.2.0 | N1-040184 |
| 2004-03 | NP-23 | NP-040032 | 579 | 1 | Inclusion of caller preferences into profile | 6.1.0 | 6.2.0 | N1-040284 |
| 2004-03 | NP-23 | NP-040027 | 586 | 1 | Network-initiated re-authentication | 6.1.0 | 6.2.0 | N1-040391 |
| 2004-03 | NP-23 | NP-040032 | 588 | 1 | Re-authentication - Abnormal cases | 6.1.0 | 6.2.0 | N1-040393 |
| 2004-03 | NP-23 | NP-040027 | 592 | 1 | Integrity protected correction | 6.1.0 | 6.2.0 | N1-040398 |
| 2004-03 | NP-23 | NP-040032 | 596 | 1 | Sec-agree parameter in "Proxy-Require" header | 6.1.0 | 6.2.0 | N1-040400 |
| 2004-03 | NP-23 | NP-040027 | 600 | 2 | Handling of record-route in target refresh and subsequent request | 6.1.0 | 6.2.0 | N1-040481 |
| 2004-03 | NP-23 | NP-040035 | 603 | | Cleanup for IP-CAN and GPRS | 6.1.0 | 6.2.0 | N1-040304 |

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| 2004-03 | NP-23 | NP-040032 | 604 | | Forking in S-CSCF | 6.1.0 | 6.2.0 | N1-040325 |
| 2004-03 | NP-23 | NP-040108 | 605 | 3 | Determination of S-CSCF role | 6.1.0 | 6.2.0 | |
| 2004-03 | NP-23 | NP-040134 | 608 | 3 | Unprotected deregistration | 6.1.0 | 6.2.0 | |
| 2004-03 | NP-23 | NP-040029 | 610 | | Sending authentication challenge | 6.1.0 | 6.2.0 | N1-040331 |
| 2004-03 | NP-23 | NP-040033 | 613 | | Reference to PDF operation | 6.1.0 | 6.2.0 | N1-040334 |
| 2004-03 | NP-23 | NP-040029 | 615 | 1 | Support of MESSAGE (Profile Tables) | 6.1.0 | 6.2.0 | N1-040466 |
| 2004-03 | NP-23 | NP-040033 | 616 | 2 | Introduction of PSI Routing to 24.229 | 6.1.0 | 6.2.0 | N1-040487 |
| 2004-03 | NP-23 | NP-040033 | 617 | 1 | P-CSCF Re-selection | 6.1.0 | 6.2.0 | N1-040463 |
| 2004-03 | NP-23 | NP-040033 | 618 | | I-CSCF does not re-select S-CSCF during re-registration | 6.1.0 | 6.2.0 | N1-040344 |
| 2004-03 | NP-23 | NP-040033 | 620 | 1 | Handling of media authorization token due to messaging | 6.1.0 | 6.2.0 | N1-040430 |
| 2004-06 | NP-24 | NP-040191 | 621 | 2 | Forking requests terminating at the served user | 6.2.0 | 6.3.0 | N1-040739 |
| 2004-06 | NP-24 | NP-040191 | 624 | 1 | Abbreviations | 6.2.0 | 6.3.0 | N1-040691 |
| 2004-06 | NP-24 | NP-040191 | 625 | 5 | Removal of restriction for multiple SIP sessions on a single PDP context | 6.2.0 | 6.3.0 | N1-041053 |
| 2004-06 | NP-24 | NP-040191 | 626 | 3 | Record route in S-CSCF | 6.2.0 | 6.3.0 | N1-041061 |
| 2004-06 | NP-24 | NP-040189 | 627 | 3 | Correction of reception of media authorization token | 6.2.0 | 6.3.0 | N1-040994 |
| 2004-06 | NP-24 | NP-040191 | 628 | 3 | Introduction of PSI Routing to 24.229 | 6.2.0 | 6.3.0 | N1-041059 |
| 2004-06 | NP-24 | NP-040198 | 629 | 2 | Addition of PRESNC material | 6.2.0 | 6.3.0 | N1-040996 |
| 2004-06 | NP-24 | NP-040189 | 631 | 1 | Missing statements regarding P-Charging-Function-Addresses header | 6.2.0 | 6.3.0 | N1-040987 |
| 2004-06 | NP-24 | NP-040191 | 634 | 1 | Multiple registrations | 6.2.0 | 6.3.0 | N1-041054 |
| 2004-06 | NP-24 | NP-040192 | 635 | 1 | Network-initiated deregistration | 6.2.0 | 6.3.0 | N1-041055 |
| 2004-06 | NP-24 | NP-040192 | 636 | | Network-initiated re-authentication | 6.2.0 | 6.3.0 | N1-040778 |
| 2004-06 | NP-24 | NP-040192 | 637 | 1 | Mobile-initiated deregistration | 6.2.0 | 6.3.0 | N1-041056 |
| 2004-06 | NP-24 | NP-040192 | 638 | 1 | Notification about registration state | 6.2.0 | 6.3.0 | N1-041057 |
| 2004-06 | NP-24 | NP-040189 | 642 | 3 | Syntax of the extension to the P-Charging-Vector header field | 6.2.0 | 6.3.0 | N1-041100 |
| 2004-06 | NP-24 | NP-040192 | 643 | 2 | Session Timer | 6.2.0 | 6.3.0 | N1-041095 |
| 2004-06 | NP-24 | NP-040193 | 644 | 3 | Session initiation without preconditions | 6.2.0 | 6.3.0 | N1-041096 |
| 2004-06 | NP-24 | NP-040192 | 645 | 1 | IMS Conferencing: Inclusion of Profile Tables to TS 24.229 | 6.2.0 | 6.3.0 | N1-041015 |
| 2004-06 | NP-24 | NP-040189 | 649 | 1 | Revisions due to published version of draft-ietf-sipping-reg-event | 6.2.0 | 6.3.0 | N1-040992 |
| 2004-06 | NP-24 | NP-040198 | 652 | | Creation of separate event package table for UA role | 6.2.0 | 6.3.0 | N1-041066 |
| 2004-09 | NP-25 | NP-040380 | 658 | | Correction of User identity verification at the AS | 6.3.0 | 6.4.0 | N1-041344 |
| 2004-09 | NP-25 | NP-040381 | 666 | 1 | NOTIFY requests | 6.3.0 | 6.4.0 | N1-041586 |
| 2004-09 | NP-25 | NP-040381 | 654 | 4 | Callee capabilities and Registration | 6.3.0 | 6.4.0 | N1-041315 |
| 2004-09 | NP-25 | NP-040381 | 668 | 2 | Network deregistration | 6.3.0 | 6.4.0 | N1-041614 |

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| 2004-09 | NP-25 | NP-040381 | 682 | 1 | SDP parameters received by the S-CSCF and the P-CSCF in the 200 OK message | 6.3.0 | 6.4.0 | N1-041592 |
| 2004-09 | NP-25 | NP-040381 | 661 | 1 | Call Release | 6.3.0 | 6.4.0 | N1-041589 |
| 2004-09 | NP-25 | NP-040381 | 659 | | Multiple public ID registration | 6.3.0 | 6.4.0 | N1-041350 |
| 2004-09 | NP-25 | NP-040381 | 660 | | Standalone transactions | 6.3.0 | 6.4.0 | N1-041351 |
| 2004-09 | NP-25 | NP-040381 | 663 | | Unprotected REGISTER | 6.3.0 | 6.4.0 | N1-041354 |
| 2004-09 | NP-25 | NP-040381 | 662 | 1 | Session timer | 6.3.0 | 6.4.0 | N1-041590 |
| 2004-09 | NP-25 | NP-040381 | 665 | | Contact in SUBSCRIBE request | 6.3.0 | 6.4.0 | N1-041372 |
| 2004-09 | NP-25 | NP-040381 | 650 | 2 | Support of draft-ietf-sip-replaces | 6.3.0 | 6.4.0 | N1-041391 |
| 2004-09 | NP-25 | NP-040381 | 657 | 1 | Support of draft-ietf-sip-join | 6.3.0 | 6.4.0 | N1-041393 |
| 2004-09 | NP-25 | NP-040381 | 656 | 1 | Support of draft-ietf-sip-referredby | 6.3.0 | 6.4.0 | N1-041263 |
| 2004-09 | NP-25 | NP-040381 | 678 | | Support of TLS | 6.3.0 | 6.4.0 | N1-041462 |
| 2004-09 | NP-25 | NP-040381 | 688 | 2 | Filtering of the P-Access-Network-Info header by the S-CSCF and privacy rules | 6.3.0 | 6.4.0 | N1-041641 |
| 2004-09 | NP-25 | NP-040382 | 692 | 2 | Ipv6 IPv4 interworking | 6.3.0 | 6.4.0 | N1-041630 |
| 2004-09 | NP-25 | NP-040383 | 689 | 2 | Addition of session set-up not requiring preconditions and reliable transport of provisional responses. | 6.3.0 | 6.4.0 | N1-041632 |
| 2004-09 | NP-25 | NP-040385 | 697 | | Missing value for the event attribute within the <contact> element of NOTIFY body | 6.3.0 | 6.4.0 | N1-041540 |
| 2004-09 | NP-25 | NP-040385 | 698 | | HSS initiated deregistration | 6.3.0 | 6.4.0 | N1-041549 |
| 2004-09 | NP-25 | NP-040385 | 673 | | Syntax correction for the P-Charging-Vector header | 6.3.0 | 6.4.0 | N1-041434 |
| 2004-09 | NP-25 | NP-040385 | 699 | 1 | Network initiated deregistration upon UE roaming and registration to a new network | 6.3.0 | 6.4.0 | N1-041629 |
| 2004-12 | NP-26 | NP-040506 | 651 | 4 | Downloading the user profile based on User-Data-Request-Type | 6.4.0 | 6.5.0 | N1-042031 |
| 2004-12 | NP-26 | NP-040506 | 703 | 2 | SDP Encryption | 6.4.0 | 6.5.0 | N1-042095 |
| 2004-12 | NP-26 | NP-040506 | 704 | 1 | RTCP streams | 6.4.0 | 6.5.0 | N1-042019 |
| 2004-12 | NP-26 | NP-040506 | 709 | | Contact in 200(OK) response | 6.4.0 | 6.5.0 | N1-041725 |
| 2004-12 | NP-26 | NP-040506 | 710 | 1 | P-Access-Network-Info header | 6.4.0 | 6.5.0 | N1-042020 |
| 2004-12 | NP-26 | NP-040506 | 711 | 1 | P-Called-Party-ID header | 6.4.0 | 6.5.0 | N1-041954 |
| 2004-12 | NP-26 | NP-040506 | 713 | 1 | IMS-ALG routing | 6.4.0 | 6.5.0 | N1-042021 |
| 2004-12 | NP-26 | NP-040506 | 714 | 1 | Public User Identity | 6.4.0 | 6.5.0 | N1-042022 |
| 2004-12 | NP-26 | NP-040506 | 715 | 1 | "Pres" and "im" URIs | 6.4.0 | 6.5.0 | N1-042023 |
| 2004-12 | NP-26 | NP-040502 | 723 | 1 | Correction Term IOI handling | 6.4.0 | 6.5.0 | N1-041956 |
| 2004-12 | NP-26 | NP-040502 | 725 | 1 | Request handling in S-CSCF originating case | 6.4.0 | 6.5.0 | N1-041958 |
| 2004-12 | NP-26 | NP-040502 | 727 | 1 | Request handling in S-CSCF - terminating case | 6.4.0 | 6.5.0 | N1-041960 |
| 2004-12 | NP-26 | NP-040506 | 728 | | SBLP and non-realtime PDP contexts | 6.4.0 | 6.5.0 | N1-041797 |
| 2004-12 | NP-26 | NP-040590 | 730 | 2 | Reference updates | 6.4.0 | 6.5.0 | N1-042085 |
| 2004-12 | NP-26 | NP-040590 | 733 | 3 | Support for extended SigComp | 6.4.0 | 6.5.0 | N1-042117 |

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| 2004-12 | NP-26 | NP-040590 | 734 | 2 | Correction to subclause 5.1.3 of TS 24,229 | 6.4.0 | 6.5.0 | N1-042120 |
| 2004-12 | NP-26 | NP-040590 | 735 | 1 | Correction to subclause 5.1.4.1.2.3 of TS 24,,229 | 6.4.0 | 6.5.0 | N1-042084 |
| 2004-12 | NP-26 | NP-040502 | 738 | 1 | Population of Via header when using REGISTER method | 6.4.0 | 6.5.0 | N1-041962 |
| 2004-12 | NP-26 | NP-040590 | 739 | | Tel-URI related reference updates | 6.4.0 | 6.5.0 | N1-041869 |
| 2004-12 | NP-26 | NP-040590 | 741 | 1 | Throttling | 6.4.0 | 6.5.0 | N1-042086 |
| 2004-12 | NP-26 | NP-040590 | 742 | | Editorial correction resulting from CR665 | 6.4.0 | 6.5.0 | N1-041881 |
| 2004-12 | NP-26 | NP-040590 | 743 | | Unprotected REGISTER corrections | 6.4.0 | 6.5.0 | N1-041882 |
| 2004-12 | NP-26 | NP-040590 | 744 | 1 | Corrections to receiving SDP offer in 200 (OK) response | 6.4.0 | 6.5.0 | N1-042087 |
| 2004-12 | NP-26 | NP-040590 | 745 | 1 | Privacy corrections | 6.4.0 | 6.5.0 | N1-042085 |
| 2004-12 | NP-26 | NP-040590 | 747 | 2 | Syntax of the P-Charging-Vector | 6.4.0 | 6.5.0 | N1-042105 |
| 2004-12 | NP-26 | NP-040590 | 752 | 2 | Unavailability of the access-network-charging-info when the session is established without SBLP | 6.4.0 | 6.5.0 | N1-042106 |
| 2004-12 | NP-26 | NP-040590 | 753 | 1 | SIP messages carrying the access-network-charging-info for sessions without preconditions | 6.4.0 | 6.5.0 | N1-042089 |
| 2004-12 | NP-26 | NP-040590 | 755 | 1 | Network-initiated deregistration for multiple UEs sharing the same user public identity and for the old contact information of a roaming UE registered in a new network | 6.4.0 | 6.5.0 | N1-042090 |
| 2004-12 | NP-26 | NP-040502 | 765 | 1 | Interaction between S-CSCF and HSS in Network initiated deregistration procedure | 6.4.0 | 6.5.0 | N1-041966 |
| 2004-12 | NP-26 | NP-040502 | 768 | 1 | Downloading of user profile | 6.4.0 | 6.5.0 | N1-042103 |
| 2005-01 | | | | | Fix Word problem | 6.5.0 | 6.5.1 | |
| 2005-03 | NP-27 | NP-050069 | 839 | | Filter criteria matching and generation of third-party REGISTER request for network-initiated deregistration | 5.11.1 | 5.12.0 | N1-050220 |
| 2005-03 | NP-27 | NP-050069 | 785 | | Deregistration effect on active sessions | 6.5.1 | 6.6.0 | N1-050052 |
| 2005-03 | NP-27 | NP-050069 | 784 | | Deregistration effect on active sessions | 5.11.1 | 5.12.0 | N1-050051 |
| 2005-03 | NP-27 | NP-050069 | 809 | 1 | IOI storage at MGCF | 5.11.1 | 5.12.0 | N1-050295 |
| 2005-03 | NP-27 | NP-050069 | 840 | | Filter criteria matching and generation of third-party REGISTER request for network-initiated deregistration | 6.5.1 | 6.6.0 | N1-050221 |
| 2005-03 | NP-27 | NP-050069 | 806 | 1 | Use of original dialog identifier at AS | 6.5.1 | 6.6.0 | N1-050292 |
| 2005-03 | NP-27 | NP-050069 | 807 | 2 | Checking Request-URI for terminating requests at the S-CSCF | 5.11.1 | 5.12.0 | N1-050401 |
| 2005-03 | NP-27 | NP-050069 | 805 | 1 | Use of original dialog identifier at AS | 5.11.1 | 5.12.0 | N1-050291 |
| 2005-03 | NP-27 | NP-050069 | 808 | 2 | Checking Request-URI for terminating requests at the S-CSCF | 6.5.1 | 6.6.0 | N1-050402 |
| 2005-03 | NP-27 | NP-050069 | 810 | 1 | IOI storage at MGCF | 6.5.1 | 6.6.0 | N1-050296 |
| 2005-03 | NP-27 | NP-050073 | 794 | | RFC 3966 | 6.5.1 | 6.6.0 | N1-050080 |
| 2005-03 | NP-27 | NP-050073 | 848 | 1 | Removal of I-CSCF normative requirement on Cx interface | 6.5.1 | 6.6.0 | N1-050299 |
| 2005-03 | NP-27 | NP-050073 | 841 | | Filtering of the P-Access-Network-Info header by the | 6.5.1 | 6.6.0 | N1-050225 |

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| | | | | | S-CSCF and privacy rules | | | |
| 2005-03 | NP-27 | NP-050073 | 817 | | Editorial corrections | 6.5.1 | 6.6.0 | N1-050129 |
| 2005-03 | NP-27 | NP-050073 | 786 | 1 | Cleanups resulting from CR changes for last version | 6.5.1 | 6.6.0 | N1-050324 |
| 2005-03 | NP-27 | NP-050073 | 821 | 1 | Handling topmost Route header at the P-CSCF | 6.5.1 | 6.6.0 | N1-050297 |
| 2005-03 | NP-27 | NP-050073 | 790 | | Registration - Abnormal Case | 6.5.1 | 6.6.0 | N1-050076 |
| 2005-03 | NP-27 | NP-050074 | 832 | 1 | Corrections to the tables for "PUBLISH" | 6.5.1 | 6.6.0 | N1-050341 |
| 2005-03 | NP-27 | NP-050074 | 822 | 1 | Corrections to the UE tables for "major capabilities" | 6.5.1 | 6.6.0 | N1-050332 |
| 2005-03 | NP-27 | NP-050074 | 825 | 1 | Corrections to the UE tables for "ACK" | 6.5.1 | 6.6.0 | N1-050334 |
| 2005-03 | NP-27 | NP-050074 | 826 | 1 | Corrections to the tables for "CANCEL" | 6.5.1 | 6.6.0 | N1-050335 |
| 2005-03 | NP-27 | NP-050074 | 827 | 1 | Corrections to the tables for "INVITE" | 6.5.1 | 6.6.0 | N1-050336 |
| 2005-03 | NP-27 | NP-050074 | 828 | 1 | Corrections to the tables for "MESSAGE" | 6.5.1 | 6.6.0 | N1-050337 |
| 2005-03 | NP-27 | NP-050074 | 829 | 1 | Corrections to the tables for "NOTIFY" | 6.5.1 | 6.6.0 | N1-050338 |
| 2005-03 | NP-27 | NP-050074 | 830 | 1 | Corrections to the tables for "OPTIONS" | 6.5.1 | 6.6.0 | N1-050339 |
| 2005-03 | NP-27 | NP-050074 | 834 | 1 | Corrections to the tables for "REGISTER" | 6.5.1 | 6.6.0 | N1-050343 |
| 2005-03 | NP-27 | NP-050074 | 831 | 1 | Corrections to the tables for "PRACK" | 6.5.1 | 6.6.0 | N1-050340 |
| 2005-03 | NP-27 | NP-050074 | 833 | 1 | Corrections to the tables for "REFER" | 6.5.1 | 6.6.0 | N1-050342 |
| 2005-03 | NP-27 | NP-050074 | 835 | 1 | Corrections to the tables for "SUBSCRIBE" | 6.5.1 | 6.6.0 | N1-050344 |
| 2005-03 | NP-27 | NP-050074 | 836 | 1 | Corrections to the tables for "UPDATE" | 6.5.1 | 6.6.0 | N1-050345 |
| 2005-03 | NP-27 | NP-050074 | 837 | 1 | Corrections to the tables for SDP | 6.5.1 | 6.6.0 | N1-050346 |
| 2005-03 | NP-27 | NP-050074 | 824 | 1 | Removal of the UE table for 'status codes' | 6.5.1 | 6.6.0 | N1-050351 |
| 2005-03 | NP-27 | NP-050074 | 823 | 1 | Corrections to the tables for "BYE" | 6.5.1 | 6.6.0 | N1-050333 |
| 2005-03 | NP-27 | NP-050075 | 846 | 2 | Correction to the Registration procedure | 6.5.1 | 6.6.0 | N1-050413 |
| 2005-03 | NP-27 | NP-050075 | 850 | 1 | Addition of IMS-ALF to profile tables | 6.5.1 | 6.6.0 | N1-050348 |
| 2005-03 | NP-27 | NP-050075 | 851 | 2 | Press and im URIs in incoming requests | 6.5.1 | 6.6.0 | N1-050395 |
| 2005-03 | NP-27 | NP-050075 | 788 | 1 | MO - Calls to IPv4 SIP terminals | 6.5.1 | 6.6.0 | N1-050387 |
| 2005-03 | NP-27 | NP-050075 | 818 | 3 | Corrections to subclause 5.5 in TS 24.229 | 6.5.1 | 6.6.0 | N1-050414 |
| 2005-03 | NP-27 | NP-050075 | 801 | 3 | Default handling associated with the trigger at the S-CSCF | 6.5.1 | 6.6.0 | N1-050418 |
| 2005-03 | NP-27 | NP-050075 | 803 | 4 | Default handling associated with the trigger for third party registration | 6.5.1 | 6.6.0 | N1-050421 |
| 2005-03 | NP-27 | NP-050078 | 795 | 1 | Sip-profile package in major capabilities | 6.5.1 | 6.6.0 | N1-050306 |
| 2005-03 | NP-27 | NP-050127 | 849 | 2 | Corrections to addition of session set-up not requiring preconditions and reliable transport of provisional responses | 6.5.1 | 6.6.0 | |
| 2005-06 | CP-28 | CP-050059 | 879 | | Correction Reg-Await-Auth Timer | 6.6.0 | 6.7.0 | C1-050522 |
| 2005-06 | CP-28 | CP-050059 | 881 | | Security Association in P-CSCF | 6.6.0 | 6.7.0 | C1-050524 |
| 2005-06 | CP-28 | CP-050059 | 871 | 1 | Port 5060 | 6.6.0 | 6.7.0 | C1-050674 |
| 2005-06 | CP-28 | CP-050059 | 891 | 2 | SIP headers storage for P-CSCF initiated session release | 6.6.0 | 6.7.0 | C1-050777 |

| Change history | | | | | | | | |
|----------------|-------|-----------|-----|-----|---|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2005-06 | CP-28 | CP-050059 | 921 | 1 | Correction of error in the specification of the extension to Authorization header | 6.6.0 | 6.7.0 | C1-050689 |
| 2005-06 | CP-28 | CP-050059 | 886 | 2 | Handling of P-Associated URI header | 6.6.0 | 6.7.0 | C1-050783 |
| 2005-06 | CP-28 | CP-050059 | 907 | 2 | Clarification to the procedures at the I-CSCF | 6.6.0 | 6.7.0 | C1-050785 |
| 2005-06 | CP-28 | CP-050061 | 894 | 1 | Re-registration failure | 6.6.0 | 6.7.0 | C1-050709 |
| 2005-06 | CP-28 | CP-050061 | 892 | | Completion of status-code tables in SIP profile | 6.6.0 | 6.7.0 | C1-050571 |
| 2005-06 | CP-28 | CP-050061 | 865 | 1 | Unsubscribe by P-CSCF | 6.6.0 | 6.7.0 | C1-050671 |
| 2005-06 | CP-28 | CP-050061 | 866 | 1 | Protected initial registration | 6.6.0 | 6.7.0 | C1-050708 |
| 2005-06 | CP-28 | CP-050061 | 916 | 1 | Clarify that S-CSCF shall support Supported and Require headers | 6.6.0 | 6.7.0 | C1-050684 |
| 2005-06 | CP-28 | CP-050061 | 862 | | Shared public user identities | 6.6.0 | 6.7.0 | C1-050599 |
| 2005-06 | CP-28 | CP-050061 | 860 | 1 | P-CSCF - routing of REGISTER requests | 6.6.0 | 6.7.0 | C1-050701 |
| 2005-06 | CP-28 | CP-050061 | 870 | 1 | Correction of table A.104A | 6.6.0 | 6.7.0 | C1-050711 |
| 2005-06 | CP-28 | CP-050061 | 887 | 1 | Contact address in REGISTER response | 6.6.0 | 6.7.0 | C1-050716 |
| 2005-06 | CP-28 | CP-050061 | 890 | 1 | P-CSCF Record-Route processing for target refresh requests/responses | 6.6.0 | 6.7.0 | C1-050717 |
| 2005-06 | CP-28 | CP-050061 | 893 | 1 | AS originated requests on behalf of PSI | 6.6.0 | 6.7.0 | C1-050719 |
| 2005-06 | CP-28 | CP-050061 | 896 | 1 | Routing PSI at terminating side | 6.6.0 | 6.7.0 | C1-050720 |
| 2005-06 | CP-28 | CP-050061 | 856 | 2 | Notification about registration state | 6.6.0 | 6.7.0 | C1-050789 |
| 2005-06 | CP-28 | CP-050061 | 861 | 3 | Registration failure at UE | 6.6.0 | 6.7.0 | C1-050790 |
| 2005-06 | CP-28 | CP-050061 | 899 | 2 | Correction of the references for the integration of resource management procedures | 6.6.0 | 6.7.0 | C1-050791 |
| 2005-06 | CP-28 | CP-050061 | 902 | 2 | Clarification on P-CSCF-initiated call release | 6.6.0 | 6.7.0 | C1-050792 |
| 2005-06 | CP-28 | CP-050061 | 863 | 3 | Error handling in UE in case of RFC 3524 | 6.6.0 | 6.7.0 | C1-050793 |
| 2005-06 | CP-28 | CP-050061 | 895 | 3 | UE registration failure because the selected S-CSCF is unreachable | 6.6.0 | 6.7.0 | C1-050802 |
| 2005-06 | CP-28 | CP-050061 | 787 | 6 | MT- SDP offer with IPv4 address. | 6.6.0 | 6.7.0 | C1-050794 |
| 2005-06 | CP-28 | CP-050061 | 858 | 1 | S-CSCF redirecting | 6.6.0 | 6.7.0 | C1-050700 |
| 2005-06 | CP-28 | CP-050064 | 872 | 2 | I-WLAN information for IMS | 6.6.0 | 6.7.0 | C1-050729 |
| 2005-06 | CP-28 | CP-050074 | 901 | | MWI RFC3842 | 6.6.0 | 7.0.0 | C1-050600 |
| 2005-06 | CP-28 | CP-050075 | 905 | 1 | 3xx response and non-SDP bodies handling by proxies | 6.6.0 | 7.0.0 | C1-050775 |
| 2005-09 | CP-29 | CP-050346 | 986 | | Modifications to 24.229 to allow multiple IPsec security association per IKE_Security association | 7.0.0 | 7.1.0 | |
| 2005-09 | CP-29 | CP-050355 | 930 | 1 | Correction Profile Table A.119 | 7.0.0 | 7.1.0 | C1-051061 |
| 2005-09 | CP-29 | CP-050355 | 946 | | Public User identity in 3rd party REG | 7.0.0 | 7.1.0 | C1-050906 |
| 2005-09 | CP-29 | CP-050355 | 957 | 1 | Removal of Access Network Charging Information by the S-CSCF | 7.0.0 | 7.1.0 | C1-051081 |
| 2005-09 | CP-29 | CP-050355 | 965 | | Optional ccf | 7.0.0 | 7.1.0 | C1-050986 |
| 2005-09 | CP-29 | CP-050355 | 969 | 1 | Contact header in REGISTER requests | 7.0.0 | 7.1.0 | C1-051177 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2005-09 | CP-29 | CP-050359 | 932 | | SigComp-Corrections | 7.0.0 | 7.1.0 | C1-050877 |
| 2005-09 | CP-29 | CP-050359 | 962 | 1 | IETF reference corrections | 7.0.0 | 7.1.0 | C1-051074 |
| 2005-09 | CP-29 | CP-050359 | 968 | 1 | AS procedure correction | 7.0.0 | 7.1.0 | C1-051085 |
| 2005-09 | CP-29 | CP-050367 | 924 | | Incorporation of draft-ietf-sip-history | 7.0.0 | 7.1.0 | C1-050838 |
| 2005-09 | CP-29 | CP-050367 | 938 | | Contact header | 7.0.0 | 7.1.0 | C1-050887 |
| 2005-09 | CP-29 | CP-050367 | 939 | 1 | Reason header - loss of radio coverage | 7.0.0 | 7.1.0 | C1-051158 |
| 2005-09 | CP-29 | CP-050367 | 947 | 3 | Changes to TS 24.229 to ease interworking with non precondition terminals | 7.0.0 | 7.1.0 | C1-051213 |
| 2005-09 | CP-29 | CP-050367 | 958 | 2 | Contents of P-Associated-URI header in 200 (OK) response to REGISTER | 7.0.0 | 7.1.0 | C1-051206 |
| 2005-09 | CP-29 | CP-050367 | 960 | 3 | Consideration on 3rd Party Service Provider in Trust Domain | 7.0.0 | 7.1.0 | C1-051208 |
| 2005-09 | CP-29 | CP-050367 | 971 | 1 | Correction of requirement to insert P-Asserted-Identity header | 7.0.0 | 7.1.0 | C1-051166 |
| 2005-09 | CP-29 | CP-050368 | 950 | 3 | privacy and trust rules for History header | 7.0.0 | 7.1.0 | C1-051199 |
| 2005-10 | | | | | missing word in subclause 5.4.1.2.2, bullet 10b) is added by MCC | 7.1.0 | 7.1.1 | |
| 2005-12 | CP-30 | CP-050538 | 1049 | | Replace 'originated' with 'terminated' | 7.1.1 | 7.2.0 | C1-051479 |
| 2005-12 | CP-30 | CP-050538 | 1046 | 2 | Mobile originating call related requests | 7.1.1 | 7.2.0 | C1-051668 |
| 2005-12 | CP-30 | CP-050538 | 1012 | 1 | Correction to section 5.4.3.2 t of TS 24.229 | 7.1.1 | 7.2.0 | C1-051563 |
| 2005-12 | CP-30 | CP-050538 | 1026 | | Handling of P-Charging-Function-Adress | 7.1.1 | 7.2.0 | C1-051424 |
| 2005-12 | CP-30 | CP-050538 | 1071 | | Correction Syntax P-Charging Vector | 7.1.1 | 7.2.0 | C1-051508 |
| 2005-12 | CP-30 | CP-050541 | 1002 | 1 | Modification to the definition of Security Association | 7.1.1 | 7.2.0 | C1-051576 |
| 2005-12 | CP-30 | CP-050542 | 0982 | 3 | Access Type of P-Access-Network-Info header | 7.1.1 | 7.2.0 | C1-051675 |
| 2005-12 | CP-30 | CP-050542 | 1059 | | Replace 'served' by 'Originating' UE | 7.1.1 | 7.2.0 | C1-051489 |
| 2005-12 | CP-30 | CP-050542 | 1017 | | Correction to subclause 5.7.5.1. of TS 24229 | 7.1.1 | 7.2.0 | C1-051382 |
| 2005-12 | CP-30 | CP-050542 | 1073 | 2 | Short Session Setup in IMS | 7.1.1 | 7.2.0 | C1-051656 |
| 2005-12 | CP-30 | CP-050542 | 1054 | | Adjusting section reference in section 6.3 | 7.1.1 | 7.2.0 | C1-051484 |
| 2005-12 | CP-30 | CP-050542 | 1029 | 1 | B2B UA AS handling | 7.1.1 | 7.2.0 | C1-041597 |
| 2005-12 | CP-30 | CP-050542 | 1062 | 2 | Correction to 3rd party registration procedures for SESSION_TERMINATED default handling | 7.1.1 | 7.2.0 | C1-051672 |
| 2005-12 | CP-30 | CP-050542 | 0994 | | cdma2000 | 7.1.1 | 7.2.0 | C1-051336 |
| 2005-12 | CP-30 | CP-050542 | 1043 | | Correction of a reference in some tables in Appendix A | 7.1.1 | 7.2.0 | C1-051473 |
| 2005-12 | CP-30 | CP-050542 | 1005 | 2 | Refreshes of SUBSCRIBE to reg-event (Fix for Rel 7) | 7.1.1 | 7.2.0 | C1-051670 |
| 2005-12 | CP-30 | CP-050542 | 1065 | 1 | Charging terms correction | 7.1.1 | 7.2.0 | C1-051618 |
| 2005-12 | CP-30 | CP-050548 | 1081 | | Change of originating and terminating terminal terminology | 7.1.1 | 7.2.0 | C1-051535 |
| 2005-12 | CP-30 | CP-050548 | 1069 | 2 | IBCF | 7.1.1 | 7.2.0 | C1-051587 |
| 2005-12 | CP-30 | CP-050550 | 1055 | | Editorial Changes | 7.1.1 | 7.2.0 | C1-051485 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2005-12 | CP-30 | CP-050550 | 0996 | 1 | UE initiated deregistration | 7.1.1 | 7.2.0 | C1-051649 |
| 2005-12 | CP-30 | CP-050550 | 1027 | 1 | Mobile originated Request for unregistered user | 7.1.1 | 7.2.0 | C1-051653 |
| 2005-12 | CP-30 | CP-050550 | 0990 | 1 | Authentication related Clarification | 7.1.1 | 7.2.0 | C1-051560 |
| 2005-12 | CP-30 | CP-050550 | 1019 | 2 | Receipt of SIP URI with user equal phone at I-CSCF | 7.1.1 | 7.2.0 | C1-051671 |
| 2005-12 | CP-30 | CP-050550 | 0995 | 2 | Default public user ID | 7.1.1 | 7.2.0 | C1-051691 |
| 2005-12 | CP-30 | CP-050550 | 0997 | 1 | P-Preferred-Identity header | 7.1.1 | 7.2.0 | C1-051650 |
| 2005-12 | CP-30 | CP-050550 | 1082 | 1 | P-CSCF discovery | 7.1.1 | 7.2.0 | C1-051681 |
| 2005-12 | CP-30 | CP-050677 | 1085 | 2 | Incorporating of TR 24.819 fixed broadband access impacts into TS 24.229 | 7.1.1 | 7.2.0 | |
| 2006-03 | CP-31 | CP-060106 | 1187 | - | Removal of Warning header non-compliance with RFC 3261 | 7.2.0 | 7.3.0 | C1-060328 |
| 2006-03 | CP-31 | CP-060106 | 1117 | 1 | IMS AKA - SQN resync clarifications | 7.2.0 | 7.3.0 | C1-060453 |
| 2006-03 | CP-31 | CP-060106 | 1114 | 1 | IMS AKA - content of initial authentication header | 7.2.0 | 7.3.0 | C1-060450 |
| 2006-03 | CP-31 | CP-060106 | 1204 | - | Syntax and operation for Security-Client, Security-Server and Security-Verify headers | 7.2.0 | 7.3.0 | C1-060387 |
| 2006-03 | CP-31 | CP-060107 | 1148 | 1 | UE processing 305 (Use Proxy) | 7.2.0 | 7.3.0 | C1-060507 |
| 2006-03 | CP-31 | CP-060107 | 1164 | 1 | Clarifications on P-CSCF discovery | 7.2.0 | 7.3.0 | C1-060459 |
| 2006-03 | CP-31 | CP-060107 | 1161 | 1 | DHCPv6 options for Domain Name Servers | 7.2.0 | 7.3.0 | C1-060456 |
| 2006-03 | CP-31 | CP-060110 | 1136 | 1 | SDP answer | 7.2.0 | 7.3.0 | C1-060472 |
| 2006-03 | CP-31 | CP-060110 | 1206 | - | Inclusion of Ma reference point | 7.2.0 | 7.3.0 | C1-060392 |
| 2006-03 | CP-31 | CP-060110 | 1134 | - | Preconditions required | 7.2.0 | 7.3.0 | C1-060192 |
| 2006-03 | CP-31 | CP-060110 | 1156 | 1 | Tables Change in Appendix A | 7.2.0 | 7.3.0 | C1-060478 |
| 2006-03 | CP-31 | CP-060110 | 1132 | 1 | P-Asserted-Identity | 7.2.0 | 7.3.0 | C1-060476 |
| 2006-03 | CP-31 | CP-060111 | 1219 | - | Reference Update of TS24.229, Rel7 | 7.2.0 | 7.3.0 | C1-060483 |
| 2006-03 | CP-31 | CP-060111 | 1119 | 2 | IMS Short Session Setup - Clarifications | 7.2.0 | 7.3.0 | C1-060595 |
| 2006-03 | CP-31 | CP-060111 | 1189 | 3 | Definition of principles for IOI exchange and storage | 7.2.0 | 7.3.0 | C1-060610 |
| 2006-03 | CP-31 | CP-060111 | 1129 | 2 | Tel URI | 7.2.0 | 7.3.0 | C1-060593 |
| 2006-03 | CP-31 | CP-060117 | 1210 | 1 | Coding of P-Access-Network-Info header for 3GPP2 IMS | 7.2.0 | 7.3.0 | C1-060494 |
| 2006-03 | CP-31 | CP-060118 | 1103 | 1 | Editor's Note on xDSL bearer | 7.2.0 | 7.3.0 | C1-060119 |
| 2006-03 | CP-31 | CP-060118 | 1095 | 1 | Reference to new annexes on NAT | 7.2.0 | 7.3.0 | C1-060116 |
| 2006-03 | CP-31 | CP-060118 | 1101 | - | Replaces header in Profile Tables | 7.2.0 | 7.3.0 | C1-060051 |
| 2006-03 | CP-31 | CP-060118 | 1093 | 2 | P-Access-Network-Info header absence for emergency call detection | 7.2.0 | 7.3.0 | C1-060339 |
| 2006-03 | CP-31 | CP-060118 | 1196 | 1 | correction for the procedure of changing media data | 7.2.0 | 7.3.0 | C1-060518 |
| 2006-03 | CP-31 | CP-060118 | 1197 | 1 | Editorial Changes | 7.2.0 | 7.3.0 | C1-060519 |
| 2006-03 | CP-31 | CP-060118 | 1092 | 3 | Optionality of P-Access-Network-Info header | 7.2.0 | 7.3.0 | C1-060338 |
| 2006-03 | CP-31 | CP-060118 | 1086 | 1 | Addition of TISPAN supported internet-drafts | 7.2.0 | 7.3.0 | C1-060337 |
| 2006-03 | CP-31 | CP-060118 | 1089 | 1 | IBCF corrections | 7.2.0 | 7.3.0 | C1-060110 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2006-03 | CP-31 | CP-060118 | 1106 | 4 | Completion of IBCF routing procedures | 7.2.0 | 7.3.0 | C1-060498 |
| 2006-03 | CP-31 | CP-060118 | 1088 | 4 | IBCF enhancements | 7.2.0 | 7.3.0 | C1-060603 |
| 2006-03 | CP-31 | CP-060119 | 1177 | 1 | PacketCable Extensions to P-Charging-Vector header | 7.2.0 | 7.3.0 | C1-060512 |
| 2006-03 | CP-31 | CP-060120 | 1098 | 4 | Emergency service S-CSCF impact | 7.2.0 | 7.3.0 | C1-060601 |
| 2006-03 | CP-31 | CP-060120 | 1097 | 5 | Emergency service - P-CSCF impact | 7.2.0 | 7.3.0 | C1-060600 |
| 2006-03 | CP-31 | CP-060120 | 1099 | 5 | Emergency service - E-CSCF impact | 7.2.0 | 7.3.0 | C1-060599 |
| 2006-03 | CP-31 | CP-060120 | 1096 | 5 | Emergency service - UE impact | 7.2.0 | 7.3.0 | C1-060602 |
| 2006-03 | CP-31 | CP-060121 | 1183 | - | Transfer of Text from the Combinational Services TR 24.879 to TS 24.229 | 7.2.0 | 7.3.0 | C1-060311 |
| 2006-03 | CP-31 | CP-060124 | 1138 | 2 | Session termination by P-CSCF | 7.2.0 | 7.3.0 | C1-060605 |
| 2006-03 | CP-31 | CP-060124 | 1157 | 3 | Support for RFC 4145 | 7.2.0 | 7.3.0 | C1-060621 |
| 2006-03 | CP-31 | CP-060124 | 1184 | 3 | Registration of multiple PUIs - CR | 7.2.0 | 7.3.0 | C1-060608 |
| 2006-03 | CP-31 | CP-060124 | 1137 | 1 | Session termination by S-CSCF | 7.2.0 | 7.3.0 | C1-060533 |
| 2006-03 | CP-31 | CP-060124 | 1152 | 1 | Editorial Changes | 7.2.0 | 7.3.0 | C1-060539 |
| 2006-03 | CP-31 | CP-060124 | 1107 | 1 | Reference Update of TS24.229 | 7.2.0 | 7.3.0 | C1-060123 |
| 2006-03 | CP-31 | CP-060124 | 1125 | - | Pre-loaded Route header | 7.2.0 | 7.3.0 | C1-060183 |
| 2006-03 | CP-31 | CP-060142 | 1226 | 1 | Transport of HSS address from I-CSCF to S-CSCF | 7.2.0 | 7.3.0 | - |
| 2006-03 | CP-31 | CP-060153 | 1222 | 2 | Mandation of RFC 4320 fixes for issues found with the Session Initiation Protocol's (SIP) Non-INVITE Transactions | 7.2.0 | 7.3.0 | - |
| 2006-03 | CP-31 | CP-060176 | 1225 | 2 | Support of call forwarding at the S-CSCF | 7.2.0 | 7.3.0 | - |
| 2006-06 | CP-32 | CP-060232 | 1290 | 2 | Realm Parameter Handling | 7.3.0 | 7.4.0 | |
| 2006-06 | CP-32 | CP-060249 | 1242 | 3 | SDP answer | 7.3.0 | 7.4.0 | |
| 2006-06 | CP-32 | CP-060262 | 1309 | 2 | Hiding correction | 7.3.0 | 7.4.0 | C1-061115 |
| 2006-06 | CP-32 | CP-060262 | 1306 | 2 | 3rd-party registration | 7.3.0 | 7.4.0 | C1-061098 |
| 2006-06 | CP-32 | CP-060262 | 1303 | 1 | One private identity one contact | 7.3.0 | 7.4.0 | C1-061095 |
| 2006-06 | CP-32 | CP-060264 | 1274 | 2 | Re-authentication during deregistration | 7.3.0 | 7.4.0 | C1-061113 |
| 2006-06 | CP-32 | CP-060265 | 1312 | | I-CSCF registration procedure correction | 7.3.0 | 7.4.0 | C1-060829 |
| 2006-06 | CP-32 | CP-060266 | 1265 | 1 | IOI overview | 7.3.0 | 7.4.0 | C1-060997 |
| 2006-06 | CP-32 | CP-060266 | 1271 | 1 | Introduction of signalling encryption | 7.3.0 | 7.4.0 | C1-060999 |
| 2006-06 | CP-32 | CP-060266 | 1348 | | UE behavior after timer F expiry | 7.3.0 | 7.4.0 | C1-060897 |
| 2006-06 | CP-32 | CP-060266 | 1236 | 2 | P-Asserted-ID | 7.3.0 | 7.4.0 | C1-061119 |
| 2006-06 | CP-32 | CP-060266 | 1238 | 1 | Via header in the initial registration | 7.3.0 | 7.4.0 | C1-060975 |
| 2006-06 | CP-32 | CP-060266 | 1327 | 1 | Incorrect requirement on I-CSCF | 7.3.0 | 7.4.0 | C1-061079 |
| 2006-06 | CP-32 | CP-060270 | 1247 | 1 | Emergency PUID | 7.3.0 | 7.4.0 | C1-061054 |
| 2006-06 | CP-32 | CP-060270 | 1266 | 1 | Inclusion of draft-ietf-ecrit-service-urn | 7.3.0 | 7.4.0 | C1-061009 |
| 2006-06 | CP-32 | CP-060270 | 1229 | | Emergency service S-CSCF impact | 7.3.0 | 7.4.0 | C1-060642 |

| Change history | | | | | | | | |
|----------------|-------|-----------|------|-----|--|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2006-06 | CP-32 | CP-060270 | 1360 | | Inclusion of E-CSCF in subclause 3.1 and subclause 4.1 | 7.3.0 | 7.4.0 | C1-060923 |
| 2006-06 | CP-32 | CP-060270 | 1249 | 2 | Emergency call release | 7.3.0 | 7.4.0 | C1-061121 |
| 2006-06 | CP-32 | CP-060270 | 1338 | 1 | Adding RDF in E-CSCF procedure | 7.3.0 | 7.4.0 | C1-061060 |
| 2006-06 | CP-32 | CP-060270 | 1358 | 1 | Priority handling for emergency calls at the E-CSCF | 7.3.0 | 7.4.0 | C1-061017 |
| 2006-06 | CP-32 | CP-060270 | 1357 | 1 | Priority handling for emergency calls at the S-CSCF | 7.3.0 | 7.4.0 | C1-061015 |
| 2006-06 | CP-32 | CP-060270 | 1356 | 1 | Priority handling for emergency calls at the P-CSCF | 7.3.0 | 7.4.0 | C1-061013 |
| 2006-06 | CP-32 | CP-060270 | 1354 | | Inclusion of session timer procedures at the E-CSCF | 7.3.0 | 7.4.0 | C1-060917 |
| 2006-06 | CP-32 | CP-060270 | 1340 | 2 | TEL URI associated with emergency IMPU | 7.3.0 | 7.4.0 | C1-061120 |
| 2006-06 | CP-32 | CP-060270 | 1337 | 1 | Getting local emergency numbers | 7.3.0 | 7.4.0 | C1-061010 |
| 2006-06 | CP-32 | CP-060270 | 1336 | 1 | Some corrections in IMS emergency calls | 7.3.0 | 7.4.0 | C1-061059 |
| 2006-06 | CP-32 | CP-060271 | 1258 | 1 | UDP encapsulation of IPSec | 7.3.0 | 7.4.0 | C1-061019 |
| 2006-06 | CP-32 | CP-060271 | 1318 | 1 | Extensions to P-Access-Network-Info header for DOCSIS Access | 7.3.0 | 7.4.0 | C1-061025 |
| 2006-06 | CP-32 | CP-060271 | 1317 | 2 | PRACK | 7.3.0 | 7.4.0 | C1-061026 |
| 2006-06 | CP-32 | CP-060271 | 1267 | 1 | IBCF corrections | 7.3.0 | 7.4.0 | C1-061022 |
| 2006-06 | CP-32 | CP-060271 | 1259 | 1 | IBCF initiated call release | 7.3.0 | 7.4.0 | C1-061021 |
| 2006-06 | CP-32 | CP-060271 | 1345 | 1 | Correction of the reference document | 7.3.0 | 7.4.0 | C1-061082 |
| 2006-06 | CP-32 | CP-060274 | 1234 | 1 | Final NOTIFY | 7.3.0 | 7.4.0 | C1-060989 |
| 2006-06 | CP-32 | CP-060274 | 1255 | | Full notification | 7.3.0 | 7.4.0 | C1-060686 |
| 2006-06 | CP-32 | CP-060274 | 1260 | | Reg event package parameters in notification | 7.3.0 | 7.4.0 | C1-060704 |
| 2006-06 | CP-32 | CP-060274 | 1261 | | Subscription refreshing | 7.3.0 | 7.4.0 | C1-060705 |
| 2006-06 | CP-32 | CP-060274 | 1217 | 2 | Definition of B2BUA | 7.3.0 | 7.4.0 | C1-061074 |
| 2006-06 | CP-32 | CP-060274 | 1277 | 1 | Usage of associated public user identities | 7.3.0 | 7.4.0 | C1-060964 |
| 2006-06 | CP-32 | CP-060274 | 1321 | | Verification by I-CSCF of trust domain origin for incoming requests | 7.3.0 | 7.4.0 | C1-060844 |
| 2006-06 | CP-32 | CP-060274 | 1322 | | Miscellaneous Correction | 7.3.0 | 7.4.0 | C1-060845 |
| 2006-06 | CP-32 | CP-060274 | 1328 | 1 | Resilience to registration and authentication errors | 7.3.0 | 7.4.0 | C1-061080 |
| 2006-06 | CP-32 | CP-060274 | 1335 | 1 | The Correction on the description for the information of registration status | 7.3.0 | 7.4.0 | C1-060986 |
| 2006-06 | CP-32 | CP-060274 | 1361 | | Reference updates | 7.3.0 | 7.4.0 | C1-060924 |
| 2006-06 | CP-32 | CP-060283 | 1366 | | Emergency service – UE impact | 7.3.0 | 7.4.0 | |
| 2006-06 | CP-32 | CP-060284 | 1367 | | Emergency service- E-CSCF impact | 7.3.0 | 7.4.0 | |
| 2006-06 | CP-32 | CP-060335 | 1232 | 3 | Handling of P-Charging-Addresses | 7.3.0 | 7.4.0 | |
| 2006-06 | CP-32 | CP-060345 | 1365 | 1 | Registration of several unrelated public user identities | 7.3.0 | 7.4.0 | |
| 2006-06 | CP-32 | CP-060352 | 1228 | 4 | Emergency service P-CSCF-impact | 7.3.0 | 7.4.0 | C1-061134 |
| 2006-09 | CP-33 | CP-060452 | 1461 | 1 | Correction of Realm Parameter Handling for S-CSCF procedures | 7.4.0 | 7.5.0 | C1-061732 |

| Change history | | | | | | | | |
|----------------|-------|-----------|------|-----|--|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2006-09 | CP-33 | CP-060452 | 1467 | | SDP reference revision | 7.4.0 | 7.5.0 | C1-061657 |
| 2006-09 | CP-33 | CP-060452 | 1475 | 2 | "Response" value in unprotected Register requests | 7.4.0 | 7.5.0 | C1-061845 |
| 2006-09 | CP-33 | CP-060463 | 1351 | 3 | Treatment of emergency requests other than INVITE requests at the P-CSCF | 7.4.0 | 7.5.0 | C1-061357 |
| 2006-09 | CP-33 | CP-060463 | 1352 | 3 | Treatment of emergency requests other than INVITE requests at the E-CSCF | 7.4.0 | 7.5.0 | C1-061358 |
| 2006-09 | CP-33 | CP-060463 | 1369 | 1 | UE emergency deregistration | 7.4.0 | 7.5.0 | C1-061304 |
| 2006-09 | CP-33 | CP-060463 | 1370 | 1 | Emergency subscription | 7.4.0 | 7.5.0 | C1-061305 |
| 2006-09 | CP-33 | CP-060463 | 1371 | 1 | P-CSCF emergency subscription | 7.4.0 | 7.5.0 | C1-061306 |
| 2006-09 | CP-33 | CP-060463 | 1373 | 2 | S-CSCF emergency registration | 7.4.0 | 7.5.0 | C1-061350 |
| 2006-09 | CP-33 | CP-060463 | 1374 | 2 | Handling of Emergency registration in S-CSCF | 7.4.0 | 7.5.0 | C1-061349 |
| 2006-09 | CP-33 | CP-060463 | 1375 | 2 | Handling of emergency registration at the UE | 7.4.0 | 7.5.0 | C1-061351 |
| 2006-09 | CP-33 | CP-060463 | 1379 | 4 | Location handling E-CSCF | 7.4.0 | 7.5.0 | C1-061913 |
| 2006-09 | CP-33 | CP-060463 | 1380 | 1 | Clarification of Emergency Session Setup without prior IMS Registration | 7.4.0 | 7.5.0 | C1-061311 |
| 2006-09 | CP-33 | CP-060463 | 1381 | 1 | Clarifications to subclause 5.1.6.1 | 7.4.0 | 7.5.0 | C1-061313 |
| 2006-09 | CP-33 | CP-060463 | 1383 | 1 | Non-INVITE requests | 7.4.0 | 7.5.0 | C1-061314 |
| 2006-09 | CP-33 | CP-060463 | 1384 | 2 | IP-CAN for emergency calls | 7.4.0 | 7.5.0 | C1-061355 |
| 2006-09 | CP-33 | CP-060463 | 1390 | 1 | Adoption of terminology from draft-ietf-ecrit-requirements | 7.4.0 | 7.5.0 | C1-061315 |
| 2006-09 | CP-33 | CP-060463 | 1391 | 3 | Minor corrections to EMC1 text from previous CRs | 7.4.0 | 7.5.0 | C1-061367 |
| 2006-09 | CP-33 | CP-060463 | 1414 | 2 | Handling of location information at E-CSCF | 7.4.0 | 7.5.0 | C1-061860 |
| 2006-09 | CP-33 | CP-060463 | 1440 | 2 | P-Asserted-Identity in P-CSCF handling | 7.4.0 | 7.5.0 | C1-061861 |
| 2006-09 | CP-33 | CP-060463 | 1443 | 4 | Handling of PSAP address mapping result at E-CSCF | 7.4.0 | 7.5.0 | C1-061919 |
| 2006-09 | CP-33 | CP-060465 | 1413 | 1 | Miscellaneous Corrections in Annex F | 7.4.0 | 7.5.0 | C1-061826 |
| 2006-09 | CP-33 | CP-060465 | 1420 | 1 | Transit IMS | 7.4.0 | 7.5.0 | C1-061827 |
| 2006-09 | CP-33 | CP-060465 | 1425 | 1 | P-CSCF procedures for session release when QoS resources are unavailable | 7.4.0 | 7.5.0 | C1-061830 |
| 2006-09 | CP-33 | CP-060465 | 1427 | 1 | Make SDP bandwidth modifiers optional for standard RTCP usage | 7.4.0 | 7.5.0 | C1-061832 |
| 2006-09 | CP-33 | CP-060465 | 1430 | 3 | Addition of the cpc parameter to TS24.229 | 7.4.0 | 7.5.0 | C1-061882 |
| 2006-09 | CP-33 | CP-060466 | 1385 | 4 | Introduction of GRUU in 24.229 | 7.4.0 | 7.5.0 | C1-061858 |
| 2006-09 | CP-33 | CP-060466 | 1386 | 5 | S-SCSF procedures to support GRUU | 7.4.0 | 7.5.0 | C1-061915 |
| 2006-09 | CP-33 | CP-060468 | 1405 | | Original dialog identifier | 7.4.0 | 7.5.0 | C1-061408 |
| 2006-09 | CP-33 | CP-060468 | 1406 | | No-fork | 7.4.0 | 7.5.0 | C1-061409 |
| 2006-09 | CP-33 | CP-060468 | 1409 | | Connection address - zero | 7.4.0 | 7.5.0 | C1-061412 |
| 2006-09 | CP-33 | CP-060468 | 1415 | | Reference for populating the "Anonymous" From header | 7.4.0 | 7.5.0 | C1-061439 |
| 2006-09 | CP-33 | CP-060468 | 1439 | 1 | Usage of P-Associated-URI | 7.4.0 | 7.5.0 | C1-061759 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2006-09 | CP-33 | CP-060468 | 1450 | | Clarification of network initiated deregistration to match reginfo format | 7.4.0 | 7.5.0 | C1-061585 |
| 2006-09 | CP-33 | CP-060468 | 1456 | 2 | Authentication between UA and UA | 7.4.0 | 7.5.0 | C1-061851 |
| 2006-09 | CP-33 | CP-060468 | 1457 | 2 | Treatment by S-CSCF of profile changes for registered PUIs | 7.4.0 | 7.5.0 | C1-061853 |
| 2006-09 | CP-33 | CP-060468 | 1458 | 1 | Completion of RFC 4320 fixes for 100 Trying responses Non-INVITE Transactions RFC 4320 fixes for 100 Trying responses Non-INVITE Transactions tration | 7.4.0 | 7.5.0 | C1-061765 |
| 2006-09 | CP-33 | CP-060468 | 1463 | | Correction to S-CSCF procedures for UE-originated requests | 7.4.0 | 7.5.0 | C1-061646 |
| 2006-09 | CP-33 | CP-060468 | 1464 | 1 | SCTP transport | 7.4.0 | 7.5.0 | C1-061766 |
| 2006-09 | CP-33 | CP-060504 | 1257 | 4 | SDP usage at MGCF | 7.4.0 | 7.5.0 | C1-061847 |
| 2006-09 | CP-33 | CP-060504 | 1417 | 1 | Type 3 orig-voi in I-CSCF | 7.4.0 | 7.5.0 | C1-061744 |
| 2006-09 | CP-33 | CP-060504 | 1469 | | SDP corrections | 7.4.0 | 7.5.0 | C1-061659 |
| 2006-09 | CP-33 | CP-060504 | 1471 | | SDP completion | 7.4.0 | 7.5.0 | C1-061661 |
| 2006-09 | CP-33 | CP-060504 | 1478 | 1 | Updates to Profile Tables UE Major Capabilities | 7.4.0 | 7.5.0 | C1-061754 |
| 2006-09 | CP-33 | CP-060504 | 1481 | | Removal of Editor's notes in 24.229, rel-6 | 7.4.0 | 7.5.0 | C1-061745 |
| 2006-09 | CP-33 | CP-060504 | 1483 | | Final codec selection | 7.4.0 | 7.5.0 | C1-061850 |
| 2006-09 | CP-33 | CP-060526 | 1418 | 3 | Originating requests on behalf of an unregistered user | 7.4.0 | 7.5.0 | C1-061758 |
| 2006-09 | | | | | Version 7.5.1 created by MCC to correct styles | 7.5.0 | 7.5.1 | |
| 2006-12 | CP-34 | CP-060655 | 1502 | - | RFC reference update | 7.5.1 | 7.6.0 | C1-061977 |
| 2006-12 | CP-34 | CP-060655 | 1506 | - | SDP group attribute correction | 7.5.1 | 7.6.0 | C1-061981 |
| 2006-12 | CP-34 | CP-060655 | 1504 | 1 | Addressing editor's notes relating to trust domains | 7.5.1 | 7.6.0 | C1-062304 |
| 2006-12 | CP-34 | CP-060655 | 1546 | - | Join header correction | 7.5.1 | 7.6.0 | C1-062205 |
| 2006-12 | CP-34 | CP-060655 | 1508 | 2 | Processing the successful response at S-CSCF | 7.5.1 | 7.6.0 | C1-062434 |
| 2006-12 | CP-34 | CP-060655 | 1449 | 2 | Correction of S-CSCF construction and UE interpretation of registration event notification | 7.5.1 | 7.6.0 | C1-062317 |
| 2006-12 | CP-34 | CP-060655 | 1514 | 1 | Removal of more Editor's notes in 24.229, rel-6 | 7.5.1 | 7.6.0 | C1-062310 |
| 2006-12 | CP-34 | CP-060659 | 1491 | 2 | Location handling for emergency | 7.5.1 | 7.6.0 | C1-062437 |
| 2006-12 | CP-34 | CP-060659 | 1521 | 1 | Location information for IMS emergency | 7.5.1 | 7.6.0 | C1-062293 |
| 2006-12 | CP-34 | CP-060659 | 1529 | 2 | Emergency re-registration due to mobility | 7.5.1 | 7.6.0 | C1-062436 |
| 2006-12 | CP-34 | CP-060659 | 1515 | 1 | Removal of Editor's notes on emergency call in clause 4 | 7.5.1 | 7.6.0 | C1-062292 |
| 2006-12 | CP-34 | CP-060659 | 1484 | 1 | Corrections to emergency call procedures for P-Asserted-Identity header | 7.5.1 | 7.6.0 | C1-062289 |
| 2006-12 | CP-34 | CP-060659 | 1543 | - | Next hop is the BGCF | 7.5.1 | 7.6.0 | C1-062181 |
| 2006-12 | CP-34 | CP-060659 | 1536 | - | Editorial corrections to emergency call text | 7.5.1 | 7.6.0 | C1-062142 |
| 2006-12 | CP-34 | CP-060659 | 1542 | 1 | minor correction to EMC of UE and PCSCF | 7.5.1 | 7.6.0 | C1-062299 |
| 2006-12 | CP-34 | CP-060659 | 1490 | 2 | Emergency call on existing registration | 7.5.1 | 7.6.0 | C1-062435 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2006-12 | CP-34 | CP-060660 | 1486 | 2 | Introduction of communication service concept in TS 24229 | 7.5.1 | 7.6.0 | C1-062451 |
| 2006-12 | CP-34 | CP-060662 | 1494 | 1 | Tel URI translation | 7.5.1 | 7.6.0 | C1-062325 |
| 2006-12 | CP-34 | CP-060662 | 1523 | 1 | I-CSCF procedure | 7.5.1 | 7.6.0 | C1-062333 |
| 2006-12 | CP-34 | CP-060662 | 1544 | - | Clarification of UEs initial SDP offer | 7.5.1 | 7.6.0 | C1-062189 |
| 2006-12 | CP-34 | CP-060662 | 1493 | 1 | Alias URI | 7.5.1 | 7.6.0 | C1-062324 |
| 2006-12 | CP-34 | CP-060662 | 1525 | 1 | Clarification of iFC execution for UE-terminated requests at S-CSCF | 7.5.1 | 7.6.0 | C1-062334 |
| 2006-12 | CP-34 | CP-060662 | 1533 | 1 | SIP response code to unknown method | 7.5.1 | 7.6.0 | C1-062336 |
| 2006-12 | CP-34 | CP-060662 | 1537 | - | Originating requests on behalf of an unregistered user | 7.5.1 | 7.6.0 | C1-062143 |
| 2006-12 | CP-34 | CP-060662 | 1538 | - | Treatment by S-CSCF of profile changes for registered PUIs | 7.5.1 | 7.6.0 | C1-062144 |
| 2006-12 | CP-34 | CP-060662 | 1547 | - | Corrections to Profile table for RFC 4320 compliance | 7.5.1 | 7.6.0 | C1-062210 |
| 2006-12 | CP-34 | CP-060662 | 1539 | - | Miscellaneous editorial corrections | 7.5.1 | 7.6.0 | C1-062145 |
| 2006-12 | CP-34 | CP-060662 | 1509 | 1 | No-forking at AS | 7.5.1 | 7.6.0 | C1-062329 |
| 2006-12 | CP-34 | CP-060662 | 1528 | 2 | P-Visited-Network-ID on ISC interface | 7.5.1 | 7.6.0 | C1-062442 |
| 2006-12 | CP-34 | CP-060662 | 1487 | 1 | Introduction of P-Profile Key in TS 24.229 | 7.5.1 | 7.6.0 | C1-062322 |
| 2006-12 | CP-34 | CP-060662 | 1522 | 1 | Local numbering | 7.5.1 | 7.6.0 | C1-062338 |
| 2006-12 | CP-34 | CP-060662 | 1495 | 2 | BGCF procedures | 7.5.1 | 7.6.0 | C1-062440 |
| 2006-12 | CP-34 | CP-060662 | 1498 | 2 | AS acting as PSI | 7.5.1 | 7.6.0 | C1-062441 |
| 2006-12 | CP-34 | CP-060662 | 1524 | - | Clarification of the URI in UE-terminating requests at the P-CSCF | 7.5.1 | 7.6.0 | C1-062061 |
| 2006-12 | CP-34 | CP-060662 | 1549 | 1 | Core Network Service Authorizatrion | 7.5.1 | 7.6.0 | C1-062339 |
| 2006-12 | CP-34 | CP-060663 | 1527 | 3 | Align with GRUU IETF draft 11 | 7.5.1 | 7.6.0 | C1-062512 |
| 2006-12 | CP-34 | CP-060663 | 1496 | 1 | I-CSCF processing GRUU | 7.5.1 | 7.6.0 | C1-062340 |
| 2006-12 | CP-34 | CP-060663 | 1497 | 1 | S-CSCF processing GRUU | 7.5.1 | 7.6.0 | C1-062341 |
| 2006-12 | CP-34 | CP-060663 | 1422 | 3 | GRUU processing by non-UE User Agents | 7.5.1 | 7.6.0 | C1-062343 |
| 2006-12 | CP-34 | CP-060667 | 1426 | 3 | Allowing an asserted display name to be conveyed with a Public Identity | 7.5.1 | 7.6.0 | C1-062427 |
| 2006-12 | CP-34 | CP-060667 | 1429 | 4 | Update to NAT Traversal procedures in support of Outbound and ICE | 7.5.1 | 7.6.0 | C1-062515 |
| 2006-12 | CP-34 | CP-060667 | 1540 | 2 | Annex I (Transit IMS) improvements | 7.5.1 | 7.6.0 | C1-062516 |
| 2007-03 | CP-35 | CP-070130 | 1566 | - | Session Establishment Interworking with Rel-5 UEs | 7.6.0 | 7.7.0 | C1-070052 |
| 2007-03 | CP-35 | CP-070130 | 1638 | - | Inclusion of draft-ietf-sip-uri-list-message in SIP profile | 7.6.0 | 7.7.0 | C1-070266 |
| 2007-03 | CP-35 | CP-070130 | 1619 | - | Clarifications on resource reservation | 7.6.0 | 7.7.0 | C1-070180 |
| 2007-03 | CP-35 | CP-070130 | 1621 | 1 | Routeing B2BUA handling of Replaces header | 7.6.0 | 7.7.0 | C1-070439 |
| 2007-03 | CP-35 | CP-070132 | 1609 | - | Establishing an emergency session | 7.6.0 | 7.7.0 | C1-070147 |
| 2007-03 | CP-35 | CP-070132 | 1575 | - | Deletion of editors note in subclause 5.1.6.5 | 7.6.0 | 7.7.0 | C1-070068 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2007-03 | CP-35 | CP-070132 | 1639 | - | Identification of emergency calls | 7.6.0 | 7.7.0 | C1-070276 |
| 2007-03 | CP-35 | CP-070132 | 1593 | 1 | Limitation on Emergency Registration | 7.6.0 | 7.7.0 | C1-070424 |
| 2007-03 | CP-35 | CP-070132 | 1586 | 1 | Tidyup UE clause | 7.6.0 | 7.7.0 | C1-070418 |
| 2007-03 | CP-35 | CP-070132 | 1654 | 1 | Double reference removal | 7.6.0 | 7.7.0 | C1-070381 |
| 2007-03 | CP-35 | CP-070132 | 1605 | 1 | Emergency PUID | 7.6.0 | 7.7.0 | C1-070419 |
| 2007-03 | CP-35 | CP-070132 | 1569 | 1 | Handling of parallel emergency registration | 7.6.0 | 7.7.0 | C1-070413 |
| 2007-03 | CP-35 | CP-070132 | 1574 | 1 | Deletion of editors note in subclause 5.1.6.2 | 7.6.0 | 7.7.0 | C1-070414 |
| 2007-03 | CP-35 | CP-070132 | 1568 | 1 | Connecting to an Emergency APN | 7.6.0 | 7.7.0 | C1-070409 |
| 2007-03 | CP-35 | CP-070132 | 1581 | 1 | Deletion of Editor' s notes in 5.2.10 | 7.6.0 | 7.7.0 | C1-070416 |
| 2007-03 | CP-35 | CP-070132 | 1641 | - | Correction of service-urn | 7.6.0 | 7.7.0 | C1-070278 |
| 2007-03 | CP-35 | CP-070132 | 1589 | - | Correction of CR#1484r1 implementation error (subclause 5.1.6.8.3) | 7.6.0 | 7.7.0 | C1-070111 |
| 2007-03 | CP-35 | CP-070132 | 1610 | - | Emergency session-no registration | 7.6.0 | 7.7.0 | C1-070148 |
| 2007-03 | CP-35 | CP-070134 | 1612 | 2 | Emergency treatment at P-CSCF | 7.6.0 | 7.7.0 | C1-070563 |
| 2007-03 | CP-35 | CP-070134 | 1635 | 1 | Remove the term ESRP | 7.6.0 | 7.7.0 | C1-070430 |
| 2007-03 | CP-35 | CP-070134 | 1607 | 2 | Emergency call at P-CSCF | 7.6.0 | 7.7.0 | C1-070443 |
| 2007-03 | CP-35 | CP-070134 | 1632 | 1 | Backward compatibility for using 380 response | 7.6.0 | 7.7.0 | C1-070429 |
| 2007-03 | CP-35 | CP-070134 | 1653 | 3 | Location for emergency | 7.6.0 | 7.7.0 | C1-070618 |
| 2007-03 | CP-35 | CP-070134 | 1626 | 1 | Handling of re-registration when user redial emergency number | 7.6.0 | 7.7.0 | C1-070426 |
| 2007-03 | CP-35 | CP-070134 | 1582 | 2 | Deletion of editors notes in 5.11 and 5.4.8 | 7.6.0 | 7.7.0 | C1-070615 |
| 2007-03 | CP-35 | CP-070134 | 1567 | 3 | Home Network Indication for Emergency Calls | 7.6.0 | 7.7.0 | C1-070640 |
| 2007-03 | CP-35 | CP-070134 | 1631 | 2 | Correction to emergency call procedure with non-emergency registration for P-Asserted-Identity header | 7.6.0 | 7.7.0 | C1-070617 |
| 2007-03 | CP-35 | CP-070137 | 1634 | 1 | Profile definition for CSI application server | 7.6.0 | 7.7.0 | C1-070469 |
| 2007-03 | CP-35 | CP-070138 | 1660 | 1 | Format of dsl-location | 7.6.0 | 7.7.0 | C1-070552 |
| 2007-03 | CP-35 | CP-070138 | 1595 | 1 | Deletion of EN's in clause 5.10 | 7.6.0 | 7.7.0 | C1-070547 |
| 2007-03 | CP-35 | CP-070138 | 1594 | - | Deletion of EN's in Annex G | 7.6.0 | 7.7.0 | C1-070132 |
| 2007-03 | CP-35 | CP-070139 | 1613 | 2 | Annex K NAT Traversal Procedural and References Updates | 7.6.0 | 7.7.0 | C1-070626 |
| 2007-03 | CP-35 | CP-070139 | 1617 | 1 | Routing of SIP URI "user=phone" when domain doesn't own target user | 7.6.0 | 7.7.0 | C1-070551 |
| 2007-03 | CP-35 | CP-070139 | 1614 | 1 | Annex A updates for Annex K NAT Traversal Procedurals | 7.6.0 | 7.7.0 | C1-070550 |
| 2007-03 | CP-35 | CP-070140 | 1598 | 1 | Forked MESSAGE request | 7.6.0 | 7.7.0 | C1-070451 |
| 2007-03 | CP-35 | CP-070140 | 1558 | 1 | Removal of notes for screening functionality | 7.6.0 | 7.7.0 | C1-070441 |
| 2007-03 | CP-35 | CP-070140 | 1556 | 1 | Handling of special characters in the local service number | 7.6.0 | 7.7.0 | C1-070458 |
| 2007-03 | CP-35 | CP-070140 | 1655 | 2 | Forwarding a request by transit functions in the S-CSCF | 7.6.0 | 7.7.0 | C1-070586 |

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| 2007-03 | CP-35 | CP-070140 | 1587 | 1 | Terminating case in S-CSCF | 7.6.0 | 7.7.0 | C1-070449 | |
| 2007-03 | CP-35 | CP-070140 | 1559 | - | Completion of SIP timers functionality | 7.6.0 | 7.7.0 | C1-070039 | |
| 2007-03 | CP-35 | CP-070140 | 1588 | 1 | P-User-Database | 7.6.0 | 7.7.0 | C1-070450 | |
| 2007-03 | CP-35 | CP-070140 | 1560 | 1 | Removal of notes for SIGCOMP functionality | 7.6.0 | 7.7.0 | C1-070442 | |
| 2007-03 | CP-35 | CP-070140 | 1557 | - | Removal of normative statements in NOTEs | 7.6.0 | 7.7.0 | C1-070037 | |
| 2007-03 | CP-35 | CP-070140 | 1604 | 1 | Forwarding P-Charging-Vector outside the home network | 7.6.0 | 7.7.0 | C1-070453 | |
| 2007-03 | CP-35 | CP-070140 | 1555 | 1 | Removal of Editor's notes for message bodies | 7.6.0 | 7.7.0 | C1-070440 | |
| 2007-03 | CP-35 | CP-070140 | 1652 | - | Correction for local numbers | 7.6.0 | 7.7.0 | C1-070341 | |
| 2007-03 | CP-35 | CP-070140 | 1601 | - | Tel URI translation | 7.6.0 | 7.7.0 | C1-070139 | |
| 2007-03 | CP-35 | CP-070140 | 1646 | 1 | Align definition of Alias URI with the description in 23.228 | 7.6.0 | 7.7.0 | C1-070455 | |
| 2007-03 | CP-35 | CP-070140 | 1600 | 2 | Dual IP addresses | 7.6.0 | 7.7.0 | C1-070584 | |
| 2007-03 | CP-35 | CP-070142 | 1642 | - | SIP extensions covering URI-lists | 7.6.0 | 7.7.0 | C1-070279 | |
| 2007-03 | CP-35 | CP-070148 | 1564 | 1 | Network Initiated / Modified Media PDP Contexts | 7.6.0 | 7.7.0 | C1-070447 | |
| 2007-03 | CP-35 | CP-070149 | 1643 | - | SDP usage in association with BFCP (additions to SDP profile) | 7.6.0 | 7.7.0 | C1-070282 | |
| 2007-03 | CP-35 | CP-070151 | 1648 | 2 | S-CSCF inserts P-Called-Party-ID before forwarding request towards served user | 7.6.0 | 7.7.0 | C1-070588 | |
| 2007-03 | CP-35 | CP-070151 | 1597 | 1 | Instance ID | 7.6.0 | 7.7.0 | C1-070461 | |
| 2007-03 | CP-35 | CP-070151 | 1615 | 1 | Signaling Public User Identity to AS when request URI is Temp-GRUU | 7.6.0 | 7.7.0 | C1-070463 | |
| 2007-03 | CP-35 | CP-070214 | 1640 | 3 | Location conveyance revisions | 7.6.0 | 7.7.0 | | |
| 2007-03 | CP-35 | CP-070242 | 1576 | 3 | Deletion of editors notes in subclauses 5.1.6.8.2, 5.1.6.8.3, 5.1.6.8.4 | 7.6.0 | 7.7.0 | | |
| 2007-03 | CP-35 | CP-070252 | 1658 | 4 | Profile for IBCF | 7.6.0 | 7.7.0 | | |
| 2007-03 | CP-35 | CP-070254 | 1580 | 3 | PCC introduction to TS 24.229 | 7.6.0 | 7.7.0 | | |
| 2007-03 | CP-35 | CP-070255 | 1630 | 3 | Corrections for the handling of target refresh requests at the S-CSCF | 7.6.0 | 7.7.0 | | |
| 2007-03 | CP-35 | CP-070271 | 1623 | 5 | Further alignment with phonebcp draft | 7.6.0 | 7.7.0 | | |
| 2007-06 | CP-36 | CP-070370 | 1749 | 1 | Correction of coding rules of P-Access-Network-Info header | 7.7.0 | 7.8.0 | C1-071435 | |
| 2007-06 | CP-36 | CP-070370 | 1689 | 2 | Inclusion of "addressing an amplification vulnerability in session initiation protocol forking proxies" (draft-ietf-sip-fork-loop-fix) in the SIP profile | 7.7.0 | 7.8.0 | C1-071409 | |
| 2007-06 | CP-36 | CP-070373 | 1666 | 2 | Protocol between E-CSCF and LRF | 7.7.0 | 7.8.0 | C1-071040 | |
| 2007-06 | CP-36 | CP-070373 | 1690 | - | Further alignment with phonebcp draft | 7.7.0 | 7.8.0 | C1-070779 | |
| 2007-06 | CP-36 | CP-070373 | 1763 | 1 | Emergency registration clarification | 7.7.0 | 7.8.0 | C1-071441 | |
| 2007-06 | CP-36 | CP-070373 | 1665 | 1 | Definition of identities used for emergency call | 7.7.0 | 7.8.0 | C1-070957 | |
| 2007-06 | CP-36 | CP-070374 | 1714 | 1 | Alignment of layout of access technology specific annexes | 7.7.0 | 7.8.0 | C1-071032 | |
| 2007-06 | CP-36 | CP-070374 | 1715 | 1 | GPRS IP-CAN change of normative requirement out | 7.7.0 | 7.8.0 | C1-071033 | |

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| | | | | | of scope to informative | | | |
| 2007-06 | CP-36 | CP-070374 | 1732 | 2 | Clarification on iFC execution | 7.7.0 | 7.8.0 | C1-071460 |
| 2007-06 | CP-36 | CP-070374 | 1721 | 1 | UE un-subscribing to reg-event | 7.7.0 | 7.8.0 | C1-071419 |
| 2007-06 | CP-36 | CP-070374 | 1722 | - | MO Record-Route at P-CSCF | 7.7.0 | 7.8.0 | C1-071051 |
| 2007-06 | CP-36 | CP-070374 | 1723 | 1 | MT Record-Route at P-CSCF | 7.7.0 | 7.8.0 | C1-071420 |
| 2007-06 | CP-36 | CP-070374 | 1727 | 1 | Double registration | 7.7.0 | 7.8.0 | C1-071422 |
| 2007-06 | CP-36 | CP-070374 | 1730 | 1 | Inclusion of new mandatory elements of SigComp | 7.7.0 | 7.8.0 | C1-071423 |
| 2007-06 | CP-36 | CP-070374 | 1731 | 1 | Use of a presence specific dictionary in SigComp | 7.7.0 | 7.8.0 | C1-071424 |
| 2007-06 | CP-36 | CP-070374 | 1720 | 1 | Registration and deregistration | 7.7.0 | 7.8.0 | C1-071418 |
| 2007-06 | CP-36 | CP-070374 | 1746 | 1 | Correction to P-CSCF procedures for cancellation of a session currently being established | 7.7.0 | 7.8.0 | C1-071431 |
| 2007-06 | CP-36 | CP-070374 | 1762 | 1 | Originating a terminating request in an AS | 7.7.0 | 7.8.0 | C1-071433 |
| 2007-06 | CP-36 | CP-070374 | 1769 | 2 | Clarification to Original Dialog Identifier | 7.7.0 | 7.8.0 | C1-071463 |
| 2007-06 | CP-36 | CP-070374 | 1761 | - | Local numbering clarification | 7.7.0 | 7.8.0 | C1-071196 |
| 2007-06 | CP-36 | CP-070374 | 1760 | 1 | PANI related corrections | 7.7.0 | 7.8.0 | C1-071437 |
| 2007-06 | CP-36 | CP-070374 | 1743 | 1 | The precondition mechanism may be required in subsequent SDP offer/answer exchanges | 7.7.0 | 7.8.0 | C1-071430 |
| 2007-06 | CP-36 | CP-070374 | 1772 | - | Minor miscellaneous clean-up | 7.7.0 | 7.8.0 | C1-071231 |
| 2007-06 | CP-36 | CP-070374 | 1739 | 1 | P-CSCF processing of P-Early-Media | 7.7.0 | 7.8.0 | C1-071428 |
| 2007-06 | CP-36 | CP-070374 | 1738 | 3 | Originating UE sending of P-Early-Media | 7.7.0 | 7.8.0 | C1-071462 |
| 2007-06 | CP-36 | CP-070374 | 1737 | 2 | Originating UE processing of P-Early-Media | 7.7.0 | 7.8.0 | C1-071461 |
| 2007-06 | CP-36 | CP-070375 | 1692 | - | Profile support for a session initiation protocol event package and data format for various settings in support for the push-to-talk over cellular service (RFC4354) | 7.7.0 | 7.8.0 | C1-070781 |
| 2007-06 | CP-36 | CP-070375 | 1562 | 4 | Completion of Phone-context parameter in rel-7 | 7.7.0 | 7.8.0 | C1-071009 |
| 2007-06 | CP-36 | CP-070375 | 1700 | - | Translation of non-international format numbers | 7.7.0 | 7.8.0 | C1-070810 |
| 2007-06 | CP-36 | CP-070375 | 1680 | - | Outgoing Request URI=pres or IM URI processing clarification and misc clean-up | 7.7.0 | 7.8.0 | C1-070705 |
| 2007-06 | CP-36 | CP-070375 | 1691 | 1 | Profile support for the P-Answer-State header extension to the session initiation protocol for the open mobile alliance push to talk over cellular (draft-allen-sipping-poc-p-answer-state-header) | 7.7.0 | 7.8.0 | C1-070987 |
| 2007-06 | CP-36 | CP-070375 | 1678 | 1 | Qvalue | 7.7.0 | 7.8.0 | C1-070984 |
| 2007-06 | CP-36 | CP-070375 | 1704 | - | Minor miscellaneous clean-up | 7.7.0 | 7.8.0 | C1-070824 |
| 2007-06 | CP-36 | CP-070375 | 1703 | - | Filter criteria evaluation when the AS changes the P-Asserted-Identity | 7.7.0 | 7.8.0 | C1-070823 |
| 2007-06 | CP-36 | CP-070378 | 1718 | 1 | Addition to network initiated PDP context | 7.7.0 | 7.8.0 | C1-071346 |
| 2007-06 | CP-36 | CP-070380 | 1679 | - | Cleanup of Signaling Public GRUU to AS | 7.7.0 | 7.8.0 | C1-070704 |
| 2007-06 | CP-36 | CP-070380 | 1663 | - | Provide GRUU functionality in case of hosted NAT | 7.7.0 | 7.8.0 | C1-070663 |
| 2007-06 | CP-36 | CP-070380 | 1756 | 1 | GRUU Alignment with stage 2 | 7.7.0 | 7.8.0 | C1-071456 |

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| 2007-06 | CP-36 | CP-070380 | 1686 | 2 | Alternate GRUU for AS acting on behalf of Public User Identity | 7.7.0 | 7.8.0 | C1-071010 |
| 2007-06 | CP-36 | CP-070380 | 1713 | 2 | Cleanup of GRUU | 7.7.0 | 7.8.0 | C1-071238 |
| 2007-06 | CP-36 | CP-070380 | 1766 | 1 | Management of GRUU | 7.7.0 | 7.8.0 | C1-071457 |
| 2007-06 | CP-36 | CP-070380 | 1711 | 2 | Use of GRUU for Emergency Sessions | 7.7.0 | 7.8.0 | C1-071458 |
| 2007-06 | CP-36 | CP-070383 | 1773 | - | IMS Communication Service ID registration | 7.7.0 | 7.8.0 | C1-071234 |
| 2007-06 | CP-36 | CP-070383 | 1645 | 6 | IMS Communication Service ID 24.229 | 7.7.0 | 7.8.0 | C1-071475 |
| 2007-06 | CP-36 | CP-070388 | 1735 | 2 | Correction on the handling of CPC parameter regarding trust domain | 7.7.0 | 7.8.0 | C1-071464 |
| 2007-06 | CP-36 | CP-070388 | 1662 | - | Tidyup open issues from FBI work item | 7.7.0 | 7.8.0 | C1-070662 |
| 2007-06 | CP-36 | CP-070388 | 1596 | 5 | Update to NAT Traversal procedures in support of Outbound and ICE | 7.7.0 | 7.8.0 | C1-071400 |
| 2007-06 | CP-36 | CP-070388 | 1740 | 1 | IBCF processing of P-Early-Media | 7.7.0 | 7.8.0 | C1-071404 |
| 2007-06 | CP-36 | CP-070388 | 1742 | 1 | IBCF Path header | 7.7.0 | 7.8.0 | C1-071405 |
| 2007-06 | CP-36 | CP-070436 | 1696 | 3 | Endorsement of P-Early-Media header draft | 7.7.0 | 7.8.0 | |
| 2007-06 | CP-36 | CP-070447 | 1698 | 3 | Report of new transit scenario documented in stage 2 | 7.7.0 | 7.8.0 | - |
| 2007-06 | CP-36 | CP-070450 | 1771 | 3 | THIG processing correction to ensure conformity to RFC 3261 | 7.7.0 | 7.8.0 | - |
| 2007-06 | CP-36 | CP-070496 | 1717 | 4 | PCC impact | 7.7.0 | 7.8.0 | - |
| 2007-06 | CP-36 | CP-070393 | 1751 | 1 | Resource-Priority header and trust domains | 7.7.0 | 8.0.0 | C1-071446 |
| 2007-06 | CP-36 | CP-070393 | 1695 | 2 | Inclusion policy for Resource-Priority header in support of multimedia priority service | 7.7.0 | 8.0.0 | C1-071443 |
| 2007-06 | CP-36 | CP-070393 | 1694 | 2 | Inclusion of "communications resource priority for the session initiation protocol" (RFC4412) in the SIP profile | 7.7.0 | 8.0.0 | C1-071444 |
| 2007-06 | CP-36 | CP-070393 | 1693 | 1 | Inclusion of "extending the session initiation protocol Reason header for preemption events" (RFC4411) in the SIP profile | 7.7.0 | 8.0.0 | C1-070918 |
| 2007-06 | CP-36 | CP-070396 | 1682 | 2 | IMS Enhancements to Support Number Portability (NP) for Cable Networks | 7.7.0 | 8.0.0 | C1-070994 |
| 2007-06 | CP-36 | CP-070396 | 1681 | 4 | Enhancements to Support Preferred Circuit Carrier Access and Dial-Around for Cable Networks | 7.7.0 | 8.0.0 | C1-071294 |
| 2007-09 | CP-37 | CP-070578 | 1945 | | Correction of the Authorization Header in the Profile Table | 8.0.0 | 8.1.0 | C1-072085 |
| 2007-09 | CP-37 | CP-070578 | 1811 | | Integrity param in De- and ReREGISTER | 8.0.0 | 8.1.0 | C1-071573 |
| 2007-09 | CP-37 | CP-070579 | 1905 | 2 | Clarification of DTD | 8.0.0 | 8.1.0 | C1-072150 |
| 2007-09 | CP-37 | CP-070580 | 1795 | 2 | Unprotected registration at UE | 8.0.0 | 8.1.0 | C1-072153 |
| 2007-09 | CP-37 | CP-070580 | 1876 | | IETF reference updates | 8.0.0 | 8.1.0 | C1-071772 |
| 2007-09 | CP-37 | CP-070580 | 1924 | 1 | P-Access-Network-Info header clarification | 8.0.0 | 8.1.0 | C1-072042 |
| 2007-09 | CP-37 | CP-070580 | 1922 | 1 | Optional rport parameter in UE | 8.0.0 | 8.1.0 | C1-072039 |
| 2007-09 | CP-37 | CP-070580 | 1797 | 1 | Unprotected registration at S-CSCF | 8.0.0 | 8.1.0 | C1-072052 |
| 2007-09 | CP-37 | CP-070584 | 1866 | | Emergency Registration without eAPN | 8.0.0 | 8.1.0 | C1-071728 |

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| 2007-09 | CP-37 | CP-070585 | 1878 | | IETF reference updates relating to emergency call feature | 8.0.0 | 8.1.0 | C1-071776 |
| 2007-09 | CP-37 | CP-070585 | 1892 | 1 | Correction of emergency procedures unregistered user case | 8.0.0 | 8.1.0 | C1-072018 |
| 2007-09 | CP-37 | CP-070585 | 1894 | | Emergency registration timer in visited network | 8.0.0 | 8.1.0 | C1-071808 |
| 2007-09 | CP-37 | CP-070585 | 1927 | | Contents of From header when initiating an emergency session within a emergency registration | 8.0.0 | 8.1.0 | C1-071874 |
| 2007-09 | CP-37 | CP-070586 | 1861 | 1 | Correction for the URNs of IMS Communication Service Identifier and IMS Application Reference Identifier | 8.0.0 | 8.1.0 | C1-071956 |
| 2007-09 | CP-37 | CP-070586 | 1909 | 2 | Completing UE ICSI/IARI procedures | 8.0.0 | 8.1.0 | C1-072162 |
| 2007-09 | CP-37 | CP-070586 | 1842 | 1 | S-CSCF option to add P-Asserted-Service in UE-originated case | 8.0.0 | 8.1.0 | C1-071952 |
| 2007-09 | CP-37 | CP-070586 | 1911 | 2 | Completing S-CSCF ICSI/IARI procedures | 8.0.0 | 8.1.0 | C1-072164 |
| 2007-09 | CP-37 | CP-070586 | 1826 | 1 | Cleanup of text related to contact header dealing with ICSI | 8.0.0 | 8.1.0 | C1-071942 |
| 2007-09 | CP-37 | CP-070586 | 1838 | 2 | Description of the ICSI as an assigned identifier | 8.0.0 | 8.1.0 | C1-072159 |
| 2007-09 | CP-37 | CP-070586 | 1929 | 1 | ICSI Alignments with reqs 2, 3 and 11 | 8.0.0 | 8.1.0 | C1-071947 |
| 2007-09 | CP-37 | CP-070586 | 1942 | 1 | UE usage of ServidID received from the network | 8.0.0 | 8.1.0 | C1-072181 |
| 2007-09 | CP-37 | CP-070586 | 1840 | | Correction of application server handling of ICSI and IARI values | 8.0.0 | 8.1.0 | C1-071676 |
| 2007-09 | CP-37 | CP-070590 | 1807 | 3 | Trust Domain in IMS | 8.0.0 | 8.1.0 | C1-072185 |
| 2007-09 | CP-37 | CP-070590 | 1799 | 1 | Unprotected registration at P-CSCF | 8.0.0 | 8.1.0 | C1-072054 |
| 2007-09 | CP-37 | CP-070590 | 1793 | 1 | Protected registration | 8.0.0 | 8.1.0 | C1-072046 |
| 2007-09 | CP-37 | CP-070590 | 1804 | 1 | No multiple simultaneous Registration | 8.0.0 | 8.1.0 | C1-072056 |
| 2007-09 | CP-37 | CP-070590 | 1864 | 1 | Corrections of tables in Annex A | 8.0.0 | 8.1.0 | C1-072065 |
| 2007-09 | CP-37 | CP-070590 | 1879 | 1 | Essential corrections to P-Early-Media header procedures | 8.0.0 | 8.1.0 | C1-072062 |
| 2007-09 | CP-37 | CP-070590 | 1881 | | IETF SigComp reference updates | 8.0.0 | 8.1.0 | C1-071779 |
| 2007-09 | CP-37 | CP-070590 | 1934 | | SIP related reference update | 8.0.0 | 8.1.0 | C1-071888 |
| 2007-09 | CP-37 | CP-070590 | 1913 | 1 | Removal of IBCF Route Headers Editors Note | 8.0.0 | 8.1.0 | C1-072073 |
| 2007-09 | CP-37 | CP-070590 | 1854 | 1 | Clarification on P-Profile-Key | 8.0.0 | 8.1.0 | C1-072063 |
| 2007-09 | CP-37 | CP-070592 | 1817 | | Resolve FFS for AS-GRUU | 8.0.0 | 8.1.0 | C1-071581 |
| 2007-09 | CP-37 | CP-070596 | 1885 | 2 | Update Emergency NAT Traversal Procedures Annex K | 8.0.0 | 8.1.0 | C1-072078 |
| 2007-09 | CP-37 | CP-070596 | 1883 | 1 | Update GRUU NAT Traversal Procedures Annex-K | 8.0.0 | 8.1.0 | C1-071926 |
| 2007-09 | CP-37 | CP-070600 | 1750 | 3 | Resource-Priority and priority | 7.8.0 | 8.1.0 | C1-072132 |
| 2007-09 | CP-37 | CP-070600 | 1919 | 2 | Addition of MGCF for optional support of Resource-Priority | 8.0.0 | 8.1.0 | C1-072184 |
| 2007-09 | CP-37 | CP-070601 | 1815 | 2 | Updates to Annex K in support of SIP Digest and TLS procedures | 8.0.0 | 8.1.0 | C1-072137 |
| 2007-09 | CP-37 | CP-070601 | 1812 | 4 | UE Digest and TLS Procedures | 8.0.0 | 8.1.0 | C1-072172 |

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| 2007-09 | CP-37 | CP-070601 | 1814 | 4 | S-CSCF Digest and TLS Procedures | 8.0.0 | 8.1.0 | C1-072174 |
| 2007-09 | CP-37 | CP-070601 | 1813 | 4 | P-CSCF Digest and TLS Procedures | 8.0.0 | 8.1.0 | C1-072173 |
| 2007-09 | CP-37 | CP-070603 | 1847 | 1 | Cleanup of SigComp dictionary support | 8.0.0 | 8.1.0 | C1-072144 |
| 2007-09 | CP-37 | CP-070603 | 1896 | 1 | S-CSCF procedure corrections | 8.0.0 | 8.1.0 | C1-072089 |
| 2007-09 | CP-37 | CP-070603 | 1935 | | Restructuring of subclause 5.2.6 (General treatment for all dialogs and standalone transactions excluding the REGISTER method) of the P-CSCF | 8.0.0 | 8.1.0 | C1-071891 |
| 2007-09 | CP-37 | CP-070603 | 1788 | 2 | Request-URI in registration | 8.0.0 | 8.1.0 | C1-072154 |
| 2007-09 | CP-37 | CP-070670 | 1907 | 3 | Definition of feature tag for IARI/ICSI | 8.0.0 | 8.1.0 | C1-072006 |
| 2007-09 | CP-37 | CP-070674 | 1791 | 2 | Emergency registration | 8.0.0 | 8.1.0 | C1-072016 |
| 2007-09 | CP-37 | CP-070676 | 1851 | 4 | P-CSCF behaviour upon loss of SIP signalling transport | 8.0.0 | 8.1.0 | C1-072178 |
| 2007-09 | CP-37 | CP-070691 | 1926 | 5 | UE setting of IARI | 8.0.0 | 8.1.0 | C1-072166 |
| 2007-12 | CP-38 | CP-070735 | 2077 | 1 | Update P-Early-Media Reference | 8.1.0 | 8.2.0 | C1-072750 |
| 2007-12 | CP-38 | CP-070785 | 2065 | | Authenticating with AKAv1-MD5 | 8.1.0 | 8.2.0 | C1-072533 |
| 2007-12 | CP-38 | CP-070785 | 2115 | | Proxy profile corrections | 8.1.0 | 8.2.0 | C1-072922 |
| 2007-12 | CP-38 | CP-070785 | 2111 | | Corrections to RFC 3329 entries in profile | 8.1.0 | 8.2.0 | C1-072918 |
| 2007-12 | CP-38 | CP-070785 | 2041 | 1 | Corrections for re-authenticating user | 8.1.0 | 8.2.0 | C1-072553 |
| 2007-12 | CP-38 | CP-070785 | 2049 | 3 | Introduction of versioning and conventions | 8.1.0 | 8.2.0 | C1-072989 |
| 2007-12 | CP-38 | CP-070788 | 2028 | 1 | Coverage of access technology specific text | 8.1.0 | 8.2.0 | C1-072746 |
| 2007-12 | CP-38 | CP-070788 | 2017 | 2 | Action on missing "integrity-protected" parameter | 8.1.0 | 8.2.0 | C1-073179 |
| 2007-12 | CP-38 | CP-070788 | 2035 | 1 | MGCF does not act as a proxy | 8.1.0 | 8.2.0 | C1-072565 |
| 2007-12 | CP-38 | CP-070788 | 2070 | 1 | Correction to subclause 7.2A.5.2.2 | 8.1.0 | 8.2.0 | C1-073052 |
| 2007-12 | CP-38 | CP-070791 | 1999 | 1 | 380 at normal call setup | 8.1.0 | 8.2.0 | C1-072670 |
| 2007-12 | CP-38 | CP-070791 | 2062 | 2 | Miscellaneous EMC1 corrections | 8.1.0 | 8.2.0 | C1-072748 |
| 2007-12 | CP-38 | CP-070791 | 2120 | | Introductory text for emergency service | 8.1.0 | 8.2.0 | C1-072930 |
| 2007-12 | CP-38 | CP-070794 | 1990 | | Correct sub-section references in Annex-K | 8.1.0 | 8.2.0 | C1-072295 |
| 2007-12 | CP-38 | CP-070794 | 2023 | | Correction of outbound and ice option tag support in profile tables | 8.1.0 | 8.2.0 | C1-072383 |
| 2007-12 | CP-38 | CP-070795 | 1986 | 1 | Align with draft-gruu-reg-ev-09 | 8.1.0 | 8.2.0 | C1-072752 |
| 2007-12 | CP-38 | CP-070795 | 2043 | 1 | Addition of GRUU to emergency set-up when registration exists | 8.1.0 | 8.2.0 | C1-072599 |
| 2007-12 | CP-38 | CP-070799 | 2067 | 1 | P-CSCF Releases/Rejects session due to PCRF responses | 8.1.0 | 8.2.0 | C1-073067 |
| 2007-12 | CP-38 | CP-070805 | 2053 | 2 | Terminating UE ICSI procedures | 8.1.0 | 8.2.0 | C1-072708 |
| 2007-12 | CP-38 | CP-070805 | 2021 | 1 | Correction to digest and TLS Procedures for Annex K | 8.1.0 | 8.2.0 | C1-072508 |
| 2007-12 | CP-38 | CP-070805 | 1951 | 1 | Correction to the examples for ICSI and IARI values | 8.1.0 | 8.2.0 | C1-072490 |
| 2007-12 | CP-38 | CP-070805 | 2014 | 2 | Encoding of ICSI and IARI within the g.ims.app_ref feature tag | 8.1.0 | 8.2.0 | C1-072704 |

| Change history | | | | | | | | |
|----------------|-------|-----------|------|-----|---|-------|-------|-----------|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2007-12 | CP-38 | CP-070805 | 2051 | 1 | Multiple IARI/ICSI values in g.ims.app_ref feature tag | 8.1.0 | 8.2.0 | C1-072512 |
| 2007-12 | CP-38 | CP-070805 | 1969 | 1 | One ICSI value per P-Preferred-Service header | 8.0.0 | 8.2.0 | C1-072496 |
| 2007-12 | CP-38 | CP-070805 | 1963 | 1 | Change of name for feature tag g.ims.app_ref | 8.0.0 | 8.2.0 | C1-072492 |
| 2007-12 | CP-38 | CP-070806 | 2008 | 2 | Handling of invalid and unauthorized media based on Communication Service Identifiers | 8.1.0 | 8.2.0 | C1-072702 |
| 2007-12 | CP-38 | CP-070806 | 2092 | 2 | S-CSCF Processing of P-Preferred-Service and P-Asserted-Service | 8.1.0 | 8.2.0 | C1-073204 |
| 2007-12 | CP-38 | CP-070806 | 2107 | 2 | The received list of ICSIs from the Network | 8.1.0 | 8.2.0 | C1-073206 |
| 2007-12 | CP-38 | CP-070806 | 2088 | | ICSI in Annex F | 8.1.0 | 8.2.0 | C1-072841 |
| 2007-12 | CP-38 | CP-070806 | 2019 | 2 | Miscellaneous service identifier corrections | 8.1.0 | 8.2.0 | C1-073106 |
| 2007-12 | CP-38 | CP-070806 | 1965 | 3 | Minor corrections to P-Preferred and P-Asserted Service headers | 8.1.0 | 8.2.0 | C1-073102 |
| 2007-12 | CP-38 | CP-070806 | 1976 | 2 | Correction to S-CSCF handling of IMS communication service | 8.1.0 | 8.2.0 | C1-072700 |
| 2007-12 | CP-38 | CP-070807 | 2005 | 1 | No SIPS | 8.1.0 | 8.2.0 | C1-072593 |
| 2007-12 | CP-38 | CP-070807 | 1961 | 1 | Route header verification at P-CSCF | 8.1.0 | 8.2.0 | C1-072587 |
| 2007-12 | CP-38 | CP-070807 | 1955 | 1 | Update of the reference for P-Profile-Key Private Header (P-Header) | 8.1.0 | 8.2.0 | C1-072487 |
| 2007-12 | CP-38 | CP-070807 | 2012 | | Reference alignment | 8.1.0 | 8.2.0 | C1-072364 |
| 2007-12 | CP-38 | CP-070807 | 2037 | 1 | AS does not subscribe to reg-event package when user is unregistered | 8.1.0 | 8.2.0 | C1-072597 |
| 2007-12 | CP-38 | CP-070807 | 2045 | 2 | Correction of mutually exclusive ICSI and GRUU | 8.1.0 | 8.2.0 | C1-072706 |
| 2007-12 | CP-38 | CP-070807 | 2055 | | Update of P-Answer-State header draft Reference | 8.1.0 | 8.2.0 | C1-072446 |
| 2007-12 | CP-38 | CP-070808 | 2057 | 2 | Clarification of UE handling of the P-Early-Media header. | 8.1.0 | 8.2.0 | C1-072723 |
| 2007-12 | CP-38 | CP-070808 | 2100 | 1 | Access Network Info for I-WLAN | 8.1.0 | 8.2.0 | C1-073075 |
| 2007-12 | CP-38 | CP-070808 | 2003 | 2 | Service Profile Change | 8.1.0 | 8.2.0 | C1-072718 |
| 2007-12 | CP-38 | CP-070808 | 1957 | 4 | Correction to the IBCF subsection in relation with trusted domain | 8.1.0 | 8.2.0 | C1-072687 |
| 2007-12 | CP-38 | CP-070808 | 2072 | 2 | Correction to procedure when registration timer times out | 8.1.0 | 8.2.0 | C1-073173 |
| 2007-12 | CP-38 | CP-070808 | 2103 | 1 | Access Network Info for 3GPP2/UMB | 8.1.0 | 8.2.0 | C1-073057 |
| 2007-12 | CP-38 | CP-070810 | 2081 | 3 | Correction of multiple Contact headers in abnormal case | 8.1.0 | 8.2.0 | C1-073226 |
| 2007-12 | CP-38 | CP-070810 | 2117 | 1 | Miscellaneous editorial corrections (part 3) | 8.1.0 | 8.2.0 | C1-073165 |
| 2007-12 | CP-38 | CP-070810 | 1932 | 4 | Incorporation of draft-ietf-consent-framework | 8.1.0 | 8.2.0 | C1-073166 |
| 2007-12 | CP-38 | CP-070810 | 2098 | 1 | Superfluous requirements for removing charging information at terminating P-CSCF | 8.1.0 | 8.2.0 | C1-073164 |
| 2007-12 | CP-38 | CP-070810 | 1974 | 1 | Synchronization When Service Profile Being Modified | 8.1.0 | 8.2.0 | C1-072661 |
| 2007-12 | CP-38 | CP-070810 | 2029 | 3 | Miscellaneous editorial corrections | 8.1.0 | 8.2.0 | C1-072764 |
| 2007-12 | CP-38 | CP-070810 | 2059 | 3 | Miscellaneous editorial corrections (part 2) | 8.1.0 | 8.2.0 | C1-073162 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2007-12 | CP-38 | CP-070811 | 2078 | 1 | Clarification on interconnect functionalities | 8.1.0 | 8.2.0 | C1-073163 |
| 2007-12 | CP-38 | CP-070812 | 2086 | 1 | Semantics for values in "integrity-protected" field | 8.1.0 | 8.2.0 | C1-073112 |
| 2007-12 | CP-38 | CP-070812 | 2060 | 3 | Public user identity and private user identity derivation in UEs without UICC | 8.1.0 | 8.2.0 | C1-073201 |
| 2007-12 | CP-38 | CP-070812 | 2006 | 1 | Digest Support in Profile Tables | 8.1.0 | 8.2.0 | C1-072623 |
| 2007-12 | CP-38 | CP-070812 | 2026 | 1 | Security-related references and definitions | 8.1.0 | 8.2.0 | C1-072761 |
| 2007-12 | CP-38 | CP-070812 | 2025 | 3 | Introduction to security mechanisms | 8.1.0 | 8.2.0 | C1-073175 |
| 2007-12 | CP-38 | CP-070812 | 1982 | 6 | Updates to integrity protection for digest and TLS | 8.1.0 | 8.2.0 | C1-073202 |
| 2007-12 | CP-38 | CP-070814 | 2085 | 4 | Addition of SIP header to support UUS1 | 8.1.0 | 8.2.0 | C1-073208 |
| 2007-12 | CP-38 | CP-070816 | 2024 | 5 | Integration of text for digest and TLS plus digest into the main body of the specification | 8.1.0 | 8.2.0 | C1-073200 |
| 2007-12 | CP-38 | CP-070864 | 1953 | 5 | Clarifications on NW-init and resource reservation | 8.1.0 | 8.2.0 | C1-073069 |
| 2007-12 | CP-38 | CP-070875 | 1997 | 4 | Corrections for emergency procedures | 8.1.0 | 8.2.0 | C1-072991 |
| 2008-03 | CP-39 | CP-080120 | 2174 | | Reference correction for RFC 4244 | 8.2.0 | 8.3.0 | C1-080147 |
| 2008-03 | CP-39 | CP-080120 | 2149 | | Handling of the reason header in requests at the MGCF | 8.2.0 | 8.3.0 | C1-080045 |
| 2008-03 | CP-39 | CP-080120 | 2162 | 1 | Correction on handling of P-Charging-Vector at IBCF | 8.2.0 | 8.3.0 | C1-080515 |
| 2008-03 | CP-39 | CP-080120 | 2181 | 1 | Correction of Alias | 8.2.0 | 8.3.0 | C1-080517 |
| 2008-03 | CP-39 | CP-080120 | 2176 | | SDP with precondition | 8.2.0 | 8.3.0 | C1-080149 |
| 2008-03 | CP-39 | CP-080126 | 2201 | 2 | Handling of Service ID in interworking cases | 8.2.0 | 8.3.0 | C1-080630 |
| 2008-03 | CP-39 | CP-080126 | 2155 | 2 | Clarification on the use of IARI in the contact header | 8.2.0 | 8.3.0 | C1-080635 |
| 2008-03 | CP-39 | CP-080126 | 2183 | 2 | UE behaviour when no ICSI is contained in the Accept-Contact header | 8.2.0 | 8.3.0 | C1-080531 |
| 2008-03 | CP-39 | CP-080130 | 2143 | 1 | Procedure at S-CSCF | 8.2.0 | 8.3.0 | C1-080600 |
| 2008-03 | CP-39 | CP-080130 | 2144 | | Empty RES | 8.2.0 | 8.3.0 | C1-080009 |
| 2008-03 | CP-39 | CP-080130 | 2145 | 1 | Alias URI | 8.2.0 | 8.3.0 | C1-080601 |
| 2008-03 | CP-39 | CP-080130 | 2146 | 2 | Notification at S-CSCF | 8.2.0 | 8.3.0 | C1-080631 |
| 2008-03 | CP-39 | CP-080130 | 2156 | 1 | Correction of example of IARI coding | 8.2.0 | 8.3.0 | C1-080526 |
| 2008-03 | CP-39 | CP-080130 | 2160 | 1 | Correction on the value used for P-Preferred-Identity header at UE | 8.2.0 | 8.3.0 | C1-080513 |
| 2008-03 | CP-39 | CP-080130 | 2170 | 1 | Correction to user initiated emergency re-registration | 8.2.0 | 8.3.0 | C1-080405 |
| 2008-03 | CP-39 | CP-080130 | 2187 | 1 | IPv4 and IPv6 support | 8.2.0 | 8.3.0 | C1-080609 |
| 2008-03 | CP-39 | CP-080130 | 2188 | 4 | P-CSCF awareness for 3GPP accesses | 8.2.0 | 8.3.0 | C1-080658 |
| 2008-03 | CP-39 | CP-080130 | 2196 | 2 | Annex K: ICE procedures for the IBCF | 8.2.0 | 8.3.0 | C1-080643 |
| 2008-03 | CP-39 | CP-080131 | 2192 | 1 | Completion of CIC and DAI requirements for MGCF | 8.2.0 | 8.3.0 | C1-080472 |
| 2008-03 | CP-39 | CP-080132 | 2163 | 1 | Miscellaneous Corrections on SIP Digest | 8.2.0 | 8.3.0 | C1-080473 |
| 2008-03 | CP-39 | CP-080132 | 2189 | 1 | Enhancements to security introduction text | 8.2.0 | 8.3.0 | C1-080474 |
| 2008-03 | CP-39 | CP-080134 | 2190 | 1 | Inclusion of NASS bundled authentication | 8.2.0 | 8.3.0 | C1-080518 |

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| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New | WG doc |
| 2008-03 | CP-39 | CP-080139 | 2164 | 1 | SIP XML addition for support of transit specific content | 8.2.0 | 8.3.0 | C1-080533 |
| 2008-03 | CP-39 | CP-080140 | 2138 | 2 | IP-CAN procedure for cdma2000 | 8.2.0 | 8.3.0 | C1-080411 |
| 2008-03 | CP-39 | CP-080140 | 2141 | 2 | P-CSCF interface to IP-CAN | 8.2.0 | 8.3.0 | C1-080413 |
| 2008-03 | CP-39 | CP-080140 | 2140 | 2 | Access-network-charging-info for cdma2000 access | 8.2.0 | 8.3.0 | C1-080412 |
| 2008-03 | CP-39 | CP-080141 | 2197 | 1 | Wildcarded Public User Identity: P-CSCF impact | 8.2.0 | 8.3.0 | C1-080612 |
| 2008-03 | CP-39 | CP-080141 | 2198 | 2 | Wildcarded Public User Identity: S-CSCF impact | 8.2.0 | 8.3.0 | C1-080644 |
| 2008-03 | CP-39 | CP-080199 | 2147 | 4 | NAT traversal | 8.2.0 | 8.3.0 | |
| 2008-03 | CP-39 | CP-080201 | 2151 | 5 | Handling of the reason header in responses | 8.2.0 | 8.3.0 | |

History

| Document history | | |
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| V8.1.0 | January 2008 | Publication |
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