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Technical Specification

**3rd Generation Partnership Project;
Technical Specification Group Core Network;
Open Service Access (OSA);
Parlay X Web Services;
Part 10: Call handling
(Release 9)**



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3GPP

Postal address

3GPP support office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet

<http://www.3gpp.org>

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Foreword

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

3GPP acknowledges the contribution of the Parlay X Web Services specifications from The Parlay Group. The Parlay Group is pleased to see 3GPP acknowledge and publish the present document, and the Parlay Group looks forward to working with the 3GPP community to improve future versions of the present document.

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:

Version x.y.z

where:

- 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.

Introduction

The present document is part 10 of a multi-part deliverable covering the 3rd Generation Partnership Project; Technical Specification Group Core Network; Open Service Access (OSA); Parlay X Web Services, as identified below:

- Part 1: "Common"
- Part 2: "Third party call"
- Part 3: "Call Notification"
- Part 4: "Short Messaging"
- Part 5: "Multimedia Messaging"
- Part 6: "Payment"
- Part 7: "Account management"
- Part 8: "Terminal Status"
- Part 9: "Terminal location"
- Part 10: "Call handling"**
- Part 11: "Audio call"
- Part 12: "Multimedia conference"
- Part 13: "Address list management"
- Part 14: "Presence"
- Part 15: "Message Broadcast"
- Part 16: "Geocoding"
- Part 17: "Application driven Quality of Service (QoS)"
- Part 18: "Device Capabilities and Configuration"
- Part 19: "Multimedia streaming control"
- Part 20: "Multimedia multicast session management"
- Part 21: "Content management"
- Part 22: "Policy"

1 Scope

The present document is Part 10 of the Stage 3 Parlay X Web Services specification for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e. the OSA APIs. The concepts and the functional architecture for the OSA are contained in 3GPP TS 23.198 [3]. The requirements for OSA are contained in 3GPP TS 22.127 [2].

The present document specifies the Call Handling Web Service aspects of the interface. All aspects of the Call Handling Web Service are defined here, these being:

- Name spaces.
- Sequence diagrams.
- Data definitions.
- Interface specification plus detailed method descriptions.
- Fault definitions.
- Service policies.
- WSDL Description of the interfaces.

The present document has been defined jointly between 3GPP TSG CT WG5, ETSI TISPAN and The Parlay Group.

Maintenance of up to 3GPP Rel-8 and new OSA Stage 1, 2 and 3 work beyond Rel-9 was moved to OMA in June 2008.

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*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.127: "Service Requirement for the Open Services Access (OSA); Stage 1".

[3] 3GPP TS 23.198: "Open Service Access (OSA); Stage 2".

[4] 3GPP TS 22.101: "Service aspects; Service principles".

[5] W3C Recommendation (2 May 2001): "XML Schema Part 2: Datatypes".

NOTE: Available at <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>.

[6] 3GPP TS 29.199-1: "Open Service Access (OSA); Parlay X Web Services; Part 1: Common".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 29.199-1 [6] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 29.199-1 [6] apply.

4 Detailed service description

The Call Handling Web Service provides a mechanism for an application to specify how calls are to be handled for a specific number. Call handling includes commonly utilized actions:

- Call accepting - only accepting calls from a list of numbers.
- Call blocking - blocking calls if they are on a blocking list.
- Conditional call forwarding - changing the destination of a call to another number for a specific calling number.
- Unconditional call forwarding - changing the destination of a call to another number.
- Play audio - initiate audio with the caller (e.g. an announcement or menu).

The set of rules are provided to the Web Service which is responsible for establishing the call handling function. Only one action is taken for a call, and once this action is started the rules will stop being processed.

There is a specific order in which these rules are processed, providing a predictable call handling expectation for rules provided. The processing is done as follows.

- 1) Call accepting determines if the call is accepted or rejected. If the caller is not on the accept list, the call is rejected and rule processing ends.
- 2) Call blocking determines if the call is rejected. If the caller is on the block list, the call is rejected and rule processing ends.
- 3) Conditional call forwarding - each calling number that has a specific forwarding instruction is checked, and the call is forwarded on a match, and rule processing ends.
- 4) Unconditional call forwarding - the called number is changed to the call forwarding number and rule processing ends.
- 5) Play audio - the call is handled by a voice system, which handles all further processing of the call. Rule processing ends when the call is handed off.
- 6) Continue processing call, to complete call to the original called number.

If no rules are specified in a particular area, then that step is skipped. If the rule processing ends without any action being indicated, then the call will continue to the called number.

Call Handling provides its function without further interaction with the Application. This is in contrast to the Call Notification interfaces which provide notifications to the Application for processing.

5 Namespaces

The Call Handling interface uses the namespace:

http://www.csapi.org/wsd/parlay x/call_handling/v4_0

The data types are defined in the namespace:

http://www.csapi.org/schema/parlay x/call_handling/v4_0

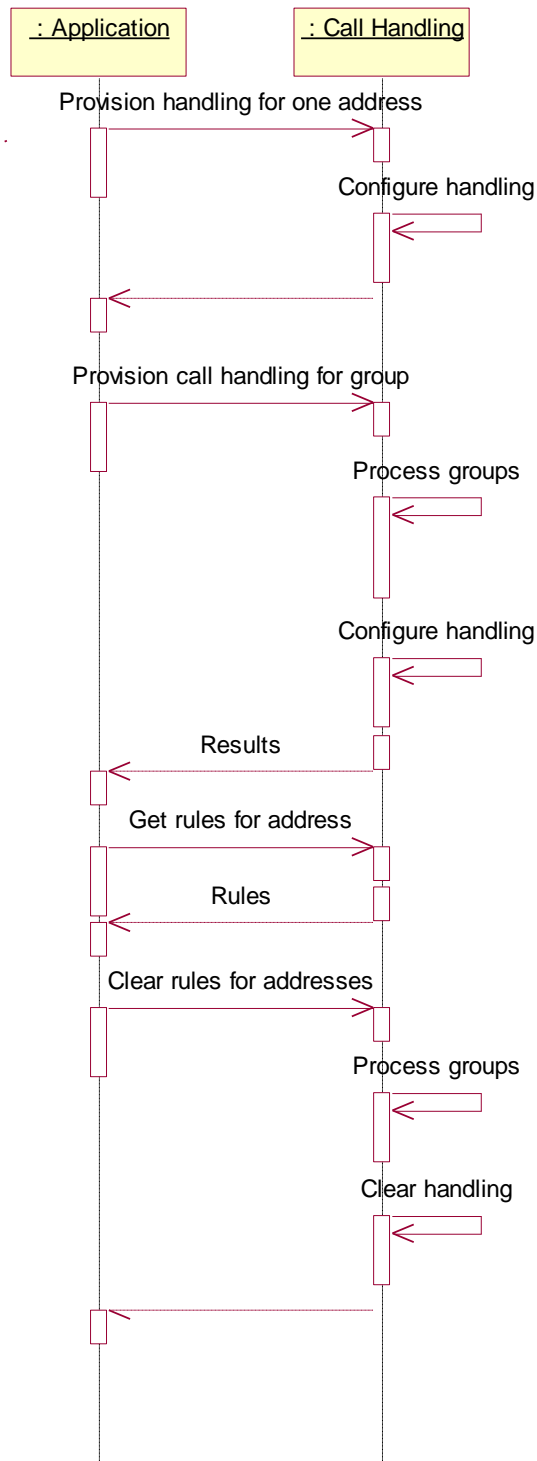
The 'xsd' namespace is used in the present document to refer to the XML Schema data types defined in XML Schema [5]. The use of the name 'xsd' is not semantically significant.

6 Sequence diagrams

6.1 Setup call handling, query and clear rules

Pattern: Request / Response.

This sequence shows the application setting up Call Handling with rules to be processed., querying those rules and clearing them.



7 XML Schema data type definition

7.1 ConditionalForward structure

Information on handling of forwarding for specific calling numbers.

Element name	Element type	Optional	Description
CallingAddress	xsd:anyURI	No	Address that call is placed from
ForwardingAddress	xsd:anyURI	No	Address to forward call to
OnBusyAddress	xsd:anyURI	No	If line is busy at forwarding address, forward to this address
OnNoAnswerAddresses	xsd:anyURI	No	If no answer at forwarding address, forward to this address

7.2 UnconditionalForward structure

Information for handling of forwarding unconditionally.

Element name	Element type	Optional	Description
ForwardingAddress	xsd:anyURI	No	Address to forward call to
OnBusyAddress	xsd:anyURI	No	If line is busy at forwarding address, forward to this address
OnNoAnswerAddresses	xsd:anyURI	No	If no answer at forwarding address, forward to this address

7.3 InteractionContent enumeration

The following are the types of content that may be used for user interaction.

Enumeration	Description
TextInfo	Text to be processed by a Text-To-Speech engine
VoiceXml	VoiceXML to be processed by a VoiceXML browser
Audio	Audio file to be played by an audio processor

7.4 TextInteraction structure

Information for processing by a text to speech engine.

Element name	Element type	Optional	Description
Text	xsd:string	No	Text to play through a Text-To-Speech engine
Language	xsd:string	No	Language of text

7.5 VoiceInteraction union

For a call that is to be handled by an interactive voice system, the information to provide to that system.

Element name	Element type	Optional	Description
UnionElement	InteractionContent	No	Type of content provided (one of the following)
TextInfo	TextInteraction	Yes	Announcement to play through a Text-To-Speech engine
VoiceXml	xsd:anyURI	Yes	Location of VoiceXML to use in a VoiceXML browser
Audio	xsd:anyURI	Yes	Location of audio content (WAV or MP3 file)

7.6 CallHandlingRules structure

Structure containing set of rules that are applied when the call is handled.

Element name	Element type	Optional	Description
AcceptList	xsd:anyURI [0..unbounded]	Yes	List of addresses to accept calls from
BlockList	xsd:anyURI [0..unbounded]	Yes	List of addresses to block calls from
ForwardList	ConditionalForward [0..unbounded]	Yes	List of conditional forwarding addresses and destinations
Forward	UnconditionalForward	Yes	Unconditional call forwarding address
VoiceInteractionContent	VoiceInteraction	Yes	Forward call to a user interaction system with information on content

7.7 SetRulesResult structure

Result of SetRulesRequest for each address.

Element name	Element type	Optional	Description
Address	xsd:anyURI	No	Address to be set
Successful	xsd:boolean	No	Successfully set rules or not
Error	common:ServiceError	Yes	Error message if unsuccessful

8 Web Service interface definition

8.1 Interface: CallHandling

CallHandling provides a rule based processing capability that is accessible to Applications through a set of operations that allow definition of discrete rules.

8.1.1 Operation: SetRules

Set the call handling rules for an address (the destination for the call). If a set of rules is already in place for any of the **Address**, then this operation will replace the old rules with the set provided in this operation.

The **Address** may not specify a group. If a group is specified, a **PolicyException** will be returned.

8.1.1.1 Input message: SetRulesRequest

Part name	Part type	Optional	Description
Address	xsd:anyURI	No	Address to handle calls for
Rules	CallHandlingRules	No	Rules to apply for this address

8.1.1.2 Output message: SetRulesResponse

Part name	Part type	Optional	Description
None			

8.1.1.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.
- POL0006: Groups not allowed.

8.1.2 Operation: SetRulesForGroup

Set the call handling rules for multiple addresses (the destination for calls). If a set of rules is already in place for any of the **Addresses**, then this operation will replace the old rules with the set provided in this operation.

The **Addresses** may include groups, with members using the 'tel:' and 'sip:' URIs in the manner defined in 3GPP TS 29.119-1 [6]. Wildcards may not be used to specify addresses.

8.1.2.1 Input message: SetRulesForGroupRequest

Part name	Part type	Optional	Description
Addresses	xsd:anyURI [1..unbounded]	No	Addresses to handle calls for
Rules	CallHandlingRules	No	Rules to apply for these addresses

8.1.2.2 Output message: SetRulesForGroupResponse

Part name	Part type	Optional	Description
Result	SetRulesResult [1..unbounded]	No	Result of setup for each of addresses provided

8.1.2.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0004: No valid addresses.
- SVC0006: Invalid group.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.
- POL0006: Groups not allowed.
- POL0007: Nested groups not allowed.

8.1.3 Operation: GetRules

Get the call handling rules for an address (the destination for the call).

The **Address** may not specify a group. If a group is specified, a **PolicyException** will be returned.

8.1.3.1 Input message: GetRulesRequest

Part name	Part type	Optional	Description
Address	xsd:anyURI	No	Address to handle calls for

8.1.3.2 Output message: GetRulesResponse

Part name	Part type	Optional	Description
Rules	CallHandlingRules	No	Rules being applied for this address

8.1.3.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.
- POL0006: Groups not allowed.

8.1.4 Operation: ClearRules

Clear the call handling rules associated with the addresses specified. If no rules have been set for an address, this operation silently ignores the request, and does not return an error or fault message.

The **Addresses** may include groups, with members using the 'tel:' and 'sip:' URIs in the manner defined in 3GPP TS 29.199-1 [6]. Wildcards may not be used to specify addresses.

8.1.4.1 Input message: ClearRulesRequest

Part name	Part type	Optional	Description
Addresses	xsd:anyURI [1..unbounded]	No	Addresses to clear call handling for

8.1.4.2 Output message: ClearRulesResponse

Part name	Part type	Optional	Description
None			

8.1.4.3 Referenced faults

ServiceException from 3GPP TS 29.199-1 [6]:

- SVC0001: Service error.
- SVC0002: Invalid input value.
- SVC0006: Invalid group.

PolicyException from 3GPP TS 29.199-1 [6]:

- POL0001: Policy error.
- POL0006: Groups not allowed.
- POL0007: Nested groups not allowed.

9 Fault definitions

No new faults defined for this service.

10 Service policies

Name	Type	Description
VoiceMailAvailable	xsd:boolean	Voice mail available or not
TextToSpeechAvailable	xsd:boolean	Service accepts text as an input for processing with a Text-To-Speech engine
AudioContentAvailable	xsd:boolean	Service accepts audio content for playing with an audio player
VoiceXmlAvailable	xsd:boolean	Service accepts VoiceXML for processing with a VoiceXML browser
AudioFormatsSupported	xsd:string	Comma separated string of audio formats supported (e.g. WAV,MP3,AU)
GroupSupport	xsd:boolean	Groups may be included with addresses
NestedGroupSupport	xsd:boolean	Are nested groups supported in group definitions

Annex A (normative): WSDL for Call handling

The document/literal WSDL representation of this interface specification is compliant to 3GPP TS 29.199-1 [6] and is contained in text files :

- parlay_x_call_handling_interface_4_0.wsdl
- parlay_x_call_handling_service_4_0.wsdl
- parlay_x_call_handling_types_4_0.xsd

which accompany the present document.

The WSDL files have been verified using the following files:

- 10_wsd2Java_axis-1_4.bat
- 10_wsd2Java_axis2-1_4_1.bat

which accompany the present document.

Annex B (informative): Description of Parlay X Web Services Part 10: Call handling for 3GPP2 cdma2000 networks

This annex is intended to define the OSA Parlay X Web Services Stage 3 interface definitions and it provides the complete OSA specifications. It is an extension of OSA Parlay X Web Services specifications capabilities to enable operation in cdma2000 systems environment. They are in alignment with 3GPP2 Stage 1 requirements and Stage 2 architecture defined in:

- [1] 3GPP2 X.S0011-D: "cdma2000 Wireless IP Network Standard ", Version 1.1
- [2] 3GPP2 S.R0037-0: "IP Network Architecture Model for cdma2000 Spread Spectrum Systems", Version 3.0
- [3] 3GPP2 X.S0013-A: "All-IP Core Network Multimedia Domain"

These requirements are expressed as additions to and/or exclusions from the 3GPP specification.

The information given here is to be used by developers in 3GPP2 cdma2000 network architecture to interpret the 3GPP OSA specifications.

B.1 General Exceptions

The terms 3GPP and UMTS are not applicable for the cdma2000 family of standards. Nevertheless these terms are used (3GPP TR 21.905) mostly in the broader sense of "3G Wireless System". If not stated otherwise there are no additions or exclusions required.

CAMEL mappings are not applicable for cdma2000 systems.

B.2 Specific Exceptions

B.2.1 Clause 1: Scope

There are no additions or exclusions.

B.2.2 Clause 2: References

There are no additions or exclusions.

B.2.3 Clause 3: Definitions and abbreviations

There are no additions or exclusions.

B.2.4 Clause 4: Detailed service description

There are no additions or exclusions.

B.2.5 Clause 5: Namespaces

There are no additions or exclusions.

B.2.6 Clause 6: Sequence diagrams

There are no additions or exclusions.

B.2.7 Clause 7: XML Schema data type definition

There are no additions or exclusions.

B.2.8 Clause 8: Web Service interface definition

There are no additions or exclusions.

B.2.9 Clause 9: Fault definitions

There are no additions or exclusions.

B.2.10 Clause 10: Service policies

There are no additions or exclusions.

B.2.11 Annex A (normative): WSDL for Call handling

There are no additions or exclusions.

Annex C (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
Sep 2004	CN_25	NP-040360	--	--	Draft v100 submitted to TSG CN#25 for Approval.	--	1.0.0	6.0.0
Jun 2005	CT_28	CP-050221	0001	--	Optionals for Part 10	F	6.0.0	6.1.0
Dec 2005	CT_30	CP-050575	0002	--	Make elements of the VoiceInteraction & CallHandlingRules structure optional	F	6.1.0	6.2.0
Dec 2005	CT_30	CP-050575	0003	--	Inconsistent part naming in PX response messages	F	6.1.0	6.2.0
Jun 2006	CT_32	CP-060202	0004	--	Change reference to OSA Stage 2 from 23.127 to 23.198	F	6.2.0	6.3.0
Jun 2006	CT_32	CP-060202	0005	--	Apply Union data type element naming convention	F	6.2.0	6.3.0
Mar 2007	CT_35	CP-070045	0006	-	Add OSA Parlay Web Services support for 3GPP2 networks	F	6.3.0	6.4.0
Mar 2007	CT_35	--	--	--	Automatic upgrade to R7 (no CR needed)	--	6.5.0	7.0.0
Mar 2007	--	--	--	--	Editorial: Aligned 5 Namespaces	--	7.0.0	7.0.1
Jun 2007	--	--	--	--	Renamed in Introduction Part 18: "Device management" to "Device Capabilities and Configuration"	--	7.0.1	7.0.2
Dec 2008	CT_42	--	--	--	Upgraded unchanged from Rel-7	--	7.0.2	8.0.0
Sep 2009	CT_45	CP-090598	0008		Completion of Parlay X Call handling for Release 8		8.0.0	8.1.0
2009-12	-	-	-	-	Update to Rel-9 version (MCC)		8.1.0	9.0.0