3GPP TR 32.837 V0.3.0 (2013-06)

Technical Report

**3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Telecommunication management;
Compliance of 3GPP OAM Specifications to NGMN NGCOR
Release 12**

Keywords
NGMN, NGCOR, Converged Management

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

Contents

Foreword

This Technical Report 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:

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

TBD

1 Scope

The present document specifies the Gap Analysis towards NGCOR Requirements [2] as compared to existing 3GPP solutions, and provides recommendation towards NGCOR compliance including suggestions for further 3GPP specification enhancements.

2 References

The following documents contain provisions that, 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*.

[0]   3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[1]   3GPP TS 32.111-1 "Fault Management; Part 1: 3G fault management requirements"

[2]   3GPP TS 32.111-2 "Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)"

[3]   3GPP TS 32.111-6 "Fault Management; Part 6: Alarm Integration Reference Point (IRP): Solution Set (SS) definitions"

[4]   3GPP TS 32.121 "Advanced Alarm Management (AAM) Integration Reference Point (IRP)"

[5]   3GPP TS 32.122 "Advanced Alarm Management (AAM) Integration Reference Point (IRP): Information Service (IS)"

[6]   3GPP TS 32.126 "Advanced Alarm Management (AAM) Integration Reference Point (IRP); Solution Set (SS) definitions"

[7]   3GPP TS 32.351 "Communication Surveillance (CS) Integration Reference Point (IRP); Requirements"

[8]   3GPP TS 32.352 "Communication Surveillance (CS) Integration Reference Point (IRP); Information Service (IS)"

[9]   3GPP TS 32.356 "Communication Surveillance (CS) Integration Reference Point (IRP); Solution Set (SS) definitions"

[10]   3GPP TS 28.390 "Fixed Mobile Convergence (FMC) Interface Integration Reference Point (IRP) Solution Profiles (SPs)" 3GPP Alarm IRP NGCOR Profile

[11]   NGMN Alliance "NGCOR NEXT GENERATION CONVERGED OPERATIONS REQUIREMENTS" V1.3

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

None

3.2 Symbols

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

None

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [x] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

NGCOR   Next Generation Converged Operations Requirements
NGMN   Next Generation Mobile Networks

4 Gap Analysis Generic Next Generation Converged Operational Requirements (GEN)

Generic Next Generation Converged Operational Requirements are considered applicable to all NCGOR functional areas, and therefore gap analysis on these requirements is conducted within the respective functional area.

5 Gap Analysis High level requirements for Converged Operations (CON)

5.1 Introduction

This section provides the gap analysis between NGMN NCGOR Converged Operations requirements and 3GPP specifications, as well as indicating available 3GPP solutions on this functional area (additional comments and questions are provided as appropriate).

A cell marked has the following meanings.

C: Compliant

FFS: Still under discussion in M-SDO (or elsewhere)

NA: Not Applicable

NC: Non-compliant

PC: Partial compliant

5.2 Compliance Summary

NGCOR Requirement	3GPP Solution Compliance	Comments
REQ-CON (1) (SDO/EV)	NA	
REQ-CON (2) (SDO/EV)	FFS	
REQ-CON (3) (SDO/EV)	FFS	
REQ-CON (4) (SDO/EV)	FFS	
REQ-CON (5) (SDO/EV)	FFS	
REQ-CON (6) (OV)	NA	
REQ-CON (7) (SDO)	NA	
REQ-CON (8) (OV)	NA	
REQ-CON (9) (SDO)	FFS	
REQ-CON (10) (SDO)	NA	

Comment-A: [detailed comment A]

Comment-B: [detailed comments B]

5.3 Compliance Details

REQ-CON (1)

Vendors' EMS shall be able to manage network elements belonging to several network operator affiliates. In a minimal configuration, it shall be able to manage multiple network domains / technologies, e.g. it shall be able to cover not only multiple radio access technologies but shall also enable network operators to manage their wireless and wire line network domains in a unified way.

3GPP Stage-1 reference

- NA

3GPP Solution reference/gap

- NA

3GPP Solution Compliance/Proposal

- NA

Comments/Questions/Open Issues

This requirement is about EMS and it's irrelevant to standard.

REQ-CON (2)

Alarms coming from operator affiliates' domestic network elements up to the shared EMS are handled by shared NOC staff. The shared EMS shall be able to filter such alarms and forward them to the relevant operator affiliate OSS FM application, either for information only or for action (acknowledge, clear, etc.). All alarm-related information exchanges between the shared EMS and the affiliates' OSS FM applications shall comply with standardized specifications.

3GPP Stage-1 reference

- FFS

3GPP Solution reference/gap

- FFS

Comments/Questions/Open Issues

This requirement is currently under the study of "Study on OAM aspects of Network Sharing (540032)".

REQ-CON (3)

Operator affiliates shall be able to configure their own network elements from their own OSS CM application(s). The shared EMS shall ensure isolation of configuration action requests coming from the affiliates' OSS CM applications. All configuration management related information exchanges between the shared EMS and the affiliates OSS CM applications shall comply with standardized specifications.

3GPP Stage-1 reference

- FFS

3GPP Solution reference/gap

- FFS

Comments/Questions/Open Issues

This requirement is currently under the study of "Study on OAM aspects of Network Sharing (540032)".

REQ-CON (4)

Operator affiliates shall be able to collect performance management counters/ KPIs related to their own network elements. They shall be able to trigger, from their own OSS PM application, performance measurement jobs for their own purpose, and collect related PM measurements within their OSS PM application. All performance management related information exchanges between the shared EMS and the affiliates' OSS PM Applications shall comply with standardized specifications.

3GPP Stage-1 reference

- FFS

3GPP Solution reference/gap

- FFS

Comments/Questions/Open Issues

This requirement is currently under the study of "Study on OAM aspects of Network Sharing (540032)".

REQ-CON (5)

Operator affiliates shall be able to inventory resources related to their own network elements. They shall be able to retrieve, from their own OSS InvM application, all available inventory data. All inventory management related information exchanges between the shared EMS and the affiliates' OSS InvM applications shall comply with standardized specifications.

3GPP Stage-1 reference

- FFS

3GPP Solution reference/gap

- FFS

Comments/Questions/Open Issues

This requirement is currently under the study of "Study on OAM aspects of Network Sharing (540032)".

REQ-CON (6)

Network management applications shall be, up to the maximum, common to multiple network domains / technologies. They shall be based on a kernel, common to multiple network domains / technologies, and possibly technology-specific management capabilities.

3GPP Stage-1 reference

- NA

3GPP Solution reference/gap

- NA

Comments/Questions/Open Issues

This requirement is about NMS and it's irrelevant to standard.

REQ-CON (7)

In order to lower the costs of integration of the various EMSs to the single set of NMS applications, it is required that all EMSs offer the same set of northbound interface(s), based on a standardized federated model (cf. Sub-Task Modelling & Tooling)

3GPP Stage-1 reference

- NA

3GPP Solution reference/gap

- NA

Comments/Questions/Open Issues

This requirement is about EMS and it's irrelevant to standard.

REQ-CON (8)

Operators expect common service management applications for the following functional processes, belonging to service operation and management:

- Service configuration and activation

- Service problem management

- Service quality management

3GPP Stage-1 reference

- NA

3GPP Solution reference/gap

- NA

Comments/Questions/Open Issues

This requirement is about EMS and it's irrelevant to standard.

REQ-CON (9)

It shall be possible that the "Master Operator" EMS and "Sharing Operators" NMS applications communicate with each others through a standardized northbound interface. This interface shall be "online", i.e. not only based on offline file exchange. These exchanges shall be secured to ensure privacy of information. The Master Operator EMS shall be able to filter information exchanged with Sharing Operators' NMSs based on unique identifiers (PLMN Id, etc.). Standardized northbound interfaces shall enable such a use case.

3GPP Stage-1 reference

- FFS

3GPP Solution reference/gap

- FFS

Comments/Questions/Open Issues

This requirement is currently under the study of "Study on OAM aspects of Network Sharing (540032)".

REQ-CON (10)

Vendors' EMS shall offer a unique set of management capabilities at its northbound interfaces. It is expected that EMS northbound interfaces are implemented according to the following rules:

- Network resource models for various network domains are built on a standardized federated network resource model, i.e. network resource model for wire line network domains shall not be 100% different from network resource models for wireless network domains.

- Functional interfaces for wire line and wireless networks shall be similar for at least configuration management, fault management, performance management, inventory management, software management. EMS northbound Interface shall offer common management capabilities to the operator, regardless of the network domain.

- It is of primary importance that EMS northbound interface fully implements:

    - standardized northbound interfaces firstly and

    - clearly identifiable, vendor-specific extensions to capture vendors' own set of parameters and/or value added management capabilities. Vendor's specific capabilities shall be implemented as extensions

- EMS northbound interface shall be based on Web Services.

3GPP Stage-1 reference

  - NA

3GPP Solution reference/gap

  - NA

Comments/Questions/Open Issues

This requirement is about EMS and it's irrelevant to standard.

6 Gap Analysis Requirements for NGCOR Modelling and Tooling (MT)

This section provides the gap analysis between NGMN NCGOR Modelling and Tooling requirements and 3GPP specifications, as well as indicating available 3GPP solutions on this functional area (additional comments and questions are provided as appropriate).

6.1 Compliance Summary

NGCOR Requirement	3GPP Solution Compliance	Comments
REQ-MT (1)		
REQ-MT (2)		
REQ-MT (3)		
REQ-MT (4)		
REQ-MT (5)		
REQ-MT (6)		
REQ-MT (7)		
REQ-MT (8)		
REQ-MT (9)		
REQ-MT (10)		
REQ-MT (11)		
REQ-MT (12)		
REQ-MT (13)		
REQ-MT (14)		
REQ-MT (15)		
REQ-MT (16)		
REQ-MT (17)		
REQ-MT (18)		
REQ-MT (19)		
REQ-MT (20)		
REQ-MT (21)		
REQ-MT (22)		
REQ-MT (23)		
REQ-MT (24)		
REQ-MT (25)		
REQ-MT (26)		
REQ-MT (27)		
REQ-MT (28)		
REQ-MT (29)		
REQ-MT (30)		
REQ-MT (31)		

REQ-MT (32)		
REQ-MT (33)		
REQ-MT (34)		
REQ-MT (35)		3GPP
REQ-MT (36)		
REQ-MT (37)		
REQ-MT (38)		
REQ-MT (39)		
REQ-MT (40)		
REQ-MT (41)		
REQ-MT (42)		
REQ-MT (43)		
REQ-MT (44)		
REQ-MT (45)		
REQ-MT (46)		
REQ-MT (47)		
REQ-MT (48)		
REQ-MT (49)		
REQ-MT (50)		
REQ-MT (51)		
REQ-MT (52)		
REQ-MT (53)		
REQ-MT (54)		
REQ-MT (55)		
REQ-MT (56)		
REQ-MT (57)		
REQ-MT (58)		
REQ-MT (59)		
REQ-MT (60)		
REQ-MT (61)		
REQ-MT (62)		
REQ-MT (63)		
REQ-MT (64)		
REQ-MT (65)		
REQ-MT (66)		
REQ-MT (67)		
REQ-MT (68)		
REQ-MT (69)		
REQ-MT (70)		
REQ-MT (71)		
REQ-MT (72)		
REQ-MT (73)		

REQ-MT (74)		
REQ-MT (75)		
REQ-MT (76)		
REQ-MT (77)		3GPP
REQ-MT (78)		
REQ-MT (79)		
REQ-MT (80)		
REQ-MT (81)		
REQ-MT (82)		
REQ-MT (83)		
REQ-MT (84)		
REQ-MT (85)		
REQ-MT (86)		
REQ-MT (87)		
REQ-MT (88)		
REQ-MT (89)		
REQ-MT (90)		
REQ-MT (91)		
REQ-MT (92)		
REQ-MT (93)		
REQ-MT (94)		
REQ-MT (95)		
REQ-MT (96)		
REQ-MT (97)		
REQ-MT (98)		
REQ-MT (99)		
REQ-MT (100)		
REQ-MT (101)		
REQ-MT (102)		
REQ-MT (103)		
REQ-MT (104)		
REQ-MT (105)		
REQ-MT (106)		
REQ-MT (107)		
REQ-MT (108)		
REQ-MT (109)		
REQ-MT (110)		
REQ-MT (111)		
REQ-MT (112)		
REQ-MT (113)		

6.2 Compliance Details

<u>REQ-MT (#)</u>

Req heading txt (if applicable/available)

3GPP Stage-1 reference/gap

- Reference xyz

3GPP Solution reference/gap

- Solution reference xyz

- Gap description (if applicable)

3GPP Solution Compliance/Proposal

- Compliant statement

- Requires Implementation of identify applicable 3GPP specifications (or portions of it)

Comments/Questions/Open Issues

None or identify Comments/Questions/Open Issues

7 Gap Analysis Requirements for Fault Management Interface (FM)

7.1 Introduction

This section provides the gap analysis between NGMN NCGOR Fault Management Interface requirements (and associated Generic Next Generation Converged Operational Requirements) and 3GPP specifications, as well as indicating available 3GPP solutions on the functional area (additional comments and questions are provided as appropriate).

A cell marked has the following meanings.

C: Compliant

FFS: Still under discussion in M-SDO (or elsewhere)

NA: Not Applicable

NC: Non-compliant

PC: Partially compliant

7.2 Compliance Summary

NGCOR Requirement	3GPP Compliance	Comments
REQ-GEN (1) (M) Plug & Play		
REQ-GEN (2) (M) Useful		
REQ-GEN (3) (E) Re-Usable / Generic		
REQ-GEN (4) (E) Simple		
REQ-GEN (5) (M) Flexible / Extensible		
REQ-GEN (6) (M) Fine grained (as far as needed)		
REQ-GEN (7) (E) Standardized / Open		
REQ-GEN (8) (M) Mature / Stable		
REQ-GEN (9) (E) De-coupled		
REQ-GEN (10) (M) Evolutionary		

REQ-GEN (11) (E) Independent		
REQ-GEN (12) (M) Certifiable		
REQ-GEN (13) (E) Compatible		
REQ-GEN (14) (M) Interoperable		
REQ-GEN (15) (E) Scalable		
REQ-GEN (16) (L) Secure		
REQ-GEN (17) (E) Reliable		
REQ-GEN (18) (E) Interface robustness		
REQ-GEN (19) (E) Simple trace and logging		
REQ-GEN (20) (M) 1:1 Relation between Event MO Instances and Inventory MO Instances		
REQ-GEN (21) (M) "MO Instance" Attribute Information Structure for EMS ← → NMS Event Interface		
REQ-GEN (22) (M) M : N Connectivity		

NGCOR Requirement	3GPP Solution Compliance	Comments
REQ-FM (1) X.733 Event/Alarm Attributes	PC	- NGCOR REQ-FM (1) Event Type shall follow ITU-T M.3703, whereas TS 32.111-1 Event Type is compliant to ITU-T X.733 NGCOR REQ-FM (1) Probable Cause shall follow ITU-T M.3703, whereas TS 32.111-1 has no requirement with regard to Probable Cause values and TS 32.11-2 follows ITU-T Recommendation M.3100 [11], ITU-T

		Recommendation X.721 [3], ITU T Recommendation X.733 [2], and ITU-T Recommendation X.736 [15].
REQ-FM (2) Event/Alarm Transport	C	
REQ-FM (3) Clear – Event/Alarm Transport	C	
REQ-FM (4) Unambiguous ID	C	
REQ-FM (5) Event/Alarm Query	C	
REQ-FM (6) Heartbeat	C	
REQ-FM (7) Supplementary Information contained within alarm	C	
REQ-FM (8) Co-operative alarm acknowledgement (OPTIONAL)	C	
REQ-FM (9) Reliable Event/Alarm Communication (supported by EMS)	C	
REQ-FM (10) Configurable EMS Heartbeat Message	C	
REQ-FM (11) Alarm Suppression	C	
REQ-FM (12) Summary Alarms	C	
REQ-FM (13) Re-Synchronization	C	

7.2 Compliance Details

REQ-FM (1)

The event/alarm must contain structured information according to the X.733 specification

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements section

4.1.1 Fault detection

For each fault, the fault detection process shall supply the following information:

- The device / resource / file / functionality / smallest replaceable unit as follows:

    - for hardware faults, the smallest replaceable unit that is faulty;

    - for software faults, the affected software component, e.g. corrupted file(s) or databases or software code;

    - for functional faults, the affected functionality;

    - for faults caused by overload, information on the reason for the overload;

    - for all the above faults, wherever applicable, an indication of the physical and logical resources that are affected by the fault if applicable, a description of the loss of capability of the affected resource.

- the type of the fault (communication, environmental, equipment, processing error, QoS) according to ITU-T Recommendation X.733 [9];

- the severity of the fault (indeterminate, warning, minor, major, critical), as defined in ITU-T Recommendation X.733 [9];

- the probable cause of the fault;

- the time at which the fault was detected in the faulty network entity;

- the nature of the fault, e.g. ADAC or ADMC;

- any other information that helps understanding the cause and the location of the abnormal situation (system/implementation specific).

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Partially Compliant

Comments/Questions/Open Issues

None

REQ-FM (2)

It must be possible to send (Server) [and receive/listen to (Client) event/alarms]

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements 4.1.2   Generation of alarms, 5.2.2 Real-time forwarding of event reports

    4.1.2   Generation of alarms

    For each detected fault, appropriate alarms shall be generated by the faulty network entity, regardless of whether it is an ADAC or an ADMC fault. Such alarms shall contain all the information provided by the fault detection process as described in clause 4.1.1.

5.2.2 Real-time forwarding of event reports

If the Itf-N is in normal operation (the NM connection to the subordinate entities is up), alarm reports are forwarded in real-time to the NM via appropriate filtering located in the subordinate entity…

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (3)

It must be possible to send [and receive/listen to] "clear" - event/alarm events

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements

    5.2.3 Alarm clearing

    On the Itf-N, alarm reports containing the value "cleared" of the parameter perceivedSeverity are used to clear the alarms.

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (4)

It must be possible to correlate between clear–event/alarm and the original event/alarm, by using an unambiguous ID.

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements

5.2.3 Alarm clearing

On the Itf-N, alarm reports containing the value "cleared" of the parameter perceivedSeverity are used to clear the alarms. The correlation between the clear alarm and the related active alarms is performed by means of unambiguous identifiers.

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (5)

It must be possible for the client (NMS) to query all active event/alarms.

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements

5.3   Retrieval of alarm information

The retrieval of alarm information comprises two aspects:

- Retrieval of current information:

    This mechanism shall ensure data consistency about the current alarm information between the NM and its subordinate entities and is achieved by means of a so-called synchronization ("alignment") procedure, triggered by the NM. The synchronization is required after every start-up of the Itf-N, nevertheless the NM may trigger it at any time.

5.3.1 Retrieval of current alarm information on NM request

The present document defines a flexible, generic synchronization procedure, which fulfils the following requirements:

…

- The procedure shall allow the NM to specify filter criteria in the alignment request

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (6)

The interface has to support a heartbeat capability which allows EMS to send heartbeats (configurable) and NMS to receive/listen to heartbeats.

3GPP Stage-1 reference

- TS 32.351: Communication Surveillance (CS) Integration Reference Point (IRP); Requirements

4.2.1.3   Emission of CS notifications

This feature allows the managed system to send CS notifications to the NM.

Managed system will emit CS notifications to NM according to the specified frequency.

3GPP Solution reference/gap

- TS 32.352 Communication Surveillance (CS) Integration Reference Point (IRP); Information Service (IS)

- TS 32.356 Communication Surveillance (CS) Integration Reference Point (IRP); Solution Set (SS) definitions

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (7)

The interface has to provide all information required for correlation.

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements

4.1.1 Fault detection

…

For each fault, the fault detection process shall supply the following information:

…

any other information that helps understanding the cause and the location of the abnormal situation (system/implementation specific).

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (8)

The interface shall support a co-operative alarm-acknowledgement function as described in 3GPP TS 32.111-1 (Optional feature).

3GPP Stage-1 reference

- TS 32.111-1: Fault Management; Part 1: 3G fault management requirements

5.4   Co-operative alarm acknowledgement on the Itf-N

The co-operative alarm acknowledgement on Itf-N shall fulfil the following requirements:

- Acknowledgement messages may be sent in both directions between EMs and NM, containing the following information:

- Correlation information to the alarm just acknowledged.

- Acknowledgement history data, including the current alarm state (active | cleared), the time of alarm acknowledgement and, as configurable information, the management system (EM | NM) and the operator in charge of acknowledgement (the parameter operator name or, in case of auto-acknowledgement, a generic system name).

- Acknowledgement notifications sent to NM shall be filtered with the same criteria applied to the alarms.

- Taking into account the acknowledgement functionality, the above described synchronization procedure for retrieval of current alarm information on NM request may be extended. Additionally to the requirements defined in clause 5.3.1, this extended synchronization procedure relates not only to the active, but also to the "cleared and not acknowledged" alarms, which have still to be managed by the EM.

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

Comments/Questions/Open Issues

None

REQ-FM (9)

Reliable Event/Alarm Communication (supported by EMS)

3GPP Stage-1 reference

- TS 32.111-1: 3G fault management requirements [1] (Section 5.3 Retrieval of alarm information)

- TS 32.351 Communication Surveillance (CS) IRP; Requirements [7]

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

- TS 32.352 Communication Surveillance (CS) IRP; Information Service (IS) [8]

- TS 32.356 Communication Surveillance (CS) IRP; Solution Set (SS) definitions [9]

3GPP Solution Compliance/Proposal

- Compliant

- Requires Implementation of 3GPP Alarm IRP [1]/[2]/[3] and 3GPP CS IRP [7]/[8]/[9] (as documented in NGCOR Fault Management Solution Profile [10])

Comments/Questions/Open Issues

None

REQ-FM (10)

Configurable EMS Heartbeat Message

3GPP Stage-1 reference

- TS 32.351 Communication Surveillance (CS) IRP; Requirements [4] (Section 4 Communication Surveillance (CS) requirements)

3GPP Solution reference/gap

- TS 32.352 Communication Surveillance (CS) IRP; Information Service (IS) [8]

- TS 32.356 Communication Surveillance (CS) IRP; Solution Set (SS) definitions [9]

3GPP Solution Compliance/Proposal

- Compliant

- Requires Implementation of 3GPP CS IRP [7]/[8]/[9] (as documented in NGCOR Fault Management Solution Profile [10])

Comments/Questions/Open Issues

None

REQ-FM (11)

Alarm Suppression

3GPP Stage-1 reference

- TS 32.111-1: 3G fault management requirements [1] (Section 4.1.4 Alarm forwarding and filtering)

- TS 32.121 Advanced Alarm Management (AAM) IRP: Requirements [4] (Section 4.2 General Requirements for AAM on Itf-N)

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

- TS 32.122 Advanced Alarm Management (AAM) IRP: Information Service (IS) [5]

- TS 32.126 Advanced Alarm Management (AAM) IRP; Solution Set (SS) definitions [6]

3GPP Solution Compliance/Proposal

- Compliant

- Requires Implementation of 3GPP Alarm IRP [1]/[2]/[3] and 3GPP AAM IRP [4]/[5]/[6] (as documented in NGCOR Fault Management Solution Profile [10])

Comments/Questions/Open Issues

None

REQ-FM (12)

Summary Alarms

3GPP Stage-1 reference

- TS 32.121 Advanced Alarm Management (AAM) IRP: Requirements [4] (Section 4.2 General Requirements for AAM on Itf-N)

3GPP Solution reference/gap

- TS 32.122 Advanced Alarm Management (AAM) IRP: Information Service (IS) [5]

- TS 32.126 Advanced Alarm Management (AAM) IRP; Solution Set (SS) definitions [6]

3GPP Solution Compliance/Proposal

- Compliant

- Requires Implementation of 3GPP Alarm IRP [1]/[2]/[3] and 3GPP AAM IRP [4]/[5]/[6] (as documented in NGCOR Fault Management Solution Profile [10])

Comments/Questions/Open Issues

None

REQ-FM (13)

Alarm Suppression

3GPP Stage-1 reference

- TS 32.111-1: 3G fault management requirements [1] (Section 5.3 Retrieval of alarm information)

3GPP Solution reference/gap

- TS 32.111-2 Alarm IRP: Information Service (IS) [2]

- TS 32.111-6 Alarm IRP: Solution Set (SS) definitions [3]

3GPP Solution Compliance/Proposal

- Compliant

- Compliant / Requires Implementation of 3GPP Alarm IRP [1]/[2]/[3] (as documented in NGCOR Fault Management Solution Profile [10])

Comments/Questions/Open Issues

None

REQ-GEN/FM (#)

Req heading txt (if applicable/available)

3GPP Stage-1 reference/gap

- Reference xyz

3GPP Solution reference/gap

- Solution reference xyz

- Gap description (if applicable)

3GPP Solution Compliance/Proposal

- Compliant statement

- Requires Implementation of identify applicable 3GPP specifications (or portions of it)

Comments/Questions/Open Issues

None or identify Comments/Questions/Open Issues

8 Gap Analysis Requirements for Inventory Management (InvM)

This section provides the gap analysis between NGMN NCGOR Inventory Management requirements and 3GPP specifications, as well as indicating available 3GPP solutions on this functional area (additional comments and questions are provided as appropriate).

8.1 Compliance Summary

NGCOR Requirement	3GPP Solution Compliance	Comments
REQ-InvM (1)		
REQ-InvM (2)		
REQ-InvM (3)		
REQ-InvM (4)		
REQ-InvM (5)		
REQ-InvM (6)		
REQ-InvM (7)		
REQ-InvM (8)		
REQ-InvM (9)		
REQ-InvM (10)		
REQ-InvM (11)		
REQ-InvM (12)		
REQ-InvM (13)		
REQ-InvM (14)		
REQ-InvM (15)		
REQ-InvM (16)		
REQ-InvM (17)		
REQ-InvM (18)		
REQ-InvM (19)		
REQ-InvM (20)		
REQ-InvM (21)		
REQ-InvM (22)		
REQ-InvM (23)		
REQ-InvM (24)		
REQ-InvM (25)		
REQ-InvM (26)		
REQ-InvM (27)		
REQ-InvM (28)		
REQ-InvM (29)		
REQ-InvM (30)		

REQ-InvM (31)		
REQ-InvM (32)		
REQ-InvM (33)		
REQ-InvM (34)		3GPP
REQ-InvM (35)		
REQ-InvM (36)		
REQ-InvM (37)		
REQ-InvM (38)		
REQ-InvM (39)		
REQ-InvM (40)		
REQ-InvM (41)		
REQ-InvM (42)		
REQ-InvM (43)		
REQ-InvM (44)		
REQ-InvM (45)		
REQ-InvM (46)		
REQ-InvM (47)		
REQ-InvM (48)		
REQ-InvM (49)		
REQ-InvM (50)		
REQ-InvM (51)		
REQ-InvM (52)		
REQ-InvM (53)		
REQ-InvM (54)		
REQ-InvM (55)		
REQ-InvM (56)		
REQ-InvM (57)		
REQ-InvM (58)		
REQ-InvM (59)		
REQ-InvM (60)		
REQ-InvM (61)		
REQ-InvM (62)		
REQ-InvM (63)		
REQ-InvM (64)		
REQ-InvM (65)		
REQ-InvM (66)		
REQ-InvM (67)		
REQ-InvM (68)		
REQ-InvM (69)		

8.2 Compliance Details

REQ-InvM (#)

Req heading txt (if applicable/available)

3GPP Stage-1 reference/gap

- Reference xyz

3GPP Solution reference/gap

- Solution reference xyz

- Gap description (if applicable)

3GPP Solution Compliance/Proposal

- Compliant statement

- Requires Implementation of identify applicable 3GPP specifications (or portions of it)

Comments/Questions/Open Issues

None or identify Comments/Questions/Open Issues

Annex A:
Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2012-08	SA5#84				Initial Draft Skeleton	---	0.0.0
2013-04	SA5#88				Updates re FM	0.0.0	0.1.0
2013-05	Post#88				Updates post SA5#88	0.1.0	0.2.0
2013-06	SA5#89				Updates according to agreed contributions (S5-131073, S5-131074)	0.2.0	0.3.0