

ETSI TS 128 675 V13.0.0 (2016-01)



**Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Home enhanced Node B (HeNB)
Subsystem (HeNS) Network Resource Model (NRM)
Integration Reference Point (IRP);
Information Service (IS)
(3GPP TS 28.675 version 13.0.0 Release 13)**



Reference

RTS/TSGS-0528675vd00

Keywords

LTE,UMTS

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2016.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	4
Introduction	4
1 Scope	5
2 References	5
3 Definitions and abbreviations.....	6
3.1 Definitions	6
3.2 Abbreviations	6
4 Model	7
4.1 Imported information entities and local labels	7
4.2 Class diagram	8
4.2.1 Relationships.....	8
4.2.2 Inheritance	9
4.3 Class definitions	9
4.3.1 HeNBGWFunction	9
4.3.1.1 Definition	9
4.3.1.2 Attributes.....	10
4.3.1.3 Notifications.....	10
4.3.2 HeMSFunction.....	10
4.3.2.1 Definition	10
4.3.2.2 Attributes.....	10
4.3.2.3 Notifications.....	10
4.3.3 HeNBProfile	10
4.3.3.1 Definition	10
4.3.3.2 Attributes.....	10
4.3.3.3 Notifications.....	10
4.3.4 HeNB	11
4.3.4.1 Definition	11
4.3.4.2 Attributes.....	11
4.3.4.3 Notifications.....	11
4.4 Attribute definitions	11
4.4.1 Attribute Properties.....	11
4.4.2 Constraints	13
4.5 Common Notifications	13
4.5.1 Alarm notifications.....	13
4.5.2 Configuration notifications	14
Annex A (informative): Change history	15
History	16

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

The present document is part of a TS-family covering the 3rd Generation Partnership Project Technical Specification Group Services and System Aspects, Telecommunication Management; as identified below:

- 28.674: Telecommunication management; Home eNode B Subsystem (HeNS) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements
- 28.675.: Telecommunication management; Home eNode B Subsystem (HeNS) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)
- 28.676: Telecommunication management; Home enhanced Node B Subsystem (HeNS) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

1 Scope

The present document specifies the Home enhanced Node B (HeNB) Subsystem (HeNS) Network Resource Model (NRM) IRP that can be communicated between an IRP Agent and an IRP Manager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

In order to access the information defined by this NRM, an IRP IS is needed, such as the Basic CM IRP IS (3GPP TS 32.602 [6]) or the Bulk CM IRP IS (3GPP TS 32.612 [7]). However, which IS that is applicable 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*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".
- [3] 3GPP TS 32.102: "Telecommunication management; Architecture".
- [4] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [5] 3GPP TS 28.622: "Telecommunication management;; Generic Network Resource Model (NRMs) Integration Reference Point (IRP):Information Service' (IS)".
- [6] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic Configuration Management Integration Reference Point (IRP): Information Service (IS)".
- [7] 3GPP TS 32.612: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Information Service (IS)".
- [8] 3GPP TS 28.702: "Telecommunication management; Core Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)'
- [9] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA), Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; stage 2"
- [10] 3GPP TS 32.593: 'Home eNode B (HeNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Procedure flows for Type 1 Interface HeNB to HeNB Management System (HeMS)'
- [11] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects'
- [12] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)".

- [13] 3GPP TS 28.708: 'Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)'.
- [14] 3GPP TS 28.672: "Telecommunication management; Home Node B Subsystem (HNS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".
- [15] 3GPP TS 28.652: 'UTRAN Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)'.
- [16] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)".
- [17] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service (IS)".
- [18] TR-196, 'Femto Access Point Device Data Model', Broadband Forum, 2009, <http://broadband-forum.org/technical/download/TR-196.pdf>.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions and abbreviations apply. For definitions and abbreviations not found here, please refer to 3GPP TS 32.101 [2], 3GPP TS 32.102 [3] and 3GPP TS 32.600 [5].

Association: See definition in TS 28.622 [6].

Management Information Model (MIM): also referred to as NRM - see the definition below.

Network Resource Model (NRM): See definition in TS 28.622 [6].

3.2 Abbreviations

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

GW	Gateway
HeNB	Home enhanced Node B
HeNS	Home enhanced Node B Subsystem
IOCs	Information Object Classes

4 Model

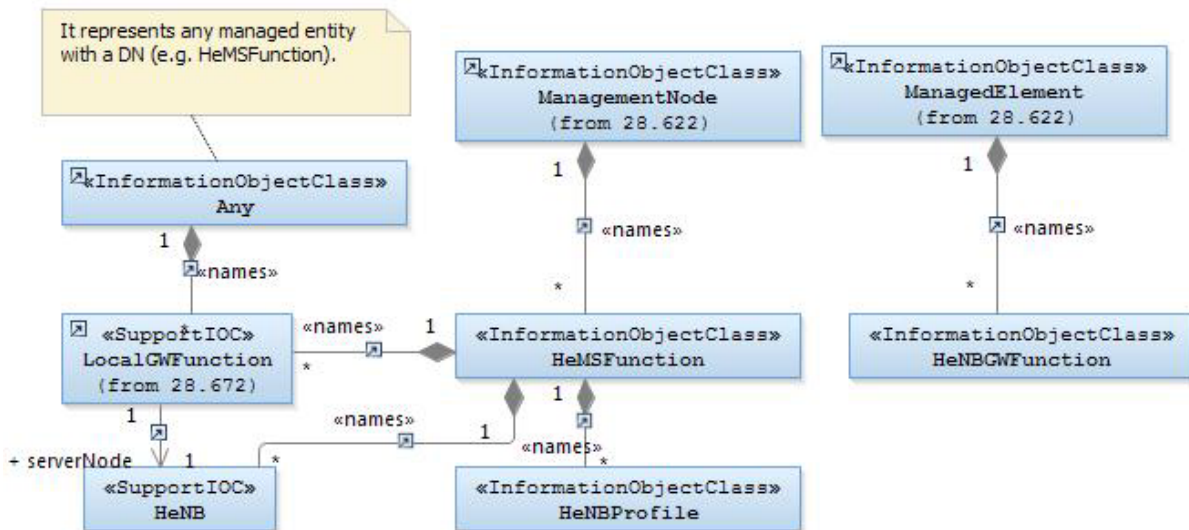
4.1 Imported information entities and local labels

Label reference	Local label
3GPP TS 28.622 [5], IOC, ManagedElement	ManagedElement
3GPP TS 28.622 [5], IOC, ManagedFunction	ManagedFunction
3GPP TS 28.622 [5], IOC, MeContext	MeContext
3GPP TS 28.622 [5], IOC, SubNetwork	SubNetwork
3GPP TS 28.622 [5], IOC, Top	Top
3GPP TS 28.622 [5], IOC, VsDataContainer	VsDataContainer
3GPP TS 28.622 [5], IOC, ManagementNode	ManagementNode
3GPP TS 28.708 [13], IOC, EP_RP_EPS	EP_RP_EPS
3GPP TS 28.672 [14], IOC, LocalGWFunction	LocalGWFunction

4.2 Class diagram

4.2.1 Relationships

This clause depicts the set of IOCs that encapsulate information relevant for this service. This clause provides the overview of all information object classes in UML. Subsequent clauses provide more detailed specification of various aspects of these information object classes.



NOTE 1: The listed cardinality numbers, in particular the use of cardinality number zero, do not represent transient states. The transient state is considered an inherent property of all IOC instances and therefore there is no need to represent them by individual IOC cardinality numbers.

Figure 4.2.1-1 HeNS NRM Containment/Naming

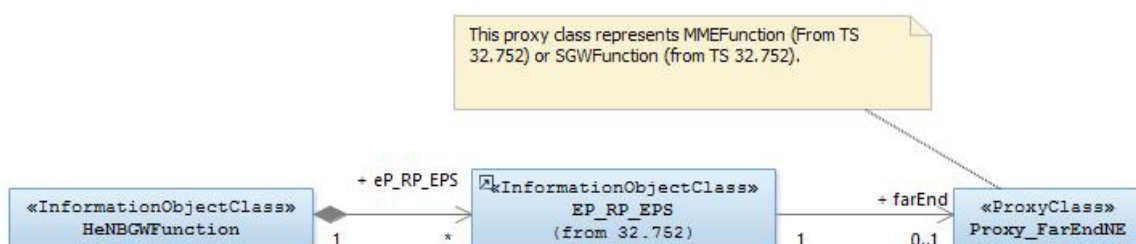
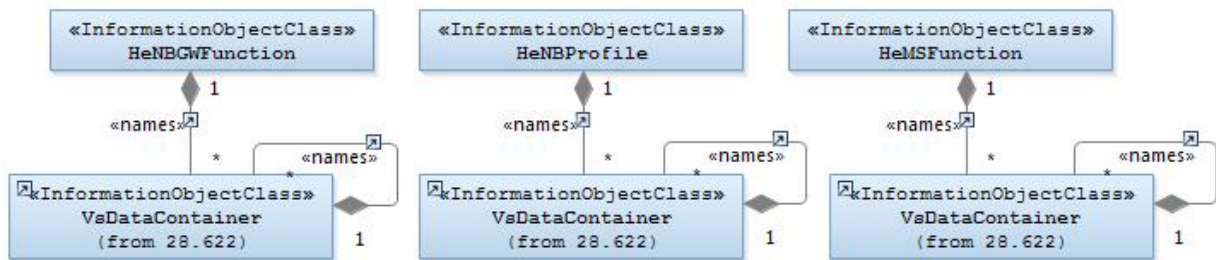


Figure 4.2.1-2 HeNS NRM Containment/Naming



NOTE 1: The listed cardinality numbers, in particular the use of cardinality number zero, do not represent transient states. The transient state is considered an inherent property of all IOC instances and therefore there is no need to represent them by individual IOC cardinality numbers.

NOTE 2: Each instance of the VsDataContainer shall only be contained under one IOC. The VsDataContainer can be contained under IOCs defined in other NRMs.

Figure 4.2.1-3: VsDataContainer Containment/Naming

The VsDataContainer is only used for the Bulk CM IRP.

Each IOC is identified with a Distinguished Name (DN) according to 3GPP TS 32.300 [11] that expresses its containment

4.2.2 Inheritance

This clause depicts the inheritance relationships that exist between IOCs.

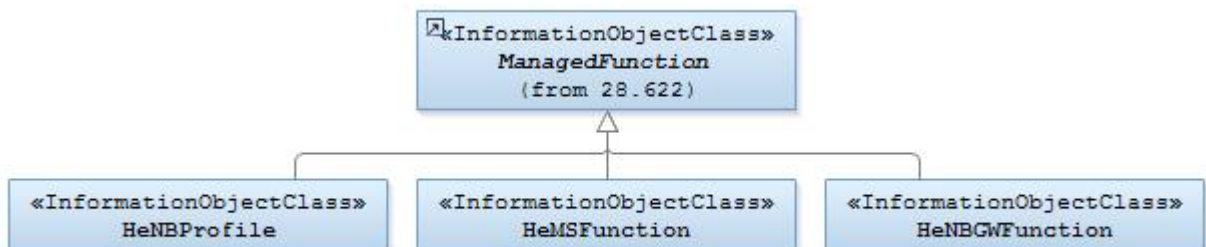


Figure 4.2.2-1: HeNS NRM Inheritance Hierarchy

4.3 Class definitions

4.3.1 HeNBGWFunction

4.3.1.1 Definition

This IOC represents HeNB GW functionality. For more information about the HeNB GW, see 3GPP TS 36.300[9]

4.3.1.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
henbGwId	M	M	-	-	M
iPConfigInfo	M	M	-	-	M
maxNbrHeNBRegistered	M	M	-	-	M
maxPacketCapability	M	M	-	-	M

4.3.1.3 Notifications

The common notifications defined in clause 4.5 are valid for this class, without exceptions or additions.

4.3.2 HeMSFunction

4.3.2.1 Definition

This IOC represents HeMS functionality. For more information about HeMS, see 3GPP TS 32.593[10].

4.3.2.2 Attributes

None.

4.3.2.3 Notifications

There are no Notifications defined.

4.3.3 HeNBProfile

4.3.3.1 Definition

The `HeNBProfile` is a representation of information that a) identifies a specific set of HeNB devices and b) the related configuration parameters (and their values) that are required to be configured in those identified HeNB devices during HeNB registration procedure [10].

It contains `userLabel`, an attribute inherited from `ManagedFunction`. This is a user friendly label assigned by operator. Examples can be 'VIP configuration', 'Gold Tier configuration', 'device vendor XYZ software version 3.4', 'camel', etc.

4.3.3.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
configuration	M	M	--	-	M
criterion	O	M	--	-	M

4.3.3.3 Notifications

There are no Notifications defined.

4.3.4 HeNB

4.3.4.1 Definition

This class represents HeNB functionality. For more information about the HeNB, see 3GPP TS 36.300 [9].

The Home eNodeB, represented by the <<SupportIOC>> HeNB, has registered itself with one node represented by HeMSFunction.

4.3.4.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifiable
id	M	-	-	-	M

4.3.4.3 Notifications

The common notifications defined in clause 4.5 are not valid for this class. The set of notifications defined in the following table is valid.

Name	Qualifier	Notes
notifyAckStateChanged	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyChangedAlarm	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyClearedAlarm	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyNewAlarm	See Alarm IRP (3GPP TS 32.111-2 [12])	

4.4 Attribute definitions

4.4.1 Attribute Properties

This table defines the attributes that are present in several Information Object Classes (IOCs) of the present document.

Attribute Name	Documentation and Allowed Values	Properties
id	<p>An attribute whose "name+value" can be used as an RDN when naming an instance of the IOC.</p> <p>This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.</p> <p>allowedValues: format of allowed values to be conformant with TS 32.300[11]</p>	<p>type: String multiplicity:1 isOrdered: False isUnique: True defaultValue:None</p> <p>isNullable: False</p>

henbGwId	<p>Unique HeNB GW ID. Ref. 3GPP TS 36.300 [9] specifies that HeNB GW acts as a concentrated node to the existing EPC network using existing S1 interface.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>
ipConfigInfo	<p>The IP address, subnet mask, default gateway for HeNB GW.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>
maxNbrHeNBRegistered	<p>Maximum number of registered HeNB means maximum number of HeNB allowed to be registered.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>
maxPacketCapability	<p>The HeNB GW's ability of forwarding packets, such as maximum number of forwarded packets per second.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>
farEndNeIpAddress	<p>The IP address(s) of the far end network entity to which the reference point is related. This is an IPv4 or an IPv6 address.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>
configuration	<p>It is a location of a data set. The data set is a set of HeNB attributes (with values) needed to be loaded into the HeNB.</p> <p>The data set does not contain all configuration data needed for a device to operate. Some configuration parameters are autonomously and dynamically calculated by the serving HeMS.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>

<p>crit_{erion}</p>	<p>It is a crit_{erion} that determines if a HeNB should or should not be loaded with a particular configuration.</p> <p>The syntax and semantics of crit_{erion} is vendor-specific.</p> <p>Example 1:</p> <p>The syntax and semantics can be 'If the HeNB ID range is between ABC and DEF then APPLY the related configuration'.</p> <p>Example 2:</p> <p>The syntax is a list of strings where each string is a 'attribute == value' pair. An attribute represents a TR-196 parameter. Its value is the corresponding attribute value.</p> <p>The semantics is 'if all pairs found in crit_{erion} are also found in the home devices, then the determination is positive in that the home device should be loaded with information of the data set identified by configuration; else not'.</p> <p>allowedValues: see [18]</p>	<p>type: see [18] multiplicity: see [18] isOrdered: see [18] isUnique: see [18] defaultValue: see [18] isNullable: see [18]</p>
-----------------------------	---	--

4.4.2 Constraints

None.

4.5 Common Notifications

4.5.1 Alarm notifications

This subclause presents a list of notifications, defined in [16], that IRPManager can receive. The notification header attribute objectClass/objectInstance, defined in [17], would capture the DN of an instance of an IOC defined in this IRP specification.

Name	Qualifier	Notes
notifyAckStateChanged	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyAttributeValueChange	O	
notifyChangedAlarm	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyClearedAlarm	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyNewAlarm	See Alarm IRP (3GPP TS 32.111-2 [12])	
notifyObjectCreation	O	

Name	Qualifier	Notes
notifyObjectDeletion	O	
notifyComments	See Alarm IRP (3GPP TS 32.111-2 [12])	

4.5.2 Configuration notifications

None.

Annex A (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
2014-06	SA#64	SP-140360	001	-	remove the feature support statements	F	11.0.0	11.1.0
2014-10	-	-	-	-	Update to Rel-12 version (MCC)		11.1.0	12.0.0
2016-01	-	-	-	-	Update to Rel-13 version (MCC)		12.0.0	13.0.0

History

Document history		
V13.0.0	January 2016	Publication