



**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Evolved Packet Core (EPC)
and non-3GPP access interworking system Network Resource
Model (NRM) Integration Reference Point (IRP);
Information Service (IS)
(3GPP TS 28.612 version 18.0.0 Release 18)**



Reference

RTS/TSGS-0528612vi00

Keywords

GSM,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 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<https://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 prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

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

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

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>

If you find a security vulnerability in the present document, please report it through our
Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

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.

© ETSI 2024.
All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are 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 Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, 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.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

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. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <https://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
Legal Notice	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	7
4.2.1 Relationships.....	7
4.2.2 Inheritance	8
4.3 Class definitions	8
4.3.1 Link_3GPPAAAServer_PGW.....	8
4.3.1.1 Definition	8
4.3.1.2 Attributes.....	8
4.3.1.3 Attribute constraints	8
4.3.1.4 Notifications.....	8
4.3.2 Link_3GPPAAAServer_HSS.....	8
4.3.2.1 Definition	8
4.3.2.2 Attributes.....	8
4.3.2.3 Attribute constraints	9
4.3.2.4 Notifications.....	9
4.3.3 Link_3GPPAAAProxy_3GPPAAAServer	9
4.3.3.1 Definition	9
4.3.3.2 Attributes.....	9
4.3.3.3 Attribute constraints	9
4.3.3.4 Notifications.....	9
4.3.4 3GPPAAAProxyFunction.....	9
4.3.4.1 Definition	9
4.3.4.2 Attributes.....	9
4.3.4.3 Attribute constraints	9
4.3.4.4 Notifications.....	9
4.3.5 3GPPAAAServerFunction	9
4.3.5.1 Definition	9
4.3.5.2 Attributes.....	9
4.3.5.3 Attribute constraints	10
4.3.5.4 Notifications.....	10
4.4 Attribute definitions	10
4.4.1 Attribute properties	10
4.4.2 Constraints	10
4.5 Common notifications	10
4.5.1 Alarm notifications	10
4.5.2 Configuration notifications	10
Annex A (informative): Change history	11
History	12

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:

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:

- TS 28.611: "Evolved Packet Core (EPC) and non-3GPP access interworking system Network Resource Model (NRM) Integration Reference Point (IRP); Requirements";
- TS 28.612: "Evolved Packet Core (EPC) and non-3GPP access interworking system Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)" ;**
- TS 28.616: " Evolved Packet Core (EPC) and non-3GPP access interworking system Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions".

The interface Itf-N, defined in 3GPP TS 32.102 [3], is built up by a number of Integration Reference Points (IRPs) and a related Name Convention, which realize the functional capabilities over this interface. The basic structure of the IRPs is defined in 3GPP TS 32.101 [2], 3GPP TS 32.102 [3] and 3GPP TS 32.103 [13].

1 Scope

The present document is an Integration Reference Point (IRP) named "Evolved Packet Core (EPC) and non-3GPP access interworking system Network resource Model (NRM) IRP; Information Service (IS)", through which an 'IRPagent' (typically an Element Manager or Network Element) can communicate configuration management information to one or several 'IRPManagers' (typically Network Managers) concerning interworking network resources.

The present document specifies the semantics and behaviour of Information Object Class (IOC) attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

It reuses relevant parts of the generic NRM in 3GPP TS 28.622 [6], either by direct reuse or sub-classing, and in addition to that defines specific IOCs in EPC and non-3GPP access interworking systems.

In order to access the information defined by this NRM, an interface IRP is needed, such as the Basic CM IRP IS (3GPP TS 32.602 [7]) or the Bulk CM IRP IS (3GPP TS 32.612 [8]). However, which interface IRP 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 TS 25.905: "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 23.402: "Architecture enhancements for non-3GPP accesses".
- [6] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".
- [7] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic Configuration Management Integration Reference Point (IRP); Information Service (IS)".
- [8] 3GPP TS 32.612: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Information Service (IS)".
- [9] Void.
- [10] 3GPP TS 28.708: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".
- [11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP); Information Service (IS)".
- [12] 3GPP TS 28.705: "Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

- [13] 3GPP TS 32.103: "Telecommunication management; Integration Reference Point (IRP) overview and usage guide".
- [14] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".
- [15] 3GPP TS 32.662: "Telecommunication management; Configuration Management (CM); Kernel CM Information Service (IS)".
- [16] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service (IS)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1], TS 32.101 [2], TS 32.102 [3], TS 32.150 [14], TS 28.622 [6], TS 32.600 [4] 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].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] 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].

DN	Distinguished Name
IOC	Information Object Class

4 Model

4.1 Imported information entities and local labels

Label reference	Local label
3GPP TS 28.622 [6], IOC, Link	Link
3GPP TS 28.708 [10], IOC, PGWFunction	PGWFunction
3GPP TS 28.705 [12], IOC, HSSFunction	HSSFunction

4.2 Class diagram

4.2.1 Relationships

This clause depicts the set of classes (e.g. IOCs) encapsulating the information relevant for this IRP. This clause provides an overview of the relationships between relevant classes in UML. Subsequent clauses provide more detailed specification of various aspects of these classes.

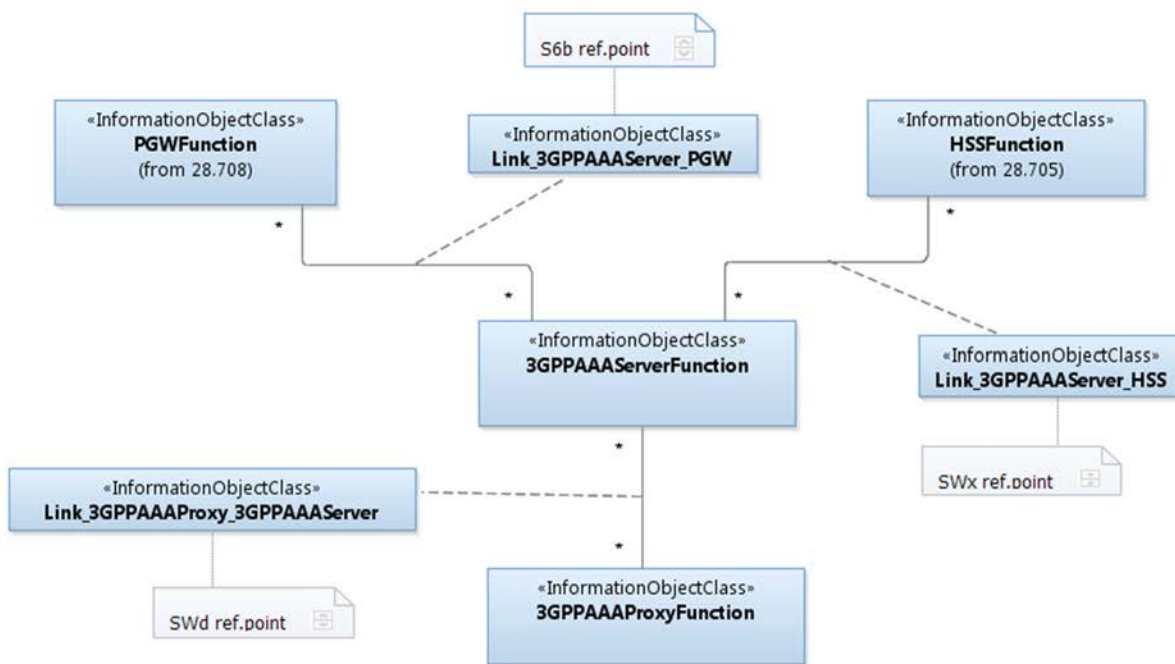


Figure 4.2.1.1 IOC containment and association diagram

4.2.2 Inheritance

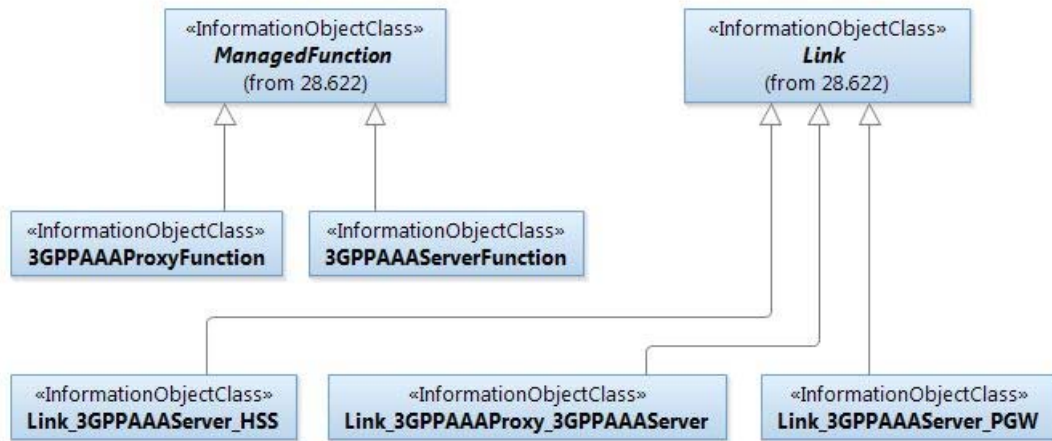


Figure 4.2.2.1: IOC inheritance diagram

4.3 Class definitions

4.3.1 Link_3GPPAAAServer_PGW

4.3.1.1 Definition

This IOC represents the S6b reference point as defined in 3GPP TS 23.402 [5].

4.3.1.2 Attributes

None.

4.3.1.3 Attribute constraints

None.

4.3.1.4 Notifications

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

4.3.2 Link_3GPPAAAServer_HSS

4.3.2.1 Definition

This IOC represents the SWx reference point as defined in 3GPP 23.402 [5].

4.3.2.2 Attributes

None.

4.3.2.3 Attribute constraints

None.

4.3.2.4 Notifications

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

4.3.3 Link_3GPPAAAProxy_3GPPAAAServer

4.3.3.1 Definition

This IOC represents the SWd reference point as defined in 3GPP 23.402 [5].

4.3.3.2 Attributes

None.

4.3.3.3 Attribute constraints

None.

4.3.3.4 Notifications

The common notifications defined in subclause 4.5 are valid without exceptions or additions for this IOC.

4.3.4 3GPPAAAProxyFunction

4.3.4.1 Definition

This IOC represents the 3GPP Access, Authentication and Authorisation (AAA) Proxy functionality. For more information about the 3GPP AAA Proxy, see 3GPP TS 23.402 [5].

4.3.4.2 Attributes

None.

4.3.4.3 Attribute constraints

None.

4.3.4.4 Notifications

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

4.3.5 3GPPAAAServerFunction

4.3.5.1 Definition

This IOC represents the 3GPP Access, Authentication and Authorisation (AAA) Server functionality. For more information about the 3GPP AAA server, see 3GPP TS 23.402 [5].

4.3.5.2 Attributes

None.

4.3.5.3 Attribute constraints

None.

4.3.5.4 Notifications

The common notifications defined in subclause 4.5 are valid without exceptions or additions for this IOC.

4.4 Attribute definitions

4.4.1 Attribute properties

None.

4.4.2 Constraints

None.

4.5 Common notifications

4.5.1 Alarm notifications

This clause presents a list of notifications, defined in 3GPP TS 32.111-2 [11], that IRPManager can receive. The notification header attribute `objectClass/objectInstance`, defined in 3GPP TS 32.302 [16], would capture the DN of an instance of an IOC defined in this IRP specification.

Name	Qualifier	Notes
<code>notifyAckStateChanged</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	
<code>notifyChangedAlarm</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	
<code>notifyClearedAlarm</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	
<code>notifyNewAlarm</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	
<code>notifyComments</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	
<code>notifyAlarmListRebuilt</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	
<code>notifyPotentialFaultyAlarmList</code>	See Alarm IRP (3GPP TS 32.111-2 [11])	

4.5.2 Configuration notifications

This clause presents a list of notifications, defined in 3GPP TS 32.662 [15], that IRPManager can receive. The notification header attribute `objectClass/objectInstance`, defined in 3GPP TS 32.302 [16], would capture the DN of an instance of an IOC defined in this IRP specification.

Name	Qualifier	Notes
<code>notifyAttributeValueChange</code>	O	
<code>notifyObjectCreation</code>	O	
<code>notifyObjectDeletion</code>	O	

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Feb 2012			--	--	Initial draft	--	0.0.1
Dec 2012					Add IOCs definition	0.0.1	0.1.1
May 2013					Revise the skeleton align with TS 28.622 according to the agreed S5-131062	0.1.1	0.1.2
Jun 2013					Add common notifications according to agreed pCR S5-131065	0.1.2	0.2.0
Aug 2013					Revise the NRM diagram to align with 28- series	0.2.0	0.3.0
Sep 2013	SA#61	SP-130449			Presented for information	0.3.0	1.0.0
Sep 2013	-	-			MCC clean-up	1.0.0	1.0.1
Nov 2013					Align with IS template	1.0.1	1.0.2
Dec 2013	SA#62	SP-130634			Presented for approval	1.0.2	2.0.0
Dec 2013					Version after approval	2.0.0	12.0.0
Sep 2014	SA#65	SP-140614	001	1	Move IOCs from discontinued TS 28.602 - align with TSG SA decision to remove I-WLAN	12.0.0	12.1.0
Dec 2014	SA#66	SP-140798	002	1	Remove feature support statement	12.1.0	12.2.0
2016-01	-	-	-	-	Update to Rel-13 version (MCC)	12.2.0	13.0.0
2017-03	SA#75	-	-	-	Promotion to Release 14 without technical change	13.0.0	14.0.0
2018-12	-	-	-	-	Update to Rel-15 version (MCC)	14.0.0	15.0.0
2020-07	-	-	-	-	Update to Rel-16 version (MCC)	15.0.0	16.0.0
2022-03	-	-	-	-	Update to Rel-17 version (MCC)	16.0.0	17.0.0
2024-04	-	-	-	-	Update to Rel-18 version (MCC)	17.0.0	18.0.0

History

Document history		
V18.0.0	May 2024	Publication