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Technical Specification

Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Integration Reference Point (IRP) Information Service (IS)
template
(3GPP TS 32.157 version 11.3.0 Release 11)

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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.

Contents

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.

Ready for Converged Management

   This specification is part of a set that has been developed for converged management solutions.

1 Scope

The present document contains the template to be used for the production of all Integration Reference Point (IRP) Information Service (IS) specifications for Converged Management.

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 32.101: "Telecommunication management; Principles and high level requirements".

[2]   3GPP TS 32.102: "Telecommunication management; Architecture".

[3]   3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".

[4]   3GPP TS 32.156: "Telecommunication management; Fixed Mobile Convergence (FMC) Model Repertoire

[5]   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 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.150 [3] and the following apply:

IRPAgent: See 3GPP TS 32.150 [3].

IRPManager: See 3GPP TS 32.150 [3].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.150 [3] and the following apply:

IOC   Information Object Class
IRP   Integration Reference Point
IS   Information Service
OMG   Object Management Group
UML   Unified Modelling Language (OMG)

4 Information Service (IS) template

4.1 General

The present document contains the templates to be used for the production of all Integration Reference Point (IRP) Information Service (IS) specifications for Converged Management.

Clause 4.2 is applicable for NRM IRP IS specifications.

Clause 4.3 is applicable for Interface IRP IS specifications.

For the introductory clauses 2 and 3 of all IRP ISs, the text shall be written conforming to the standard 3GPP TS template (i.e. not this template).

The IS template uses qualifiers M, O, CM, CO and C. The semantics of these qualifiers are defined in [4].

The IS template uses type definition as one characteristic to describe class attributes and operation/notification parameters. The valid type definitions that can be used and their semantics are defined in [4].

Usage of fonts shall be according to the following table.

Item	Font
Class names	Courier New
Attribute names	Courier New
Operation names	Courier New
Parameter names	Courier New
Assertion names	Courier New
Notification names	Courier New
Exception names	Courier New
State names	Arial
Matching Information	Courier New
Information Type	Courier New
Legal Values	Courier New
NOTE: These font requirements do not apply to UML diagrams.	

4.2 Template for NRM IRP IS

W1 Scope

The following quoted text is relevant for all NRM IRP ISs. It shall be copied as the first two paragraphs of the NRM IRP IS specification. IRP IS author may add additional paragraph(s) if necessary.

"

The present document specifies the *<<n>> (where <<n>> shall be substituted by the name of the NRM IRP IS concerned such as 'HNS', 'E_UTRAN', 'GERAN')* network resource information that can be communicated between an IRPAgent and an IRPManager 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.

"

W2 References

TBD

W3 Definitions and abbreviations

TBD

W4 Model

W4.1 Imported information entities and local labels

This clause identifies a list of information entities (e.g. information object class, interface, attribute) that have been defined in other specifications and that are imported in the present (target) specification. All imported entities shall be treated as if they are defined locally in the target specification. One usage of import is for inheritance purpose.

Each element of this list is a pair (label reference, local label). The label reference contains the name of the specification where the information entity is defined, the information entity type and its name. The local label contains the name of the information entity that appears in the target specification. The local label can then be used throughout the target specification instead of that which appears in the label reference.

This information is provided in a table. An example of such a table is given here below:

Label reference	Local label
3GPP TS 32.622 [71], information object class, `Top`	`Top`

W4.2 Class diagram

W4.2.1 Relationships

This first set of diagrams represents all classes defined in this IS with all their relationships and all their attributes, including relationships with imported information entities (if any). These diagrams shall contain class cardinalities (for

associations as well as containment relationships) and may also contain role names. These shall be UML compliant class diagrams (see also [4]).

Characteristics (attributes, relationships) of imported information entities need not to be repeated in the diagrams. Allowable classes are specified in [4].

Use this as the first paragraph: "This clause depicts the set of classes (e.g. IOCs) that encapsulates 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."

W4.2.2 Inheritance

This second set of diagrams represents the inheritance hierarchy of all classes defined in this specification. These diagrams do not need to contain the complete inheritance hierarchy but shall at least contain the parent classes of all classes defined in the present document. By default, a class inherits from the class "top".

Characteristics (attributes, relationships) of imported classes need not to be repeated in the diagrams.

> NOTE: *some inheritance relationships presented in clause X.2.2 can be repeated in clause X.2.1 to enhance readability.*

Use "This subclause depicts the inheritance relationships." as the first paragraph.

W4.3   Class definitions

Each class is defined using the following structure.

Inherited items (attributes etc.) shall not be shown, as they are defined in the parent class(es) and thus valid for the subclass.

W4.3.a `InformationObjectClassName`

InformationObjectClassName is the name of the information object class.

The "a" represents a number, starting at 1 and increasing by 1 with each new definition of a class.

W4.3.a.1   Definition

The <definition> clause is written in natural language. The <definition> clause refers to the class itself.

Optionally, information on traceability back to one or more requirements supported by this class can be defined here, in the following form:

Referenced TS	Requirement label	Comment
3GPP TS 32.xyz [xy]	REQ-SM-CON-23	*Optional clarification*
3GPP TS 32.xyz [xy]	REQ-SM-FUN-11	*Optional clarification*

W4.3.a.2   Attributes

The <attributes> clause presents the list of attributes, which are the manageable properties of the class. Each attribute is characterised by some of the attribute properties (see Table 1 of [4]), i.e. supportQualifier, isReadable, isWritable, isInvariant and isNotifyable.

The legal values and their semantics for attribute properties are defined in [4].

This information is provided in a table.

An example below indicates

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
eNodeBId	M	M	-	M	M

Another example below indicates that the attribute `password1` *is not readable, is writable, is not an invariant and no* `notifyAttributeValueChange` *will be emitted when the attribute value is changed.*

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
password1	O	-	M	-	-

Another example below indicates that the attribute `password2` *and* `password1` *(in example above) has same qualifiers for the shown properties except that of isReadable. In the case of password1, the standard specification determines the qualifier to be M, i.e. it is readable. In the case of password2, the standard specification does not make a determination. The vendor would make the determination if the attribute is readable or not readable.*

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
password2	O	O	M	-	-

In case there is one or more attributes related to role (see section 5.2.9 of [4]), the attributes related to role shall be specified at the bottom of the table with a divider "Attribute related to role", as shown in the following example:

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
aTMChannelTerminationPointid	M	M	-	M	M
...					
...					
Attribute related to role					
theATMPathTerminationPoint	M	M	-	-	M
theIubLink	M	M	-	-	M

This clause shall state "None." when there is no attribute to define.

W4.3.a.3   Attribute constraints

The <attribute constraints> clause presents constraints for the attributes, and one use is to present the predicates for conditional qualifiers (CM/CO).

This information is provided in a table. An example of such a table is given here below:

Name	Definition
`pci` CM write qualifier	Centralized PCI assignment (see TS 32.500, ref [15] clause 6.1.6) is supported.
`pciList` CM support qualifier	Distributed PCI assignment (see TS 32.500, ref [15] clause 6.1.6) is supported.
`partOfSectorPower` CM support qualifier	The IOC `SectorEquipmentFunction` is used.
`attributeX` max value	The value of `attributeX` shall be within the specified value range but may never be higher than the value of `attributeY`.

This clause shall state "None." when there is no attribute constraint to define.

W4.3.a.4   Notifications

The < Notifications> clause, for this class, presents one of the following options:

a) *The class defines (and independent from those inherited) the support of a set of notifications that is identical to that defined in clause W.4.5. In such case, use "The common notifications defined in clause W.4.5 are valid for this class, without exceptions or additions." as the lone sentence of this clause.*

b) *The class defines (and independent from those inherited) the support of a set of notifications that is a superset of that defined in clause W.4.5. In such case, use "The common notifications defined in clause W.4.5 are valid*

for this IOC. In addition, the following set of notification is also valid." as the lone paragraph of this clause. Then, define the 'additional' notifications in a table. See clause W.4.5 for the notification table format.

  c) *The class defines (and independent from those inherited) the support of a set of notifications that is not identical to, nor a superset of, that defined in clause W.4.5. In such case, use "The common notifications defined in clause W.4.5 are not valid for this IOC. The set of notifications defined in the following table is valid." as the lone paragraph of this clause. Specify the set of notifications in a table. See clause W.4.5 for the notification table format.*

  d) *The class does not define (and independent from those inherited) the support of any notification. In such case, use "There is no notification defined." as the lone sentence of this clause.*

The notifications identified (i.e. option-a, option-b and option-c above) in this clause are notifications that can be emitted across the Itf-N, where the "object class" and "object instance" parameters of the notification header (see note 2) of these notifications identifies an instance of the class (or its direct or indirect derived class) defined by the encapsulating clause (i.e. clause W4.3.a).

The notifications identified (i.e. option-a and option-b above) in this clause, may originate from implementation object(s) whose identifier may or may not be the same as that carried in the notification parameters "object class" and "object instance". Hence the identification of notifications in this clause does not imply nor identify those notifications as being originated from an instance of the class (or its direct or indirect derived class) defined by the encapsulating clause (i.e. clause W4.3.a).

  NOTE 1: *This clause shall state "This class does not support any notification." (see option-c) when there is no notification defined for this class. (Note that if its parent class has defined some notifications, the implementation of this class is capable of emitting those inherited defined notifications.)*

  NOTE 2: *The notification header is defined in the notification IRP Information service TS 32.302 [5].*

  NOTE 3: *The qualifier of a notification, specified in Notification Table, indicates if an implementation can generate a notification carrying the DN of the subject class. The qualifier of a notification, specified in an Interface IRP, indicates if an implementation of the Interface IRP can generate such notification in general.*

  An IRPManager can receive notification-XYZ that carries DN (the "object class" and "object instance") of class-ABC instance if and only if:

   a) *The class-ABC Notification Table defines the notification-XYZ and*

   b) *The class-ABC instance implementation supports this notification-XYZ and*

   c) *An Interface IRP defines the notification-XYZ and*

   d) *The Interface IRP implementation supports this notification-XYZ.*

W4.4 Attribute definitions

Void.

W4.4.1 Attribute properties

It has a lone paragraph "The following table defines the properties of attributes that are specified in the present document. ".

Each information attribute is defined using the following structure.

Inherited attributes shall not be shown, as they are defined in the parent class(es) and thus valid for this class.

An attribute has properties (see Table 1 of [4]). Some properties of an attribute are defined in W4.3.a.2 (e.g. Support Qualifier). The remaining properties of an attribute (e.g. documentation, default value) are defined here.

The information is provided in a table. In case a) attributes of the same name are specified in more than one class and b) the attributes have different properties, then the attribute names (first column) should be prefixed with the class name followed by a period.

An example is given below:

Attribute Name	Documentation and Allowed Values	Properties
xyzId	It identifies … allowedValues: …	type: Integer multiplicity: … isOrdered: … isUnique: … defaultValue: … isNullable: False
Abc.state	It indicates … allowedValues: "ON": the state is on; "OFF": the state is off.	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
Zyz.state	It indicates … allowedValues: "HIGH": the state is high; "MEDIUM": the state is medium; "LOW": the state is low.	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
abc	It defines… allowedValues: …	type: … multiplicity: … isOrdered: … isUnique: … defaultValue: … isNullable: …

In case there is one or more attributes related to role (see section 5.2.9 of [4]), the attributes related to role shall be specified at the bottom of the table with a divider "Attribute related to role". See example below.

Attribute Name	Documentation and Allowed Values	Properties
abc	It defines… allowedValues: …	type: <<dataType>> multiplicity: … isOrdered: … isUnique: … defaultValue: … isNullable: …
Attribute related to role		
aEnd	It defines… allowedValues: Values to be conformant to TS 32.300 [13] …	type: DN multiplicity: … isOrdered: … isUnique: … defaultValue: … isNullable: False

This clause shall state "None." if there is no attribute to define.

W4.4.2   Constraints

The <constraints> clause indicates whether there are any constraints affecting attributes. Each constraint is defined by a pair (propertyName, propertyDefinition). PropertyDefinitions are expressed in natural language.

An example is given here below:

Name	Definition
inv_TimerConstraints	The `ntfTimeTickTimer` is lower than or equal to `ntfTimeTick`.

This clause shall state "None." if there is no constraint.

W4.5   Common Notifications

This <Common Notifications> clause presents notifications that can be referred to by any class defined in the specification. This information is provided in tables.

Name	Qualifier	Notes
notifyAttributeValueChange	O	Example common notification
notifyObjectCreation	O	Example
notifyObjectDeletion	O	Example

This clause shall state "None." if there are no common notifications.

W4.5.1   Alarm notifications

The following quoted text shall be copied as the only paragraph of this clause.

"This clause presents a list of notifications, defined in [x], that IRPManager can receive. The notification header attribute `objectClass/objectInstance`, defined in [y], shall capture the DN of an instance of a class defined in this specification."

The information is provided in a table. The following is an example.

Name	Qualifier	Notes
notifyNewAlarm	M	--

W4.5.2   Configuration notifications

The following quoted text shall be copied as the only paragraph of this clause.

"This clause presents a list of notifications, defined in [x], that IRPManager can receive. The notification header attribute `objectClass/objectInstance`, defined in [z], shall capture the DN of an instance of a class defined in this specification."

The information is provided in a table. The following is an example.

Name	Qualifier	Notes
notifyAttributeValueChange	O	--
notifyObjectCreation	O	--
notifyObjectDeletion	O	--

4.3 Template for Interface IRP IS

Y1 Scope

TBD

Y2 References

TBD

Y3 Definitions and abbreviations

TBD

Y4 TBD

TBD

Annex A (informative): Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**		**Old**	**New**
2012-08					First draft		--	0.1.0
2012-08					Sent to TSG SA#57 for Information		0.1.0	1.0.0
2012-11					Minor updates agreed at SA5#86		1.0.0	1.1.0
2012-12					Sent to SA#58 for information		1.1.0	2.0.0
2012-12					New version after approval		2.0.0	11.0.0
2013-06	SA#60	SP-130304	001	1	Correct the description of the attribute definition table		11.0.0	11.1.0
2013-09	SA#61	SP-130433	002	1	Correction of ambiguous statements		11.1.0	11.2.0
2013-12	SA#62	SP-130614	003	1	Move instruction to the correct subclause		11.2.0	11.3.0

History

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V11.1.0	July 2013	Publication
V11.2.0	October 2013	Publication
V11.3.0	January 2014	Publication