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Technical Specification

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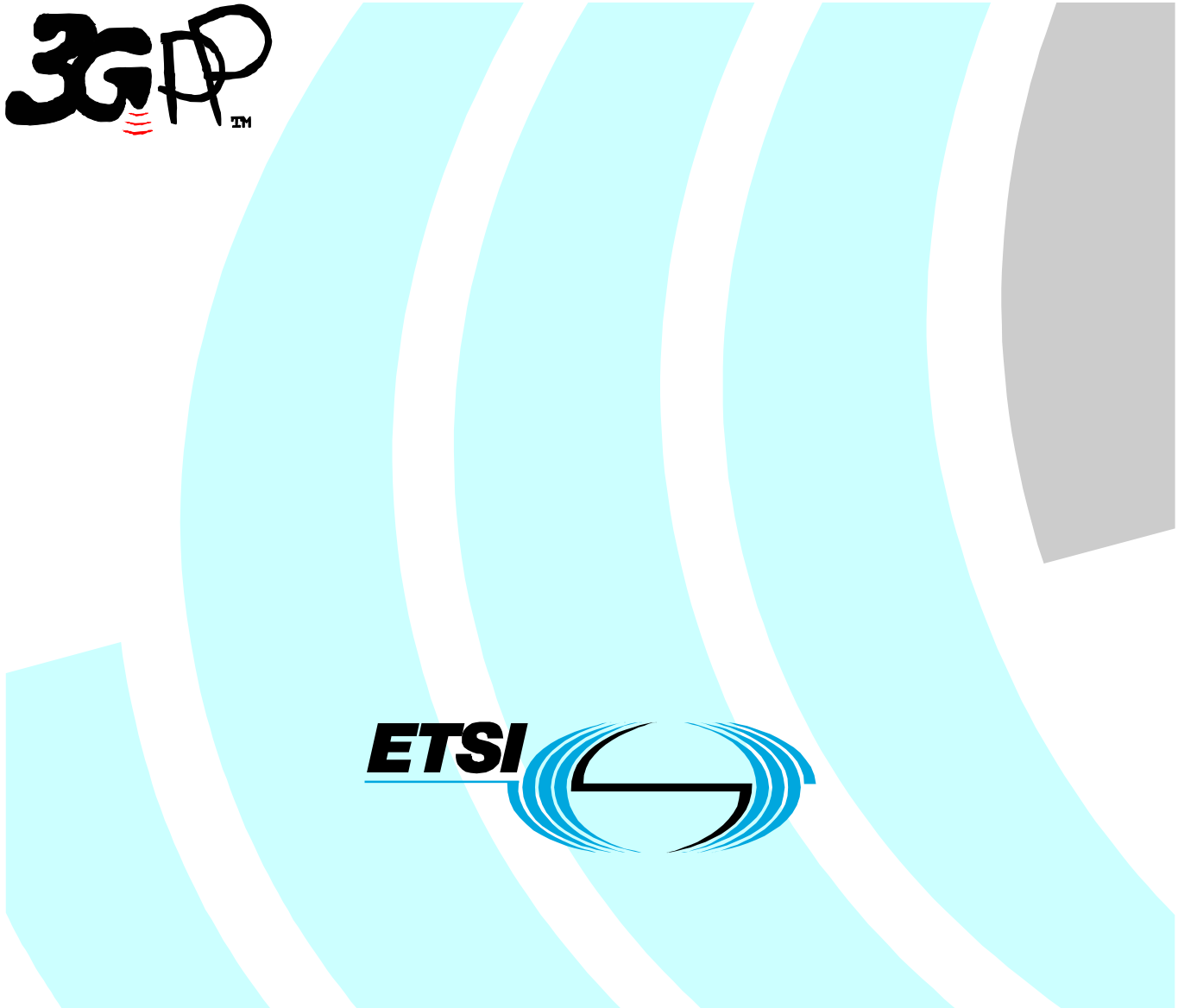
Telecommunication management;
Generic Integration Reference Point (IRP) management;
Information service
(3GPP TS 32.312 version 5.0.1 Release 5)



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Foreword

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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 (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The present document is part of the 32.300-series covering the 3rd Generation Partnership Project: Technical Specification Group Services and System Aspects; Telecommunication Management; Generic Integration Reference Point (IRP) management, as identified below:

32.311: "Requirements";

32.312: "Information Service".

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 Itf-N interface is built up by a number of Integration Reference Points (IRPs) and a related Name Convention, which realise the functional capabilities over this interface. The basic structure of the IRPs is defined in 3GPP TS 32.101 [1] and 3GPP TS 32.102 [2].

All IRPs support a set of generic features. Those features allow to retrieve IRP profile and IRP supported versions. The present document contains the specification of those generic features.

1 Scope

The purpose of the present document is to define a common service supported by all IRPs. The present document is the "Information Service" part. It defines, for the purpose of supporting the common service, the information observable and controlled by management system's client and it also specifies the semantics of the interactions used to carry this information.

With this common service supported by all IRPs, an IRPManager can retrieve the profile of operations and notifications supported by a given IRP supported by an IRPAgent. An IRPManager can also retrieve the different versions supported by an IRP.

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: "3G Telecom Management principles and high level requirements".

[2] 3GPP TS 32.102: "3G Telecom Management Architecture".

[3] 3GPP TS 32.301: "Telecommunication Management; Configuration Management; Notification IRP: Requirements".

[4] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[5] 3GPP TS 32.311: "Telecommunication management; Generic Integration Reference Point (IRP) management; Requirements".

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] and 3GPP TS 32.301-1 [3] and the following apply:

IRPAgent: See 3GPP TS 32.102 [2].

IRPManager: See 3GPP TS 32.102 [2].

IRP document version number string (or "IRPVersion"): See 3GPP TS 32.311 [5].

IRP: See 3GPP TS 32.102 [2].

qualifiers: the meaning of qualifiers for operations, parameters and information attributes (whether they are Mandatory (M), Conditional(C) or Optional (O)) is provided in 3GPP TS 32.102 [2].
Moreover, qualifiers of information attributes, when those information attributes are re-used in other IRP ISs, obey to the following rule: Mandatory and Conditional qualifiers of information attributes shall always be the same in other IRPs ISs, Optional qualifiers of information attributes may be set to either Optional or Mandatory in the other IRP ISs.

3.2 Abbreviations

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

CM	Configuration Management
DN	Distinguished Name
EM	Element Manager
IOC	Information Object Class
IRP	Integration Reference Point
IS	Information Service
ITU-T	International Telecommunication Union Telecommunication standardisation sector
NE	Network Element
NM	Network Manager
NR	Network Resource
NRM	Network Resource Model
OMG	Object Management Group
SS	Solution Set
UML	Unified Modelling Language (OMG)

4 System overview

4.1 System context

Figure 1 and figure 2 identify System contexts for this service in terms of implementations called IRPAgent and IRPManager.

"IRPManager" depicts a process that interacts with IRPAgent for the purpose of receiving network Notifications via this IRP. IRPAgent detects network events. IRPAgent sends IRPManagers notifications carrying the events. Examples of IRPManagers can be a process running supporting network Notification logging device or supporting network Notification viewing devices (such as a local craft terminal) or a process running within a Network Manager (NM) as shown in figure 1 and figure 2. IRPAgent implements and supports this IRP. IRPAgent can run within one Element Manager (EM) with one or more NEs (see figure 1) or run within one NE (see figure 2). In the former case, the interfaces (represented by a thick dotted line) between the EM and the NEs are not subject of this IRP. Whether EM and NE share the same hardware system is not relevant to this IRP either. By observing the interaction across the IRP, one cannot deduce if EM and NE are integrated in a single system or if they run in separate systems.

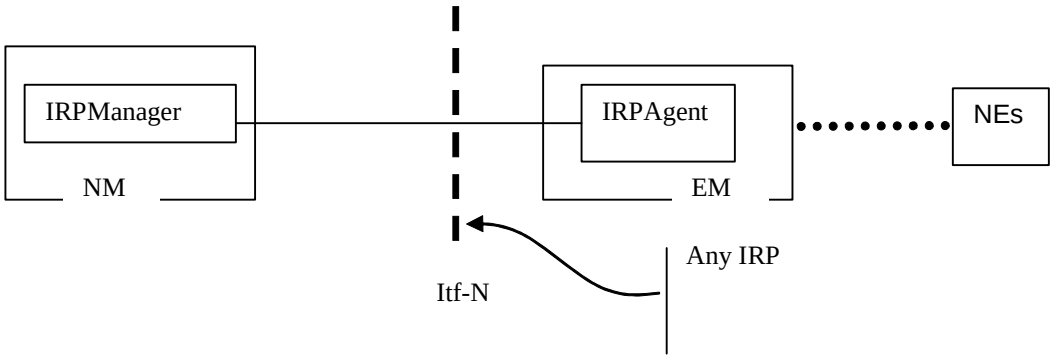

Figure 1: System Context A

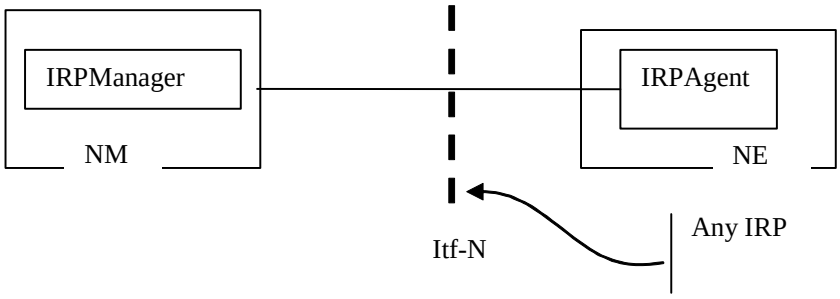

Figure 2: System Context B

5 Information Object Classes

5.1 Information entities imported and local labels

Label reference	Local label
3GPP TS 32.622 [4], information object class, GenericIRP	GenericIRP

5.2 Class Diagram

5.2.1 Attributes and relationships

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

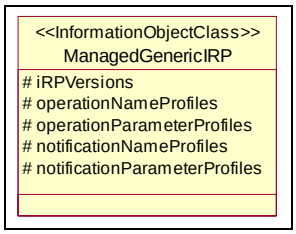

Figure 3:

5.2.2 Inheritance

This subclause depicts the inheritance relationships that exist between information object classes.

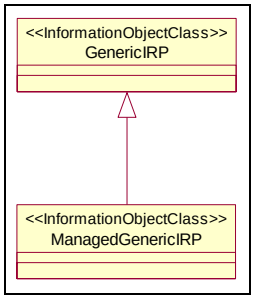

Figure 4:

5.3 Information object classes definition

5.3.1 ManagedGenericIRP

5.3.1.1 Definition

This information object represents a generic IRP which supports generic management capabilities. It inherits from IOC GenericIRP.

5.3.1.2 Attributes

Attribute name	Support Qualifier
IRPVersion	M
operationNameProfile	O
operationParameterProfile	O
notificationNameProfile	O
notificationParameterProfile	O

5.4 Information relationships definition

None

5.5 Information attributes definition

This subclause defines the semantics of the Attributes used in Information Object Classes.

5.5.1 Definitions and legal values

Attribute Name	Definition	Legal Values
irpVersion	This attribute contains a set of IRPVersions. The set contains at least one element.	Any value of the following format : "**32.**xyz **V**a.b"
operationNameProfile	This attribute contains a set of elements. The n-th element of this set contains the set of operation names supported for the IRPVersion identified in the n-th element of irpVersion attribute	
notificationNameProfile	This attribute contains a set of elements. The n-th element of this set contains the set of notification names supported for the IRPVersion identified in the n-th element of irpVersion attribute	
operationParameterProfile	This attribute contains a set of elements. The n-th element of this set contains the set of set of notification parameters supported by the operations identified in the n-th element of operationNameProfile attribute. The set of operation parameters are placed in the set in the same order as the order followed by the operation names in their set	
notificationParameterProfile	This attribute contains a set of elements. The n-th element of this set contains the set of set of notification parameters supported by the notifications identified in the n-th element of notificationNameProfile attribute. The set of notification parameters are placed in the set in the same order as the order followed by the notification names in their set	

6 Interface Definition

6.1 Class diagram representing interfaces

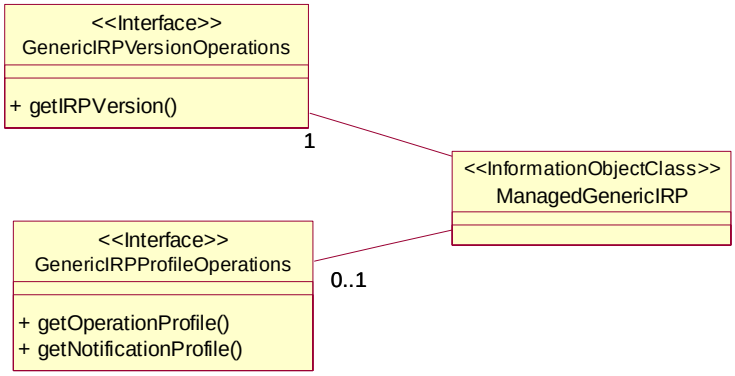

Figure 5:

6.2 Generic rules

- **Rule 1:** each operation with at least one input parameter supports a pre-condition valid_input_parameter which indicates that all input parameters shall be valid with regards to their information type. Additionally, each such operation supports an exception operation_failed_invalid_input_parameter which is raised when pre-condition valid_input_parameter is false. The exception has the same entry and exit state.

- **Rule 2:** Each operation with at least one optional input parameter supports a set of pre-conditions supported_optional_input_parameter_xxx where "xxx" is the name of the optional input parameter and the pre-condition indicates that the operation supports the named optional input parameter. Additionally, each such operation supports an exception operation_failed_unsupported_optional_input_parameter_xxx which is raised when (a) the pre-condition supported_optional_input_parameter_xxx is false and (b) the named optional input parameter is carrying information. The exception has the same entry and exit state.

- **Rule 3:** each operation shall support a generic exception operation_failed_internal_problem which is raised when an internal problem occurs and that the operation cannot be completed. The exception has the same entry and exit state.

6.3 genericIRPVersionOperations Interface

6.3.1 Operation `getIRPVersion` (M)

6.3.1.1 Definition

IRPManager wishes to find out the IRP SS versions supported by an IRP. The IRP shall respond with a set of supported IRP SS version(s). The list of returned IRP versions is such that the IRPManager can use any of these versions without having to specify an IRPVersion to the IRPAgent.

6.3.1.2 Input parameters

None

6.3.1.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
versionNumberSet	M	ManagedGenericIRP.iRPVersion	It indicates one or more SS version numbers supported by the IRP.
status	M	ENUM (Operation succeeded, Operation failed)	If operation_failed_internal_problem status = OperationFailed.

6.3.1.4 Pre-condition

None specific.

6.3.1.5 Post-condition

None specific.

6.3.1.6 Exceptions

None specific.

6.4 genericIRPProfileOperations Interface

6.4.1 Operation getOperationProfile (O)

6.4.1.1 Definition

IRPManager invokes this operation to query the detailed profile of an IRP (supported operations and supported parameters) for a specific supported version. The notification profile will provide details about notifications that are specifically defined by this IRP.

6.4.1.2 Input parameters

Parameter Name	Qualifier	Information Type	Comment
irpVersion	M	Element of ManagedGenericIRP.iRPVersion	It contains a version number.

6.4.1.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
operationNameProfile	M	Elements of ManagedGenericIRP.operationNameProfile corresponding to the irpVersion parameter	If this parameter contains no information, it implies that the IRP does not support any operation.
operationParameterProfile	M	Elements of ManagedGenericIRP.operationParameterProfile corresponding to the irpVersion parameter	
status	M	ENUM (Operation succeeded, Operation failed)	If operation_failed_invalid_version status = OperationFailed.

6.4.1.4 Pre-condition

validIRPVersion.

Assertion Name	Definition
validIRPVersion	"the irpVersion input parameter identifies a supported version contained in attribute iRPVersion of ManagedGenericIRP"

6.4.1.5 Post-condition

None specific.

6.4.1.6 Exceptions

Name	Definition
Operation_failed_invalid_version	**Condition:** validIRPVersion is false **Returned Information:** The output parameter status **Exit state:** Entry State

6.4.2 Operation getNotificationProfile (O)

6.4.2.1 Definition

IRPManager invokes this operation to query the detailed notification profile of an IRP (supported notifications and supported parameters) for a specific supported version. The notification profile will provide details about notifications that are specifically defined by this IRP. For example, if this IRP is notification IRP R4, then getNotificationProfile will not return any information since no notification are defined in notification IRP R4.

6.4.2.2 Input parameters

Parameter Name	Qualifier	Information Type	Comment
irpVersion	M	Element of ManagedGenericIRP.iRPVersion	It contains a version number.

6.4.2.3 Output parameters

Parameter Name	Qualifier	Matching Information	Comment
notificationNameProfile	M	Element of ManagedGenericIRP.notificationNameProfile corresponding to the irpVersion parameter	If this parameter contains no information, it implies that the IRP does not support any notification.
notificationParameterProfile	M	Element of ManagedGenericIRP.notificationParameterProfile corresponding to the irpVersion parameter	
status	M	ENUM (Operation succeeded, Operation failed)	If operation_failed_invalid_version status = OperationFailed.

6.4.2.4 Pre-condition

validIRPVersion.

Assertion Name	Definition
validIRPVersion	"the irpVersion input parameter identifies a supported version contained in attribute iRPVersion of ManagedGenericIRP"

6.4.2.5 Post-condition

None specific.

6.4.2.6 Exceptions

Name	Definition
Operation_failed_invalid_version	**Condition:** validIRPVersion is false **Returned Information:** The output parameter status **Exit state:** Entry State

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2001	S_12	SP-010285	--	--	Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0
Mar 2002	S_15	--	--	--	Automatic upgrade to Rel-5 (no Rel-5 CR)	4.0.0	5.0.0
Dec 2002	--	--	--	--	Cosmetics	5.0.0	5.0.1

History

Document history		
V5.0.0	March 2002	Publication (Withdrawn)
V5.0.1	December 2002	Publication