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Technical Specification

Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
Telecommunication management;
Configuration Management (CM);
Transport Network (TN) Network Resource Model (NRM)
Integration Reference Point (IRP):
Common Object Request Broker Architecture (CORBA)
Solution Set (SS)
(3GPP TS 32.713 version 7.0.0 Release 7)

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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
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Foreword

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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.

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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.

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:

32.711:	Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Requirements
32.712:	Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)
32.713:	**Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)**
32.715	Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) file format definition

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G-network as it evolves. CM actions have the objective to control and monitor the actual configuration on the NEs and NRs, and they may be initiated by the operator or functions in the OSs or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service (QoS). The CM actions are initiated either as a single action on a Network Element (NE) of the 3G-network or as part of a complex procedure involving actions on many NEs.

The Itf-N interface for Configuration Management 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]. For CM, a number of IRPs (and the Name Convention) are defined herein, used by this as well as other technical specifications for telecom management produced by 3GPP.

1 Scope

The purpose of this Transport Network (TN) interface Network Resource Model IRP: CORBA Solution Set is to define the mapping of the IRP information model in 3GPP TS 32.712 [4] to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

This Solution Set specification is related to 3GPP TS 32.712 V7.0.X.

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 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[4] 3GPP TS 32.712: "Telecommunication management; Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[5] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[6] OMG Notification Service, Version 1.0.

[7] OMG CORBA services: Common Object Services Specification, Update: November 22, 1996.

[8] The Common Object Request Broker: Architecture and Specification (for specification of valid version, see [1]).

[9] 3GPP TS 32.303: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

3 Definitions and abbreviations

3.1 Definitions

For terms and definitions please refer to 3GPP TS 32.101 [1], TS 32.102 [2], TS 32.600 [3] and TS 32.712 [4].

3.2 Abbreviations

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

CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
IS	Information Service
IDL	Interface Definition Language (OMG)
IOC	Information Object Class
IRP	Integration Reference Point
MO	Managed Object
MOC	Managed Object Class
NRM	Network Resource Model
OMG	Object Management Group
SS	Solution Set

4 Architectural features

The overall architectural feature of Transport Network Resources IRP is specified in 3GPP TS 32.712 [4].
This clause specifies features that are specific to the CORBA SS.

4.1 Notifications

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.303 [9]).

5 Mapping

5.1 General mappings

The IS parameter name managedObjectInstance is mapped into DN.

Attributes modelling associations as defined in the NRM (here also called “reference attributes”) are in this SS mapped to attributes. The names of the reference attributes in the NRM are mapped to the corresponding attribute names in the MOC. When the cardinality for an association is 0..1 or 1..1 the datatype for the reference attribute is defined as an MOReference. The value of an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

If a reference attribute is changed, an AttributeValueChange notification is emitted.

5.2 Transport NRM Information Object Class (IOC) mapping

5.2.1 IOC TransportNetworkInterface

Table 5.2.1: Mapping from NRM IOC TransportNetworkInterface attributes to SS equivalent MOC TransportNetworkInterface attributes

NRM Attributes of IOC TransportNetworkInterface in 3GPP TS 32.712 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
transportNetworkInterfaceId	transportNetworkInterfaceId	string	M	M	-
userLabel	userLabel	string	M	M	M
transportNetworkType	transportNetworkType	string	M	M	-

5.2.2 IOC ATMChannelTerminationPoint

Table 5.2.2: Mapping from NRM IOC ATMChannelTerminationPoint attributes and associations to SS equivalent MOC ATMTerminationPoint attributes

NRM Associations/Attributes of IOC ATMChannelTerminationPoint in 3GPP TS 32.712 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
aTMChannelTerminationPointId	aTMChannelTerminationPointId	string	M	M	_
usageChannel	usageChannel	long	M	M	_
virtualPathId	virtualPathId	long	M	M	O
virtualChannelId	virtualChannelId	long	M	M	O
physicalPortId	physicalPortId	long	M	M	O
physicalLinkType	physicalLinkType	long	M	M	O
serviceCategoryIn	serviceCategoryIn	long	M	M	O
serviceCategoryEg	serviceCategoryEg	long	M	M	O
usedAAL	usedAAL	long	M	M	O
peakCellRateIn	peakCellRateIn	long	M	M	O
peakCellRateEg	peakCellRateEg	long	M	M	O
sustainableCellRateIn	sustainableCellRateIn	long	O	M	O
sustainableCellRateEg	sustainableCellRateEg	long	O	M	O
maximumBurstSizeIn	maximumBurstSizeIn	long	M	M	O
maximumBurstSizeEg	maximumBurstSizeEg	long	M	M	O
minimumDesiredCellRateIn	minimumDesiredCellRateIn	long	O	M	O
minimumDesiredCellRateEg	minimumDesiredCellRateEg	long	O	M	O
minimumCellRateIn	minimumCellRateIn	long	O	M	O
minimumCellRateEg	minimumCellRateEg	long	O	M	O
aTMChannelTerminationPoint-ATMPathTerminationPoint	aTMChannelTerminationPointATMPathTerminationPoint	GenericNRIRPSystem::AttributeTypes::MOReference	M	M	-
aTMChannelTerminationPoint-IubLink	aTMChannelTerminationPointIubLink	GenericNRIRPSystem::AttributeTypes::MOReference	M	M	-

5.2.3 IOC ATMPathTerminationPoint

Table 5.2.3: Mapping from NRM IOC ATMPathTerminationPoint attributes and associations to SS equivalent MOC ATMTerminationPoint attributes

NRM Associations/Attributes of IOC ATMPathTerminationPoint in 3GPP TS 32.712 [4]	SS Attributes	SS Type	Support Qualifier	Read	Write
aTMPathTerminationPointId	aTMPathTerminationPointId	string	M	M	_
virtualPathId	virtualPathId	long	M	M	O
physicalPortIdList	physicalPortIdList	long	M	M	O
peakCellRateIn	peakCellRateIn	long	M	M	O
peakCellRateEg	peakCellRateEg	long	M	M	O
aTMPathTerminationPoint-ATMChannelTerminationPoint	aTMPathTerminationPointATMChannelTerminationPoint	GenericNRIRPSystem::AttributeTypes::MOReference	M	M	-

6 Rules for management information model extensions

This clause discusses how the models and IDL definitions provided the present document can be extended for a particular implementation and still remain compliant with 3GPP SA5's specifications.

6.1 Allowed extensions

Vendor-specific IOCs may be supported. The vendor-specific IOCs may support new types of attributes. The 3GPP SA5-specified notifications may be issued referring to the vendor-specific IOCs and vendor-specific attributes. New IOCs shall be distinguishable from 3GPP SA5 IOCs by name. 3GPP SA5-specified and vendor-specific attributes may be used in vendor-specific IOCs. Vendor-specific attribute names shall be distinguishable from existing attribute names.

NRM IOCs may be subclassed. Subclassed IOCs shall maintain the specified behaviour of the 3GPP SA5's superior classes. They may add vendor-specific behaviour with vendor-specific attributes. When subclassing, naming attributes cannot be changed. The subclassed IOC shall support all attributes of its superior class. Vendor-specific attributes cannot be added to 3GPP SA5 NRM IOCs without subclassing.

When subclassing, the 3GPP SA5-specified containment rules and their specified cardinality shall still be followed. As an example, `ManagementNode` (or its subclasses) shall be contained under `SubNetwork` (or its subclasses). Also, in 3GPP Release 4, there may only be 0 or 1 `ManagementNode` (or its subclasses) contained under `SubNetwork` (or its subclasses).

Managed Object Instances may be instantiated as CORBA objects. This requires that the IOCs be represented in IDL. 3GPP SA5's NRM IOCs are not currently specified in IDL, but may be specified in IDL for instantiation or subclassing purposes. However, management information models should not require that IRPManagers access the instantiated managed objects other than through supported methods in the present document.

Extension rules related to notifications (Notification categories, Event Types, Extended Event Types etc.) are for further study.

6.2 Extensions not allowed

The IDL specifications in the present document cannot be edited or altered. Any additional IDL specifications shall be specified in separate IDL files.

IDL interfaces (note: not IOCs) specified in the present document may not be subclassed or extended. New interfaces may be defined with vendor-specific methods.

Annex A (normative): CORBA IDL, NRM Definitions

```
//File: TransportNetworkResourcesNRMDefs.idl
#ifndef _TRANSPORT_NETWORK_RESOURCES_NRM_DEFS_IDL_
#define _TRANSPORT_NETWORK_RESOURCES_NRM_DEFS_IDL_
#include "GenericNetworkResourcesNRMDefs.idl"
#pragma prefix "3gppsa5.org"
/**
 * This module defines constants for each MO class name and
 * the attribute names for each defined MO class.
 */
module TransportNetworkResourcesNRMDefs
{
      /**
       *  Definitions for MO class TransportNetworkInterface
       */
      interface TransportNetworkInterface : GenericNetworkResourcesNRMDefs::ManagedFunction
      {
         const string CLASS = "TransportNetworkInterface";
         // Attribute Names
         //
         const string transportNetworkInterfaceId = "transportNetworkInterfaceId";
         const string userLabel = "userLabel";
         const string transportNetworkType= "transportNetworkType";
      };
      /**
       *  Definitions for MO class ATMChannelTerminationPoint
       */
      interface ATMChannelTerminationPoint
      {
         const string CLASS = "ATMChannelTerminationPoint";
         // Attribute Names
         //
         const string aTMChannelTerminationPointId = "aTMChannelTerminationPointId";
         const string usageChannel= "usageChannel";
         const string virtualPathId= "virtualPathId";
         const string virtualChannelId= "virtualChannelId";
         const string physicalPortId= "physicalPortId";
         const string physicalLinkType= "physicalLinkType";
         const string serviceCategoryIn= "serviceCategoryIn";
         const string serviceCategoryEg= "serviceCategoryEg";
         const string usedAAL= "usedAAL";
         const string peakCellRateIn= "peakCellRateIn";
         const string peakCellRateEg= "peakCellRateEg";
         const string sustainableCellRateIn= "sustainableCellRateIn";
         const string sustainableCellRateEg= "sustainableCellRateEg";
         const string maximumBurstSizeIn= "maximumBurstSizeIn";
         const string maximumBurstSizeEg= "maximumBurstSizeEg";
         const string minimumDesiredCellRateIn= "minimumDesiredCellRateIn";
         const string minimumDesiredCellRateEg= "minimumDesiredCellRateEg";
         const string minimumCellRateIn= "minimumCellRateIn";
         const string minimumCellRateEg= "minimumCellRateEg";
         const string aTMChannelTerminationPointATMPathTerminationPoint =
"aTMChannelTerminationPointATMPathTerminationPoint";
         const string aTMChannelTerminationPointIubLink = "aTMChannelTerminationPointIubLink";
      };
      /**
       *  Definitions for MO class ATMPathTerminationPoint
       */
      interface ATMPathTerminationPoint
      {
         const string CLASS = "ATMPathTerminationPoint";
         // Attribute Names
         //
         const string aTMPathTerminationPointId = "aTMPathTerminationPoint";
         const string virtualPathId= "virtualPathId";
         const string physicalPortIdList= "physicalPortIdList";
         const string peakCellRateIn= "peakCellRateIn";
         const string peakCellRateEg= "peakCellRateEg";
         const string aTMPathTerminationPointATMChannelTerminationPoint =
"aTMPathTerminationPointATMChannelTerminationPoint";
      };
};
```

```
#endif // _TRANSPORT_NETWORK_RESOURCES_NRM_DEFS_IDL_
```

Annex B (informative): Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Cat**	**Old**	**New**
Sep 2004	SA_25	SP-040598	--	--	Submitted to TSG SA#25 for Approval	--	1.0.0	6.0.0
Dec 2005	SA_30	SP-050718	0001	--	Correct the inconsistency of TransportNetworkInterface - Align with IS in 32.712	F	6.0.0	6.1.0
Mar 2006	SA_31	SP-060101	0002	--	Correct attribute "aTMChannelTerminationPoint" - Align with 32.712 Information Service (IS)	F	6.1.0	6.2.0
Jun 2007	SA_36	--	--	--	Automatic upgrade to Rel-7 (no CR) at freeze of Rel-7. Deleted reference to CMIP SS, discontinued from R7 onwards.	--	6.2.0	7.0.0

History

Document history		
V7.0.0	June 2007	Publication