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Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Configuration Management: UTRAN Network Resources IRP: CORBA Solution Set (Release 4)



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Contents

Foreword	4
Introduction	4
1 Scope	6
2 References	6
3 Definitions and abbreviations	6
3.1 Definitions	6
3.2 Abbreviations	6
4 Architectural features	7
4.1 Notifications	7
5 Mapping	7
5.1 General mappings	7
5.2 UTRAN NRM Managed Object Class (MOC) mapping	8
5.2.1 MOC RncFunction	8
5.2.2 MOC UtranCell	8
5.2.3 MOC NodeBFunction	9
5.2.4 MOC IubLink	9
5.2.5 MOC UtranRelation	9
5.2.6 MOC ExternalUtranCell	10
6 Rules for management information model extensions	11
6.1 Allowed extensions	11
6.2 Extensions not allowed	11
Annex A (normative): CORBA IDL, NRM Definitions	12
Annex B (informative): Change history	15

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

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. 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.

Due to the growing number of specifications to model new services and Resource Models for Configuration Management (CM), as well as the expected growth in size of each of them from 3GPP Release 4 onwards, a new structure of the specifications is already needed in Release 4. This structure is needed for several reasons, but mainly to enable more independent development and release for each part, as well as a simpler document identification and version handling. Another benefit would be that it becomes easier for bodies outside 3GPP, such as the ITU-T, to refer to telecom management specifications from 3GPP. The new structure of the specifications does not lose any information or functionality supported by the Release 1999. The restructuring also includes defining new IRPs for the Network Resource Model (NRM) parts of R99 Basic CM IRP (Generic, Core Network and UTRAN NRM). These IRPs are named "Network Resources IRP".

Further, the Notification IRP (in Release 1999: 32.106-1 to -4) and the Name convention for Managed Objects (in Release 1999: 32.106-8) have been moved to a separate number series used for specifications common between several management areas (e.g. CM, FM, PM).

Finally, in addition to the restructuring mentioned above, the need to define some new functionality and IRPs for CM compared to Release 1999, has also been identified. Firstly, a new Bulk CM IRP, and secondly an a GERAN Network Resources IRP, have been created. Thirdly, the Generic, UTRAN and GERAN Network Resources IRPs have been

extended with support for GSM-UMTS Inter-system handover (ISH), and the 32.600 (Concept and High-level Requirements) has been modified to cover the high-level Bulk CM and ISH requirements.

Table: Mapping between Release '99 and the new specification numbering scheme

R99 Old no.	Old (R99) specification title	Rel-4 spec. no. with Bulk CM /ISH	Rel-4 specification title with Bulk CM/ ISH
32.106-1	3G Configuration Management: Concept and Requirements	32.600	3G Configuration Management: Concept and High-level Requirements
32.106-1	<Notification IRP requirements from 32.106-1 and 32.106-2>	32.301-1	Notification IRP: Requirements
32.106-2	Notification IRP: IS	32.301-2	Notification IRP: Information Service
32.106-3	Notification IRP: CORBA SS	32.301-3	Notification IRP: CORBA SS
32.106-4	Notification IRP: CMIP SS	32.301-4	Notification IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	Name Convention for Managed Objects
-	-	32.602-1	Bulk CM IRP: Requirements
-	-	32.602-2	Bulk CM IRP: Information Service
-	-	32.602-3	Bulk CM IRP: CORBA SS
-	-	32.602-4	Bulk CM IRP: CMIP SS
-	-	32.602-5	Bulk CM IRP: XML file format definition
32.106-1	<Basic CM IRP Generic NRM requirements from 32.106-1 and 32.106-5>	32.620-1	Generic Network Resources IRP: Requirements
32.106-5	Basic CM IRP IM (Generic NRM part)	32.620-2	Generic Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (Generic NRM related part)	32.620-3	Generic Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (Generic NRM related part)	32.620-4	Generic Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP UTRAN NRM requirements from 32.106-1 and 32.106-5>	32.622-1	UTRAN Network Resources IRP: Requirements
32.106-5	Basic CM IRP IM (UTRAN NRM part)	32.622-2	UTRAN Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (UTRAN NRM related part)	32.622-3	UTRAN Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (UTRAN NRM related part)	32.622-4	UTRAN Network Resources IRP: CMIP SS
-	-	32.623-1	GERAN Network Resources IRP: Requirements
-	-	32.623-2	GERAN Network Resources IRP: NRM
-	-	32.623-3	GERAN Network Resources IRP: CORBA SS
-	-	32.623-4	GERAN Network Resources IRP: CMIP SS

The present document is CORBA Solution Set - Part 3 of 3GPP TS 32.622 "UTRAN Network Resources IRP".

1 Scope

The purpose of this UTRAN Network Resources IRP: CORBA Solution Set is to define the mapping of the IRP information model (see 3GPP TS 32.622-2 [4]) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

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 32.600: "3G Configuration Management".
- [4] 3GPP TS 32.622-2: "UTRAN Network Resources IRP: NRM".
- [5] 3GPP TS 32.300: "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 32.301-3: "Notification IRP: CORBA Solution Set, Version 1:1".
- [10] 3GPP TS 32.111-3: "Alarm IRP: CORBA Solution Set, Version 1:1".

3 Definitions and abbreviations

3.1 Definitions

For terms and definitions please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.600 [3] and 3GPP TS 32.622-2 [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)
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 UTRAN Network Resources IRP is specified in 3GPP TS 32.622-2[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 32.301-3 [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 UTRAN NRM Managed Object Class (MOC) mapping

5.2.1 MOC RncFunction

Table 18: Mapping from NRM MOC RncFunction attributes to SS equivalent MOC RncFunction attributes

NRM Attributes of MOC RncFunction in 3GPP TS 32.622-2 [4]	SS Attributes	SS Type	Qualifier
rncFunctionId	rncFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
mcc	mcc	integer	Read-Write, M
mnc	mnc	integer	Read-Write, M
rncId	rncId	integer	Read-Write, M

5.2.2 MOC UtranCell

Table 19: Mapping from NRM MOC UtranCell attributes and associations to SS equivalent MOC UtranCell attributes

NRM Associations/Attributes of MOC UtranCell in 3GPP TS 32.622-2 [4]	SS Attributes	SS Type	Qualifier
utranCellId	utranCellId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
cId	cId	integer	Read-Write, M
localCellId	localCellId	integer	Read-Write, M
uarfcnUl	uarfcnUl	integer	Read-Write, M
uarfcnDl	uarfcnDl	integer	Read-Write, M
primaryScramblingCode	primaryScramblingCode	integer	Read-Write, M
primaryCpichPower	primaryCpichPower	integer	Read-Write, M
maximumTransmissionPower	maximumTransmissionPower	integer	Read-Write, M
primarySchPower	primarySchPower	integer	Read-Write, M
secondarySchPower	secondarySchPower	integer	Read-Write, M
bchPower	bchPower	integer	Read-Write, M
lac	lac	integer	Read-Write, M
rac	rac	integer	Read-Write, M
sac	sac	integer	Read-Write, M
ura	ura	integer	Read-Write, M
AssociatedWith/ utranCell-IubLink	utranCellIubLink	GenericNRIRPSsystem::AttributeTypes::MOReference	Read-Only, M

5.2.3 MOC NodeBFunction

Table 20: Mapping from NRM MOC NodeBFunction attributes and associations to SS equivalent MOC NodeBFunction attributes

NRM Associations/Attributes of MOC NodeBFunction in 3GPP TS 32.622-2 [4]	SS Attributes	SS Type	Qualifier
nodeBFunctionId	nodeBFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
ConnectedTo/ nodeBFunction-IubLink	nodeBFunctionIubLink	GenericNRIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.4 MOC IubLink

Table 21: Mapping from NRM MOC IubLink attributes and associations to SS equivalent MOC IubLink attributes

NRM Associations/Attributes of MOC IubLink in 3GPP TS 32.622-2 [4]	SS Attributes	SS Type	Qualifier
iubLinkId	iubLinkId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
AssociatedWith/ iubLink-UtranCell	iubLinkUtranCell	GenericNRIRPSystem::AttributeTypes::MOReferenceSet	Read-Write, M
ConnectedTo/ iubLink-NodeBFunction	iubLinkNodeBFunction	GenericNRIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.5 MOC UtranRelation

Table 22: Mapping from NRM MOC UtranRelation attributes and associations to SS equivalent MOC UtranRelation attributes

NRM Associations/Attributes of MOC UtranRelation in 3GPP TS 32.622-2 [4]	SS Attributes	SS Type	Qualifier
utranRelationId	utranRelationId	string	Read-Only, M
relationType	relationType	string	Read-Write, M
adjacentCell	adjacentCell	string	Read-Write, M
uarfcnUl	uarfcnUl	integer	Read-Only, O
uarfcnDl	uarfcnDl	integer	Read-Only, O
primaryScramblingCode	primaryScramblingCode	integer	Read-Only, O
primaryCpichPower	primaryCpichPower	integer	Read-Only, O
lac	lac	integer	Read-Only, O

5.2.6 MOC ExternalUtranCell

Table 23: Mapping from NRM MOC ExternalUtranCell attributes and associations to SS equivalent MOC ExternalUtranCell attributes

NRM Associations/Attributes of MOC ExternalUtranCell in 3GPP TS 32.622-2 [4]	SS Attributes	SS Type	Qualifier
externalUtranCellId	externalUtranCellId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
cId	cId	integer	Read-Write, M
mcc	mcc	integer	Read-Write, M
mnc	mnc	integer	Read-Write, M
rncId	rncId	integer	Read-Write, M
uarfcnUl	uarfcnUl	integer	Read-Write, M
uarfcnDl	uarfcnDl	integer	Read-Write, M
primaryScramblingCode	primaryScramblingCode	integer	Read-Write, M
primaryCpichPower	primaryCpichPower	integer	Read-Write, M
lac	lac	integer	Read-Write, M
rac	rac	integer	Read-Write, 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 MOCs may be supported. The vendor-specific MOCs may support new types of attributes. The 3GPP SA5-specified notifications may be issued referring to the vendor-specific MOCs and vendor-specific attributes. New MOCs shall be distinguishable from 3GPP SA5 MOCs by name. 3GPP SA5-specified and vendor-specific attributes may be used in vendor-specific MOCs. Vendor-specific attribute names shall be distinguishable from existing attribute names.

NRM MOCs may be subclassed. Subclassed MOCs 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 MOC shall support all attributes of its superior class. Vendor-specific attributes cannot be added to 3GPP SA5 NRM MOCs 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 Rel-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 MOCs be represented in IDL. 3GPP SA5's NRM MOCs 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 (3GPP TS 32.622-3).

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 MOCs) 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

```
#ifndef UtranNetworkResourcesNRMDefs_idl
#define UtranNetworkResourcesNRMDefs_idl

#pragma prefix "3gppsa5.org"

/**
 * This module defines constants for each MO class name and
 * the attribute names for each defined MO class.
 */
module UtranNetworkResourcesNRMDefs
{

    /**
     * Definitions for MO class RncFunction
     */
    interface RncFunction
    {
        const string CLASS = "RncFunction";

        // Attribute Names
        //
        const string rncFunctionId = "rncFunctionId";
        const string userLabel = "userLabel";
        const string mcc= "mcc";
        const string mnc= "mnc";
        const string rncId= "rncId";
    };

    /**
     * Definitions for MO class UtranCell
     */
    interface UtranCell
    {
        const string CLASS = "UtranCell";

        // Attribute Names
        //
        const string utranCellId = "utranCellId";
        const string userLabel = "userLabel";
        const string utranCellIubLink = "utranCellIubLink";
        const string cId= "cId";
        const string localCellId= "localCellId";
        const string uarfcnUl= "uarfcnUl";
        const string uarfcnDl= "uarfcnDl";
        const string primaryScramblingCode= "primaryScramblingCode";
        const string primaryCpichPower= "primaryCpichPower";
        const string maximumTransmissionPower= "maximumTransmissionPower";
        const string primarySchPower= "primarySchPower";
        const string secondarySchPower= "secondarySchPower";
    };
};

```

```
    const string bchPower= "bchPower";
    const string lac= "lac";
    const string rac= "rac";
    const string sac= "sac";
    const string ura= "ura";

};

/**
 * Definitions for MO class NodeBFunction
 */
interface NodeBFunction
{
    const string CLASS = "NodeBFunction";

    // Attribute Names
    //
    const string nodeBFunctionId = "nodeBFunctionId";
    const string userLabel = "userLabel";
    const string nodeBFunctionIubLink = "nodeBFunctionIubLink";
};

/**
 * Definitions for MO class IubLink
 */
interface IubLink
{
    const string CLASS = "IubLink";

    // Attribute Names
    //
    const string iubLinkId = "iubLinkId";
    const string userLabel = "userLabel";
    const string iubLinkNodeBFunction = "iubLinkNodeBFunction";
    const string iubLinkUtranCell = "iubLinkUtranCell";

};

};

/**
 * Definitions for MO class UtranRelation
 */
interface UtranRelation
{
    const string CLASS = "UtranRelation";

    // Attribute Names
    //
    const string utranRelationId = "utranRelationId";
    const string relationType = "relationType";
    const string adjacentCell = "adjacentCell";
    const string uarfcnUl= "uarfcnUl";
    const string uarfcnDl= "uarfcnDl";
};
```

```
    const string primaryScramblingCode= "primaryScramblingCode";
    const string primaryCpichPower= "primaryCpichPower";
    const string lac= "lac";
};

/**
 * Definitions for MO class ExternalUtranCell
 */
interface ExternalUtranCell
{
    const string CLASS = "ExternalUtranCell";

    // Attribute Names
    //
    const string externalUtranCellId = "externalUtranCellId";
    const string userLabel = "userLabel";
    const string cId= "cId";
    const string mcc= "mcc";
    const string mnc= "mnc";
    const string rncId= "rncId";
    const string uarfcnUl= "uarfcnUl";
    const string uarfcnDl= "uarfcnDl";
    const string primaryScramblingCode= "primaryScramblingCode";
    const string primaryCpichPower= "primaryCpichPower";
    const string lac= "lac";
    const string rac= "rac";

};

#endif
```

Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0