

# ETSI TS 132 623 V4.1.0 (2001-09)

---

*Technical Specification*

**Digital cellular telecommunications system (Phase 2+) (GSM);  
Universal Mobile Telecommunications System (UMTS);  
Telecommunication Management;  
Configuration Management;  
Generic network resources IRP: CORBA solution set  
(3GPP TS 32.623 version 4.1.0 Release 4)**

---



---

**Reference**

RTS/TSGS-0532623Uv4R1

---

**Keywords**

GSM, 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 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

---

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

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

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, send your comment to:

[editor@etsi.fr](mailto:editor@etsi.fr)

---

**Copyright Notification**

---

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2001.  
All rights reserved.

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is 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 (<http://www.etsi.org/legal/home.htm>).

Pursuant to the ETSI IPR Policy, no investigation, 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.

---

## 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 [www.etsi.org/key](http://www.etsi.org/key).

# Contents

Intellectual Property Rights .....	2
Foreword.....	2
Foreword.....	4
Introduction .....	4
1 Scope .....	6
2 References .....	6
3 Definitions and abbreviations.....	6
3.1 Definitions .....	6
3.2 Abbreviations .....	7
4 Architectural features .....	7
4.1 Notifications .....	7
4.2 Filter language.....	7
4.3 Syntax for Distinguished Names and Versions .....	7
5 Mapping .....	8
5.1 General mappings.....	8
5.2 Managed Object Classes (MOCs) mapping .....	8
5.2.1 MOC SubNetwork .....	8
5.2.2 MOC ManagedElement .....	8
5.2.3 MOC MeContext.....	9
5.2.4 MOC ManagementNode.....	9
5.2.5 MOC ManagedFunction .....	9
5.2.6 MOC IRPAgent .....	9
5.2.7 MOC BasicCmIRP .....	10
5.2.8 MOC BulkCmIRP.....	10
5.2.9 MOC VsDataContainer .....	10
6 New methodology Mapping.....	11
6.1 General mappings.....	11
6.2 Generic NRM Information Object Class (IOC) mapping.....	11
6.2.1 IOC SubNetwork.....	11
6.2.2 IOC ManagedElement .....	11
6.2.3 IOC MeContext .....	12
6.2.4 IOC ManagementNode .....	12
6.2.5 IOC VsDataContainer.....	12
6.2.6 IOC ManagedFunction.....	12
6.2.7 IOC IRPAgent .....	13
6.2.8 IOC GenericIRP.....	13
6.2.9 IOC Top .....	13
7 Rules for NRM extensions .....	14
7.1 Allowed extensions .....	14
7.2 Extensions not allowed.....	14
<b>Annex A (normative): CORBA IDL, Access Protocol .....</b>	<b>15</b>
<b>Annex B (normative): CORBA IDL, NRM Definitions.....</b>	<b>17</b>
<b>Annex C (informative): Change history .....</b>	<b>20</b>
History .....	21

---

## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> 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

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 New no.	New (Rel-4) specification title
32.106-1	3G Configuration Management: Concept and Requirements	32.600	<b>3G Configuration Management: Concept and High-level Requirements</b>
32.106-1	<Notification IRP requirements from 32.106-1 and 32.106-2>	32.301	<b>Notification IRP: Requirements</b>
32.106-2	Notification IRP: IS	32.302	Notification IRP: Information Service
32.106-3	Notification IRP: CORBA SS	32.303	Notification IRP: CORBA SS
32.106-4	Notification IRP: CMIP SS	32.304	Notification IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	<b>Name Convention for Managed Objects</b>
32.106-1	<Basic CM IRP IS requirements from 32.106-1 and 32.106-5>	32.601	<b>Basic CM IRP: Requirements</b>
32.106-5	Basic CM IRP IM (Intro & IS part)	32.602	Basic CM IRP: Information Service
32.106-6	Basic CM IRP CORBA SS (IS related part)	32.603	Basic CM IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (IS related part)	32.604	Basic CM IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	<b>Name Convention for Managed Objects</b>
-	-	32.611	<b>Bulk CM IRP: Requirements</b>
-	-	32.612	Bulk CM IRP: Information Service
-	-	32.613	Bulk CM IRP: CORBA SS
-	-	32.614	Bulk CM IRP: CMIP SS
		32.615	Bulk CM IRP: XML file format definition
32.106-1	<Basic CM IRP Generic NRM requirements from 32.106-1 and 32.106-5>	32.621	<b>Generic Network Resources IRP: Requirements</b>
32.106-5	Basic CM IRP IM (Generic NRM part)	32.622	Generic Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (Generic NRM related part)	32.623	<b>Generic Network Resources IRP: CORBA SS</b>
32.106-7	Basic CM IRP CMIP SS (Generic NRM related part)	32.624	Generic Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP CN NRM requirements from 32.106-1 and 32.106-5>	32.631	<b>Core Network Resources IRP: Requirements</b>
32.106-5	Basic CM IRP IM (CN NRM part)	32.632	Core Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (CN NRM related part)	32.633	Core Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (CN NRM related part)	32.634	Core Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP UTRAN NRM requirements from 32.106-1 and 32.106-5>	32.641	<b>UTRAN Network Resources IRP: Requirements</b>
32.106-5	Basic CM IRP IM (UTRAN NRM part)	32.642	UTRAN Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (UTRAN NRM related part)	32.643	UTRAN Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (UTRAN NRM related part)	32.644	UTRAN Network Resources IRP: CMIP SS
		32.651	<b>GERAN Network Resources IRP: Requirements</b>
		32.652	GERAN Network Resources IRP: NRM
		32.653	GERAN Network Resources IRP: CORBA SS
		32.654	GERAN Network Resources IRP: CMIP SS

---

# 1 Scope

The TS 32.620 series (Generic Network Resources IRP) defines an Integration Reference Point (IRP) through which an 'IRP Agent' (typically an Element Manager or Network Element) can communicate Network Management related information to one or several 'IRP Managers' (typically Network Managers).

This series of documents specifies a generic Network Resource Model, NRM (also referred to as a Management Information Model - MIM) with definitions of Information Object Classes and Managed Object Classes.

The present document specifies the Corba Solution set.

---

# 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: "Generic Network Resources IRP: Network Resource Model".
- [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 32.303: "Notification IRP: CORBA Solution Set".
- [10] 3GPP TS 32.111-3: "Alarm IRP: CORBA Solution Set".

---

# 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 [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 Generic Network Resources IRP is specified in 3GPP TS 32.622 [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]).

The contents of the Basic CM IRP notifications are defined in the present document.

### 4.2 Filter language

The filter language used in the SS is the Extended Trader Constraint Language (see OMG Notification Service [6]). IRP Agents may throw a FilterComplexityLimit exception when a given filter is too complex. However, for 3GPP Release 99 an “empty filter” shall be used i.e. a filter that satisfies all MOs of a scoped search (this does not affect the filter for notifications as defined in the Notification IRP – see 3GPP TS 32.303 [9]).

### 4.3 Syntax for Distinguished Names and Versions

The format of a Distinguished Name is defined in 3GPP TS 32.300 [5].

The Version of this IRP is represented as a string.



## 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 Managed Object Classes (MOCs) mapping

This Solution Set supports reference attributes for relations other than containment relations between objects. Reference attributes are therefore introduced in each MOC where needed.

#### 5.2.1 MOC `SubNetwork`

**Table 1: Mapping from NRM MOC `SubNetwork` attributes to SS equivalent MOC `SubNetwork` attributes**

NRM Attributes of MOC <code>SubNetwork</code> in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
<code>subNetworkId</code>	<code>subNetworkId</code>	string	Read-Only, M
<code>dnPrefix</code>	<code>dnPrefix</code>	string	Read-Only, M
<code>userLabel</code>	<code>userLabel</code>	string	Read-Write, M
<code>userDefinedNetworkType</code>	<code>userDefinedNetworkType</code>	string	Read-Only, M

#### 5.2.2 MOC `ManagedElement`

**Table 2: Mapping from NRM MOC `ManagedElement` attributes and association roles to SS equivalent MOC `ManagedElement` attributes**

NRM Attributes/Association roles in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
<code>managedElementId</code>	<code>managedElementId</code>	string	Read-Only, M
<code>dnPrefix</code>	<code>dnPrefix</code>	string	Read-Only, M
<code>userLabel</code>	<code>userLabel</code>	string	Read-Write, M
<code>locationName</code>	<code>locationName</code>	string	Read-Only, M
<code>vendorName</code>	<code>vendorName</code>	string	Read-Only, M
<code>userDefinedState</code>	<code>userDefinedState</code>	string	Read-Write, M
<code>managedElementType</code>	<code>managedElementType</code>	<code>GenericNRIRPSystem::AttributeTypes::StringSet</code>	Read-Only, M
<code>managedBy</code>	<code>managedBy</code>	<code>GenericNRIRPSystem::AttributeTypes::MOReferenceSet</code>	Read-Only, M
<code>swVersion</code>	<code>swVersion</code>	string	Read-Only, M

### 5.2.3 MOC MeContext

**Table 3: Mapping from NRM MOC MeContext attributes to SS equivalent MOC MeContext attributes**

NRM Attributes of MOC MeContext in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
meContextId	meContextId	string	Read-Only, M
dnPrefix	dnPrefix	string	Read-Only, M

### 5.2.4 MOC ManagementNode

**Table 4: Mapping from NRM MOC ManagementNode attributes and association roles to SS equivalent MOC ManagementNode attributes**

NRM Attributes/association roles of MOC ManagementNode in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
managementNodeId	managementNodeId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
locationName	locationName	string	Read-Only, M
vendorName	vendorName	string	Read-Only, M
userDefinedState	userDefinedState	string	Read-Write, M
manages	manages	GenericNRIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
swVersion	swVersion	string	Read-Only, M

### 5.2.5 MOC ManagedFunction

**Table 5: Mapping from NRM MOC ManagedFunction attributes to SS equivalent MOC ManagedFunction attributes**

NRM Attributes of MOC ManagedFunction in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
userLabel	userLabel	string	Read-Write, M

### 5.2.6 MOC IRPAgent

**Table 6: Mapping from NRM MOC IRPAgent attributes to SS equivalent MOC IRPAgent attributes**

NRM Attributes of MOC IRPAgent in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
irpAgentId	irpAgentId	string	Read-Only, M
systemDN	systemDN	string	Read-Only, M

## 5.2.7 MOC BasicCmIRP

**Table 7: Mapping from NRM MOC BasicCmIRP attributes to SS equivalent MOC BasicCmIRP attributes**

NRM Attributes of MOC BasicCmIRP in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
basicCmIRPID	basicCmIRPID	string	Read-Only, M
irpVersion	irpVersion	CommonIRPConstDefs::VersionNumberSet	Read-Only, M

## 5.2.8 MOC BulkCmIRP

**Table 8: Mapping from NRM MOC BulkCmIRP attributes to SS equivalent MOC BulkCmIRP attributes**

NRM Attributes of MOC BulkCmIRP in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
bulkCmIRPID	bulkCmIRPID	string	Read-Only, M
irpVersion	irpVersion	CommonIRPConstDefs::VersionNumberSet	Read-Only, M

## 5.2.9 MOC VsDataContainer

**Table 9: Mapping from NRM MOC VsDataContainer attributes to SS equivalent MOC VsDataContainer attributes**

NRM Attributes of MOC VsDataContainer in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
vsDataContainerId	vsDataContainerId	string	Read-Only, M
vsDataType	vsDataType	string	Read-Only, M
vsData	vsData	vsDataType	Read-Write, M
vsDataFormatVersion	vsDataFormatVersion	string	Read-Only, M

## 6 New methodology Mapping

### 6.1 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.

### 6.2 Generic NRM Information Object Class (IOC) mapping

This Solution Set supports reference attributes for relations other than containment relations between objects. Reference attributes are therefore introduced in each MOC where needed.

#### 6.2.1 IOC SubNetwork

**Table 10: Mapping from NRM IOC SubNetwork attributes to SS equivalent MOC SubNetwork attributes**

NRM Attributes of IOC SubNetwork in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
<code>subNetworkId</code>	<code>subNetworkId</code>	string	Read-Only, M
<code>dnPrefix</code>	<code>dnPrefix</code>	string	Read-Only, M
<code>userLabel</code>	<code>userLabel</code>	string	Read-Write, M
<code>userDefinedNetworkType</code>	<code>userDefinedNetworkType</code>	string	Read-Only, M

#### 6.2.2 IOC ManagedElement

**Table 11: Mapping from NRM IOC ManagedElement attributes and association roles to SS equivalent MOC ManagedElement attributes**

NRM Attributes/Association roles	SS Attributes	SS Type	Qualifier
<code>managedElementId</code>	<code>managedElementId</code>	string	Read-Only, M
<code>dnPrefix</code>	<code>dnPrefix</code>	string	Read-Only, M
<code>userLabel</code>	<code>userLabel</code>	string	Read-Write, M
<code>locationName</code>	<code>locationName</code>	string	Read-Only, M
<code>vendorName</code>	<code>vendorName</code>	string	Read-Only, M
<code>userDefinedState</code>	<code>userDefinedState</code>	string	Read-Write, M
<code>managedElementType</code>	<code>managedElementType</code>	<code>GenericNRIRPSsystem::AttributeTypes::StringSet</code>	Read-Only, M
<code>managedBy</code>	<code>managedBy</code>	<code>GenericNRIRPSsystem::AttributeTypes::MOReferenceSet</code>	Read-Only, M
<code>swVersion</code>	<code>swVersion</code>	string	Read-Only, M

### 6.2.3 IOC MeContext

**Table 12: Mapping from NRM IOC MeContext attributes to SS equivalent MOC MeContext attributes**

NRM Attributes of IOC MeContext in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
meContextId	meContextId	string	Read-Only, M
dnPrefix	dnPrefix	string	Read-Only, M

### 6.2.4 IOC ManagementNode

**Table 13: Mapping from NRM IOC ManagementNode attributes and association roles to SS equivalent MOC ManagementNode attributes**

NRM Attributes/association roles of IOC ManagementNode in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
managementNodeId	managementNodeId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
locationName	locationName	string	Read-Only, M
vendorName	vendorName	string	Read-Only, M
userDefinedState	userDefinedState	string	Read-Write, M
manages	manages	GenericNRIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
swVersion	swVersion	string	Read-Only, M

### 6.2.5 IOC VsDataContainer

**Table 14: Mapping from NRM IOC VsDataContainer attributes and association roles to SS equivalent MOC VsDataContainer attributes**

NRM Attributes/association roles of IOC VsDataContainer in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
vsDataContainerId	vsDataContainerId	string	Read-Only, M
vsDataType	vsDataType	string	Read-Only, M
vsData	vsData	vsDataType	Read-Write, M
vsDataFormatVersion	vsDataFormatVersion	string	Read-Only, M

### 6.2.6 IOC ManagedFunction

**Table 15: Mapping from NRM IOC ManagedFunction attributes and association roles to SS equivalent MOC ManagedFunction attributes**

NRM Attributes/association roles of IOC ManagedFunction in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
userLabel	userLabel	string	Read-Write, M

## 6.2.7 IOC IRPAgent

**Table 16: Mapping from NRM IOC IRPAgent attributes to SS equivalent MOC IRPAgent attributes**

NRM Attributes of IOC IRPAgent in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
IrpAgentId	irpAgentId	string	Read-Only, M
SystemDN	systemDN	string	Read-Only, M

## 6.2.8 IOC GenericIRP

This Information Object Class is provided for sub-classing only. Therefore no mapping for this class is provided in this document.

## 6.2.9 IOC Top

**Table 17: Mapping from NRM IOC Top attributes to SS equivalent attributes in all MOCs**

NRM Attributes of IOC Top in 3GPP TS 32.622 [4]	SS Attributes	SS Type	Qualifier
ObjectClass	CLASS	string	Read-Only, M
ObjectInstance	No direct mapping.		

---

## 7 Rules for NRM extensions

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

### 7.1 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.

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

### 7.2 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, Access Protocol

```
#ifndef GenericNetworkResourcesIRPSystem_idl
#define GenericNetworkResourcesIRPSystem_idl

#include "CommonIRPConstDefs.idl"

#pragma prefix "3gppsa5.org"

module GenericNetworkResourcesIRPSystem
{
    /**
     * The format of Distinguished Name (DN) is specified in "Name Conventions
     * for Managed Objects revision B".
     */
    typedef string DN;

    /**
     * This module adds datatype definitions for types
     * used in the NRM which are not basic datatypes defined
     * already in CORBA.
     */
    module AttributeTypes
    {
        /**
         * An MO reference refers to an MO instance.
         * "otherMO" contains the distinguished name of the referred MO.
         * A conceptual "null" reference (meaning no MO is referenced)
         * is represented as an empty string ("").
         */
        struct MOReference
        {
            DN otherMO;
        };

        /**
         * MOReferenceSet represents a set of MO references.
         * This type is used to hold 0..n MO references.
         * A referred MO is not allowed to be repeated (therefore
         * it is denoted as a "Set")
         */
        typedef sequence<MOReference> MOReferenceSet;

        /**
         * A set of strings.
         */
        typedef sequence<string> StringSet;

        /**
         * A set of integers.
         */
        typedef sequence<integer> IntegerSet;
    };
};
```



```
};
```

```
#endif
```

---

## Annex B (normative): CORBA IDL, NRM Definitions

```
#ifndef GenericNetworkResourcesNRMDefs_idl
#define 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 GenericNetworkResourcesNRMDefs
{

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

        // Attribute Names
        //
        const string subNetworkId = "subNetworkId";
        const string dnPrefix = "dnPrefix";
        const string userLabel = "userLabel";
        const string userDefinedNetworkType = "userDefinedNetworkType";
    };

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

        // Attribute Names
        //
        const string managedElementId = "managedElementId";
        const string dnPrefix = "dnPrefix";
        const string managedElementType = "managedElementType";
        const string userLabel = "userLabel";
        const string vendorName = "vendorName";
        const string userDefinedState = "userDefinedState";
        const string locationName = "locationName";

        const string managedBy = "managedBy";

        const string swVersion = "swVersion";
    };

    /**
     * Definitions for MO class MeContext
     */
    interface MeContext
    {
        const string CLASS = "MeContext";
    };
};
```

```
// Attribute Names
//
const string meContextId = "meContextId";
const string dnPrefix = "dnPrefix";
};

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

    // Attribute Names
    //
    const string managementNodeId = "managementNodeId";
    const string userLabel = "userLabel";
    const string vendorName = "vendorName";
    const string userDefinedState = "userDefinedState";
    const string locationName = "locationName";
    const string manages = "manages";

    const string swVersion = "swVersion";
};

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

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

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

    // Attribute Names
    //
    const string irpAgentId = "irpAgentId";
    const string systemDN = "systemDN";
};

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

    // Attribute Names
```

```
    //
    const string basicCmIRPId = "basicCmIRPId";
    const string irpVersion = "irpVersion";
};

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

    // Attribute Names
    //
    const string bulkCmIRPId = "bulkCmIRPId";
    const string irpVersion = "irpVersion";
};

};

#endif
```

---

## Annex C (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
Sep 2001	S_13	SP-010479	001	--	Missing Mapping table added and attribute qualifier corrected	4.0.0	4.1.0

---

## History

<b>Document history</b>		
V4.0.0	June 2001	Publication
V4.1.0	September 2001	Publication