3GPP TS 32.633 V9.2.0 (2010-09)

Technical Specification

**3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Telecommunication management;
Configuration Management (CM);
Core network resources Integration Reference Point (IRP);
Common Object Request Broker Architecture (CORBA)
Solution Set (SS)
(Release 9)**

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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:

32.631:   "Configuration Management (CM); Core network resources Integration Reference Point (IRP); Requirements".

32.632:   "Configuration Management (CM); Core network resources Integration Reference Point (IRP); Network Resource Model (NRM)".

32.633:   "Configuration Management (CM); Core network resources Integration Reference Point (IRP); Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

32.635:   "Configuration Management (CM); Core network resources Integration Reference Point (IRP); Bulk CM eXtensible Markup Language (XML) file format definition".

1 Scope

The purpose of the present document is to define the mapping of the IRP information model (see TS 32.632 [3]) 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 32.632 V9.1.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 32.632: " Telecommunication management; Configuration Management (CM); Core Network Resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[4] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[5] 3GPP TS 32.303: " Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

[6] 3GPP TS 32.623: "Telecommunication management; Configuration Management (CM); Generic Network Resources 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 TS 32.101 [1], TS 32.102 [2] and TS 32.632 [3].

3.2 Abbreviations

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

CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
HNB GW	Home NodeB Gateway
IDL	Interface Definition Language (OMG)
IOC	Information Object Class
IRP	Integration Reference Point
IS	Information Service

MGW	Media GateWay	
MO	Managed Object	
MOC	Managed Object Class	
NRM	Network Resource Model	
OMG	Object Management Group	

4 Architectural features

The overall architectural feature of Core Network Resources IRP is specified in TS 32.632 [3].
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 TS 32.303 [5]).

5 Mapping

5.1 General mappings

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 a 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.

5.2 Information Object Class (IOC) mapping

5.2.1 IOC MscServerFunction

Mapping from NRM IOC MscServerFunction attributes to SS equivalent MOC MscServerFunction attributes

Attributes of IOC MscServerFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
mscServerFunctionId	mscServerFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M
mccList	mccList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
mncList	mncList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
lacList	lacList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
sacList	sacList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
gcaList	gcaList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
mscId	mscId	long	Read-Write, M
mscServerFunction-GsmCell	mscServerFunctionGsmCell	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
mscServerFunction-ExternalGsmCell	mscServerFunctionExternalGsmCell	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
mscServerFunction-CsMgwFunction	mscServerFunctionCsMgwFunction	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M

5.2.2   IOC HlrFunction

Mapping from NRM IOC HlrFunction attributes to SS equivalent MOC HlrFunction attributes

Attributes of IOC Hlr Function in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
hlrFunctionId	hlrFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.3   IOC VlrFunction

Mapping from NRM IOC VlrFunction attributes to SS equivalent MOC VlrFunction attributes

Attributes of IOC Vlr Function in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
vlrFunctionId	vlrFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.4   IOC AucFunction

Mapping from NRM IOC AucFunction attributes to SS equivalent MOC AucFunction attributes

Attributes of IOC Auc Function in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
aucFunctionId	aucFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.5   IOC EirFunction

Mapping from NRM IOC EirFunction attributes to SS equivalent MOC EirFunction attributes

Attributes of IOC Eir Function in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
eirFunctionId	eirFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.6   IOC SmsIwmscFunction

Mapping from NRM IOC SmsIwmscFunction attributes to SS equivalent MOC SmsIwmscFunction attributes

Attributes of IOC SmsIwmscFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
smsIwmscFunctionId	smsIwmscFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.7   IOC SmsGmscFunction

Mapping from NRM IOC SmsGmscFunction attributes to SS equivalent MOC SmsGmscFunction attributes

Attributes of IOC SmsGmscFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
smsGmscFunctionId	smsGmscFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.8   IOC SgsnFunction

Mapping from NRM IOC SgsnFunction attributes to SS equivalent MOC SgsnFunction attributes

Attributes of IOC SgsnFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
sgsnFunctionId	sgsnFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
mccList	mccList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
mncList	mncList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
lacList	lacList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
racList	racList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
sacList	sacList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	Read-Write, M
sgsnId	sgsnId	long	Read-Write, M
sgsnFunction-GsmCell	sgsnFunctionGsmCell	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
sgsnFunction-ExternalGsmCell	sgsnFunctionExternalGsmCell	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
proceduralStatus	There is no corresponding SS attribute.		

5.2.9   IOC GgsnFunction

Mapping from NRM IOC GgsnFunction attributes to SS equivalent MOC GgsnFunction attributes

Attributes of IOC GgsnFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
ggsnFunctionId	ggsnFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M
proceduralStatus	There is no corresponding SS attribute.		

5.2.10   IOC BgFunction

Mapping from NRM IOC BgFunction attributes to SS equivalent MOC BgFunction attributes

Attributes of IOC BgFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
bgFunctionId	bgFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.11   IOC GmscFunction

Mapping from NRM IOC GmscFunction attributes to SS equivalent MOC GmscFunction attributes

Attributes of IOC GmscFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
gmscFunctionId	gmscFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.12   IOC SmlcFunction

Mapping from NRM IOC SmlcFunction attributes to SS equivalent MOC SmlcFunction attributes

Attributes of IOC SmlcFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
smlcFunctionId	smlcFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.13   IOC GmlcFunction

Mapping from NRM IOC GmlcFunction attributes to SS equivalent MOC GmlcFunction attributes

Attributes of IOC GmlcFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
gmlcFunctionId	gmlcFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.14   IOC ScfFunction

Mapping from NRM IOC ScfFunction attributes to SS equivalent MOC ScfFunction attributes

Attributes of IOC ScfFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
scfFunctionId	scfFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.15   IOC SrfFunction

Mapping from NRM IOC SrfFunction attributes to SS equivalent MOC SrfFunction attributes

Attributes of IOC SrfFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
srfFunctionId	srfFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.16   IOC CbcFunction

Mapping from NRM IOC CbcFunction attributes to SS equivalent MOC CbcFunction attributes

Attributes of IOC CbcFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
cbcFunctionId	cbcFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.17   IOC CgfFunction

Mapping from NRM IOC CgfFunction attributes to SS equivalent MOC CgfFunction attributes

Attributes of IOC CgfFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
cgfFunctionId	cgfFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.18 Void

5.2.19 IOC GmscServerFunction

Mapping from NRM IOC GmscServerFunction attributes to SS equivalent MOC GmscServerFunction attributes

Attributes of IOC GmscServerFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
gmscServerFunctionId	gmscServerFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.20 IOC IwfFunction

Mapping from NRM IOC IwfFunction attributes to SS equivalent MOC IwfFunction attributes

Attributes of IOC IwfFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
iwfFunctionId	iwfFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.21 IOC MnpSrfFunction

Mapping from NRM IOC MnpSrfFunction attributes to SS equivalent MOC IwfFunction attributes

Attributes of IOC MnpSrfFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
mnpSrfFunctionId	mnpSrfFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.22 IOC NpdbFunction

Mapping from NRM IOC NpdbFunction attributes to SS equivalent MOC NpdbFunction attributes

Attributes of IOC NpdbFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
npdbFunctionId	npdbFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.23 IOC SgwFunction

Mapping from NRM IOC SgwFunction attributes to SS equivalent MOC SgwFunction attributes

Attributes of IOC SgwFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
sgwFunctionId	sgwFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.24 IOC SsfFunction

Mapping from NRM IOC SsfFunction attributes to SS equivalent MOC SsfFunction attributes

Attributes of IOC SsfFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
ssfFunctionId	ssfFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.25   IOC BsFunction

Mapping from NRM IOC BsFunction attributes to SS equivalent MOC BsFunction attributes

Attributes of IOC BsFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
bsFunctionId	bsFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M

5.2.26   IOC IucsLink

Mapping from NRM IOC IucsLink attributes to SS equivalent MOC IucsLink attributes

Attributes of IOC IucsLink in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
iucsLinkId	iucsLinkId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M
connectedRnc	connectedRnc	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M
connectedBss	connectedBss	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M
connectedHNBGW	connectedHNBGW	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.27   IOC IupsLink

Mapping from NRM IOC IupsLink attributes to SS equivalent MOC IupsLink attributes

Attributes of IOC IupsLink in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
iupsLinkId	iupsLinkId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M
connectedRnc	connectedRnc	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, O
connectedBss	connectedBss	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, O
connectedHNBGW	connectedHNBGW	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.28   IOC IubcLink

Mapping from NRM IOC IubcLink attributes to SS equivalent MOC IubcLink attributes

Attributes of IOC IubcLink in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
iubcLinkId	iubcLinkId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M
connectedRnc	connectedRnc	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M
connectedHNBGW	connectedHNBGW	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.29　IOC ALink

Mapping from NRM IOC ALink attributes to SS equivalent MOC ALink attributes

Attributes of IOC ALink in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
aLinkId	aLinkId	string	Read-Only, M
userLabel	userLabel	string	Read- Write, M
connectedBss	connectedBss	GenericNetworkResourcesIRPSystem::Attribute Types::MOReference	Read-Only, M

5.2.30　IOC GbLink

Mapping from NRM IOC GbLink attributes to SS equivalent MOC GbLink attributes

Attributes of IOC GbLink in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
gbLinkId	gbLinkId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
connectedBss	connectedBss	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.31　IOC CsMgwFunction

Mapping from NRM IOC CsMgwFunction attributes to SS equivalent MOC CsMgwFunction attributes

Attributes of IOC CsMgwFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
csMgwFunctionId	csMgwFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
csMgwFunction-MscServerFunction	csMgwFunction-MscServerFunction	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference	Read-Only, M
csMgwFunction-IucsLink	csMgwFunctionIucsLink	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M
csMgwFunction-ALink	csMgwFunctionALink	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet	Read-Only, M

5.2.32　Void

5.2.33　Void

5.2.34　Void

5.2.35　Void

5.2.36　Void

5.2.37　Void

5.2.38　Void

5.2.39　Void

5.2.40   Void

5.2.41   Void

5.2.42   Void

5.2.43   Void

5.2.44   Void

5.2.45   Void

5.2.46   Void

5.2.47   Void

5.2.48   Void

5.2.49   Void

5.2.50   Void

5.2.51   Void

5.2.52   Void

5.2.53   Void

5.2.54   Void

5.2.55   Void

5.2.56   Void

5.2.57   Void

5.2.58   Void

5.2.59   Void

5.2.60   Void

5.2.61   Void

5.2.62   Void

5.2.63   Void

5.2.64   Void

5.2.65   Void

5.2.66   IOC BmScFunction

Mapping from NRM IOC BmScFunction attributes to SS equivalent MOC BmScFunction attributes

Attributes of IOC MgwFunction in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
bmScFunctionId	bmScFunctionId	string	Read-Only, M

5.2.67   IOC Link_BmSc_Ggsn

All attributes are inherited from `Link`. See mapping of attributes for `Link` IOC in 3GPP TS 32.623 [6].

5.2.68   IOC Link_Ggsn_Sgsn

All attributes are inherited from `Link`. See mapping of attributes for `Link` IOC in 3GPP TS 32.623 [6].

5.2.69   CircuitEndPointSubgroup

**Mapping from NRM IOC CircuitEndPointSubgroup attributes to SS equivalent MOC
CircuitEndPointSubgroup attributes**

Attributes of IOC CircuitEndPointSubgroup in TS 32.632 [3]	SS Attributes	SS Type	Qualifier
circuitEndPointSubgroupId	circuitEndPointSubgroupId	string	Read-Only, M

6 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.

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).

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.

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

A.1 IDL specification (file name "CoreNetworkResourcesNRMDefs.idl")

```
// File: CoreNetworkResourcesNRMDefs.idl
#ifndef _CORENETWORKRESOURCESNRMDEFS_IDL_
#define _CORENETWORKRESOURCESNRMDEFS_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 CoreNetworkResourcesNRMDefs
{
     /**
      *  Definitions for MO class MscServerFunction
      */
     interface MscServerFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "MscServerFunction";
        // Attribute Names
        //
        const string mscServerFunctionId = "mscServerFunctionId";
        const string mccList = "mccList";
        const string mncList = "mncList";
        const string lacList = "lacList";
        const string sacList = "sacList";
        const string gcaList = "gcaList";
        const string mscId = "mscId";
        const string mscServerFunctionGsmCell = "mscServerFunctionGsmCell";
        const string mscServerFunctionExternalGsmCell = "mscServerFunctionExternalGsmCell";
        const string mscServerFunctionCsMgwFunction = "mscServerFunctionCsMgwFunction";
     };
     /**
      *  Definitions for MO class HlrFunction
      */
     interface HlrFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "HlrFunction";
        // Attribute Names
        //
        const string hlrFunctionId = "hlrFunctionId";
     };
     /**
      *  Definitions for MO class VlrFunction
      */
     interface VlrFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "VlrFunction";
        // Attribute Names
        //
        const string vlrFunctionId = "vlrFunctionId";
     };
     /**
      *  Definitions for MO class AucFunction
      */
     interface AucFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "AucFunction";
        // Attribute Names
        //
        const string aucFunctionId = "aucFunctionId";
     };
     /**
      *  Definitions for MO class EirFunction
      */
     interface EirFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
```

```
{
   const string CLASS = "EirFunction";
   // Attribute Names
   //
   const string eirFunctionId = "eirFunctionId";
};
/**
 *  Definitions for MO class SmsIwmscFunction
 */
interface SmsIwmscFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "SmsIwmscFunction";
   // Attribute Names
   //
   const string smsIwmscFunctionId = "smsIwmscFunctionId";
};
/**
 *  Definitions for MO class SmsGmscFunction
 */
interface SmsGmscFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "SmsGmscFunction";
   // Attribute Names
   //
   const string smsGmscFunctionId = "smsGmscFunctionId";
};
/**
 *  Definitions for MO class SgsnFunction
 */
interface SgsnFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "SgsnFunction";
   // Attribute Names
   //
   const string sgsnFunctionId = "sgsnFunctionId";
   const string mccList = "mccList";
   const string mncList = "mncList";
   const string lacList = "lacList";
   const string racList = "racList";
   const string sacList = "sacList";
   const string sgsnId = "sgsnId";
   const string sgsnFunctionGsmCell = "sgsnFunctionGsmCell";
   const string sgsnFunctionExternalGsmCell = "sgsnFunctionExternalGsmCell";
};
/**
 *  Definitions for MO class GgsnFunction
 */
interface GgsnFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "GgsnFunction";
   // Attribute Names
   //
   const string ggsnFunctionId = "ggsnFunctionId";
};
/**
 *  Definitions for MO class BgFunction
 */
interface BgFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "BgFunction";
   // Attribute Names
   //
   const string bgFunctionId = "bgFunctionId";
};
/**
 *  Definitions for MO class GmscFunction
 */
interface GmscFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "GmscFunction";
   // Attribute Names
   //
   const string gmscFunctionId = "gmscFunctionId";
};
/**
 *  Definitions for MO class SmlcFunction
 */
interface SmlcFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
```

```
{
    const string CLASS = "SmlcFunction";
    // Attribute Names
    //
    const string smlcFunctionId = "smlcFunctionId";
};
/**
 *  Definitions for MO class GmlcFunction
 */
interface GmlcFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "GmlcFunction";
    // Attribute Names
    //
    const string gmlcFunctionId = "gmlcFunctionId";
};
/**
 *  Definitions for MO class ScfFunction
 */
interface ScfFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "ScfFunction";
    // Attribute Names
    //
    const string scfFunctionId = "scfFunctionId";
};
/**
 *  Definitions for MO class SrfFunction
 */
interface SrfFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "SrfFunction";
    // Attribute Names
    //
    const string srfFunctionId = "srfFunctionId";
};
/**
 *  Definitions for MO class CbcFunction
 */
interface CbcFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "CbcFunction";
    // Attribute Names
    //
    const string cbcFunctionId = "cbcFunctionId";
};
/**
 *  Definitions for MO class CgfFunction
 */
interface CgfFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "CgfFunction";
    // Attribute Names
    //
    const string cgfFunctionId = "cgfFunctionId";
};
/**
 *  Definitions for MO class GmscServerFunction
 */
interface GmscServerFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "GmscServerFunction";
    // Attribute Names
    //
    const string gmscServerFunctionId = "gmscServerFunctionId";
};
/**
 *  Definitions for MO class IwfFunction
 */
interface IwfFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
    const string CLASS = "IwfFunction";
    // Attribute Names
    //
    const string iwfFunctionId = "iwfFunctionId";
};
/**
 *  Definitions for MO class MnpSrfFunction
```

```
 */
interface MnpSrfFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "MnpSrfFunction";
   // Attribute Names
   //
   const string mnpSrfFunctionId = "mnpSrfFunctionId";
};
/**
 *  Definitions for MO class NpdbFunction
 */
interface NpdbFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "NpdbFunction";
   // Attribute Names
   //
   const string npdbFunctionId = "npdbFunctionId";
};
/**
 *  Definitions for MO class SgwFunction
 */
interface SgwFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "SgwFunction";
   // Attribute Names
   //
   const string sgwFunctionId = "sgwFunctionId";
};
/**
 *  Definitions for MO class SsfFunction
 */
interface SsfFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "SsfFunction";
   // Attribute Names
   //
   const string ssfFunctionId = "ssfFunctionId";
};

/**
 *  Definitions for MO class BsFunction
 */
interface BsFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "BsFunction";
   // Attribute Names
   //
   const string bsFunctionId = "bsFunctionId";
};
/**
 *  Definitions for MO class IucsLink
 */
interface IucsLink : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "IucsLink";
   // Attribute Names
   //
   const string iucsLinkId = "iucsLinkId";
   const string connectedRnc = "connectedRnc";
   const string connectedBss = "connectedBss";
   const string connectedHNBGW = "connectedHNBGW";
};
/**
 *  Definitions for MO class IupsLink
 */
interface IupsLink : GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "IupsLink";
   // Attribute Names
   //
   const string iupsLinkId = "iupsLinkId";
   const string connectedRnc = "connectedRnc";
   const string connectedBss = "connectedBss";
   const string connectedHNBGW = "connectedHNBGW";
};
/**
 *  Definitions for MO class IubcLink
 */
```

```
   interface IubcLink : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "IubcLink";
      // Attribute Names
      //
      const string iubcLinkId = "iubcLinkId";
      const string connectedRnc = "connectedRnc";
      const string connectedHNBGW = "connectedHNBGW";
   };
   /**
    *  Definitions for MO class ALink
    */
   interface ALink : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "ALink";
      // Attribute Names
      //
      const string aLinkId = "aLinkId";
      const string connectedBss = "connectedBss";
   };
   /**
    *  Definitions for MO class GbLink
    */
   interface GbLink : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "GbLink";
      // Attribute Names
      //
      const string gbLinkId = "gbLinkId";
      const string connectedBss = "connectedBss";
   };
   /**
    *  Definitions for MO class CsMgwFunction
    */
   interface CsMgwFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "CsMgwFunction";
      // Attribute Names
      //
      const string csMgwFunctionId = "csMgwFunctionId";
      const string csMgwFunctionMscServerFunction = "csMgwFunctionMscServerFunction";
      const string csMgwFunctionIucsLink = "csMgwFunctionIucsLink";
      const string csMgwFunctionALink = "csMgwFunctionALink";
   };
   /**
    *  Definitions for MO class BmScFunction
    */

   interface BmScFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "BmScFunction";
      //Attribute Names
      //
      const string bmScFunctionId = "bmScFunctionId";
   };

 /**
   *  Definitions for MO class Link_BmSc_Ggsn
   */
  interface Link_BmSc_Ggsn : GenericNetworkResourcesNRMDefs::Link
  {
     const string CLASS = "Link_BmSc_Ggsn";

     // All Attributes inherited from Link
  };

 /**
   *  Definitions for MO class Link_Ggsn_Sgsn
   */
  interface Link_Ggsn_Sgsn : GenericNetworkResourcesNRMDefs::Link
  {
     const string CLASS = "Link_Ggsn_Sgsn";

     // All Attributes inherited from Link
  };
   /*  Definitions for MO class CircuitEndPointSubgroup
    */
```

```
interface CircuitEndPointSubgroup: GenericNetworkResourcesNRMDefs::ManagedFunction
{
   const string CLASS = "CircuitEndPointSubgroup";
   //Attribute Names
   const string circuitEndPointSubgroupId = "circuitEndPointSubgroupId";
};


};
#endif // _CORENETWORKRESOURCESNRMDEFS_IDL_
```

Annex B (informative):
Change history

Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
Jun 2001	SA_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	--	2.0.0	4.0.0
Jun 2002	SA_16	SP-020302	0001	--	Align with Rel-4 Network Architecture (23.002) by changing Roaming Signalling Gateway (R-SGW) to Signalling Gateway (SGW)	F	4.0.0	4.1.0
Sep 2002	SA_17	SP-020489	0002	--	Upgrade to Rel-5 the CORBA SS for Core Network NRM (add Managed Object Classes (MOCs)	C	4.1.0	5.0.0
Dec 2002	SA_18	SP-020747	0003	--	Removal of faulty attribute uraList (alignment with Rel-5 32.632 Network Resource Model)	F	5.0.0	5.1.0
Sep 2004	SA_25	SP-040567	0004	--	Correction in Rules for NRM extensions - Align with 32.622 (Generic NRM IS)	F	5.1.0	5.2.0
Sep 2004	SA_25	SP-040582	0005	--	Correction of modelling of Media GateWay (MGW)	F	5.1.0	5.2.0
Sep 2004	SA_25	SP-040581	0006	--	Add Inheritance in CORBA IDL	B	5.2.0	6.0.0
Dec 2004	SA_26	SP-040809	0007	--	Add new IMS Entities	B	6.0.0	6.1.0
Dec 2004	SA_26	SP-040809	0008	--	Add restart notification to GSN objects using "proceduralStatus" attribute - Align with IS in 32.632	B	6.0.0	6.1.0
Mar 2005	SA_27	SP-050047	0011	--	Align with 32.632, regarding the IS template and UML repertoire	F	6.1.0	6.2.0
Mar 2005	SA_27	SP-050047	0012	--	Correct List of Long Attributes	A	6.1.0	6.2.0
Mar 2005	SA_27	SP-050047	0013	--	Add IMS links to CN NRM CORBA SS	B	6.1.0	6.2.0
Mar 2006	SA_31	SP-060103	0014	--	Name correction of Bgcf Function - Align with 32.632 Information Service (IS)	F	6.2.0	6.3.0
Sep 2006	SA_33	SP-060611	0015	--	Add missing Cscf Function to CN NRM - Align with 32.632	F	6.3.0	6.4.0
Dec 2006	SA_34	SP-060712	0016	--	Correct the Link subclasses to model Mg and Mj reference points - Align with 32.632	F	6.4.0	6.5.0
Dec 2006	SA_34	SP-060731	0017	--	Move IMS part to new IMS NRM (32.733)	C	6.5.0	7.0.0
Mar 2007	SA_35	SP-070047	0019	--	Removing IMS related links from the CN NRM	F	7.0.0	7.1.0
Jun 2007	SA_36	SP-070277	0020	--	Add the BmScFunction to the CN NRM - Needed for the TraceIRP - Align with 32.632	B	7.1.0	7.2.0
Sep 2007	SA_37	SP-070606	0022	--	Correct CORBA Solution Set Tables	A	7.2.0	7.3.0
Jun 2008	SA_40	SP-080328	0023	--	Add definition of IOC CircuitEndPointSubgroup - Align with 32.632 and 32.407	F	7.3.0	7.4.0
Dec 2008	SA_42	--	--	--	Upgrade to Release 8	--	7.4.0	8.0.0
Dec 2009	-	-	-	-	Update to Rel-9 version	--	8.0.0	9.0.0
Mar 2010	SA_47	SP-100038	0024	--	Addition of HNBGW relationship attributions in CN NRM CORBA SS	B	9.0.0	9.1.0
Sep 2010	SA_49	SP-100488	0025	--	Correct attribute connectedBss in IDL- Align with 32.632	F	9.1.0	9.2.0