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*Technical Specification*

## Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS) (3GPP TS 32.753 version 8.0.0 Release 8)

**GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS**

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*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
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# Foreword

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# Contents

# Foreword

This Technical Specification has been produced by the 3$^{rd}$ Generation Partnership Project (3GPP).

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x the first digit:

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y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

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# Introduction

The present document is part of a TS-family covering the 3$^{rd}$ Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

32.751: "Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements";

32.752: "Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)";

**32.753:** **"Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)";**

32.755: "Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition".

# 1 Scope

The present document is part of an Integration Reference Point (IRP) named EPC Network Resource Model (NRM) IRP, through which an `IRPAgent` can communicate configuration management information to one or several `IRPManagers` concerning EPC resources. The EPC NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The present document specifies the EPC Network Resources IRP: CORBA Solution Set, which defines the mapping of the IRP information model (see TS 32.752 [2]) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

This Solution Set is related to 3GPP TS 32.752 v8.0.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 21.905: 'Vocabulary for 3GPP Specifications'

[2]       3GPP TS 32.752: " Telecommunications management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

void

## 3.2 Symbols

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

void

## 3.3      Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

| | |
|---|---|
| CORBA | Common Object Request Broker Architecture |
| DN | Distinguished Name |
| EPDG | Evolved Packet Data Gateway |
| IS | Information Service |
| IDL | Interface Definition Language (OMG) |
| IOC | Information Object Class |
| IRP | Integration Reference Point |
| MME | Mobility Management Entity |
| MO | Managed Object |
| MOC | Managed Object Class |
| NRM | Network Resource Model |
| OMG | Object Management Group |
| PCRF | Policy and Charging Rules Function |
| P-GW | PDN Gateway |
| S-GW | Serving Gateway |
| SS | Solution Set |

# 4      Architectural Features

The overall architectural feature of EPC NRM IRP is specified in 3GPP TS 32.752 [2].  This clause specifies features that are specific to the CORBA SS.

# 5      Mapping

## 5.1      General mapping

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.

# 5.2 Information Object Class (IOC) mapping

## 5.2.1 OC MMEFunction

| Attribute of IOC MMEFunction in 3GPP TS 32.752 [2] | SS Attribute | SS Type | Support Qualifier | Read Qualifier | Write Qualifier |
|---|---|---|---|---|---|
| `id` | `id` | string | M | M | - |
| `pLMNIdList` | `pLMNIdList` | genericEPCNRMAttributeTypes:: AttributeTypes:: plmnIdListType | M | M | - |
| `mMEC` | `mMEC` | long | M | M | - |
| `sGWAddress` | `sGWAddress` | string | CM | M | M |
| `sGSNAddress` | `sGSNAddress` | string | CM | M | M |
| `mMEPool` | `mMEPool` | GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference | M | M | - |

## 5.2.2 IOC MMEPool

| Attribute of IOC MMEPool in 3GPP TS 32.752 [2] | SS Attribute | SS Type | Support Qualifier | Read Qualifier | Write Qualifier |
|---|---|---|---|---|---|
| `id` | `id` | string | M | M | - |
| `mMEGI` | `mMEGI` | long | M | M | - |
| `mMEPoolMemberList` | `mMEPoolMemberList` | GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet | M | M | M |
| `mMEPoolArea` | `mMEPoolArea` | GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference | M | M | M |

## 5.2.3 IOC MMEPoolArea

| Attribute of IOC MMEPoolArea in 3GPP TS 32.752 [2] | SS Attribute | SS Type | Support Qualifier | Read Qualifier | Write Qualifier |
|---|---|---|---|---|---|
| `id` | `id` | string | M | M | - |
| `mMEPool` | `mMEPool` | GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference | M | M | M |
| `tACList` | `tACList` | GenericNetworkResourcesIRPSystem:: AttributeTypes::LongSet | M | M | M |
| `pLMNIdList` | `pLMNIdList` | genericEPCNRMAttributeTypes:: AttributeTypes:: plmnIdListType | O | M | - |

## 5.2.4 IOC EP_RP_EPS

| Attribute of IOC EP_RP_EPS in 3GPP TS 32.752 [2] | SS Attribute | SS Type | Support Qualifier | Read Qualifier | Write Qualifier |
|---|---|---|---|---|---|
| `farEndNeIpAddr` | `farEndNeIpAddr` | string | O | M | CM |

# Annex A (normative):
# CORBA IDL, NRM definitions

```
//File:EPCResourcesNRMDefs.idl
#ifndef _EPCNETWORKRESOURCESNRMDEFS_IDL_
#define _EPCNETWORKRESOURCESNRMDEFS_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 EPCNetworkResourcesNRMDefs
{

     /**
      *  Definitions for MO class EPDGFunction
      */
     interface EPDGFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "EPDGFunction";
        // No New Attribute Names
        //
     };

     /**
      *  Definitions for MO class MMEFunction
      */
     interface MMEFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "MMEFunction";
        // Attribute Names
        //
        const string id = "id";
        const string pLMNIdList = "pLMNIdList";
        const string mMEC = "mMEC";
        const string sGWAddress = "sGWAddress";
        const string sGSNAddress = "sGSNAddress";
        const string mMEPool = "mMEPool";
     };

     /**
      *  Definitions for MO class PCRFFunction
      */
     interface PCRFFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "PCRFFunction";
        // No New Attribute Names
        //
     };

     /**
      *  Definitions for MO class PGWFunction
      */
     interface PGWFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "PGWFunction";
        // No New Attribute Names
        //
     };

     /**
      *  Definitions for MO class SGWFunction
      */
     interface SGWFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "SGWFunction";
        // No New Attribute Names
        //
     };

      /**
       *  Definitions for MO class MMEPool
```

```
   */
   interface MMEPool : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "MMEPool";
      // Attribute Names
      //
      const string id = "id";
      const string mMEGI = "mMEGI";
      const string mMEPoolMemberList = "mMEPoolMemberList";
      const string mMEPoolArea = "mMEPoolArea";
   };

    /**
    *  Definitions for MO class MMEPoolArea
    */
   interface MMEPoolArea : GenericNetworkResourcesNRMDefs::ManagedFunction
   {
      const string CLASS = "MMEPoolArea";
      // Attribute Names
      //
      const string id = "id";
      const string mMEPool = "mMEPool";
      const string tACList = "tACList";
      const string sGWAddress = "sGWAddress";
      const string pLMNIdList = "pLMNIdList";
   };

    /**
    *  Definitions for MO class EP_RP_EPS
    */
   interface EP_RP_EPS : GenericNetworkResourcesNRMDefs::EP_RP
   {
      const string CLASS = "EP_RP_EPS";
      // Attribute Names
      const string farEndNeIpAddr = "farEndNeIpAddr";
   };

    /**
    *  Definitions for MO class Link_ENB_MME
    */
   interface Link_ENB_MME : GenericNetworkResourcesNRMDefs::Link
   {
      const string CLASS = "Link_ENB_MME";
      // No New Attribute Names
      //
   };

    /**
    *  Definitions for MO class Link_ENB_SGW
    */
   interface Link_ENB_SGW : GenericNetworkResourcesNRMDefs::Link
   {
      const string CLASS = "Link_ENB_SGW";
      // No New Attribute Names
      //
   };

    /**
    *  Definitions for MO class Link_EPDG_PCRF
    */
   interface Link_EPDG_PCRF : GenericNetworkResourcesNRMDefs::Link
   {
      const string CLASS = "Link_EPDG_PCRF";
      // No New Attribute Names
      //
   };

    /**
    *  Definitions for MO class Link_EPDG_PGW
    */
   interface Link_EPDG_PGW : GenericNetworkResourcesNRMDefs::Link
   {
      const string CLASS = "Link_EPDG_PGW";
      // No New Attribute Names
      //
   };

    /**
```

```
 *  Definitions for MO class Link_HSS_MME
 */
interface Link_HSS_MME : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_HSS_MME";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_MME_MME
 */
interface Link_MME_MME : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_MME_MME";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_MME_SGSN
 */
interface Link_MME_SGSN : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_MME_SGSN";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_MME_SGW
 */
interface Link_MME_SGW : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_MME_SGW";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_PCRF_SGW
 */
interface Link_PCRF_SGW : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_PCRF_SGW";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_PCRF_PGW
 */
interface Link_PCRF_PGW : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_PCRF_PGW";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_PGW_SGW
 */
interface Link_PGW_SGW : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_PGW_SGW";
   // No New Attribute Names
   //
};

 /**
 *  Definitions for MO class Link_SGSN_SGW
 */
interface Link_SGSN_SGW : GenericNetworkResourcesNRMDefs::Link
{
   const string CLASS = "Link_SGSN_SGW";
   // No New Attribute Names
   //
};
```

```
};

module genericEPCNRMAttributeTypes
{
      /**
       *  Definitions for struct PlmnIdType
       */
      struct PlmnIdType
      {
         short mcc;
         short mnc;
      };

      typedef sequence<PlmnIdType> plmnIdListType;


};
#endif // _EPCNETWORKRESOURCESNRMDEFS_IDL_
```

# Annex B (informative):
# Change history

| Change history | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | TSG # | TSG Doc. | CR | Rev | Subject/Comment | Old | New |
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# History

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