ETSI TS 132 753 V9.2.0 (2010-10)

Technical Specification

**Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
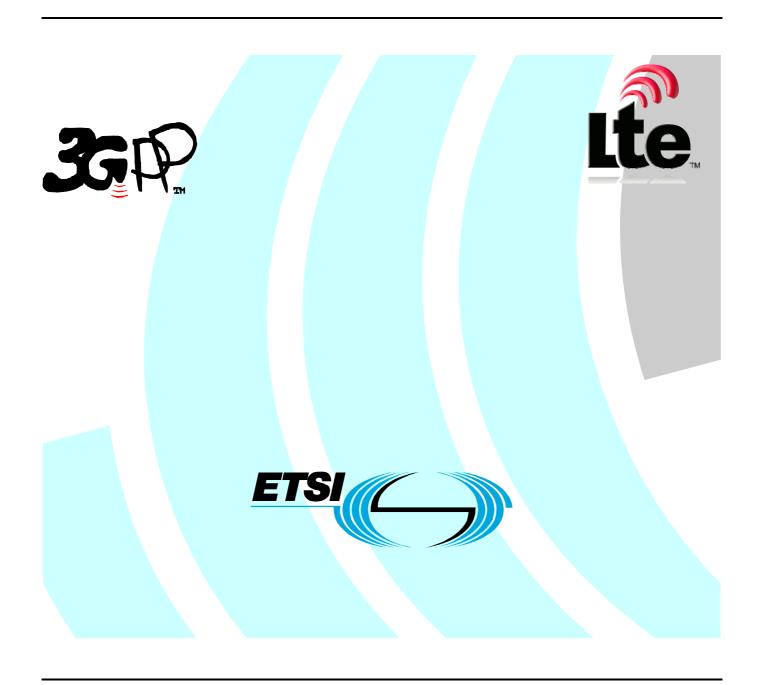LTE;
Telecommunication management;
Evolved Packet Core (EPC) Network Resource Model (NRM)
Integration Reference Point (IRP):
Common Object Request Broker Architecture (CORBA)
Solution Set (SS)
(3GPP TS 32.753 version 9.2.0 Release 9)**

Reference
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Keywords
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Foreword

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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

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x the first digit:

1 presented to TSG for information;

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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 3rd 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 v9.3.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].

3.2 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 IOC 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::plmnIdListType	M	M	-
mMEC	mMEC	long	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	
`pLMNIdList`	`pLMNIdList`	genericEPCNRMAttributeTypes::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

5.2.5 IOC ExternalMMEFunction

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

5.2.6 IOC ServingGWFunction

Attribute of IOC ServingGWFunction in 3GPP TS 32.752 [2]	SS Attribute	SS Type	Support Qualifier	Read Qualifier
`id`	`id`	string	M	M
`pLMNIdList`	`pLMNIdList`	genericEPCNRMAttributeTypes:: plmnIdListType	M	M
`tACList`	`tACList`	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	M	M

5.2.7 IOC ExternalServingGWFunction

Attribute of IOC ExternalServingGWFunction in 3GPP TS 32.752 [2]	SS Attribute	SS Type	Support Qualifier	Read Qualifier
`id`	`id`	string	M	
`pLMNIdList`	`pLMNIdList`	genericEPCNRMAttributeTypes:: plmnIdListType	M	
`tACList`	`tACList`	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet	M	

5.2.8   IOC QCISet

Attribute of IOC QCISet in 3GPP TS 32.752 [2]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Wri Quali
id	id	string	M	M	-
qCIList	qCIList	genericEPCNRMAttributeTypes:: qciListType	M	M	M

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 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";
        // Attribute Names
        //
        const string id = "id";
        const string pLMNIdList = "pLMNIdList";
        const string tACList = "tACList";
        //
     };

     /**
      *  Definitions for MO class ServingGWFunction
      */
     interface ServingGWFunction : GenericNetworkResourcesNRMDefs::ManagedFunction
     {
        const string CLASS = "ServingGWFunction";
        // Attribute Names
        //
        const string id = "id";
```

```
      const string pLMNIdList = "pLMNIdList";
      const string tACList = "tACList";
   };

    /**
     *  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 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_ServingGW
     */
   interface Link_ENB_ServingGW : GenericNetworkResourcesNRMDefs::Link
   {
      const string CLASS = "Link_ENB_ServingGW";
      // 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_ServingGW
  */
interface Link_MME_ServingGW : GenericNetworkResourcesNRMDefs::Link
{
    const string CLASS = "Link_MME_ServingGW";
    // No New Attribute Names
    //
};

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

 /**
  *  Definitions for MO class Link_SGSN_ServingGW
  */
interface Link_SGSN_ServingGW : GenericNetworkResourcesNRMDefs::Link
```

```
        {
           const string CLASS = "Link_SGSN_ServingGW";
           // No New Attribute Names
           //
        };

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

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

         /**
          *  Definitions for MO class QCISet
          */
        interface QCISet: GenericNetworkResourcesNRMDefs::ManagedFunction
        {
           const string CLASS = "QCISet";
           // Attribute Names
           //
           const string id = "id";
           const string qCIList = "qCIList";
        };
};

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

        typedef sequence<PlmnIdType> plmnIdListType;


         /**
          *  Definitions for struct QciType
          */

        struct QciType
        {
           short qci;
           boolean resourceType;
           // True is GBR, False is Non-GBR
           short priority;
           short packetDelayBudget;
           float packetErrorLossRate;
        };

        typedef sequence<QciType> qciListType;

};
#endif // _EPCNETWORKRESOURCESNRMDEFS_IDL_
```

Annex B (informative):
Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Mar 2009	SP-43	SP-090072	--	--	Presentation to SA for information and approval	1.0.0	8.0.0
Jun 2009	SP-44	SP-090291	001	-	Add the missing ExternalMmeFunction IOC	8.0.0	8.1.0
Jun 2009	SP-44	SP-090291	002	-	Add the missing ExternalSGWFunction IOC and attributes for SGWFunction	8.0.0	8.1.0
Sep 2009	SP-45	SP-090534	003	--	Removal of the Write Qualifier from the TACList attribute for the MMEPoolArea	8.1.0	8.2.0
Sep 2009	SP-45	SP-090627	004	--	Add QCI model	8.2.0	9.0.0
Mar 2010	SP-47	SP-100035	006	--	Removal of sgwAddress and sgsnAddress in MMEFunction	9.0.0	9.1.0
Mar 2010	SP-47	SP-100034	008	--	Correct the attributes of SGWFunction and MMEPoolArea to align with IS	9.0.0	9.1.0
Sep 2010	SP-49	SP-100488	009	--	Changing the name of SGWFunction IOC in order not to conflict with the SGWFunction IOC in TS 32.632	9.1.0	9.2.0

History

Document history		
V9.0.0	January 2010	Publication
V9.1.0	April 2010	Publication
V9.2.0	October 2010	Publication