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Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Evolved Packet Core (EPC) Network Resource Model (NRM)
Integration Reference Point (IRP);
Solution Set (SS) definitions
(3GPP TS 28.709 version 11.1.0 Release 11)

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Contents

Foreword

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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:

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

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

28.709: Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

1 Scope

The present document specifies the Solution Sets for the EPC NRM IRP.

The Solution Set definition is related to 3GPP TS 28.708 V11.0.X [3].

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.
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[1] 3GPP TS 21.905: “Vocabulary for 3GPP Specifications”.

[2] 3GPP TS 28.708: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)”.

[3] 3GPP TS 32.616: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[4] 3GPP TS 32.606: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[5] W3C REC-xml-names-20060816: "Namespaces in XML 1.1 (Second Edition)".

[6] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[7] W3C REC-xml11-20060816: "Extensible Markup Language (XML) 1.1 (Second Edition)".

[8] Void

[9] W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures.

[10] W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes.

[11] 3GPP TS 28.623: “Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definition”.

3 Definitions 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].

XML file: See definition of [11].

XML document: See definition of [11].

XML declaration: See definition of [11].

XML element: See definition of [11].

empty XML element: See definition of [11].

XML content (of an XML element): See definition of [11].

XML start-tag: See definition of [11].

XML end-tag: See definition of [11].

XML empty-element tag: See definition of [11].

XML attribute specification: See definition of [11].

DTD: See definition of [11].

XML schema: See definition of [11].

XML namespace: See definition of [11].

XML complex type: See definition of [11].

XML element type: See definition of [11].

3.2 Abbreviations

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

CM	Configuration Management
CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
DTD	Document Type Definition
eNodeB	evolved NodeB
EPC	Evolved Packet Core
EPDG	Evolved Packet Data Gateway
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
GPRS	General Packet Radio System
IS	Information Service
IDL	Interface Definition Language (OMG)
IOC	Information Object Class
IRP	Integration Reference Point
IS	Information Service
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
XML	eXtensible Markup Language

4 Solution Set definitions

This specifications defines the following 3GPP EPC NRM IRP Solution Set definitions:

- 3GPP EPC NRM IRP CORBA SS (Annex A)
- 3GPP EPC NRM IRP XML definitions (Annex B)

Annex A (normative): CORBA Solution Set

This annex contains the CORBA Solution Set for the IRP whose semantics is specified in EPC Network Resource Model (NRM) IRP: Information Service (TS 28.708 [2]).

A.1 Architectural features

The overall architectural feature of EPC NRM IRP is specified in 3GPP TS 28.708 [2].

This clause specifies features that are specific to the CORBA SS.

A.1.1 Syntax for Distinguished Names

See clause A.1.1 of [11].A.1.2 Rules for NRM extensions

See clause A.1.2 of [11].

A.2 Mapping

A.2.1 General mapping

See clause A.1.2.1 of [11].

A.2.2 Information Object Class (IOC) mapping

A.2.2.1 IOC MMEFunction

IS Attributes	SS Attributes	SS Type
id	id	string
pLMNIdList	pLMNIdList	genericEPCNRMAttributeTypes::AttributeTypes::plmnIdListType
mMEC	mMEC	long
mMEPool	mMEPool	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference

A.2.2.2 IOC MMEPool

IS Attributes	SS Attributes	SS Type
id	id	string
mMEGI	mMEGI	long
mMEPoolMemberList	mMEPoolMemberList	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReferenceSet
mMEPoolArea	mMEPoolArea	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference

A.2.2.3 IOC MMEPoolArea

IS Attributes	SS Attributes	SS Type
id	id	string
mMEPool	mMEPool	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference
tACList	tACList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet
pLMNIdList	pLMNIdList	genericEPCNRMAttributeTypes::AttributeTypes::plmnIdListType

A.2.2.4 IOC EP_RP_EPS

IS Attributes	SS Attributes	SS Type
farEndNeIpAddr	farEndNeIpAddr	string

A.2.2.5 IOC ExternalMMEFunction

IS Attributes	SS Attributes	SS Type
id	id	string
pLMNIdList	pLMNIdList	genericEPCNRMAttributeTypes::AttributeTypes:: plmnIdListType
mMEC	mMEC	long
mMEPool	mMEPool	GenericNetworkResourcesIRPSystem::AttributeTypes::MOReference

A.2.2.6 IOC ServingGWFunction

IS Attributes	SS Attributes	SS Type
id	id	string
pLMNIdList	pLMNIdList	genericEPCNRMAttributeTypes::AttributeTypes:: plmnIdListType
tACList	tACList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet

A.2.2.7 IOC ExternalServingGWFunction

IS Attributes	SS Attributes	SS Type
id	id	string
pLMNIdList	pLMNIdList	genericEPCNRMAttributeTypes::AttributeTypes::plmnIdListType
tACList	tACList	GenericNetworkResourcesIRPSystem::AttributeTypes::LongSet

A.2.2.8 IOC QCISet

IS Attributes	SS Attributes	SS Type
id	id	string
qCIList	qCIList	genericEPCNRMAttributeTypes::AttributeTypes:: qciListType

A.2.2.9 IOC MBMSGWFunction

IS Attributes	SS Attributes	SS Type
id	id	string

A.3 Solution Set definitions

A.3.1 IDL definition structure

Clause A.3.2 defines the types and constants which are used by the EPC NRM IRP.

A.3.2 IDL specification "EPCResourcesNRMDefs.idl"

```
//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";
         // No New Attribute Names
         //
         //
      };

    /**
       *  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 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_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";
      };

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

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

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 (normative): XML definitions

This annex contains the XML definitions for the EPC NRM IRP as it applies to Itf-N, in accordance with EPC NRM IRP IS definitions [2].

The XML file formats are based on XML [7], XML Schema [9] [10] and XML Namespace [5] standards.

B.1 Architectural features

The overall architectural feature of EPC Network Resource Model IRP is specified in 3GPP TS 28.708 [2]. This clause specifies features that are specific to the XML definitions SS.

B.1.1 Syntax for Distinguished Names

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [6].

B.2 Mapping

B.2.1 General mapping

An IOC maps to an XML element of the same name as the IOC's name in the IS. An IOC attribute maps to a sub-element of the corresponding IOC's XML element, and the name of this sub-element is the same as the attribute's name in the IS.

B.2.2 Information Object Class (IOC) mapping

The overall description of the file format of configuration data XML files is provided by 3GPP TS 32.616 [3].

B.3.2 defines the NRM-specific XML schema `epcNrm.xsd` for the EPC NRM IRP IS defined in 3GPP TS 28.708 [2].

XML schema `epcNrm.xsd` explicitly declares NRM-specific XML element types for the related NRM.

The definition of those NRM-specific XML element types complies with the generic mapping rules defined in 3GPP TS 32.616 [3].

B.3 Solution Set definitions

B.3.1 XML definition structure

The XML definitions of this document specify the schema for configuration content.

When using the XML definitions for a configuration file transfer with the Bulk CM IRP, using either CORBA Solution Set of 3GPP TS 32.616 [3] or SOAP Solution Set of 3GPP TS 32.616 [3], the basic part of the XML file format definition is provided by 3GPP TS 32.616 [3]. The XML definitions of this document provide the schema for the configuration content to be included in such a configuration file.

When using the XML definitions with a SOAP solution set of any interface IRP that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.606 [4], the XML definitions of this document

provides the schema for the configuration content operated on by the interface IRP. Such configuration content can be name of managed object and, if applicable, IOC attributes.

B.3.2 XML schema “epcNrm.xsd”

```
<?xml version="1.1" encoding="UTF-8"?>

<!--
  3GPP TS 28.709 EPC Network Resource Model IRP
  XML schema definition
  epcNrm.xsd
-->

<schema
  targetNamespace="http://www.3gpp.org/ftp/specs/archive/28_series/28.709#epcNrm"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xn="http://www.3gpp.org/ftp/specs/archive/28_series/28.623#genericNrm"
  xmlns:epc="http://www.3gpp.org/ftp/specs/archive/28_series/28.709#epcNrm"
>

  <import namespace="http://www.3gpp.org/ftp/specs/archive/28_series/28.623#genericNrm"/>

  <!--EPC NRM IRP IS class associated XML elements -->
  <complexType name="PLMNId">
    <sequence>
      <element name="mcc" type="short" minOccurs="0"/>
      <element name="mNc" type="short" minOccurs="0"/>
    </sequence>
  </complexType>
  <complexType name="PLMNIdList">
    <sequence>
      <element name="pLMNId" type="epc:PLMNId" minOccurs="0" />
    </sequence>
  </complexType>
  <complexType name="TACList">
    <sequence>
      <element name="tAC" type="long" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
  </complexType>
  <complexType name="QCIType">
    <sequence>
      <element name="qci" type="short" minOccurs="0"/>
      <element name="resourceType" type="boolean" minOccurs="0"/>
      <!-- True is GBR, and False is Non-GBR -->
      <element name="priority" type="short" minOccurs="0"/>
      <element name="packetDelayBudget" type="short" minOccurs="0"/>
      <element name="packetErrorLossRate" type="decimal" minOccurs="0"/>
    </sequence>
  </complexType>
  <complexType name="QCIListType">
    <sequence>
      <element name="qCIInfo" type="epc:QCIType" minOccurs="0"/>
    </sequence>
  </complexType>


  <element
    name="EPDGFunction"
    substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
  >
    <complexType>
      <complexContent>
        <extension base="xn:NrmClass">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
                <all>
                   <element name="userLabel" type="string" minOccurs="0"/>
                  <element name="linkList" type="xn:linkListType" minOccurs="0"/>
                </all>
              </complexType>
            </element>
            <choice minOccurs="0" maxOccurs="unbounded">
              <element ref="epc:EPDGFunctionOptionallyContainedNrmClass"/>
```

```
            <element ref="epc:EP_RP_EPS"/>
          <element ref="xn:VsDataContainer"/>
        </choice>
      </sequence>
    </extension>
  </complexContent>
 </complexType>
</element>

<element
 name="MMEFunction"
 substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
>
 <complexType>
  <complexContent>
   <extension base="xn:NrmClass">
    <sequence>
     <element name="attributes" minOccurs="0">
      <complexType>
       <all>
        <element name="userLabel" type="string" minOccurs="0"/>
        <element name="pLMNIdList" type="epc:PLMNIdList" minOccurs="0"/>
        <element name="mMEC" type="long" minOccurs="0"/>
        <element name="mMEPool" type="xn:dn" minOccurs="0"/>
       </all>
      </complexType>
     </element>
     <choice minOccurs="0" maxOccurs="unbounded">
      <element ref="epc:MMEFunctionOptionallyContainedNrmClass"/>
        <element ref="epc:EP_RP_EPS"/>
      <element ref="xn:VsDataContainer"/>
     </choice>
    </sequence>
   </extension>
  </complexContent>
 </complexType>
</element>

<element
 name="PCRFFunction"
 substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
>
 <complexType>
  <complexContent>
   <extension base="xn:NrmClass">
    <sequence>
     <element name="attributes" minOccurs="0">
      <complexType>
       <all>
          <element name="userLabel" type="string" minOccurs="0"/>
         <element name="linkList" type="xn:linkListType" minOccurs="0"/>
       </all>
      </complexType>
     </element>
     <choice minOccurs="0" maxOccurs="unbounded">
      <element ref="epc:PCRFFunctionOptionallyContainedNrmClass"/>
        <element ref="epc:EP_RP_EPS"/>
      <element ref="xn:VsDataContainer"/>
     </choice>
    </sequence>
   </extension>
  </complexContent>
 </complexType>
</element>

<element
 name="PGWFunction"
 substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
>
 <complexType>
  <complexContent>
   <extension base="xn:NrmClass">
    <sequence>
     <element name="attributes" minOccurs="0">
      <complexType>
       <all>
          <element name="userLabel" type="string" minOccurs="0"/>
       </all>
```

```
          </complexType>
        </element>
        <choice minOccurs="0" maxOccurs="unbounded">
          <element ref="epc:PGWFunctionOptionallyContainedNrmClass"/>
            <element ref="epc:EP_RP_EPS"/>
          <element ref="xn:VsDataContainer"/>
        </choice>
      </sequence>
    </extension>
  </complexContent>
 </complexType>
</element>

<element
  name="ServingGWFunction"
  substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
>
  <complexType>
    <complexContent>
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              <element name="tACList" type="epc:TACList" minOccurs="0"/>
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            <element ref="epc:EP_RP_EPS"/>
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  </complexType>
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  substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass"
>
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                <element name="tACList" type="epc:TACList" minOccurs="0"/>
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        <element name="mMEPoolArea" type="xn:dn" minOccurs="0"/>
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      <element ref="xn:VsDataContainer"/>
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    </sequence>
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</element>

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      <element ref="xn:VsDataContainer"/>
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            <element ref="xn:VsDataContainer"/>
          </choice>
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            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
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</element>

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          <choice minOccurs="0" maxOccurs="unbounded">
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            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
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  </complexType>
</element>

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                <element name="protocolVersion" type="string" minOccurs="0"/>
                <element name="userLabel" type="string" minOccurs="0"/>
                <element name="zEnd" type="xn:dn" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
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            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
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      </extension>
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          <element ref="xn:VsDataContainer"/>
        </choice>
      </sequence>
    </extension>
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</element>

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 substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass"
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   <extension base="xn:NrmClass">
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        <element name="protocolVersion" type="string" minOccurs="0"/>
       <element name="userLabel" type="string" minOccurs="0"/>
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       </all>
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      <element ref="xn:VsDataContainer"/>
     </choice>
    </sequence>
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</element>

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                <element name="protocolVersion" type="string" minOccurs="0"/>
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            <element ref="xn:VsDataContainer"/>
          </choice>
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            </element>
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      </extension>
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                  <element name="userLabel" type="string" minOccurs="0"/>
                  <!-- End of inherited attributes from EP_RP -->
                  <element name="farEndNeIpAddr" type="string" minOccurs="0"/>
                </all>
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              <element ref="xn:VsDataContainer"/>
            </choice>
          </sequence>
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    </complexType>
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                </all>
              </complexType>
            </element>
            <choice minOccurs="0" maxOccurs="unbounded">
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              <element ref="xn:VsDataContainer"/>
            </choice>
          </sequence>
        </extension>
```

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  </element>

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                  <element name="zEnd" type="xn:dn" minOccurs="0"/>
                </all>
              </complexType>
            </element>
            <choice minOccurs="0" maxOccurs="unbounded">
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              <element ref="xn:VsDataContainer"/>
            </choice>
          </sequence>
        </extension>
      </complexContent>
    </complexType>
  </element>

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  <element name="MMEFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="PCRFFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="PGWFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="ServingGWFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="MMEPoolOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="MMEPoolAreaOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_ENB_MMEOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_ENB_ServingGWOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_EPDG_PCRFOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_EPDG_PGWOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_HSS_MMEOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_MME_MMEOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_MME_SGSNOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_MME_ServingGWOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_PCRF_ServingGWOptionallyContainedNrmClass" type="xn:NrmClass"
abstract="true"/>
  <element name="Link_PCRF_PGWOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_PGW_ServingGWOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
```

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  <element name="Link_SGSN_ServingGWOptionallyContainedNrmClass" type="xn:NrmClass"
abstract="true"/>
  <element name="EP_RP_EPSOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="QCISetOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="MBMSGWFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
  <element name="Link_MBMSGW_ENBOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>

</schema>
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Annex C (informative): Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Cat**	**Old**	**New**
2014-06	SA#64	SP-140332	001	-	Upgrade W3C XML Schema version from 1.0 to 1.1	F	11.0.0	11.1.0
		SP-140358	002	-	remove the feature support statements	F		

History

Document history		
V11.0.0	January 2013	Publication
V11.1.0	July 2014	Publication