Source:	**SA5 (Telecom Management)**
Title:	**Rel-5 TS 32.625-200 (Generic Network Resources IRP: Bulk CM XML File Format Definition)**
Document for:	**Approval**
Agenda Item:	**7.5.3**

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Presentation of Technical Specification to TSG SA

Presentation to:	**TSG SA Meeting #17**
Document for presentation:	**TS 32.625, Version 2.0.0**
	Generic Network Resources IRP: Bulk CM XML File Format Definition
Presented for:	**Approval**

Abstract of document:

Work done against the WID contained in SP-010461 (Work Item ID: OAM-NIM).

Due to the number of TSs defining Network Resource Models (NRMs) for Configuration Management (CM) as well as their expected growth in size from Release 5 onwards, a new TS structure is needed in Release 5 for the definition of the eXtensible Markup Language (XML) file formats for the Bulk CM Integration Reference Point (IRP).

This Release 5 TS structure for Bulk CM XML file format definition sets out as follows:

- 32.615 provides the head part of it,
- The present TS provides the sub-part that is specific to the NRM of the Generic Network Resources IRP (32.622), and
- TSs 32.635, 32.645 and 32.655 provide the other NRM-specific sub-parts.

Note: Linked changes to 32.615 were covered through Release 5 CR 003 approved at TSG SA meeting #16 (TD SP-020298).

Changes since last presentation to TSG SA Meeting #16:
None

Outstanding Issues:
None

Contentious Issues:
None

3GPP TS 32.625 V2.0.0 (2002-09)

**3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
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Bulk CM eXtensible Markup Language (XML)
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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

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G network as it evolves. CM actions have the objective to control and monitor the actual configuration on the Network Elements (NEs) and Network Resources (NRs), and they may be initiated by the operator or by functions in the Operations Systems (OSs) or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service (QoS). The CM actions are initiated either as single actions on single NEs of the 3G network, or as part of a complex procedure involving actions on many resources/objects in one or several NEs.

Due to the number of specifications defining Network Resource Models (NRMs) for Configuration Management as well as their expected growth in size from Release 5 onwards, a new structure of specifications is already needed in Release 5 for the definition of the XML file formats for the Bulk CM IRP (in Release 4 solely defined in 3GPP TS 32.615). This structure is needed to enable independent development and release for CM NRMs and corresponding NRM-specific parts of the Bulk CM XML file format definition, from each other and from the non NRM-specific part of the Bulk CM XML file format definition.

Table 1: New specification structure for Bulk CM IRP XML file format definition

Rel-4 3G TS	Rel-5 3G TS	3GPP TS no.	3GPP TS title
New	Yes	32.615	Bulk CM Integration Reference Point (IRP); eXtensible Markup Language (XML) file format definition
	New	32.625	Generic network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition
	New	32.635	Core network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition
	New	32.645	UTRAN network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition
	New	32.655	GERAN network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition

The present document is 3GPP TS 32.625 "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition".

1 Scope

The present document provides the NRM-specific part related to the Generic Network Resources IRP NRM [1] of the XML file format definition for the Bulk Configuration Management IRP IS [2].

The main part of this XML file format definition is provided by 3GPP TS 32.615 [3].

Bulk CM XML file formats are based on XML [4], XML Schema [5] [6] [7] and XML Namespace [8] standards.

This File Format Definition specification is related to 3GPP TS 32.622 (V5.0.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 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[2] 3GPP TS 32.612: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Information service".

[3] 3GPP TS 32.615: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); eXtensible Markup Language (XML) file format definition".

[4] W3C REC-xml-20001006: "Extensible Markup Language (XML) 1.0 (Second Edition)".

[5] W3C REC-xmlschema-0-20010502: "XML Schema Part 0: Primer".

[6] W3C REC-xmlschema-1-20010502: "XML Schema Part 1: Structures".

[7] W3C REC-xmlschema-2-20010502: "XML Schema Part 2: Datatypes".

[8] W3C REC-xml-names-19990114: "Namespaces in XML".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

XML file: file containing an XML document

XML document: composed of the succession of an optional XML declaration followed by a root XML element

NOTE: See [4]; in the scope of the present document.

XML declaration: it specifies the version of XML being used

NOTE: See [4].

XML element: has a type, is identified by a name, may have a set of XML attribute specifications and is either composed of the succession of an XML start-tag followed by the XML content of the XML element followed by an XML end-tag, or composed simply of an XML empty-element tag; each XML element may contain other XML elements

> NOTE: See [4].

empty XML element: having an empty XML content; an empty XML element still possibly has a set of XML attribute specifications; an empty XML element is either composed of the succession of an XML start-tag directly followed by an XML end-tag, or composed simply of an XML empty-element tag

> NOTE: See [4].

XML content (of an XML element): empty if the XML element is simply composed of an XML empty-element tag; otherwise the part, possibly empty, of the XML element between its XML start-tag and its XML end-tag

XML start-tag: the beginning of a non-empty XML element is marked by an XML start-tag containing the name and the set of XML attribute specifications of the XML element

> NOTE: See [4].

XML end-tag: the end of a non-empty XML element is marked by an XML end-tag containing the name of the XML element

> NOTE: See [4].

XML empty-element tag: composed simply of an empty-element tag containing the name and the set of XML attribute specifications of the XML element.

> NOTE: See [4].

XML attribute specification: has a name and a value

> NOTE: See [4].

DTD: defines structure and content constraints to be respected by an XML document to be valid with regard to this DTD

> NOTE: See [4].

XML schema: more powerful than a DTD, an XML schema defines structure and content constraints to be respected by an XML document to conform with this XML schema; through the use of XML namespaces several XML schemas can be used together by a single XML document; an XML schema is itself also an XML document that shall conform with the XML schema for XML schemas

> NOTE: See [5], [6] and [7].

XML namespace: enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas

> NOTE: See [8], in the scope of the present document.

XML complex type: defined in an XML schema; cannot be directly used in an XML document; can be the concrete type or the derivation base type for an XML element type or for another XML complex type; ultimately defines constraints for an XML element on its XML attribute specifications and/or its XML content

> NOTE: See [5], [6] and [7].

XML element type: declared by an XML schema; can be directly used in an XML document; as the concrete type of an XML element, directly or indirectly defines constraints on its XML attribute specifications and/or its XML content; can also be the concrete type or the derivation base type for another XML element type

> NOTE: See [5], [6] and [7].

3.2 Abbreviations

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

CM   Configuration Management
DTD   Document Type Definition
EDGE   Enhanced Data for GSM Evolution
GERAN   GSM/EDGE Radio Access Network
GSM   Global System for Mobile communication
IRP   Integration Reference Point
IS   Information Service
NRM   Network Resource Model
UMTS   Universal Mobile Telecommunications System
UTRAN   Universal Terrestrial Radio Access Network
XML   eXtensible Markup Language

4 Structure and content of configuration data XML files

The overall description of the file format of configuration data XML files is provided by 3GPP TS 32.615 [3].

Annex A of the present document defines the NRM-specific XML schema `genericNrm.xsd` for the Generic Network Resources IRP NRM defined in 3GPP TS 32.622 [1].

XML schema `genericNrm.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 32.615 [3], with the following exception: as defined in 3GPP TS 32.615 [3], the `vsData` XML element type has an empty XML content.

Additionally, XML schema `genericNrm.xsd` also provides the following global XML declarations and definitions:

- XML complex type `NrmClassXmlType`: derivation base type (see [5], [6] and [7]) for all NRM class associated XML element types (see 3GPP TS 32.615 [3])

- XML element type `vsData`: derivation base type (see [5], [6] and [7]) for all vendor-specific XML element types (see 3GPP TS 32.615 [3]).

Annex A (normative): Configuration data file NRM-specific XML schema `genericNrm.xsd`

The following XML schema `genericNrm.xsd` is the NRM-specific schema for the Generic Network Resources IRP NRM defined in 3GPP TS 32.622 [1]:

```
<?xml version="1.0" encoding="UTF-8"?>

<!--
  3GPP TS 32.625 Generic Network Resources IRP
  Bulk CM Configuration data file NRM-specific XML schema
  genericNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32625-500.zip#genericNrm"
  elementFormDefault="qualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32625-500.zip#genericNrm"
  xmlns:cn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32635-500.zip#coreNrm"
  xmlns:un=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32645-500.zip#utranNrm"
  xmlns:gn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32655-500.zip#geranNrm"
>

  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32635-500.zip#coreNrm"
  />
  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32645-500.zip#utranNrm"
  />
  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32655-500.zip#geranNrm"
  />

  <!-- Abstract base type for all NRM class associated XML elements -->

  <complexType name="NrmClassXmlType" abstract="true">
    <attribute name="id" type="string" use="required"/>
    <attribute name="modifier" use="optional">
      <simpleType>
        <restriction base="string">
          <enumeration value="create"/>
          <enumeration value="delete"/>
          <enumeration value="update"/>
        </restriction>
      </simpleType>
    </attribute>
  </complexType>

  <!-- Generic Network Resources IRP NRM class associated XML elements -->

  <element name="SubNetwork">
    <complexType>
      <complexContent>
        <extension base="xn:NrmClassXmlType">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
                <all>
                  <element name="userLabel" minOccurs="0"/>
                  <element name="userDefinedNetworkType" minOccurs="0"/>
                </all>
              </complexType>
```

```
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:SubNetwork"/>
            <element ref="xn:ManagedElement"/>
            <element ref="xn:MeContext"/>
            <element ref="xn:ManagementNode"/>
            <element ref="xn:IRPAgent"/>
            <element ref="un:ExternalUtranCell"/>
            <element ref="gn:ExternalGsmCell"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ManagedElement">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="managedElementType" minOccurs="0"/>
                <element name="userLabel" minOccurs="0"/>
                <element name="vendorName" minOccurs="0"/>
                <element name="userDefinedState" minOccurs="0"/>
                <element name="locationName" minOccurs="0"/>
                <element name="swVersion" minOccurs="0"/>
                <element name="managedBy" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:IRPAgent"/>
            <element ref="un:RncFunction"/>
            <element ref="un:NodeBFunction"/>
            <element ref="gn:BssFunction"/>
            <element ref="cn:MscFunction"/>
            <element ref="cn:HlrFunction"/>
            <element ref="cn:VlrFunction"/>
            <element ref="cn:AucFunction"/>
            <element ref="cn:EirFunction"/>
            <element ref="cn:SmsIwmscFunction"/>
            <element ref="cn:SmsGmscFunction"/>
            <element ref="cn:GmscFunction"/>
            <element ref="cn:SgsnFunction"/>
            <element ref="cn:GgsnFunction"/>
            <element ref="cn:BgFunction"/>
            <element ref="cn:SmlcFunction"/>
            <element ref="cn:GmlcFunction"/>
            <element ref="cn:ScfFunction"/>
            <element ref="cn:SrfFunction"/>
            <element ref="cn:CbcFunction"/>
            <element ref="cn:CgfFunction"/>
            <element ref="cn:MgwFunction"/>
            <element ref="cn:GmscServerFunction"/>
            <element ref="cn:IwfFunction"/>
            <element ref="cn:MnpSrfFunction"/>
            <element ref="cn:NpdbFunction"/>
            <element ref="cn:SgwFunction"/>
            <element ref="cn:SsfFunction"/>
            <element ref="cn:BsFunction"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="MeContext">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
```

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

<element name="ManagementNode">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="vendorName" minOccurs="0"/>
                <element name="userDefinedState" minOccurs="0"/>
                <element name="locationName" minOccurs="0"/>
                <element name="manages" minOccurs="0"/>
                <element name="swVersion" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:IRPAgent"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="IRPAgent">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="systemDN" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:NotificationIRP"/>
            <element ref="xn:AlarmIRP"/>
            <element ref="xn:BasicCmIRP"/>
            <element ref="xn:BulkCmIRP"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="NotificationIRP">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="irpVersion" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
```

```xml
<element name="AlarmIRP">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="irpVersion" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="BasicCmIRP">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="irpVersion" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="BulkCmIRP">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="irpVersion" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="VsDataContainer">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="vsDataType" minOccurs="0"/>
                <element name="vsDataFormatVersion" minOccurs="0"/>
                <element ref="xn:vsData" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
```

```
<!-- VsDataContainer NRM class vsData attribute associated empty XML element -->

  <element name="vsData">
    <complexType/>
  </element>

</schema>
```

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2002	S_16	SP-020298	--	--	Submitted to TSG SA #16 for Information	1.0.0	
Sep 2002	S_17	SP-020460	--	--	Submitted to TSG SA #17 for Approval	2.0.0	