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*Technical Specification*

**Digital cellular telecommunications system (Phase 2+);**
**Universal Mobile Telecommunications System (UMTS);**
**Telecommunication management;**
**Configuration Management (CM) Transport Network (TN)**
**Network Resource Model (NRM)**
**Integration Reference Point (IRP):**
**Bulk CM eXtensible Markup Language (XML)**
**file format definition**
**(3GPP TS 32.715 version 7.1.0 Release 7)**

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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

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:

32.711: Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Requirements

32.712: Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)

32.713: Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)

**32.715 Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) file format definition**

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.

# 1 Scope

The present document provides the NRM-specific part related to 3GPP TS 32.712 [1] Transport Network (TN) interface NRM IRP IS of the XML file format definition for the 3GPP TS 32.612 [2] Bulk Configuration Management IRP IS.

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 32.712 V7.1.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 32.712: "Telecommunication management; Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

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

[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 |
| TN | Transport Network |
| 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 `transportNrm.xsd` for the Transport interface Network Resources IRP NRM defined in 3GPP TS 32.712 [1].

XML schema `transportNrm.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].

# Annex A (normative): Configuration data file NRM-specific XML schema (file name "transportNrm.xsd")

The following XML schema transportNrm.xsd is the NRM-specific schema for the Transport Network Interface IRP NRM defined in 3GPP TS 32.712 [1]:

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

<!--
  3GPP TS 32.715 Transport Network Interface NRM IRP
  Bulk CM Configuration data file NRM-specific XML schema
  transportNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.715#transportNrm"
  elementFormDefault="qualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"
  xmlns:tn=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.715#transportNrm"
>

  <import
    namespace=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.625#genericNrm"
  />

<!--Transport Network Interface Resources IRP NRM attribute related XML types -->

  <simpleType name="transportNetworkType">
    <restriction base="string">
      <enumeration value="ATM"/>
      <enumeration value="IP"/>
    </restriction>
  </simpleType>

  <simpleType name="serviceCategoryIn">
    <restriction base="string">
      <enumeration value="CBR"/>
      <enumeration value="RT-VBR"/>
      <enumeration value="NRT-VBR"/>
      <enumeration value="ABR"/>
      <enumeration value="UBR"/>
      <enumeration value="GFR"/>
    </restriction>
  </simpleType>

  <simpleType name="serviceCategoryEg">
    <restriction base="string">
      <enumeration value="CBR"/>
      <enumeration value="RT-VBR"/>
      <enumeration value="NRT-VBR"/>
      <enumeration value="ABR"/>
      <enumeration value="UBR"/>
      <enumeration value="GFR"/>
    </restriction>
  </simpleType>

  <simpleType name="usedAAL">
    <restriction base="string">
      <enumeration value="Null"/>
      <enumeration value="AAL1"/>
      <enumeration value="AAL2"/>
      <enumeration value="AAL3"/>
      <enumeration value="AAL4"/>
      <enumeration value="AAL5"/>
    </restriction>
  </simpleType>
```

```
<simpleType name="virtualPathId">
  <restriction base="integer">
    <minInclusive value="0"/>
  </restriction>
</simpleType>

<simpleType name="virtualChannelId">
  <restriction base="integer">
    <minInclusive value="0"/>
  </restriction>
</simpleType>

<complexType name="physicalPortIdList">
  <sequence>
    <element name="physicalPortId" type="string" minOccurs="1" maxOccurs="unbounded">
    </element>
  </sequence>
</complexType>

<simpleType name="peakCellRateIn">
  <restriction base="integer">
    <minInclusive value="1"/>
  </restriction>
</simpleType>

<simpleType name="peakCellRateEg">
  <restriction base="integer">
    <minInclusive value="1"/>
  </restriction>
</simpleType>

<simpleType name="sustainableCellRateIn">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="sustainableCellRateEg">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="maximumBurstSizeIn">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="maximumBurstSizeEg">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="minimumCellRateIn">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="minimumCellRateEg">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="minimumDesiredCellRateIn">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
</simpleType>

<simpleType name="minimumDesiredCellRateEg">
   <restriction base="integer">
    <minInclusive value="1"/>
   </restriction>
```

```
</simpleType>

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

<element
  name="TransportNetworkInterface"
  substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass"
>
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element
                  name="transportNetworkType"
                  type="tn:transportNetworkType"
                  minOccurs="0"
                />
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="tn:ATMPathTerminationPoint"/>
            <element ref="tn:ATMChannelTerminationPoint"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ATMChannelTerminationPoint">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="usageChannel" type="string" minOccurs="0"/>
                <element
                  name="virtualPathId"
                  type="tn:virtualPathId"
                  minOccurs="0"
                />
                <element
                  name="virtualChannelId"
                  type="tn:virtualChannelId"
                  minOccurs="0"
                />
                <element
                  name="physicalPortId"
                  type="string"
                  minOccurs="0"
                />
                <element name="physicalInterfaceType" type="string" minOccurs="0"/>
                <element
                  name="serviceCategoryIn"
                  type="tn:serviceCategoryIn"
                  minOccurs="0"
                />
                <element
                  name="serviceCategoryEg"
                  type="tn:serviceCategoryEg"
                  minOccurs="0"
                />
                <element
                  name="usedAAL"
                  type="tn:usedAAL"
                  minOccurs="0"
                />
                <element
                  name="peakCellRateIn"
                  type="tn:peakCellRateIn"
```

```
                  minOccurs="0"
                />
                <element
                  name="peakCellRateEg"
                  type="tn:peakCellRateEg"
                  minOccurs="0"
                />
                <element
                  name="sustainableCellRateIn"
                  type="tn:sustainableCellRateIn"
                  minOccurs="0"
                />
                <element
                  name="sustainableCellRateEg"
                  type="tn:sustainableCellRateEg"
                  minOccurs="0"
                />
                <element
                  name="maximumBurstSizeIn"
                  type="tn:maximumBurstSizeIn"
                  minOccurs="0"
                />
                <element
                  name="maximumBurstSizeEg"
                  type="tn:maximumBurstSizeEg"
                  minOccurs="0"
                />
                <element
                  name="minimumDesiredCellRateIn"
                  type="tn:minimumDesiredCellRateIn"
                  minOccurs="0"
                />
                <element
                  name="minimumDesiredCellRateEg"
                  type="tn:minimumDesiredCellRateEg"
                  minOccurs="0"
                />
                <element
                  name="minimumCellRateIn"
                  type="tn:minimumCellRateIn"
                  minOccurs="0"
                />
                <element
                  name="minimumCellRateEg"
                  type="tn:minimumCellRateEg"
                  minOccurs="0"
                />
                <element name="aTMChannelTerminationPointATMPathTerminationPoint" minOccurs="0"/>
                <element name="aTMChannelTerminationPointIubLink" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice>
            <element ref="xn:VsDataContainer" minOccurs="0" maxOccurs="unbounded"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ATMPathTerminationPoint">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element
                  name="virtualPathId"
                  type="tn:virtualPathId"
                  minOccurs="0"
                />
                <element
                  name="physicalPortIdList"
                  type="tn:physicalPortIdList"
                  minOccurs="0"
```

```
                />
                <element
                  name="peakCellRateIn"
                  type="tn:peakCellRateIn"
                  minOccurs="0"
                />
                <element
                  name="peakCellRateEg"
                  type="tn:peakCellRateEg"
                  minOccurs="0"
                />
                <element name="aTMPathTerminationPointATMChannelTerminationPoint" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

</schema>
```

# Annex B (informative): XML schema electronic files

The electronic files corresponding to the normative XML schemas defined in the present document are available in native form in the following archive:

http://www.3gpp.org/ftp/specs/archive/32_series/32.715/schema/32715-710-XMLSchema.zip

# Annex C (informative): Change history

| Change history | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Date** | **TSG #** | **TSG Doc.** | **CR** | **Rev** | **Subject/Comment** | **Old** | **New** |
| Sep 2004 | S_25 | SP-040599 | -- | -- | Submitted to TSG SA#25 for Approval | 1.0.0 | 6.0.0 |
| Mar 2005 | S_27 | SP-050052 | 001 | -- | 'Unbounded' is not a valid value for 'maxInclusive' for type Integer - Correction of XML schema | 6.0.0 | 6.1.0 |
| Jun 2007 | SA_36 | -- | -- | -- | Automatic upgrade to Rel-7 (no CR) at freeze of Rel-7. Deleted reference to CMIP SS, discontinued from R7 onwards. | 6.1.0 | 7.0.0 |
| Sep 2007 | SA_37 | SP-070606 | 0003 | -- | Add Missing VsDataContainer Containment | 7.0.0 | 7.1.0 |

# History

| Document history | | |
|---|---|---|
| V7.0.0 | June 2007 | Publication |
| V7.1.0 | October 2007 | Publication |
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