

**Source:** SA5 (Telecom Management)  
**Title:** Rel-5 CR 32.615 : New structure of specifications for definition of Bulk CM IRP XML file formats - for Approval & 4 new v100 draft TSs 32.625/635/645/655 - for Information  
**Document for:** Approval & Information  
**Agenda Item:** 7.5.3

Doc-1 <sup>st</sup> -Level	Spec	CR	R	Phase	Subject	Cat	Ver Cur	Ver New	Doc-2 <sup>nd</sup> -Level	Workite m
SP-020298	32.615	003	-	Rel-5	New structure of specifications for the definition of Bulk CM IRP XML file formats	C	4.2.0	5.0.0	S5-026262	OAM-NIM

Transfer of each NRM-specific XML schema to the related new Rel-5 TSs:

- 32.625 - Generic Network Resources IRP: Bulk CM XML File Format Definition
- 32.635 - Core Network Resources IRP: Bulk CM XML File Format Definition
- 32.645 - UTRAN Network Resources IRP: Bulk CM XML File Format Definition
- 32.655 - GERAN Network Resources IRP: Bulk CM XML File Format Definition

TS	32.625	Telecommunication management; 3G Configuration Management; Generic network resources IRP: Bulk CM XML file format definition	Rel-5	1.0.0	BONNEAU, Frédéric
TS	32.635	Telecommunication management; 3G Configuration Management; Generic network resources IRP: Bulk CM XML file format definition	Rel-5	1.0.0	BONNEAU, Frédéric
TS	32.645	Telecommunication management; 3G Configuration Management; UTRAN network resources IRP: Bulk CM XML file format definition	Rel-5	1.0.0	BONNEAU, Frédéric
TS	32.655	Telecommunication management; 3G Configuration Management; GERAN network resources IRP: Bulk CM XML file format definition	Rel-5	1.0.0	BONNEAU, Frédéric

## CHANGE REQUEST

⌘ **32.615 CR 003** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ New structure of specifications for the definition of Bulk CM IRP XML file formats		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-NIM	<b>Date:</b>	⌘ 24/05/2002
<b>Category:</b>	⌘ <b>C</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Due to the number of specifications defining NRMs for CM as well as their expected growth in size from Rel-5 onwards a new structure of specifications is already needed in Rel-5 for the definition of the XML file formats for the Bulk CM IRP (Note: in Rel-4 solely defined in 32.615).
<b>Summary of change:</b>	⌘ <ul style="list-style-type: none"> <li>• Transfer of each NRM-specific XML schema to the related new Rel-5 TSs:                      32.625 - Generic Network Resources IRP: Bulk CM XML File Format Definition                      32.635 - Core Network Resources IRP: Bulk CM XML File Format Definition                      32.645 - UTRAN Network Resources IRP: Bulk CM XML File Format Definition                      32.655 - GERAN Network Resources IRP: Bulk CM XML File Format Definition</li> <li>• Non-functional modifications and enhancements in order to enable proper introduction of the newly created TSs and proper reference to them.</li> <li>• Addition of reference to the related IS TS</li> <li>• Editorial modifications</li> </ul>
<b>Consequences if not approved:</b>	⌘ This would preclude independent development and release for CM NRMs and corresponding NRM-specific parts of the Bulk CM XML file format definition, independent from each other and independent from the non NRM-specific part of the Bulk CM XML file format definition.

<b>Clauses affected:</b>	⌘ "Introduction", 1, 2, 3.1, 4, 4.1, 4.2.1, 4.3, new subclause 4.3A, 4.4, 4.5, annex A, annex B, annex C		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ <input type="checkbox"/> Test specifications	New Rel-5 TSs 32.625, 32.635, 32.645, 32.655
	<input checked="" type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘ This CR and its associated new TSs do not in essence functionally modify the Bulk CM feature or its XML part.		

# Introduction



Due to the growing number of specifications to model new services and Resource Models for Configuration Management (CM), as well as the expected growth in size of each of them from 3GPP Release 4 onwards, a new structure of the specifications is already needed in Release 4. This structure is needed for several reasons, but mainly to enable more independent development and release for each part, as well as a simpler document identification and version handling. Another benefit would be that it becomes easier for bodies outside 3GPP, such as the ITU-T, to refer to telecom management specifications from 3GPP. The new structure of the specifications does not lose any information or functionality supported by the Release 1999. The restructuring also includes defining new IRPs for the Network Resource Model (NRM) parts of R99 Basic CM IRP (Generic, Core Network and UTRAN NRM). These IRPs are named "Network Resources IRP".

Further, the Notification IRP (in Release 1999: 32.106-1 to -4) and the Name convention for Managed Objects (in Release 1999: 32.106-8) have been moved to a separate number series used for specifications common between several management areas (e.g. CM, FM, PM).

Finally, in addition to the restructuring mentioned above, the need to define some new functionality and IRPs for CM compared to Release 1999, has also been identified. Firstly, a new Bulk CM IRP, and secondly an a GERAN Network Resources IRP, have been created. Thirdly, the Generic, UTRAN and GERAN Network Resources IRPs have been extended with support for GSM-UMTS Inter-system handover (ISH), and the 32.600 (Concept and High-level Requirements) has been modified to cover the high-level Bulk CM and ISH requirements.

**Table: Mapping between Release '99 and the new specification numbering scheme**

R99 Old no.	Old (R99) specification title	Rel-4 New no.	New (Rel-4) specification title
32.106-1	3G Configuration Management: Concept and Requirements	32.600	<b>3G Configuration Management: Concept and High-level Requirements</b>
32.106-1	<Notification IRP requirements from 32.106-1 and 32.106-2>	32.301	<b>Notification IRP: Requirements</b>
32.106-2	Notification IRP: IS	32.302	Notification IRP: Information Service
32.106-3	Notification IRP: CORBA SS	32.303	Notification IRP: CORBA SS
32.106-4	Notification IRP: CMIP SS	32.304	Notification IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	<b>Name Convention for Managed Objects</b>
32.106-1	<Basic CM IRP IS requirements from 32.106-1 and 32.106-5>	32.601	<b>Basic CM IRP: Requirements</b>
32.106-5	Basic CM IRP IM (Intro & IS part)	32.602	Basic CM IRP: Information Service
32.106-6	Basic CM IRP CORBA SS (IS related part)	32.603	Basic CM IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (IS related part)	32.604	Basic CM IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	<b>Name Convention for Managed Objects</b>
-	-	32.611	<b>Bulk CM IRP: Requirements</b>
-	-	32.612	Bulk CM IRP: Information Service
-	-	32.613	Bulk CM IRP: CORBA SS
-	-	32.614	Bulk CM IRP: CMIP SS
		32.615	<b>Bulk CM IRP: XML file format definition</b>
32.106-1	<Basic CM IRP Generic NRM requirements from 32.106-1 and 32.106-5>	32.621	<b>Generic Network Resources IRP: Requirements</b>
32.106-5	Basic CM IRP IM (Generic NRM part)	32.622	Generic Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (Generic NRM related part)	32.623	Generic Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (Generic NRM related part)	32.624	Generic Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP CN NRM requirements from 32.106-1 and 32.106-5>	32.631	<b>Core Network Resources IRP: Requirements</b>
32.106-5	Basic CM IRP IM (CN NRM part)	32.632	Core Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (CN NRM related part)	32.633	Core Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (CN NRM related part)	32.634	Core Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP UTRAN NRM requirements from 32.106-1 and 32.106-5>	32.641	<b>UTRAN Network Resources IRP: Requirements</b>
32.106-5	Basic CM IRP IM (UTRAN NRM part)	32.642	UTRAN Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (UTRAN NRM related part)	32.643	UTRAN Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (UTRAN NRM related part)	32.644	UTRAN Network Resources IRP: CMIP SS
		32.651	<b>GERAN Network Resources IRP: Requirements</b>
		32.652	GERAN Network Resources IRP: NRM
		32.653	GERAN Network Resources IRP: CORBA SS
		32.654	GERAN Network Resources IRP: CMIP SS

[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 \(in Release 4 solely defined in 3G TS 32.615\). 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**

<a href="#">R4 3G TS</a>	<a href="#">R5 3G TS</a>	<a href="#">3G TS no.</a>	<a href="#">3G TS title</a>
<a href="#">New</a>	<a href="#">Yes</a>	<a href="#">32.615</a>	<a href="#">Bulk Configuration Management IRP: XML File Format Definition</a>
	<a href="#">New</a>	<a href="#">32.625</a>	<a href="#">Generic Network Resources IRP: Bulk CM XML File Format Definition</a>
	<a href="#">New</a>	<a href="#">32.635</a>	<a href="#">Core Network Resources IRP: Bulk CM XML File Format Definition</a>
	<a href="#">New</a>	<a href="#">32.645</a>	<a href="#">UTRAN Network Resources IRP: Bulk CM XML File Format Definition</a>
	<a href="#">New</a>	<a href="#">32.655</a>	<a href="#">GERAN Network Resources IRP: Bulk CM XML File Format Definition</a>

[The present document is 3GPP TS 32.615 "3G Configuration Management; Bulk Configuration Management IRP: XML File Format Definition".](#)

## 1 Scope

The present document ~~defines~~ [provides the main part of the XML file formats definition](#) for the ~~configuration data files and session log files of~~ Bulk [CM Configuration Management IRP IS](#) [1].

[The other parts of this XML file format definition are NRM-specific parts.](#)

[Those NRM-specific parts are provided by 3G TS 32.625 \[11\], 3G TS 32.635 \[12\], 3G TS 32.645 \[13\] and 3G TS 32.655 \[14\].](#)

~~These~~ [Bulk CM XML](#) file formats are based on XML [2], XML Schema [3] [4] [5] and XML Namespace [6] standards.

[This File Format Definition specification is related to 3G TS 32.612 V5.0.X.](#)

## 2 References



- [10] 3GPP TS 32.652: "3G Configuration Management; GERAN Network Resources IRP: Network Resource Model".
- [11] [3GPP TS 32.625: "3G Configuration Management; Generic Network Resources IRP: Bulk CM XML File Format Definition".](#)
- [12] [3GPP TS 32.635: "3G Configuration Management; Core Network Resources IRP: Bulk CM XML File Format Definition".](#)
- [13] [3GPP TS 32.645: "3G Configuration Management; UTRAN Network Resources IRP: Bulk CM XML File Format Definition".](#)
- [14] [3GPP TS 32.655: "3G Configuration Management; GERAN Network Resources IRP: Bulk CM XML File Format Definition".](#)

### 3.1 Definitions



**XML namespace:** see [6]; in the scope of this specification, enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas.

**XML complex type:** see [3], [4] and [5]; 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.

**XML element type:** see [3], [4] and [5]; 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.

## 4 Structure and content of configuration data XML files



Upload and download configuration data XML files share a common file format defined by the XML schemas in Annex A and B and by the following subclauses.



### 4.1 Global structure



The following XML namespaces are potentially used in configuration data XML files:

- the default XML namespace is associated with the configuration data files base XML schema `configData.xsd` (see Annex A)
- ~~— the XML namespace prefix `xn` is defined for the XML namespace associated with the NRM-specific XML schema `genericNrm.xsd` for the Generic Network Resources IRP NRM (see Annex B)~~
- ~~— the XML namespace prefix `un` is defined for the XML namespace associated with the NRM-specific XML schema `utranNrm.xsd` for the UTRAN Network Resources IRP NRM (see Annex B)~~
- ~~— the XML namespace prefix `gn` is defined for the XML namespace associated with the NRM-specific XML schema `geranNrm.xsd` for the GERAN Network Resources IRP NRM (see Annex B)~~
- for each NRM-specific XML schema, a specific XML namespace prefix is defined for the associated XML namespace (see subclause 4.3A.1)
- XML namespaces prefixes starting with `vs`, e.g. `vsRH011`, are reserved for the XML namespaces associated with the vendor-specific XML schemas (see clause 4.5)



The following is an example of a configuration data XML file, without presentation of the XML attribute specifications and XML content of `fileHeader`, `configData` and `fileFooter` XML elements (replaced by [...]; see subclauses 4.2, 4.3, 4.4 and 4.5):

```
<?xml version="1.0" encoding="UTF-8"?>
<bulkCmConfigDataFile
  xmlns=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
[...]
```



#### 4.2.1 XML element `fileHeader`



The following is an example of a `fileHeader` XML element:

```

<fileHeader
  fileFormatVersion="32.615 V4.24.0"
  senderName="DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1"
  vendorName="Company NN"
/>

```

## 4.3 XML element configData

As defined by the following extract of XML schema configData.xsd (see Annex A):

```

<element name="configData" maxOccurs="unbounded">
  <complexType>
    <choice>
      <element ref="xn:SubNetwork"/>
      <element ref="xn:MeContext"/>
      <element ref="xn:ManagedElement"/>
    </choice>
    <attribute name="dnPrefix" type="string" use="optional"/>
  </complexType>
</element>

```

a configData XML element:

- has an optional dnPrefix XML attribute specification; this attribute specification carries the DN Prefix information as defined in Annex C of 32.300 [7]
- and its XML content is an instance of the specific type of XML element (see below) corresponding to one of the NRM classes SubNetwork, MeContext or ManagedElement (see [8]); depending on the System Context of the IRP (see [1]) the used NRM class shall be:
  - in case of System Context A, only SubNetwork NRM class, or
  - in case of System Context B, only MeContext or ManagedElement NRM class

[This instance of SubNetwork/MeContext/ManagedElement NRM class corresponding specific XML element type is the starting point for a configData XML element to possibly contain several NRM instances in a NRM naming tree organized structure \(see subclause 4.3A.2\).](#)

[The following is an example of a configData XML element:](#)

```

<configData dnPrefix="DC=a1.companyNN.com">
  <xn:SubNetwork [...]>
[...]
```

```

</xn:SubNetwork>
</configData>

```

### 4.3A NRM-specific XML elements

[NRM-specific XML element types are generically defined under the mapping rules defined in subclause 4.3A.2.](#)

[NRM-specific XML element types are explicitly declared by NRM-specific XML schemas as defined in subclause 4.3A.1.](#)

#### 4.3A.1 NRM-specific XML schemas

[NRM-specific XML schemas are defined in the NRM-specific parts \(see clause 1\) of the XML file format definition for the Bulk Configuration Management IRP IS \[1\].](#)

[NRM-specific XML schemas with definition of corresponding XML namespace prefixes \(see subclause 4.1\) are listed by the following table:](#)

**Table 2: NRM-specific XML schemas, corresponding 3G TSs and XML namespace prefixes**

<a href="#">NRM</a>	<a href="#">XML schema</a>	<a href="#">3G TS no.</a>	<a href="#">XML namespace prefix</a>
<a href="#">Generic Network Resources</a>	<a href="#">genericNrm.xsd</a>	<a href="#">32.625 [11]</a>	<a href="#">xn</a>
<a href="#">Core Network Resources</a>	<a href="#">coreNrm.xsd</a>	<a href="#">32.635 [12]</a>	<a href="#">cn</a>
<a href="#">UTRAN Network Resources</a>	<a href="#">utranNrm.xsd</a>	<a href="#">32.645 [13]</a>	<a href="#">un</a>
<a href="#">GERAN Network Resources</a>	<a href="#">geranNrm.xsd</a>	<a href="#">32.655 [14]</a>	<a href="#">gn</a>

[Each NRM-specific XML schema explicitly declares NRM-specific XML element types for the related NRM.](#)

[Additionally, XML schema `genericNrm.xsd` \(see \[11\]\) also provides global XML declarations and definitions for the support of:](#)

- [NRM-specific XML element type declaration](#)
- [vendor-specific XML element type declaration \(see subclause 4.5\)](#)

### 4.3A.2 Generic mapping rules

~~As defined by XML schemas `genericNrm.xsd`, `utranNrm.xsd` and `geranNrm.xsd` (see Annex B):~~

[NRM-specific XML element types are generically defined under the following mapping rules:](#)

- to each NRM class corresponds a specific type of XML element having the following characteristics:
  - its name is the name of the NRM class
  - [it derives by extension \(see \[3\], \[4\] and \[5\]\) the `NrmClassXmlType` XML complex type defined in the XML schema `genericNrm.xsd` \(see \[11\]\)](#)
  - it has the following XML attribute specifications, [inherited from `NrmClassXmlType` XML complex type](#):
    - an `id` XML attribute specification; this attribute specification carries the attribute value part of the RDN of the NRM instance carried by the XML element, i.e. the value of the naming attribute of this NRM instance
    - an optional `modifier` XML attribute specification (see subclause 4.4)
  - and its XML content is the succession of:
    - an optional `attributes` XML element whose XML content is the succession of: ~~zero or more specific XML elements (see below) corresponding to attributes of the NRM class~~
      - [zero or more specific XML elements \(see below\) corresponding to attributes of the NRM class, each occurring not more than once](#)
    - zero or more similar specific XML elements corresponding to direct subordinate NRM classes of the NRM class to which the current XML element corresponds
- to each NRM attribute of each NRM class, except for the following NRM attributes:
  - the naming NRM attribute of each NRM class, whose value is already carried by the `id` XML attribute specification of the specific XML element corresponding to the NRM class
  - the conditional `dnPrefix` NRM attribute of `SubNetwork`, `MeContext` and `ManagedElement` NRM classes (see [8]), whose value is already carried by the `dnPrefix` XML attribute specification of the `configData` XML element

corresponds a specific type of XML element having the following characteristics:

- its name is constructed from the name of the NRM attribute by removing any contained dash character

- and it has an XML content; this XML content carries the value of the NRM attribute

For example for the SubNetwork NRM class (see [8]), the corresponding extract of XML schema genericNrm.xsd (see [Annex B \[11\]](#)) is the following:

```
<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>
```

supported by the following extract of XML schema genericNrm.xsd (see [Annex B \[11\]](#)):

```
<complexType name="NrmClassXmlType" abstract="true">
  <attribute name="id" type="string" use="required"/>
  <attribute name="modifier" use="optional">
[...]
```

[Exceptions to the generic mapping rules for the definition of NRM-specific XML element types are listed by the following table:](#)

**Table 3: Generic mapping rule exceptions**

<a href="#">NRM classes / attributes</a>	<a href="#">NRM 3G TS no.</a>	<a href="#">Exception description references</a>
<a href="#">vsData attribute of VsDataContainer class</a>	<a href="#">32.622 [8]</a>	<a href="#">subclause 4.5 of present TS annex A of TS 32.625 [11]</a>

The following is an example of a configData XML element [with regard to NRM-specific XML elements \(in bold\)](#) in a configuration data XML file [\(in bold\)](#):

```
<?xml version="1.0" encoding="UTF-8"?>
<bulkCmConfigDataFile
  xmlns=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
```



```

[...]  

>  

[...]  

<configData dnPrefix="DC=a1.companyNN.com">  

<configData dnPrefix="DC=a1.companyNN.com">  

  <xn:SubNetwork id="1">  

    <xn:attributes>  

      <xn:userLabel>Paris SN1</xn:userLabel>  

      <xn:userDefinedNetworkType>UMTS</xn:userDefinedNetworkType>  

    </xn:attributes>  

    <xn:ManagementNode id="1">  

      <xn:attributes>  

        <xn:userLabel>Paris MN1</xn:userLabel>  

        <xn:vendorName>Company NN</xn:vendorName>  

        <xn:userDefinedState>commercial</xn:userDefinedState>  

        <xn:locationName>Montparnasse</xn:locationName>  

      </xn:attributes>  

    </xn:ManagementNode>  

    <xn:ManagedElement id="1">  

      <xn:attributes>  

        <xn:managedElementType>RNC</xn:managedElementType>  

        <xn:userLabel>Paris RN1</xn:userLabel>  

        <xn:vendorName>Company NN</xn:vendorName>  

        <xn:userDefinedState>commercial</xn:userDefinedState>  

        <xn:locationName>Champ de Mars</xn:locationName>  

      </xn:attributes>  

    </xn:ManagedElement>  

    <xn:ManagedElement id="2">  

      <xn:attributes>  

        <xn:managedElementType>RNC</xn:managedElementType>  

        <xn:userLabel>Paris RN2</xn:userLabel>  

        <xn:vendorName>Company NN</xn:vendorName>  

        <xn:userDefinedState>commercial</xn:userDefinedState>  

        <xn:locationName>Concorde</xn:locationName>  

      </xn:attributes>  

    </xn:ManagedElement>  

  </xn:SubNetwork>  

</configData>  

</configData>  

[...]  

</bulkCmConfigDataFile>

```

## 4.4 sXML attribute specification modifier

As defined by the following extract of XML schema genericNrm.xsd (see [Annex B \[11\]](#)):

```

<attribute name="modifier" use="optional">
  <simpleType>
    <restriction base="string">
      <enumeration value="create"/>
      <enumeration value="delete"/>
      <enumeration value="update"/>
    </restriction>
  </simpleType>
</attribute>

```

the value of the optional modifier XML attribute specification of the specific XML elements corresponding to the classes of the NRM is one of the following: create, delete, or update.



The following are examples of legal configData XML element with regard to modifier XML attribute specification (in **bold**) in configuration data XML files:

- example 1:

```
<?xml version="1.0" encoding="UTF-8"?>
<bulkCmConfigDataFile
  xmlns=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
[...]
```

>

...

- example 2:

```
<?xml version="1.0" encoding="UTF-8"?>
<bulkCmConfigDataFile
  xmlns=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
[...]
```

>

...

- example 3:

```
<?xml version="1.0" encoding="UTF-8"?>
<bulkCmConfigDataFile
  xmlns=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
[...]
```

>

...

- example 4:

```
<?xml version="1.0" encoding="UTF-8"?>
<bulkCmConfigDataFile
  xmlns=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
[...]
```

>

...

- example 5:

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

```

"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
  xmlns:un=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615645-
420500.zip#utranNrm"
[...]
```

## 4.5 XML elements VsDataContainer, vsData and vsDataFormatVersion

As all XML element types corresponding to NRM classes (see subclause 4.3 4.3A.2), the VsDataContainer XML element type, [explicitly declared in 3G TS 32.625 \[11\]](#), corresponds to the VsDataContainer NRM class defined in [3G TS 32.622 \[8\]](#).

Contained in an attributes XML element [type](#), itself contained in a VsDataContainer XML element, as all XML element types corresponding to NRM attributes (see subclause 4.3 4.3A.2), the vsData and vsDataFormatVersion XML elements [types, explicitly declared in 3G TS 32.625 \[11\]](#), corresponds to the vsData and vsDataFormatVersion NRM attributes defined in [3G TS 32.622 \[8\]](#).

~~Unlike all the other XML element types corresponding to NRM attributes,~~ [As an exception to the generic mapping rules for the definition of NRM-specific XML element types \(see subclause 4.3A.2\)](#), the vsData XML element [type](#) has an empty XML content.

Each vendor-specific XML schema shall [define-declare](#) one or more vendor-specific XML elements [types](#) that:

- have a name starting with vsData, e.g. vsDataRHO
- derive by extension (see [3], [4] and [5]) the vsData XML element [type defined-in-declared by](#) the XML schema genericNrm.xsd ([see \[11\]](#))
- are designated as members of the substitution group (see [3], [4] and [5]) headed by the vsData XML element [type](#)

---

## Annex A (normative): Configuration data file base XML schema

The following XML schema configData.xsd is the base schema for configuration data XML files:

```

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

<!--
  3GPP TS 32.615 Bulk CM IRP
  Configuration data file base XML schema
  configData.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-
420500.zip#configData"
  elementFormDefault="qualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
```

```

xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
>

<import
namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-
420500.zip#genericNrm"
/>

```



## Annex B (normative): Configuration data file NRM specific XML schemas

### [Void.](#)

The following XML schemas are the NRM specific schemas for configuration data XML files.

The following XML schema `genericNrm.xsd` is the NRM specific schema for the Generic Network Resources IRP NRM defined in 32.622 [8]:

```

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

<!--
--3GPP TS 32.615 Bulk CM IRP
--Configuration data file Generic Network Resources IRP NRM XML schema
--genericNrm.xsd
-->

<schema
targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#genericNrm"
elementFormDefault="qualified"
xmlns="http://www.w3.org/2001/XMLSchema"
xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#genericNrm"
xmlns:un=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#utranNrm"
xmlns:gn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#geranNrm"
>

<import
namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#utranNrm"
/>
<import
namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.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"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>


```

```

</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"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

</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>

<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>

The following XML schema utranNrm.xsd is the NRM specific schema for the UTRAN Network Resources IRP
NRM defined in 32.642 [9]:

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

<!--
3GPP TS 32.615 Bulk CM IRP
Configuration data file UTRAN Network Resources IRP NRM XML schema
utranNrm.xsd
-->

<schema
  targetNamespace=


```



```

"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#utranNrm"
—elementFormDefault="qualified"
—xmlns="http://www.w3.org/2001/XMLSchema"
—xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#genericNrm"
—xmlns:un=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#utranNrm"
—xmlns:gn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#geranNrm"
>

—<import
—namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#genericNrm"
—/>
—<import
—namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#geranNrm"
—/>

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

—<element name="RncFunction">
—<complexType>
—<complexContent>
—<extension base="xn:NrmClassXmlType">
—<sequence>
—<element name="attributes" minOccurs="0">
—<complexType>
—<all>
—<element name="userLabel" minOccurs="0"/>
—<element name="mcc" minOccurs="0"/>
—<element name="mnc" minOccurs="0"/>
—<element name="rncId" minOccurs="0"/>
—</all>
—</complexType>
—</element>
—<choice minOccurs="0" maxOccurs="unbounded">
—<element ref="un:UtranCell"/>
—<element ref="un:IubLink"/>
—<element ref="xn:VsDataContainer"/>
—</choice>
—</sequence>
—</extension>
—</complexContent>
—</complexType>
—</element>

—<element name="NodeBFunction">
—<complexType>
—<complexContent>
—<extension base="xn:NrmClassXmlType">
—<sequence>
—<element name="attributes" minOccurs="0">
—<complexType>
—<all>
—<element name="userLabel" minOccurs="0"/>
—<element name="nodeBFunctionIubLink" minOccurs="0"/>
—</all>
—</complexType>
—</element>
—<choice minOccurs="0" maxOccurs="unbounded">
—<element ref="xn:VsDataContainer"/>

```

```

</choice>
</sequence>
</extension>
</complexContent>
</complexType>
</element>

<element name="UtranCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cId" minOccurs="0"/>
                <element name="localCellId" minOccurs="0"/>
                <element name="uarfcnUl" minOccurs="0"/>
                <element name="uarfcnDl" minOccurs="0"/>
                <element name="primaryScramblingCode" minOccurs="0"/>
                <element name="primaryCpichTxPower" minOccurs="0"/>
                <element name="maximumTransmissionPower" minOccurs="0"/>
                <element name="primarySchPower" minOccurs="0"/>
                <element name="secondarySchPower" minOccurs="0"/>
                <element name="behPower" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
                <element name="rac" minOccurs="0"/>
                <element name="sac" minOccurs="0"/>
                <element name="ura" minOccurs="0"/>
                <element name="utranCellIubLink" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="un:UtranRelation"/>
            <element ref="gn:GsmRelation"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="IubLink">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="iubLinkUtranCell" minOccurs="0"/>
                <element name="iubLinkNodeBFunction" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

</element>

<element name="UtranRelation">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="relationType" minOccurs="0"/>
                <element name="adjacentCell" minOccurs="0"/>
                <element name="uarfcnUl" minOccurs="0"/>
                <element name="uarfcnDl" minOccurs="0"/>
                <element name="primaryScramblingCode" minOccurs="0"/>
                <element name="primaryCpichTxPower" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ExternalUtranCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cId" minOccurs="0"/>
                <element name="mcc" minOccurs="0"/>
                <element name="mnc" minOccurs="0"/>
                <element name="rncId" minOccurs="0"/>
                <element name="uarfcnUl" minOccurs="0"/>
                <element name="uarfcnDl" minOccurs="0"/>
                <element name="primaryScramblingCode" minOccurs="0"/>
                <element name="primaryCpichTxPower" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
                <element name="rac" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
</schema>

```

The following XML schema `geranNrm.xsd` is the NRM specific schema for the GERAN Network Resources IRP NRM defined in 32.652 [10]:

```

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

<!--
--3GPP TS 32.615 Bulk CM IRP
--Configuration data file GERAN Network Resources IRP NRM XML schema
--geranNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#geranNrm"
  elementFormDefault="qualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#genericNrm"
  xmlns:un=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#utranNrm"
  xmlns:gn=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#geranNrm"
>

  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#genericNrm"
  />
  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615-420.zip#utranNrm"
  />

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

  <element name="BssFunction">
    <complexType>
      <complexContent>
        <extension base="xn:NrmClassXmlType">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
                <all>
                  <element name="userLabel" minOccurs="0"/>
                </all>
              </complexType>
            </element>
            <choice minOccurs="0" maxOccurs="unbounded">
              <element ref="gn:BtsSiteMgr"/>
              <element ref="xn:VsDataContainer"/>
            </choice>
          </sequence>
        </extension>
      </complexContent>
    </complexType>
  </element>

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

```

```

</element name="latitude" minOccurs="0"/>
</element name="longitude" minOccurs="0"/>
</all>
</complexType>
</element>
<choice minOccurs="0" maxOccurs="unbounded">
  <element ref="gn:GsmCell"/>
  <element ref="xn:VsDataContainer"/>
</choice>
</sequence>
</extension>
</complexContent>
</complexType>
</element>

<element name="GsmCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cellIdentity" minOccurs="0"/>
                <element name="cellAllocation" minOccurs="0"/>
                <element name="ncc" minOccurs="0"/>
                <element name="bcc" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
                <element name="mcc" minOccurs="0"/>
                <element name="mnc" minOccurs="0"/>
                <element name="rac" minOccurs="0"/>
                <element name="race" minOccurs="0"/>
                <element name="tsc" minOccurs="0"/>
                <element name="rxLevAccessMin" minOccurs="0"/>
                <element name="msTxPwrMaxCCH" minOccurs="0"/>
                <element name="hoppingSequenceNumber" minOccurs="0"/>
                <element name="plmnPermitted" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="gn:GsmRelation"/>
            <element ref="un:UtranRelation"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="GsmRelation">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="relationType" minOccurs="0"/>
                <element name="adjacentCell" minOccurs="0"/>
                <element name="bechFrequency" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

</element>
</complexType>
</choice>
</sequence>
</extension>
</complexContent>
</complexType>
</element>

<element name="ExternalGsmCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cellIdentity" minOccurs="0"/>
                <element name="bechFrequency" minOccurs="0"/>
                <element name="ncc" minOccurs="0"/>
                <element name="bcc" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
                <element name="mcc" minOccurs="0"/>
                <element name="mnc" minOccurs="0"/>
                <element name="rac" minOccurs="0"/>
                <element name="race" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
</schema>

```

## Annex C (informative): Configuration data file vendor-specific XML schema example

The following XML schema is an example of vendor-specific schema for configuration data XML files:

```

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

<!--
  Configuration data file vendor-specific XML schema example
  NNRncHandOver.1.1.xsd
-->

<schema
  targetNamespace="http://www.companyNN.com/xmlschemas/NNRncHandOver.1.1"

```

```
elementFormDefault="qualified"  
xmlns="http://www.w3.org/2001/XMLSchema"  
xmlns:xn=  
| "http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-  
420500.zip#genericNrm"  
>
```

```
<import  
  namespace=  
| "http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32615625-  
420500.zip#genericNrm"  
  />
```



# 3GPP TS 32.655 V1.0.0-2 (2002-05)

*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group Services and System Aspects;  
3G Configuration Management;  
GERAN Network Resources IRP:  
Bulk CM XML File Format Definition  
(Release 5)**



The present document has been developed within the 3<sup>rd</sup> Generation Partnership Project (3GPP™) and may be further elaborated for the purposes of 3GPP.

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Keywords

---

Configuration Management

**3GPP**

Postal address

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3GPP support office address

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## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> 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 3G 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**

R4 3G TS	R5 3G TS	3G TS no.	3G TS title
New	Yes	32.615	Bulk Configuration Management IRP: XML File Format Definition
	<b>New</b>	32.625	Generic Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.635	Core Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.645	UTRAN Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.655	GERAN Network Resources IRP: Bulk CM XML File Format Definition

The present document is 3GPP TS 32.655 "3G Configuration Management; GERAN Network Resources IRP: Bulk CM XML File Format Definition".

---

# 1 Scope

The present document provides the NRM-specific part related to the GERAN 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 3G 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 3G TS 32.652 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 32.652: "3G Configuration Management; GERAN Network Resources IRP: Network Resource Model".
- [2] 3GPP TS 32.612: "3G Configuration Management; Bulk Configuration Management IRP: Information Service".
- [3] 3GPP TS 32.615: "3G Configuration Management; Bulk Configuration Management IRP: 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:** a file containing an XML document.

**XML document:** see [4]; in the scope of this specification, an XML document is composed of the succession of an optional XML declaration followed by a root XML element.

**XML declaration:** see [4]; it specifies the version of XML being used.

**XML element:** see [4]; an 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.

**empty XML element:** see [4]; an 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.

**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:** see [4]; 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.

**XML end-tag:** see [4]; the end of a non-empty XML element is marked by an XML end-tag containing the name of the XML element.

**XML empty-element tag:** see [4]; an empty XML element is composed simply of an empty-element tag containing the name and the set of XML attribute specifications of the XML element.

**XML attribute specification:** see [4]; an XML attribute specification has a name and a value.

**DTD:** see [4]; a DTD defines structure and content constraints to be respected by an XML document to be valid with regard to this DTD.

**XML schema:** see [5], [6] and [7]; 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.

**XML namespace:** see [8]; in the scope of this specification, enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas.

**XML complex type:** see [5], [6] and [7]; 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.

**XML element type:** see [5], [6] and [7]; 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.

## 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 3G TS 32.615 [3].

Annex A of the present document defines the NRM-specific XML schema `geranNrm.xsd` for the GERAN Network Resources IRP NRM defined in 3G TS 32.652 [1].

XML schema `geranNrm.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 3G TS 32.615 [3].

---

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

The following XML schema `geranNrm.xsd` is the NRM-specific schema for the GERAN Network Resources IRP NRM defined in 3G TS 32.652 [1]:

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

<!--
  3GPP TS 32.655 GERAN Network Resources IRP
  Bulk CM Configuration data file NRM-specific XML schema
  geranNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32655-500.zip#geranNrm"
  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: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/32625-500.zip#genericNrm"
  />
  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32645-500.zip#utranNrm"
  />

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

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

```

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

<element name="BtsSiteMgr">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="latitude" minOccurs="0"/>
                <element name="longitude" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="gn:GsmCell"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="GsmCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cellIdentity" minOccurs="0"/>
                <element name="cellAllocation" minOccurs="0"/>
                <element name="ncc" minOccurs="0"/>
                <element name="bcc" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
                <element name="mcc" minOccurs="0"/>
                <element name="mnc" minOccurs="0"/>
                <element name="rac" minOccurs="0"/>
                <element name="racc" minOccurs="0"/>
                <element name="tsc" minOccurs="0"/>
                <element name="rxLevAccessMin" minOccurs="0"/>
                <element name="msTxPwrMaxCCH" minOccurs="0"/>
                <element name="hoppingSequenceNumber" minOccurs="0"/>
                <element name="plmnPermitted" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="gn:GsmRelation"/>
            <element ref="un:UtranRelation"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

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

<element name="GsmRelation">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="relationType" minOccurs="0"/>
                <element name="adjacentCell" minOccurs="0"/>
                <element name="bcchFrequency" minOccurs="0"/>
                <element name="ncc" minOccurs="0"/>
                <element name="bcc" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ExternalGsmCell">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="cellIdentity" minOccurs="0"/>
                <element name="bcchFrequency" minOccurs="0"/>
                <element name="ncc" minOccurs="0"/>
                <element name="bcc" minOccurs="0"/>
                <element name="lac" minOccurs="0"/>
                <element name="mcc" minOccurs="0"/>
                <element name="mnc" minOccurs="0"/>
                <element name="rac" minOccurs="0"/>
                <element name="racc" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
</schema>

```



---

## Annex B (informative): Change history

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

# 3GPP TS 32.645 V1.0.0-2 (2002-05)

*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group Services and System Aspects;  
3G Configuration Management;  
UTRAN Network Resources IRP:  
Bulk CM XML File Format Definition  
(Release 5)**



The present document has been developed within the 3<sup>rd</sup> Generation Partnership Project (3GPP™) and may be further elaborated for the purposes of 3GPP.

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Keywords

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Configuration Management

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## Introduction

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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 3G 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**

R4 3G TS	R5 3G TS	3G TS no.	3G TS title
New	Yes	32.615	Bulk Configuration Management IRP: XML File Format Definition
	<b>New</b>	32.625	Generic Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.635	Core Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.645	UTRAN Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.655	GERAN Network Resources IRP: Bulk CM XML File Format Definition

The present document is 3GPP TS 32.645 "3G Configuration Management; UTRAN Network Resources IRP: Bulk CM XML File Format Definition".

---

# 1 Scope

The present document provides the NRM-specific part related to the UTRAN 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 3G 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 3G TS 32.642 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 32.642: "3G Configuration Management; UTRAN Network Resources IRP: Network Resource Model".
- [2] 3GPP TS 32.612: "3G Configuration Management; Bulk Configuration Management IRP: Information Service".
- [3] 3GPP TS 32.615: "3G Configuration Management; Bulk Configuration Management IRP: 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:** a file containing an XML document.

**XML document:** see [4]; in the scope of this specification, an XML document is composed of the succession of an optional XML declaration followed by a root XML element.

**XML declaration:** see [4]; it specifies the version of XML being used.

**XML element:** see [4]; an 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.

**empty XML element:** see [4]; an 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.

**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:** see [4]; 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.

**XML end-tag:** see [4]; the end of a non-empty XML element is marked by an XML end-tag containing the name of the XML element.

**XML empty-element tag:** see [4]; an empty XML element is composed simply of an empty-element tag containing the name and the set of XML attribute specifications of the XML element.

**XML attribute specification:** see [4]; an XML attribute specification has a name and a value.

**DTD:** see [4]; a DTD defines structure and content constraints to be respected by an XML document to be valid with regard to this DTD.

**XML schema:** see [5], [6] and [7]; 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.

**XML namespace:** see [8]; in the scope of this specification, enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas.

**XML complex type:** see [5], [6] and [7]; 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.

**XML element type:** see [5], [6] and [7]; 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.

## 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 3G TS 32.615 [3].

Annex A of the present document defines the NRM-specific XML schema `utranNrm.xsd` for the UTRAN Network Resources IRP NRM defined in 3G TS 32.642 [1].

XML schema `utranNrm.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 3G TS 32.615 [3].

---

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

The following XML schema `utranNrm.xsd` is the NRM-specific schema for the UTRAN Network Resources IRP NRM defined in 3G TS 32.642 [1]:

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

<!--
  3GPP TS 32.645 UTRAN Network Resources IRP
  Bulk CM Configuration data file NRM-specific XML schema
  utranNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32645-500.zip#utranNrm"
  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: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/32625-500.zip#genericNrm"
  />
  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32655-500.zip#geranNrm"
  />

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

  <element name="RncFunction">
    <complexType>
      <complexContent>
        <extension base="xn:NrmClassXmlType">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
                <all>
                  <element name="userLabel" minOccurs="0"/>
                  <element name="mcc" minOccurs="0"/>
                  <element name="mnc" minOccurs="0"/>
                  <element name="rncId" minOccurs="0"/>
                </all>
              </complexType>
            </element>
          </sequence>
        </extension>
      </complexContent>
    </complexType>
  </element>

```



```

        </all>
      </complexType>
    </element>
    <choice minOccurs="0" maxOccurs="unbounded">
      <element ref="un:UtranCell"/>
      <element ref="un:IubLink"/>
      <element ref="xn:VsDataContainer"/>
    </choice>
  </sequence>
</extension>
</complexContent>
</complexType>
</element>

<element name="NodeBFunction">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
                <element name="nodeBFunctionIubLink" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="UtranCell">
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    <complexContent>
      <extension base="xn:NrmClassXmlType">
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            <complexType>
              <all>
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                <element name="cId" minOccurs="0"/>
                <element name="localCellId" minOccurs="0"/>
                <element name="uarfcnUl" minOccurs="0"/>
                <element name="uarfcnDl" minOccurs="0"/>
                <element name="primaryScramblingCode" minOccurs="0"/>
                <element name="primaryCpichTxPower" minOccurs="0"/>
                <element name="maximumTransmissionPower" minOccurs="0"/>
                <element name="primarySchPower" minOccurs="0"/>
                <element name="secondarySchPower" minOccurs="0"/>
                <element name="bchPower" minOccurs="0"/>
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                <element name="rac" minOccurs="0"/>
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                <element name="ura" minOccurs="0"/>
                <element name="utranCellIubLink" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

        <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="un:UtranRelation"/>
            <element ref="gn:GsmRelation"/>
            <element ref="xn:VsDataContainer"/>
        </choice>
    </sequence>
</extension>
</complexContent>
</complexType>
</element>

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                        <complexType>
                            <all>
                                <element name="userLabel" minOccurs="0"/>
                                <element name="iubLinkUtranCell" minOccurs="0"/>
                                <element name="iubLinkNodeBFunction" minOccurs="0"/>
                            </all>
                        </complexType>
                    </element>
                </sequence>
            </extension>
        </complexContent>
    </complexType>
</element>

<element name="UtranRelation">
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        <complexContent>
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                            <all>
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                                <element name="uarfcnDl" minOccurs="0"/>
                                <element name="primaryScramblingCode" minOccurs="0"/>
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                            </all>
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                    </element>
                    <choice minOccurs="0" maxOccurs="unbounded">
                        <element ref="xn:VsDataContainer"/>
                    </choice>
                </sequence>
            </extension>
        </complexContent>
    </complexType>
</element>

<element name="ExternalUtranCell">
    <complexType>
        <complexContent>
            <extension base="xn:NrmClassXmlType">
                <sequence>

```

```

<element name="attributes" minOccurs="0">
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    <all>
      <element name="userLabel" minOccurs="0"/>
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      <element name="mcc" minOccurs="0"/>
      <element name="mnc" minOccurs="0"/>
      <element name="rncId" minOccurs="0"/>
      <element name="uarfcnUl" minOccurs="0"/>
      <element name="uarfcnDl" minOccurs="0"/>
      <element name="primaryScramblingCode" minOccurs="0"/>
      <element name="primaryCpichTxPower" minOccurs="0"/>
      <element name="lac" minOccurs="0"/>
      <element name="rac" minOccurs="0"/>
    </all>
  </complexType>
</element>
</sequence>
</extension>
</complexContent>
</complexType>
</element>

</schema>

```

---

## Annex B (informative): Change history

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

# 3GPP TS 32.635 V1.0.0-4 (2002-05)

*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group Services and System Aspects;  
3G Configuration Management;  
Core Network Resources IRP:  
Bulk CM XML File Format Definition  
(Release 5)**



The present document has been developed within the 3<sup>rd</sup> Generation Partnership Project (3GPP™) and may be further elaborated for the purposes of 3GPP.

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Keywords

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Configuration Management

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## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> 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 3G 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**

R4 3G TS	R5 3G TS	3G TS no.	3G TS title
New	Yes	32.615	Bulk Configuration Management IRP: XML File Format Definition
	<b>New</b>	32.625	Generic Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.635	Core Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.645	UTRAN Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.655	GERAN Network Resources IRP: Bulk CM XML File Format Definition

The present document is 3GPP TS 32.635 "3G Configuration Management; Core Network Resources IRP: Bulk CM XML File Format Definition".

---

# 1 Scope

The present document provides the NRM-specific part related to the Core 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 3G 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 3G TS 32.632 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 32.632: "3G Configuration Management; Core Network Resources IRP: Network Resource Model".
- [2] 3GPP TS 32.612: "3G Configuration Management; Bulk Configuration Management IRP: Information Service".
- [3] 3GPP TS 32.615: "3G Configuration Management; Bulk Configuration Management IRP: 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:** a file containing an XML document.

**XML document:** see [4]; in the scope of this specification, an XML document is composed of the succession of an optional XML declaration followed by a root XML element.

**XML declaration:** see [4]; it specifies the version of XML being used.

**XML element:** see [4]; an 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.

**empty XML element:** see [4]; an 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.

**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:** see [4]; 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.

**XML end-tag:** see [4]; the end of a non-empty XML element is marked by an XML end-tag containing the name of the XML element.

**XML empty-element tag:** see [4]; an empty XML element is composed simply of an empty-element tag containing the name and the set of XML attribute specifications of the XML element.

**XML attribute specification:** see [4]; an XML attribute specification has a name and a value.

**DTD:** see [4]; a DTD defines structure and content constraints to be respected by an XML document to be valid with regard to this DTD.

**XML schema:** see [5], [6] and [7]; 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.

**XML namespace:** see [8]; in the scope of this specification, enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas.

**XML complex type:** see [5], [6] and [7]; 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.

**XML element type:** see [5], [6] and [7]; 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.

## 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 3G TS 32.615 [3].

Annex A of the present document defines the NRM-specific XML schema `coreNrm.xsd` for the Core Network Resources IRP NRM defined in 3G TS 32.632 [1].

XML schema `coreNrm.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 3G TS 32.615 [3].

---

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

The following XML schema `coreNrm.xsd` is the NRM-specific schema for the Core Network Resources IRP NRM defined in 3G TS 32.632 [1]:

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

<!--
  3GPP TS 32.635 Core Network Resources IRP
  Bulk CM Configuration data file NRM-specific XML schema
  coreNrm.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32635-500.zip#coreNrm"
  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"
>

  <import
    namespace=
"http://www.3gpp.org/ftp/specs/latest/rel-4/32_series/32625-500.zip#genericNrm"
  />

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

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

  <element name="HlrFunction">
    <complexType>
```

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

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

<element name="AucFunction">
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    <complexContent>
      <extension base="xn:NrmClassXmlType">
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
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            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

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

```
        </element>
      </sequence>
    </extension>
  </complexContent>
</complexType>
</element>

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

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              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="GmscFunction">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
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                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="SgsnFunction">
  <complexType>
```

```
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  <extension base="xn:NrmClassXmlType">
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          </all>
        </complexType>
      </element>
    </sequence>
  </extension>
</complexContent>
</complexType>
</element>

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

<element name="BgFunction">
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      <extension base="xn:NrmClassXmlType">
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
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            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

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

```
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      </sequence>
    </extension>
  </complexContent>
</complexType>
</element>

<element name="GmlcFunction">
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    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ScfFunction">
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
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    </complexContent>
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</element>

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

<element name="CbcFunction">
  <complexType>
```

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

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

<element name="MgwFunction">
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    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

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

```
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      </sequence>
    </extension>
  </complexContent>
</complexType>
</element>

<element name="IwfFunction">
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    <complexContent>
      <extension base="xn:NrmClassXmlType">
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="MnpSrfFunction">
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    <complexContent>
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          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="NpdbFunction">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="SgwFunction">
  <complexType>
```



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

<element name="SsfFunction">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClassXmlType">
        <sequence>
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            <complexType>
              <all>
                <element name="userLabel" minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

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

</schema>
```

---

## Annex B (informative): Change history

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

# 3GPP TS 32.625 V1.0.0-2 (2002-05)

*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group Services and System Aspects;  
3G Configuration Management;  
Generic Network Resources IRP:  
Bulk CM XML File Format Definition  
(Release 5)**



The present document has been developed within the 3<sup>rd</sup> Generation Partnership Project (3GPP™) and may be further elaborated for the purposes of 3GPP.

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Keywords

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Configuration Management

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## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> 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 3G 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**

R4 3G TS	R5 3G TS	3G TS no.	3G TS title
New	Yes	32.615	Bulk Configuration Management IRP: XML File Format Definition
	<b>New</b>	32.625	Generic Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.635	Core Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.645	UTRAN Network Resources IRP: Bulk CM XML File Format Definition
	<b>New</b>	32.655	GERAN Network Resources IRP: Bulk CM XML File Format Definition

The present document is 3GPP TS 32.625 "3G Configuration Management; Generic Network Resources IRP: Bulk CM 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 3G 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 3G 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: "3G Configuration Management; Generic Network Resources IRP: Network Resource Model".
- [2] 3GPP TS 32.612: "3G Configuration Management; Bulk Configuration Management IRP: Information Service".
- [3] 3GPP TS 32.615: "3G Configuration Management; Bulk Configuration Management IRP: 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:** a file containing an XML document.

**XML document:** see [4]; in the scope of this specification, an XML document is composed of the succession of an optional XML declaration followed by a root XML element.

**XML declaration:** see [4]; it specifies the version of XML being used.

**XML element:** see [4]; an 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.

**empty XML element:** see [4]; an 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.

**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:** see [4]; 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.

**XML end-tag:** see [4]; the end of a non-empty XML element is marked by an XML end-tag containing the name of the XML element.

**XML empty-element tag:** see [4]; an empty XML element is composed simply of an empty-element tag containing the name and the set of XML attribute specifications of the XML element.

**XML attribute specification:** see [4]; an XML attribute specification has a name and a value.

**DTD:** see [4]; a DTD defines structure and content constraints to be respected by an XML document to be valid with regard to this DTD.

**XML schema:** see [5], [6] and [7]; 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.

**XML namespace:** see [8]; in the scope of this specification, enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas.

**XML complex type:** see [5], [6] and [7]; 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.

**XML element type:** see [5], [6] and [7]; 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.

## 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 3G 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 3G 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 3G TS 32.615 [3], with the following exception: as defined in 3G 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 [3])
- XML element type `vsData`: derivation base type (see [5], [6] and [7]) for all vendor-specific XML element types (see [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 3G 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>
        </sequence>
      </extension>
    </complexContent>
  </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>

<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>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

```

```

        </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