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LTE;
Telecommunication management;
Configuration Management (CM);
Bulk CM Integration Reference Point (IRP);
Solution Set (SS) definitions
(3GPP TS 32.616 version 15.1.0 Release 15)**

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

32.611: "Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Requirements".

32.612: "Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Information Service (IS)".

32.616: "Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Solution Set (SS) definitions".

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 Element (NEs) and network resources , and they may be initiated by the operator or 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. The CM actions are initiated either as a single action on a NE of the 3G network or as part of a complex procedure involving actions on many NEs.

1 Scope

The present document specifies the Solution Sets for the IRP whose semantics are specified in Bulk CM IRP: Information Service (3GPP TS 32.612 [9]).

This Solution Set specification is related to 3GPP TS 32.612 [9].

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 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".

[4] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[5] 3GPP TS 32.306: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Solution Set (SS) definitions".

[6] 3GPP TS 32.312: "Telecommunication management; Generic Integration Reference Point (IRP) management; Information Service (IS)".

[7] 3GPP TS 32.316: "Telecommunication management; Generic Integration Reference Point (IRP) management: Solution Set (SS) definitions".

[8] 3GPP TS 32.611: " Technical Specification Group Services and System Aspects; Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Requirements ".

[9] 3GPP TS 32.612: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Information Service (IS)".

[10] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[11] 3GPP TS 32.626: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Solution Set (SS) definitions".

[12] 3GPP TS 32.632: "Telecommunication management; Configuration Management (CM); CN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[13] 3GPP TS 32.636: "Telecommunication management; Configuration Management (CM); Core network resources Integration Reference Point (IRP): Solution Set (SS) definitions".

[14] 3GPP TS 32.642: "Telecommunication management; Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[15] 3GPP TS 32.646: "Telecommunication management; Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Solution Set (SS) definitions".

[16] 3GPP TS 32.652: "Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[17] 3GPP TS 32.656: "Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP): Solution Set (SS) definitions".

[18] 3GPP TS 32.692 "Inventory Management (IM) network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[19] 3GPP TS 32.696: "Telecommunication management; Inventory Management (IM) Network Resource Model (NRM); Integration Reference Point (IRP): Solution Set (SS) definitions".

[20] 3GPP TS 32.716: "Telecommunication management; Configuration Management (CM); Transport Network (TN) interface Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[21] 3GPP TS 32.736: "IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[22] 3GPP TS 32.742: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) Interface Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[23] 3GPP TS 32.746: "Telecommunication management; Configuration Management (CM); Signalling Transport Network (STN) Interface Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[24] 3GPP TS 32.756: " Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[25] 3GPP TS 32.766: "Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[26] OMG Notification Service, Version 1.0.

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

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

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

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

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

[32] W3C SOAP 1.1 specification (http://www.w3.org/TR/2000/NOTE-SOAP-20000508/)

[33] W3C XPath 1.0 specification (http://www.w3.org/TR/1999/REC-xpath-19991116)

[34] W3C WSDL 1.1 specification (http://www.w3.org/TR/2001/NOTE-wsdl-20010315)

[35] W3C SOAP 1.2 specification (http://www.w3.org/TR/soap12-part1/)

[36] 3GPP TS 32.172: "Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[37] 3GPP TS 32.176: "Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[38] 3GPP TS 32.522: "Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[39] 3GPP TS 32.526: "Telecommunication management; Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[40] 3GPP TS 32.712: "Telecommunication management; Configuration Management (CM); Transport Network (TN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[41] 3GPP TS 32.722: "Telecommunication management; Configuration Management (CM); Repeater network resources Integration Reference Point (IRP); information Service (IS)".

[42] 3GPP TS 32.726: "Telecommunication management; Configuration Management (CM); Repeater network resources Integration Reference Point (IRP): Solution Set (SS) definitions".

[43] 3GPP TS 32.732: "Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[44] 3GPP TS 32.752: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[45] 3GPP TS 32.762: "Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[46] 3GPP TS 32.772: "Telecommunication management; Home Node B (HNB) Subsystem (HNS); Network Resource Model (NRM); Integration Reference Point (IRP): Information Service (IS)".

[47] 3GPP TS 32.776: "Telecommunication management; Home Node B (HNB) Subsystem (HNS); Network Resource Model (NRM); Integration Reference Point (IRP): Solution Set (SS) definitions".

[48] 3GPP TS 32.782: "Telecommunication management; Home enhanced Node B (HeNB) Subsystem (HeNS); Network Resource Model (NRM); Integration Reference Point (IRP): Information Service (IS)".

[49] 3GPP TS 32.786: "Telecommunication management; Home enhanced Node B (HeNB) Subsystem (HeNS); Network Resource Model (NRM); Integration Reference Point (IRP): Solution Set (SS) definitions".

[50] 3GPP TS 32.796: "Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions".

[51] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms given in 3GPP TR 21.905 [51] , TS 32.101 [1], TS 32.102 [2], TS 32.150 [3], TS 32.172 [36], TS 32.522 [38], TS 32.611 [8], TS 32.612 [9], TS 32.622 [10], TS 32.632 [12], TS 32.642 [14], TS 32.652 [16], TS 32.692 [18], TS 32.712 [40], 32.722 [41], TS 32.732 [43], TS 32.742 [22], TS 32.752 [44], TS 32.762 [45], TS 32.772 [46] and TS 32.782 [48] and the following apply:

IRP document version number string (or "IRPVersion"): See 3GPP TS 32.312 [6].

XML file: a file containing an XML document.

XML document: see [27]; 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 [27]; it specifies the version of XML and the character encoding being used.

XML element: see [27]; 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 [27]; 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 [27]; 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 [27]; 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 [27]; 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 [27]; an XML attribute specification has a name and a value.

DTD: see [27]; 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 [28], [29] and [30]; 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 [31]; 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 [28], [29] and [30]; 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 [28], [29] and [30]; 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 abbreviations given in 3GPP TR 21.905 [51] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [51].].

CM	Configuration Management
DN	Distinguished Name
MO	Managed Object
MOC	Managed Object Class
RDN	Relative Distinguished Name
SS	Solution Set
WSDL	Web Service Description Language

4 Solution Set (SS) definitions

This specification defines the following 3GPP Bulk CM IRP Solution Set Definitions:

Annex A provides the CORBA Solution Set.
Annex B provides the XML Definitions.
Annex C provides the SOAP Solution Set.

Annex A (normative): CORBA Solution Set

This annex specifies the CORBA Solution Set for the IRP whose semantics are specified in 3GPP TS 32.612 [9].

A.1 Architectural features

The overall architectural feature of Bulk CM IRP is specified in 3GPP TS 32.612 [9].
This clause specifies features that are specific to the CORBA SS.

A.1.1 Syntax for Distinguished Names

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [4].

A.1.2 BulkCMIRPNotifications Interface

OMG CORBA Notification push operation is used to realise the notification of BulkCMIRPNotifications. All the notifications in this interface are implemented using this push_structured_event method.

A.1.2.1 Method push (M)

```
module CosNotifyComm {
        …
        Interface SequencePushConsumer : NotifyPublish {
                void push_structured_events(
                                in CosNotification::EventBatch notifications)
            raises( CosEventComm::Disconnected);
                …
        }; // SequencePushConsumer
        …
}; // CosNotifyComm
```

NOTE 1: The push_structured_events method takes an input parameter of type EventBatch as defined in the OMG CosNotification module (OMG Notification Service [26]). This data type is the same as a sequence of Structured Events. Upon invocation, this parameter will contain a sequence of Structured Events being delivered to IRPManager by IRPAgent to which it is connected.

NOTE 2: The maximum number of events that will be transmitted within a single invocation of this operation is controlled by IRPAgent wide configuration parameter.

NOTE 3: The amount of time the supplier (IRPAgent) of a sequence of Structured Events will accumulate individual events into the sequence before invoking this operation is controlled by IRPAgent wide configuration parameter as well.

NOTE 4: IRPAgent may push EventBatch with only one Structured Event.