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XML definitions for Type 1 interface HeNB to HeNB Management System (HeMS)
(3GPP TS 32.594 version 15.0.0 Release 15)

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Contents

Foreword

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Version x.y.z

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  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

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

32.591: "Concepts and requirements for Type 1 interface HeNB to HeNB Management System (HeMS)"

32.592: "Information model for Type 1 interface HeNB to HeNB Management System (HeMS)"

32.593: "Procedure flows for Type 1 interface HeNB to HeNB Management System (HeMS)"

32.594: "Data definitions for Type 1 interface HeNB to HeNB Management System (HeMS)"

1 Scope

The present document describes the data format for Configuration Management, Fault Management, and Performance Management for Home eNodeB (HeNB). The Stage 3 definitions captured in this document shall be met via type 1 interface between HeNB and Home eNodeB Management System (HeMS).

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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] Void.

[3] Void.

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

[5] – [7] Void.

[8] 3GPP TS 32.435: "Telecommunication management; Performance measurement: eXtensible Markup Language (XML) file format definition"

[9] 3GPP TS 32.592: " Information model for Type 1 interface HeNB to HeNB Management System (HeMS) "

[10]-[12] Void.

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

[14] Void.

[15] WT-157, Component Objects for CWMP, Broadband Forum

[16] TR-098 Amendment 2, “Internet Gateway Device Data Model for TR-069", Broadband Forum

[17] Void.

[18] TR-196i2, "Femto Access Point Device Data Model". Broadband Forum, Issue 2 November 2011 http://www.broadband-forum.org/technical/download/TR-196_Issue-2.pdf .

[19] ISO 8601:2004(E) "Data elements and interchange formats — Information interchange — Representation of dates and times", ISO.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

Home eNodeB, 3G Home eNodeB: These terms, their derivations and abbreviations are used synonymously throughout this document.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

CM	Configuration Management
DM	Domain Manager
DTD	Document Type Definition
EM	Element Manager
HMS	Home NodeB Management System
HeMS	Home eNodeB Management System
HNB	Home NodeB
HeNB	Home eNodeB
IP	Internet Protocol
LTE	Long Term Evolution
MME	Mobility Management Entity
NGMN	Next Generation Mobile Networks
OAM	Operations, Administration and Maintenance
PM	Performance Management
PnP	Plug and Play
SAE	System Architecture Evolution
SON	Self-Organising Networks
UMTS	Universal Mobile Telecommunications System
UTC	Universal Time Coordinated
UTRAN	UMTS Radio Access Network
XML	eXtensible Markup Language

4 CM data format definition

This clause describes the format of Configuration Management data.

4.1 File content description

Table 4.1 lists all the file content items, provides and explanation of the individual items, and maps the file content items to those used in the XML schema based file format definitions. XML tag attributes are useful where data values bind tightly to its parent element. They have been used where appropriate.

Table 4.1 File Content Description and Mapping of File Content Items to XML tags

File Content Item	XML schema based XML tag	Description
configDataCollection	configDataFile	This is the top-level tag, which identifies the file as a collection of config data. The file content is made up of a header ("configFileHeader"), the collection of configuration items ("configData"), and a configfile footer ("configFileFooter").
configFileHeader	fileHeader	This is the configuration data file header to be inserted in each file. It includes a version indicator, the sender name, and vendor name of the sending network node.
configData	configData	The "configData" construct represents the sequence of zero or more configuration parameter items contained in the file. Each "configData" element contains the name of the NE ("nEId") and the list of parameters to be created,modified or deleted which pertaining to that NE The "configData" consists of DeviceData, DiagnosticsData, and FAPServiceData
configFileFooter	fileFooter	The configuration data file footer to be inserted in each file. It includes a time stamp, which refers to the time when the file is closed for sending to the NE.
fileFormatVersion	fileHeader fileFormatVersion	This parameter identifies the file format version applied by the sender. The format version defined in the present document shall be the abridged number and version of this 3GPP document (see below). The abridged number and version of a 3GPP document is constructed from its version specific full reference "3GPP […] (yyyy-mm)" by: - removing the leading "3GPP TS" - removing everything including and after the version third digit, representing editorial only changes, together with its preceding dot character - from the resulting string, removing leading and trailing white space, replacing every multi character white space by a single space character and changing the case of all characters to uppercase. e.g. "32.594 V9.0"
senderName	fileHeader senderName	The senderName uniquely identifies the NE or EM that assembled this alarm reporting file by its Distinguished Name (DN), according to the definitions in 3GPP TS 32.300 [4]. In the case of the NE-based approach, it is identical to the sender's "nEDistinguishedName".
vendorName	fileHeader vendorName	The "vendorName" identifies the vendor of the equipment that provided the measurement file. The string may be empty (i.e. string size =0) if the "vendorName" is not configured in the sender. For the XML schema based XML format, XML attribute specification "vendorName" may be absent in case the "vendorName" is not configured in the sender.
neId	managedElement	
neUserName	managedElement userLabel	"userLabel" may be absent in case the "nEUserName" is not configured in the CM applications.

File Content Item	XML schema based XML tag	Description
neDistinguishedName	managedElement localDn	The DN is split into the DN prefix and the Identifier of the Managed Object (see 3GPP TS 32.592 [9]). "localDn" may be absent in case the Identifier of the Managed Object is not configured in the CM applications
neSoftwareVersion	managedElement swVersion	"swVersion" may be absent in case the "nESoftwareVersion" is not configured in the CM applications.
Modifier	configData modifier	This element is present if the HMS is required to inform the NE whether the parameter information should be used to create, update or delete an specific object instance on the HNB.. If not present the NE will assume the modification action is update
HNBDataParameters	configData DeviceInfo configData ManagementServer configData Time FAPService DNPrefix FAPService FAPControl FAPService AccessManagementParameters FAPService CellConfig FAPService TransportParameters FAPService LTEREMParameters FAPService GPS FAPService SecurityParameters FAPService LocationManagementParameters	These elements are present if the HMS requires to modify the specific configuration parameters The XML file format definitions implement the configuration structure and parameter definitions defined in 3GPP TS 32.592 [9] and broadband forum TR-098 Amendment 2 [16].
timestamp	fileFooter dataTime	

A vendor MAY extend the standardized parameter list with vendor-specific parameters and objects. Vendor-specific parameters and objects MAY be defined either in a separate naming hierarchy or within the standardized naming hierarchy of the XML File Format.
The name of a vendor-specific parameter or object not contained within another vendor-specific object MUST have the following form to align with the Vendor Specific Parameter Definition of TR-098 Amendment 2 [16].

- X_<VENDOR>_VendorSpecificName

4.2 XML schema based CM data file format definition

4.2.1 CM data file XML diagram

For the purposes of the present document XML diagram in TR-196 Amendment 1 [18] applies.

4.2.2 CM data file XML schema

For the purposes of the present document XML schema in TR-196 Amendment 1 [18] applies.

4.2.3 CM data file XML header

For the purposes of the present document XML header in TR-196 Amendment 1 [18] applies.

5 PM data format definition

5.1 Mapping table

Table 5.1 maps the PM file content items in the 3GPP TS 32.592 [9] document to those used in the XML schema based file format definitions. XML tag attributes are useful where data values bind tightly to its parent element. They have been used where appropriate.

Table 5.1 Mapping of File Content Items to XML tags

File Content Item	XML schema based XML tag	Description
measDataCollection	measCollecFile	
measFileHeader	fileHeader	
measData	measData	
measFileFooter	fileFooter	
fileFormatVersion	fileHeader fileFormatVersion	
senderName	fileHeader dnPrefix and fileSender localDn	For the XML schema based XML format, the DN is split into the DN prefix and the Identifier of the Managed Object (see 3GPP TS 32.592 [9]). XML attribute specification "dnPrefix" may be absent in case the DN prefix is not configured in the sender. XML attribute specification "localDn" may be absent in case the Identifier of the Managed Object is not configured in the sender.
senderType	fileSender elementType	For the XML schema based XML format, XML attribute specification "elementType" may be absent in case the "senderType" is not configured in the sender.
vendorName	fileHeader vendorName	For the XML schema based XML format, XML attribute specification "vendorName" may be absent in case the "vendorName" is not configured in the sender.
collectionBeginTime	measCollec beginTime	3GPP TS 32.592 [9] clause 6.3.2.1 Periodic Statistics “ReportStartTime”
neId	managedElement	
neUserName	managedElement userLabel	For the XML schema based XML format, XML attribute specification "userLabel" may be absent in case the "nEUserName" is not configured in the CM applications. Not used in HeNB PM file
neDistinguishedName	fileHeader dnPrefix and managedElement localDn	For the XML schema based XML format, the DN is split into the DN prefix and the Identifier of the Managed Object (see 3GPP TS 32.592 [9]). XML attribute specification "localDn" may be absent in case the Identifier of the Managed Object is not configured in the CM applications.
neSoftwareVersion	managedElement swVersion	For the XML schema based XML format, XML attribute specification "swVersion" may be absent in case the "nESoftwareVersion" is not configured in the CM applications. Not used in HeNB PM file
measInfo	measInfo	
measInfoId	measInfoId	
measTimeStamp	granPeriod endTime	Calculated from the 3GPP TS 32.592 [9] clause 6.3.2.1 Periodic Statistics “ReportStartTime” + accumulation of the 3GPP TS 32.592 [9] clause 6.3.2.1 Periodic Statistics “SampleSeconds”
jobId	Job jobId	Not used in HeNB PM file
granularityPeriod	granPeriod duration	For the XML schema based XML format, the value of XML attribute specification "duration" shall use the truncated representation "PT*n*S" (see [13]). 3GPP TS 32.592 [9] clause 6.3.2.1 Periodic Statistics “SampleInterval”
reportingPeriod	repPeriod duration	For the XML schema based XML format, the value of XML attribute specification "duration" shall use the truncated representation "PT*n*S" (see [13]). 3GPP TS 32.592 [9] clause 6.3.1 Periodic Statistics “PeriodicUploadInterval”
measTypes	measTypes or measType	For the XML schema based XML format, depending on sender's choice for optional positioning presence, either XML element "measTypes" or XML elements "measType" will be used. 3GPP TS 32.592 [9] clause 6.3.2.2 Periodic Statistics “Reference”

File Content Item	XML schema based XML tag	Description
measValues	measValue	
measObjInstId	measValue measObjLdn	Identifier of the Managed Object (see 3GPP TS 32.592 [9])
measResults	measResults or r	For the XML schema based XML format, depending on sender's choice for optional positioning presence, either XML element "measResults" or XML elements "r" will be used. Broadband Forum data Model WT-157 [15] PeriodicStatistics.SampleSet.{i}.Parameter.{i}.Values
suspectFlag	Suspect	Not used in HeNB PM file
timeStamp	measCollec endTime	3GPP TS 32.592 [9] clause 6.3.2.1 Periodic Statistics “ReportEndTime”
There is no corresponding File Content Item.	measType p	An optional positioning XML attribute specification of XML element "measType" (XML schema based), used to identify a measurement type for the purpose of correlation to a result. The value of this XML attribute specification is expected to be a non-zero, non-negative integer value that is unique for each instance of XML element "measType" that is contained within the measurement data collection file. Not used in HeNB PM file
There is no corresponding File Content Item.	r p	An optional positioning XML attribute specification of XML element "r", used to correlate a result to a measurement type. The value of this XML attribute specification should match the value of XML attribute specification "p" of the corresponding XML element "measType" (XML schema based). Not used in HeNB PM file

The representation of all timestamps in PM files shall follow the representations allowed by the ISO 8601 [19].

The precise format for timestamp representation shall be determined by the technology used for encoding the PM file (e.g. XML DTD, XML Schema). The choice of technology should ensure that this representation is derived from ISO 8601 [19]. Based on the representation used, the timestamp shall refer to either UTC time or local time or local time with offset from UTC.

5.2 XML schema based PM data file format definition

5.2.1 PM data file XML diagram

For the purposes of the present document XML diagram in TS 32.435 [8] section 4.2.1 applies.

5.2.2 PM data file XML schema

For the purposes of the present document XML schema in TS 32.435 [8] section 4.2.2 applies.

5.2.3 PM data file XML header

For the purposes of the present document XML header in TS 32.435 [8] section 4.2.3 applies.

Annex A (informative): Examples

A.1 XML schema based CM data file

For the purposes of the present document the examples in TR-196 Amendment 1 [18] apply.

A.2 XML schema based PM data file

For the purposes of the present document the examples in TS 32.435 [8] Annex A apply.

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
2010-03	SA#47	SP-100059	--	--	Presentation to SA for information and approval	--	1.0.0
2010-03	--	--	--	--	Publication of SA approved version	1.0.0	9.0.0
2010-06	SA#48	SP-100264	001	--	Remove unused reference and wrong keyword, and modify editorial errors	9.0.0	10.0.0
2012-09	-	-	-	-	Update to Rel-11 version (MCC)	10.0.0	**11.0.0**
2013-12	SA#62	SP-130615	003	1	Correct reference to TR-196	11.0.0	**12.0.0**
2016-01	-	-	-	-	Update to Rel-13 version (MCC)	12.0.0	**13.0.0**
2017-04	SA#75	-	-	-	Promotion to Release 14 without technical change	13.0.0	**14.0.0**
2018-06	-	-	-	-	Update to Rel-15 version (MCC)	14.0.0	**15.0.0**

History

Document history		
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