ERICSSON

MDT Mapping Log

Printout Description

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Contents

1 Introduction

This printout description describes logs generated by MDT Mapping on the SGSN-MME for LTE systems.

2 Description

MDT Mapping associates an MDT trace with an IMEI-TAC. MDT Mapping generates an output that can be logged to a file, streamed in real time to a TCE, or both logged and streamed.

When the logging function is enabled, an MDT Mapping log file is created on the MME. When the streaming function is enabled, the MDT Mapping events are streamed to a TCE in real time.

The MDT Mapping log file is stored in the `/tmp/OMS_LOGS/mdt` directory. The MDT Mapping data is logged in an Ericsson proprietary bit-packed binary format.

To inform the operator of a new published log file, an event is sent. The operator uses SFTP to retrieve and delete log files in the directory for ready log files. All logs, except for performance logs, are predefined at system startup. That is, the operator cannot add or remove logs. All log files are so called multiple logs, which means that each log consists of a predefined number of log files. The log file is recognized by the name of the log followed by an index: `Logname.index`. The data is written to several log files in a circular manner. The current log file is written in the `tmp` directory. When a log file has reached its maximum file size, it is given the consecutive index in the range of log files and is moved to the `ready` directory. A new file is opened in the `tmp` directory. When the last file in the range has reached its maximum size, the first file is overwritten.

For more information about the MDT feature, see Minimization of Drive Tests.

For information about parameters and CLI commands used for configuring logging, see Logging (CLI).

2.1 Event Parameters for MDT Mapping

Table 1 lists some major event parameters that are used in MDT Mapping logs.

Table 1 Major Event Parameters for MDT Mapping

Event Parameter Group	Event Parameter Name	Description
TIMESTAMP	TIME_HOUR	Timestamp, Hour. HH Value range: 0–23
	TIME_MINUTE	Timestamp, Minute. MM Value range: 0–59
	TIME_SECOND	Timestamp, Second. SS. The second value 60 indicates a leap second. The time is presented in local time.

Event Parameter Group	Event Parameter Name	Description
		Value range: 0–59
	TIME_MILLISECOND	Timestamp, Millisecond. Value range: 0–999
TRACE_REFERENCE	MCC	Mobile Country Code
	MNC	Mobile Network Code
	TRACE_ID	Trace ID, a 3-byte number
E_UTRAN_TRACE_ID	TRACE_REFERENCE	TRACE_REFERENCE consists of the MCC, MNC, and TRACE_ID.
	TRACE_RECORDING_SESSION_REFERENCE	Trace Recording Session Reference, a 2-byte number
ECGI	PLMN_IDENTITY	PLMN ID, which consists of the MCC and MNC
	ECI	E-UTRAN Cell Identity, which is used to identify cells within a PLMN.
-	IMEI_TAC	IMEI Type Allocation Code (TAC)

2.2 Interface Files

There are two MDT Mapping interface files on the MME: `mdtm_definition.xml` and `1_LMI-09:1899.xsd`.

2.2.1 Relationship

The `mdtm_definition.xml` file is an XML file that defines event parameters logged in MDT Mapping logs, which contain actual values for these parameters. The `1_LMI-09:1899.xsd` file is an XML schema description file that defines the syntax used to validate the structure of `mdtm_definition.xml`.

Figure 1 shows how the XML schema description file, XML definition file, and the MDT Mapping logs are linked to each other.

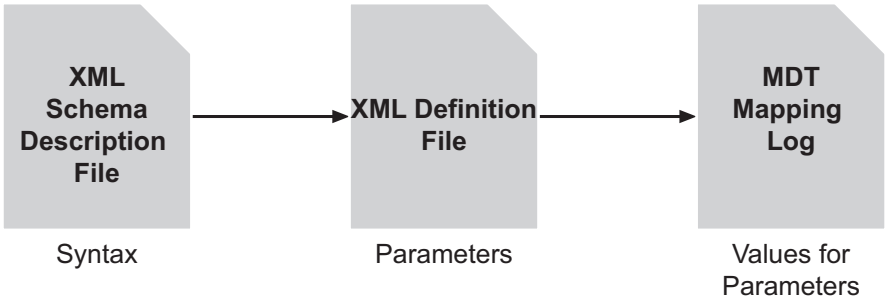

Figure 1 Interface Files and MDT Mapping Logs

A good understanding of XML files helps in interpretation of MDT Mapping logs.

2.2.2 XML Definition File

The `mdtm_definition.xml` file is stored on the MME. This file defines event parameters, records, and events used in the generated MDT Mapping logs. This file is used by the post-processing system as an input for parsing MDT Mapping logs.

The MDT Mapping log format is likely to change in a new release of the SGSN-MME. Whenever there is a change in the MDT interface files, the TCE must fetch the new XML definition file from the SGSN-MME for parsing adaptation.

For more information on the contents of the XML file and how they are structured, see Event-Based Monitoring Log.

2.2.3 XML Schema Description File

The `1_LMI-09:1899.xsd` schema description file that defines syntax of the XML definition file is also stored on the MME.

This XML schema description file can be used to validate the structure of the XML definition file.

The XML schema description file can be copied to the TCE over the Gom interface using SFTP.

For more information on how to copy the interface files to the TCE, see Configuring Minimization of Drive Tests.

3 MDT Mapping Log Files

MDT Mapping log files generated by the MME contain MDT mapping data recorded within the Reporting Output Period (ROP) of 15 minutes. MDT Mapping log files are available on the MME and can be fetched by the TCE for post-processing.

3.1 Log File Name

MDT Mapping logs are stored in log files named according to the following convention:

```
<Type><StartDate>.<Starttime><UTC>-
<Enddate>.<Endtime><UTC>_<ROPindex>_mdt_mapping_log<.Index>
```

The parts constituting the name of the log file are defined as follows:

Type Indicates whether the file contains data for single or multiple NEs and granularity periods. Only `A` is used for MDT Mapping log files. `A` means single NE, single granularity period.

StartDate Specifies the date when the file recording is started in the format <yyyy><mm><dd>.

Starttime Specifies the time when the file recording is started in the format <hh><mm>.

UTC Specifies the local time differential from UTC.

Enddate Specifies the date when the file recording is completed in the format <yyyy><mm><dd>.

Endtime Specifies the time when the file recording is completed in the format <hh><mm>.

ROPindex Specifies a unique index for the log file within the ROP.

Index Specifies the log file recording order.

Every 15 minutes, a log file is stored on the MME. More than one log file can be created within one ROP, for example, if the maximum file size is reached.

The first log file created within a ROP gets ROP index 1. For each subsequent file within the same ROP, the index is increased by one. If the log server restarts for some reason, for example, because of a failover, the first log file after the restart gets ROP index `0`.

The index value, namely the log file recording order, is increased by one if the log server restarts for some reason. The index value is reset to 1 only after reaching the value 255.

Example of Log File Name

```
A20161215.0930+0100-20161215.0945+0100_10_mdt_mapping_log.22
```

A
Indicates that the file contains data for a single NE and a single granularity period.

20161215.0930+0100-20161215.0945+0100
Indicates that the log file was generated at 09:45 of 15 Dec., 2016 and started the logging at 09:30 with a local time differential of +1 hour from UTC.

_10_mdt_mapping_log.22
Indicates that the ROP index is 10, which means that this log file is the 10th within the same ROP. The index 22 indicates that this is the 22nd recorded log file.

3.2 Log Records

An MDT Mapping log file comprises several records:

Header record
Contains the administrative information about the log, such as FILE_FORMAT_VERSION and FILE_INFORMATION_VERSION.

Event record
Contains event data, such as EVENT_ID, IMEI_TAC, and E_UTRAN_TRACE_ID.

Error record
Specifies the reason for the abnormal termination of the recording. If there are no errors, the error record is not displayed in the file.

Footer record
Contains information such as the record length and file termination cause.

4 Streamed MDT Mapping Logs

4.1 Log Records

A streamed MDT Mapping log comprises several records:

Stream header record

Contains the cause for the header and the administrative information about the log. The cause for the header can be "Stream enabled" or "Stream restart after communication failure".

Event record

Contains event data, such as EVENT_ID, IMEI_TAC, and E_UTRAN_TRACE_ID.

Stream error record

Specifies why some event records have been discarded and how many MDT mapping events have been lost. If there are no errors, the error record is not displayed in the file.