

Configuring UE Tracer

OPERATION DIRECTIONS

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1 Introduction

This document describes the configuration of the license-controlled feature UE Tracer within the SGSN-MME for GSM, WCDMA, and LTE.

For more information on the UE Tracer feature, see [UE Tracer](#).

1.1 Scope

This document covers the following topics:

- Prerequisites for the configuration of the UE Tracer
- Instructions for enabling the UE Tracer
- Instructions for configuring the UE trace sessions for specific UE
- Instructions for configuring the UE trace trigger
- Configuration example

1.2 Target Groups

This document is intended for personnel configuring the UE Tracer in the SGSN-MME.

2 Prerequisites

This section outlines the prerequisites for the configuration.

2.1 Planning

Before executing the instructions in this document, do the following:

- Refer to the document [UE Tracer](#) to understand the UE Tracer feature.
- Ensure that an external system capable of handling the UE Tracer log files is available, for example, Ericsson Operations Support System for Radio and Core (OSS-RC).



- Ensure that the license-key file containing the license for the UE Tracer is loaded. For more information on the license for the UE Tracer, see [Installing Node-Based Licenses](#). If network-based licenses are used, see [Activation of NeLS Client Licenses](#).

2.2 User

The person following these instructions must be trained in management of the SGSN-MME.

3 Overview

This section describes the procedure for configuring the UE Tracer.

To display the configuration classes and parameters related to the UE Tracer, use the `get_config_area -can UeTrace` CLI command.

A UE trace session is activated by using one of the following CLI commands:

4 Enabling the UE Tracer

This section describes the steps to be followed to activate the UE Tracer.

1. Enable the UE Tracer feature by setting the feature state to ACTIVATED for the `ue_trace_mme` parameter, using the `modify_feature_state` CLI command.
2. Check and activate the configuration according to the instructions in Section 7 on page 8.



5 Configuring UE Trace Sessions for Specific UE

This section describes the steps to be followed to initiate a UE trace session for a specific UE. A UE trace session is configured using one of the following CLI commands:

- `action_ue_trace_start`
- `create_ue_trace`

If a UE trace session is initiated using the `action_ue_trace_start` CLI command, the trace is started immediately without changing any configuration.

If a UE trace session is initiated using the `create_ue_trace` CLI command, the configuration is not applied instantly and it must be checked and activated. This method is used if the change is to be persistent. For more information on how to check, activate and checkpoint the configuration, see Section 7 on page 8.

Both CLI commands are used to initiate a UE trace session in both the SGSN-MME and the eNodeBs.

To initiate the UE trace session in both the SGSN-MME and the eNodeBs, use the parameters for both the SGSN-MME and the eNodeBs when issuing the CLI command.

Note: If the `UeIdType` parameter in the preceding CLI commands is given as IMEI or IMEISV on the SGSN, Ericsson recommends enabling the IMEI fetching parameter. The IMEI fetching parameter is `GbIdentityImeiEnabled` for GSM, and `IuIdentityImeiEnabled` for WCDMA. Otherwise, some signalling messages related to the UE cannot be traced.

5.1 Example for Configuring a UE Trace Session

Instructions

This example shows how to initiate the UE trace session using the `action_ue_trace_start` CLI command.

1. Initiate the UE trace session by using the `action_ue_trace_start` CLI command.

```
gsh action_ue_trace_start -id 12345600001 -ref 24011010001 -ent enodeb -ifl
```

Example 1 Initiate the UE Trace Session



Instructions

This example shows how to initiate the UE trace session using the `create_ue_trace` CLI command. Configuration check and activation are also performed in this example.

1. Create the UE trace session by using the `create_ue_trace` CLI command.
2. Check the configuration by using the `check_config` CLI command.
3. Activate the pending configuration by using the `activate_config_pending` CLI command.

```
gsh create_ue_trace -id 12345600001 -ref 24011010001 -ent enodeb -iflm all
gsh check_config
gsh activate_config_pending
```

Example 2 Initiate the UE Trace Session

6 Configuring UE Trace Trigger

This section describes the procedure of configuring a UE trace trigger.

A UE trace trigger is created using one of the following CLI commands:

- `action_ue_trace_trigger_start`
- `create_ue_trace_trigger`

If the `action_ue_trace_trigger_start` CLI command is used, the UE trace trigger is applied immediately without changing any configuration.

If the `create_ue_trace_trigger` CLI command is used, the UE trace trigger is not applied instantly and it must be checked and activated. This method is used if the change is to be persistent. For more information on how to check, activate and checkpoint the configuration, see Section 7 on page 8.

When configuring a UE trace trigger, both trigger condition parameters and the UE trace session parameters must be set.

6.1 UE Trace Triggers Based on EBM Data

This section describes using Trigger-Based UE Tracer based on EBM data.



Workflow

1. Analyze the EBM data with the toolbox command `parse_ebm_log.pl`, or by using network assurance systems.
2. Set trigger conditions for the UE trace trigger based on the analyzed data, to fetch signalling history the next time the specified problem occurs.
3. Convert the UE Trace log files to PCAP files with the toolbox command `uetrace2pcap.pl`, and perform a detailed analysis in Wireshark™ to conclude the problem scenario.

6.1.1 Initiating a UE Trace Trigger with SM Status Message Received

When a UE receives SM Status Message, it is possible to configure a UE trace trigger to capture signalling history for the UEs experiencing the same issue.

Instructions

1. Initiate the UE trace trigger using the `action_ue_trace_trigger_start` CLI command.

In this example, the trigger is intended to get signalling history and start a UE trace session for WCDMA UEs matching the defined parameters for trigger conditions, set as follows:

```

— -rat EBMRadioAccessType = wcdma
— -eid EBMEventIdentity = DEACTIVATE
— -er EBMEventResult = reject
— -cpt EBMCauseProtType = ril3
— -cc EBMCauseCode = 0
— -scc EBMSubCauseCode = 402

```

In the example, the parameter `-cuth` is set to value = yes, meaning that a UE trace session is started after the trigger conditions are met.

Example

```
gsh action_ue_trace_trigger_start -utrp 123123A20 -uttd "SM status message r
```

6.1.2 Initiating a UE Trace Trigger with RAB Establishment Problem

When a UE experience a RAB establishment problem, it is possible to configure a UE trace trigger to capture signalling history for the UEs experiencing the same issue.



Instructions

1. Initiate the UE trace trigger using the `action_ue_trace_trigger_start` CLI command.

In this example, the trigger is intended to get signalling history for WCDMA UEs matching the defined parameters for trigger conditions, set as follows:

```
— -rat EBMRadioAccessType = wcdma
— -eid EBMEventIdentity = ACTIVATE
— -er EBMEventResult = reject
— -cpt EBMCauseProtType = ril3
— -cc EBMCauseCode = 38
— -scc EBMSubCauseCode = 444
— -ocpt EBMOriinatingCauseProtType = ril3
— -occ EBMOriinatingCauseCode = 23
```

In the example, the parameter `-cuth` is kept with default value = no, meaning that no UE trace session is started after the trigger conditions are met.

Example

```
gsh action_ue_trace_trigger_start -utrp 123123A25 -uttd "RAB establishment prob
```

6.1.3 Initiating a UE Trace Trigger with Unexpected Data from the HLR

When the SGSN-MME receives unexpected data from the HLR, it is possible to configure a UE trace trigger to capture signalling history for the affected UEs.

Instructions

1. Initiate the UE trace trigger using the `action_ue_trace_trigger_start` CLI command.

In this example, the trigger is intended to get signalling history for WCDMA UEs matching the defined parameters for trigger conditions, set as follows:

```
— -rat EBMRadioAccessType = wcdma
— -eid EBMEventIdentity = ATTACH
— -er EBMEventResult = reject
— -cpt EBMCauseProtType = ril3
```



- `-cc EBMCauseCode = 17`
- `-scc EBMSubCauseCode = 76`

In the example, the parameter `-cuth` is kept with default value = no, meaning that no UE trace session is started after the trigger conditions are met.

Example

```
gsh action_ue_trace_trigger_start -utrp 123123A35 -uttd "Unexpected data fro
```

6.2 UE Trace Triggers Based on KPIs

This section describes using Trigger-Based UE Tracer based on signalling failure ratio KPIs.

Workflow

1. Check the KPIs with the `health_check.pl` or the `pdcc_kpi.pl` command.
2. Check the relevant PM counters by running the `pm_job_monitor` command. Relevant counters per signalling procedure are found in the Troubleshooting document.
3. Set trigger conditions for the UE trace trigger based on the analyzed data, to fetch signalling history the next time the specified problem occurs.
4. Convert the UE Trace log files to PCAP files with the toolbox command `uetrace2pcap.pl`, and perform a detailed analysis in Wireshark to conclude the problem scenario.

6.2.1 PDP Context Activation Failure Ratio

When it is discovered that the KPI PDP Context Activation Failure Ratio for WCDMA has increased, it is possible to create a UE trace trigger. The UE trace trigger can capture signalling history for UEs to get traces and find the root cause.

Instructions

1. Initiate the UE trace trigger using the `action_ue_trace_trigger_start` CLI command.

In this example, the trigger is intended to get signalling history for WCDMA UEs matching the defined parameters for trigger conditions, set as follows:

- `-rat EBMRadioAccessType = wcdma`
- `-eid EBMEventIdentity = ACTIVATE`



— -cc EBMCauseCode = 26

In the example, the parameter `–cuth` is kept with default value = no, meaning that no UE trace session is started after the trigger conditions are met.

Example

```
gsh action_ue_trace_trigger_start -utrp 123123A40 -uttd "PDP Context Activation
```

7 Checking and Activating the Configuration

This section describes the steps needed to check and activate the configuration for UE Tracer.

Check and activate the configuration according to the following instructions:

1. Run a consistency check on the active configurations with pending configurations using the `check_config` CLI command.
2. Activate the pending configuration using the `activate_config_pending` CLI command.
3. Perform a checkpoint using the `checkpoint` CLI command.



Reference List

Network License Server (NeLS) CPI Library References

- [1] Activation of NeLS Client Licenses
USER GUIDE, 6/1553-AVA 901 45/1