DRAFT
OpenScape DeskPhone CP SIP

Service Information - Trace Guide

Unify SaS UCC PH DE DEV 2

Version: 1.1
Date: 18.12.2019

History of Change

Version	Date	Author	Changes:
1.0	07.10.2019	Stefan Siewert	Initial release
1.1	18.12.2019	Stefan Siewert	release

Content

1. Reason for this How-to

This How-to is to provide service personnel and self-maintaining customers alike a Guide to quality error reporting. It will describe a best practice for providing useful traces for initial error reporting to either GO Service Desk and also further to GVS.

It is updated to include descriptions for how to capture Ethernet based traces and also for activation, saving and deactivation Internal Phone trace. It will show, based on a few examples, how to select what traces match the error description of the user.

With that How-to in hands the requester could define the traces which are relevant for his/her topic.

1.1   What it is NOT

1. A guide that can be used to provide complete traces for every problem in a way that no requests from Development or GVS for further traces are done.
2. A complete guide for understanding the trace output. So do not expect to become an expert for understanding phone traces.
3. A replacement for a detailed error description during error reporting.

2. Ethernet Traces

The very first trace that is helpful for a problem with SIP phones is an Ethernet Trace.

We do recommend using the Free Tool "Wireshark" for capturing Ethernet traces and we recommend doing that directly on the Phone with a Network tap.

Other possibilities are Mirror Port on the network switch.

Using the Mirror Feature of the Phone internal network switch should only be done for topics that are directly reproducible as it will require the PC of the user that is connected to this port to run the Wireshark application.

If it is possible or required to run a long term Ethernet capture we do recommend configuring the Wireshark application to use multiple files with each of a maximum size of 50 Megabytes.

Those traces are saved with a Timestamp so if users report that a topic happened at a specific time the specific file + at least one of the files before and after the error time reported from customer.

3. Phone Traces

3.1   Important information about Phones traces

Phone Traces are stored in the Phones RAM and only saved in the Phones flash if a reboot occurs that is initiated from an internal phone service. This is also done from a phone that crashed.

So in case a problem is reported do not perform a power cycle reboot of the phone by pulling the power cable or LAN cable in case of Power over Ethernet.

This will cause the traces to be lost!

In case the phone does stop responding, including no longer reachable via WBM, but is not rebooting on its own, it should not take more than 10min for the phone to do so, please use the Remote Trace feature described in chapter 3.4

3.2   Activating Phone Traces

Login to the Web based Management of the phone as administrator and select the option shown below:

Administrator settings

Admin login
Bluetooth
Network
System
File transfer
Local functions
Date and time
Speech
General information
Security and policies
Ringer
User mobility
Diagnostics
   LLDP-MED TLVs
   Fault trace configuration
   EasyTrace profiles
   Bluetooth advanced traces
   QoS reports
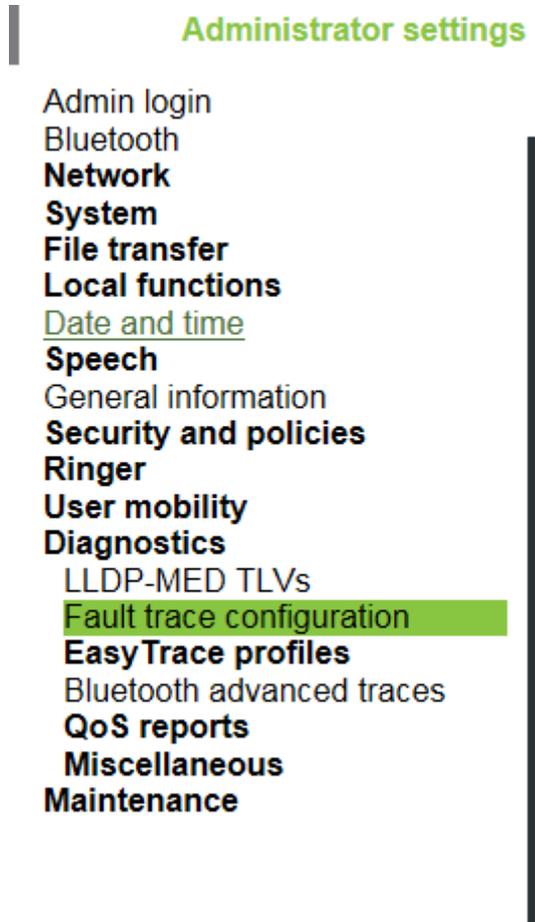   **Miscellaneous**
Maintenance

Figure 1 Insert SIP WBM picture

The Fault trace configuration page is divided into three parts, general configuration, trace components and Trace files.

General Trace configuration

The general configuration of the traces let's you configure the File size of the Trace file, a timeout for the traces and it will let you delete all previous data in the trace file.

Fault trace configuration		
File size (Max 6290000 bytes) 6290000	Trace timeout (minutes) 0	Automatic clear before start ☐

The file size can range between 1 MB (1048576 bytes) and 6 MB (6290000 bytes). It is recommended to use a file size of 3 MB (3145728 bytes). Increasing the file size above that is not recommended for OpenScape Desk Phone CP200, OpenScape Desk Phone CP205 and OpenScape Desk Phone CP100 due to memory consumption.

The trace timeout will clear all active traces after the configured timeout. A timeout value of 0 disables the timeout. Please do only configure a trace timeout if you are sure that the error is captured within that timeframe.

On activation of traces the "Automatic clear before start" check box should be selected as it will remove old logging data after the Submit button is clicked.

If for example the user reports that after 2 days of usage the phone shows an error and it is persisting since then it might be useful to activate the traces and let the user perform the actions that show the error and save the traces after that.

However for best traces it is required that the traces are activated before the error has happed as otherwise it will only show the consequences of the fault but not what has caused it.
The root cause analyses is not always possible with traces activated after the error happened.
However for initial error reporting to GVS, which is the focus this document is covering, it is enough to start investigation.

Trace components

Fault trace configuration			
File size (Max 6290000 bytes) `3145728`		Trace timeout (minutes) `0`	Automatic clear before start ☐

Trace levels for components

Component	Level	Component	Level
802.1x service	OFF	Administration	OFF
Application framework	OFF	Application menu	OFF
Broadsoft service	OFF	Bluetooth service	OFF
Call view	TRACE	Certificate management	OFF
Circuit service	OFF	Clock service	OFF
Communications	OFF	Component registrar	OFF
ConversationAPI	OFF	CSTA service	TRACE
Data access service	OFF	Digit analysis service	OFF
Directory service	OFF	DLS client management	OFF
Exchange service	OFF	GPALAudio Core	OFF
GPALAudio Framework	OFF	Health service	OFF
Instrumentation service	OFF	Journal service	OFF
Media control service	OFF	Media recording service	OFF
Mobility service	OFF	OBEX service	OFF
OpenScape UC service	DEBUG	OpenStage client management	OFF
Password management service	OFF	Performance marks	OFF
Physical interface service	OFF	Security log service	OFF
Service framework	OFF	Service registry	OFF
Sidecar service	OFF	SIP call control	TRACE
SIP messages	TRACE	SIP signalling	TRACE
SIP M5T stack	OFF	Team service	OFF
Tone generation service	OFF	Transport service	OFF
vCard parser service	OFF	Video service engine	OFF
Voice engine service	OFF	Web server service	OFF

Submit   Reset

The following trace components can be activated to various levels for the phone trace. Some traces might be not shown for various phone types.

802.1x service

This is for port security. 802.1X prevents unauthorized network access until appropriate credentials are supplied to access the network.

Administration

This deals with the changing and setting of configuration items that resides in User and Admin menus, managing mobility notification popups and calforwarding activities.

Application framework

All applications within the phone e.g. Call view, Call log or Phonebook are run within the application framework. It is responsible for the switching between different applications and bringing them into and out of focus as appropriate. Also widget problems in GUI such as incorrect display items

Application menu

This is where applications to be run on the phone can be started and stopped.

Bluetooth Service

This handles the Bluetooth interactions between external Bluetooth devices and the phone.

Broadsoft service

Traces communication between phone and the XSI server, if configured.

Call view

This handles the representation of telephony calls on the phone screen.

Certificate management

This handles the certificates for WBM and SPE and 802.1x.

Circuit service
Traces communication and events between phone and the Circuit server, if configured.

Clock service
This service traces all clock related messages. Including SNTP and time taken from OpenScape server.

Communications
This is for tracing all signaling between phone and system, keep alive, key presses and call related.

Component registrar
This handles data relating to the type of the phone either OpenScape DeskPhone CP High (400/600) or OpenScape DeskPhone CP Low (200)

ConversationAPI
The important part of the Conversation List, it combines the Call history information from Call Log and the contact information in the phonebook.

CSTA service
Any CSTA messages are handled by this service. CSTA messages are used within the phone by all services as a common call progression and control protocol.

Data access service
This service allows other services to access the data held within the phone database.

Digit analysis service
This analyses and modifies digit streams which are sent and received by the phone e.g. canonical conversion.

Directory service
This performs a look up service for data in the phonebook, LDAP or System Phonebook, trying to match incoming and outgoing numbers with entries in the phonebook, LDAP or System Phonebook.

DLS client management
These traces display the messages between OpenStage Phone and DLS server and operations in DLS service.

Exchange service
Traces communication between phone and the Exchange server, if configured.

GPALAudio Core
Core Audio component traces with low level information

GPALAudio Framework
Advanced Audio component traces with low level information.

Health service
This monitors other parts of the phone for diagnostic purposes and provides a logging interface for the other services in the phone.

Instrumentation service

This is used by the Husim phone tester to exchange data with the phone for remote control, testing and monitoring purposes.

Journal service

The Journal service is responsible for saving and retrieving call history information which is used by the Call log application.

Media control service

This service provides the control of media streams (voice, tones, ringing etc.) within the phone.

Media recording service

This is a layer of software between the media control service and the tone generation and voice engine services. It is also involved in switching of audio devices such as the handset and loudspeaker.

Mobility service

This handles the mobility feature whereby users can log onto different phones and have them configured to their own profile.

OpenScape UC service

Traces communication and events between phone and the OpenScape UC server, if configured.

OpenStage client management

This trace allows you to control the data flow of the system in case a configuration item on Local Menu, WEBM or DLS is deleted/updated/added. It resides in the middle of all services and provides interface to all other services for data management.

Password management service

This is used to verify passwords used in the phone.

Performance marks

This traces prints when hookswitch key pressed, physical button pressed shown.

Physical interface service

This handles any interactions with the phone via the keypad, mode keys, fixed feature buttons, click wheel and slider. Also LED Indicators are managed by this service.

Security log service

This handles the entries are sent to security log.

Service framework

This is the environment within which other phone services operate. It is involved in the starting and stopping of services.

Service registry

This keeps a record of all services which are currently running inside the phone

Sidecar service

This handles interactions between the phone and any attached sidecars. In case of problems with Key handling on Sidecar please activate.

SIP call control
This is contains the call model for the phone and is associated with telephony and call handling.

SIP messages
This traces the SIP messages which are exchanged by the phone.

SIP signaling
This is involved in the creation and parsing of SIP messages and communicates directly with the SIP stack.

SIP M5T stack
SIP stack internal trace messages.

Team service
This is primarily concerned with Keyset operation.

Tone generation service
This service handles the generation of the tones and ringers on the phone, High quality ringers or wav/MP3/MIDI files are not handled by this service.

Transport service
The transport service provides the IP (LAN) interface between the phone and the network.

Video service engine
This is for the video part of the phone

Voice engine service
This provides a switching mechanism for voice streams within the phone. It is also involved in QDC, High quality ringers/ wav/MP3/MIDI and voice instrumentation.

Web server service
Traces the webserver of the Web based management of the device.

Trace Files

Download trace file   Download saved   Download H.323 trace file   Download upgrade
                            trace file   trace file

Download old trace file   Download syslog   Download old syslog file   Download saved
                               file   syslog file

Download database file   Download upgrade   Download HPT remote service log file   Download
                               error file   exception file

Download old exception file   Download security
                               log file

Figure 2 Insert SIP WBM picture

These are the links to the various trace files on the phone. The information that every files includes is described below:

Trace File

The Trace file does contain the latest trace information from the phone application it is either started at the last reboot or if the configured file size was exceeded previously. See also "Old Trace File".

Saved Trace File

The Saved Trace File does contain the last 1MB of information that where present in the "Trace file" before the last reboot that the phone had performed and that wasn't a Power cycle or software upgrade. On a software upgrade this file is deleted for memory space required for a software upgrade.

Upgrade Trace File

The Upgrade trace file does contain information about the latest Software upgrade process.

Old Trace File

The Old Trace file does only contain information if the Trace file had exceeded the configured file size. In this case the previous Trace File is saved in phone RAM as Old Trace file and a new Trace file is created. If a Old Trace file already existed it will be deleted before the Trace file is renamed. Information from the Old Trace file are never saved to flash even if the Trace file hasn't exceeded 1 MB before the last reboot.

Syslog File

The Syslog File includes output from the underlying Linux and network stack.

Old Syslog File

The same as for Old Trace file, but it does contain the Syslog Trace information.

Saved Syslog File

The same as for Saved Trace file, but it does contain the Syslog Trace information.

Database File

It does containing the phone configuration in a SQL database.

Upgrade Error File

Information about errors during last upgrade can be found here. The information that several processes are not killed during upgrade is normal and not an actual error.

HPT Remote Service Log File

Logging about usage of the HPT Remote Service tool can be found here.

Exception File

The Exception file does contain a history of restarts that the phone had performed, including basic information about the reason of the crash. If the phone did crash a Basic stack trace output is show for this restart.

Old Exception File

Not yet used.

Security Log File

Information about Security information like wrong password attempts, expired passwords.

Trace Levels

Various Trace levels are available for each Component.
For the purpose of this document the only two relevant trace levels are:
OFF
This will turn the trace component off
DEBUG
This will activate the trace with all available logging.

The other trace levels are should be only set on request, see Trace Examples or if they are set by an Easy Trace profile.
After a problem has been traced and data was collected using the DDC Tool, please do set all Traces to OFF. This can be done also by the Easy Trace Profile "Clear all Profiles"

3.3   Core Dump

The core dump is important for us to see what is going wrong.
Normally the phone automatically generates a core dump if the phone crash's.
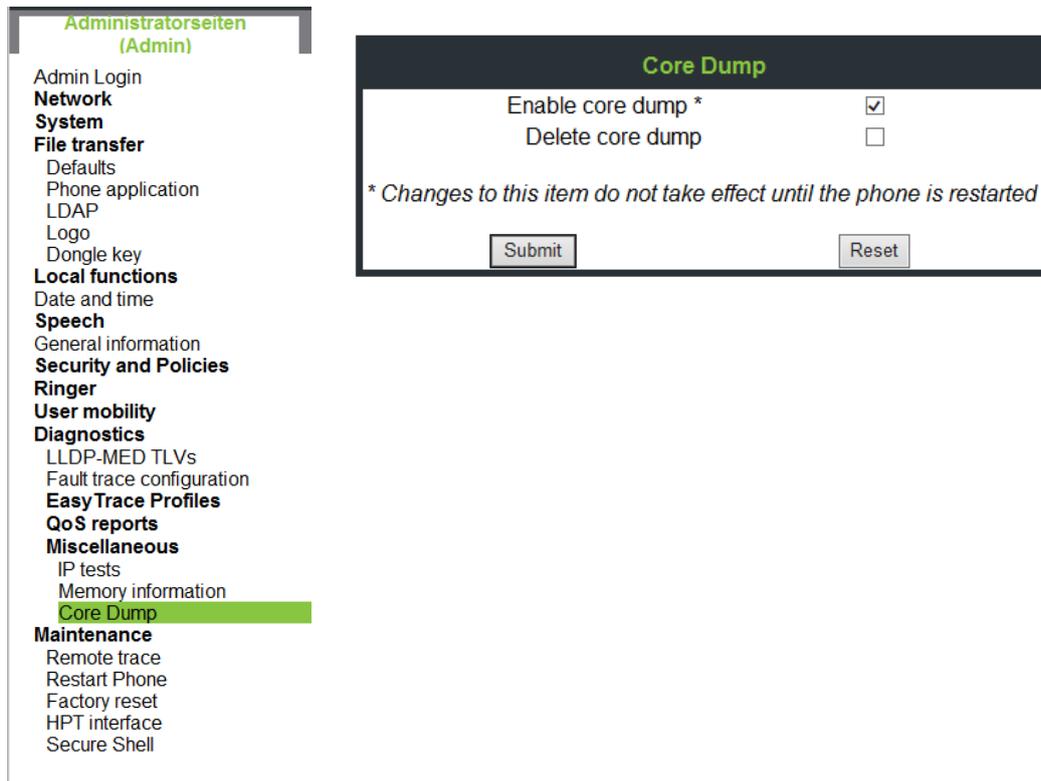
Core Dumps are linked on this page:

Figure 3 Insert SIP WBM picture

On this page there are two parameters that could be set:

Enable core dump: This will enable that the memory dumps are written on a crash. The parameter is enabled by default and should not be disabled!

Delete core dump: This will delete all current core dumps that are available on the phone.

3.4   Remote Trace Functionality

With the Remote trace the phone will send the Trace output that is normally written into the trace file to the configured Syslog Server but it is still written into the Phone memory as well.
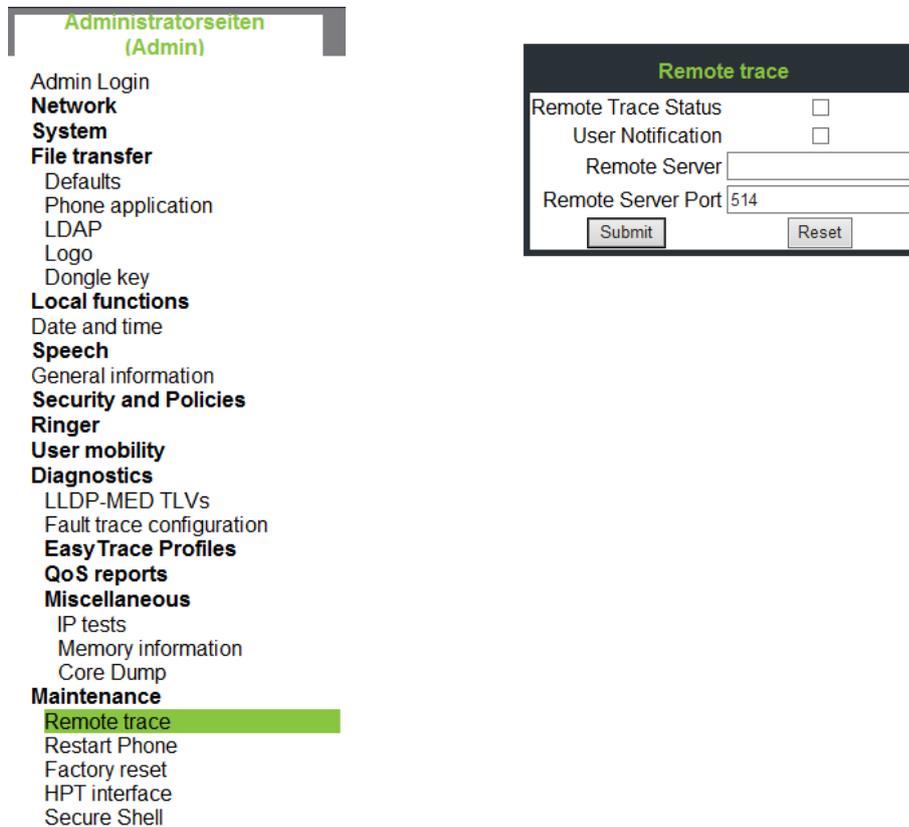

Figure 4 Insert SIP WBM picture

Remote Trace Status
If this is set the Remote Trace is activated. If not set it is deactivated.

User notification
If the user notification is set the user gets informed about the ongoing tracing by an Icon in the phone display (only shown on CP400/600).

Remote Server
This is the IP of the Server where the Syslog is running.

Remote Server Port
This is the UDP Port at which the Remote Syslog Server is configured to listen. Default Syslog Port is the default value. This may be different based on customer environment.

Please note that the Remote Trace messages are NOT encrypted!

Recommended Syslog Server is Syslog-NG but other may work as well. A configuration file for the Trace Output on this server is available at Unify Expert Wiki:
http://wiki.unify.com/wiki/OpenStage_HFA_FAQ#Config_File_Syslog_NG
IMPORTANT: It was observed that the 3CDaemon Syslog Server is not saving all Syslog Information the phone will send out. DO NOT USE THE 3CDaemon Syslog Server.

3.5   Saving of Phone Traces and Core Dumps

It is not required to download every single trace file one by one by hand.
There is a Service Tool available on the Software Supply server or Partner Portal that will download all traces with a single step. This tool is called "Diagnostic Data Collector" or short: DDC-Tool
With this tool you only need the IP + Administrator password of the device to download all trace data and configuration information with a single click into a single zip file.
Please note with OpenScape Desk Phone CP HFA only V5 of the DDC Tool is supported, don't use the V4 of DDC as it will miss important parts of Traces.

Please do always use the DDC-Tool to avoid missing required trace files and avoid questions about basic configuration settings. Even if using the Remote Trace functionality.
As previously noted even the use of the DDC-Tool will not free you from providing a quality error description!

3.6   Check the Trace data

If using the DDC-Tool to collect traces they are stored in a single .zip File. Before sending those data to GVS please do also check them for following points:

1. The error time is present in the Traces by checking the Timestamp in the trace files including old* or saved*.
2. The requested traces are activated by checking the _device_configuration.html

4. Trace Configuration Example scenarios

4.1   Best default trace configuration
[Trace Level = TRACE]

- SIP Messages
- SIP signaling
- SIP call control
- Call View
- CSTA Service

4.2   Calls visible in Conversation list, even though no call is active (ghost call)
[Trace Level = DEBUG]

- Call view
- ConversationsAPI
- Communications
- Journal service

4.3   Speech path delay
[Trace Level = DEBUG]

- Wireshark (LAN trace)
- GPALAudio Core
- SIP messages
- Tone generation service
- Call view
- ConversationAPI
- Directory service
- GPALAudio Framework
- Media control service
- Performance marks
- Voice engine service
- SIP Signalling
- SIP Call Control
- Communications

4.4   DSS LED delay (keymodule or local device)
[Trace Level = DEBUG]

- Call view
- Media control service
- Physical interface service
- Sidecar service
- SIP messages
- Tone generation service
- Team service
- SIP Signalling
- SIP Call Control
- Communications

4.5   Wrong item visible in Conversation list
[Trace Level = DEBUG]

- Communications
- Call View
- ConversationAPI
- Data access service
- Directory service
- Journal Service
- OpenStage client management

4.6   Mobility (problems during login/logoff)
[Trace Level = DEBUG]

- SIP Messages
- SIP signaling
- SIP call control
- Mobility service
- Administration
- DLS Client management

4.7   802.1x issues

- Wireshark (LAN trace)

- 802.1x service
- Transport service