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PRODUCT
GUIDE

Unify OpenScape 4000 Manager V10R1

Flag Trace Watchdog (FTW)

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Help
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1 Overview

The OpenScape 4000 Manager Flag Trace Watchdog application is closely associated with the Flag Trace feature. A flag trace, unlike all previous types of traces, is connection-oriented and traces the connection through all of the relevant paths in the HiPath 4000/OpenScape 4000 network following the implementation of numerous supplementary services (such as consultation hold, call forwarding or ACD routing). The flag trace information was integrated in the CorNET NQ protocol. The feature can, therefore, be transferred to other nodes and is used, for example, to determine which systems and paths will be used in the network. This is particularly helpful for diagnosing unexplained performance behavior and for tracing configuration problems.

The Flag Trace Watchdog application checks the HISTA file of the HiPath 4000/ OpenScape 4000 network node from which the current flag trace feature was activated. The acknowledgments issued by all nodes that were accessed during the connection setup are stored in this file (end and transit nodes). The node numbers contained in this file are extracted, grouped in a node list and transferred to the user. You can also define selections here (for example, CP messages only, certain events). This reduces the amount of data to be transferred and accelerates the process (the enormous stream of messages means that the RMX trace files may grow to a few MB in size in the seconds area).

The transfer process can begin once the preparatory phase has been completed. A new browser window opens. You can start the file transfer process using this window. PPP or LAN connections to all involved network nodes are set up, the trace files are copied to the Linux file system with the help of a local server process, filtered and subsequently transferred to OpenScape 4000 Manager.

2 Prerequisites

In addition to those prerequisites required for flag trace recording (node networking with Cornet NQ, APS Version E V3.0 or later), the following conditions must be satisfied before the FTW functionality can be used:

1. The network selected must contain at least two HiPath 4000/OpenScape 4000 nodes (nodes from earlier versions are ignored);
2. All nodes must be reachable from OpenScape 4000 Manager via LAN or PPP.
3. All nodes must contain two additional entries in the OpenScape 4000 Manager System Management:
   - the network domain and
   - the node number (this can be determined from the DB node by means of the AMO ZAND).
4. the flag trace recording must be activated (AMO TRACS, default: activated).
5. the HISTA recording must be activated (AMO HISTA, default: deactivated).
6. the COT parameter NOFT must be deactivated.

Although not a general prerequisite, attention must be paid to network node synchronization. This is not really essential because allocation of ***Master device*** to call is performed on the basis of the time-independent unambiguous global call ID. Nevertheless the time factor plays a certain role, e.g. for the search start time. The user can set the start time of the flag trace up to the exact minute. The greater the asynchronism between the nodes, the greater the danger that searches for messages on other nodes will fail (because target objects predate the beginning of the search on account of asynchronism).

In the event of severe node asynchronism, it is not advisable to place the search start time too near the start of the flag trace (it would be better to sychronize the nodes before starting flag trace tests).

3 Restrictions

The following flag trace data is only transferred:

1. data that started at a HiPath 4000/OpenScape 4000 node, i.e.
2. from a terminal with a station number (not from selected digital lines, call queues or special equipment, such as PSE);
3. which transited at least two HiPath 4000/OpenScape 4000 nodes (i.e. the following is not transferred: data from local calls, data from calls which go directly from node to the public network and data from calls in which all transited nodes except for ***Master node*** use versions older than OpenScape 4000).

4 Activation

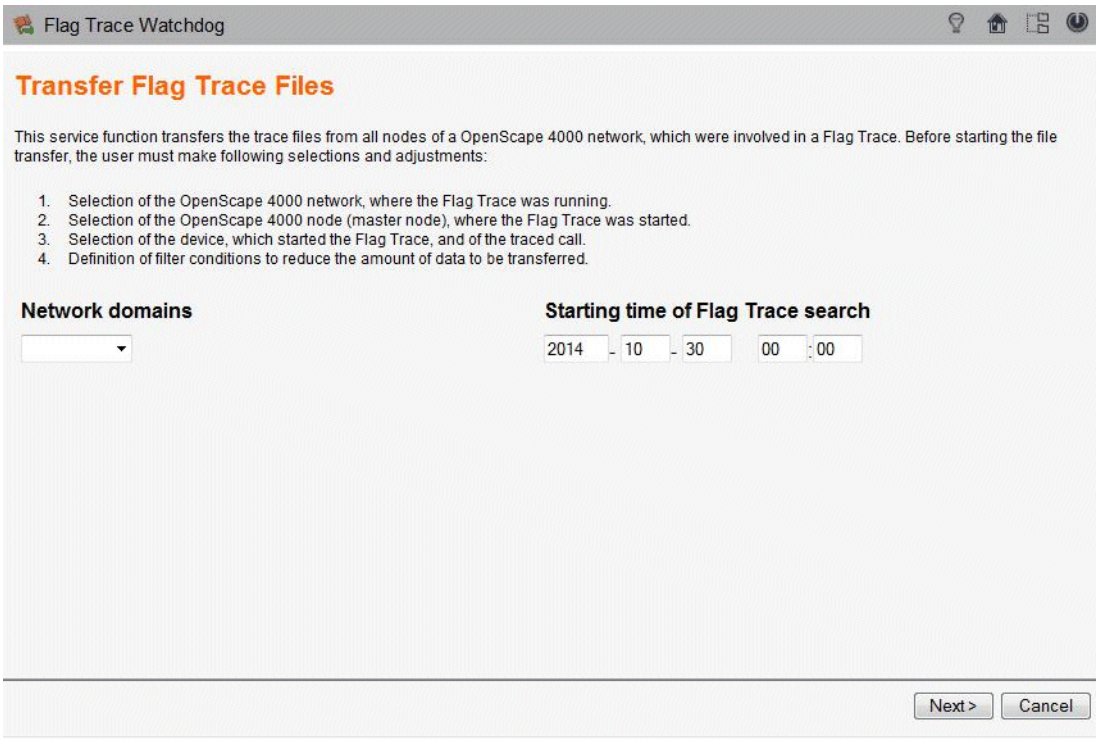
As the Flag Trace Watchdog is a network feature, it can only be started via a OpenScape 4000 Manager client (cannot be started on a network node).

The Flag Trace Watchdog application is started from the OpenScape 4000 Manager start page as follows:

Fault Management -> Flag Trace Watchdog

5 Start page

This page is displayed when the OpenScape 4000 Management application Flag Trace Watchdog is started. This start page is also the Network and node selection, page 15.



Overview

- Function
- Buttons

5.1 Function

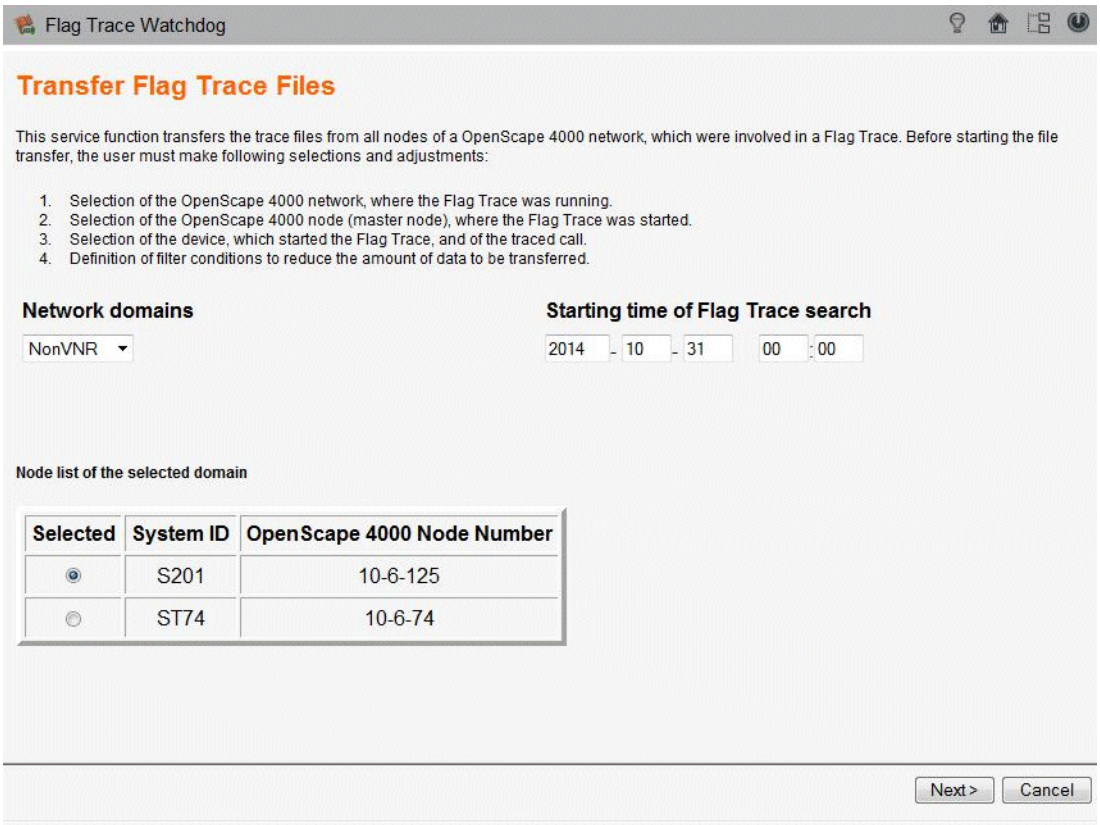
Please refer to the Network and node selection, page 15 for a list of possible functions.

5.2 Buttons

The ***Next >*** and ***Cancel*** buttons are available on the start page.

6 Network and node selection

This page is displayed when the OpenScape 4000 Manager application Flag Trace Watchdog is started. The page for network and node selection is also the start page.



Overview

- Function
- Buttons

6.1 Function

This page allows you to

- select the HiPath 4000/OpenScape 4000 network on which the flag trace feature was executed (see also ***Network domains***)
- select the HiPath 4000/OpenScape 4000 node on which the flag trace feature was started (see also ***Node list***)
- insert the start time of the flag trace search (the time 00:00 and the current date are set by default).

Click the ***Next >*** button after you have selected one of these options. The application starts by checking OpenScape 4000 validity because System Management does not perform this verification, i.e. the node number entered may differ from the actual node number.

An error message is displayed if the node number is not valid. If it is valid, on the other hand, a page documenting the process progress of the flag trace list generation opens.

6.2 Buttons

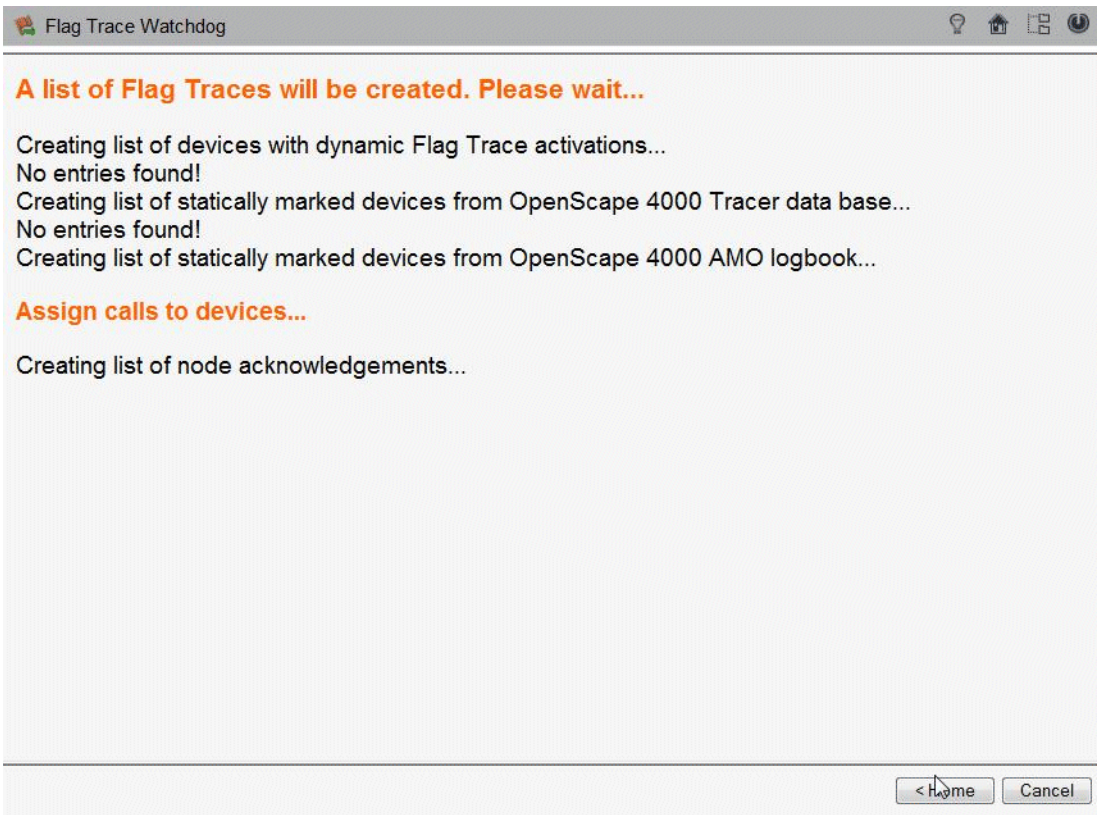
The ***Cancel*** and ***Next >*** buttons are available in the page for Network and node selection.

7 Status output

This page is always displayed if a flag trace list is transmitted, i.e. after clicking

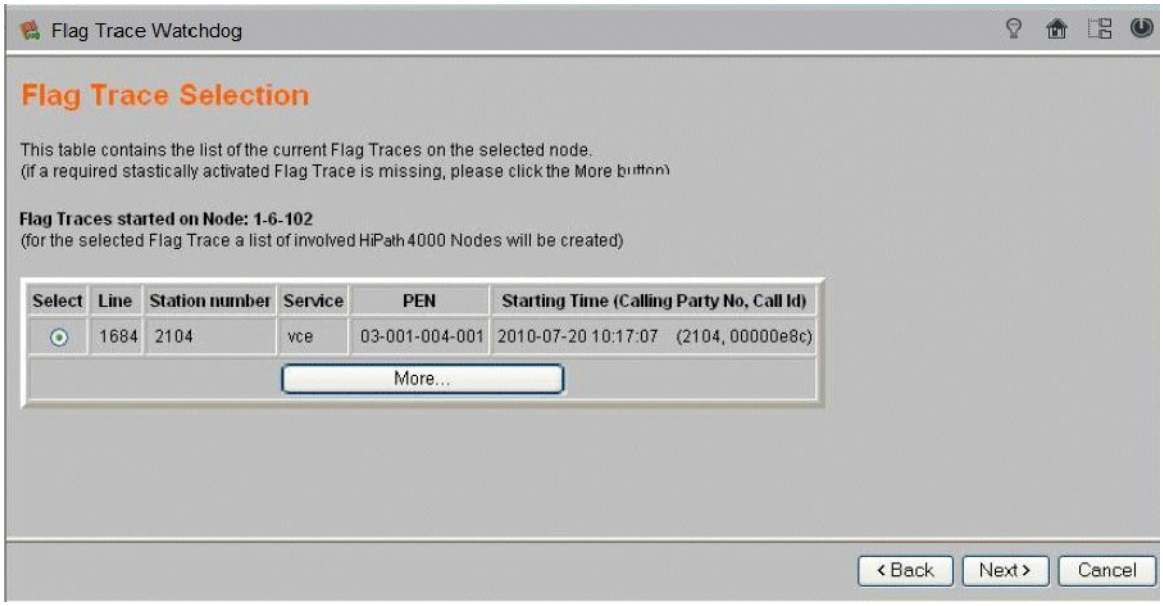
- the ***Next >*** button on the Network and node selection, page 15
- the ***More...*** button on the Flag trace selection, page 19.

These pages are refreshed every five seconds so that progress is documented in as good as real time. The Flag trace selection, page 19 is automatically loaded after successful generation and if the flag traces were found. Otherwise, an error or advisory message is displayed (if no flag trace was found).



8 Flag trace selection

This page appears when the selection made on the Network and node selection, page 15 is confirmed with ***Next >***.



Overview

- Function
- Buttons

8.1 Function

A table containing of all static and dynamic flag traces that were started from the selected node is created here on the basis of the HiPath 4000/OpenScape 4000 network and node selection selected beforehand. This table lists all of the devices from which one or more flag traces were started using either a code (dynamic) or by setting a static flag (static). The list is sorted in ascending order based on column 2 (line).

The table contains the following information:

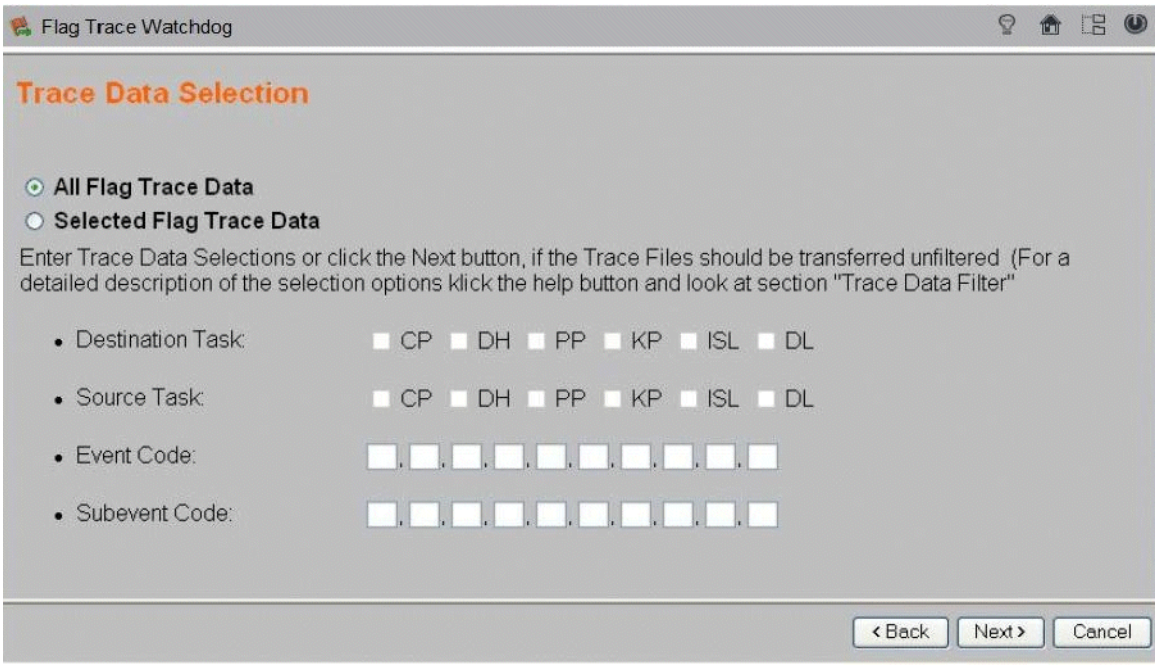
1. ***Master device*** **data:**
   - ***Line***
   - Station number
   - ***Service***
   - ***PEN***
2. **Flag trace data**
   -
   - ***No. of calling parties***
   - ***Call ID***

8.2 Buttons

The ***< Back***, ***Next >*** and ***Cancel*** buttons are provided in the button section. The ***More...*** button appears after the last line of the flag trace list after initial generation.

9 Trace data filter

This page appears when the selection made on the Flag trace selection, page 19 is confirmed with ***Next >***.



Overview

- Function
- Buttons

9.1 Function

This page allows you to select data in accordance with message contents. The entry of the filter data is optional. Select the ***Next >*** button if the trace files are to be transferred to the OpenScape 4000 Manager without being filtered.

The following filter options are available (the byte address of the trace object in displayed in brackets):

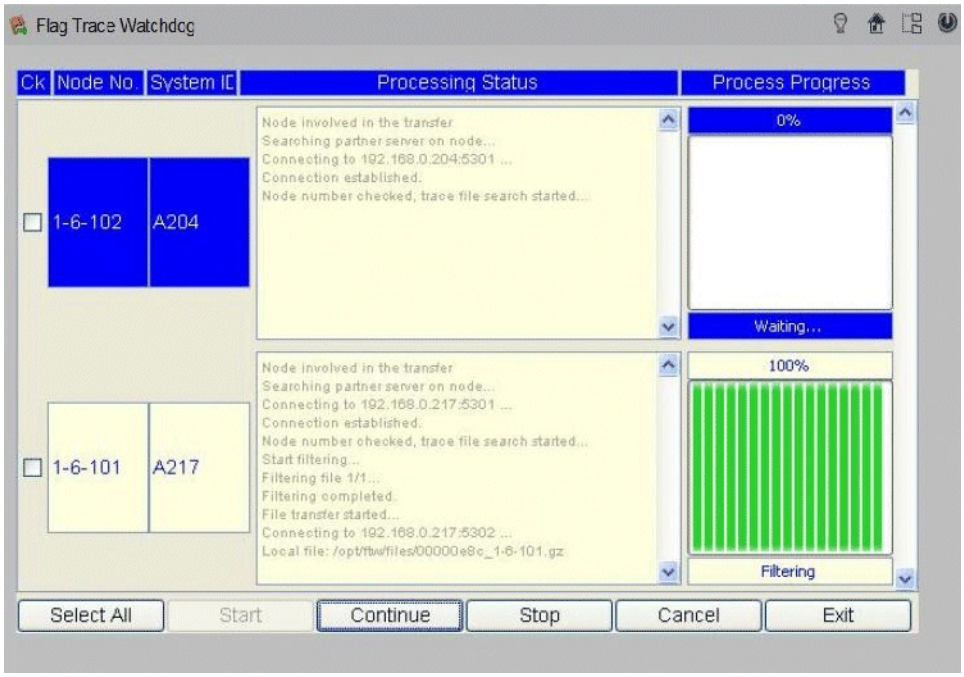
- **Destination task ID (byte 0)**
- **Source task ID (byte 1)**
- **Event code (byte 4)**
- **Subevent code (byte 5)**

9.2 Buttons

The ***< Back***, ***Next >*** and ***Cancel*** buttons are provided in the button section.

10 Trace file transfer

This page is displayed if the selection made on the Trace data filter, page 21 is confirmed with **Next >**.



Overview

- Function
- Table structure
- Buttons

10.1 Function

The user can intervene in the transfer process interactively. The user can start, stop, continue or cancel the transfer process for an individual node or for all nodes or the user can cancel the entire transfer process.

10.2 Table structure

A table containing entries for all network nodes involved in a flag trace is created:

- ***'Selected' Radio button***
- ***HiPath 4000/OpenScape Node Number***
- ***System ID***
- ***Processing output***
- ***Processing process***

10.3 Buttons

The main panel contains the ***Select all***, ***Start***, ***Stop***, ***Continue***, ***Cancel*** and ***Exit*** buttons.

11 Transfer destination and file name

The destination of all file transfers is the directory

/opt/ftw/files

on the OpenScape 4000 Manager. The name of the files transferred from the individual nodes has the following structure:

cccccccc_nn-nnn-nnn.gz

with

cccccccc	Call ID in 8-digit hexadecimal representation
nn-nnn-nnn	Number of nodes from which the file was transferred to OpenScape 4000 Manager.
gz	File name extension as a result of compression with gzip.

The files transferred can simply be decompressed with gunzip, e.g.

gunzip cccccccc_nn-nnn-nnn.gz

for a singe file or

gunzip cccccccc*

for all files transferred from a selected flag trace.

The decompressed files have the same names as the those compressed but without the gz extension. These text files have a COOL readable format and can therefore be displayed on the screen using this application.

Transfer destination and file name

12 Error messages

110	Unable to create file due to insufficient resources.
111	Unable to open file for the required access.
120	Unable to start process.
121	Process was canceled with error code.
200	Setup of FAMOS connection with MPCID was rejected with a CMX error (caused, for example, by an incorrect destination node IP address or a peripheral MPCID demon did not ring). The CMX error message is displayed for the purpose of further analysis.
300	HISTA function is not configured on the relevant node. Solution: create the HISTA file with the AMO HISTA.
301	AMO TRACS was already started by another user on the relevant node.
310	A serious RMX error occurred (e.g. AMO could not be started). The RMX error message is displayed for the purpose of further analysis.
311	An AMO command was incorrectly interrupted on the relevant node. The error message and the AMO noun are displayed for the purpose of further analysis.
320	The node numbers entered in the System Management do not correspond to those of the actual node involved. Error correction must be performed in the System Management area where the current node number must be replaced by the effective node number. Both are displayed in the error message.

13 Fields and Controls

Master device

The ***Master node*** device which started the flag trace. This is always the calling device in the case of dynamic flag traces. In the case of static flag traces, this is any markable device which is involved in the call (e.g. terminal called and lines trunks).

Node list

Once the HiPath 4000/OpenScape 4000 network has been selected, a table containing all network nodes specific to this selected HiPath 4000/OpenScape 4000 network is displayed. The columns are:

- **Select**
  Select the line that you want to trace
- **System ID**
  Node address as an alphanumeric system ID (same system ID as one used in System Management)
- **HiPath 4000/OpenScape 4000 Node Number**
  Node address as a three-digit number (representation: n-n-n) within the HiPath 4000/OpenScape 4000 network.

NOTE: Domain ID and Node Number are optional parameters for the configuration of the network node by System Management. This list, therefore, may be incomplete.
To eliminate this error, System Management must be opened and the missing entries must be added to the relevant network node entry (Domain ID, Node Number).

Start Time

The start time of the flag trace start. The start time can only be determined precisely for dynamic flag traces (see also ***Start Time Output***)

If several flag traces were started from a device, an option list (pull-down menu) is generated for the flag trace data. The start times are sorted is descending order from the earliest to the latest start times.

Next >

- Start page/Page for Network and node selection.
  The Flag trace selection page containing a list of all flag traces started from the ***Master node*** is loaded into the application frame.
- Flag trace selection.
  The Trace data filter page for defining filter criteria is loaded in the application frame.
- Trace data filter.
  The Trace file transfer page is loaded into a new browser window.

More...

Only current devices that are highlighted are collected in the first phase (by clicking the **Next >** button in the page for Network and node selection). Flag traces from devices whose static check mark is already deleted, are ignored. These are to added by clicking the **More...** button. A Status page is also displayed in this process (see also Status output page). A complete flag trace list is output after successful list generation, however, without the **More...** button in the last line of the table.

This process may take some time since the log book, which may contain several thousand entries, is scanned.

Destination task ID (byte 0)

ID of the HiPath 4000/OpenScape 4000 subsystem that received the recorded message (***Possible values***).

Source task ID (byte 1)

ID of the HiPath 4000/OpenScape 4000 subsystem that sent the recorded message (***Possible values***).

Event code (byte 4)

Event code of the recorded message (***Possible values***).

Subevent code (byte 5)

Subevent code of the recorded message (***Possible values***).

Processing process

Progress bar for graphically displaying the processing progress in the file filter and file transfer phases. Different colors (***black*** and ***blue***) identify the currently active phase of the transfer process:

Transfer process

A transfer process consists of:

- testing the node number,
- determining the trace file names,
- transferring the created trace files to the Linux file system,
- filtering the data from the filter criteria entered in the trace data filter page (filtered data is stored in chronological order in a file), as well as
- compressing (with gzip) and transferring the file generated to OpenScape 4000 Manager.

Master node

Node on which the flag trace started.

Cancel

The browser window is closed and the application is terminated.

Network domains

Pull-down menu listing all domains in the HiPath 4000/OpenScape 4000 networks managed by the server.

< Back

Go to the previous page

Start Time Output

There is a great difference between the various types of flag traces with regard to the display of the start time:

- The start time for dynamic flag traces is indicated by the output of an appropriate signaling message (which is output with a time stamp).
- The situation is somewhat more complex for static flag traces since a start message is **not** signaled here. The exact start time is, therefore, unknown. The time of the first external node acknowledgment is displayed instead.

NOTE: The exact start time is not actually that important since the trace file is incorporated into the node table.

For example: Calling party A calls calling party 6 at time defined by T_1. Both parties are configured on node 1. Calling party A is statically flagged. A flag trace is, therefore, activated. Calling party B initiates a consultation call with calling party C at the time defined by T_2 . Calling party C is configured on node 2. A node acknowledgment is issued and T_2 is consequently displayed as the start time. The recorded messages from time interval $[T_1,T_2]$ are not lost. They are all stored in the trace file of the master node.

No. of calling parties

Station number of A calling party

Call ID

A 32-bit number which is unambiguous during the duration of a call in the entire network (global ID). If several sub-connections are required for setting up a connection (e.g. in the case of call forwarding), these are also assigned call IDs (Leg ID). The latter are also unambiguous.

The call (and therefore the associated flag trace as well) can thus be identified in the network on the basis of the global ID. The unambiguity of the call ID is actually only guaranteed for the time of the call but normally remains active for an extended period after the call because the call ID is incremented with every new connection. However, this does not apply in the case of frequent hard restarts or reloads because the calculation procedure is re-initialized. Tests have shown that different calls with the same call ID within relatively short timeframes are not rare under the conditions mentioned.

The problem of temporary ambiguity has not yet been resolved. The FTW therefore only finds the oldest call. If subsequent calls are to be output then this can be done by setting the flag trace search start time (see also the page for Network and node selection).

Line

Device line.

Service

Identification of services used (voice, fax, etc.)

PEN

Port to which the device is connected

Possible values

Possible values for **destination task** ID (byte (0) and the **source task** ID (byte (1)).

- CP - Call Processing
- DH - Device Handler
- PP - Pre-Processing
- KP - Key Processing
- ISL - Intermediate Subscriber Layer
- DL - Device Layer

Default: All (no option selected)

Possible values

Possible values for **event code** (byte 4)

Input as single-digit or two-digit hexadecimal number (for example:11 or A = 0A).

Up to 10 values may be entered.

Default: Nothing selected (all input fields are blank)

Possible values

Possible values for **subevent code** (byte 5)

Input as single-digit or two-digit hexadecimal number (for example: 11 or A = 0A).

Up to 10 values may be entered.

Default: Nothing selected (all input fields are blank)

'Selected' Radio button

Allows the node to be selected.

System ID

Network node system ID. All HiPath 4000/OpenScape 4000 network nodes are displayed.

HiPath 4000/OpenScape Node Number

Node number of the network node.

Processing output

Text field for the status display. A scroll bar appears if the status display extends beyond the maximum number of lines.

black

File filter phase

blue

File transfer

Select all

Select transfer process for all nodes.

Start

Start the transfer process for all selected nodes.

Stop

Stop the transfer process for all selected nodes. This action must be confirmed in a dialog box (input option: Yes/All/No/Cancel).

Continue

Continue stopped transfer process for all nodes selected.

Cancel

Cancel the transfer process for all nodes selected. This action must be confirmed in a dialog box (input option: Yes/All/No/Cancel).

Exit

The entire transfer process is terminated and the browser window is closed. Active transfer processes are canceled. This action must be confirmed in a dialog box (input option: Yes/No).

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