# HP Network Node Manager Smart Plug-in for LAN/WAN Edge

for the HP-UX, Solaris, Linux, and Windows operating system

Software Version: 7.53

## User Guide

**hp** ®

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# Contents

# 1 Introducing the LAN/WAN Edge Smart Plug-in

Frame relay is an important wide-area network (WAN) service used by a large number of enterprise customers. It is common to buy frame relay services from service providers who provide connectivity between local-area networks (LANs) in geographically different locations.

HP NNM Smart Plug-in for LAN/WAN Edge provides additional value to HP Network Node Manager (NNM). It helps users monitor frame relay outages caused by problems within the edge router or within the service provider network.

The LAN/WAN Edge Smart Plug-in (SPI) uses event reduction, a process of identifying relationships between events, to generate a smaller number of new events with the same or better information content. You can analyze these more meaningful events to react to and resolve problems within your frame relay network.

When HP Performance Insight (OVPI) is also installed, the LAN/WAN Edge SPI proactively works with NNM and OVPI to provide analysis and reporting of both fault and performance data.

## Features and Benefits of the LAN/WAN Edge SPI

The following list outlines the features of the LAN/WAN Edge SPI and its benefits to you:

- The LAN/WAN Edge SPI provides network fault analysis capabilities to help determine the root cause of a frame relay-related problem.

- By correlating the frame relay events with the root cause events, the LAN/WAN Edge SPI generates new, more meaningful events for display in the NNM alarm browser.

- For frame relay, the NNM alarm browser displays the LAN/WAN Edge SPI-generated events only, not the raw traps. This greatly reduces the number of alarms operators must consider.

- For each type of problem from a specific source, the LAN/WAN Edge SPI generates only one event during a configurable period of time.

- When NNM Advanced Edition is installed and configured for overlapping IP address domains, the LAN/WAN Edge SPI identifies the public internet address of the source and correlates alarms accordingly.

- Correlated traps are suppressed and logged. The correlated traps for an alarm can be viewed by opening a drill-down window.

- No traps are discarded before you configure the system to do so.

- When OVPI is installed, OVPI monitors the counters for FECN, BECN, and Discard Eligible and sends a trap to NNM when any counter crosses a configured threshold. The NNM alarm browser displays the trap as an alarm from which you can launch an OVPI report containing additional information about the interface that crossed the threshold.

- The LAN/WAN Edge SPI supports NNM's active problem analyzer (APA). It correlates events generated by the APA and by netmon.

# Examining Faults of a Frame Relay Network

Figure 1 illustrates an example frame relay network offered by a service provider. This illustration depicts three types of problems that are likely to occur in a frame relay network.

The three types of problems that could trigger frame relay traps or congestion statistics are:

- Frame relay private virtual connections (PVCs) are down due to a problem with the local frame relay data terminal equipment (DTE) interface (depicted in problem 1).

- A frame relay DTE cannot communicate with the frame relay cloud (depicted in problem 2). This problem could indicate that there is a protocol mismatch between the router and the service provider or that the local management interface (LMI) is down.

- A problem within the frame relay cloud (depicted in problem 3) indicates that there is a problem with the service provider.

Each problem maps to one or more problem scenarios with a root cause, related causes, and corresponding diagnosis. For more details on each of these problems and how the LAN/WAN Edge SPI handles these problems, Understanding Events from the LAN/WAN Edge Smart Plug-in on page 25.

**Figure 1   Frame Relay Network Example**
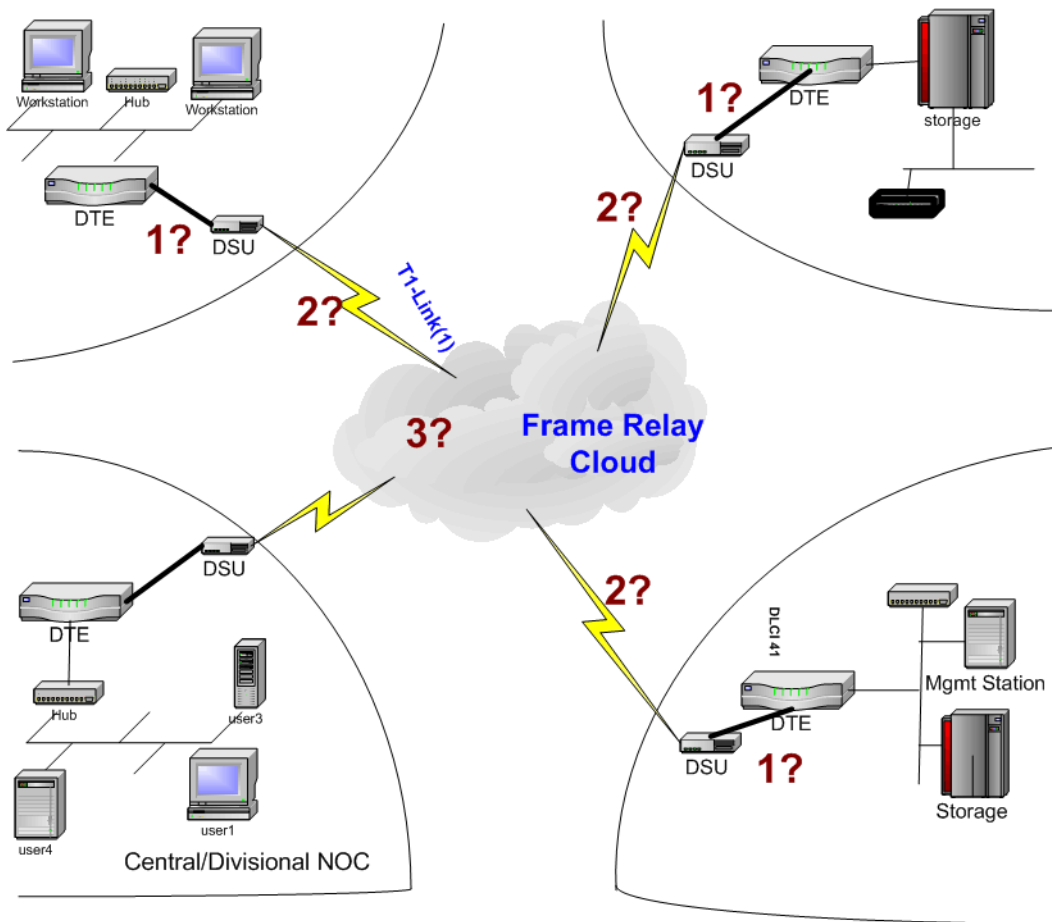
# Behavior of the LAN/WAN Edge SPI

The LAN/WAN Edge SPI detects and reports problems with frame relay virtual connections. It performs root cause analysis to distinguish between failures within the provider network and failures within the local edge router.

The LAN/WAN Edge SPI narrows the troubleshooting area for frame relay problems and reduces the number of events in the NNM alarm browser by reporting one alarm per frame relay fault during a pre-defined period of time.

The types of traps and events that the LAN/WAN Edge SPI detects and analyzes include:

- Data link connection identifier (DLCI) status change traps
- HP interface down events (generated by the APA and netmon)
- LMI failure traps

The LAN/WAN Edge SPI includes a set of correlators that augment the HP Correlation Composer circuit. These correlations analyze received traps and HP events to determine the type of frame relay fault occurring in the network.

When a frame relay fault is detected by the LAN/WAN Edge SPI, an alarm is generated and sent to the NNM alarm browser. Only one frame relay alarm is forwarded to the alarm browser per device during a period of time. After the time period expires, the correlators reset in preparation for the next frame relay fault analysis.

# User Interaction with the LAN/WAN Edge SPI

The alarms that the LAN/WAN Edge SPI generates appear in the FrameRelay Alarms category of the NNM alarm browser. Click the FrameRelay Alarms category to open the FrameRelay Alarms browser.

The correlated traps and events associated with a frame relay alarm can be viewed from the FrameRelay Alarms browser by double-clicking the number in the Corr column for that alarm.

When the LAN/WAN Edge SPI detects a frame relay fault, it generates one of the following alarms:

- `Frame Relay: Local PVC problem due to IF DOWN`

- Frame Relay: Local PVC problem due to LMI failure

- Frame Relay: Carrier Problem

- Frame Relay: PVC Reset (Creation time changed)

- Frame Relay: PVC Flapping

- Frame Relay: Local PVC problem due to Connection down

- Frame Relay: Local PVC problem due to Board failure

An example message follows:

```
Frame Relay: Local PVC problem due to LMI failure. ifIndex=3
((401, 2), (402, 1)) connect to Cisco4k1-S0.1
```

The message field of a frame relay alarm indicates the nature of the frame relay fault that has occurred. It also contains three additional pieces of information:

The correlated alarm reports the interface index on which the PVCs are configured. For example, ifIndex=3 indicates that the interface index is three.

The correlated alarm reports the affected DLCIs and the number of times a reset occurs within the time period. For example, ((401, 2), (402, 1)) indicates that there were two resets for DLCI 401 and one reset for DLCI 402.

The correlated alarm reports the affected remote destination. For example, connect to Cisco4k1-S0.1. A remote destination value of -1 indicates that the remote destination information is not available.

## Cross-Launching

If OVPI and NNM are integrated, and if the Frame Relay Report Pack is installed on your OVPI server, you can launch reports in that package directly from the FrameRelay Alarms browser.

To start OVPI from NNM, follow these steps:

1  Click an alarm in the FrameRelay Alarms browser, and then click Actions->Additional Actions.

2  In the Action list, click OVPI Report.

3  Click OK.

A web browser window displays an OVPI report, pre-filtered for the object that generated the alarm.

# Related Documentation

Refer to the following documents for more information:

- *Network Node Manager Managing Your Network*
- *OVPI Frame Relay Report Pack User Guide*
- *Event Correlation Services Administrator Guide*
- *HP Correlation Composer Guide*

# 2 Installing the LAN/WAN Edge Smart Plug-in

Before installing the LAN/WAN Edge Smart Plug-in (SPI), verify that your computer meets hardware and software prerequisites, and that the prerequisite software has been set up properly.

## Hardware Requirements

Verify that the following disk space settings are configured before installing the LAN/WAN Edge SPI:

**Table 1    Recommended Disk Space Setting**

| Location | Size |
| --- | --- |
| *UNIX*: `$OV_MAIN_PATH` | 3MB |
| *Windows*: `%OV_MAIN_PATH%` | |

## Software Requirements

The following operating systems are supported:

The following operating systems are supported:

- HP-UX 11.0, 11.11, 11iv2 on PA-RISC, Itanium, and 11iv3 on PA-RISC, Itanium
- Solaris 2.8, 2.9, and 2.10
- Red Hat Enterprise Linux Release 4
- Microsoft Windows 2003 operating system with Service Pack  2 :

- Standard Edition
- Enterprise Edition
- Web Edition (Service Pack 1 only)
- Microsoft Windows Server 2003 R2 :
  - Standard Edition
  - Enterprise Edition
- Microsoft Windows XP with Service Pack 2
- Microsoft Windows 2000 with Service Pack 4 :
  - Professional
  - Server
  - Advanced Server

## Network Node Manager

Verify that the following software and all of its prerequisites and patches are installed on all systems in the managed environment:

- HP Network Node Manager Advanced Edition, version 7.53.

  Refer to the *Network Node Manager Installation Guide* for instructions on how to install the NNM product.

- Enable NNM Extended Topology.

  If NNM Extended Topology is not enabled before installing the MPLS VPN SPI, an error is reported to the screen and the installation stops.

- Verify that the LANG environment variable is set to an appropriate value:

  **echo $LANG**

  The response should be C (for English) or another value appropriate to your locale.

- Verify that the NNM environment variables are sourced properly.

## Setting the NNM Environment Variables

To source the NNM environment variables, do the following:

- UNIX using sh or ksh: . /opt/OV/bin/ov.envvars.sh

- UNIX using `csh`: `source /opt/OV/bin/ov.envvars.csh`
- Windows: In a command window, type
- install_dir\bin\ov.envvars.bat

This step sets the following environment variables required by the LAN/WAN Edge SPI:

- UNIX: `$OV_BIN, $OV_LRF, $OV_CONF, $OV_MAIN_PATH`
- Windows: `%OV_BIN%, %OV_LRF%, %OV_CONF%, %OV_MAIN_PATH%`


# MIB Dependencies

The following MIBs must be loaded before the LAN/WAN Edge SPI can function properly:

- RFC 2115 MIB—Shipped with NNM and installed to the following location:
  - UNIX:

    `$OV_SNMP_MIBS/Standard/rfc2115-FRAME-RELAY-DTE-MIB`

  - Windows:
    `%OV_SNMP_MIBS%\Standard\rfc2115-FRAME-RELAY-DTE-MIB`

▶ RFC 1315 MIB can be used in place of RFC 2115 MIB.

- Cisco Frame Relay MIB—Shipped with the LAN/WAN Edge SPI and installed to the following location:
  - UNIX:

    `$OV_MAIN_PATH/NetSolutions/FrameRelay/RCA/`

    `CISCO-FRAME-RELAY-MIB.my`

  - Windows:

    `%OV_MAIN_PATH%\NetSolutions\FrameRelay\RCA\CISCO-FRAME-RE
    LAY-MIB.my`

- Cisco SMI MIB—Shipped with the LAN/WAN Edge SPI and installed to the following location:

— UNIX:

`$OV_MAIN_PATH/NetSolutions/FrameRelay/RCA/`

`CISCO-SMI.my`

— Windows:

`%OV_MAIN_PATH%\NetSolutions\FrameRelay\RCA\`

`CISCO-SMI.my`

# Installing the LAN/WAN Edge SPI

If you encounter problems while performing the installation, see Chapter 4, Troubleshooting the LAN/WAN Smart Plug-in on page 41 as well as the latest Release Notes for LAN/WAN Edge Smart Plug-in for Network Node Manager for assistance.

If you are installing the LAN/WAN Edge SPI over an existing installation of the LAN/WAN Edge SPI, unload the frame relay correlators as described in "Removing the LAN/WAN Edge SPI on page 18 before continuing with the installation.

## Installing on a UNIX Operating System

To install the  LAN/WAN SPI on a UNIX® operating system, follow these steps:

1  Log on to the NNM management station as user root.

2  Insert the product media in the CD-ROM drive.

   If you need to mount the CD-ROM, do so by typing:

   **`/etc/mount /dev/dsk/device_name/cdrom`**
   where device_name is the specific name of your CD drive.

3  From the CD-ROM top-level directory, execute **`setup`**.

   The installation script verifies that the target system has the correct version of NNM installed. If NNM is not installed, or if the wrong version is installed, the installation script exits with an error. See the Troubleshooting chapter for more information.

4    Follow the instructions on the screen to install the SPI.

5    To help you resolve any errors that may occur during installation, the SPI release notes and installation log file are available from the Installation Complete screen. Additionally, these files are always available in the following locations:

```
install_dir/Docs/LanWanEdge_RelNotes.html
```

```
$OV_PRIV_LOG/FR/fr_install.log and $OV_PRIV_LOG/FR/
post_install_fr.log
```

After resolving all the errors,  execute the configuration command.

## Installing on a Windows Operating System

To install the LAN/WAN Edge SPI on a Windows operating system, follow these steps:

1    Log on to the NNM management station as administrator.

2    Insert the product media into the CD-ROM drive.

⚠    On Windows 2000 professional operating systems, Windows Script version 5.6 must be installed prior to installing the LAN/WAN Edge SPI.

The CD-ROM should start automatically. If it does not, go to the CD-ROM top-level directory, and double-click **setup.bat**.

The installation script verifies that the target system has the correct version of NNM installed. If NNM is not installed, or if the wrong version is installed, the installation script exits with an error. See the Troubleshooting chapter for more information.

3    Follow the instructions on the screen to install theLAN/WAN Edge SPI.

4    To help you resolve any errors that may occur during installation, the LAN/WAN Edge SPIrelease notes and installation log file are available from the Installation Complete screen. Additionally, these files are always available in the following locations:

```
install_dir/Docs/LanWanEdge_RelNotes.html
```

```
$OV_PRIV_LOG/FR/fr_install.log and $OV_PRIV_LOG/FR/
post_install_fr.log
```

# Removing the LAN/WAN Edge SPI

To remove the LAN/WAN Edge SPI, follow the instructions relevant to your operating system.

⚠️ If you have customized either or both of the HP OpenView Correlation Composer deploy file (deploy.conf) and the Correlation Composer name space file (NameSpace.conf), follow the unload process described in Manually Unloading the LAN/WAN Edge SPI on page 19.

Use the OV Composer deploy file from `$OV_CONF/ecs/CIB/deploy.conf` and the OV Composer Namespace file from `$OV_CONF/ecs/CIB/NameSpace.con`. If you are using custom OV Composer deploy or Namespace file, then exit this script and follow the manually:

1 Update your NameSpace.conf file to remove or comment this correlator entry.

2 Run the csdeploy.ovpl with -p <deploy file> option \n.

## Removing the LAN/WAN Edge SPI on a UNIX Operating System

To remove the LAN/WAN Edge SPI on a UNIX operating system, follow these steps:

1 Log on to the NNM management station as user `root`.

⚠️ For HP-UX 11.23 IPF operating systems, add `$OV_MAIN_PATH/nonOV/jre/1.4/bin` to your path list.

2 If you are using the LAN/WAN Edge SPI media, go to the top-level directory, and execute **setup**.

Alternatively, the uninstall wizard can be activated by executing `setup` from the directory: `$OV_MAIN_PATH/Uninstall/HPOvFRPac`

▶ From the Uninstaller window, you must select the uninstall option. The Modify and Repair options are not supported for LAN/WAN Edge SPI.

3 The Maintenance Selection screen opens. From the Maintenance Selection screen, select **Uninstall**.

4 Click **Next** to uninstall the LAN/WAN Edge SPI.

5 View the following log file after uninstalling the LAN/WAN Edge SPI to troubleshoot any errors:
`$TMP\HPOvInstaller\HPOvFRPac_<date>_HPOvInstallerLog.txt`

## Removing the LAN/WAN Edge SPI on a Windows Operating System

To remove the LAN/WAN Edge SPI on a Windows operating system, follow these steps:

1 Log on to the NNM management station as user `administrator`.

2 If you are using the LAN/WAN Edge SPI media, go to the top-level directory, and double-click **setup.bat**.

Alternatively, the uninstall wizard can be activated by double-clicking **setup.bat** from the directory: `%TMP%\HPOvFRPac`.

3 The Maintenance Selection screen opens. From the Maintenance Selection screen, select **Uninstall**.

4 Click **Next** to uninstall the LAN/WAN Edge SPI.

5 View the following log file after uninstalling the LAN/WAN Edge SPI to troubleshoot any errors:
`%TMP%\HPOvInstaller\HPOvFRPac_<date>_HPOvInstallerLog.txt`

## Manually Unloading the LAN/WAN Edge SPI

If you have customized either or both of the following Correlation Composer files, unload the LAN/WAN Edge SPI manually to prevent the removal of your customizations. Follow the instructions relevant to your operating system.

• The deploy configuration file:

  *UNIX*: `$OV_CONF/ecs/CIB/deploy.conf`

  *Windows*: `%OV_CONF%\ecs\CIB\deploy.conf`

• The name space configuration file:

*UNIX*: `$OV_CONF/ecs/CIB/NameSpace.conf`

*Windows*: `%OV_CONF%\ecs\CIB\NameSpace.conf`

## Unloading on a UNIX Operating System

To manually unload the LAN/WAN Edge SPI from Correlation Composer on a UNIX operating system, follow these steps:

Using any text editor, edit the file NameSpace.conf to remove or comment the entry for the LAN/WAN Edge SPI.

Start the script `csdeploy.ovpl` with the following syntax:

`$OV_BIN/csdeploy.ovpl -p deploy_file`

This script reads the specified deploy configuration file to determine the location of the name space configuration file, and then it deploys the correlators specified in the name space configuration file into the Correlation Composer circuit.

## Unloading on a Windows Operating System

To manually unload the LAN/WAN Edge SPI from Correlation Composer on a Windows operating system, follow these steps:

1   Using any text editor, edit the file NameSpace.conf to remove or comment the entry for the LAN/WAN Edge SPI.

2   Start the script `csdeploy.ovpl` with the following syntax:

`%OV_BIN%\csdeploy.ovpl -p deploy_file.`

This script reads the specified deploy configuration file to determine the location of the name space configuration file, and then it deploys the correlators specified in the name space configuration file into the Correlation Composer circuit.

3   Determine the state of the PMD process:

**`%OV_BIN%\ovstatus -c`**

If the NNM process pmd is not running, start **ovstart pmd**.

4   If the PMD process is not running, stop and restart all NNM services:

**`%OV_BIN%\ovstop -c`**

```
%OV_BIN%\ovstart -c
```

# Migrating from the Previous Version of the LAN/WAN Edge SPI

To install  LAN/WAN Edge SPI 7.53  follow these steps:

► Install NNM Advanced Edition version 7.53 before installing the LAN/WAN Edge SPI 7.53 product. For information, see Network Node Manager on page 14.

1  Install LAN/WAN Edge SPI 7.53

2  Migrating from any pervious version to the current version requires only the installation of the LAN/WAN Edge SPI7.53.

3  If you have customized a previous version of the LAN/WAN Edge SPI, read the sections below appropriate to your installation before installing the current version of the LAN/WAN Edge SPI.

The new version of the LAN/WAN Edge SPI installation supports the configurations done in the previous version. If there are no configurations found in the installation, LAN/WAN Edge SPI configures with the default values.

# Configuring NNM to Collect FECN and BECN Counters

This configuration step is applicable on all platforms.

► If you are using OVPI for performance monitoring, skip this section. Instead, follow the OVPI Frame Relay Report Pack instructions to enable the FECN and BECN counters.

The frame relay standard defines the forward explicit congestion notifier (FECN) and the backward explicit congestion notifier (BECN) as single bits that identify forward and backward congestion, respectively. In this document, the terms FECN and BECN refer to NNM's FECN and BECN counters.

To configure NNM to monitor the FECN and BECN counters for generating threshold events:

1   Start NNM.

2   Click Options: Data Collection & Thresholds: SNMP.

3   In the Data Collection and Threshold window, click Edit: Add-> MIB Objects.

4   In the MIB Object Selection window, select Expression.

5   In the Expression ID list, click IfFRPctBECN to configure collection of the BECN counter.

    (To enable collection of the FECN counter, click IfFRPctFECN.)

6   Click **Apply**.

    The Add IfFRPctBECN Collection for management station name window appears.

7   In the Set Collection Mode list, click **Store**, Check Thresholds.

8   In the Source box, enter the list of nodes for which the BECN count should be monitored, and then click Add.

9   In the Polling Interval box, set the time between threshold checks.

    The polling interval is in the format xh or xm. x is the numerical duration of the interval. h indicates hours, and m indicates minutes. The default polling interval is 4h (or four hours).

10  In the Threshold list, click threshold type.

11  Set the threshold level:

•   If you chose a fixed threshold type in step 10, select an operand from the list, and then type the percentage value.

•   If you chose a statistical threshold type in step 10, select a direction from the list, and then type the standard deviation.

12  Enter the number of consecutive samples from which to measure.

13  In the Rearm list, click a threshold type.

14  Set the rearm level:

•   If you chose a fixed rearm type in step 13, select an operand from the list, select either Percent of Threshold or Absolute, and then type the rearm value.

- If you chose a statistical arm type in step 13, select a direction from the list, and then type the standard deviation.

15 Enter the number of consecutive samples from which to measure.

16 If needed, configure the threshold and rearm events.

17 Click **Apply**, and then click **OK** to save the changes.

For more information on configuring data collections, see *Network Node Manager Managing Your Network.*

# 3 Understanding Events from the LAN/ WAN Edge Smart Plug-in

The LAN/WAN Edge Smart Plug-in (SPI) accepts input events and traps from multiple sources:

- Direct HP events and SNMP traps regarding status changes

- Syslog message events

Typically, you will use either the direct HP events and SNMP traps or syslog message events as your input to the LAN/WAN Edge SPI.

## Direct HP Events and SNMP Traps

The LAN/WAN Edge SPI interprets the following HP events and SNMP traps that indicate device status changes:

- Interface status change events regarding the frame relay devices generated by netmon.

- Interface status change events regarding the frame relay devices generated by the active problem analyzer (APA).

- Link down traps generated by Cisco frame relay devices.Data link connection identifier (DLCI) status change traps and local management interface (LMI) failure traps generated by frame relay devices.

**Table 2**

| Event or Trap Name Identifier | Event or Trap Generator | Notes |
|---|---|---|
| OV_IF_Down/<br><br>.1.3.6.1.4.1.11.2.17.1.0.5 8916867 | netmon | The seventh variable binding contains the index of the interface that is down. |
| OV_APA_IF_DOWN/<br><br>.1.3.6.1.4.1.11.2.17.1.0.5 8983012 | APA | The fifth variable binding contains the index of the interface that is down. |
| OV_APA_BOARD_DO WN/<br><br>.1.3.6.1.4.1.11.2.17.1.0.5 8983035 | APA | The ninth variable binding contains the identifier of the board that is down. |
| OV_APA_IF_UNREAC HABLE/<br><br>.1.3.6.1.4.1.11.2.17.1.0.5 8983022 | APA | The ninth variable binding contains the IP address that is unreachable. |

**Table 2**

| Event or Trap Name Identifier | Event or Trap Generator | Notes |
|---|---|---|
| OV_APA_CONNECTION_DOWN/ .1.3.6.1.4.1.11.2.17.1.0.58983014 | APA | The 20th variable binding contains the identifier of the connected interface. |
| Cisco_Link_Down/ .1.3.6.1.4.1.9 | Frame relay device (Cisco devices only) | If the fourth variable binding contains the value LMI failed, the LAN/WAN Edge SPI accepts this trap. The first variable binding contains the index of the interface that is down. |
| frDLCIStatusChange/ .1.3.6.1.2.1.10.32.0.1 | Frame relay device | The third variable binding contains the DLCI status. |

## Syslog Message Events

The syslog integration functionality provided with Network Node Manager (NNM) enables the management of network equipment from syslog messages. Certain types of network equipment do not have SNMP traps nor supporting MIBs for all error and warning conditions. Also, some network administrators choose to manage the network through syslog messages. The syslog integration functionality provides the ability to map syslog messages into HP events for presentation or analysis.

The syslog integration functionality generates link, line protocol, and DLCI status change events from messages in the syslog file. Table 5 lists the syslog messages that pertain to frame relay devices. The third column in the table indicates whether the LAN/WAN Edge SPI accepts the generated HP event as input to one or more correlators.

**Table 3      Syslog Event Mappings for Frame Relay Devices**

| Syslog Message Format | HP Event Generated | Correlated |
|---|---|---|
| %LINK-3-UPDOWN (down) | OV_Syslog_LinkDown | No |
| %LINK-3-UPDOWN (up) | OV_Syslog_LinkUp | No |
| %LINEPROTO-5-UPDOWN (down) | OV_Syslog_LineProtoDown | Yes |
| %LINEPROTO-5-UPDOWN (up) | OV_Syslog_LineProtoUp | No |
| %FR-5-DLCICHANGE (INVALID) | OV_Syslog_FrameDLCI_Inactive | Yes |
| %FR-5-DLCICHANGE (INACTIVE) | | |
| %FR-5-DLCICHANGE (ACTIVE) | OV_Syslog_FrameDLCI_Active | No |

To initialize the syslog service:

UNIX: **$OV_BIN/setupSyslog.ovpl**

The syslog integration functionality is not available on the Windows operating system.

# Frame Relay Correlators

This section provides an explanation of the correlators included in the LAN/WAN Edge SPI. These correlators are defined using Correlation Composer.

• OV_FR_DLCIFailedDueIFproblem

Listens for interface down events (generated by netmon) and DLCI status change traps from the same device. This failure indicates that the device cannot communicate with the frame relay cloud because of a problem with the interface.

- `OV_FR_APA_DLCIFailedDueIFproblem`

Listens for interface down events (generated by the APA) and DLCI status change traps from the same device. This failure indicates that the device cannot communicate with the frame relay cloud because of a problem with the interface.

If the APA is enabled, netmon does not generate any interface down events.

- `OV_FR_DLCIFailedDueConnectionProblem`

Listens for connection down events (generated by the APA) and DLCI status change traps from the same device. This failure indicates that the device cannot communicate with the frame relay cloud because of a problem with the serial connection between the device and the frame relay cloud.

- `OV_FR_DLCIFailedDueBoardProblem`

Listens for board down and interface unreachable events (generated by the APA) and DLCI status change traps from the same device. This failure indicates that the device cannot communicate with the frame relay cloud because of a problem with the network card.

- `OV_FR_DLCIFailureDueToLMIDown`

Listens for DLCI status change traps and LMI failure traps to determine if the DLCI status changes are a result of the LMI failing. This failure indicates that the interface is up, but the device cannot communicate with the frame relay cloud (meaning, a protocol mismatch exists between the router and the service provider).

- `OV_FR_DLCIFailureDueToCloudProblem`

Listens for DLCI status change traps and then performs additional work to determine if the problem resides with the service provider. A new event is generated when at least one DLCI status change trap is received within the configurable Time Window. The type of event generated depends on the type of information the correlation rule receives, such as if the creation time has changed or if the DLCI status is invalid or inactive.

# Output from the LAN/WAN Edge SPI

Table 6 lists the HP events that the LAN/WAN Edge SPI correlators generate. For a description of the situation that causes each event, see Diagnosing Frame Relay Problems on page 31.

**Table 4      Events Generated by the LAN/WAN Edge SP**

| HP Event Identifier | Generating Correlator |
|---|---|
| OV_FrameRelayReset/<br><br>.1.3.6.1.4.1.11.2.17<br>.1.0.58982428 | OV_FR_DLCIFailureDue<br>ToCloudProblem |
| OV_FrameRelayCarrier<br>Problem<br>1.3.6.1.4.1.11.2.17.<br>1.0.58982429 | OV_FR_DLCIFailureDue<br>ToCloudProblem |
| OV_FrameRelayLocalCi<br>rcuitProblem/<br><br>.1.3.6.1.4.1.11.2.17<br>.1.0.58982430 | OV_FR_DLCIFailureDue<br>ToCloudProblem |
| OV_FrameRelayCircuit<br>Problem/<br><br>.1.3.6.1.4.1.11.2.17<br>.1.0.58982431 | OV_FR_DLCIFailureDue<br>ToCloudProblem |

**Table 4    Events Generated by the LAN/WAN Edge SP**

| HP Event Identifier | Generating Correlator |
|---|---|
| `OV_FrameRelayIFProbl em/` <br><br> `.1.3.6.1.4.1.11.2.17 .1.0.58982433` | `OV_FR_DLCIFailedDueI Fproblem` |
| `OV_FrameRelayConnect ionProblem/` <br><br> `.1.3.6.1.4.1.11.2.17 .1.0.58982434` | `OV_FR_DLCIFailedDueC onnectionProblem` |
| `OV_FrameRelayBoardPr oblem/` <br><br> `.1.3.6.1.4.1.11.2.17 .1.0.58982435` | `OV_FR_DLCIFailedDueB oardProblem` |

# Diagnosing Frame Relay Problems

This section provides examples of how to use the LAN/WAN Edge SPI to help you diagnose problems.

**Figure 2   The Frame Relay Network**



Router A      CSU/DSU
                 A          Frame Relay Cloud          CSU/DSU
                                                          B          Router B
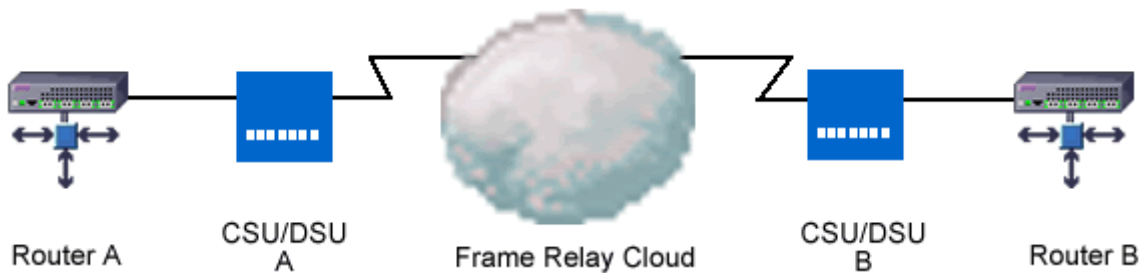
## Interface Down on the Local Frame Relay Interface

This scenario corresponds to problem 1 in Figure 1. Refer to above Figure 3 for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: Local PVC problem due to IF DOWN event:

1  The LAN/WAN Edge SPI receives an interface down event or a DLCI status change trap with status inactive (or invalid) that indicates a failure on Router A. The Window Period begins.

2  During the Window Period, the LAN/WAN Edge SPI continues to receive interface down events and DLCI status change traps with status inactive (or invalid) for Router A.

3  If the LAN/WAN Edge SPI receives the combination of at least one interface down event and one DLCI status change trap with status inactive (or invalid) for Router A during the Window Period, it generates an OV_FrameRelayIFProblem event (with text Frame Relay: Local PVC problem due to IF DOWN). This event indicates that there is a problem with the local frame relay interface (Router A).

   The interface down on the DTE (Router A) is the root cause. The DLCI status change events are symptoms of not being able to reach the DLCI because the DTE is down.

▶  If the LAN/WAN Edge SPI receives a DLCI status change trap with invalid or inactive status before it receives an interface down event and both notifications arrive during the configurable Window Period, then two events may be generated and displayed in the FrameRelay Alarms browser: one event indicating the interface down status and another indicating PVC flapping. This situation occurs because the LAN/WAN Edge SPI does not that know the problem is due to an interface failure and the DLCI status change trap also satisfies the conditions of another correlator. In this case, the DLCI status change trap appears as a correlated trap under both events.

## Connection Problem on the Local Frame Relay Device

This scenario corresponds to problem 1 in Figure 1. Refer to The Frame Relay Network on page 31 for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: Local PVC problem due to Connection down event:

1   The LAN/WAN Edge SPI receives a connection down event or a DLCI status change trap with status inactive (or invalid) that indicates a failure on Router A. The Window Period begins.

2   During the Window Period, the LAN/WAN Edge SPI continues to receive connection down events and DLCI status change traps with status inactive (or invalid) for Router A.

3   If the LAN/WAN Edge SPIreceives the combination of at least one connection down event and one DLCI status change trap with status inactive (or invalid) for Router A during the Window Period, it generates an OV_FrameRelayConnectionProblem event (with text Frame Relay: Local PVC problem due to Connection down). This event indicates that there is a problem with the serial connection between the local frame relay device (Router A) and the frame relay cloud.

The connection down on the DTE (Router A) is the root cause. The DLCI status change events are symptoms of not being able to reach the DLCI because the connection is down.

➤   If the LAN/WAN Edge SPI receives a DLCI status change trap with invalid or inactive status before it receives a connection down event and both notifications arrive during the configurable Window Period, then two events may be generated and displayed in the FrameRelay Alarms browser: one event indicating the connection down status and another indicating PVC flapping. This situation occurs because the LAN/WAN Edge SPI does not know the problem is due to a connection failure and the DLCI status change trap also satisfies the conditions of another correlator. In this case, the DLCI status change trap appears as a correlated trap under both events.

## Network Card Problem on the Local Frame Relay Device

This scenario corresponds to problem 1 in Figure 1. Refer to The Frame Relay Network on page 31  for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: Local PVC problem due to Board failure event:

1   The LAN/WAN Edge SPI receives a board down event, an interface unreachable event, or a DLCI status change trap with status inactive (or invalid) that indicates a failure on Router A. The Window Period begins.

2   During the Window Period, the LAN/WAN Edge SPI continues to receive board down and interface unreachable events and DLCI status change traps with status inactive (or invalid) for Router A.

3   If the LAN/WAN Edge SPIreceives the combination of at least one board down event, one interface unreachable event, and one DLCI status change trap with status inactive (or invalid) for Router A during the Window Period, it generates an OV_FrameRelayBoardProblem event (with text Frame Relay: Local PVC problem due to Board failure). This event indicates that there is a problem with the network card that connects the local frame relay device (Router A) to the frame relay cloud.

    The board down on the DTE (Router A) is the root cause. The DLCI status change events are symptoms of not being able to reach the DLCI because the network card is down.

For information about the format of this message, see User Interaction with the LAN/WAN Edge SPI on page 10.

For information about setting the value of the Window Period, see Setting Parameters in HP Correlation Composer on page 37.

►   If the LAN/WAN Edge SPI receives a DLCI status change trap with invalid or inactive status before it receives a board down or interface unreachable event and both notifications arrive during the configurable Window Period, then two events may be generated and displayed in the FrameRelay Alarms browser: one event indicating the board down status and another indicating PVC flapping. This situation occurs because the LAN/WAN Edge SPI does not that know the problem is due to a network card failure and the DLCI status change trap also satisfies the conditions of another correlator. In this case, the DLCI status change trap appears as a correlated trap under both events.

## LMI Problem on the Local Frame Relay Interface

This scenario corresponds to problem 2 in Figure 1 on page 11. Refer to The Frame Relay Network on page 31 for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: Local PVC problem due to LMI failure event:

► This correlation is applicable to Cisco devices only.

1   The LAN/WAN Edge SPI receives a Cisco-specific link down trap that indicates an LMI failure on Router A. The Time window begins.

2   During the Time Window, the LAN/WAN Edge SPI continues to receive DLCI status change traps with inactive status for Router A.

3   The LAN/WAN Edge SPI generates an OV_FrameRelayLocalCircuitProblem event (with text Frame Relay: Local PVC problem due to LMI failure). This event indicates that there is a problem at the local frame relay interface.

Typically, this event indicates that the frame relay device cannot communicate with the service provider.

► If the LAN/WAN Edge SPI receives a DLCI status change trap with inactive status before it receives an LMI failure trap and both traps arrive during the configurable Time Window, then two events may be generated and displayed in the FrameRelay Alarms browser: one event indicating the LMI failure and another indicating PVC flapping. This situation occurs because the LAN/WAN Edge SPI does not know that the problem is due to an LMI failure, and the DLCI status change trap also satisfies the conditions of another correlator. In this case, the DLCI status change trap appears as a correlated trap under both events.

## Carrier Problem Due to PVC Invalidation

This scenario corresponds to problem 3 in Figure 1. Refer to The Frame Relay Network on page 31 for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: Carrier Problem event:

1  The LAN/WAN Edge SPI receives a DLCI status change trap with invalid status for Router A. The Time Window begins.

2  The LAN/WAN Edge SPI verifies that the DLCI status change is not due to an interface down failure.

3  After the Time Window has expired, the LAN/WAN Edge SPI determines whether the DLCI status change is caused by a fault with the service provider or a fault with the interface or LMI configuration at the local data terminal equipment (DTE). In the following order, the LAN/WAN Edge SPI verifies that:

   a  The LMI link is operational.

   b  The creation time has not changed.

   c  The current DLCI status is invalid.

4  The LAN/WAN Edge SPI generates an OV_FrameRelayCarrierProblem event (with text Frame Relay: Carrier Problem). This event indicates that there is a problem within the frame relay cloud.

   Typically, this event indicates that the service provider has inactivated the PVC. You may need to call your service provider.

## DLCI Flapping Due to Circuit Problem

This scenario corresponds to problem 3 in Figure 1. Refer to The Frame Relay Network on page 31 for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: PVC Flapping event:

1  The LAN/WAN Edge SPI receives one or more DLCI status change traps for Router A with inactive status.

2  After the Time Window has expired, the LAN/WAN Edge SPI determines whether the DLCI status change is caused by a fault with the service provider or a fault with the interface or LMI configuration at the local DTE. In the following order, the correlator instance verifies that:

   a  The LMI link is operational.

   b  The creation time has not changed.

  c The current DLCI status is inactive.

3 The LAN/WAN Edge SPI generates an `OV_FrameRelayCircuitProblem` event (with text Frame Relay: PVC Flapping). This event indicates that there is a problem within the frame relay cloud.

This problem could be due to an issue with the remote destination interface DTE.

## DLCI Reset Problem

This scenario corresponds to problem 3 in Figure 1. Refer to Figure 3 for the network used in this example.

The following steps illustrate when the LAN/WAN Edge SPI might generate a Frame Relay: PVC Reset (Creation time changed) event:

1 The LAN/WAN Edge SPI receives one or more DLCI status change traps for Router A with invalid or inactive status.

2 After the Time Window has expired, the LAN/WAN Edge SPI determines whether the DLCI status change is caused by a fault with the service provider or a fault with the interface or LMI configuration at the local DTE.

3 The LAN/WAN Edge SPI determines if the PVC has been reset in the last 30 minutes. If so, it generates an OV_FrameRelayReset event (with text Frame Relay: PVC Reset (Creation time changed)). This event indicates that there is a problem within the frame relay cloud.

# Setting Parameters in HP Correlation Composer

A typical value for the time window to clean up the internal memory is 20 seconds greater than the value of the correlation time window. By default, the value of the correlation time window parameter is 300s and the value of the time window to clean up the internal memory parameter is 320s.

Increasing the value of the correlation time window parameter causes the LAN/WAN Edge SPIs to consume more memory resources and delay correlation output.

There are several ways to access the event correlation features. For more information, from any submap, select Tools:HP Launcher. Select the [?] tab. Click Tasks, Event Correlation Management. Read the information under Accessing the Event Correlation Configuration Windows.

To view more information about or to modify the parameters of the correlators of the LAN/WAN Edge SPI, follow these steps:

1   From any NNM submap, click Options:Event Configuration to launch the Event Configuration window.

2   In the Event Configuration window, click Edit:Event Correlation to open the ECS Configuration window.

3   To enable or disable a correlation, in the ECS Configuration window, highlight the correlation, and then click Enable or Disable.

4   To display the correlation description, in the ECS Configuration window, highlight the correlation, and then click Describe.

5   To open the CorrelatorName-Modify window, in the ECS Configuration window, highlight the correlation, and then click Modify.

The only configurable parameters for the LAN/WAN Edge SPI correlations are those for changing the correlation window periods.

6   To view a parameter's description or to modify a configurable parameter's value, select the parameter, and then click **View/Modify**.

**Table 5    Configurable Correlator Parameters**

| Correlator Name | Configurable Parameter | Description |
|---|---|---|
| OV_FR_DLCIFailedDueIFproblem | Window Period | Corelation time window. |
| | Time Period | Time window to clean up the internal memory. |
| OV_FR_APA_DLCIFailedDueIFProblem | Window Period | Correlation time window. |
| | Time Period | Time window to clean up the internal memory. |
| OV_FR_DLCIFailedDueConnectionProblem | Window Period | Correlation time window. |
| | Time Period | Time window to clean up the internal memory. |
| OV_FR_DLCIFailedDueBoardProblem | Window Period | Correlation time window. |
| | Time Period | Time window to clean up the internal memory. |
| OV_FR_DLCIFailureDueToLMIDown | Window Period | Correlation time window. |
| | Time Period | Time window to clean up the internal memory. |
| OV_FR_DLCIFailureDueToCloudProblem | Window Period | Correlation time window. |
| | Time Period | Time window to clean up the internal memory. |

# 4 Troubleshooting the LAN/WAN Smart Plug-in

Following is a summary of items to consider if you are having difficulties with the LAN/WAN Edge Smart Plug-in (SPI):

- Network Node Manager (NNM) cannot connect to the topology.

  — Verify that the NNM environment variables have been sourced properly as described in Setting the NNM Environment Variables on page 14.

  — Verify that the NNM services are running properly as described in Verifying That the NNM Services are Operating on the Management Station on page 43.

- One or more frame relay devices is not appearing in the NNM topology.

  NNM has not discovered this device.

  — Use the loadhosts command or a seed file to help NNM locate all frame relay devices in the network. For instructions, see *Managing Your Network with NNM*.

- No events appear in the FrameRelay Alarms category of the NNM alarm browser.

  The LAN/WAN Edge SPI is not receiving events about the frame relay devices.

  — Verify that the required MIBs are loaded as described in Verifying that MIBs are Loaded on page 44.

  — Verify that the managed devices are properly configured to forward traps to the NNM management station:

    – If you use SNMP access-control to limit the computers that can have SNMP access to a router, include the NNM management station in the access list on each frame relay device.

    – Configure each frame relay device to include the NNM management station as one of the SNMP trap recipients.

– For information about these configurations, see the documentation that came with your routers.

— Verify that the NNM management station is receiving events from the devices:

– Look in the All Alarms browser for events regarding the frame relay devices. An easy way to create an event is to temporarily disconnect an interface card on the frame relay router from the network.

— Verify that the LAN/WAN Edge SPI is installed as described in Verifying that the LAN/WAN Edge SPI is Installed on page 43.

— Verify that Correlation Composer circuit is loaded into ECS and enabled as described in Verifying the Correlation Composer Circuit on page 45.

— Verify that Composer.fs exists as described in Failure of csdeploy.ovpl on page 46.

— If the error indicates a problem with loading, unloading, enabling, or disabling a circuit or fact store, verify that you can perform the respective operation manually as described in Working Manually with the Correlation Composer Circuit on page 47.

- Windows operating system only: Events are correlated incorrectly in the Frame Relay Alarms category of the NNM alarm browser.

— Verify that NNM is the only process receiving SNMP traps as described in Disabling the SNMP Trap Service on page 49.

— If the MKS Toolkit® product is installed on the NNM management station, verify that system environment variable %Path% includes the path to the HP directory at the beginning of the path list. The system environment variables are available from the Advanced tab of the System Properties control panel.

- If you are trying to install the LAN/WAN Edge SPI over an existing version, unload the LAN/WAN Edge SPI before following the LAN/WAN Edge SPI installation steps.

For additional troubleshooting information, refer to the latest Release Notes for LAN/WAN Edge Smart Plug-in available on the Web at **http:// h20230.www2.hp.com/selfsolve/manuals** under the Reporting and Network Solutions product category.

# Verifying That the NNM Services are Operating on the Management Station

To verify that the NNM services are operating on the management station, follow these steps:

1   Verify that NNM is installed as described in "Verifying Proper Installation of Network Node Manager" on page 19.

2   Determine the status of the NNM services:

•   UNIX: **$OV_BIN/ovstatus -v**

•   Windows: **%OV_BIN%\ovstatus -v**

    All of the processes, including PMD, should be running.

3   If NNM and all associated processes are not running, stop and restart the NNM services:

•   UNIX:

    **$OV_BIN/ovstop -c**

    **$OV_BIN/ovstart -c**

•   Windows:

    **%OV_BIN%\ovstop -c**

    **%OV_BIN%\ovstart -c**

# Verifying that the LAN/WAN Edge SPI is Installed

To verify that the LAN/WAN Edge SPI is installed on the management station, follow these steps:

1   Examine the categories in the NNM alarm browser.

•   If the FrameRelay Alarms category exists, then the LAN/WAN Edge SPI is installed.

•   If the FrameRelay Alarms category does not exist, proceed to step 2.

2   Examine the name space configuration file:

UNIX: `$OV_CONF/ecs/CIB/NameSpace.conf`

Windows: `%OV_CONF%\ecs\CIB\NameSpace.conf`

- If this file contains an entry for FrameRelay that is not preceded by a comment character (#), then the LAN/WAN Edge SPI is installed.

  Update the list categories in the NNM alarm browser:

  — Stop and restart NNM.

    OR

  — Stop and restart the NNM alarm browser only.

  a  Close the alarm browser.

  b  Type the command:

    – UNIX: $OV_BIN/xnmevents

    – Windows: %OV_BIN%\xnmevents

- If this file does not contain an entry for FrameRelay, then the LAN/WAN Edge SPI is not installed.

  See Installing the LAN/WAN Edge SPI on page 16.


# Verifying that MIBs are Loaded

To verify that the required MIBs are loaded onto the NNM management station, follow these steps:

1  In NNM, click `Options->Load/Unload MIBs:SNMP`.

   The Load/Unload MIB:SNMP window appears. This window lists the MIBs that have been loaded onto the NNM management station.

2  Verify that the MIBs listed in MIB Dependencies on page 15 are loaded.

3  If one or more of the required MIBs is not loaded, add it using this window.

# Verifying the Correlation Composer Circuit

To verify that the Correlation Composer circuit is loaded into ECS and enabled, follow these steps:

1  Determine the current ECS configuration:

- UNIX: **$OV_BIN/ecsmgr -info**
- Windows: **%OV_BIN%\ecsmgr -info**

2  In the ecsmgr output, look for the line:

circuit name - Composer.

3  In the Composer circuit section of the ecsmgr output, look for the following lines:

- fact store name - Composer

This line indicates that the Correlation Composer circuit is loaded into ECS.

- circuit state - stream default - enabled

This line indicates that the Correlation Composer circuit is enabled.

- Perl File loaded: ...fr.ovpl

This line indicates that the frame relay perl script is loaded.

4  Evaluate your findings:

- If you saw the lines specified in step 3, then the Correlation Composer circuit is loaded and running correctly.
- If you did not see the lines specified in step 3, then load the Correlation Composer circuit.

    To load the Correlation Composer circuit, stop and restart the NNM services. For instructions, see Verifying That the NNM Services are Operating on the Management Station on page 43.

# Handling Installation Errors

If the installation of the LAN/WAN Edge SPI fails, it could be because of one of the following problems:

## Correct Version of NNM Not Installed

The LAN/WAN Edge SPI detected that the required version of NNM is not available on the target computer. To resolve this installation error, install or upgrade to the correct version of NNM before installing the LAN/WAN Edge SPI.

## Error Loading Frame Relay Correlation Rules

The LAN/WAN Edge SPI could not connect to PMD. To resolve this installation error, verify that the NNM services are running as described in Verifying That the NNM Services are Operating on the Management Station on page 43.

## Frame Relay Trap Definitions Already Loaded

A version of the LAN/WAN Edge SPI already exists on the NNM management station, so the frame relay trap definitions have already been loaded onto the system.

This message is informational only.

## Failure of csdeploy.ovpl

The LAN/WAN Edge SPI correlators did not merge correctly with the Correlation Composer circuit.

- Verify that the Correlation Composer fact store file exists:

  UNIX: $OV_CONF/ecs/circuits/Composer.fs

  Windows: %OV_CONF%\ecs\circuits\Composer.fs

  — If the Correlation Composer fact store file exists, the correlations are loaded and should work properly.

  — If the Correlation Composer fact store file does not exist, then create this file:

    – UNIX: **$OV_BIN/csdeploy.ovpl -p deploy_file**

– Windows: **%OV_BIN%\csdeploy.ovpl -p deploy_file**

- You can also examine the log file for the process that merges the fact store information:

UNIX: $OV_LOG/ecs/csmerge.log

Windows: %OV_LOG%\ecs\csmerge.log

# Working Manually with the Correlation Composer Circuit

If the LAN/WAN Edge SPI generates an error that indicates a problem with loading, unloading, enabling, or disabling a circuit or fact store, verify that you can perform the respective operation manually.

- To manually disable the Correlation Composer circuit:

  UNIX: $OV_BIN/ecsmgr -disable Composer

  Windows: %OV_BIN%\ecsmgr -disable Composer

- To manually enable the Correlation Composer circuit:

  UNIX: $OV_BIN/ecsmgr -enable Composer

  Windows: %OV_BIN%\ecsmgr -enable Composer

- To manually unload the Correlation Composer circuit:

  UNIX: $OV_BIN/ecsmgr -circuit_unload Composer

  Windows: %OV_BIN%\ecsmgr -circuit_unload Composer

- To manually unload the Correlation Composer fact store:

  UNIX: $OV_BIN/ecsmgr -fact_unload Composer

  Windows: %OV_BIN%\ecsmgr -fact_unload Composer

- To reload the Correlation Composer circuit or fact store, manually unload the circuit or fact store as described above, and then follow the steps relevant to your operating system:

  UNIX:

1 **$OV_BIN/ecsmgr -fact_load Composer**

**$OV_CONF/ecs/circuits/Composer.fs**

2   **$OV_BIN/ecsmgr -data_load Composer**

   **$OV_CONF/ecs/circuits/Composer.d**s

This command is only required if the data store has been unloaded using the command ecsmgr -reset.

The Composer.ds file contains no data. This file exists because it is required input to the next command.

3   **$OV_BIN/ecsmgr -circuit_load Composer**

   **$OV_CONF/ecs/circuits/Composer.eco Composer Composer**

In the above command, the first Composer references the Composer.ds file. The second Composer references the Composer.fs file. Both references are required.

4   $OV_BIN/ecsmgr -enable Composer

Windows:

1   **%OV_BIN%\ecsmgr -fact_load Composer**
   **%OV_CONF%\ecs\circuits\Composer.fs**

2   **%OV_BIN%\ecsmgr -data_load Composer**
   **%OV_CONF%\ecs\circuits\Composer.ds**

This command is only required if the data store has been unloaded using the command ecsmgr -reset.

The Composer.ds file contains no data. This file exists because it is required input to the next command.

3   **%OV_BIN%\ecsmgr -circuit_load Composer**
   **%OV_CONF%\ecs\circuits\Composer.eco Composer Composer**

In the above command, the first Composer references the Composer.ds file. The second Composer references the Composer.fs file. Both references are required.

4   %OV_BIN%\ecsmgr -enable Composer.

➤   If one or more of the manual operations reports a failure, refer to the troubleshooting information in the ECS documentation for more information.

# Disabling the SNMP Trap Service

▶ This topic applies to the Windows operating system only.

The HP event subsystem must receive all SNMP traps that arrive at the NNM management station. Any other SNMP trap receiver must be disabled for NNM to work correctly.

To disable the SNMP Trap Service and set the correct start option for NNM's SNMP trap receptor process (ovtrapd), follow these steps:

1  On the Taskbar, click **Start**, and then click **Control Panel**.

2  In the Control Panel window, click **Performance and Maintenance**.

3  In the Performance and Maintenance window, click **Administrative Tools**.

4  In the Administrative Tools window, double-click **Services**.

5  In the list of local services, scroll down and select the **SNMP Trap Service**.

6  Use the buttons in the Services window to stop the SNMP Trap Service and to set its Startup Type to Disabled.

7  Modify the local registration file for the ovtrapd process to use the -W option at startup:

   a  Verify that the NNM environment variables are sourced properly as described in "Setting the NNM Environment Variables" on page 19.

   b  Using any text editor, open the %OV_LRF%\ovtrapd.lrf file.

   c  Edit the second line of the local registration file to read:

      **OVs_YES_START:pmd:-W:OVs_WELL_BEHAVED**::

   d  Apply the change to the local registration file:

      %OV_BIN%\ovaddobj %OV_LRF%\ovtrapd.lrf

8  Stop and restart the ovtrapd process:

   %OV_BIN%\ovstop -c

   %OV_BIN%\ovstart -c

See *Managing Your Network with NNM* for information on the HP services.

# Tracing a Process to Document Error Messages

If errors occur that are not documented in this user guide, then collect a trace file of the error condition, by following these steps:

1   Enable tracing of the components related to the function of the LAN/WAN Edge SPI:

    a   Enable tracing:

       UNIX: `$OV_BIN/ecsmgr -trace 65536`

       Windows: `%OV_BIN%\ecsmgr -trace 65536`

    b   Enable tracing of the ECS engine:

       UNIX: `$OV_BIN/pmdmgr -Secss\;T0x00400000 -Qt -Ql`

       Windows: `%OV_BIN%\pmdmgr -Secss;T0x00400000 -Qt -Ql`

    c   Enable tracing of the Correlation Composer circuit:

       UNIX: $OV_BIN/ecsmgr -fact_update Composer $OV_CONTRIB/ CompTraceOn.fs

       Windows: %OV_BIN%\ecsmgr -fact_update Composer %OV_CONTRIB%\CompTraceOn.fs

2   With tracing enabled, rerun your test scripts or repeat the steps necessary to recreate the scenario that caused the unexpected behavior.

3   View the pmd.trc files for more details. These files are in the following directory:

   UNIX: $OV_LOG

   Windows: %OV_LOG%

4   If necessary, contact your HP support representative.

   Submit the following files:

   UNIX:

   `$OV_LOG/pmd.trc`

   `$OV_LOG/ecs/1/ecsin.evt`

   Windows:

```
%OV_LOG%\pmd.trc

%OV_LOG%\ecs\1\ecsin.evt
```

Enabling tracing consumes some of PMD's processing power. After you have resolved the problem, disable tracing by executing:

UNIX:

```
$OV_BIN/pmdmgr -SECSS\;T0x0

$OV_BIN/ecsmgr -fact_update Composer

$OV_CONTRIB/CompTraceOff.fs
```

Windows:

```
%OV_BIN%\pmdmgr -SECSS;T0x0

%OV_BIN%\ecsmgr -fact_update Composer
%OV_CONTRIB%\CompTraceOff.fs
```

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