

*InCharge*TM

IP Adapters User's Guide

Version 6.0



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Preface

This guide provides information about how you can use the InCharge Adapter for HP OpenView (OV) Network Node Manager or the InCharge Adapter for IBM/Tivoli NetView (NV) to manage the flow of data from those products to your InCharge IP Domain Manager.

The InCharge Adapter for HP OpenView Network Node Manager and the InCharge Adapter for IBM/Tivoli NetView are adapters that collect information from an OV/NV managed network and send it to an InCharge IP Domain Manager. The adapters perform functions such as providing a Domain Manager with topology information, sending topology updates, or collecting event information.

Intended Audience

This guide is intended to be read by any user who needs to configure and run the InCharge Adapter for HP OpenView Network Node Manager or the InCharge Adapter for IBM/Tivoli NetView.

Prerequisites

It is assumed that one of the following versions of HP OpenView NNM or IBM/Tivoli NetView is installed:

- HP OpenView Network Node Manager version 6.2 or 6.4
- IBM/Tivoli NetView version 6.0.2 or 7.1

This document also assumes that an InCharge IP Domain Manager and an InCharge Adapter for OV/NV have already been installed. For more information about installation, refer to the *InCharge Installation Guide*.

Note: The InCharge Adapter for OV/NV is not supported on the Linux operating system.

Document Organization

The sections are organized as shown in Table 1.

1. INTRODUCTION	Provides an overview of the InCharge Adapters for HP OpenView NNM and IBM/Tivoli NetView.
2. RUNNING THE INCHARGE ADAPTERS FOR OPENVIEW/NETVIEW	Describes how to run and configure the InCharge Adapters for HP OV and IBM/Tivoli NV.
3. OPENVIEW/NETVIEW INITIAL TOPOLOGY READER	Provides additional configuration information specific to the OV/NV Initial Topology Reader.
4. OPENVIEW/NETVIEW TOPOLOGY UPDATE READER	Provides specific information about the OV/NV Topology Update Reader.
5. OPENVIEW/NETVIEW TRAP FORWARDER	Provides specific information about the OV/NV Trap Forwarder.
APPENDIX A	Provides troubleshooting procedures for the InCharge Adapters for HP OV and IBM/Tivoli NV.
APPENDIX B	Outlines the SMARTS Corporate MIB.

Table 1: Document Organization

Documentation Conventions

Several conventions may be used in this document as shown in Table 2.

CONVENTION	EXPLANATION
sample code	Indicates code fragments and examples in Courier font
keyword	Indicates commands, keywords, literals, and operators in bold
%	Indicates C shell prompt
#	Indicates C shell superuser prompt

CONVENTION	EXPLANATION
<parameter>	Indicates a user-supplied value or a list of non-terminal items in angle brackets
[option]	Indicates optional terms in brackets
<i>/InCharge</i>	Indicates directory path names in italics
<i>yourDomain</i>	Indicates a user-specific or user-supplied value in bold, italics
<i>File > Open</i>	Indicates a menu path in italics
▲ ▼	Indicates a command that is formatted so that it wraps over one or more lines. The command must be typed as one line.

Table 2: Documentation Conventions

Directory path names are shown with forward slashes (/). Users of the Windows operating systems should substitute back slashes (\) for forward slashes.

Also, if there are figures illustrating consoles in this document, they represent the consoles as they appear in Windows. Under UNIX, the consoles appear with slight differences. For example, in views that display items in a tree hierarchy such as the Topology Browser, a plus sign displays for Windows and an open circle displays for UNIX.

Finally, unless otherwise specified, the term InCharge Manager is used to refer to InCharge programs such as Domain Managers, Global Managers, and adapters.

InCharge Installation Directory

In this document, the term **BASEDIR** represents the location where InCharge software is installed.

- For UNIX, this location is: */opt/InCharge<n>/<productsuite>*.
- For Windows, this location is: *C:\InCharge<n>\<productsuite>*.

The *<n>* represents the InCharge software version number. The *<productsuite>* represents the InCharge product suite that the product is part of.

Table 3 defines the *<productsuite>* directory for each InCharge product.

PRODUCT SUITE	INCLUDES THESE PRODUCTS	DIRECTORY
IP Management Suite	<ul style="list-style-type: none"> • InCharge IP Availability Manager • InCharge IP Performance Manager • InCharge Discovery Manager • InCharge Adapter for HP OpenView NNM • InCharge Adapter for IBM/Tivoli NetView 	/IP
Service Assurance Management Suite	<ul style="list-style-type: none"> • InCharge Service Assurance Manager • Global Console • InCharge Service Assurance Manager Business Impact Manager • InCharge Service Assurance Manager Failover System • InCharge Service Assurance Manager Notification Adapters • InCharge Service Assurance Manager Adapter Platform • InCharge SNMP Trap Adapter • InCharge Syslog Adapter • InCharge XML Adapter • InCharge Adapter for Remedy • InCharge Adapter for TIBCO Rendezvous • InCharge Adapter for Concord eHealth • InCharge Adapter for InfoVista 	/SAM
Application Management Suite	<ul style="list-style-type: none"> • InCharge Application Connectivity Monitor 	/APP
SMARTS Software Development Kit	<ul style="list-style-type: none"> • Software Development Kit 	/SDK

Table 3: Product Suite Directory for InCharge Products

For example, on UNIX operating systems, version 6.0 of InCharge IP Availability Manager is, by default, installed to `/opt/InCharge6/IP/smarts`. This location is referred to as **BASEDIR**/`smarts`.

Optionally, you can specify the root of **BASEDIR** to be something other than `/opt/InCharge6` (on UNIX) or `C:\InCharge6` (on Windows), but you cannot change the `<productsuite>` location under the root directory.

For more information about the directory structure of InCharge software, refer to the *InCharge System Administration Guide*.

Additional Resources

In addition to this manual, SMARTS provides the following resources.

InCharge Commands

Descriptions of InCharge commands are available as HTML pages. The *index.html* file, which provides an index to the various commands, is located in the **BASEDIR**/*smarts/doc/html/usage* directory.

Documentation

Readers of this manual may find other SMARTS documentation (also available in the **BASEDIR**/*smarts/doc/pdf* directory) helpful.

InCharge Documentation

The following SMARTS documents are product independent and thus relevant to users of all InCharge products:

- *InCharge Release Notes*
- *InCharge Documentation Roadmap*
- *InCharge Installation Guide*
- *InCharge System Administration Guide*
- *InCharge Global Console Guide*

InCharge IP Management Documentation

The following SMARTS documents are relevant to users of the InCharge IP Management product suite.

- *InCharge IP Availability Manager User's Guide*
- *InCharge IP Performance Manager User's Guide*
- *InCharge IP Adapters User's Guide*
- *InCharge IP Discovery Guide*

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1

Introduction

The InCharge Adapter for HP OpenView NNM and IBM/Tivoli NetView—including Initial Topology Reader, Topology Update Reader, and Trap Forwarder processes—are applications that provide a means of communication between an HP OpenView or IBM/Tivoli NetView system and an InCharge IP Domain Manager (Availability Manager, Performance Manager, or Discovery Manager).

The Initial Topology Reader and the Topology Update Reader initialize an InCharge Availability Manager or Performance Manager with topology information from OV/NV and send, as they occur, event information and topology changes. The OV/NV Trap Forwarder forwards SNMP traps from OV/NV to the Service Assurance Adapter Platform. The Adapter Platform processes the traps and sends the traps required by IP Availability Manager (or IP Performance Manager) to the appropriate Domain Manager. Figure 1 illustrates a typical deployment of the OV/NV adapter.

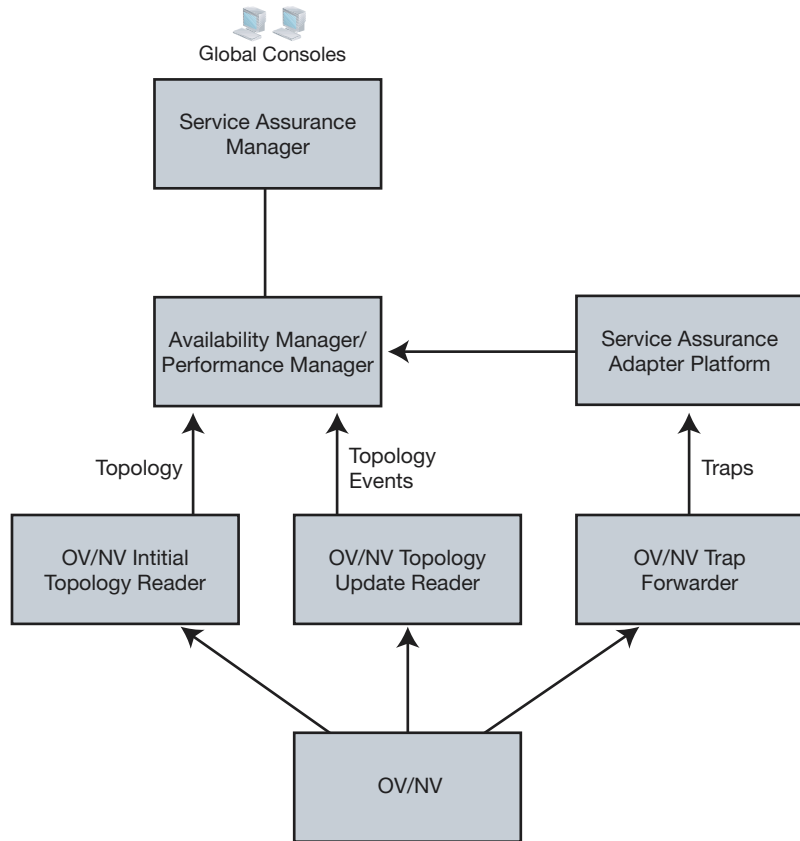


Figure 1: Typical Deployment of OV/NV Adapter Processes

It is also possible to deploy the OV/NV Trap Forwarder without Service Assurance Manager and the Service Assurance Manager Adapter Platform. Figure 2 illustrates this deployment.

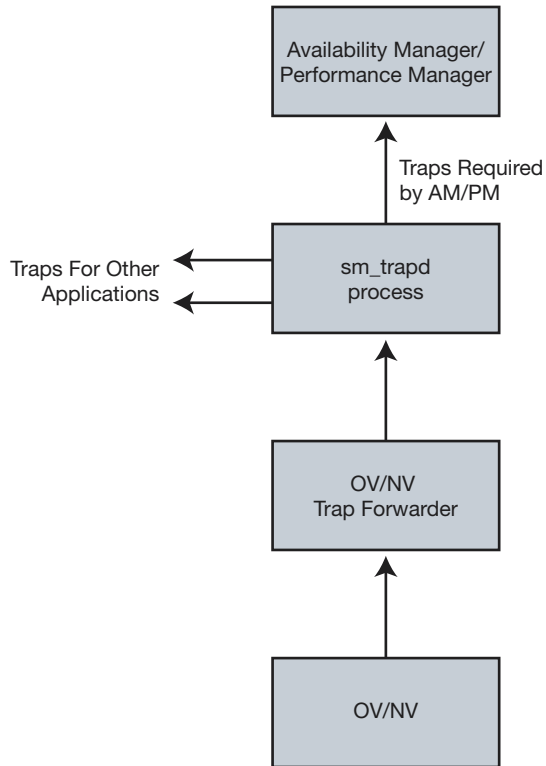


Figure 2: Deployment of OV/NV Trap Forwarder Without Service Assurance Manager

Table 4 describes the purpose of the processes.

ADAPTER	PURPOSE
OV/NV Initial Topology Reader	Initializes the InCharge topology using information from Hewlett-Packard OpenView NNM or IBM/Tivoli NetView
OV/NV Topology Update Reader	Forwards information from OpenView or NetView to InCharge in order to update the topology
OV/NV Trap Forwarder	Forwards traps from OpenView or NetView to InCharge

Table 4: InCharge OV/NV Adapter Processes and Purposes

Adapter Features

The adapters start either manually or automatically. Adapters execute based on parameters specified in configuration files or command-line arguments.

If the InCharge IP Domain Manager is restarted, adapters automatically reconnect to the InCharge Domain Manager. When OpenView or NetView restarts, any OV/NV adapters configured to run will automatically restart and connect to the InCharge IP Domain Manager.

For more information about the installation of adapters, see the *InCharge Installation Guide*.

Configuration Files

The adapter configuration files describe the name of the Domain Manager and the event subscriptions for an adapter. Configuration files have an extension of *conf*. The original files are located in the **BASEDIR**/*smarts/conf* directory. Modified files are located in the **BASEDIR**/*smarts/local/conf* directory.

Be careful when you rename the configuration files or move them. An adapter only recognizes the default configuration file name and does not search for its configuration file. An adapter that cannot find its configuration file will not run.

After installation, the configuration files of some of the adapters must be modified. Table 5 identifies whether or not you need to configure an adapter process before running it. For more information about configuring an adapter, see the specific instructions for the adapter.

Note: Use the `sm_edit` utility to modify adapter configuration files. See [Modifying Adapter Configuration Files](#) on page 5 for additional information. After you modify an adapter's configuration file, you must stop and restart the adapter in order for the changes to take effect.

ADAPTER/PROCESS	CONFIGURE BEFORE USING?	DESCRIPTION
OV/NV Initial Topology Reader	Yes	Configure the discovery filters in the Domain Manager. If the Domain Manager's name is something other than INCHARGE-AM, change the configuration file.
OV/NV Topology Update Reader	Yes	Configure the discovery filters in the Domain Manager. If the Domain Manager's name is something other than INCHARGE-AM, change the configuration file.
OV/NV Trap Forwarder	No	Providing the Domain Manager's name is INCHARGE-AM.

Table 5: Adapter Process and Configuration Requirements

Modifying Adapter Configuration Files

As part of the InCharge deployment and configuration process, you will need to modify certain files. User modifiable files include InCharge tool scripts, configuration files, rule set files, and templates. Original versions of these files are installed into appropriate subdirectories under the **BASEDIR**/*smarts/* hierarchy. For example, original versions of Global Manager configuration files are installed to **BASEDIR**/*smarts/conf/ics*.

To edit a user modifiable file, create a local copy of the file in **BASEDIR**/*smarts/local* or one of its subdirectories. For example, a modified *ics.conf* file should be saved to **BASEDIR**/*smarts/local/conf/ics*. InCharge software is designed to first search for user modifiable files in **BASEDIR**/*smarts/local* or one of its subdirectories. If a modified version of a file is not found in the local area, InCharge software then searches appropriate nonlocal directories.

Note: Original versions of files may be changed or updated as part of an InCharge software upgrade. However, files located in **BASEDIR**/*smarts/local* are always retained during an upgrade.

To facilitate proper file editing, SMARTS provides the *sm_edit* utility. When used to modify an original version of a file, this utility automatically creates a local copy of the file and places it in the appropriate location under **BASEDIR**/*smarts/local*. This ensures that the original version of the file remains unchanged. In both UNIX and Windows environments, you can invoke *sm_edit* from the command line. Optionally, you can configure Windows so that *sm_edit* is automatically invoked when user-modifiable files are double-clicked in Windows Explorer.

To invoke the *sm_edit* utility from the command line, specify the path and the name of the file you want to edit under **BASEDIR**/*smarts*. For example, to edit the configuration file for the Global Manager, you invoke the *sm_edit* utility as follows:

```
% BASEDIR/smarts/bin/sm_edit conf/ics/ics.conf
```

The *sm_edit* utility automatically creates a local copy of the *ics.conf* file in the **BASEDIR**/*smarts/local/conf/ics* directory, if necessary, and opens the file in a text editor. If a local version of the file already exists, the *sm_edit* utility opens the local version in a text editor. In addition, *sm_edit* creates any necessary directories.

For more information about how to properly edit user modifiable InCharge files and how to use the *sm_edit* utility, refer to the *InCharge System Administration Guide*.

Running the InCharge Adapters for OpenView/NetView

The InCharge Adapters for HP OpenView NNM and IBM/Tivoli NetView—including Initial Topology Reader, Topology Update Reader, and Trap Forwarder processes—operate similarly.

This chapter focuses on the common operator tasks for the adapters: configuring the adapters, starting and stopping them, and logging history. Any differences between the adapters are noted.

You can start using an adapter after you install and configure it.

Configuring OV/NV Adapter

When an OV/NV adapter starts, it reads the *server.conf* configuration file. The OV/NV adapters will work without changes to *server.conf* if the name of the InCharge IP Domain Manager is INCHARGE-AM.

For installations where the Domain Manager's name is not INCHARGE-AM, you must modify configuration files. Use the `sm_edit` utility to modify the configuration files. See [Modifying Adapter Configuration Files](#) on page 5 for additional information.

Note: Whenever you modify a configuration file, you must restart the adapter for the changes to take effect.

The configuration files, `conf/OV/server.conf` or `conf/NV/server.conf`, are located in **BASEDIR**/`smarts/conf` directory.

OpenView Account and Service Requirements

For the InCharge Adapter for HP OpenView NNM on Windows, if OpenView is installed on an NTFS partition, the adapter may not start. Before you install the adapter, use the Control Panel Services to configure the HP OpenView Process Manager service to start under an account that has full NTFS privileges (for example, Administrator).

Creating a User Account

To create a user account, perform these steps:

- 1 Select *Start > Programs > Administrative Tools > User Manager for Domains* to open the User Manager dialog box.
- 2 Change the domain. SMARTS recommends creating this new user in the machine's local domain. To do so, in the User Manager dialog box, select the option *Select Domain* from the User menu. In the Select Domain dialog box, enter the Universal Naming Convention (UNC) name for this host (for example, `\\myhost`) and click **OK**.
- 3 In the User Manager dialog box from the User menu, select *New User* to create a new user account. The New User dialog box displays.
- 4 Complete the New User dialog box.

Type these values in the fields:

FIELD	VALUE
Username	OpenView
Full Name	OpenView Administration
Description	Permit operation from OpenView services
Password	<i>password</i>
Confirm Password	<i>password</i>

Review the check box selections and make any changes appropriate to your environment.

- 5 At the bottom of the New User dialog box, click **Groups** to display the Group Memberships dialog box to assign the user's group. Complete the Group Memberships dialog box:
 - In the Member of section, select each entry and click **Remove** to move the entry into the Not member of section.
 - Select Administrators in the Not member of section and click **Add** to move the entry into the Member of section.
 - Click **OK**.
- 6 In the New User dialog box, click **Add**.
- 7 In the User Manager dialog box from the Policies menu, select User Rights. This displays the User Rights Policy dialog box.
- 8 Select the check box *Show Advanced User Rights* at the bottom of the dialog box.
- 9 In the Right drop-down field, select Log on as a service and click **Add**. The Add Users and Groups dialog box displays.
- 10 In the List Names From field, select the domain where you created the OpenView user account. Click **Show Users**.
- 11 In the Names field, select the name OpenView and click **Add**.
- 12 The name appears in the Add Names field. Click **OK**.
- 13 In the User Rights Policy dialog box, OpenView appears in the Grant to field. Click **OK**.
- 14 Exit the User Manager program.

Configuring the HP OpenView Process Manager Service

To configure the HP OpenView Process Manager service, perform these steps:

- 1 Select *Start > Settings > Control Panel > Services*.
- 2 In the Services dialog box, select HP OpenView Process Manager and click **Startup**. The Service dialog box displays.
- 3 In the Log On As section of the Service dialog box, select This Account and click **...**. The Add User dialog box displays.

- 4 In List Names From field, select the domain where you created the OpenView user account. (After you select the domain, the user account appears in the Names list.)
- 5 In the Names field, select the name OpenView and click **Add**.
- 6 The name appears in the Add Name field. Click **OK**.
- 7 In the Service dialog box, click **OK**.
- 8 Enter the password for this account in the Password and Confirm Password fields.

Starting OV/NV Adapters

The installation process registers the OV/NV adapters with HP OpenView or IBM/Tivoli NetView. You start and stop the adapters as a process in OV/NV. The command for OpenView and NetView is the same, but the name of each adapter process is different. To start an OpenView (`/opt/OV/bin/`) or NetView (`/usr/OV/bin/`) process issue the following command:

```
ovstart <name_of_adapter_process>
```

Table 6 lists the names of the adapter processes (OpenView processes are listed first).

ADAPTER/PROCESS	OPENVIEW NAME NETVIEW NAME
OV/NV Initial Topology	sm_ov_topo sm_nv_topo
OV/NV Topology Update	sm_ov_event sm_nv_event
OV/NV Trap Forwarder	sm_ov_fwd sm_nv_fwd

Table 6: OV/NV Adapter Process Names

Standard Startup Options

There is a set of standard options that apply to the adapters. These standard options control

- Access to help information and
- Location and contents of a log file.

The standard startup options are explained in Table 7.

OPTION	DESCRIPTION
<code>--help</code>	Prints help text and exits
<code>--version</code>	Prints program version and exits
<code>--daemon</code>	Runs the process as a daemon (UNIX only)
<code>--logname=<name></code>	Use <i><name></i> to identify the sender recorded in the system log. The default value is the program's name
<code>--loglevel=<level></code>	The minimum system logging level; default value = <i>Error</i> Values for <i>level</i> : None, Emergency, Alert, Critical, Error, Warning, Notice, Informational, Debug or Fatal (a synonym for Critical)
<code>--errlevel=<level></code>	The minimum error printing level; default value = <i>Warning</i> Values for <i>level</i> : None, Emergency, Alert, Critical, Error, Warning, Notice, Informational, Debug or Fatal (a synonym for Critical)
<code>--output [=<file>]</code>	Redirects output (of stdout and stderr) to BASEDIR /logs/<file>.log; If <file> not specified the value of <code>--logname</code> is used

Table 7: Standard Startup Options

Stopping OV/NV Adapters

The command used to stop OpenView and NetView processes is the same. To stop an OpenView (`/opt/OV/bin/`) or NetView (`/usr/OV/bin/`) process issue the following command:

```
ovstop <name_of_adapter_process>
```

Logging OV/NV Adapters' History

Each adapter stores its working history in a log file. When an adapter starts, an error occurs, or the connection to the Domain Manager is lost, the adapter writes a message to its log file.

Each adapter writes its log file to **BASEDIR**/*smarts*/*logs*.

The name of the log file is the same as the adapter's OV/NV process name.

Table 8 lists the OV/NV adapters and their related log names.

ADAPTER/PROCESS	OPENVIEW LOG NETVIEW LOG
OV/NV Initial Topology Reader	sm_ov_topo.log sm_nv_topo.log
OV/NV Topology Update Reader	sm_ov_event.log sm_nv_event.log
OV/NV Trap Forwarder	sm_ov_fwd.log sm_nv_fwd.log

Table 8: OV/NV Adapters and Log Names

For additional information about managing log files, see the *InCharge System Administration Guide*.

3

OpenView/NetView Initial Topology Reader

Initial Topology Reader

The OV/NV Initial Topology Reader process collects network topology information from an HP OpenView NNM or IBM/Tivoli NetView and uses the information to create a network topology in an InCharge IP Domain Manager. This adapter creates the initial topology. To keep the topology current, the adapter should be run in conjunction with the OV/NV Topology Update Reader.

This adapter adds new topology from OV/NV to the Domain Manager when one of the following is initialized or restarted:

- HP OpenView or IBM/Tivoli NetView
- InCharge IP Domain Manager (Availability Manager, Performance Manager, or Discovery Manager)
- OV/NV Initial Topology Reader

After running the batch synchronization process, the adapter enters a wait state until either the InCharge IP Domain Manager or OpenView or NetView is restarted.

When the OV/NV Initial Topology Reader retrieves topology information from the OpenView or NetView system, it produces a list of managed elements and their SNMP community strings for the Domain Manager. The Domain Manager performs discovery on these devices to gather additional information.

When using InCharge with OpenView or NetView, the management state of the interface depends on the management state of the IP address. If OpenView or NetView manages any of the Internet Protocol (IP) addresses, the underlying interface is managed. InCharge makes a distinction between the IP address and the interface. InCharge can manage each separately.

When you run an OV/NV Initial Topology Reader, you should use OpenView or NetView to control the management status of network elements rather than InCharge. If you use InCharge, the management status information is overwritten by the management status from OpenView or NetView every time the adapter performs a discovery sweep and resynchronizes the management status of network elements. See "Synchronizing the InCharge Topology With OV/NV" on page 19 for information about managing network elements.

Figure 3 shows how the OV/NV Initial Topology Reader is a conduit between OpenView or NetView and an InCharge IP Domain Manager. If OV/NV manages the topology, the Domain Manager only receives the managed nodes.

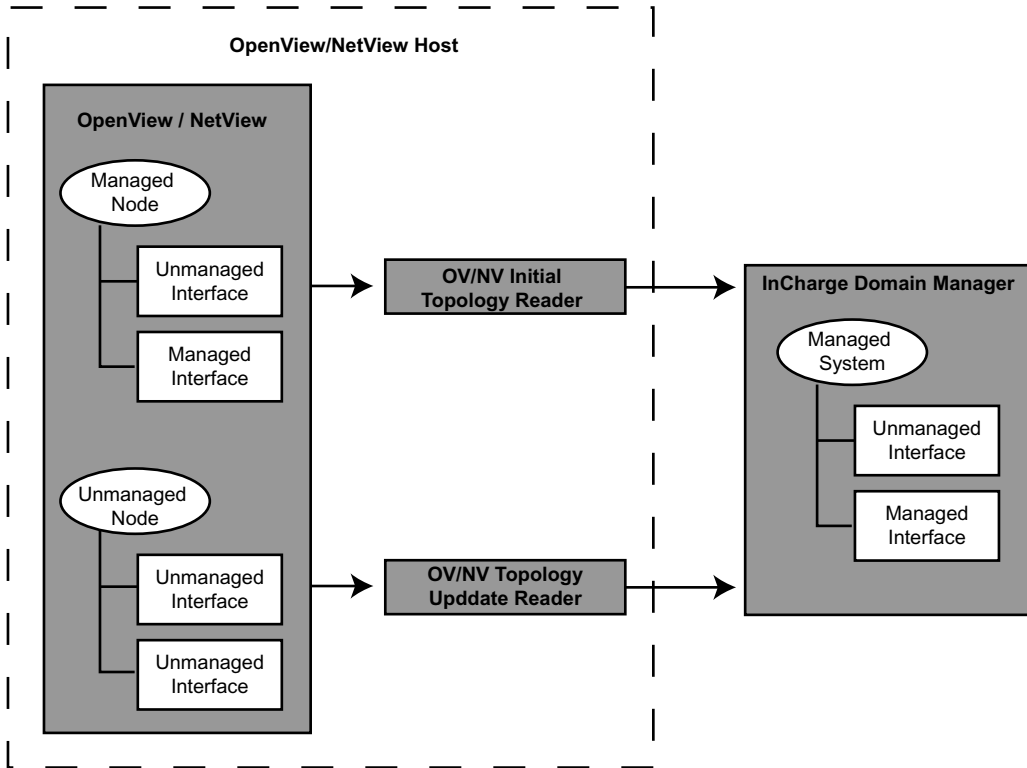


Figure 3: OV/NV Initial Topology Reader and InCharge Domain Manager Interactions

Configuring the OV/NV Initial Topology Reader

Configuration for this adapter process consists of three basic steps in the following order:

- 1** Modify the discovery configuration file, *discovery.conf*. (See [Modifying the discovery.conf Configuration File](#) on page 16.)
- 2** Create a discovery filter and system limit for the Domain Manager. (See [Configuring the Discovery Filter](#) on page 17.)
- 3** Modify the configuration file, *server.conf*. (See [Configuring the Adapter](#) on page 18.)

Modifying the `discovery.conf` Configuration File

An InCharge application performs its own discovery of the devices retrieved by the OV/NV Initial Topology Reader. Because of network conditions or other factors, InCharge may not be able to successfully discover all the devices retrieved from HP OpenView or IBM/Tivoli NetView. Under the default configuration, undiscovered devices are discarded.

SMARTS recommends that you make two changes to the `discovery.conf` file so that undiscovered devices are stored in the Pending Devices List. The `discovery.conf` file is located in the **BASEDIR**/`smarts/conf/discovery` directory. Use the `sm_edit` utility to make the changes.

Change ShowPendingNONSNMP and NameFormat

Parameters

- 1 Change the value of the ShowPendingNONSNMP parameter to TRUE. By default, this attribute is set to FALSE.

When you set the value of ShowPendingNONSNMP to TRUE, any system that does not respond to an SNMP request is added to the Pending Devices List. This may include systems, such as hosts, that do not support SNMP.

- 2 Change the value of the NameFormat parameter to "TM_USESEEDNAME". The default value is "TM_USEAUTONAME".

When you set the value of NameFormat to "TM_USESEEDNAME", InCharge uses the system name it receives from HP OpenView or Tivoli NetView as the system name in its own topology.

- 3 Restart the Domain Manager after editing `discovery.conf` to make the changes take effect. The topology adapters automatically reconnect to the Domain Manager.

To periodically check the Pending Devices List, open the Domain Manager Administration Console and select *Show Discovery Progress* from the *Topology* menu. For more information about the Pending Devices List, refer to the *InCharge IP Discovery Guide*.

Optionally Exclude Systems from Imported Topology

If the network topology of HP OpenView or IBM/Tivoli NetView contains networks or systems that you do not want imported by the OV/NV topology adapter, you can exclude them in the `discovery.conf` file. The `discovery.conf` file includes an `ipExcludeList` where you can specify networks or systems that are not to be imported by InCharge. The `discovery.conf` file is located in the **BASEDIR**/`smarts/conf/discovery/` directory.

The `ipExcludeList` is a list of IP addresses or address patterns that should be excluded from topology imports. Any IP address that matches an IP address or address pattern in the list is excluded from the managed topology.

Systems whose IP address passes the `ipExclude` filters are then passed on to the discovery filters. If the systems pass the discovery filters, they are added to the managed topology or the Pending Devices list.

`IpExclude` filters can be constructed using the following wildcard patterns:

- 10.10.9.*
- 10.10.<10-20>.*
- 10.10.1.* | 10.10.<2-10>.*

For more information regarding wildcard patterns, see the *InCharge IP Discovery Guide*.

Configuring the Discovery Filter

Before running the OV/NV Initial Topology Reader, make sure that you first configure the discovery filter. The discovery filter must exist for the adapter to work. Without a discovery filter, the Domain Manager ignores incoming topology information and does not place it in the discovery Pending Devices List. The system limit determines the maximum number of systems managed by the Domain Manager.

The following steps create a filter in the Domain Manager Administration Console to discover everything in your OV/NV topology and to set a system limit. For more information about discovery filters and system limits see the *InCharge IP Discovery Guide*.

- 1 Run the Administration Console and connect to the InCharge Domain IP Manager that the OV/NV Initial Topology Reader connects to.
- 2 Highlight the Domain Manager and select the Topology tab.
- 3 In the System Limit field, enter the number of nodes managed in OV/NV.

The Domain Manager will not discover any system in excess of the limit entered in this field. The number beneath the System Limit shows the number of systems managed by the Domain Manager.

- 4 Select the Discovery Filters tab.

If filter criteria appears, a discovery filter exists and you do not need to create one. If no filter exists, follow the remaining steps to create an open filter that includes everything in your OV/NV topology.

- 5 Put an asterisk in IP Address Range, System Name, and System Description fields.
- 6 Leave the *Ask before adding new systems* check box unchecked.
- 7 In the System Types list box, select everything (select the first item in the list, scroll down to the bottom, and while holding the Shift key, select the last item in the list).
- 8 Click the **Add** button.
- 9 Click the **Apply** button.
- 10 Restart the Domain Manager.

Note: If you do not see the appropriate hosts and the OV/NV Initial Topology Reader is running, check the existing filters. The filters probably need to change.

Configuring the Adapter

The file, *server.conf*, configures the adapter. The adapter reads the configuration information when it starts. If you edit this file while the adapter is running, you need to restart the adapter so that it rereads its configuration file. An adapter run for OpenView reads the file in the **BASEDIR**/*smarts/conf/OV* directory while an adapter run for NetView reads the file in the **BASEDIR**/*smarts/conf/NV* directory.

The *server.conf* file specifies the name of the InCharge IP Domain Manager. If you use a name other than the default, INCHARGE-AM, for your Domain Manager, you must change the Remote Server Name in this file. Use the *sm_edit* utility to change the file.

```
remoteServerName = "INCHARGE-AM" # This field must be filled in!
```

Note: The *server.conf* file is used by the OV/NV Initial Topology Reader, the OV/NV Topology Update Reader, and the OV/NV Trap Forwarder. If these adapters exist on the same machine, they must communicate with the same InCharge IP Domain Manager.

Synchronizing the InCharge Topology With OV/NV

The OV/NV Initial Topology Reader adds topology information to a Domain Manager and does not check to see that the topology in OV/NV is synchronized with the topology in InCharge. For example, if you unmanage OV/NV nodes while the OV/NV Initial Topology and OV/NV Topology Update Readers are stopped, by default, their counterparts will not get deleted from InCharge when you restart the adapters.

You can change the manner in which the OV/NV Initial Topology Reader works to remove unmanaged or stale InCharge information. This change causes InCharge to delete any elements from its topology that OV/NV does not manage.

To configure this adapter to match the InCharge topology to the OV/NV topology, do the following:

- 1 Use the `sm_edit` utility to open one of the following files.

BASEDIR/*smarts/conf/OV/sm_ovtopo.lrf* (OpenView)

BASEDIR/*smarts/conf/NV/sm_nvtopo.lrf* (NetView)

- 2 Add the option in the file as follows and save the file.

```
-DremoveStaleSystems=TRUE
```

By default, the value is FALSE. In other words, elements in the InCharge topology not managed by OV/NV are not deleted.

- 3 Stop the OV/NV Initial Topology Reader.
- 4 Delete the original lrf from OV/NV (OpenView listed first):

```
/opt/OV/bin/ovdelobj sm_ovtopo.lrf
```

or

```
/usr/OV/bin/ovdelobj sm_nvtopo.lrf
```

- 5 Execute the following (OpenView listed first):

```
/opt/OV/bin/ovaddobj▼
```

```
▲ BASEDIR/smarts/conf/OV/sm_ovtopo.lrf
```

Note: The command must be typed as one line.

or

```
/usr/OV/bin/ovaddobj BASEDIR/smarts/conf/NV/sm_nvtopo.lrf
```

- 6 Start the OV/NV Initial Topology Reader.

Starting and Stopping the Adapter

See [Starting OV/NV Adapters](#) on page 10 and [Stopping OV/NV Adapters](#) on page 11 for the procedures to start and stop the OV/NV Initial Topology Reader.

4

OpenView/NetView Topology Update Reader

Topology Update Reader

The OV/NV Topology Update Reader process sends changes in the OV/NV topology to InCharge. Unlike the OV/NV Initial Topology Reader, this adapter process does not create an initial topology. It updates the topology. You should run this adapter in conjunction with the OV/NV Initial Topology Reader. The management status of network elements should also be controlled through OV/NV.

The OV/NV Topology Update Reader waits for OV/NV events and performs the following actions based on the event. Table 9 shows the OV/NV events that the adapter reads and passes to the Domain Manager.

OV/NV EVENT	OV/NV TOPOLOGY UPDATE READER ACTION
OV_Managed_Node	Adds device to the Pending Devices list and extracts the community string
OV_Node_Added	Adds device to the Pending Devices list and extracts the community string
OV_Subnet_Mask_Chg	Adds device to the Pending Devices list and extracts the community string if the corresponding device already exists in the InCharge topology
OV_IF_Added	Adds device to the Pending Devices list and extracts the community string if the corresponding device already exists in the InCharge topology

OV/NV EVENT	OV/NV TOPOLOGY UPDATE READER ACTION
OV_Forw_Status_Chg	Adds device to the Pending Devices list and extracts the community string if the corresponding device already exists in the InCharge topology
OV_Sys_Name_Chg	Adds device to the Pending Devices list and extracts the community string if the corresponding device already exists in the InCharge topology
OV_Node_Deleted	Deletes the device from the InCharge topology and Discovery Pending List
OV_Unmanage_Node	Deletes the device from the InCharge topology and Discovery Pending List
OV_Manage_IF	Manages associated objects in InCharge
OV_Unmanage_IF	Unmanages associated objects in InCharge

Table 9: OV/NV Events and OV/NV Topology Update Reader Handling

Configuring the OV/NV Topology Update Reader

The same configuration conditions that apply to the OV/NV Initial Topology Reader also apply for this adapter. If both of the topology readers run on the same machine, configuration done for one automatically applies to the other.

Starting and Stopping the Adapter

See [Starting OV/NV Adapters](#) on page 10 and [Stopping OV/NV Adapters](#) on page 11 for the procedures to start and stop the OV/NV Topology Update Reader.

OpenView/NetView Trap Forwarder

Trap Forwarder

The OV/NV Trap Forwarder process forwards SNMP traps that originate outside of OpenView or NetView to InCharge when InCharge cannot receive traps on the default SNMP TRAP port (162). This occurs in two cases:

- When Open View or NetView and InCharge are installed on the same machine and OpenView or NetView uses port 162.
- When InCharge is installed on a different machine, but you do not want to change the configuration of the SNMP devices to send SNMP traps to InCharge instead of sending them (or in addition to sending them) to OpenView or NetView.

Figure 1 shows how the OV/NV Trap Forwarder passes non-OV/NV SNMP traps from OpenView or NetView to an InCharge IP Domain Manager.

For a complete list of SNMP traps used by InCharge IP Availability Manager, refer to the *InCharge IP Availability Manager User's Guide*. For a complete list of SNMP Traps used by InCharge IP Performance Manager, refer to the *InCharge IP Performance Manager User's Guide*

Configuring the OV/NV Trap Forwarder

The file, *server.conf*, configures the adapter. The adapter reads the configuration information when it starts. If you edit this file while the adapter is running, you need to restart the adapter so that it rereads its configuration file. An adapter run for OpenView reads the file in the **BASEDIR**/*smarts/conf/OV* directory while an adapter run for NetView reads the file in the **BASEDIR**/*smarts/conf/NV* directory.

The *server.conf* file specifies the name of the InCharge Domain Manager. If you use a name other than the default, INCHARGE-AM, for Domain Manager, you must change the Remote Server Name in this file. Use the *sm_edit* utility to change the file.

```
remoteServerName = "INCHARGE-AM" # This field must be filled  
in!
```

Note: The *server.conf* file is used by the OV/NV Initial Topology Reader, the OV/NV Topology Update Reader, and the OV/NV Trap Forwarder. If these adapters exist on the same machine, they must communicate with the same InCharge Domain Manager.

Starting and Stopping the Adapter

See [Starting OV/NV Adapters](#) on page 10 and [Stopping OV/NV Adapters](#) on page 11 for the procedures to start and stop the OV/NV Trap Forwarder.

A

Troubleshooting Adapters

This appendix contains resolutions to common issues experienced by adapter users involving OV/NV adapters

Table 10 shows the complete list of issues covered in this appendix, organized by adapter. Under each adapter is a list of common issues corresponding to the heading in the appendix that discusses the solution.

ISSUES	SOLUTION (HEADING IN APPENDIX)
OV/NV Initial Topology Reader	
Does not start.	OV/NV Adapter Fails to Start on page 26
Does not connect to Domain Manager.	OV/NV Adapter Starts, but Fails to Connect to Domain Manager on page 27
No topology is imported from OpenView or NetView.	Device is Not Added to the InCharge Topology on page 29
Some, but not all, of the topology is imported from OpenView or NetView into InCharge.	InCharge Topology Does Not Match OV/NV Topology on page 29
After restarting the adapter, devices that should have been deleted from InCharge still exist.	Device Is Not Deleted on page 31
OV/NV Topology Update Reader	
Does not start.	OV/NV Adapter Fails to Start on page 26
Does not connect to Domain Manager.	OV/NV Adapter Starts, but Fails to Connect to Domain Manager on page 27
New devices in OpenView or NetView are not added to the InCharge topology.	Device is Not Added to the InCharge Topology on page 29

ISSUES	SOLUTION (HEADING IN APPENDIX)
InCharge and OpenView or NetView topologies do not match.	InCharge Topology Does Not Match OV/NV Topology on page 29
Devices deleted from OpenView or NetView are not deleted from InCharge.	Device Is Not Deleted on page 31
The managed status of devices in InCharge is incorrect.	Managed Status Is Incorrect on page 31
OV/NV Trap Forwarder	
Does not start.	OV/NV Adapter Fails to Start on page 26
Does not connect to Domain Manager.	OV/NV Adapter Starts, but Fails to Connect to Domain Manager on page 27
Traps do not reach the InCharge Domain Manager.	Traps Not Received by the InCharge Domain Manager on page 31

Table 10: Issues Covered in this Appendix

OV/NV Adapter Fails to Start

Applies to: OV/NV Initial Topology Reader, OV/NV Topology Update Reader, OV/NV Trap Forwarder

All OpenView/NetView adapters are system processes started by OpenView or NetView. If any of these adapters fail to start, follow this checklist to diagnose the issue.

- 1 Check the status of OpenView or NetView.

These adapters will not start unless OpenView or NetView is running.

- 2 Check the Status of the adapter process with OV/NV using the **ovstatus** command. Table 11 lists the OV/NV process names.

ADAPTER	OPENVIEW PROCESS NAME NETVIEW PROCESS NAME
OV/NV Initial Topology Reader	sm_ov_topo sm_nv_topo
OV/NV Topology Update Reader	sm_ov_event sm_nv_event
OV/NV Trap Forwarder	sm_ov_fwd sm_nv_fwd

Table 11: OV/NV Adapters' Process Names

- 3 Do one of the following based on what you see:

- Start the adapter manually
- Register the adapter with OpenView or NetView

Start the Adapter Manually

If OpenView or NetView lists the adapter as not running, try to start the adapter manually. Use the **ovstart** command followed by the adapter process.

```
ovstart <adapter_process>
```

Table 11 lists the OpenView and NetView processes. See "Starting OV/NV Adapters" on page 10 for more information.

Register the Adapter with OpenView or NetView

If the adapter is not listed as an OpenView or NetView process, look in the install log file to make sure that the adapter was installed. If it was, the adapter needs to be registered with OV/NV. The command to register all of the OV/NV adapters for OpenView is:

```
/opt/OV/bin/ovaddobj  
BASEDIR/smarts/conf/OV/<registration file>
```

for NetView, use the following command:

```
/usr/OV/bin/ovaddobj BASEDIR/smarts/conf/NV/<registration  
file>
```

Table 12 lists the files used to register the OV/NV adapters.

OV/NV ADAPTER	OPENVIEW REGISTRATION FILE NETVIEW REGISTRATION FILE
OV/NV Initial Topology Reader	sm_ovtopo.lrf sm_nvtopo.lrf
OV/NV Topology Update Reader	sm_ovevent.lrf sm_nvevent.lrf
OV/NV Trap Forwarder	sm_ovfwd.lrf sm_nvfwd.lrf

Table 12: OV/NV Adapters' Registration Files

OV/NV Adapter Starts, but Fails to Connect to Domain Manager

Applies to: OV/NV Initial Topology Reader, OV/NV Topology Update Reader, OV/NV Trap Forwarder

When an adapter cannot connect to an InCharge Domain Manager, it is usually for one of the following reasons:

- Domain manager is not running
- Name of the Domain Manager is not the same as the name specified in the adapter's configuration file
- Domain manager cannot be reached from the host running the adapter

Check the Status of the Domain Manager

Use the **brcontrol** command to check the status of the Domain Manager.

The syntax is:

```
brcontrol
```

By default, this command returns a list of Domain Managers registered with the broker and their current state. The list indicates whether a Domain Manager's state is RUNNING or DEAD.

If the Domain Manager is not running or not included in the list, restart the Domain Manager.

Check the Name of the Domain Manager with the Configuration File

The configuration file of each adapter contains the name of the InCharge Domain Manager it connects to. In cases where an adapter cannot connect, check that the appropriate Domain Manager is specified in the adapter's configuration file.

Note: The OV/NV Initial Topology Reader, OV/NV Topology Update, and OV/NV Trap Forwarder share the same configuration file.

Check Communication to the Domain Manager

If the adapter and the Domain Manager run on different hosts, the adapter's host might not be able to communicate with the Domain Manager's host. Try to ping the Domain Manager from the adapter's host.

The OpenView or NetView host must be able to resolve the name of the InCharge host. The adapter will not fail if the name is not resolved but continues to wait to connect.

Device is Not Added to the InCharge Topology

Applies to: OV/NV Initial Topology Reader, OV/NV Topology Update Reader

This case only applies to the OV/NV Initial Topology Reader and the OV/NV Topology Update Reader. There are generally three reasons why devices do not get added to the InCharge topology. These common reasons are:

- Filters Set Up Incorrectly in InCharge (OpenView and NetView)
- Problem with DNS or Host File (OpenView and NetView)
- Devices Use Duplicate IP addresses

Create Filters in InCharge

Follow the steps for, "Configuring the Discovery Filter" on page 17. These steps show how to create a basic filter to import everything. Use the *InCharge IP Discovery Guide* to review the existing filters. If there are no filters configured, no devices will be imported.

Check for Problem with Name Resolution

If InCharge and OpenView or NetView are on different hosts, names might be resolved on the OpenView or NetView host, but not on the InCharge host. Check that the InCharge host can resolve all names the OpenView/NetView host can. Also, if you run multiple DNS servers, make sure the InCharge host uses the same DNS as OpenView or NetView. If there is a name resolution problem, no devices will be imported.

Correct the Duplicate IP Address Misconfiguration

If an IP address has already been discovered on one device and the same IP address is then found to be configured as the only SNMP agent address on another device, InCharge will not discover the second device. Correct the misconfiguration and attempt to discover the device again.

InCharge Topology Does Not Match OV/NV Topology

Applies to: OV/NV Initial Topology Reader, OV/NV Topology Update Reader

The common reasons why the InCharge topology will not match the OV/NV topology are:

- No purging of InCharge topology
- Incorrect filters in InCharge

- Problem with name resolution
- Incorrect SNMP access list

Configure InCharge to Purge Systems Not in the OV/NV Topology

By default, when you unmanage nodes in OpenView or NetView while the OV/NV Topology Readers are stopped, when the adapters start, InCharge is not updated with the information about the unmanaged nodes. A parameter to control this behavior, `removeStaleSystems`, is stored in:

- **BASEDIR**/*smarts/conf/OV/sm_ovtopo.lrf* (OpenView)
- **BASEDIR**/*smarts/conf/NV/sm_nvtopo.lrf* (NetView).

To change the parameter, follow the instructions used in "Synchronizing the InCharge Topology With OV/NV" on page 19.

Modify the InCharge Filters

Follow the steps for, "Configuring the Discovery Filter" on page 17. These steps show how to create an import filter to include every device in your OV/NV topology. Refer to the *InCharge IP Discovery Guide* to learn more about filters.

Check for Problem with DNS or Host File

If InCharge and OpenView or NetView are on different hosts, names might be resolved on the OpenView or NetView host, but not on the InCharge host. Check to see that the name translation for InCharge's host is operating consistently with the OV/NV host. Also, if you run multiple DNS servers, make sure the InCharge host uses the same DNS as OpenView or NetView.

Check the SNMP Access List

If OpenView or NetView has access to a device and InCharge does not, the issue may be that the SNMP access list for the device excludes the address of InCharge's host. Execute the following from the InCharge host:

```
sm_snmp --dest=<device> --snmp=<1|2c> --community=<string  
name> next .0.0
```

If this command times out, you do not have access to the device. If the command returns information, the InCharge host is included in the device's SNMP access list.

Device Is Not Deleted

Applies to: OV/NV Initial Topology Reader, OV/NV Topology Update Reader

In order for a device to get deleted from the InCharge topology, it must be deleted or unmanaged in the OpenView or NetView topology while the OV/NV Topology Update Reader is running. Verify that any device that is supposed to be deleted actually does not exist in the OV/NV topology.

If the adapter was not running when the device was deleted, you can either manually remove the device or configure the OV/NV Initial Topology Reader to remove stale systems and restart both OV/NV Topology Readers.

Managed Status Is Incorrect

Applies to: OV/NV Initial Topology Reader

If the managed status of a device appears to be incorrect, confirm its status in OpenView or NetView. Another cause could be a problem with duplicate IP addresses for devices in the OpenView or NetView environment. Once you confirm the managed status of the device or the duplicate IP address, restart the OV/NV Initial Topology Reader to try to correct the managed status.

Traps Not Received by the InCharge Domain Manager

Applies to: OV/NV Trap Forwarder

When the Domain Manager is not receiving traps from the OV/NV Trap Forwarder, there are two possible reasons. These reasons are:

- Adapter cannot resolve the name of the host
- Adapter is not running

Check for Problem with DNS or Host File

If InCharge and OpenView or NetView are on different hosts, the name of the InCharge host must be resolvable from the OpenView/NetView host in order for the OV/NV Trap Forwarder to work. Check to see that the name of the InCharge host is correct and that the name translation for the OV/NV host is operating consistently with InCharge's host. Also, if you run multiple DNS servers, make sure that OpenView or NetView host uses the same DNS as the InCharge host.

Check the Status of the OV/NV Trap Forwarder

You check the status of the adapter using an OpenView or NetView command called **ovstatus**. If the OV/NV Trap Forwarder is running, `sm_ov_fwd` (for OpenView) or `sm_nv_fwd` (for NetView) appears in the output of **ovstatus**.

To start this adapter type:

```
ovstart sm_ov_fwd
```

or

```
ovstart sm_nv_fwd
```

B

SMARTS Corporate MIB

The following is the MIB implemented by SMARTS for SNMP Traps.

```
-- SMARTS-MIB.my: SMARTS corporate MIB
--
-- Copyright (C) 2003 by System Management ARTS, Inc.
-- All Rights Reserved
--
-- RCS $Id: SMARTS-MIB.my,v 1.1 2000/07/10 17:39:52 jweiss
Exp $
--
SMARTS-MIB DEFINITIONS ::= BEGIN

IMPORTS

    enterprises, Counter32, OBJECT-TYPE,
    MODULE-IDENTITY, OBJECT-IDENTITY, NOTIFICATION-TYPE
    FROM SNMPv2-SMI;

smartsMIB MODULE-IDENTITY
    LAST-UPDATED "9909232300Z"
    ORGANIZATION "System Management ARTS"
    CONTACT-INFO
        "          Support
```

Postal: System Management ARTS
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DESCRIPTION

"The MIB module for entities defined by
System Management ARTS, Inc."

::= { enterprises 733 }

-- top level groups in the SMARTS-MIB

-- The smNotificationTrap Group.

smNotificationTrap OBJECT-IDENTITY

STATUS current

DESCRIPTION

"This group is acutally the prefix one uses when
creating

enterprise-specific trap OID's for an SNMPv2 trap.
It is

used in the SMARTS MIBS when defining traps."

::= { smartsMIB 0 }

-- The smNotificationData Group.

smNotificationData OBJECT-IDENTITY

STATUS current

DESCRIPTION

"The members of this group are the OIDs for VarBinds

```
        containing notification data."
 ::= { smartsMIB 2 }

-- Group for generic notification data.

smGenericNotify OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "The members of this group are the OIDs for VarBinds
        containing generic notification data."
    ::= { smNotificationData 1 }

smNotifTimestamp OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The timestamp of the notification."
    ::= { smGenericNotify 1 }

smNotifServer OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The name of the server that is sending the
        notification."
    ::= { smGenericNotify 2 }

smNotifClass OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS accessible-for-notify
```

```
STATUS current
DESCRIPTION
    "The class of the object associated with the
notification."
 ::= { smGenericNotify 3 }

smNotifInstance OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The instance name of the object associated with the
notification."
    ::= { smGenericNotify 4 }

smNotifEventName OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The name of the event causing the notification."
    ::= { smGenericNotify 5 }

smNotifInstanceID OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The unique InCharge inventory identification
        for the object associated with the notification."
    ::= { smGenericNotify 6 }

smNotifDescription OBJECT-TYPE
```

```
SYNTAX OCTET STRING
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "A complete description of the event."
 ::= { smGenericNotify 7 }
```

```
smNotifCertainty OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The certainty of the event. Floating-point number
in the
        range 0-100, stored as a string."
 ::= { smGenericNotify 8 }
```

```
smNotifSeverity OBJECT-TYPE
    SYNTAX INTEGER {
        notApplicable (1),
        informational (2),
        warning (3),
        minor (4),
        major (5),
        severe (6)
    }
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The severity of the event. Integer number in the
range 1-6."
 ::= { smGenericNotify 9 }
```

```
-- The SMARTS enterprise Traps
--
-- These are the enterprise-specific trap codes currently in-
use in
-- SMARTS software.  The final sub-OID of each object is the
code sent
-- in the "specific-trap" field of an SNMPv1 Trap-PDU.
--
-- The definition of these objects mimics the SNMPv2
convention for
-- sending traps:  Take the enterprise OID, append 0, then
append the
-- trap code.

-- TRAP NUMBER USE:  Trap code 0 is reserved (by SNMP).
--
--                   Trap codes 1-3 are used by the SMARTS-OV-
NV-MIB.

-- TRAPS 4-7:  The "smTrap*" series of traps define "base" trap
--
--             numbers, ones with a generic purpose.  These
traps are
--
--             also used by the generic Trap Adapter.

smTrapNotification NOTIFICATION-TYPE
    OBJECTS {
        smNotifTimestamp,
        smNotifServer,
        smNotifClass,
        smNotifInstance,
        smNotifEventName,
        smNotifInstanceID,
        smNotifDescription,
        smNotifCertainty,
        smNotifSeverity
    }
    STATUS current
```

DESCRIPTION

"A trap describing an InCharge root cause notification.

The text in smNotifDescription indicates the nature of

the problem."

::= { smNotificationTrap 4 }

smTrapCertaintyChange NOTIFICATION-TYPE

```
OBJECTS {  smNotifTimestamp,
           smNotifServer,
           smNotifClass,
           smNotifInstance,
           smNotifEventName,
           smNotifInstanceID,
           smNotifDescription,
           smNotifCertainty,
           smNotifSeverity
        }
```

STATUS current

DESCRIPTION

InCharge "A trap indicating a certainty change of an

notification. The text in smNotifDescription indicates

the nature of the problem."

::= { smNotificationTrap 5 }

smTrapSeverityChange NOTIFICATION-TYPE

```
OBJECTS {  smNotifTimestamp,
           smNotifServer,
           smNotifClass,
           smNotifInstance,
           smNotifEventName,
```

```

        smNotifInstanceID,
        smNotifDescription,
        smNotifCertainty,
        smNotifSeverity
    }
STATUS current
DESCRIPTION
    "A trap indicating a severity change of an
InCharge
notification. The text in smNotifDescription
indicates
the nature of the notification."
 ::= { smNotificationTrap 6 }

smTrapNotificationClear NOTIFICATION-TYPE
OBJECTS {
    smNotifTimestamp,
    smNotifServer,
    smNotifClass,
    smNotifInstance,
    smNotifEventName,
    smNotifInstanceID,
    smNotifDescription,
    smNotifCertainty,
    smNotifSeverity
}
STATUS current
DESCRIPTION
    "A trap indicating the clear of an InCharge
notification."
 ::= { smNotificationTrap 7 }

-- TRAP NUMBER USE: Trap codes 8-99 are reserved for future
"base trap number"
--
    use.
```

```
--  
--           Trap codes 100-133 are used by SMARTS-  
PERFORMANCE-MIB.  
--           Trap codes 134-199 are reserved for future  
use by  
--           SMARTS-PERFORMANCE-MIB.  
  
END
```

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