EMC® Smarts® IP Adapters

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User's Guide

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Preface

This guide provides information about how you can use the EMC Smarts Adapter for HP OpenView NNM or the EMC Smarts Adapter for IBM/Tivoli NetView to manage the flow of data from those products to your EMC Smarts IP Manager.

The Adapter for HP OpenView Network Node Manager and the Adapter for IBM/Tivoli NetView are adapters that collect information from an OV/NV managed network and send it to an EMC Smarts 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 EMC Smarts Adapter for HP OpenView Network Node Manager or the EMC Smarts 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 EMC Smarts IP Domain Manager and an EMC Smarts Adapter for OV/NV have already been installed. For more information about installation, refer to the *EMC Smarts IP Management Suite Installation Guide.*

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

EMC Smarts IP Management Suite installation directory

In this document, the term BASEDIR represents the location where EMC Smarts software is installed.

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

The <n> represents the EMC Smarts software platform version number. The <productsuite> represents the EMC Smarts product suite to which the product belongs. For example, on UNIX operating systems, EMC Smarts IP Availability Manager is, by default, installed to: /opt/InCharge7/IP/smarts. On Windows

operating systems, this product is, by default, installed to: C:\InCharge7\IP\smarts. This location is referred to as BASEDIR/smarts.

Optionally, you can specify the root of BASEDIR to be something other than /opt/InCharge7 (on UNIX) or C:\InCharge7 (on Windows), but you cannot change the <productsuite> location under the root directory.

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

EMC Smarts IP Management Suite products

The EMC Smarts IP Management Suite includes the following products:

- EMC Smarts IP Availability Manager
- EMC Smarts IP Discovery Manager
- EMC Smarts IP Performance Manager
- EMC Smarts IP Server Performance Manager
- EMC Smarts Adapter for HP OpenView NNM
- EMC Smarts Adapter for IBM/Tivoli NetView

Related documentation

In addition to this document, EMC Corporation provides a Help system for command line programs as well as product documentation.

Help for command line programs

Descriptions of command line programs 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.

EMC Smarts documentation

Readers of this guide may find the following related documentation helpful. It can be found in the BASEDIR/smarts/doc/pdf directory.

Note: These documents are updated periodically. Electronic versions of the updated manuals are available on the Powerlink website: **http://Powerlink.EMC.com**.

- *EMC Smarts Documentation Catalog*
- *EMC Smarts System Administration Guide*
- *EMC Smarts ICIM Reference*
- *EMC Smarts Common Information Model Infrastructure Models Chart*
- *EMC Smarts Common Information Model Application/Business Models Chart*
- *EMC Smarts ASL Reference Guide*
- *EMC Smarts Perl Reference Guide*
- *EMC Smarts Dynamic Modeling Tutorial*
- *EMC Smarts MODEL Reference Guide*

EMC Smarts IP Management Suite documentation

The following EMC Smarts documents are relevant to users of the IP Management product suite:

- *EMC Smarts IP Management Suite Installation Guide*
- *EMC Smarts IP Management Suite Deployment Guide*
- *EMC Smarts IP Management Suite Configuration Guide*
- *EMC Smarts IP Management Suite Discovery Guide*
- *EMC Smarts IP Availability Manager User's Guide*
- *EMC Smarts IP Performance Manager and Server Performance Manager User's Guide*
- *EMC Smarts IP Adapters User's Guide*
- *EMC Smarts IP Availability Manager Extension for IPv6 User's Guide*
- *EMC Smarts IP Availability Manager Extension for NAS User's Guide*
- *EMC Smarts Quick Start Guide*

Refer to the *EMC Smarts Documentation Catalog* for documentation resources provided with other EMC Smarts product suites.

Suggestions for searching PDF files

You may search across multiple PDF files using the Adobe Acrobat Reader software.

1. If the documentation is not accessible to all users of the EMC Smarts product suite, copy the contents of the *BASEDIR/smarts/doc/pdf d*irectory to a central location, such as a shared drive on your LAN, that operators and others may view.
2. To search throughout the documentation library, open the Acrobat Reader software.
   1. Choose **Edit** > **Search**, and enter a word or phrase.
   2. In the **Where would you like to search** option, select **All PDF Documents in** and type the pathname of the location where the PDF documents reside.

If you have more than one EMC Smarts product suite installed, you can set up cross-product document searches by copying files from the BASEDIR/smarts/doc/pdf directory for each product suite into this common documentation directory path.

Conventions used in this guide

EMC uses the following conventions for notes and cautions.

Note: A note presents information that is important, but not hazard-related.

IMPORTANT

An important notice contains information essential to the operation of the software.

CAUTION

A caution contains information essential to avoid data loss or damage to the system or equipment. The caution may apply to hardware or software.

Typographical conventions

EMC uses the following conventions in this guide:

Normal font	In running text: • Interface elements (for example, button names, dialog box names) outside of procedures • Items that the user selects outside of procedures • Java classes and interface names • Names of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, filenames, functions, menu names, utilities • Pathnames, URLs, filenames, directory names, computer names, links, groups, service keys, file systems, environment variables (for example, command line and text), notifications
Bold	In procedures: • Names of dialog boxes, buttons, icons, menus, fields, and maps • Selections from the user interface, including menu items, and field entries • Key names • Window names • Code examples • Commands • User interface tabs
Italic	Used for: • Full publications titles referenced in text In procedures: • Directory paths • Filenames • Scripts • Important/unique words • URLs • Utilities • Variables
`Courier`	Used for: • System output • User entry
< >	Angle brackets used to enclose parameter or variable values supplied by the user.
[ ]	Square brackets used to indicate optional values.
|	Vertical bar used to indicate alternate selections. The bar means “or”.
{ }	Braces used to indicate content that you must specify (that is, x or y or z).
...	Ellipses used to indicate nonessential information omitted from the example.
%	Used to indicate a C shell prompt.
#	Used to indicate a C shell superuser prompt.
▼▲	Used to indicate a command is wrapped over one or more lines. The command must be typed as one line.

Pathname conventions

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

Graphical conventions

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.

Smarts Manager

Unless otherwise specified, the term Smarts Manager is used to refer to EMC Smarts programs such as Domain Managers, Global Managers, and adapters.

Where to get help

EMC support, product, and licensing information can be obtained as follows:

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink™ website (registration required) at:

http://Powerlink.EMC.com

Technical support — For technical support, go to EMC Customer Service on Powerlink. To open a service request through Powerlink, you must have a valid support agreement. Please contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

Sales and customer service contacts — For the list of EMC sales locations, please access the EMC home page at:

http://EMC.com/contact

1

Introduction

The EMC Smarts Adapter for HP OpenView NNM and the EMC Smarts Adapter for 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 EMC Smarts IP Domain Manager (Availability Manager, Performance Manager, or Discovery Manager).

- Adapter deployment 1-2
- Adapter features 1-4
- Configuration files 1-4
- Modifying adapter configuration files 1-5

Adapter deployment

The Initial Topology Reader and the Topology Update Reader initialize an EMC Smarts IP Availability Manager or EMC Smarts IP 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 1-1 illustrates a typical deployment of the OV/NV adapter.

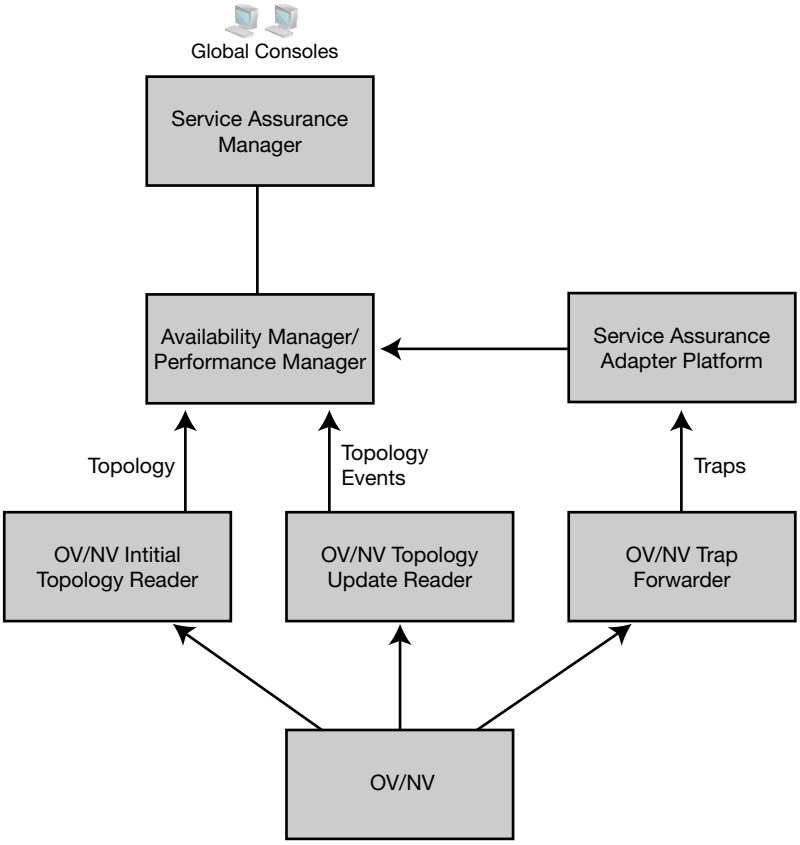

Figure 1-1 Typical deployment of OV/NV adapter processes

It is also possible to deploy the OV/NV Trap Forwarder without Service Assurance Manager and the Service Assurance Manager Adapter Platform. Figure 1-2 illustrates this deployment.

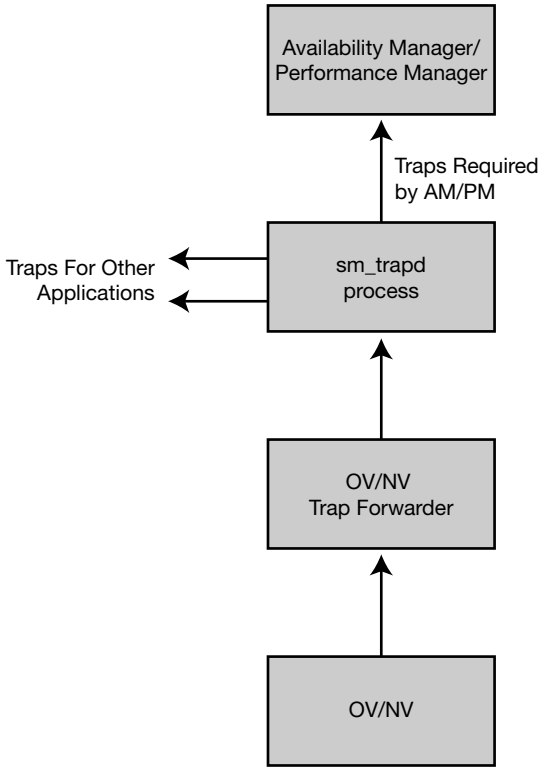

Figure 1-2 Deployment of OV/NV Trap Forwarder without Service Assurance Manager

Table 1-1 describes the purpose of the processes.

Table 1-1 EMC Smarts OV/NV adapter processes and purposes

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

Adapter features

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

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

For more information about the installation of adapters, see the *EMC Smarts IP Management Suite 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 1-2 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 1-5 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.

Table 1-2 Adapter process and configuration requirements

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.

Modifying adapter configuration files

As part of the EMC Smarts deployment and configuration process, you need to modify certain files. User modifiable files include configuration files, rule set files, templates, and files (such as seed files, and security configuration files) that contain encrypted passwords. Original versions of these files are installed into appropriate subdirectories under the BASEDIR/smarts/ directory.

Examples:

- The original versions of the Global Manager configuration files on UNIX are installed to /opt/InCharge7/SAM/smarts/conf/ics
- The original versions of the Console configuration files on Windows are installed on C:\InCharge7\SAM\smarts\conf\console

Original versions of files should not be altered. If a file requires modification, it must be stored as a local copy of the file in BASEDIR/smarts/local or one of its subdirectories.

Examples:

- A modified ics.conf file on UNIX should be saved to /opt/InCharge7/SAM/smarts/local/conf/ics
- A modified properties.conf file on Windows should be saved to C:\InCharge7\SAM\smarts\local\conf\console.

Smarts 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, Smarts software then searches appropriate nonlocal directories.

To facilitate proper file editing, EMC Corporation provides the sm_edit utility with every Smarts product suite. 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. 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 to edit under BASEDIR/smarts. If multiple Smarts products are running on the same host, invoke sm_edit from the bin directory of the product suite with the files to edit.

Example:

To edit the configuration file for the Global Manager, invoke the sm_edit utility as follows:

```
# /opt/InCharge7/SAM/smarts/bin>sm_edit conf/ics/ics.conf
```

In this example, the sm_edit utility automatically creates a local copy of the ics.conf file in the /opt/InCharge7/SAM/smarts/local/conf/ics directory 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 subdirectories.

The *EMC Smarts System Administration Guide* provides additional information about the sm_edit utility.

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Running EMC Smarts Adapters for OpenView/NetView

The EMC Smarts 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.

- Configuring OV/NV adapter 2-2
- OpenView account and service requirements 2-2
- Starting OV/NV adapters 2-4
- Stopping OV/NV adapters 2-5
- Logging OV/NV adapters' history 2-5

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 EMC Smarts 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 1-5 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 EMC Smarts 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. EMC Corporation 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:

Table 2-1

Field	Value
Username	OpenView
Full Name	OpenView Administration
Description	Permit operation from OpenView services
Password	***password***
Confirm Password	password

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 Browse. 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. *Yo*u 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 2-2 lists the names of the adapter processes (OpenView processes are listed first).

Table 2-2 OV/NV adapter process names

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

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 2-3.

Table 2-3 Standard startup options

Option	Description
`--help`	Prints help text and exits
`--version`	Prints program version and exits
`--daemon`	Runs the process as a daemon (UNIX only)
`--logname=<name>`	Use *<name>* to identify the sender recorded in the system log. The default value is the program's name

Table 2-3 Standard startup options (continued)

Option	Description
`--loglevel=<level>`	The minimum system logging level; default value = *Error* Values for *level*: None, Emergency, Alert, Critical, Error, Warning, Notice, Informational, Debug or Fatal (a synonym for Critical)
`--errlevel=<level>`	The minimum error printing level; default value = *Warning* Values for *level*: None, Emergency, Alert, Critical, Error, Warning, Notice, Informational, Debug or Fatal (a synonym for Critical)
`--output [=<file>]`	Redirects output (of stdout and stderr) to ***BASEDIR****/logs/<file>.log*; If *<file>* not specified the value of *--logname* is used

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 2-4 lists the OV/NV adapters and their related log names.

Table 2-4 OV/NV adapters and 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

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

3

OpenView/NetView Initial Topology Reader

This chapter describes the Initial Topology Reader adapter. Topics include:

- Initial Topology Reader 3-2
- Configuring the OV/NV Initial Topology Reader 3-3
- Synchronizing the EMC Smarts topology With OV/NV 3-6
- Starting and stopping the adapter 3-6

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 EMC Smarts 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
- EMC Smarts 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 EMC Smarts 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 EMC Smarts 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. EMC Smarts makes a distinction between the IP address and the interface. EMC Smarts 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 EMC Smarts. If you use EMC Smarts, 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 EMC Smarts topology With OV/NV" on page 3-6 for information about managing network elements.

Figure 3-1 shows how the OV/NV Initial Topology Reader is a conduit between OpenView or NetView and an EMC Smarts IP Domain Manager. If OV/NV manages the topology, the Domain Manager only receives the managed nodes.

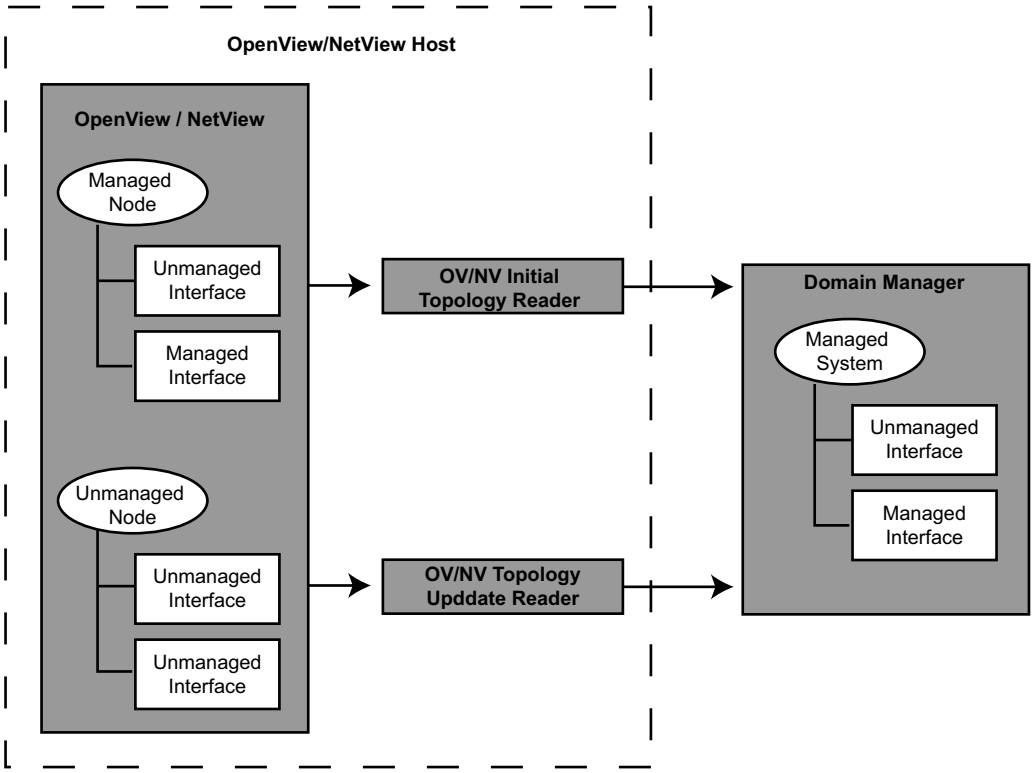

Figure 3-1 OV/NV Initial Topology Reader and domain manager interactions

Configuring the OV/NV Initial Topology Reader

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

1. Modify discovery parameters. (See "Modifying the discovery.conf and name-resolver.conf configuration files" on page 3-3.)
2. Create a discovery filter and system limit for the Domain Manager. (See "Configuring the discovery filter" on page 3-4.)
3. Modify the configuration file, *server.conf*. (See "Configuring the adapter" on page 3-5.)

Modifying the discovery.conf and name-resolver.conf configuration files

An EMC Smarts application performs its own discovery of the devices retrieved by the OV/NV Initial Topology Reader. Because of network conditions or other factors, EMC Smarts software 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.

EMC Corporation recommends that you edit the ShowPendingNONSNMP and NameFormat parameters so that undiscovered devices are stored in the Pending Devices List. Use the sm_edit utility to edit the default parameter values in the discovery.conf and name-resolver.conf files. These files are located in the BASEDIR/smarts/conf/discovery directory.

Change ShowPendingNONSNMP and NameFormat parameters

1. In the discovery.conf file, 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. In the name-resolver.conf file, change the value of the NameFormat parameter to "TM_USESEEDNAME" by removing the comment (#) indicator at the start of the line. Add the comment (#) indicator to the default value, "TM_USEAUTONAME," to disable it.

   When you set the value of NameFormat to "TM_USESEEDNAME", EMC Smarts 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 and name-resolver.conf to make the changes take effect. The topology adapters automatically reconnect to the Domain Manager.

Note: Configuration of the NameFormat parameters moved from the discovery.conf file to the name-resolver.conf file with the 6.2SP2 release.

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 *EMC Smarts IP Management Suite 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 EMC Smarts. 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 EMC Smarts IP Management Suite 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 *EMC Smarts IP Management Suite Discovery Guide*.

1. Run the Administration Console and connect to the 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 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 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 EMC Smarts IP Domain Manager.

Synchronizing the EMC Smarts 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 EMC Smarts. 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 EMC Smarts when you restart the adapters.

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

To configure this adapter to match the EMC Smarts 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; elements in the EMC Smarts 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
   ```

   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 2-4 and "Stopping OV/NV adapters" on page 2-5 for the procedures to start and stop the OV/NV Initial Topology Reader.

4

OpenView/NetView Topology Update Reader

This chapter describes the Topology Update Reader adapter. Topics include:

- Topology Update Reader 4-2
- Configuring the OV/NV Topology Update Reader 4-3
- Starting and stopping the adapter 4-3

Topology Update Reader

The OV/NV Topology Update Reader process sends changes in the OV/NV topology to EMC Smarts. 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 4-1 shows the OV/NV events that the adapter reads and passes to the Domain Manager.

Table 4-1 OV/NV Events and OV/NV Topology Update Reader Handling

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 EMC Smarts topology
OV_IF_Added	Adds device to the Pending Devices list and extracts the community string if the corresponding device already exists in the EMC Smarts topology
OV_Forw_Status_Chg	Adds device to the Pending Devices list and extracts the community string if the corresponding device already exists in the EMC Smarts 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 EMC Smarts topology
OV_Node_Deleted	Deletes the device from the EMC Smarts topology and Discovery Pending List
OV_Unmanage_Node	Deletes the device from the EMC Smarts topology and Discovery Pending List
OV_Manage_IF	Manages associated objects in EMC Smarts
OV_Unmanage_IF	Unmanages associated objects in EMC Smarts

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 2-4 and "Stopping OV/NV adapters" on page 2-5 for the procedures to start and stop the OV/NV Topology Update Reader.

5

OpenView/NetView Trap Forwarder

This chapter describes the Trap Forwarder adapter. Topics include:

- Trap Forwarder 5-2
- Configuring the OV/NV Trap Forwarder 5-2
- Starting and stopping the adapter 5-2

Trap Forwarder

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

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

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

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

Starting and stopping the adapter

See "Starting OV/NV adapters" on page 2-4 and "Stopping OV/NV adapters" on page 2-5 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 A-1 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.

Table A-1 Issues Covered in This appendix

Issues	Solution (Heading in Appendix)
Unable to launch ovaddobj.exe.	"OV adapter fails during installation" on page A-2
OV/NV Initial Topology Reader	
Does not start.	"OV/NV adapter fails to start" on page A-3
Does not connect to Domain Manager.	"OV/NV adapter starts, but fails to connect to domain manager" on page A-4
No topology is imported from OpenView or NetView.	"Device is not added to the EMC Smarts topology" on page A-5
Some, but not all, of the topology is imported from OpenView or NetView into EMC Smarts.	"EMC Smarts topology does not match OV/NV topology" on page A-5
After restarting the adapter, devices that should have been deleted from EMC Smarts still exist.	"Device is not deleted" on page A-6
OV/NV Topology Update Reader	
Does not start.	"OV/NV adapter fails to start" on page A-3
Does not connect to Domain Manager.	"OV/NV adapter starts, but fails to connect to domain manager" on page A-4
New devices in OpenView or NetView are not added to the topology.	"Device is not added to the EMC Smarts topology" on page A-5
EMC Smarts and OpenView or NetView topologies do not match.	"EMC Smarts topology does not match OV/NV topology" on page A-5
Devices deleted from OpenView or NetView are not deleted from EMC Smarts.	"Device is not deleted" on page A-6
The managed status of devices in EMC Smarts is incorrect.	"Managed status is incorrect" on page A-6
OV/NV Trap Forwarder	

Table A-1 Issues Covered in This appendix (continued)

Issues	Solution (Heading in Appendix)
Does not start.	"OV/NV adapter fails to start" on page A-3
Does not connect to Domain Manager.	"OV/NV adapter starts, but fails to connect to domain manager" on page A-4
Traps do not reach the Domain Manager.	"Traps not received by the EMC Smarts domain manager" on page A-6

OV adapter fails during installation

When HP OpenView 6.2 is installed on Windows, the pathname may contain spaces that are not converted properly in the EMC Smarts OV_TOPO.import file. By default, HP OpenView 6.2 installs itself in Program Files/HP OpenView.

The resolution has two steps:

1. Modify the OV_TOPO.import file.
2. Register EMC Smarts with HP OpenView.

Modifying the OV_TOPO.import file

The file BASEDIR\smarts\conf\OV\OV_TOPO.import must be modified to state the correct path to the OpenView *ovtopodump* executable.

In the GA_Driver section of *OV_TOPO.import* (see below), the command string setting should be changed from:

```
ReadsInputFrom = GA_ProgramFE::OpenView-Topology-FE
   {
   commandString = "/opt/OV/bin/ovtopodump -rl"
   }
```

to:

```
commandString =
   "C:\Program Files\HP OpenView\opt\OV\bin\ovtopodump -rl"
```

Registering EMC Smarts with HP OpenView

Next, the EMC Smarts registration files must be registered with OpenView. Use the following command (all on one line):

```
▼C:\"Program Files\HP OpenView"\NNM\bin\ovaddobj.exe
   C:\InCharge6\IP\smarts\conf\OV\sm_ovtopo.lrf ▲
```

Repeat for each file: sm_ovevent.lrf, sm_ovfwd.lrf, sm_ovlog.lrf, and sm_ovtopo.lrf.

Alternatively, change directory to HP OpenView with the following command:

```
cd C:\"Program Files\HP OpenView"\NNM
```

Then issue the following four commands (each on one line):

```
bin\ovaddobj C:\InCharge6\IP\smarts\conf\OV\sm_ovevent.lrf
bin\ovaddobj C:\InCharge6\IP\smarts\conf\OV\sm_ovfwd.lrf
bin\ovaddobj C:\InCharge6\IP\smarts\conf\OV\sm_ovlog.lrf
bin\ovaddobj C:\InCharge6\IP\smarts\conf\OV\sm_ovtopo.lrf
```

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 A-2 lists the OV/NV process names.

Table A-2 OV/NV adapters' 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

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 A-2 lists the OpenView and NetView processes. See "Starting OV/NV adapters" on page 2-4 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 A-3 lists the files used to register the OV/NV adapters.

Table A-3 OV/NV Adapters' Registration Files

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

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 EMC Smarts 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 EMC Smarts Domain Manager to which it connects. 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 EMC Smarts host. The adapter will not fail if the name is not resolved but continues to wait to connect.

Device is not added to the EMC Smarts 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 topology. These common reasons are:

- Filters set up incorrectly in EMC Smarts (OpenView and NetView)
- Problem with DNS or host file (OpenView and NetView)
- Devices use duplicate IP addresses

Create filters in EMC Smarts

Follow the steps for, "Configuring the discovery filter" on page 3-4. These steps show how to create a basic filter to import everything. Use the *EMC Smarts IP Management Suite 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 EMC Smarts and OpenView or NetView are on different hosts, names might be resolved on the OpenView or NetView host, but not on the EMC Smarts host. Check that the EMC Smarts host can resolve all names that the OpenView/NetView host can. Also, if you run multiple DNS servers, make sure the EMC Smarts 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, EMC Smarts will not discover the second device. Correct the misconfiguration and attempt to discover the device again.

EMC Smarts topology does not match OV/NV topology

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

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

- No purging of EMC Smarts topology
- Incorrect filters in EMC Smarts
- Problems with name resolution
- Incorrect SNMP access list

Configure EMC Smarts to purge systems not in the OV/NV topology

By default, if the OV/NV Topology Readers are stopped when you unmanage nodes in OpenView or NetView, EMC Smarts is not updated with the information about the unmanaged nodes when the adapters start. 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 EMC Smarts topology With OV/NV" on page 3-6.

Modify the EMC Smarts filters

Follow the steps for, "Configuring the discovery filter" on page 3-4. These steps show how to create an import filter to include every device in your OV/NV topology. Refer to the *EMC Smarts IP Management Suite Discovery Guide* to learn more about filters.

Check for problem with DNS or host file

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

Check the SNMP access list

If OpenView or NetView has access to a device and EMC Smarts does not, the issue may be that the SNMP access list for the device excludes the address of the EMC Smarts host. Execute the following from the EMC Smarts 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 EMC Smarts 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 EMC Smarts 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 EMC Smarts 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 EMC Smarts and OpenView or NetView are on different hosts, the name of the EMC Smarts 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 EMC Smarts host is correct and that the name translation for the OV/NV host is operating consistently with the EMC Smarts host. Also, if you run multiple DNS servers, make sure that OpenView or NetView host uses the same DNS as the EMC Smarts 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
```

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