

Open NerveCenter™ 3.8

Integrating NerveCenter with a Network Management Platform

UNIX and Windows

July 2003

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Open NerveCenter *Integrating NerveCenter with a Network Management Platform*

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Contents

Chapter 1. Integrating NerveCenter with a Network Management Platform	1
NerveCenter and network management platforms	2
Ways to integrate NerveCenter with a network management platform	2
How this integration guide is arranged	3
Chapter 2. Integrating NerveCenter with HP OpenView Network Node Manager	5
The OpenView Platform Adapter	6
How to Enable and Disable the Platform Adapter	6
How to Start and Stop the OpenView Platform Adapter	8
Using OpenView as a node source	9
Populating NerveCenter’s node list using OpenView as a node data source	10
Synchronization with HP OpenView Network Node Manager	12
Filtering nodes from HP OpenView Network Node Manager	13
Identifying Parent-Child Relationships	20
Sending NerveCenter Informs to HP OpenView Network Node Manager	23
The Reliability of NerveCenter Informs Sent to HP OpenView Network Node Manager	26
How to Save NerveCenter Informs until Acknowledgement	28
How to Configure the Inform Queue Depth	29
How to Configure OpenView to Integrate with NerveCenter	31
Configuring a Node Map to Reflect NerveCenter Alarm Severity Colors	31
How to Reconfigure OpenView before Removing the NerveCenter OpenView Platform Adapter	35
OpenView Integration Reference	37
Command line reference for the NerveCenter OpenView Platform Adapter	37

Variable Bindings for NerveCenter Informs	40
Chapter 3. Integrating NerveCenter with HP OpenView IT/Operations	43
The OpenView Platform Adapter	44
How to Enable and Disable the Platform Adapter	44
How to Start and Stop the OpenView Platform Adapter	46
The NerveCenter IT/Operations Platform Adapter	47
Using IT/Operations as a node source	47
Populating NerveCenter's node list using IT/Operations as a node data source	48
Synchronization with HP OpenView IT/Operations	50
Filtering nodes from HP OpenView IT/Operations	51
Identifying Parent-Child Relationships	59
Specifying the Destination of NerveCenter Inform Packets sent to HP OpenView IT/Operations	61
Configuring HP OpenView IT/Operations to Divert Messages to NerveCenter	63
Chapter 4. Integrating NerveCenter with Micromuse Netcool/OMNIBus	65
How to Start and Stop the Universal Platform Adapter	66
Starting and Stopping the Universal Platform Adapter in UNIX	66
Starting and Stopping Platform Integration with Micromuse Netcool/OMNIBus in Windows	67
How to Specify the Destination of Inform Packets Sent to Micromuse Netcool/OMNIBus ..	67
How to Configure Netcool to Integrate with the NerveCenter Universal Platform Adapter ..	70
Netcool Integration Reference	71
Command line reference for Integrating NerveCenter with Netcool	71
Variable Bindings for NerveCenter Informs	72
Chapter 5. Integrating NerveCenter with IBM NetView for Solaris	75
The OpenView Platform Adapter	76
How to Enable and Disable the Platform Adapter	77
How to Start and Stop the OpenView Platform Adapter	78
Using NetView as a node source	79

Populating NerveCenter's node list using NetView as a node data source	80
Synchronization with IBM NetView for Solaris	82
Filtering nodes from IBM NetView for Solaris	83
Identifying Parent-Child Relationships	90
Sending NerveCenter Informs to IBM NetView for Solaris	92
The Reliability of NerveCenter Informs Sent to IBM NetView for Solaris	95
How to Save NerveCenter Informs until Acknowledgement	97
How to Configure the Inform Queue Depth	98
How to Configure NetView to Integrate with NerveCenter	100
Configuring a Node Map to Reflect NerveCenter Alarm Severity Colors	100
How to Reconfigure NetView before Removing the NerveCenter OpenView Platform Adapter	104
NetView Integration Reference	106
Command line reference for the NerveCenter OpenView Platform Adapter	106
Variable Bindings for NerveCenter Informs	109
Chapter 6. Integrating NerveCenter with CA Unicenter TNG	111
Starting and Stopping Platform Integration with CA Unicenter TNG	112
How to Specify the Destination of Inform Packets Sent to CA Unicenter TNG	112
How to Configure CA Unicenter TNG to Integrate with the NerveCenter Universal Platform	
Adapter	115
Configuring Unicenter's SNMP Trap Server for NerveCenter Integration	115
Additional Ways to Configure Unicenter's Integration with NerveCenter	116
Unicenter Integration Reference	116
Command line reference for Integrating NerveCenter with Unicenter	116
Variable Bindings for NerveCenter Informs	117
Chapter 7. Integrating NerveCenter with Tivoli TME	119
Starting and Stopping Platform Integration with Tivoli TME	120
How to Specify the Destination of Inform Packets Sent to Tivoli TME	120
How to Configure Tivoli to Integrate with the NerveCenter Universal Platform Adapter ..	123

Tivoli Integration Reference	123
Command line reference for Integrating NerveCenter with Tivoli	123
Variable Bindings for NerveCenter Informs	125
Index	127

Integrating NerveCenter with a Network Management Platform

One of the best features of NerveCenter™ is its ability to integrate with a variety of network management platforms. This book *Integrating NerveCenter with a Network Management Platform* provides the following information:

- ♦ Description of foundational platform integration concepts, such as:
 - ♦ Using a network management platform as a node source
 - ♦ The difference between a SNMP trap and a NerveCenter inform
- ♦ Step-by-step explanation of common integration procedures, such as:
 - ♦ How to start and stop the appropriate NerveCenter platform adapter
 - ♦ How to declare the machine hosting your platform as an inform recipient
- ♦ Frequently referenced material, such as:
 - ♦ The syntax for common NerveCenter commands
 - ♦ Information stored in NerveCenter inform packets

The remainder of this introductory chapter explains basic NerveCenter concepts and includes the following sections:

Section	Description
<i>NerveCenter and network management platforms</i> on page 2	Describes the role NerveCenter plays in a network management strategy.
<i>Ways to integrate NerveCenter with a network management platform</i> on page 2	Explains that NerveCenter can receive node data from certain platforms as well as send inform notifications to platforms.
<i>How this integration guide is arranged</i> on page 3	Provides an overview for this guide.

NerveCenter and network management platforms

Today's LANs and WANs typically involve a conglomeration of devices from a multitude of vendors connected across vast geographical distances. As businesses become increasingly dependent on complex networks, the dependency on proper management of these networks also increases.

Network administrators frequently rely on network management platforms to discover a network's topology as well as the current status of managed nodes. Although NerveCenter can operate as a stand-alone network management product, many customers integrate NerveCenter with their network management platform to provide additional functionality and control. NerveCenter offers advanced features often weak or lacking in network management platforms. These powerful NerveCenter features include:

- ♦ An advanced polling engine that polls only when required, thus reducing the amount of network traffic devoted to management.
- ♦ Intelligent event correlation based on finite state machines that alarm only after all the necessary conditions are met.
- ♦ Reliable notification actions that use TCP/IP to inform management platforms rather than the less reliable protocol of SNMP.

Ways to integrate NerveCenter with a network management platform

The two primary methods of integrating NerveCenter with a network management platform are:

- ♦ NerveCenter can receive node information from a network management platform

A network management platform can add some or all of its managed nodes to NerveCenter's node list. Afterwards, NerveCenter remains synchronized with the platform to insure the information is as accurate as possible.

A network management platform can also provide parent-child relationship information for any NerveCenter running the Downstream Alarm Suppression behavior models.

- ♦ NerveCenter can send informs to a network management platform

NerveCenter users can design behavior models that will inform their network management platforms. Although NerveCenter can send SNMP traps, it can also send an Inform packet via TCP/IP which tends to be more reliable.

Table 1-1 illustrates how NerveCenter integrates with supported platforms:

Table 1-1. How NerveCenter integrates with your network management platform

Platform	Node data	Inform recipient
HP OpenView Network Node Manager	✓	✓
HP IT/Operations	✓	✓
Micromuse Netcool/OMNIBus		✓
IBM NetView	✓	✓
Computer Associates Unicenter TNG		✓
Tivoli TME		✓

How this integration guide is arranged

Because most users will be interested in only one network management platform at a time, this integration guide is arranged by platform. Each chapter address issues specific to that platform.

The chapters that address specific platforms are as follows:

- ♦ *Integrating NerveCenter with HP OpenView Network Node Manager* on page 5
- ♦ *Integrating NerveCenter with HP OpenView IT/Operations* on page 43
- ♦ *Integrating NerveCenter with Micromuse Netcool/OMNIBus* on page 65
- ♦ *Integrating NerveCenter with IBM NetView for Solaris* on page 75
- ♦ *Integrating NerveCenter with CA Unicenter TNG* on page 111
- ♦ *Integrating NerveCenter with Tivoli TME* on page 119

Note The procedures found in this integration guide assume NerveCenter and at least one supported network management platform has been installed on your network. For more information, see *Installing NerveCenter*.

Integrating NerveCenter with HP OpenView Network Node Manager

2

NerveCenter provides the event correlation engine that helps reduce the barrage of events typically displayed in HP OpenView Network Node Manager. OpenView can provide NerveCenter with node data and NerveCenter can send inform messages to OpenView when it detects significant events.

This chapter describes how to integrate NerveCenter with OpenView and includes the following sections:

Section	Description
<i>The OpenView Platform Adapter on page 6</i>	Explains how to enable and disable NerveCenter's OpenView Platform Adapter.
<i>Using OpenView as a node source on page 9</i>	Explains how to populate NerveCenter's node list with nodes from OpenView's node database.
<i>Sending NerveCenter Informs to HP OpenView Network Node Manager on page 23</i>	Explains how to configure inform recipients for behavior models that send informs.
<i>The Reliability of NerveCenter Informs Sent to HP OpenView Network Node Manager on page 26</i>	Describes the advantage of sending NerveCenter inform over SNMP traps. It also describes how to use NerveCenter's Inform Acknowledgement feature.
<i>How to Configure OpenView to Integrate with NerveCenter on page 31</i>	Explains how to configure OpenView for better integration with NerveCenter.
<i>How to Reconfigure OpenView before Removing the NerveCenter OpenView Platform Adapter on page 35</i>	Explains how to reconfigure OpenView before removing the NerveCenter OpenView Platform Adapter.
<i>OpenView Integration Reference on page 37</i>	Provides information you may need to reference occasionally when integrating NerveCenter and HP OpenView Network Node Manager.

The OpenView Platform Adapter

The NerveCenter component that allows NerveCenter to integrate with HP OpenView Network Node Manager is known as the OpenView Platform Adapter.

For integration to take place between NerveCenter and OpenView, the following must occur:

- ♦ The NerveCenter OpenView Platform Adapter must be installed on the machine hosting OpenView.

For detailed instructions on installing the NerveCenter OpenView Platform Adapter, see *Installing NerveCenter*.

- ♦ OpenView must be running.
- ♦ The NerveCenter OpenView Platform Adapter must be enabled.

Enabling the NerveCenter OpenView Platform Adapter registers it to start as a service whenever you start OpenView. See *How to Enable and Disable the Platform Adapter* on page 6.

- ♦ The NerveCenter OpenView Platform Adapter must be running.

The NerveCenter OpenView Platform Adapter typically starts at the same time OpenView starts. See *How to Start and Stop the OpenView Platform Adapter* on page 8.

How to Enable and Disable the Platform Adapter

A typical NerveCenter installation automatically enables the NerveCenter OpenView Platform Adapter. However, there may be times you will need to disable the NerveCenter OpenView Platform Adapter. Once you disable it, you will need to enable it manually before NerveCenter will be able to integrate with OpenView again. You can enable or disable the NerveCenter OpenView Platform Adapter by following the procedures described in this section.

Enabling the NerveCenter OpenView Platform Adapter

If the NerveCenter OpenView Platform Adapter is disabled or was never enabled during NerveCenter installation, you can enable it at any time by adding the OpenView Platform Adapter local registration file (`ovpa.lrf`) to the list of services that are started by `ovstart`.

Tip If you are unsure if the NerveCenter OpenView Platform Adapter is registered to run with `ovstart`, you can check OpenView's start-up file. When the NerveCenter OpenView Platform Adapter is registered, its data, including the pathname to the executable, appears in the file `ovsufl` typically found in the `conf` directory under OpenView's installation directory. If either the `ovpa` data does not appear or the line with the `ovpa` data begins with a `1`, then the NerveCenter OpenView Platform Adapter will not run with `ovstart`.

❖ To enable the NerveCenter OpenView Platform Adapter:

1. From the command line of the machine hosting HP OpenView Network Node Manager, run `ovstop`.

The OpenView services stop running.

Tip On Windows, you can also select the **Services - Stop** utility from the Windows **Start** menu.

2. Navigate to the following directory:

- ♦ Windows: `installation_path\lrf` where `installation_path` is the installation directory for OpenView.
- ♦ UNIX: `installation_path/OV/lrf` where `installation_path` is the installation directory for NerveCenter.

3. Run the following command:

```
ovaddobj ovpa.lrf
```

4. Run `ovstart`.

OpenView's services, including NerveCenter OpenView Platform Adapter, start running.

Tip On Windows, you can also select the **Services > Start** utility from the Windows **Start** menu.

The NerveCenter OpenView Platform Adapter now automatically runs every time you start OpenView.

Disabling the NerveCenter OpenView Platform Adapter

If the NerveCenter OpenView Platform Adapter is enabled, you can disable it at any time by removing the OpenView Platform Adapter local registration file (`ovpa.lrf`) from the list of services that are started by `ovstart`.

❖ To disable the NerveCenter OpenView Platform Adapter:

1. From the command line of the machine hosting HP OpenView Network Node Manager, run `ovstop`.

OpenView's services stop running.

Tip On Windows, you can also select the **Services > Stop** utility from the Windows **Start** menu.

2. Navigate to the following directory:
 - ♦ Windows: `installation_path\lrf` where `installation_path` is the installation directory for OpenView.
 - ♦ UNIX: `installation_path/OV/lrf` where `installation_path` is the installation directory for NerveCenter.
3. Run the following command:

```
ovdelobj ovpa.lrf
```
4. Run `ovstart`.
OpenView's services, including NerveCenter OpenView Platform Adapter, start running.

Tip On Windows, you can also select the **Services - Start** utility from the Windows **Start** menu.

The NerveCenter OpenView Platform Adapter will no longer automatically run every time you start OpenView.

How to Start and Stop the OpenView Platform Adapter

The NerveCenter component that allows you to integrate NerveCenter with HP OpenView Network Node Manager is known as the OpenView Platform Adapter. Following a typical installation of the NerveCenter OpenView Platform Adapter component, NerveCenter enabled the OpenView Platform Adapter to run automatically as a service of OpenView.

Note If for some reason, the NerveCenter OpenView Platform Adapter was not enabled during installation or has since been disabled, see *How to Enable and Disable the Platform Adapter* on page 6.

Therefore, whenever you start OpenView services by typing `ovstart`, the NerveCenter OpenView Platform Adapter will automatically start with any other OpenView services.

In the same way, typing `ovstop` stops all OpenView services, including the NerveCenter OpenView Platform Adapter.

- ♦ If you want to start only the NerveCenter OpenView Platform Adapter, you can type at the command line:

```
ovstart ovpa
```
- ♦ If you want to stop only the NerveCenter OpenView Platform Adapter, you can type at the command line:

```
ovstop ovpa
```

Using OpenView as a node source

NerveCenter can integrate with HP OpenView Network Node Manager by receiving information about some or all of the nodes managed by OpenView.

NerveCenter can obtain node information from any or all of the following sources:

- ◆ A network management platform, such as HP OpenView Network Node Manager
- ◆ The NerveCenter Discovery behavior model
- ◆ An administrator's manual entries

Note Though NerveCenter supports SNMP v1, v2c, and v3, when NerveCenter obtains its nodes from a platform, the platform does not provide SNMP version information. By default, NerveCenter deems the SNMP agents on these nodes to be SNMP v1 by default.

If you want NerveCenter to attempt SNMP version classification automatically for the nodes it receives from your platform, you must enable auto-classification. Then, NerveCenter can classify the correct SNMP version for each node with each resynchronization. Refer to *Managing NerveCenter* and *NerveCenter: Node Classification* for more information about SNMP auto-classification.

Note If you want NerveCenter to manage SNMP v3 nodes, you must use NerveCenter as your trap source regardless of the node source you configure. Refer to *Managing NerveCenter* for more information about the SNMP trap source.

When NerveCenter uses information obtained by a network management platform, it does not use the platform's database as its repository for managed nodes. Instead, it stores node information in its own database in a node list.

There are several reasons for NerveCenter maintaining a node list in its own database:

- ◆ There may be a considerable distance between the platform's database and NerveCenter, making frequent access time-consuming and costly.
- ◆ NerveCenter adds configuration data to the node data that the management platform does not necessarily provide.
- ◆ Administrators have the option of adding nodes not in the platform's node database to the node list in NerveCenter's database.

Using OpenView as a node data source involves the following three items:

- ◆ Setting filters that limit the nodes NerveCenter monitors.

For further details, see *Filtering nodes from HP OpenView Network Node Manager* on page 13

- ◆ Populating NerveCenter's node list

For further details, see *Populating NerveCenter's node list using OpenView as a node data source* on page 10.

- ♦ Maintaining current data between NerveCenter and OpenView

For further details, see *Synchronization with HP OpenView Network Node Manager* on page 12.

Populating NerveCenter's node list using OpenView as a node data source

NerveCenter is able to receive information about some or all of the nodes managed by OpenView.

Note To use OpenView to populate NerveCenter's node database, you must have the NerveCenter OpenView Platform Adapter (OVPA) installed and running.

To populate NerveCenter's node list using OpenView, you must specify it as a source for the node data. Each NerveCenter database populates its node list from just one network management platform database. Depending on your filtering, the database may contain all the nodes or just a subset. In either case, there is just one source of the information.

Caution If you wish to map system Object Identifiers (OID) to NerveCenter property groups, you must make the necessary configurations in the NerveCenter Client before naming the node data source. (See *Designing and Managing Behavior Models*.) After NerveCenter initially populates its node list, any subsequent mapping of OIDs to property groups will affect only new nodes added to the node list.

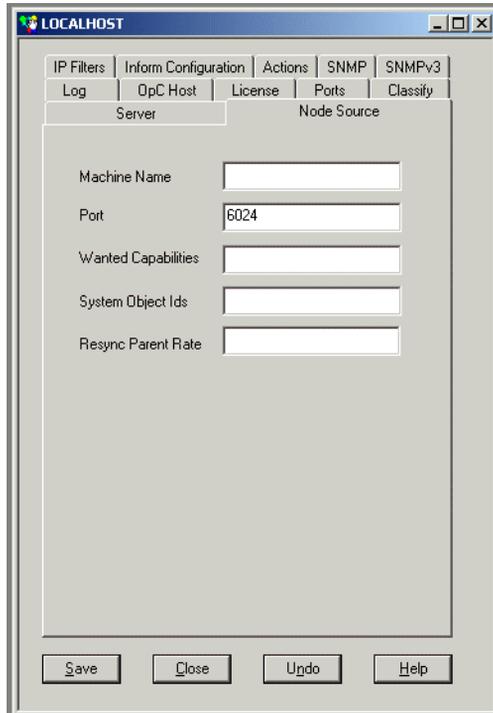
❖ To use OpenView as a node data source:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the Node Source tab.

NerveCenter displays the Node Source tab.



3. In the **Machine Name** field, type either the name or the IP address of a host that runs OpenView.

For example, if you have OpenView running on a machine named Norm, you would type the name **Norm** or its IP address in the **Machine Name** field.

If the **Machine Name** field is left blank, NerveCenter does not retrieve nodes from any platform.

4. In the **Port** field, type the number of the port used to communicate with the platform adapter process on the host. The default is 6024.

The platform adapter must be configured to listen on the same port specified in this field.

5. Select **Save**.

NerveCenter now retrieves its initial node data from OpenView's database.

Synchronization with HP OpenView Network Node Manager

Over time, a network's topology will change. Eventually OpenView will add newly discovered devices to its database. It will also delete nodes and change node information. If NerveCenter depends on OpenView for the data in its node list, it needs to adapt to reflect these changes.

NerveCenter automatically updates its node list to keep in sync with OpenView's node data. This occurs in the following situations:

- ◆ When OpenView adds a node to its node database. After NerveCenter verifies the node meets the criteria set by its filters, it will add the node to its node list.
- ◆ When OpenView deletes a node from its node database. NerveCenter will delete from its node list any node that is set to Autodelete. Autodelete is the default setting for any new node added to the node list. This setting can be changed in the node's Node Definition Window in the NerveCenter Client. (See the section "Discovering and defining nodes" in *Designing and Managing Behavior Models*.)
- ◆ When OpenView changes information about a node in its node database. NerveCenter will make any necessary changes to its node data, including changes in the community string, address, parenting information or the managed/unmanaged state.

Note If OpenView unmanages a node in the NerveCenter node list, the unmanaged state will be updated in NerveCenter. However, if OpenView unmanages a node not found in NerveCenter's node list, the node will not be added to NerveCenter.

Most often, the node list will only be updated a node at a time. Occasionally, NerveCenter will need to perform a complete resynchronization with the platform. A resynchronization gathers from the platform the most current node data for all nodes. This occurs in the following situations:

- ◆ The NerveCenter Server is started and successfully connects to the OpenView Platform Adapter (OVPA).
- ◆ A connection between the NerveCenter Server and the node source successfully reconnects after being broken.
- ◆ The NerveCenter administrator changes the way in which NerveCenter filters by capabilities or system Object Identifiers (OIDs).
- ◆ A user manually chooses Resync in the Server menu of the NerveCenter Client.

The **Machine Name** field on the **Node Source** tab of the NerveCenter Administrator specifies the name of the host running the platform resynchronizing with NerveCenter. (See *Populating NerveCenter's node list using OpenView as a node data source* on page 10 for more details on how to declare a node data source.) The **Node Source** and **IP Filters** tabs also specify the parameters NerveCenter uses to filter node data. (See *Filtering nodes from HP OpenView Network Node Manager* on page 13.)

Anyone administering NerveCenter should be aware of two important scenarios involving changes to OpenView's database:

- ♦ If the name changes in OpenView's database, NerveCenter considers it to be a new node.
- ♦ If a node is unmanaged in one of OpenView's maps but is managed in another, the node will remain in the managed state in NerveCenter's node data.

Caution Since OpenView's node is matched to a NerveCenter node using its name, you should use care when changing NerveCenter's node configurations. Resynchronization adds nodes when it cannot find names that match OpenView's map information. Therefore, if you change a node's name in the Node Definition window, resynchronization will not find a match and will add a node, resulting in two nodes with the same address but different names.

Filtering nodes from HP OpenView Network Node Manager

When using OpenView as a source of information about nodes, it is important to determine which of the nodes in OpenView's database NerveCenter will manage. NerveCenter does not need to monitor every node on your network.

There are several methods for restricting which nodes in OpenView's node database will be placed in NerveCenter's node list:

- ♦ *Filtering Using a Node's Capabilities* on page 13
- ♦ *Filtering Using a Node's System Object Identifier* on page 15
- ♦ *Filtering nodes using a Node's IP Address* on page 16

Filtering Using a Node's Capabilities

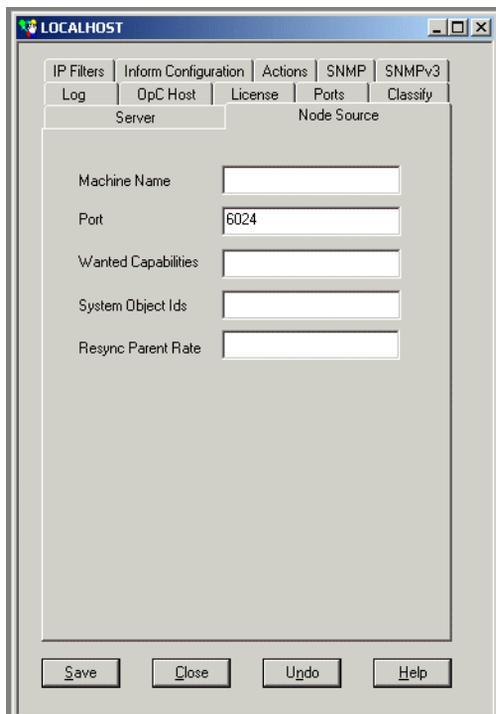
NerveCenter allows you to monitor managed nodes that have particular capabilities. Typically OpenView assigns these capabilities to a node to determine applicable management activities. Some examples of these capabilities are `isRouter`, `isHub`, and `isIP`.

Note Filtering by capabilities is available only when OpenView has assigned specific capabilities to a node.

❖ To filter using a node's capabilities:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the Node Source tab.

The Node Source tab is displayed.



3. In the **Wanted Capabilities** field, type the name of the specific capability desired.
If this field is left blank, NerveCenter will not filter using a node's capability.
4. To enter multiple capabilities, separate each with a space.
NerveCenter will monitor any node that matches at least *one* of the capabilities in the list.
5. Select **Save**.

The NerveCenter Server adds the new capabilities filter. It also closes and opens a new connection with the platform adapter. NerveCenter automatically performs a resynchronization with OpenView's database.

New nodes will be added. Any node that is marked Autodelete (the default) will be deleted.

Filtering Using a Node's System Object Identifier

NerveCenter allows you to monitor managed nodes according to their particular system object identifiers (OIDs).

A node's System Object ID is an SNMP MIB-II object in the system group. It identifies the SNMP agent software running on the device. It is, however, commonly used to identify the type and vendor of the device because a particular vendor's agent usually runs on that vendor's devices.

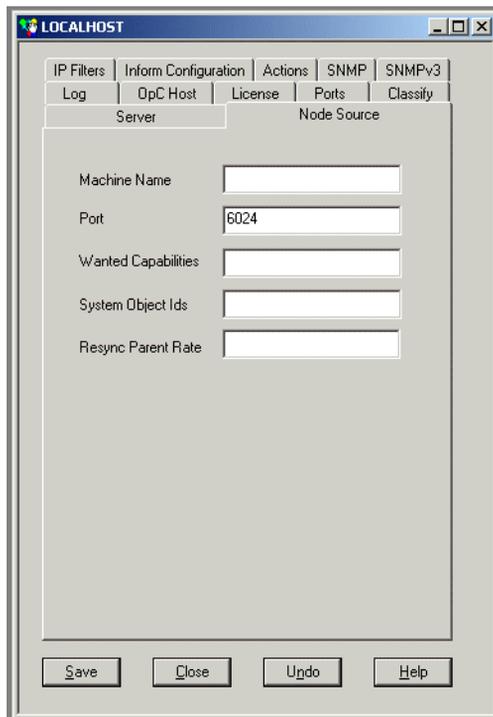
❖ To filter using a node's system object identifier:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the Node Source tab.

NerveCenter displays the Node Source tab.



3. In the System Object Ids field, type the name of the system OID wanted.
If this field is left blank, NerveCenter will not filter using a node's system OID.
4. To enter multiple OIDs, separate each with a space.

NerveCenter will monitor any node that matches at least *one* of the OID in the list.

For example, an administrator may want to restrict NerveCenter to nodes running SNMP agents from either Cisco or Hewlett-Packard nodes by typing the following:

1.3.6.1.4.1.9 1.3.6.1.4.1.11

Any device with an OID matching either of these numbers will be included in the NerveCenter nodes database.

5. Select Save.

The NerveCenter Server adds the new OID filter. It also closes and opens a new connection with the platform adapter. NerveCenter automatically resynchronizes with OpenView's database.

New nodes will be added. Any node that is marked Autodelete (the default) will be deleted.

Filtering nodes using a Node's IP Address

In addition to filtering nodes by OIDs and capabilities, NerveCenter allows you to filter out all nodes that do not belong to one or more subnets. NerveCenter determines the subnet by combining a specific IP address with a subnet mask. NerveCenter can filter by subnets of both Class B and Class C networks. In Class B networks, the first two octets specify the network while in Class C networks the first three octets identify the network.

Table 2-1 and Table 2-2 illustrate some filter configurations and their results:

Table 2-1. Sample Subnet Filters and Their Results for a Class C Network

IP address	Subnet mask	Result
134.204.179.0	255.255.255.0	All nodes on subnet 134.204.179.0 are included. For example, 134.204.179.7 is included.
197.22.44.0	255.255.255.240	All nodes 1-15 on subnet 197.22.44.0 are included. For example, 197.22.44.5 is included but 197.22.44.35 is excluded.
134.204.179.0 197.22.44.0	255.255.255.0 255.255.255.240	All nodes on subnets 134.204.179.0 and nodes 1-15 on 197.22.44.0 are included. For example, both 134.204.179.7 and 197.22.44.5 are included.

Table 2-2. Sample Subnet Filters and Their Results for a Class B Network

IP address	Subnet mask	Result
132.45.0.0	255.255.0.0	All nodes on subnet 132.45.0.0 are included. For example, 132.45.174.7 is included.
132.45.0.0	255.255.240.0	Nodes 1.0 - 15.255 are included. For example 132.45.14.231 is included but 132.45.174.7 is excluded.

In addition to filtering out all but an entire subnet, NerveCenter allows you to exclude a specific node or range of nodes within the remaining subnet.

Table 2-3 illustrates some filter configurations with exclusions and their results.:

Table 2-3. Sample Subnet Filters with Exclusions and Their Results

IP address	Subnet mask	Excluded node(s)	Result
134.204.179.0	255.255.255.0	40	All nodes on subnet 134.204.179.0 except node 40 are include. For example, 134.204.179.7 is included but 134.204.179.40 is excluded.
134.204.179.0	255.255.255.0	40-55	All nodes on subnet 134.204.179.0 except nodes 40-55 are include. For example, 134.204.179.7 is included but 134.204.179.40 and 134.204.179.52 are excluded.
132.45.0.0	255.255.0.0	63.5	All nodes on subnet 132.45.0.0 except node 63.5 are included.

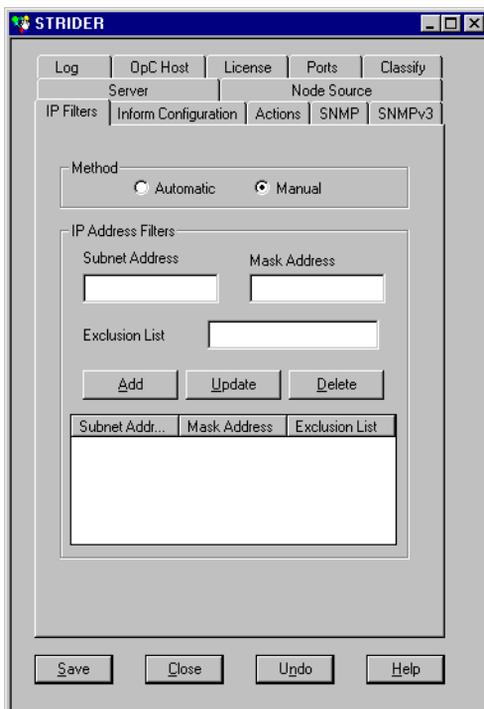
Note You can filter nodes that have been discovered by NerveCenter, provided by the platform node source, or imported from a node file.

NerveCenter can determine automatically or manually subnet criteria used to filter nodes by IP address.

❖ **To configure NerveCenter to determine subnet criteria automatically:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the IP Filters tab.

The IP Filters tab is displayed.



3. In the Method area, select Automatic.

Setting the method to automatic tells NerveCenter to ignore any address filters you enter and use instead the server's masks as a filter. NerveCenter calculates the subnet address and mask using the IP address and mask of each network interface card on the server.

4. Select Save.

NerveCenter will now automatically use the server's masks as a filter.

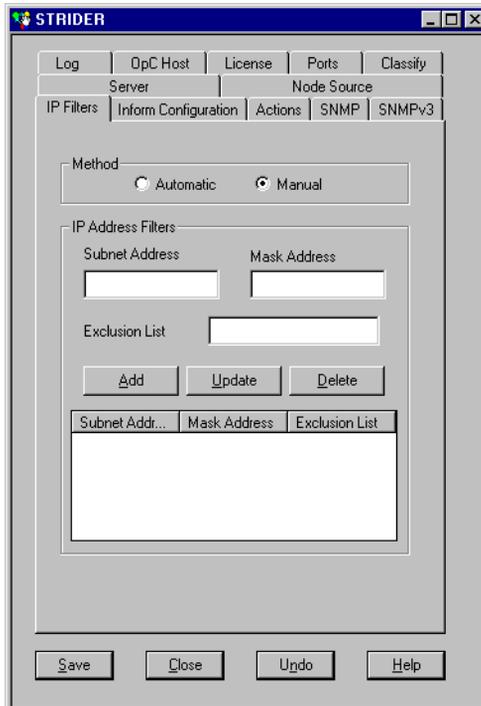
❖ **To set the subnet criteria manually:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the IP Filters tab.

The IP Filters tab is displayed.



3. In the Method area, select Manual.

When the method is set to manual, NerveCenter will only use the subnet addresses listed in IP Address Filters area. If the IP Address Filters list is empty, NerveCenter ignores a node's subnet when determining if the node will be part of the node database.

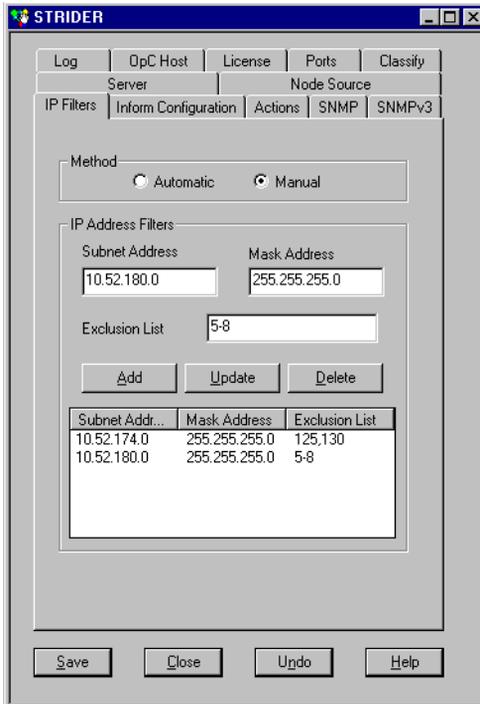
4. In the Subnet Address field, type the appropriate subnet. In the Mask Address field, type the appropriate subnet mask.

A node's subnet address combines the node's IP address with the subnet mask.

5. In the Exclusion List field, enter all the nodes you want excluded from the subnet address. To exclude more than one node, separate each number with a comma without a space. To exclude a continuous range of nodes, use a hyphen to separate the minimum and maximum number by a hyphen.

6. Select Add.

The subnet address and mask address will be added to the IP Address Filters list.



7. Select **Save**.
8. To filter by additional IP addresses and masks, repeat steps 4 through 7.

NerveCenter monitors any address falling within the subnet and not excluded by the filter.

Identifying Parent-Child Relationships

In order to use NerveCenter's Downstream Alarm Suppression behavior model, it is necessary to establish the parent-child relationship between nodes. You can let OVPA extract relationship information from HP OpenView Network Node Manager and either store it in the NerveCenter database or in a text file. You can also create the text file manually.

Note By default, OVPA does not get information about a node's parents from OpenView. You must configure OVPA to collect that information by doing the following steps.

❖ **To identify parent-child relationships using OVPA:**

1. Make sure HP OpenView Network Node Manager is running. Also make sure the NerveCenter Server is running.
2. Make sure that OpenView is set up as your node source in the NerveCenter Administrator. See *Populating NerveCenter's node list using OpenView as a node data source* on page 10 for more details.
3. If OVPA is running, stop it by typing `ovstop ovpa` at the command line.
4. Start OVPA in parenting mode from the command line by typing one of the following commands:
 - ♦ `ovpa -pc`

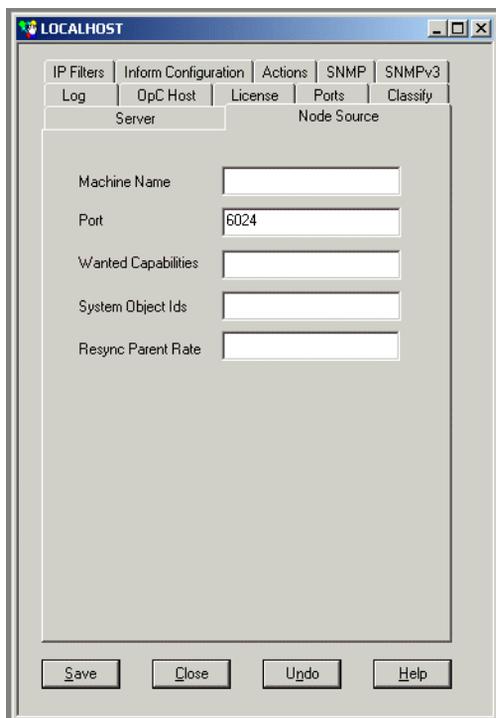
OVPA runs and computes parenting information, resynchronizing the information periodically. The how often OVPA resynchronizes information is configurable through the Node Source tab in the NerveCenter Administrator. The default resync parent rate is 600 seconds.
 - ♦ `ovpa -pc -writeParentsToFile hostname`

hostname is the name of the machine on which the NerveCenter Server runs. OVPA computes the parenting information, writes it to a file named *hostname_PC.dat*, and then stops.

❖ **To change the resync parent rate:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. For further instructions, see *Managing NerveCenter*.
2. Select the Node Source tab.

NerveCenter displays the Node Source tab.



3. In the Resync Parent Rate field, type the number of seconds you want between each resync attempt.

If left blank, the default resync parent rate is 600.

4. Select Save.

❖ **To identify parent-child relationships manually:**

1. Open a new text file.
2. Include a line for each node that has parents. Use the following syntax:

```
child parent
```

where *child* is the name of the node and *parent* is the name of each node on which the child is dependent. If you have more than one parent, separate parents by typing a space between each one.

Note If NerveCenter uses a full domain name for the node, use the full name in this file to refer to that node.

For example, if nodeA is dependent on nodeB.domain.com and nodeC; and nodeB.domain.com is dependent on nodeD, then the contents of the text file would look like this:

```
nodeA nodeB.domain.com nodeC
nodeB.domain.com nodeD
```

3. Save and close the file.

For more information see the White Paper *Open NerveCenter: Downstream Alarm Suppression*.

Sending NerveCenter Informs to HP OpenView Network Node Manager

One of NerveCenter's powerful platform integration features is its ability to send inform packets to HP OpenView Network Node Manager. Since the inform packets use the Transmission Control Protocol (TCP), the alert sent to OpenView is more reliable than a standard SNMP trap. To configure NerveCenter to keep track of acknowledgements sent in response to an inform, see *The Reliability of NerveCenter Informs Sent to HP OpenView Network Node Manager* on page 26.

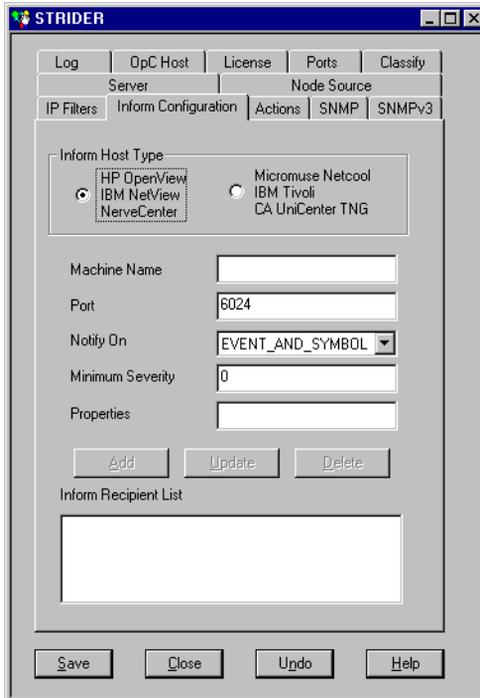
As you create or modify a behavior model to notify OpenView, you determine the specific inform number it will receive. However, before you can use this behavior model, NerveCenter must know which machine or machines will receive the inform.

The following procedure will step you through the process of declaring one or more recipients of NerveCenter informs.

❖ To specify the destination of NerveCenter informs sent to OpenView:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
2. Select the Inform Configuration tab.

The Inform Configuration tab appears.



3. In the Inform Host Type field, select HP OpenView NerveCenter.
Selecting this option associates the NerveCenter OpenView Platform Adapter with the machine hosting OpenView.
4. In the Machine Name field, type the name of the machine hosting OpenView.
5. In the Port field, type the port number your NerveCenter Server will use when communicating with the NerveCenter OpenView Platform Adapter.
By default, NerveCenter uses the port number 6024.
6. In the Notify On field, select one of the following:
 - ◆ **EVENT_ONLY**—Events are sent to this platform host when an Inform action is invoked. No symbol color change messages are sent.
 - ◆ **SYMBOL_ONLY**—Messages causing symbol color changes on the platform map are sent to this host. Events are not sent.
 - ◆ **EVENT_AND_SYMBOL**—Both event and symbol messages are sent.

Note Selecting either `SYMBOL_ONLY` or `EVENT_AND_SYMBOL` causes the node's object to update according to the NerveCenter color in OpenView's map.

The recommended setting for OpenView is `EVENT_AND_SYMBOL`. Even though this setting increases traffic overhead, the other two options prevents data from reaching your platform.

This setting need to be consistent with your platform's map configuration settings. For example, if you configured your platform to allow symbol color changes from NerveCenter but now select `EVENT_ONLY`, you will see no symbol color changes.

7. In the **Minimum Severity** field, type the number representing the minimum severity an alarm must reach before triggering a message to this platform.

This option enables you to be selective about which events are sent to particular platforms. For example, a local platform could get all events, while a lead or central platform could get only critical events. When NerveCenter sends Informs to your platform, NerveCenter first checks the minimum severity value entered here to ensure that the trap value for the Inform matches or exceeds that severity.

Note There is one case when NerveCenter disregards the minimum severity value specified in Administrator: After NerveCenter sends an Inform, if the condition returns to a normal state—that is, a state below the minimum severity threshold you configure—it's important that NerveCenter notify the platform of this change. Therefore, if a node transitions the alarm from a severity above the minimum value to a severity below the minimum value, and the transition includes an Inform action, NerveCenter will send a Normal Inform to the platform. This allows the platform to reset the mapped severity color associated with the node.

Note The values associated with each severity in NerveCenter can be viewed and altered in the NerveCenter Client in the **Severity List** found under the **Admin** menu. See *Designing and Managing Behavior Models* in the NerveCenter documentation for more details.

8. In the **Properties** field, type zero or more properties.

NerveCenter will only send an inform packet to this platform if the managed node's property group contains at least one of the properties listed in this field. If no events are listed, NerveCenter sends events for all managed nodes.

This option enables you to be selective about which events are sent to particular platforms. For example, one platform could receive informs prompted by only routers.

9. Select **Add**.

The platform's host machine is added to the Inform Recipient List.

10. Repeat steps 3 through 9 for each machine hosting OpenView that will receive a NerveCenter inform packet.

11. Select **Save**.

When a behavior model performs an Inform alarm action, each machine within the Inform Recipient List that is associated with the NerveCenter OpenView Platform Adapter will receive the inform as long as the alarm meets the relevant criteria.

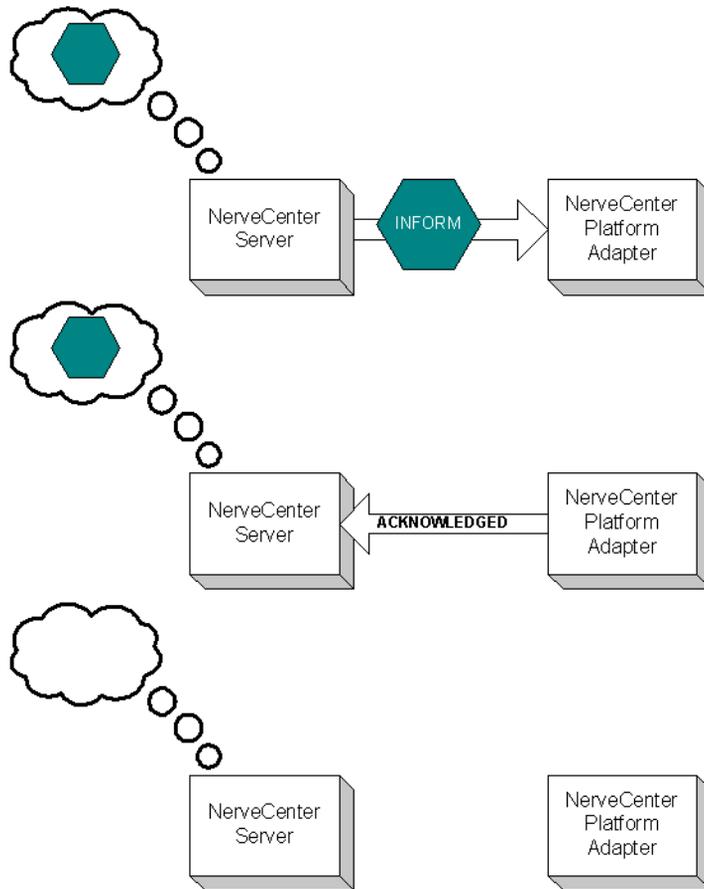
The Reliability of NerveCenter Informs Sent to HP OpenView Network Node Manager

Since NerveCenter informs are sent via the Transmission Control Protocol (TCP) they tend to be more reliable than SNMP traps. TCP allows for the following:

- ♦ NerveCenter informs take priority over SNMP traps.
- ♦ A direct connection is made between the NerveCenter Server and the NerveCenter OpenView Platform Adapter.
- ♦ The NerveCenter OpenView Platform Adapter can acknowledge the receipt of a NerveCenter inform.

The following diagram illustrates how the NerveCenter OpenView Platform Adapter acknowledges informs.

Figure 2-1. How NerveCenter handles inform acknowledgement



When a NerveCenter behavior model performs the Inform alarm action:

- The NerveCenter Server sends an Inform message to the NerveCenter OpenView Platform Adapter. The NerveCenter Server places the inform in a queue.
- The NerveCenter OpenView Platform Adapter sends the inform message to OpenView. At the same time, the NerveCenter OpenView Platform Adapter sends a packet back to the NerveCenter Server acknowledging it has received the inform packet.
- Once the NerveCenter Server receives the inform acknowledgement, it deletes the inform from its queue.

If for any reason the NerveCenter Server loses its connection to the NerveCenter OpenView Platform Adapter the informs will be held in its inform queue. Once the server regains its connection, any inform that was not acknowledged as received will be sent again.

By default, the NerveCenter Server is not set to have informs acknowledged. If you want NerveCenter to keep track of informs and their acknowledgement, you must enable the inform acknowledgement feature. The section *How to Save NerveCenter Informs until Acknowledgement* on page 28 explains how to enable the inform acknowledgement feature.

Note To use the Inform acknowledgement feature, you must use version 3.6 or later of NerveCenter Server and the NerveCenter OpenView Platform Adapter.

While the connection between the NerveCenter Server and the OpenView Platform Adapter is down, any new informs will be placed in the inform queue. The queue length is limited. If the number of informs waiting to be sent exceeds the queue limit, NerveCenter will delete the oldest inform so the newest inform can be added to the queue. If NerveCenter drops informs it will also fire the predefined trigger `NC_INFORMS_LOST`. (See the book *Designing and Managing Behavior Models* for complete details on using this and other predefined triggers in behavior models.) By default, the queue depth is set to 10000 informs. You can however set the queue to whatever depth you prefer. The section *How to Configure the Inform Queue Depth* on page 29 explains how to set the inform queue depth.

How to Save NerveCenter Informs until Acknowledgement

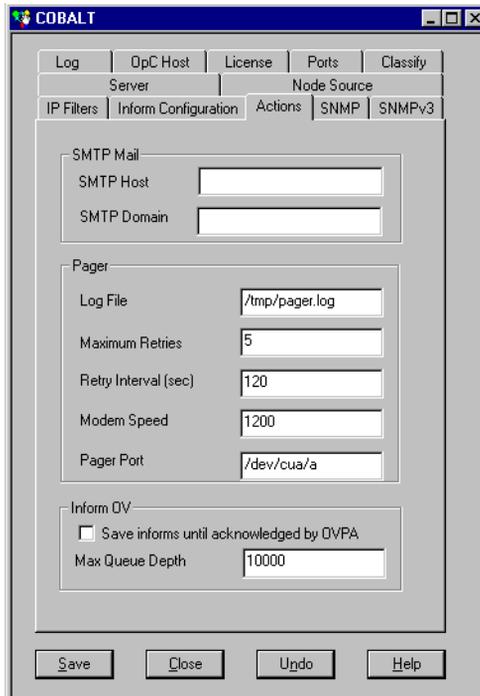
By default, NerveCenter Server does not save informs to wait acknowledgement. If you want NerveCenter to keep track of informs until the NerveCenter OpenView Platform Adapter acknowledges their receipt, you must enable the inform acknowledgement feature. This section explains how to enable the inform acknowledgement feature.

Note To use the Inform acknowledgement feature, you must use version 3.6 or later of NerveCenter Server and the NerveCenter OpenView Platform Adapter.

❖ To enable inform acknowledgement:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
2. Select the Actions tab.

NerveCenter displays the Actions tab.



In the Inform OV area is a checkbox labeled **Save informs until acknowledged by OVPA**. By default, this box is not selected.

3. Check the box labeled **Save informs until acknowledged by OVPA**.
4. Select **Save**.

The NerveCenter Server will now save Informs in its queue until the NerveCenter OpenView Platform Adapter acknowledges their receipt.

How to Configure the Inform Queue Depth

When the NerveCenter inform acknowledgement feature is enabled, any new informs will be placed in the Inform Queue should the NerveCenter Server lose its connection to the NerveCenter OpenView Platform Adapter. Once the connection is restored, NerveCenter will resend any unacknowledged informs. The section *How to Save NerveCenter Informs until Acknowledgement* on page 28 explains how to enable the inform acknowledgement feature.

The inform queue length is limited. If the number of informs waiting to be sent exceeds the queue limit, NerveCenter will delete the oldest inform so the newest inform can be added to the queue. If NerveCenter drops informs it will also fire the predefined trigger NC_INFORMS_LOST. (See the book *Designing and Managing Behavior Models* for complete details on using this and other predefined triggers in behavior models.)

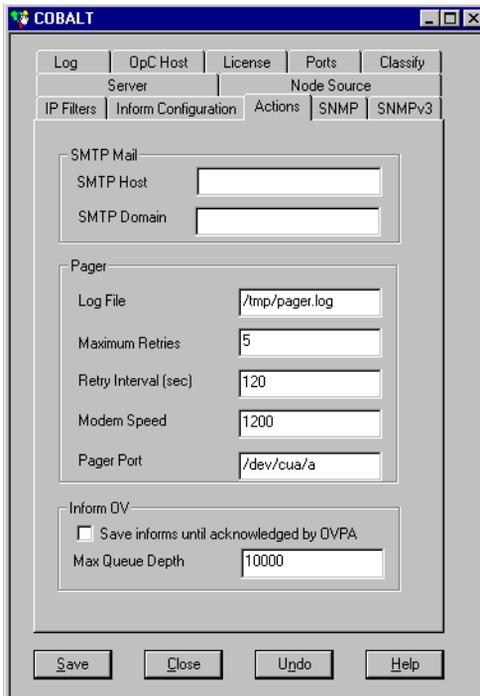
This section will step you through the process of setting the maximum Inform Queue depth.

❖ **To configure the maximum depth for the Inform Queue:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.

2. Select the Actions tab.

NerveCenter displays the Actions tab.



3. In the Max Queue Depth box enter the desired number of informs you want to be saved in the Inform Queue.

By default, the Inform Queue depth is set to a maximum of 10000 informs.

4. Select Save.

When the number of informs in the Inform Queue exceed the number entered in Max Queue Depth, NerveCenter will begin dropping informs to include more recent informs.

How to Configure OpenView to Integrate with NerveCenter

Once you have configured NerveCenter to integrate with HP OpenView Network Node Manager, you may want to configure OpenView for an even tighter integration. Two options for modifying OpenView are:

- ◆ Customize notification messages to make them more meaningful.
Your NerveCenter behavior models will send OpenView informs with specific numbers. You may want to configure OpenView to interpret each of these specific numbers as a specific event on your network. See OpenView's documentation for complete instructions on configuring notification messages.
- ◆ Customize device symbol colors in a node map so they will reflect the severity of active NerveCenter alarms.
- ◆ As NerveCenter behavior models are created to send informs to OpenView, you may want to customize OpenView notification messages to make them more meaningful.

The next section will discuss this option in more detail.

Configuring a Node Map to Reflect NerveCenter Alarm Severity Colors

NerveCenter can affect symbol colors on OpenView's map in one of several ways:

- ◆ NerveCenter can change the color of the device symbol itself to reflect the highest severity of all active alarms for the device.
- ◆ NerveCenter can change the color of a NerveCenter symbol automatically created under the symbol for each managed device.
- ◆ NerveCenter can leave unaffected symbol colors on the map. This setting is the default.

Keep in mind that although NerveCenter is shipped with 12 different colors for severities, your network management platform may have fewer choices. If you choose either of the first two options listed above, the colors on your network management platform symbols will be restricted to the network management platform's choices.

You must configure an IP map to enable map symbol color changes—either of the first two choices. You can either create a new map or configure an existing map. Follow one of the following procedures:

- ◆ *Creating a New Map for OpenView to Reflect NerveCenter Alarm Severity Colors* on page 32
- ◆ *Modifying an old Map for OpenView to Reflect NerveCenter Alarm Severity Colors* on page 33

Creating a New Map for OpenView to Reflect NerveCenter Alarm Severity Colors

❖ To configure OpenView to reflect NerveCenter alarm severity colors by creating a new map:

1. Begin the new map wizard.

This typically requires choosing **New** or **New Map** from the **Map** menu. See your OpenView's documentation for further instructions.

2. Enter a name for the new map. Select **Next**.

3. Choose one of the following:

- ♦ If you do not want NerveCenter to change the colors of any symbol colors at all, or if you want NerveCenter to change only the colors of the NerveCenter symbols on your map, skip to step 7.
- ♦ If you want NerveCenter to change a device's symbol color directly to reflect the highest active alarm severity for the device, select **IP Map** in the **Configurable Applications** list and select **Configure For This Map**.

4. Change **Should status of nodes be IP/IPX only?** to **False**.

5. Select **Verify**.

OpenView verifies your requested changes and then displays a message at the bottom of the window.

6. Select **OK**.

The Configuration window closes, and returns you to the New Map window.

7. From the **Configurable Applications** list, select **Open NerveCenter** and **Configure For This Map**.

8. For the setting **Enable NerveCenter for this map**, choose one of the following:

- ♦ If you do not want NerveCenter to change the colors of any symbols, select **False** and skip to step 10.
- ♦ If you want NerveCenter to change device or NerveCenter symbol colors to reflect the highest active alarm severity, select **True**.

9. For the **Set NerveCenter status on node symbol** setting, choose one of the following:

- ♦ If you want NerveCenter to change the color of the NerveCenter icon in the submap beneath the device symbol, select **False**.

If you select False, NerveCenter automatically creates a new NerveCenter icon in the submap beneath the symbol for each managed device on the map. Color changes are applied to the NerveCenter symbol, and the color of the device symbol itself is changed according to the normal OpenView settings for the map.

- ♦ If you want NerveCenter to change a device's symbol color to reflect the highest active alarm severity, select True.

10. Select Verify.

OpenView verifies your requested changes and then displays a message at the bottom of the window.

11. Select OK.

The Configuration window closes, and returns you to the New Map window.

12. Select Next.

13. Select an appropriate value for Compound Status. See your OpenView's documentation for further instructions.

14. Select Next.

The final wizard screen is displayed.

15. Select Finish.

OpenView configures the new map to handle symbol data sent by a NerveCenter inform.

Modifying an old Map for OpenView to Reflect NerveCenter Alarm Severity Colors

❖ **To configure OpenView to reflect NerveCenter alarm severity colors by modifying an existing map:**

1. Open the appropriate map, if it is not currently open.

This typically requires choosing Open or Open/List from the Map menu. See your OpenView's documentation for further instructions.

2. Open the Map Properties window.

This typically requires choosing Properties from the Map menu. See your OpenView's documentation for further instructions.

3. Select the Applications tab.

4. Choose one of the following:
 - ♦ If you do not want NerveCenter to change the colors of any symbol colors at all, or if you want NerveCenter to change only the colors of the NerveCenter symbols on your map, skip to step 8.
 - ♦ If you want NerveCenter to change a device's symbol color directly to reflect the highest active alarm severity for the device, select **IP Map** in the Configurable Applications list and select **Configure For This Map**.
5. Change **Should status of nodes be IP/IPX only?** to **False**.
6. Select **Verify**.

OpenView verifies your requested changes and then displays a message at the bottom of the window.
7. Select **OK**.

The Configuration window closes, and you return to the New Map window.
8. From the Configurable Applications list select **Open NerveCenter** and select **Configure For This Map**.
9. For the **Enable NerveCenter for this map** setting, choose one of the following:
 - ♦ If you do not want NerveCenter to change the colors of any symbols, select **False** and skip to step 11.
 - ♦ If you do want NerveCenter to change device or NerveCenter symbol colors to reflect the highest active alarm severity, select **True**.
10. For the **Set NerveCenter status on node symbol** setting, choose one of the following:
 - ♦ If you want NerveCenter to change the color of the NerveCenter icon in the submap beneath the device symbol, select **False**.

If you select **False**, NerveCenter automatically creates a new NerveCenter icon in the submap beneath the symbol for each managed device on the map. Color changes are applied to the NerveCenter symbol, and the color of the device symbol itself is changed according to the normal settings for OpenView's map.
 - ♦ If you want NerveCenter to change a device's symbol color to reflect the highest active alarm severity, select **True**.
11. Select **Verify**.

OpenView verifies your requested changes and then displays a message at the bottom of the window.

12. Select OK.

The Configuration window closes, and you return to the New Map window.

13. In the Map Properties window, select OK.

OpenView configures the current map to handle symbol data sent by a NerveCenter inform.

How to Reconfigure OpenView before Removing the NerveCenter OpenView Platform Adapter

During a typical NerveCenter OpenView Platform Adapter installation, some NerveCenter-specific information is configured into OpenView. Before you remove NerveCenter, you should reconfigure OpenView.

❖ **To reconfigure OpenView:**

1. Shut down the NerveCenter Server and applications.

2. Do one of the following to display the map properties:

- ♦ UNIX: From the Options menu in the OpenView's Root window, choose **Map Configuration: Modify Map**.

The Map Description window is displayed.

- ♦ Windows: From the Map menu, select **Properties**.

The Map Properties window is displayed.

3. Do one of the following to display the NerveCenter configuration information:

- ♦ UNIX: From the Configurable Applications list, select **Open NerveCenter**.
- ♦ Windows: From the Applications tab, select **Open NerveCenter**.

4. Select **Configure For This Map**.

The Open NerveCenter Configuration window is displayed.

5. For **Enable NerveCenter for this map**, select **False**.

6. Select **Verify**, then **OK**.

7. Do one of the following to display the IP map configuration information:

- ♦ UNIX: In the Configurable Applications list box, select **IP Map**.
- ♦ Windows: From the Applications tab, select **IP Map**.

8. Select **Configure For This Map**.

The IP Map Configuration window is displayed.

9. For **Should status of nodes be IP/IPX only?**, select **True**.

10. Select **Verify**, then **OK**.

NerveCenter can no longer change symbols on the IP map.

11. Select **OK** to close the Map Description window.

12. From the Options menu, choose **Event Configuration**.

The Event Configuration window is displayed.

13. Select **Open_NerveCenter** from the Enterprise Identification list box.

All Open NerveCenter events are displayed in the Event Identification list box.

14. Select the first event and select **Edit**, then **Delete**, then **Event**. Repeat this step for every NerveCenter event.

Removing events isn't required but does leave your platform installation less cluttered with old information.

15. While **Open_NerveCenter** is still selected, select **Edit**, then **Delete**, then **Enterprise**.

16. Close the Event Configuration window.

17. Exit OpenView and stop all OpenView's processes.

Typically you can do this by typing **ovstop** at the command line and pressing **Enter**. (On Windows, you can also select **NNM Services > Stop** from the **Start** menu.)

18. On Windows, delete the Open NerveCenter registration, help, and symbol files. (On UNIX, these files will be deleted automatically.)

These files are:

- ♦ *installation_path*\registration\C\ncapp.reg
- ♦ *installation_path*\symbols\C\Software\NCApp
- ♦ *installation_path*\bin\ovdelobj

- ♦ `installation_path\lrf\ovpa.lrf`
- ♦ `installation_path\fields\C\ncapp.fields`

`installation_path` is the installation directory for OpenView.

19. Restart OpenView processes.

Typically you can do this by typing `ovstart` at the command line and pressing **Enter**. (On Windows, you can also select **NNM Services > Stop** from the **Start** menu.)

After you have reconfigured OpenView so NerveCenter is no longer integrated with it, you can remove NerveCenter.

OpenView Integration Reference

The following section includes information you may need to reference occasionally when integrating NerveCenter and HP OpenView Network Node Manager.

This section includes:

- ♦ *Command line reference for the NerveCenter OpenView Platform Adapter* on page 37
- ♦ *Variable Bindings for NerveCenter Informs* on page 40

Command line reference for the NerveCenter OpenView Platform Adapter

You can control certain aspects of the NerveCenter OpenView Platform Adapter (OVPA) from the command line. The proper syntax is:

```
Ovpa [ -logLevel Error | Warning | Debug | Trace ]
      [ -traceOutputFile FileName ] [ -traceOutputStdout ]
      [ -traceResync ] [ -traceInform ] [ -traceLoadDb ]
      [ -traceParentComp ] [ -traceMapUpdates ] [ -traceConnects ]
      [ -traceAll ] [ -pc ] [ -writeParentsToFile NcHostName ]
      [ -heartbeat seconds ] [ -ignoreUnmanagedIntf ]
      [ -initNcStatusInOV ] [ -ignoreCapability ]
      [ -noResolveCommunityOnResync ] [ -defGlobalCommunity filename ]
```

Note OpenView (OV) must be running before you can run OVPA. To issue an `ovpa` command (with or without switches) by itself and without also using `ovstart`, you must first remove the OVPA local registration file (`ovpa.lrf`) from the list of services that are started by OV. For more information, refer to *How to Configure OpenView to Integrate with NerveCenter* on page 31. All of these command line switches are optional.

`-logLevel Error | Warning | Debug | Trace`

Set logging level, default value is Warning.

`-traceOutputFile FileName`

Set the output of logging messages to be a file with *FileName*.

`-traceOutputStdout`

Set the output of logging messages to be standard output. This option can be used with `-traceOutputFile filename` so that logging messages can be written both to the screen and the output file.

`-traceResync`

Enable logging messages for resync (node source) and resync parents. Logging messages contain node information including parent information OVPA is sending to Nerve Center.

To use this option, the log level must also be set to either debug or trace.

`-traceInform`

Enable logging messages for status informing from NerveCenter to OpenView. It shows status change messages from NerveCenter, whether the status change information is sent to OpenView or is logged into OpenView database.

To use this option, the log level must also be set to either debug or trace.

`-traceLoadDb`

Enable logging messages for loading nodes and interfaces from the OpenView database at initialization stage. It shows each node and each interfaces are loaded.

To use this option, the log level must also be set to either debug or trace.

`-traceParentComp`

Enable logging messages for the details of how the parents are computed for each Nerve Center host.

To use this option, the log level must also be set to either debug or trace.

`-traceMapUpdates`

Enable logging messages for the processing of OpenView events regarding changes. This option displays the significant data that arrived with an OpenView event, how ovpa is processing that event, and whether network topology needs to be updated or not.

To use this option, the log level must be set to either debug or trace.

`-traceConnects`

Enable logging messages for connections from the NerveCenter server, and from OpenView. It also shows why the port is disconnected.

To use this option, the log level must also be set to either debug or trace.

`-traceAll`

Enable logging messages for resync, inform, loadDb, parentComp, mapUpdates, and connects.

To use this option, the log level must also be set to either debug or trace.

`-pc`

Enable parent computing. Without this option, no parent information is computed for any NerveCenter host, including the requests of resync parents from NerveCenter server, and the command line option `-writeParentsToFile`

`-writeParentsToFile NcHostName`

When `-pc` is turned on, OVPA computes parent-child relationships, writes to the file `NcHostName_PC.dat`, and exits.

`-heartbeat seconds`

The ovpa process and the NerveCenter server process exchange heartbeats. You can configure how often the heartbeat is sent from OVPA using the `-heartbeat` switch. If OVPA doesn't receive a heartbeat from NerveCenter in the specified time then it will close the connection to that server's port. Default heartbeat rate is 300 seconds.

`-ignoreUnmanagedIntf`

If this switch is used OVPA does not send NerveCenter server any unmanaged interfaces within a node. You may want to restrict the interfaces that NerveCenter server must poll to only interfaces that OpenView is currently managing. If you have many subobject scope alarms and nodes, this switch to improves polling performance.

`-initNcStatusInOV`

Synchronizes the status of a NerveCenter icon and its managed nodes.

Note NerveCenter must be configured so that its node data source and inform host are the same. All IP filters must be empty.

`-ignoreCapability`

Determines whether OVPA keeps track of OpenView's capability information, such as IsRouter. For more information, see *Filtering nodes from HP OpenView Network Node Manager* on page 13.

`-ignoreCapability` prevent ovpa from keeping track of capability data. This increases ovpa's speed and decreases its memory usage.

This switch can be turned on when a user wants to force the node to be added to NC server, regardless of capabilities.

Note The `-ignoreCapability` switch disables NerveCenter's ability to filter nodes based on capabilities.

`-noResolveCommunityOnResync`

When this option is turned on, OVPA does not obtain the community strings during a resync or resync parents. You can use this argument when you are sure that the community has not changed since the initial OpenView database import to improve resync performance.

`-defGlobalCommunity filename`

Instead of retrieving community strings through OpenView, you can retrieve them from a file. This option is used to give the filename where user defines default community strings.

`-info`

print out the version of OVPA

`-help`

Help information for OVPA

If you want these settings to take effect every time `ovpa` is started, edit the file `ovpa.lrf` to include these switches. On Windows, the file is located in the `OpenView/lrf` directory. On UNIX, the file is located in the `opt/OSInc/nc/OV/lrf` directory. For example, to have `ovpa` compute parenting information you would modify `ovpa.lrf` to read:

```
ovpa:/opt/OSInc/nc/OV/bin/ovpa:
OVs_YES_START:ovwdb:-pc:OVs_WELL_BEHAVED:5:
```

Variable Bindings for NerveCenter Informs

Depending on how its behavior models are designed, a NerveCenter detecting particular network conditions can send Inform packets to HP OpenView Network Node Manager. Although these Inform packets use TCP/IP, they are similar in content to an SNMP trap, containing trap numbers (generic and specific), an enterprise OID, and a variable-binding list. The lengthy `varbinds` contains information about the alarm that performed the Inform action, such as the name of alarm, the object the alarm was monitoring, and the names of the origin and destination alarm states.

The OpenView receiving the trap can make use of the information in the variable bindings much the same way it would use variable bindings found in an SNMP trap.

Table 2-4 explains the contents of this variable-binding list.

Table 2-4. Inform Trap Variable Bindings

Variable Binding	Value
0	The name of the domain where NerveCenter is running
1	The name of the host machine running the NerveCenter Server
2	The name of the managed node associated with the alarm
3	The base object associated with the alarm (for example, ifEntry for a monitored interface)
4	The base object instance associated with the alarm (for example, 4 for the fourth interface)
5	The name of the subobject. This would include the null string if the alarm is not associated with an alarm.
6	The property group assigned to the node or the subobject
7	The name of the alarm
8	The alarm's property
9	The name of the trigger that caused the alarm transition
10	The state of the alarm before the transition
11	The severity of the state of the alarm prior to the transition
12	The state of the alarm after the transition
13	The severity of the state of the alarm after the transition
14	The maximum severity of all active alarms for the managed node before this alarm transition
15	The maximum severity of all active alarms for the managed node after this alarm transition
16	The variable bindings in the poll or trap that caused the transition. These variable bindings are formatted as follows: Attribute ncTransitionVarBinds = <i>attribute .instance=value ; attribute=value ; . . .</i>
17	The identification number of the alarm instance

Integrating NerveCenter with HP OpenView IT/Operations

3

You can integrate NerveCenter with HP OpenView IT/Operations. HP OpenView IT/Operations can send messages to NerveCenter for additional correlation or processing. NerveCenter correlates these messages with related events that might result in corrective actions or a message for the operator. In addition, NerveCenter can send a message back to HP OpenView IT/Operations in response to any network event, whether or not it was initiated by an HP OpenView IT/Operations message. One NerveCenter Server works with at most one HP OpenView IT/Operations, and vice versa.

This chapter describes how to integrate NerveCenter with IT/Operations and includes the following sections:

Section	Description
<i>The OpenView Platform Adapter</i> on page 44	Explains how to enable and disable NerveCenter's OpenView Platform Adapter.
<i>The NerveCenter IT/Operations Platform Adapter</i> on page 47	Describes the function and use of the NerveCenter IT/Operations Platform Adapter.
<i>Using IT/Operations as a node source</i> on page 47	Describes how to use HP OpenView IT/Operations as a source of node data.
<i>Specifying the Destination of NerveCenter Inform Packets sent to HP OpenView IT/Operations</i> on page 61	Explains how to specify the destination of NerveCenter inform packets sent to IT/Operations.
<i>Configuring HP OpenView IT/Operations to Divert Messages to NerveCenter</i> on page 63	Explains how to configure IT/Operations for better integration with NerveCenter.

The OpenView Platform Adapter

The NerveCenter component that allows NerveCenter to retrieve node data from HP OpenView IT/Operations is known as the OpenView Platform Adapter.

For integration to take place between NerveCenter and IT/Operations, the following must occur:

- ♦ The NerveCenter OpenView Platform Adapter must be installed on the machine hosting IT/Operations.

For detailed instructions on installing the NerveCenter OpenView Platform Adapter, see *Installing NerveCenter*.

- ♦ IT/Operations must be running.
- ♦ The NerveCenter OpenView Platform Adapter must be enabled.

Enabling the NerveCenter OpenView Platform Adapter registers it to start as a service whenever you start IT/Operations. See *How to Enable and Disable the Platform Adapter* on page 44.

- ♦ The NerveCenter OpenView Platform Adapter must be running.

The NerveCenter OpenView Platform Adapter typically starts at the same time IT/Operations starts. See *How to Start and Stop the OpenView Platform Adapter* on page 46.

How to Enable and Disable the Platform Adapter

A typical NerveCenter installation automatically enables the NerveCenter OpenView Platform Adapter. However, there may be times you will need to disable the NerveCenter OpenView Platform Adapter. Once you disable it, you will need to enable it manually before NerveCenter will be able to integrate with IT/Operations again. You can enable or disable the NerveCenter OpenView Platform Adapter by following the procedures described in this section.

Enabling the NerveCenter OpenView Platform Adapter

If the NerveCenter OpenView Platform Adapter is disabled or was never enabled during NerveCenter installation, you can enable it at any time by adding the OpenView Platform Adapter local registration file (ovpa.lrf) to the list of services that are started by ovstart.

Tip If you are unsure if the NerveCenter OpenView Platform Adapter is registered to run with ovstart, you can check IT/Operations's start-up file. When the NerveCenter OpenView Platform Adapter is registered, its data, including the pathname to the executable, appears in the file `ovsuf` typically found in the `conf` directory under IT/Operations's installation directory. If either the ovpa data does not appear or the line with the ovpa data begins with a 1, then the NerveCenter OpenView Platform Adapter will not run with ovstart.

❖ **To enable the NerveCenter OpenView Platform Adapter:**

1. From the command line of the machine hosting HP OpenView IT/Operations, run **ovstop**.
The IT/Operations services stop running.

Tip On Windows, you can also select the **Services - Stop** utility from the Windows **Start** menu.

2. Navigate to the following directory:
 - ♦ Windows: *installation_path*\lrf where *installation_path* is the installation directory for IT/Operations.
 - ♦ UNIX: *installation_path*/OV/lrf where *installation_path* is the installation directory for NerveCenter.

3. Run the following command:

```
ovaddobj ovpa.lrf
```

4. Run **ovstart**.

IT/Operations's services, including NerveCenter OpenView Platform Adapter, start running.

Tip On Windows, you can also select the **Services - Start** utility from the Windows **Start** menu.

The NerveCenter OpenView Platform Adapter will now automatically run every time you start IT/Operations.

Disabling the NerveCenter OpenView Platform Adapter

If the NerveCenter OpenView Platform Adapter is enabled, you can disable it at any time by removing the OpenView Platform Adapter local registration file (ovpa.lrf) from the list of services that are started by ovstart.

❖ **To disable the NerveCenter OpenView Platform Adapter:**

1. From the command line of the machine hosting HP OpenView IT/Operations, run **ovstop**.
IT/Operations's services stop running.

Tip On Windows, you can also select the **Services > Stop** utility from the Windows **Start** menu.

2. Navigate to the following directory:
 - ♦ Windows: `installation_path\lrf` where `installation_path` is the installation directory for IT/Operations.
 - ♦ UNIX: `installation_path/OV/lrf` where `installation_path` is the installation directory for NerveCenter.
3. Run the following command:

```
ovdelobj ovpa.lrf
```
4. Run `ovstart`.
IT/Operations's services, including NerveCenter OpenView Platform Adapter, start running.

Tip On Windows, you can also select the **Services > Start** utility from the Windows **Start** menu.

The NerveCenter OpenView Platform Adapter will no longer automatically run every time you start IT/Operations.

How to Start and Stop the OpenView Platform Adapter

The NerveCenter component that allows you to integrate NerveCenter with HP OpenView IT/Operations is known as the OpenView Platform Adapter. Following a typical installation of the NerveCenter OpenView Platform Adapter component, NerveCenter enabled the OpenView Platform Adapter to run automatically as a service of IT/Operations.

Note If for some reason, the NerveCenter OpenView Platform Adapter was not enabled during installation or has since been disabled, see *How to Enable and Disable the Platform Adapter* on page 44.

Therefore, whenever you start IT/Operations services by typing `ovstart`, the NerveCenter OpenView Platform Adapter will automatically start with any other IT/Operations services.

In the same way, typing `ovstop` stops all IT/Operations services, including the NerveCenter OpenView Platform Adapter.

- ♦ If you want to start only the NerveCenter OpenView Platform Adapter, you can type at the command line:

```
ovstart ovpa
```
- ♦ If you want to stop only the NerveCenter OpenView Platform Adapter, you can type at the command line:

```
ovstop ovpa
```

The NerveCenter IT/Operations Platform Adapter

While the OpenView Platform Adapter allows NerveCenter to retrieve node data from IT/Operations, NerveCenter requires an additional platform adapter, called `semsopca`, for integrating with other Operations Center features.

You can control certain aspects of the NerveCenter IT/O Platform Adapter from the command line. `Semsopca` is a Open-supplied interface that enables NerveCenter to send and receive IT/Operations messages. NerveCenter setup installs the IT/Operations Platform Adapter when OpenView Platform Adapter integration is selected. The proper syntax is:

```
semsopca [-agent] [-v1]
```

`-agent`

Connects to the OpC agent interface. By default, `semsopca` connects to the OpC server interface.

`-v1`

Pipes `semsopca` messages to the UNIX shell console.

Note The `-v1` switch is equivalent to setting the UNIX environment variable `NL_OPC_VERBOSE = 1`.

Using IT/Operations as a node source

NerveCenter can integrate with HP OpenView IT/Operations by receiving information about some or all of the nodes managed by IT/Operations.

NerveCenter can obtain node information from any or all of the following sources:

- ♦ A network management platform, such as HP OpenView Network Node Manager
- ♦ The NerveCenter Discovery behavior model
- ♦ An administrator's manual entries

Note Though NerveCenter supports SNMP v1, v2c, and v3, when NerveCenter obtains its nodes from a platform, the platform does not provide SNMP version information. By default, NerveCenter deems the SNMP agents on these nodes to be SNMP v1 by default.

If you want NerveCenter to attempt SNMP version classification automatically for the nodes it receives from your platform, you must enable auto-classification. Then, NerveCenter can classify the correct SNMP version for each node with each resynchronization. Refer to *Managing NerveCenter* and *NerveCenter: Node Classification* for more information about SNMP auto-classification.

Note If you want NerveCenter to manage SNMP v3 nodes, you must use NerveCenter as your trap source regardless of the node source you configure. Refer to *Managing NerveCenter* for more information about the SNMP trap source.

When NerveCenter uses information obtained by a network management platform, it does not use the platform's database as its repository for managed nodes. Instead, it stores node information in its own database in a node list.

There are several reasons for NerveCenter maintaining a node list in its own database:

- ◆ There may be a considerable distance between the platform's database and NerveCenter, making frequent access time-consuming and costly.
- ◆ NerveCenter adds configuration data to the node data that the management platform does not necessarily provide.
- ◆ Administrators have the option of adding nodes not in the platform's node database to the node list in NerveCenter's database.

Using IT/Operations as a node data source involves the following three items:

- ◆ Setting filters that limit the nodes NerveCenter monitors.
For further details, see *Filtering nodes from HP OpenView IT/Operations* on page 51
- ◆ Populating NerveCenter's node list
For further details, see *Populating NerveCenter's node list using IT/Operations as a node data source* on page 48.
- ◆ Maintaining current data between NerveCenter and IT/Operations
For further details, see *Synchronization with HP OpenView IT/Operations* on page 50.

Populating NerveCenter's node list using IT/Operations as a node data source

NerveCenter is able to receive information about some or all of the nodes managed by IT/Operations.

Note To use IT/Operations to populate NerveCenter's node database, you must have the NerveCenter OpenView Platform Adapter (OVPA) installed and running.

To populate NerveCenter's node list using IT/Operations, you must specify it as a source for the node data. Each NerveCenter database populates its node list from just one network management platform database. Depending on your filtering, the database may contain all the nodes or just a subset. In either case, there is just one source of the information.

Caution If you wish to map system Object Identifiers (OID) to NerveCenter property groups, you must make the necessary configurations in the NerveCenter Client before naming the node data source. (See *Designing and Managing Behavior Models* in the NerveCenter documentation.) After NerveCenter initially populates its node list, any subsequent mapping of OIDs to property groups will affect only new nodes added to the node list.

❖ **To use IT/Operations as a node data source:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the Node Source tab.

NerveCenter displays the Node Source tab.

The screenshot shows a dialog box titled 'LOCALHOST' with a 'Node Source' tab selected. The dialog contains the following fields and controls:

- Tabs: IP Filters, Inform Configuration, Actions, SNMP, SNMPv3, Log, OpC Host, License, Ports, Classify
- Machine Name:
- Port:
- Wanted Capabilities:
- System Object Ids:
- Resync Parent Rate:
- Buttons: Save, Close, Undo, Help

3. In the Machine Name field, type either the name or the IP address of a host that runs IT/Operations.

For example, if you have IT/Operations running on a machine named Norm, you would type the name **Norm** or its IP address in the Machine Name field.

If the Machine Name field is left blank, NerveCenter does not retrieve nodes from any platform.

4. In the Port field, type the number of the port used to communicate with the platform adapter process on the host. The default is 6024.

The platform adapter must be configured to listen on the same port specified in this field.

5. Select **Save**.

NerveCenter will now retrieve its initial node data from IT/Operations's database.

Synchronization with HP OpenView IT/Operations

Over time, a network's topology will change. Eventually IT/Operations will add newly discovered devices to its database. It will also delete nodes and change node information. If NerveCenter depends on IT/Operations for the data in its node list, it will need to adapt to reflect these changes.

NerveCenter will automatically update its node list to keep in sync with IT/Operations's node data. This occurs in the following situations:

- ◆ When IT/Operations adds a node to its node database. After NerveCenter verifies the node meets the criteria set by its filters, it will add the node to its node list.
- ◆ When IT/Operations deletes a node from its node database. NerveCenter will delete from its node list any node that is set to Autodelete. Autodelete is the default setting for any new node added to the node list. This setting can be changed in the node's Node Definition Window in the NerveCenter Client. (See the section "Discovering and defining nodes" in *Designing and Managing Behavior Models* in the NerveCenter documentation.)
- ◆ When IT/Operations changes information about a node in its node database. NerveCenter will make any necessary changes to its node data, including changes in the community string, address, parenting information or the managed/unmanaged state.

Note If IT/Operations unmanages a node in the NerveCenter node list, the unmanaged state will be updated in NerveCenter. However, if IT/Operations unmanages a node not found in NerveCenter's node list, the node will not be added to NerveCenter.

Most often, the node list will only be updated a node at a time. Occasionally, NerveCenter will need to perform a complete resynchronization with the platform. A resynchronization gathers from the platform the most current node data for all nodes. This occurs in the following situations:

- ◆ The NerveCenter Server is started and successfully connects to the OpenView Platform Adapter (OVPA).
- ◆ A connection between the NerveCenter Server and the node source successfully reconnects after being broken.

- ♦ The NerveCenter administrator changes the way in which NerveCenter filters by capabilities or system Object Identifiers (OIDs).
- ♦ A user manually chooses **Resync** in the **Server** menu of the NerveCenter Client.

The **Machine Name** field on the **Node Source** tab of the NerveCenter Administrator specifies the name of the host running the platform resynchronizing with NerveCenter. (See *To use IT/Operations as a node data source*: on page 49.) The **Node Source** and **IP Filters** tabs also specify the parameters NerveCenter uses to filter node data. (See *Filtering nodes from HP OpenView IT/Operations* on page 51.)

Anyone administering NerveCenter should be aware of two important scenarios involving changes to IT/Operations's database:

- ♦ If the name changes in IT/Operations's database, NerveCenter considers it to be a new node.
- ♦ If a node is unmanaged in one of IT/Operations's maps but is managed in another, the node will remain in the managed state in NerveCenter's node data.

Caution Since IT/Operations's node is matched to a NerveCenter node using its name, you should use care when changing NerveCenter's node configurations. Resynchronization adds nodes when it cannot find names that match IT/Operations's map information. Therefore, if you change a node's name in the **Node Definition** window, resynchronization will not find a match and will add a node, resulting in two nodes with the same address but different names.

Filtering nodes from HP OpenView IT/Operations

When using IT/Operations as a source of information about nodes, it is important to determine which of the nodes in IT/Operations's database NerveCenter will manage. NerveCenter does not need to monitor every node on your network.

There are several methods for restricting which nodes in IT/Operations's node database will be placed in NerveCenter's node list:

- ♦ *Filtering Using a Node's Capabilities* on page 51
- ♦ *Filtering Using a Node's System Object Identifier* on page 53
- ♦ *Filtering nodes using a Node's IP Address* on page 54

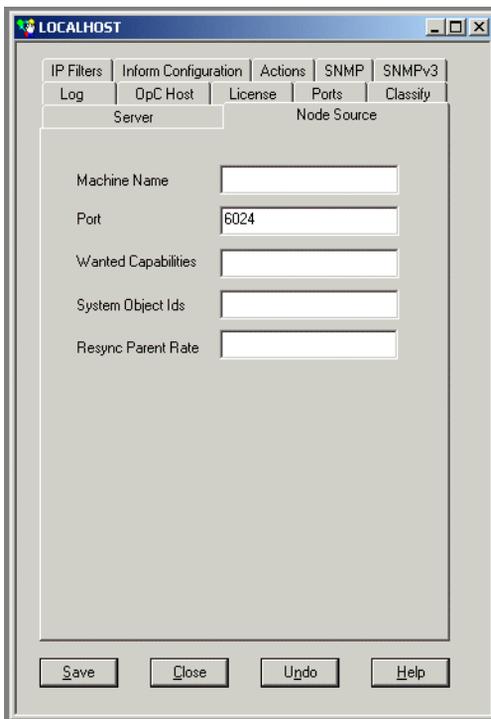
Filtering Using a Node's Capabilities

NerveCenter allows you to monitor managed nodes that have particular capabilities. Typically IT/Operations assigns these capabilities to a node to determine applicable management activities. Some examples of these capabilities are `isRouter`, `isHub`, and `isIP`.

Note Filtering by capabilities is available only when IT/Operations has assigned specific capabilities to a node.

❖ **To filter using a node's capabilities:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the Node Source tab.
The Node Source tab is displayed.



3. In the **Wanted Capabilities** field, type the name of the specific capability desired.
If this field is left blank, NerveCenter will not filter using a node's capability.
4. To enter multiple capabilities, separate each with a space.
NerveCenter will monitor any node that matches at least *one* of the capabilities in the list.
5. Select **Save**.

The NerveCenter Server adds the new capabilities filter. It also closes and opens a new connection with the platform adapter. NerveCenter automatically performs a resynchronization with IT/Operations's database.

New nodes will be added. Any node that is marked Autodelete (the default) will be deleted.

Filtering Using a Node's System Object Identifier

NerveCenter allows you to monitor managed nodes according to their particular system object identifiers (OIDs).

A node's System Object ID is an SNMP MIB-II object in the system group. It identifies the SNMP agent software running on the device. It is, however, commonly used to identify the type and vendor of the device because a particular vendor's agent usually runs on that vendor's devices.

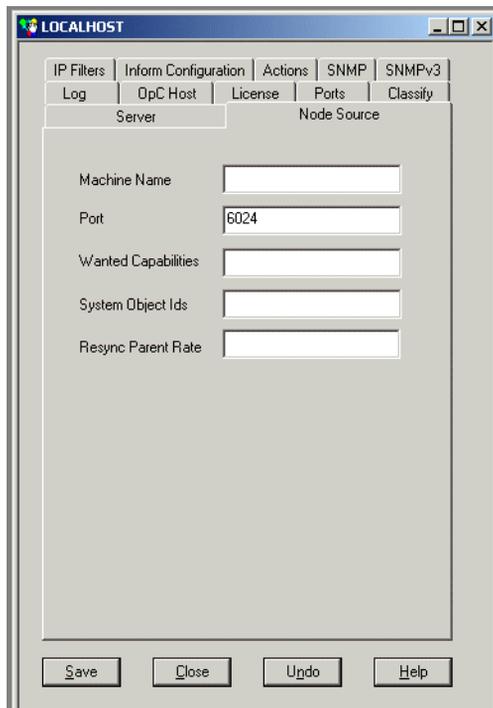
❖ To filter using a node's system object identifier:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the Node Source tab.

NerveCenter displays the Node Source tab.



3. In the **System Object Ids** field, type the name of the system OID wanted.

If this field is left blank, NerveCenter will not filter using a node's system OID.

4. To enter multiple OIDs, separate each with a space.

NerveCenter will monitor any node that matches at least *one* of the OID in the list.

For example, an administrator may want to restrict NerveCenter to nodes running SNMP agents from either Cisco or Hewlett-Packard nodes by typing the following:

```
1.3.6.1.4.1.9 1.3.6.1.4.1.11
```

Any device with an OID matching either of these numbers will be included in the NerveCenter nodes database.

5. Select **Save**.

The NerveCenter Server adds the new OID filter. It also closes and opens a new connection with the platform adapter. NerveCenter automatically resynchronizes with IT/Operations's database.

New nodes will be added. Any node that is marked Autodelete (the default) will be deleted.

Filtering nodes using a Node's IP Address

In addition to filtering nodes by OIDs and capabilities, NerveCenter allows you to filter out all nodes that do not belong to one or more subnets. NerveCenter determines the subnet by combining a specific IP address with a subnet mask. NerveCenter can filter by subnets of both Class B and Class C networks. In Class B networks, the first two octets specify the network while in Class C networks the first three octets identify the network.

Table 3-1 and Table 3-2 illustrate some filter configurations and their results:

Table 3-1. Sample Subnet Filters and Their Results for a Class C Network

IP address	Subnet mask	Result
134.204.179.0	255.255.255.0	All nodes on subnet 134.204.179.0 are included. For example, 134.204.179.7 is included.
197.22.44.0	255.255.255.240	All nodes 1-15 on subnet 197.22.44.0 are included. For example, 197.22.44.5 is included but 197.22.44.35 is excluded.
134.204.179.0 197.22.44.0	255.255.255.0 255.255.255.240	All nodes on subnets 134.204.179.0 and nodes 1-15 on 197.22.44.0 are included. For example, both 134.204.179.7 and 197.22.44.5 are included.

Table 3-2. Sample Subnet Filters and Their Results for a Class B Network

IP address	Subnet mask	Result
132.45.0.0	255.255.0.0	All nodes on subnet 132.45.0.0 are included. For example, 132.45.174.7 is included.
132.45.0.0	255.255.240.0	Nodes 1.0 - 15.255 are included. For example 132.45.14.231 is included but 132.45.174.7 is excluded.

In addition to filtering out all but an entire subnet, NerveCenter allows you to exclude a specific node or range of nodes within the remaining subnet.

Table 3-3 illustrates some filter configurations with exclusions and their results.:

Table 3-3. Sample Subnet Filters with Exclusions and Their Results

IP address	Subnet mask	Excluded node(s)	Result
134.204.179.0	255.255.255.0	40	All nodes on subnet 134.204.179.0 except node 40 are include. For example, 134.204.179.7 is included but 134.204.179.40 is excluded.
134.204.179.0	255.255.255.0	40-55	All nodes on subnet 134.204.179.0 except nodes 40-55 are include. For example, 134.204.179.7 is included but 134.204.179.40 and 134.204.179.52 are excluded.
132.45.0.0	255.255.0.0	63.5	All nodes on subnet 132.45.0.0 except node 63.5 are included.

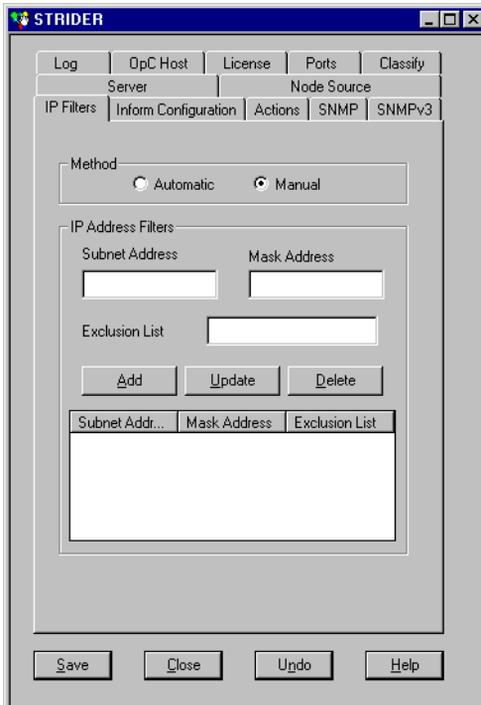
Note You can filter nodes that have been discovered by NerveCenter, provided by the platform node source, or imported from a node file.

NerveCenter can determine automatically or manually subnet criteria used to filter nodes by IP address.

❖ **To configure NerveCenter to determine subnet criteria automatically:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the IP Filters tab.

The IP Filters tab is displayed.



3. In the Method area, select Automatic.

Setting the method to automatic tells NerveCenter to ignore any address filters you enter and use instead the server's masks as a filter. NerveCenter calculates the subnet address and mask using the IP address and mask of each network interface card on the server.

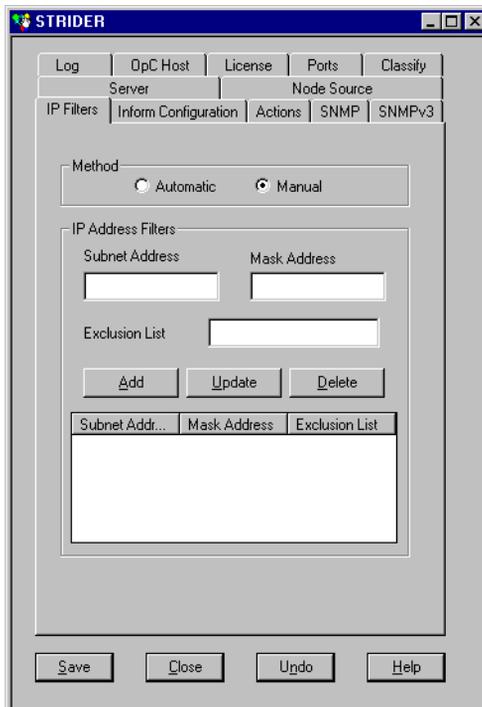
4. Select Save.

NerveCenter will now automatically use the server's masks as a filter.

❖ **To set the subnet criteria manually:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the IP Filters tab.

The IP Filters tab is displayed.



3. In the Method area, select Manual.

When the method is set to manual, NerveCenter will only use the subnet addresses listed in IP Address Filters area. If the IP Address Filters list is empty, NerveCenter ignores a node's subnet when determining if the node will be part of the node database.

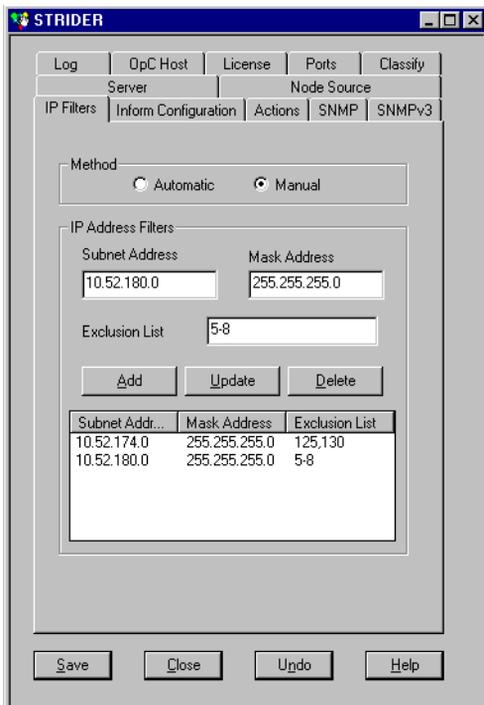
4. In the Subnet Address field, type the appropriate subnet. In the Mask Address field, type the appropriate subnet mask.

A node's subnet address combines the node's IP address with the subnet mask.

5. In the Exclusion List field, enter all the nodes you want excluded from the subnet address. To exclude more than one node, separate each number with a comma without a space. To exclude a continuous range of nodes, use a hyphen to separate the minimum and maximum number by a hyphen.

6. Select Add.

The subnet address and mask address will be added to the IP Address Filters list.



7. Select **Save**.

8. To filter by additional IP addresses and masks, repeat steps 4 and 7.

NerveCenter monitors any address falling within the subnet and not excluded by the filter.

Identifying Parent-Child Relationships

In order to use NerveCenter's Downstream Alarm Suppression behavior model, it is necessary to establish the parent-child relationship between nodes. You can let OVPA extract relationship information from HP OpenView IT/Operations and either store it in the NerveCenter database or in a text file. You can also create the text file manually.

Note By default, OVPA does not get information about a node's parents from IT/Operations. You must configure OVPA to collect that information by doing the following steps.

❖ To identify parent-child relationships using OVPA:

1. Make sure HP OpenView IT/Operations is running. Also make sure the NerveCenter Server is running.
2. Make sure that IT/Operations is set up as your node source in the NerveCenter Administrator. See for more details.
3. If OVPA is running, stop it by typing `ovstop ovpa` at the command line.

4. Start OVPA in parenting mode from the command line by typing one of the following commands:

- ♦ `ovpa -pc`

OVPA runs and computes parenting information, resynchronizing the information periodically. The how often OVPA resynchronizes information is configurable through the Node Source tab in the NerveCenter Administrator. The default resync parent rate is 600 seconds.

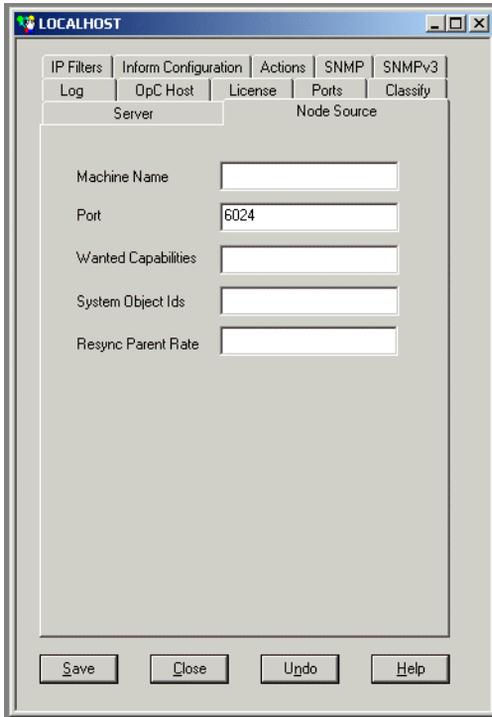
- ♦ `ovpa -pc -writeParentsToFile hostname`

hostname is the name of the machine on which the NerveCenter Server runs. OVPA computes the parenting information, writes it to a file named *hostname_PC.dat*, and then stops.

❖ To change the resync parent rate:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the Node Source tab.

NerveCenter displays the Node Source tab.



3. In the Resync Parent Rate field, type the number of seconds you want between each resync attempt.

If left blank, the default resync parent rate is 600.

4. Select Save.

❖ **To identify parent-child relationships manually:**

1. Open a new text file.
2. Include a line for each node that has parents. Use the following syntax:

```
child parent
```

where *child* is the name of the node and *parent* is the name of each node on which the child is dependent. If you have more than one parent, separate parents by typing a space between each one.

Note If NerveCenter uses a full domain name for the node, use the full name in this file to refer to that node.

For example, if nodeA is dependent on nodeB.domain.com and nodeC, and nodeB.domain.com is dependent on nodeD, then the contents of the text file would look like this:

```
nodeA nodeB.domain.com nodeC
nodeB.domain.com nodeD
```

3. Save and close the file.

For more information see the White Paper *Open NerveCenter: Downstream Alarm Suppression*.

Specifying the Destination of NerveCenter Inform Packets sent to HP OpenView IT/Operations

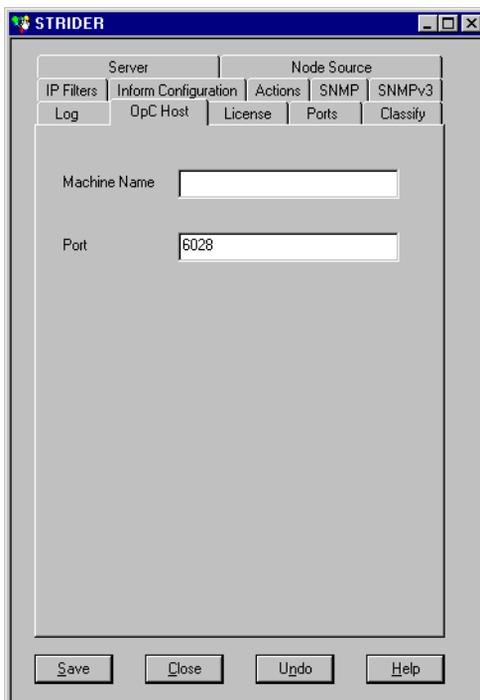
To have NerveCenter communicate with HP OpenView IT/ Operations, you must specify the host and port where the communication will take place.

Note This setting may have already been configured at the time of NerveCenter installation.

❖ **To configure NerveCenter to communicate with HP OpenView IT/Operations:**

4. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*
5. Select the tab OpC Host.

The OpC Host tab appears.



6. In the Machine Name field, type the name of the machine running HP OpenView IT/Operations.
7. In the Port field, type the number of the port NerveCenter uses to communicate with HP OpenView IT/Operations.
By default, NerveCenter uses 6028.
8. Select Save.

NerveCenter will communicate with HP OpenView IT/Operations running on this machine at this port.

Configuring HP OpenView IT/Operations to Divert Messages to NerveCenter

By default, your HP OpenView IT/Operations keeps its own messages. To have NerveCenter receive and process messages you must do the following:

- ♦ Enable the HP OpenView IT/Operations Message Stream Interface (MSI).
- ♦ Configure each type of message that NerveCenter will receive and process.

Reconfiguring every type of message HP OpenView IT/Operations sends would be a lengthy procedure, although certainly possible. At the very least, you may want to reconfigure those types of messages that would be more useful if they were correlated with other messages or with other network or systems events.

Note You must have HP OpenView IT/Operations administrator privileges to complete the tasks described in this section.

❖ To configure HP OpenView IT/Operations to divert messages to NerveCenter:

1. Open the OperationsCenter Node Bank window.

Note The exact menus and window texts used in these steps may be different, depending on the version of HP OpenView IT/Operations you are running. See your HP OpenView IT/Operations documentation for further instructions on implementing message policy.

2. Configure the Message Stream Interface to divert messages to other applications:
 - a. Open the Configure Management Server window.
This window typically provides access to Message Stream Interface configuration.
 - b. Enable all the options in the Message Stream Interface section.
HP OpenView IT/Operations now allows messages to be diverted to other applications.
3. Alter the appropriate message source templates to copy or divert messages to the MSI:
 - a. Open the appropriate message source template.
 - b. Open the advanced options window for the desired message condition.
 - c. In the Message Stream Interface area select for both Agent MSI and Server MSI either Divert Messages or Copy Messages.

Note If you divert the message, the HP OpenView IT/Operations message browser will not post the message unless it comes back from NerveCenter. If you copy the message, it will go to NerveCenter in addition to being posted in the HP OpenView IT/Operations message browser.

- d. Make the same alterations for each message you wish diverted or copied to NerveCenter.
4. Using the Install/Update ITO Software and Configuration window update the configuration on all components for the targeted nodes.

All node agents and the server are updated with the new message requirements.

Your HP OpenView IT/Operations is now set up to forward messages of interest to NerveCenter. You must create NerveCenter behavior models to detect, process, and respond to these messages. See *Designing and Managing Behavior Models* for more details on creating the appropriate behavior models.

Integrating NerveCenter with Micromuse Netcool/OMNIBus

NerveCenter provides the event correlation engine that helps reduce the barrage of events typically displayed in Micromuse Netcool/OMNIBus. In order to integrate NerveCenter with Netcool, you must have the following:

- ◆ Netcool's current NerveCenter probe. If you do not have this probe, please contact your Micromuse representative.
- ◆ NerveCenter's Universal Platform Adapter. See *Installing NerveCenter* for installation instructions.

This chapter describes how to operate the Universal Platform Adapter in a way that facilitates integration between NerveCenter and Netcool. It includes the following sections:

Section	Description
<i>How to Start and Stop the Universal Platform Adapter</i> on page 66	Explains how to start and stop the Universal Platform Adapter from the command line.
<i>How to Specify the Destination of Inform Packets Sent to Micromuse Netcool/OMNIBus</i> on page 67	Explains how to specify the destination of inform packets sent by a NerveCenter Server to Netcool.
<i>How to Configure Netcool to Integrate with the NerveCenter Universal Platform Adapter</i> on page 70	Describes ways you can configure Netcool to further integrate your platform with NerveCenter.
<i>Netcool Integration Reference</i> on page 71	Provides information you may need to reference occasionally when integrating NerveCenter and Micromuse Netcool/OMNIBus.

How to Start and Stop the Universal Platform Adapter

During a typical installation, the NerveCenter Universal Platform Adapter is installed as a Windows service or UNIX daemon. Therefore, whenever you boot Micromuse Netcool/OMNIBus's host machine, the NerveCenter Universal Platform Adapter will automatically start.

There may be times when you want to start or stop the Universal Platform Adapter manually. The procedure depends on your operating system:

- ♦ *Starting and Stopping the Universal Platform Adapter in UNIX* on page 66
- ♦ *Starting and Stopping Platform Integration with Micromuse Netcool/OMNIBus in Windows* on page 67

Starting and Stopping the Universal Platform Adapter in UNIX

During a typical installation, the NerveCenter Universal Platform Adapter is installed as a daemon. Therefore, whenever you boot Netcool's host machine, the NerveCenter Universal Platform Adapter will automatically start.

However, there may be times when you want to start or stop the Universal Platform Adapter manually.

- ♦ To start the Universal Platform Adapter, type at the command line:

```
pastart
```

Note The command `pastart` is a script that runs `paserver` with set options. To change those options edit the script `pastart`. See *Command line reference for Integrating NerveCenter with Netcool* on page 71 for further instructions.

- ♦ To stop the Universal Platform Adapter, type at the command line:

```
pastop
```

Starting and Stopping Platform Integration with Micromuse Netcool/OMNIBus in Windows

During a typical installation, the NerveCenter Universal Platform Adapter is installed as an automatic Windows service. Therefore, whenever you boot Netcool's host machine, the NerveCenter Universal Platform Adapter will automatically be started.

However, there may be times when you wish to start or stop the NerveCenter Universal Platform Adapter manually.

- ♦ To start the Universal Platform Adapter, type at the command line:

```
paserver -n ON
```

- ♦ You can stop the Universal Platform Adapter in the Windows Services applet in the Control Panel or by typing at the command line:

```
paserver -n OFF
```

For a complete discussion of command line switches and how they are used, see *Command line reference for Integrating NerveCenter with Netcool* on page 71.

How to Specify the Destination of Inform Packets Sent to Micromuse Netcool/OMNIBus

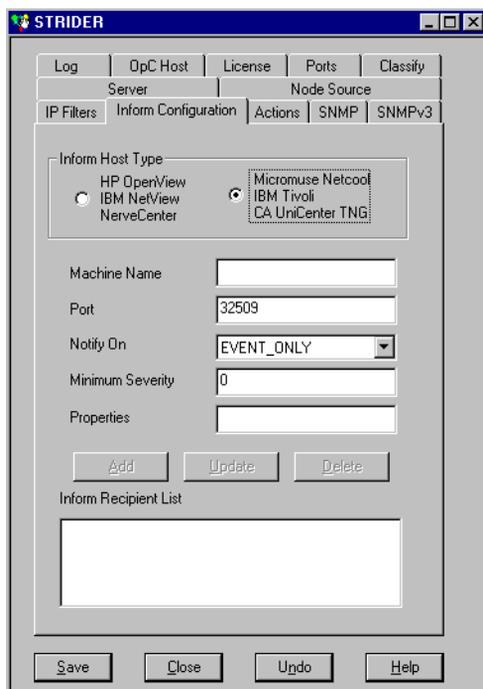
One of the most powerful characteristics of NerveCenter's platform integration is how it informs Micromuse Netcool/OMNIBus. Since NerveCenter's inform packets use the Transmission Control Protocol (TCP), the alert sent to Netcool is more reliable than a standard SNMP trap. As you create or modify a behavior model to notify Netcool, you determine the specific inform number it will receive. However, before you can use this behavior model, NerveCenter must know which machine or machines will receive the inform.

The following procedure will step you through the process of declaring one or more recipients of NerveCenter informs.

❖ To specify the destination of NerveCenter informs sent to Netcool:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
2. Select the Inform Configuration tab.

The Inform Configuration tab appears.



3. In the Inform Host Type field, select the radio button beside Netcool.
Selecting this option enables the NerveCenter Server to recognize the inform recipient as a platform needing the NerveCenter Universal Platform Adapter.
4. In the Machine Name field, type the name of the machine hosting Netcool.
5. In the Port field, type the port number your NerveCenter Server will use when communicating with the NerveCenter Universal Platform Adapter.
By default, NerveCenter uses the port number 32509.
6. In the Notify On field, select EVENT_ONLY.
NerveCenter send events to Netcool when the Inform Platform action is invoked.
7. In the Minimum Severity field, type the number representing the minimum severity an alarm must reach before triggering a message to this platform.

This option enables you to be selective about which events are sent to particular platforms. For example, a local platform could get all events, while a lead or central platform could get only critical events. When NerveCenter sends Informs to your platform, NerveCenter first checks the minimum severity value entered here to ensure that the trap value for the Inform matches or exceeds that severity.

Note There is one case when NerveCenter disregards the minimum severity value specified in Administrator: After NerveCenter sends an Inform, if the condition returns to a normal state—that is, a state below the minimum severity threshold you configure—it’s important that NerveCenter notify the platform of this change. Therefore, if a node transitions the alarm from a severity above the minimum value to a severity below the minimum value, and the transition includes an Inform action, NerveCenter will send a Normal Inform to the platform. This allows the platform to reset the mapped severity color associated with the node.

Note The values associated with each severity in NerveCenter can be viewed and altered in the NerveCenter Client in the **Severity List** found under the **Admin** menu.

8. In the **Properties** field, type zero or more properties.

NerveCenter will only send an Inform packet to this platform if the managed node’s property group contains at least one of the properties listed in this field. If no events are listed, NerveCenter sends events for all managed nodes.

This option enables you to be selective in which events are sent to particular platforms. For example, one platform could receive informs only prompted by routers.

9. Select **Add**.

The platform’s host machine is added to the Inform Recipient list.

10. Repeat steps 3 through 9 for each different machine hosting a network management platform that will receive a NerveCenter inform packet.

11. Select **Save**.

When an alarm performs an Inform Platform action, the relevant platforms included in this list will receive the inform data.

How to Configure Netcool to Integrate with the NerveCenter Universal Platform Adapter

As long as the NerveCenter Universal Platform Adapter and the Netcool's NerveCenter probe are installed and running, NerveCenter will be able to send inform packets to Micromuse Netcool/OMNIbus. There are a few additional ways you may want to configure the integration between NerveCenter and Netcool.

Some of these configurations involve altering Netcool's `nervecenter.rules` file. This file is typically found in the following directory:

```
$OMNIHOME/probes/platform/
```

Where `$OMNIHOME` is the installation directory used by Micromuse, which is typically `/opt/Omnibus`.

The following list describes some of the ways you may want to customize your Netcool/NerveCenter integration.

- ◆ Should the platform adapter's host or port change, you must configure the platform adapter settings accordingly. See *Command line reference for Integrating NerveCenter with Netcool* on page 71 for further instructions. You may also need to reconfigure the Inform Configuration setting in NerveCenter Administrator to reflect the new host or port. See *How to Specify the Destination of Inform Packets Sent to Micromuse Netcool/OMNIbus* on page 67.
- ◆ If you change the probe's host so that it differs from the machine on which the platform adapter resides, you must change the default `-nhost` setting for the adapter to the machine that is running the probe. See *Command line reference for Integrating NerveCenter with Netcool* on page 71 for further instructions. You may also need to change your Netcool configuration. See your Micromuse Netcool/OMNIbus documentation for further details.
- ◆ You may want to create a new event list or modify an existing list to display only traps received from NerveCenter. Creating or modifying a list would involve creating a new filter that displays only informs sent from NerveCenter. See your Micromuse Netcool/OMNIbus documentation for further instructions.
- ◆ You may want to customize an Event List to display fields defined in the `nervecenter.rules` file.
- ◆ By default, messages received from NerveCenter display in the Event List as "See Details." You may want to associate more meaningful messages with NerveCenter informs.

To create more meaningful messages, edit the `@Summary field` value in the `nervecenter.rules` file.

- ◆ You can create a new or change an existing NerveCenter inform recipient at any time. See *How to Specify the Destination of Inform Packets Sent to Micromuse Netcool/OMNIbus* on page 67 for further instructions.

Netcool Integration Reference

The following section includes information you may need to reference occasionally when integrating NerveCenter and Micromuse Netcool/OMNIBus.

This section includes:

- ♦ *Command line reference for Integrating NerveCenter with Netcool* on page 71
- ♦ *Variable Bindings for NerveCenter Informs* on page 72

Command line reference for Integrating NerveCenter with Netcool

During a typical NerveCenter installation, the NerveCenter Universal Platform Adapter is installed as a service or daemon. However, there may be times in which you will want to make changes from the command line. From a command prompt type the following:

```
paserver [-n ON|OFF] [-d] [-g] [-h] [-nhost] [-nport] [-o] [-p] [-r]
          [-scm a|m|r|s] [-tcfg] [-v] [-?]
```

Table 4-1. Command Line Switches for Integrating NerveCenter with Micromuse Netcool/OMNIBus

Switch	Description
-n ON OFF	Enables or disables NerveCenter integration with Netcool. On Windows, when starting paserver from the command line, you must specify either -d or -scm option in combination with either -n or -u .
-d	Runs the Universal Platform Adapter from the command line in debug mode and outputs debug messages to the console. The next time the host machine boots, the Universal Platform Adapter will run as a service or daemon again.
-g	(Windows only) Registers the Universal Platform Adapter as an Event Source.
-h	Displays help information for the Universal Platform Adapter switches.
-nhost	Defines the machine on which the Netcool probe is located. The default is localhost.
-nport	Defines the port the NerveCenter platform adapter uses to communicate with Micromuse Netcool/OMNIBus. The default is 32510.
-o	(Windows only) Records values into Registry. Any options (other than -scm) become a part of the standard configuration. To use this switch, you should first stop the Universal Platform Adapter. You must then restart the Universal Platform Adapter.
-p	Defines the platform adapter's listening port. The default is 32509. Note This number must match the Inform Recipient port in NerveCenter Administrator.
-r	Removes the Universal Platform Adapter as a service. It also removes Registry entries created at install time.

Table 4-1. Command Line Switches for Integrating NerveCenter with Micromuse Netcool/OMNIBus

Switch	Description
<code>[-scm a m r s]</code>	(Windows only) Changes settings in the service control manager: a Installs the Universal Platform Adapter as a service, making it as autostart. The service will start following this command. m Installs the Universal Platform Adapter as a service, making it start on demand. The service will not start following this command. r Removes the Universal Platform Adapter as a service. If the service is running, it will be stopped. s Starts the Universal Platform Adapter as a service. This may be combined with a or m.
<code>-tcfg</code>	Defines the full qualified path/filename for the Event Adapter configuration file. The default is <code>/opt/OSINC/userfiles/nctec.cfg</code>
<code>-v</code>	Views current Universal Platform Adapter settings.
<code>-?</code>	Displays help information for the Universal Platform Adapter switches.

Note `paserver` has many options specific to other integrations. For a complete list of options, see *Managing NerveCenter*.

Variable Bindings for NerveCenter Informs

Depending on how its behavior models are designed, a NerveCenter detecting particular network conditions can send Inform packets to Micromuse Netcool/OMNIBus. Although these Inform packets use TCP/IP, they are similar in content to an SNMP trap, containing trap numbers (generic and specific), an enterprise OID, and a variable-binding list. The lengthy `varbinds` contains information about the alarm that performed the Inform action, such as the name of alarm, the object the alarm was monitoring, and the names of the origin and destination alarm states.

The Netcool receiving the trap can make use of the information in the variable bindings much the same way it would use variable bindings found in an SNMP trap.

The table below explains the contents of this variable-binding list.

Table 4-2. Inform Trap Variable Bindings

Variable Binding	Value
0	The name of the domain where NerveCenter is running
1	The name of the host machine running the NerveCenter Server
2	The name of the managed node associated with the alarm
3	The base object associated with the alarm (for example, <code>ifEntry</code> for a monitored interface)

Table 4-2. Inform Trap Variable Bindings (continued)

Variable Binding	Value
4	The base object instance associated with the alarm (for example, 4 for the fourth interface)
5	The name of the subobject. This would include the null string if the alarm is not associated with an alarm.
6	The property group assigned to the node or the subobject
7	The name of the alarm
8	The alarm's property
9	The name of the trigger that caused the alarm transition
10	The state of the alarm before the transition
11	The severity of the state of the alarm prior to the transition
12	The state of the alarm after the transition
13	The severity of the state of the alarm after the transition
14	The maximum severity of all active alarms for the managed node before this alarm transition
15	The maximum severity of all active alarms for the managed node after this alarm transition
16	The variable bindings in the poll or trap that caused the transition. These variable bindings are formatted as follows: Attribute ncTransitionVarBinds = <i>attribute.instance=value;attribute=value;...</i>
17	The identification number of the alarm instance

Integrating NerveCenter with IBM NetView for Solaris

NerveCenter provides the event correlation engine that helps reduce the barrage of events typically displayed in IBM NetView for Solaris. NetView can provide NerveCenter with node data and NerveCenter can send inform messages to NetView when it detects significant events.

Note NerveCenter can use the node database from IBM NetView for Solaris to populate and maintain its own node list. See the chapter “Managing Nodes” in *Managing NerveCenter* for more details.

This chapter describes how to integrate NerveCenter with NetView and includes the following sections:

Section	Description
<i>The OpenView Platform Adapter</i> on page 76	Explains how to enable and disable NerveCenter’s OpenView Platform Adapter.
<i>Using NetView as a node source</i> on page 79	Explains how to populate NerveCenter’s node list with nodes from NetView’s node database
<i>Sending NerveCenter Informs to IBM NetView for Solaris</i> on page 92	Explains how to configure inform recipients for behavior models that send informs.
<i>The Reliability of NerveCenter Informs Sent to IBM NetView for Solaris</i> on page 95	Describes the advantage of sending NerveCenter inform over SNMP traps. It also describes how to use NerveCenter’s Inform Acknowledgement feature.
<i>How to Configure NetView to Integrate with NerveCenter</i> on page 100	Explains how to configure NetView for better integration with NerveCenter.
<i>How to Reconfigure NetView before Removing the NerveCenter OpenView Platform Adapter</i> on page 104	Explains how to reconfigure NetView before removing the NerveCenter OpenView Platform Adapter.
<i>NetView Integration Reference</i> on page 106	Provides information you may need to reference occasionally when integrating NerveCenter and IBM NetView for Solaris.

The OpenView Platform Adapter

The NerveCenter component that allows NerveCenter to integrate with IBM NetView for Solaris is known as the OpenView Platform Adapter.

For integration to take place between NerveCenter and NetView, the following must occur:

- ◆ The NerveCenter OpenView Platform Adapter must be installed on the machine hosting NetView.

For detailed instructions on installing the NerveCenter OpenView Platform Adapter, see *Installing NerveCenter*.

- ◆ NetView must be running.
- ◆ The NerveCenter OpenView Platform Adapter must be enabled.

Enabling the NerveCenter OpenView Platform Adapter registers it to start as a service whenever you start NetView. See *How to Enable and Disable the Platform Adapter* on page 77.

- ◆ The NerveCenter OpenView Platform Adapter must be running.

The NerveCenter OpenView Platform Adapter typically starts at the same time NetView starts. See *How to Start and Stop the OpenView Platform Adapter* on page 78.

- ◆ Running a NerveCenter Server and NetView on the same machine is not supported.

How to Enable and Disable the Platform Adapter

A typical NerveCenter installation automatically enables the NerveCenter OpenView Platform Adapter. However, there may be times you will need to disable the NerveCenter OpenView Platform Adapter. Once you disable it, you will need to enable it manually before NerveCenter will be able to integrate with NetView again. You can enable or disable the NerveCenter OpenView Platform Adapter by following the procedures described in this section.

Enabling the NerveCenter OpenView Platform Adapter

If the NerveCenter OpenView Platform Adapter is disabled or was never enabled during NerveCenter installation, you can enable it at any time by adding the OpenView Platform Adapter local registration file (`ovpa.lrf`) to the list of services that are started by `ovstart`.

Tip If you are unsure if the NerveCenter OpenView Platform Adapter is registered to run with `ovstart`, you can check NetView's start-up file. When the NerveCenter OpenView Platform Adapter is registered, its data, including the pathname to the executable, appears in the file `ovsuf` typically found in the `conf` directory under NetView's installation directory. If either the `ovpa` data does not appear or the line with the `ovpa` data begins with a 1, then the NerveCenter OpenView Platform Adapter will not run with `ovstart`.

❖ To enable the NerveCenter OpenView Platform Adapter:

1. From the command line of the machine hosting IBM NetView for Solaris, run `ovstop`.
The NetView services stop running.
2. Navigate to the following directory:
 - ♦ Windows: `installation_path\lrf` where `installation_path` is the installation directory for NetView.
 - ♦ UNIX: `installation_path/OV/lrf` where `installation_path` is the installation directory for NerveCenter.
3. Run the following command:

```
ovaddobj ovpa.lrf
```
4. Run `ovstart`.
NetView's services, including NerveCenter OpenView Platform Adapter, start running.

The NerveCenter OpenView Platform Adapter will now automatically run every time you start NetView.

Disabling the NerveCenter OpenView Platform Adapter

If the NerveCenter OpenView Platform Adapter is enabled, you can disable it at any time by removing the OpenView Platform Adapter local registration file (`ovpa.lrf`) from the list of services that are started by `ovstart`.

❖ To disable the NerveCenter OpenView Platform Adapter:

1. From the command line of the machine hosting IBM NetView for Solaris, run `ovstop`.
NetView's services stop running.

Tip On Windows, you can also select the **Services - Stop** utility from the Windows **Start** menu.

2. Navigate to the following directory:
 - ♦ Windows: `installation_path\lrf` where `installation_path` is the installation directory for NetView.
 - ♦ UNIX: `installation_path/OV/lrf` where `installation_path` is the installation directory for NerveCenter.

3. Run the following command:

```
ovdelobj ovpa.lrf
```

4. Run `ovstart`.

NetView's services, including NerveCenter OpenView Platform Adapter, start running.

The NerveCenter OpenView Platform Adapter will no longer automatically run every time you start NetView.

How to Start and Stop the OpenView Platform Adapter

The NerveCenter component that allows you to integrate NerveCenter with IBM NetView for Solaris is known as the OpenView Platform Adapter. Following a typical installation of the NerveCenter OpenView Platform Adapter component, NerveCenter enabled the OpenView Platform Adapter to run automatically as a service of NetView.

Note If for some reason, the NerveCenter OpenView Platform Adapter was not enabled during installation or has since been disabled, see *How to Enable and Disable the Platform Adapter* on page 77.

Therefore, whenever you start NetView services by typing `ovstart`, the NerveCenter OpenView Platform Adapter will automatically start with any other NetView services.

In the same way, typing `ovstop` stops all NetView services, including the NerveCenter OpenView Platform Adapter.

- ◆ If you want to start only the NerveCenter OpenView Platform Adapter, you can type at the command line:

```
ovstart ovpa
```

- ◆ If you want to stop only the NerveCenter OpenView Platform Adapter, you can type at the command line:

```
ovstop ovpa
```

Using NetView as a node source

NerveCenter can integrate with IBM NetView for Solaris by receiving information about some or all of the nodes managed by NetView.

NerveCenter can obtain node information from any or all of the following sources:

- ◆ A network management platform, such as HP OpenView Network Node Manager or IBM NetView for Solaris
- ◆ The NerveCenter Discovery behavior model
- ◆ An administrator's manual entries

Note Though NerveCenter supports SNMP v1, v2c, and v3, when NerveCenter obtains its nodes from a platform, the platform does not provide SNMP version information. By default, NerveCenter deems the SNMP agents on these nodes to be SNMP v1 by default.

If you want NerveCenter to attempt SNMP version classification automatically for the nodes it receives from your platform, you must enable auto-classification. Then, NerveCenter can classify the correct SNMP version for each node with each resynchronization. Refer to *Managing NerveCenter* for more information about SNMP auto-classification.

Note If you want NerveCenter to manage SNMP v3 nodes, you must use NerveCenter as your trap source regardless of the node source you configure. Refer to *Managing NerveCenter* for more information about the SNMP trap source.

When NerveCenter uses information obtained by a network management platform, it does not use the platform's database as its repository for managed nodes. Instead, it stores node information in its own database in a node list.

There are several reasons for NerveCenter maintaining a node list in its own database:

- ◆ There may be a considerable distance between the platform's database and NerveCenter, making frequent access time-consuming and costly.

- ◆ NerveCenter adds configuration data to the node data that the management platform does not necessarily provide.
- ◆ Administrators have the option of adding nodes not in the platform's node database to the node list in NerveCenter's database.

Using NetView as a node data source involves the following three items:

- ◆ Setting filters that limit the nodes NerveCenter monitors.
For further details, see *Filtering nodes from IBM NetView for Solaris* on page 83.
- ◆ Populating NerveCenter's node list
For further details, see *Filtering nodes from IBM NetView for Solaris* on page 83
- ◆ Maintaining current data between NerveCenter and NetView
For further details, see *Synchronization with IBM NetView for Solaris* on page 82.

Populating NerveCenter's node list using NetView as a node data source

NerveCenter is able to receive information about some or all of the nodes managed by NetView.

Note To use NetView to populate NerveCenter's node database, you must have the NerveCenter OpenView Platform Adapter (OVPA) installed and running.

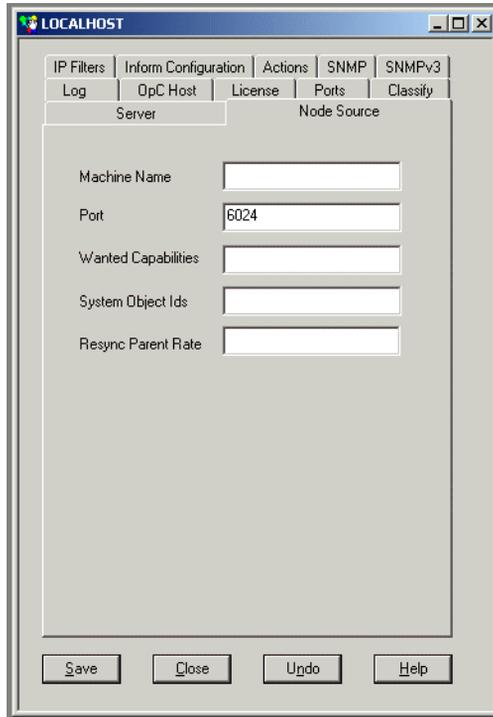
To populate NerveCenter's node list using NetView, you must specify it as a source for the node data. Each NerveCenter database populates its node list from just one network management platform database. Depending on your filtering, the database may contain all the nodes or just a subset. In either case, there is just one source of the information.

Caution If you wish to map system Object Identifiers (OID) to NerveCenter property groups, you must make the necessary configurations in the NerveCenter Client before naming the node data source. (See *Designing and Managing Behavior Models* in the NerveCenter documentation.) After NerveCenter initially populates its node list, any subsequent mapping of OIDs to property groups will affect only new nodes added to the node list.

❖ To use NetView as a node data source:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the Node Source tab.

NerveCenter displays the Node Source tab.



3. In the **Machine Name** field, type either the name or the **IP** address of a host that runs NetView.

For example, if you have NetView running on a machine named Norm, you would type the name **Norm** or its IP address in the Machine Name field.

If the Machine Name field is left blank, NerveCenter does not retrieve nodes from any platform.

4. In the **Port** field, type the number of the port used to communicate with the platform adapter process on the host. The default is 6024.

The platform adapter must be configured to listen on the same port specified in this field.

5. Select **Save**.

NerveCenter will now retrieve its initial node data from NetView's database.

Synchronization with IBM NetView for Solaris

Over time, a network's topology will change. Eventually NetView will add newly discovered devices to its database. It will also delete nodes and change node information. If NerveCenter depends on NetView for the data in its node list, it will need to adapt to reflect these changes.

NerveCenter will automatically update its node list to keep in sync with NetView's node data. This occurs in the following situations:

- ◆ When NetView adds a node to its node database. After NerveCenter verifies the node meets the criteria set by its filters, it will add the node to its node list.
- ◆ When NetView deletes a node from its node database. NerveCenter will delete from its node list any node that is set to Autodelete. Autodelete is the default setting for any new node added to the node list. This setting can be changed in the node's Node Definition Window in the NerveCenter Client. (See the section "Discovering and defining nodes" in *Designing and Managing Behavior Models*.)
- ◆ When NetView changes information about a node in its node database. NerveCenter will make any necessary changes to its node data, including changes in the community string, address, parenting information or the managed/unmanaged state.

Note If NetView unmanages a node in the NerveCenter node list, the unmanaged state will be updated in NerveCenter. However, if NetView unmanages a node not found in NerveCenter's node list, the node will not be added to NerveCenter.

Most often, the node list will only be updated a node at a time. Occasionally, NerveCenter will need to perform a complete resynchronization with the platform. A resynchronization gathers from the platform the most current node data for all nodes. This occurs in the following situations:

- ◆ The NerveCenter Server is started and successfully connects to the OpenView Platform Adapter (OVPA).
- ◆ A connection between the NerveCenter Server and the node source successfully reconnects after being broken.
- ◆ The NerveCenter administrator changes the way in which NerveCenter filters by capabilities or system Object Identifiers (OIDs).
- ◆ A user manually chooses **Resync** in the **Server** menu of the NerveCenter Client.

The **Machine Name** field on the **Node Source** tab of the NerveCenter Administrator specifies the name of the host running the platform resynchronizing with NerveCenter. (See *Populating NerveCenter's node list using NetView as a node data source* on page 80 for more details on how to declare a node data source.) The **Node Source** and **IP Filters** tabs also specify the parameters NerveCenter uses to filter node data. (See *Filtering nodes from IBM NetView for Solaris* on page 83.)

Anyone administering NerveCenter should be aware of two important scenarios involving changes to NetView's database:

- ◆ If the name changes in NetView's database, NerveCenter considers it to be a new node.
- ◆ If a node is unmanaged in one of NetView's maps but is managed in another, the node will remain in the managed state in NerveCenter's node data.

Caution Since NetView's node is matched to a NerveCenter node using its name, you should use care when changing NerveCenter's node configurations. Resynchronization adds nodes when it cannot find names that match NetView's map information. Therefore, if you change a node's name in the Node Definition window, resynchronization will not find a match and will add a node, resulting in two nodes with the same address but different names.

Filtering nodes from IBM NetView for Solaris

When using NetView as a source of information about nodes, it is important to determine which of the nodes in NetView's database NerveCenter will manage. NerveCenter does not need to monitor every node on your network.

There are several methods for restricting which nodes in NetView's node database will be placed in NerveCenter's node list:

- ◆ *Filtering Using a Node's Capabilities* on page 83
- ◆ *Filtering Using a Node's System Object Identifier* on page 84
- ◆ *Filtering nodes using a Node's IP Address* on page 86

Filtering Using a Node's Capabilities

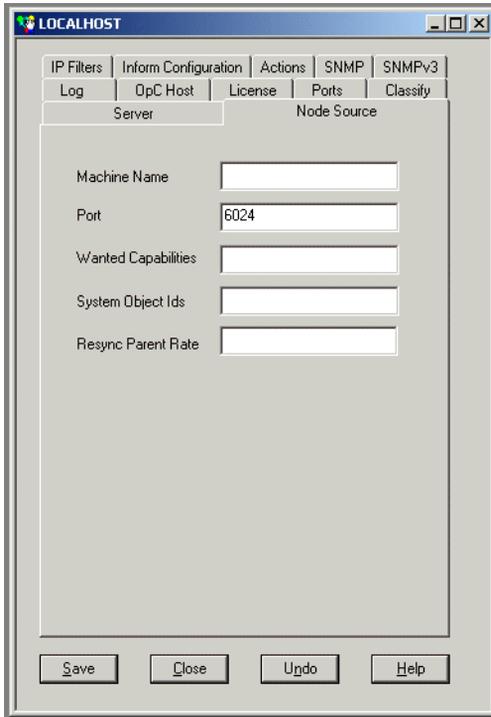
NerveCenter allows you to monitor managed nodes that have particular capabilities. Typically NetView assigns these capabilities to a node to determine applicable management activities. Some examples of these capabilities are isRouter, isHub, and isIP.

Note Filtering by capabilities is available only when NetView has assigned specific capabilities to a node.

❖ **To filter using a node's capabilities:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the Node Source tab.

The Node Source tab is displayed.



3. In the **Wanted Capabilities** field, type the name of the specific capability desired.

If this field is left blank, NerveCenter will not filter using a node's capability.

4. To enter multiple capabilities, separate each with a space.

NerveCenter will monitor any node that matches at least *one* of the capabilities in the list.

5. Select **Save**.

The NerveCenter Server adds the new capabilities filter. It also closes and opens a new connection with the platform adapter. NerveCenter automatically performs a resynchronization with NetView's database.

New nodes will be added. Any node that is marked Autodelete (the default) will be deleted.

Filtering Using a Node's System Object Identifier

NerveCenter allows you to monitor managed nodes according to their particular system object identifiers (OIDs).

A node's System Object ID is an SNMP MIB-II object in the system group. It identifies the SNMP agent software running on the device. It is, however, commonly used to identify the type and vendor of the device because a particular vendor's agent usually runs on that vendor's devices.

❖ **To filter using a node's system object identifier:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the Node Source tab.

NerveCenter displays the Node Source tab.

3. In the System Object Ids field, type the name of the system OID wanted.

If this field is left blank, NerveCenter will not filter using a node's system OID.

4. To enter multiple OIDs, separate each with a space.

NerveCenter will monitor any node that matches at least *one* of the OID in the list.

For example, an administrator may want to restrict NerveCenter to nodes running SNMP agents from either Cisco or Hewlett-Packard nodes by typing the following:

1.3.6.1.4.1.9 1.3.6.1.4.1.11

Any device with an OID matching either of these numbers will be included in the NerveCenter nodes database.

5. Select Save.

The NerveCenter Server adds the new OID filter. It also closes and opens a new connection with the platform adapter. NerveCenter automatically resynchronizes with NetView's database.

New nodes will be added. Any node that is marked Autodelete (the default) will be deleted.

Filtering nodes using a Node's IP Address

In addition to filtering nodes by OIDs and capabilities, NerveCenter allows you to filter out all nodes that do not belong to one or more subnets. NerveCenter determines the subnet by combining a specific IP address with a subnet mask. NerveCenter can filter by subnets of both Class B and Class C networks. In Class B networks, the first two octets specify the network while in Class C networks the first three octets identify the network.

Table 5-1 and Table 5-2 illustrate some filter configurations and their results:

Table 5-1. Sample Subnet Filters and Their Results for a Class C Network

IP address	Subnet mask	Result
134.204.179.0	255.255.255.0	All nodes on subnet 134.204.179.0 are included. For example, 134.204.179.7 is included.
197.22.44.0	255.255.255.240	All nodes 1-15 on subnet 197.22.44.0 are included. For example, 197.22.44.5 is included but 197.22.44.35 is excluded.
134.204.179.0 197.22.44.0	255.255.255.0 255.255.255.240	All nodes on subnets 134.204.179.0 and nodes 1-15 on 197.22.44.0 are included. For example, both 134.204.179.7 and 197.22.44.5 are included.

Table 5-2. Sample Subnet Filters and Their Results for a Class B Network

IP address	Subnet mask	Result
132.45.0.0	255.255.0.0	All nodes on subnet 132.45.0.0 are included. For example, 132.45.174.7 is included.
132.45.0.0	255.255.240.0	Nodes 1.0 - 15.255 are included. For example 132.45.14.231 is included but 132.45.174.7 is excluded.

In addition to filtering out all but an entire subnet, NerveCenter allows you to exclude a specific node or range of nodes within the remaining subnet.

Table 5-3 illustrates some filter configurations with exclusions and their results.

Table 5-3. Sample Subnet Filters with Exclusions and Their Results

IP address	Subnet mask	Excluded node(s)	Result
134.204.179.0	255.255.255.0	40	All nodes on subnet 134.204.179.0 except node 40 are include. For example, 134.204.179.7 is included but 134.204.179.40 is excluded.
134.204.179.0	255.255.255.0	40-55	All nodes on subnet 134.204.179.0 except nodes 40-55 are include. For example, 134.204.179.7 is included but 134.204.179.40 and 134.204.179.52 are excluded.
132.45.0.0	255.255.0.0	63.5	All nodes on subnet 132.45.0.0 except node 63.5 are included.

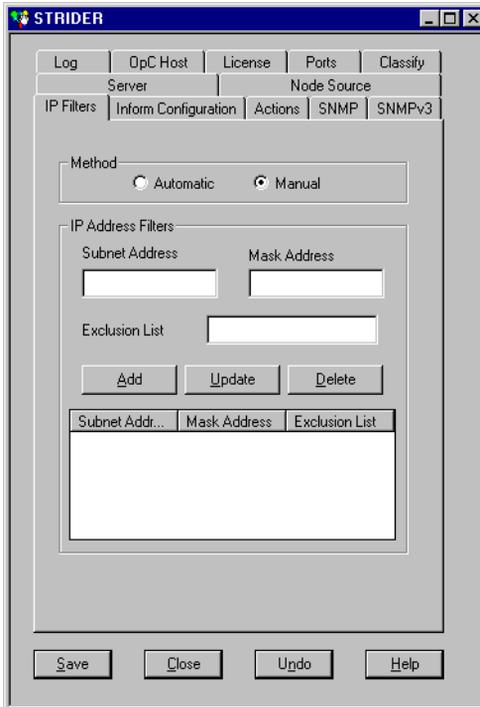
Note You can filter nodes that have been discovered by NerveCenter, provided by the platform node source, or imported from a node file.

NerveCenter can determine automatically or manually subnet criteria used to filter nodes by IP address.

❖ **To configure NerveCenter to determine subnet criteria automatically:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.
For further instructions, see *Managing NerveCenter*.
2. Select the IP Filters tab.

The IP Filters tab is displayed.



3. In the Method area, select Automatic.

Setting the method to automatic tells NerveCenter to ignore any address filters you enter and use instead the server's masks as a filter. NerveCenter calculates the subnet address and mask using the IP address and mask of each network interface card on the server.

4. Select Save.

NerveCenter will now automatically use the server's masks as a filter.

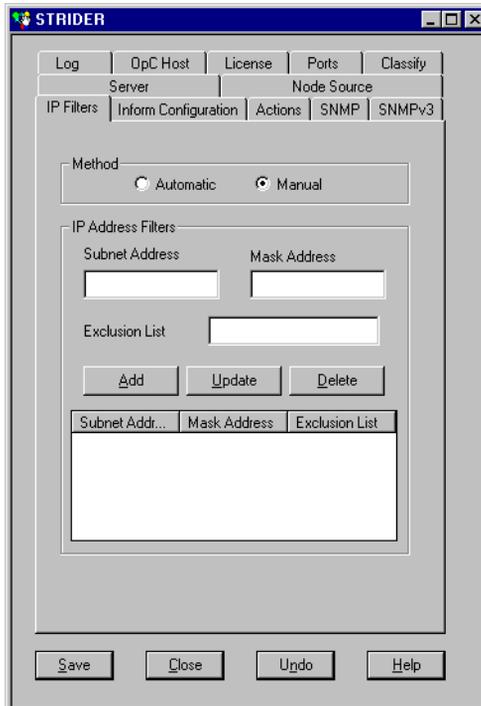
❖ **To set the subnet criteria manually:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server.

For further instructions, see *Managing NerveCenter*.

2. Select the IP Filters tab.

The IP Filters tab is displayed.



3. In the Method area, select Manual.

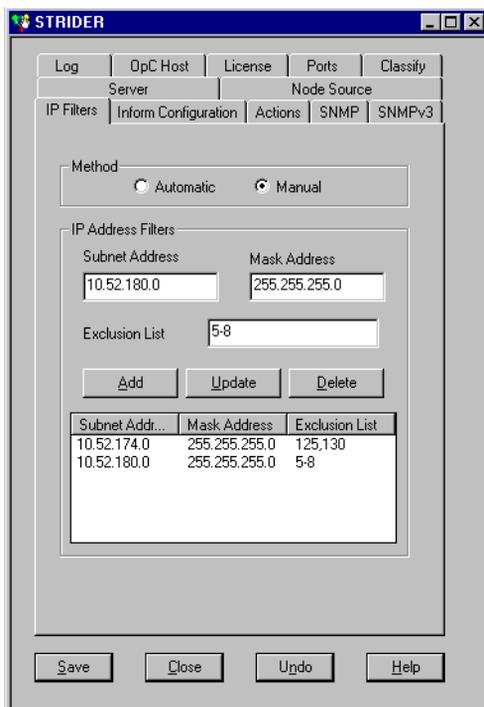
When the method is set to manual, NerveCenter will only use the subnet addresses listed in IP Address Filters area. If the IP Address Filters list is empty, NerveCenter ignores a node's subnet when determining if the node will be part of the node database.

4. In the Subnet Address field, type the appropriate subnet. In the Mask Address field, type the appropriate subnet mask.

A node's subnet address combines the node's IP address with the subnet mask.

5. In the Exclusion List field, enter all the nodes you want excluded from the subnet address. To exclude more than one node, separate each number with a comma without a space. To exclude a continuous range of nodes, use a hyphen to separate the minimum and maximum number by a hyphen.
6. Select Add.

The subnet address and mask address will be added to the IP Address Filters list.



7. Select **Save**.
8. To filter by additional IP addresses and masks, repeat steps 4 and 7.

NerveCenter monitors any address falling within the subnet and not excluded by the filter.

Identifying Parent-Child Relationships

In order to use NerveCenter's Downstream Alarm Suppression behavior model, it is necessary to establish the parent-child relationship between nodes. You can let OVPA extract relationship information from IBM NetView for Solaris and either store it in the NerveCenter database or in a text file. You can also create the text file manually.

Note By default, OVPA does not get information about a node's parents from NetView. You must configure OVPA to collect that information by doing the following steps.

❖ **To identify parent-child relationships using OVPA:**

1. Make sure IBM NetView for Solaris is running. Also make sure the NerveCenter Server is running.
2. Make sure that NetView is set up as your node source in the NerveCenter Administrator. See *Populating NerveCenter's node list using NetView as a node data source* on page 80 for more details.
3. If OVPA is running, stop it by typing `ovstop ovpa` at the command line.
4. Start OVPA in parenting mode from the command line by typing one of the following commands:
 - ♦ `ovpa -pc`
 OVPA runs and computes parenting information, resynchronizing the information periodically. The how often OVPA resynchronizes information is configurable through the Node Source tab in the NerveCenter Administrator. The default resync parent rate is 600 seconds.
 - ♦ `ovpa -pc -writeParentsToFile hostname`
hostname is the name of the machine on which the NerveCenter Server runs. OVPA computes the parenting information, writes it to a file named *hostname_PC.dat*, and then stops.

❖ **To identify parent-child relationships manually:**

1. Open a new text file.
2. Include a line for each node that has parents. Use the following syntax:

```
child parent
```

where *child* is the name of the node and *parent* is the name of each node on which the child is dependent. If you have more than one parent, separate parents by typing a space between each one.

Note If NerveCenter uses a full domain name for the node, use the full name in this file to refer to that node.

For example, if nodeA is dependent on nodeB.domain.com and nodeC, and nodeB.domain.com is dependent on nodeD, then the contents of the text file would look like this:

```
nodeA nodeB.domain.com nodeC
nodeB.domain.com nodeD
```

3. Save and close the file.

For more information see the White Paper *Open NerveCenter: Downstream Alarm Suppression*.

Sending NerveCenter Informs to IBM NetView for Solaris

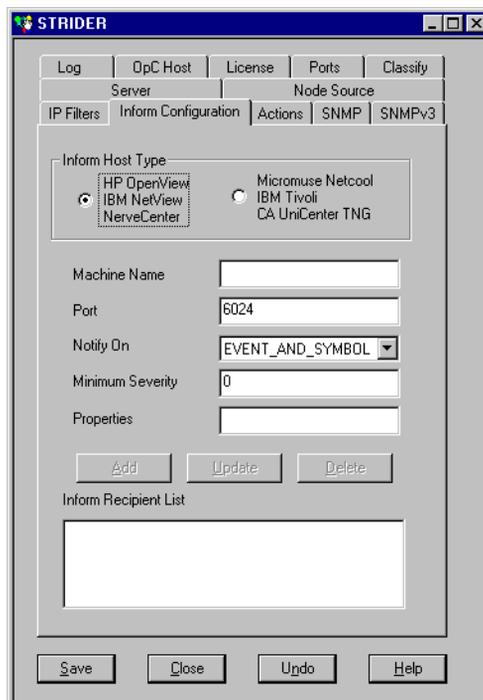
One of NerveCenter's powerful platform integration features is its ability to send inform packets to IBM NetView for Solaris. Since the inform packets use the Transmission Control Protocol (TCP), the alert sent to NetView is more reliable than a standard SNMP trap. To configure NerveCenter to keep track of acknowledgements sent in response to an inform, see *The Reliability of NerveCenter Informs Sent to IBM NetView for Solaris* on page 95.

As you create or modify a behavior model to notify NetView, you determine the specific inform number it will receive. However, before you can use this behavior model, NerveCenter must know which machine or machines will receive the inform.

The following procedure will step you through the process of declaring one or more recipients of NerveCenter informs.

- ❖ **To specify the destination of NerveCenter informs sent to NetView:**
 1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
 2. Select the Inform Configuration tab.

The Inform Configuration tab appears.



3. In the Inform Host Type field, select HP OpenView IBM NetView NerveCenter.
Selecting this option associates the NerveCenter OpenView Platform Adapter with the machine hosting NetView.
4. In the Machine Name field, type the name of the machine hosting NetView.
5. In the Port field, type the port number your NerveCenter Server will use when communicating with the NerveCenter OpenView Platform Adapter.
By default, NerveCenter uses the port number 6024.
6. In the Notify On field, select one of the following:
 - ◆ **EVENT_ONLY**—Events are sent to this platform host when an Inform action is invoked. No symbol color change messages are sent.
 - ◆ **SYMBOL_ONLY**—Messages causing symbol color changes on the platform map are sent to this host. Events are not sent.
 - ◆ **EVENT_AND_SYMBOL**—Both event and symbol messages are sent.

Note Selecting either `SYMBOL_ONLY` or `EVENT_AND_SYMBOL` causes the node's object to update according to the NerveCenter color in NetView's map.

The recommended setting for NetView is `EVENT_AND_SYMBOL`. Even though this setting increases traffic overhead, the other two options prevents data from reaching your platform.

This setting need to be consistent with your platform's map configuration settings. For example, if you configured your platform to allow symbol color changes from NerveCenter but now select `EVENT_ONLY`, you will see no symbol color changes.

7. In the **Minimum Severity** field, type the number representing the minimum severity an alarm must reach before triggering a message to this platform.

This option enables you to be selective about which events are sent to particular platforms. For example, a local platform could get all events, while a lead or central platform could get only critical events. When NerveCenter sends Informs to your platform, NerveCenter first checks the minimum severity value entered here to ensure that the trap value for the Inform matches or exceeds that severity.

Note There is one case when NerveCenter disregards the minimum severity value specified in Administrator: After NerveCenter sends an Inform, if the condition returns to a normal state—that is, a state below the minimum severity threshold you configure—it's important that NerveCenter notify the platform of this change. Therefore, if a node transitions the alarm from a severity above the minimum value to a severity below the minimum value, and the transition includes an Inform action, NerveCenter will send a Normal Inform to the platform. This allows the platform to reset the mapped severity color associated with the node.

Note The values associated with each severity in NerveCenter can be viewed and altered in the NerveCenter Client in the **Severity List** found under the **Admin** menu. See *Designing and Managing Behavior Models* in the NerveCenter documentation for more details.

8. In the **Properties** field, type zero or more properties.

NerveCenter will only send an inform packet to this platform if the managed node's property group contains at least one of the properties listed in this field. If no events are listed, NerveCenter sends events for all managed nodes.

This option enables you to be selective about which events are sent to particular platforms. For example, one platform could receive informs prompted by only routers.

9. Select **Add**.

The platform's host machine is added to the Inform Recipient List.

10. Repeat steps 3 through 9 for each machine hosting NetView that will receive a NerveCenter inform packet.

11. Select Save.

When a behavior model performs an Inform alarm action, each machine within the Inform Recipient List that is associated with the NerveCenter OpenView Platform Adapter will receive the inform as long as the alarm meets the relevant criteria.

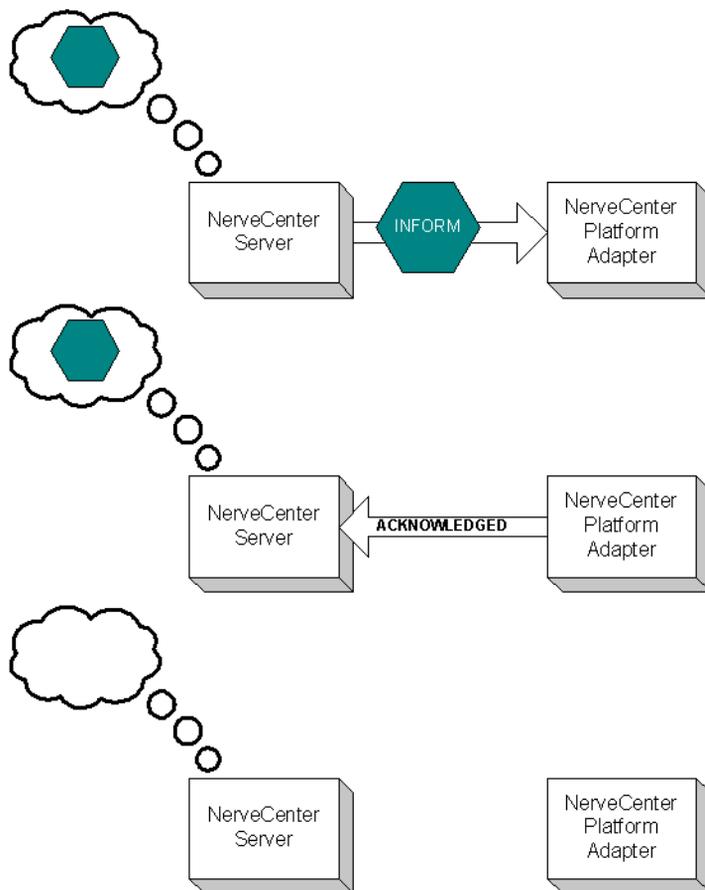
The Reliability of NerveCenter Informs Sent to IBM NetView for Solaris

Since NerveCenter informs are sent via the Transmission Control Protocol (TCP) they tend to be more reliable than SNMP traps. TCP allows for the following:

- ◆ NerveCenter informs take priority over SNMP traps.
- ◆ A direct connection is made between the NerveCenter Server and the NerveCenter OpenView Platform Adapter.
- ◆ The NerveCenter OpenView Platform Adapter can acknowledge the receipt of a NerveCenter inform.

The following diagram illustrates how the NerveCenter OpenView Platform Adapter acknowledges informs.

Figure 5-1. How NerveCenter handles inform acknowledgement



When a NerveCenter behavior model performs the Inform alarm action:

- ◆ The NerveCenter Server sends an Inform message to the NerveCenter OpenView Platform Adapter. The NerveCenter Server places the inform in a queue.
- ◆ The NerveCenter OpenView Platform Adapter sends the inform message to NetView. At the same time, the NerveCenter OpenView Platform Adapter sends a packet back to the NerveCenter Server acknowledging it has received the inform packet.
- ◆ Once the NerveCenter Server receives the inform acknowledgement, it deletes the inform from its queue.

If for any reason the NerveCenter Server loses its connection to the NerveCenter OpenView Platform Adapter the informs will be held in its inform queue. Once the server regains its connection, any inform that was not acknowledged as received will be sent again.

By default, the NerveCenter Server is not set to have informs acknowledged. If you want NerveCenter to keep track of informs and their acknowledgement, you must enable the inform acknowledgement feature. The section *How to Save NerveCenter Informs until Acknowledgement* on page 97 explains how to enable the inform acknowledgement feature.

Note To use the Inform acknowledgement feature, you must use version 3.6 or later of NerveCenter Server and the NerveCenter OpenView Platform Adapter.

While the connection between the NerveCenter Server and the OpenView Platform Adapter is down, any new informs will be placed in the inform queue. The queue length is limited. If the number of informs waiting to be sent exceeds the queue limit, NerveCenter will delete the oldest inform so the newest inform can be added to the queue. If NerveCenter drops informs it will also fire the predefined trigger NC_INFORMS_LOST. (See the book *Designing and Managing Behavior Models* for complete details on using this and other predefined triggers in behavior models.) By default, the queue depth is set to 10000 informs. You can however set the queue to whatever depth you prefer. The section *How to Configure the Inform Queue Depth* on page 98 explains how to set the inform queue depth.

How to Save NerveCenter Informs until Acknowledgement

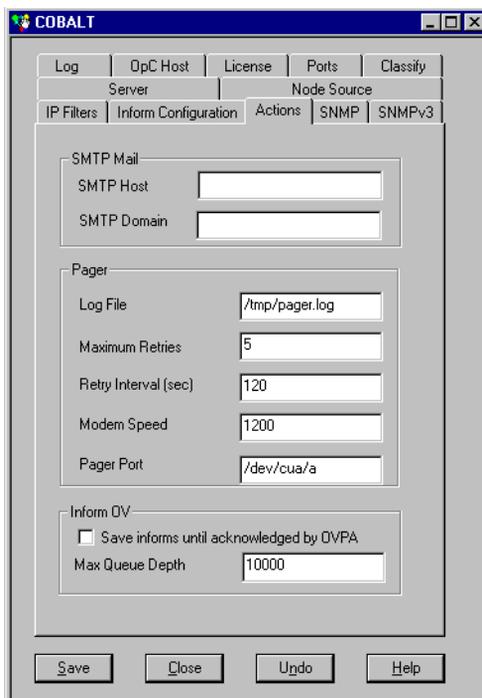
By default, NerveCenter Server does not save informs to wait acknowledgement. If you want NerveCenter to keep track of informs until the NerveCenter OpenView Platform Adapter acknowledges their receipt, you must enable the inform acknowledgement feature. This section explains how to enable the inform acknowledgement feature.

Note To use the Inform acknowledgement feature, you must use version 3.6 or later of NerveCenter Server and the NerveCenter OpenView Platform Adapter.

❖ To enable inform acknowledgement:

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
2. Select the Actions tab.

NerveCenter displays the Actions tab.



In the Inform OV area is a checkbox labeled Save informs until acknowledged by OVPA. By default, this box is not selected.

3. Check the box labeled Save informs until acknowledged by OVPA.
4. Select Save.

The NerveCenter Server will now save Informs in its queue until the NerveCenter OpenView Platform Adapter acknowledges their receipt.

How to Configure the Inform Queue Depth

When the NerveCenter inform acknowledgement feature is enabled, any new informs will be placed in the Inform Queue should the NerveCenter Server lose its connection to the NerveCenter OpenView Platform Adapter. Once the connection is restored, NerveCenter will resend any unacknowledged informs. The section *How to Save NerveCenter Informs until Acknowledgement* on page 97 explains how to enable the inform acknowledgement feature.

The inform queue length is limited. If the number of informs waiting to be sent exceeds the queue limit, NerveCenter will delete the oldest inform so the newest inform can be added to the queue. If NerveCenter drops informs it will also fire the predefined trigger NC_INFORMS_LOST. (See the book *Designing and Managing Behavior Models* for complete details on using this and other predefined triggers in behavior models.)

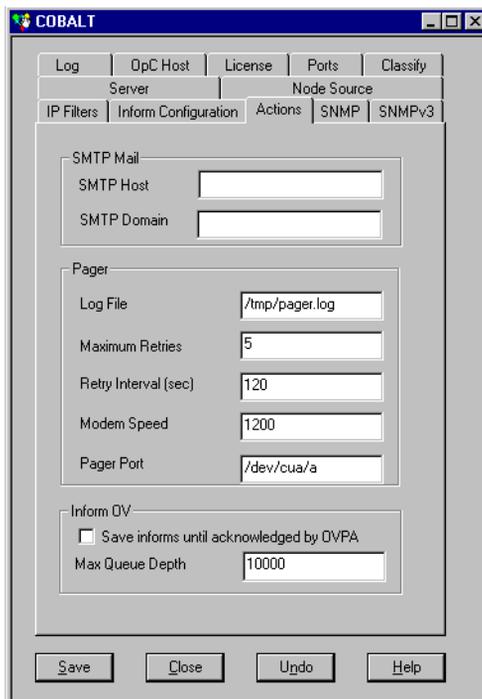
This section will step you through the process of setting the maximum Inform Queue depth.

❖ **To configure the maximum depth for the Inform Queue:**

1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.

2. Select the Actions tab.

NerveCenter displays the Actions tab.



3. In the Max Queue Depth box enter the desired number of informs you want to be saved in the Inform Queue.

By default, the Inform Queue depth is set to a maximum of 10000 informs.

4. Select **Save**.

When the number of informs in the Inform Queue exceed the number entered in Max Queue Depth, NerveCenter will begin dropping informs to include more recent informs.

How to Configure NetView to Integrate with NerveCenter

Once you have configured NerveCenter to integrate with IBM NetView for Solaris, you may want to configure NetView for an even tighter integration. Two options for modifying NetView are:

- ◆ Customize notification messages to make them more meaningful.
Your NerveCenter behavior models will send NetView informs with specific numbers. You may want to configure NetView to interpret each of these specific numbers as a specific event on your network. See NetView's documentation for complete instructions on configuring notification messages.
- ◆ Customize device symbol colors in a node map so they will reflect the severity of active NerveCenter alarms.
- ◆ As NerveCenter behavior models are created to send informs to NetView, you may want to customize NetView notification messages to make them more meaningful.

The next section will discuss this option in more detail.

Configuring a Node Map to Reflect NerveCenter Alarm Severity Colors

NerveCenter can affect symbol colors on NetView's map in one of several ways:

- ◆ NerveCenter can change the color of the device symbol itself to reflect the highest severity of all active alarms for the device.
- ◆ NerveCenter can change the color of a NerveCenter symbol automatically created under the symbol for each managed device.
- ◆ NerveCenter can leave unaffected symbol colors on the map. This setting is the default.

Keep in mind that although NerveCenter is shipped with 12 different colors for severities, your network management platform may have fewer choices. If you choose either of the first two options listed above, the colors on your network management platform symbols will be restricted to the network management platform's choices.

You must configure an IP map to enable map symbol color changes—either of the first two choices. You can either create a new map or configure an existing map. Follow one of the following procedures:

- ◆ *Creating a New Map for NetView to Reflect NerveCenter Alarm Severity Colors* on page 101
- ◆ *Modifying an old Map for NetView to Reflect NerveCenter Alarm Severity Colors* on page 102

Creating a New Map for NetView to Reflect NerveCenter Alarm Severity Colors

❖ To configure NetView to reflect NerveCenter alarm severity colors by creating a new map:

1. Begin the new map wizard.

This typically requires choosing **New** or **New Map** from the **Map** menu. See your NetView's documentation for further instructions.

2. Enter a name for the new map. Select **Next**.

3. Choose one of the following:

- ♦ If you do not want NerveCenter to change the colors of any symbol colors at all, or if you want NerveCenter to change only the colors of the NerveCenter symbols on your map, skip to step 7.
- ♦ If you want NerveCenter to change a device's symbol color directly to reflect the highest active alarm severity for the device, select **IP Map** in the Configurable Applications list and select **Configure For This Map**.

4. Change **Should status of nodes be IP/IPX only?** to **False**.

5. Select **Verify**.

NetView verifies your requested changes and then displays a message at the bottom of the window.

6. Select **OK**.

The Configuration window closes, and returns you to the New Map window.

7. From the Configurable Applications list, select **Open NerveCenter** and **Configure For This Map**.

8. For the setting **Enable NerveCenter for this map**, choose one of the following:

- ♦ If you do not want NerveCenter to change the colors of any symbols, select **False** and skip to step 10.
- ♦ If you want NerveCenter to change device or NerveCenter symbol colors to reflect the highest active alarm severity, select **True**.

9. For the **Set NerveCenter status on node symbol** setting, choose one of the following:

- ♦ If you want NerveCenter to change the color of the NerveCenter icon in the submap beneath the device symbol, select **False**.

If you select `False`, NerveCenter automatically creates a new NerveCenter icon in the submap beneath the symbol for each managed device on the map. Color changes are applied to the NerveCenter symbol, and the color of the device symbol itself is changed according to the normal NetView settings for the map.

- ♦ If you want NerveCenter to change a device's symbol color to reflect the highest active alarm severity, select `True`.

10. Select `Verify`.

NetView verifies your requested changes and then displays a message at the bottom of the window.

11. Select `OK`.

The Configuration window closes, and returns you to the New Map window.

12. Select `Next`.

13. Select an appropriate value for Compound Status. See your NetView's documentation for further instructions.

14. Select `Next`.

The final wizard screen is displayed.

15. Select `Finish`.

NetView configures the new map to handle symbol data sent by a NerveCenter inform.

Modifying an old Map for NetView to Reflect NerveCenter Alarm Severity Colors

❖ **To configure NetView to reflect NerveCenter alarm severity colors by modifying an existing map:**

1. Open the appropriate map, if it is not currently open.

This typically requires choosing `Open` or `Open/List` from the `Map` menu. See your NetView's documentation for further instructions.

2. Open the Map Properties window.

This typically requires choosing `Properties` from the `Map` menu. See your NetView's documentation for further instructions.

3. Select the Applications tab.

4. Choose one of the following:

- ♦ If you do not want NerveCenter to change the colors of any symbol colors at all, or if you want NerveCenter to change only the colors of the NerveCenter symbols on your map, skip to step 8.
 - ♦ If you want NerveCenter to change a device's symbol color directly to reflect the highest active alarm severity for the device, select **IP Map** in the Configurable Applications list and select **Configure For This Map**.
5. Change **Should status of nodes be IP/IPX only?** to **False**.
 6. Select **Verify**.

NetView verifies your requested changes and then displays a message at the bottom of the window.
 7. Select **OK**.

The Configuration window closes, and you return to the New Map window.
 8. From the Configurable Applications list select **Open NerveCenter** and select **Configure For This Map**.
 9. For the **Enable NerveCenter for this map** setting, choose one of the following:
 - ♦ If you do not want NerveCenter to change the colors of any symbols, select **False** and skip to step 11.
 - ♦ If you do want NerveCenter to change device or NerveCenter symbol colors to reflect the highest active alarm severity, select **True**.
 10. For the **Set NerveCenter status on node symbol** setting, choose one of the following:
 - ♦ If you want NerveCenter to change the color of the NerveCenter icon in the submap beneath the device symbol, select **False**.

If you select **False**, NerveCenter automatically creates a new NerveCenter icon in the submap beneath the symbol for each managed device on the map. Color changes are applied to the NerveCenter symbol, and the color of the device symbol itself is changed according to the normal settings for NetView's map.
 - ♦ If you want NerveCenter to change a device's symbol color to reflect the highest active alarm severity, select **True**.
 11. Select **Verify**.

NetView verifies your requested changes and then displays a message at the bottom of the window.
 12. Select **OK**.

The Configuration window closes, and you return to the New Map window.

13. In the Map Properties window, select **OK**.

NetView configures the current map to handle symbol data sent by a NerveCenter inform.

How to Reconfigure NetView before Removing the NerveCenter OpenView Platform Adapter

During a typical NerveCenter OpenView Platform Adapter installation, some NerveCenter-specific information is configured into NetView. Before you remove NerveCenter, you should reconfigure NetView.

❖ **To reconfigure NetView:**

- 1.** Shut down the NerveCenter Server and applications.
- 2.** Do one of the following to display the map properties:
 - ◆ **UNIX:** From the **Options** menu in the NetView's Root window, choose **Map Configuration: Modify Map**.
The Map Description window is displayed.
 - ◆ **Windows:** From the **Map** menu, select **Properties**.
The Map Properties window is displayed.
- 3.** Do one of the following to display the NerveCenter configuration information:
 - ◆ **UNIX:** From the Configurable Applications list, select **Open NerveCenter**.
 - ◆ **Windows:** From the Applications tab, select **Open NerveCenter**.
- 4.** Select **Configure For This Map**.
The Open NerveCenter Configuration window is displayed.
- 5.** For **Enable NerveCenter for this map**, select **False**.
- 6.** Select **Verify**, then **OK**.
- 7.** Do one of the following to display the IP map configuration information:
 - ◆ **UNIX:** In the Configurable Applications list box, select **IP Map**.
 - ◆ **Windows:** From the Applications tab, select **IP Map**.

8. Select **Configure For This Map**.

The IP Map Configuration window is displayed.

9. For **Should status of nodes be IP/IPX only?**, select **True**.

10. Select **Verify**, then **OK**.

NerveCenter can no longer change symbols on the IP map.

11. Select **OK** to close the Map Description window.

12. From the Options menu, choose **Event Configuration**.

The Event Configuration window is displayed.

13. Select **Open_NerveCenter** from the Enterprise Identification list box.

All Open NerveCenter events are displayed in the Event Identification list box.

14. Select the first event and select **Edit**, then **Delete**, then **Event**. Repeat this step for every NerveCenter event.

Removing events isn't required but does leave your platform installation less cluttered with old information.

15. While **Open_NerveCenter** is still selected, select **Edit**, then **Delete**, then **Enterprise**.

16. Close the Event Configuration window.

17. Exit NetView and stop all NetView's processes.

Typically you can do this by typing **ovstop** at the command line and pressing **Enter**.

18. On Windows, delete the Open NerveCenter registration, help, and symbol files. (On UNIX, these files will be deleted automatically.)

These files are:

- ♦ *installation_path*\registration\C\ncapp.reg
- ♦ *installation_path*\symbols\C\Software\NCApp
- ♦ *installation_path*\bin\ovdelobj
- ♦ *installation_path*\lrf\ovpa.lrf
- ♦ *installation_path*\fields\C\ncapp.fields

installation_path is the installation directory for NetView.

19. Restart NetView processes.

Typically you can do this by typing `ovstart` at the command line and pressing `Enter`. (On Windows, you can also select `NNM Services > Stop` from the `Start` menu.)

After you have reconfigured NetView so NerveCenter is no longer integrated with it, you can remove NerveCenter.

NetView Integration Reference

The following section includes information you may need to reference occasionally when integrating NerveCenter and IBM NetView for Solaris.

This section includes:

- ♦ *Command line reference for the NerveCenter OpenView Platform Adapter* on page 106
- ♦ *Variable Bindings for NerveCenter Informs* on page 109
- ♦ *Command line reference for Integrating NerveCenter with Unicenter* on page 116
- ♦ *Variable Bindings for NerveCenter Informs* on page 117
- ♦ *Command line reference for Integrating NerveCenter with Tivoli* on page 123
- ♦ *Variable Bindings for NerveCenter Informs* on page 125

Command line reference for the NerveCenter OpenView Platform Adapter

You can control certain aspects of the NerveCenter OpenView Platform Adapter (OVPA) from the command line. The proper syntax is:

```
Ovpa [ -logLevel Error | Warning | Debug | Trace ]  
      [ -traceOutputFile FileName ] [ -traceOutputStdout ]  
      [ -traceResync ] [ -traceInform ] [ -traceLoadDb ]  
      [ -traceParentComp ] [ -traceMapUpdates ] [ -traceConnects ]  
      [ -traceAll ] [ -pc ] [ -writeParentsToFile NcHostName ]  
      [ -heartbeat seconds ] [ -ignoreUnmanagedIntf ]  
      [ -initNcStatusInOV ] [ -ignoreCapability ]  
      [ -noResolveCommunityOnResync ] [ -defGlobalCommunity filename ]
```

Note OpenView (OV) must be running before you can run OVPA. To issue an `ovpa` command (with or without switches) by itself and without also using `ovstart`, you must first remove the OVPA local registration file (`ovpa.lrf`) from the list of services that are started by OV. For more information, refer to *How to Configure NetView to Integrate with NerveCenter* on page 100. All of these command line switches are optional.

`-logLevel Error | Warning | Debug | Trace`

Set logging level, default value is Warning.

`-traceOutputFile FileName`

Set the output of logging messages to be a file with *FileName*.

`-traceOutputStdout`

Set the output of logging messages to be standard output. This option can be used with `-traceOutputFile filename` so that logging messages can be written both to the screen and the output file.

`-traceResync`

Enable logging messages for resync (node source) and resync parents. Logging messages contain node information including parent information OVPA is sending to Nerve Center.

To use this option, the log level must also be set to either debug or trace.

`-traceInform`

Enable logging messages for status informing from NerveCenter to OpenView. It shows status change messages from NerveCenter, whether the status change information is sent to OpenView or is logged into OpenView database.

To use this option, the log level must also be set to either debug or trace.

`-traceLoadDb`

Enable logging messages for loading nodes and interfaces from the OpenView database at initialization stage. It shows each node and each interfaces are loaded.

To use this option, the log level must also be set to either debug or trace.

`-traceParentComp`

Enable logging messages for the details of how the parents are computed for each Nerve Center host.

To use this option, the log level must also be set to either debug or trace.

`-traceMapUpdates`

Enable logging messages for the processing of OpenView events regarding changes. This option displays the significant data that arrived with an OpenView event, how ovpa is processing that event, and whether network topology needs to be updated or not.

To use this option, the log level must be set to either debug or trace.

`-traceConnects`

Enable logging messages for connections from the NerveCenter server, and from OpenView. It also shows why the port is disconnected.

To use this option, the log level must also be set to either debug or trace.

`-traceAll`

Enable logging messages for resync, inform, loadDb, parentComp, mapUpdates, and connects.

To use this option, the log level must also be set to either debug or trace.

`-pc`

Enable parent computing. Without this option, no parent information is computed for any NerveCenter host, including the requests of resync parents from NerveCenter server, and the command line option `-writeParentsToFile`

`-writeParentsToFile NcHostName`

When `-pc` is turned on, OVPA computes parent-child relationships, writes to the file `NcHostName_PC.dat`, and exits.

`-heartbeat seconds`

The ovpa process and the NerveCenter server process exchange heartbeats. You can configure how often the heartbeat is sent from OVPA using the `-heartbeat` switch. If OVPA doesn't receive a heartbeat from NerveCenter in the specified time then it will close the connection to that server's port. Default heartbeat rate is 300 seconds.

`-ignoreUnmanagedIntf`

If this switch is used OVPA does not send NerveCenter server any unmanaged interfaces within a node. You may want to restrict the interfaces that NerveCenter server must poll to only interfaces that OpenView is currently managing. If you have many subobject scope alarms and nodes, this switch to improves polling performance.

`-initNcStatusInOV`

Synchronizes the status of a NerveCenter icon and its managed nodes.

Note NerveCenter must be configured so that its node data source and inform host are the same. All IP filters must be empty.

`-ignoreCapability`

Determines whether OVPA keeps track of OpenView's capability information, such as IsRouter. For more information, see *Filtering nodes from IBM NetView for Solaris* on page 83.

-ignoreCapability prevent ovpa from keeping track of capability data. This increases ovpa's speed and decreases its memory usage.

This switch can be turn on when a user wants to force the node to be added to NC server, regardless of capabilities.

Note The -ignoreCapability switch disables NerveCenter's ability to filter nodes based on capabilities.

-noResolveCommunityOnResync

When this option is turned on, OVPA does not obtain the community strings during a resync or resync parents. You can use this argument when you are sure that the community has not changed since the initial OpenView database import to improve resync performance.

-defGlobalCommunity *filename*

Instead of retrieving community strings through OpenView, you can retrieve them from a file. This option is used to give the filename where user defines default community strings.

-info

print out the version of OVPA

-help

Help information for OVPA

If you want these settings to take effect every time ovpa is started, edit the file ovpa.lrf to include these switches. On Windows, the file is located in the OpenView/lrf directory. On UNIX, the file is located in the opt/OSInc/nc/OV/lrf directory. For example, to have ovpa compute parenting information you would modify ovpa.lrf to read:

```
ovpa:/opt/OSInc/nc/OV/bin/ovpa:
Ovs_YES_START:ovwdb:-pc:Ovs_WELL_BEHAVED:5:
```

Variable Bindings for NerveCenter Informs

Depending on how its behavior models are designed, a NerveCenter detecting particular network conditions can send Inform packets to IBM NetView for Solaris. Although these Inform packets use TCP/IP, they are similar in content to an SNMP trap, containing trap numbers (generic and specific), an enterprise OID, and a variable-binding list. The lengthy varbinds contains information about the alarm that performed the Inform action, such as the name of alarm, the object the alarm was monitoring, and the names of the origin and destination alarm states.

The NetView receiving the trap can make use of the information in the variable bindings much the same way it would use variable bindings found in an SNMP trap.

Table 5-4 explains the contents of this variable-binding list.

Table 5-4. Inform Trap Variable Bindings

Variable Binding	Value
0	The name of the domain where NerveCenter is running
1	The name of the host machine running the NerveCenter Server
2	The name of the managed node associated with the alarm
3	The base object associated with the alarm (for example, ifEntry for a monitored interface)
4	The base object instance associated with the alarm (for example, 4 for the fourth interface)
5	The name of the subobject. This would include the null string if the alarm is not associated with an alarm.
6	The property group assigned to the node or the subobject
7	The name of the alarm
8	The alarm's property
9	The name of the trigger that caused the alarm transition
10	The state of the alarm before the transition
11	The severity of the state of the alarm prior to the transition
12	The state of the alarm after the transition
13	The severity of the state of the alarm after the transition
14	The maximum severity of all active alarms for the managed node before this alarm transition
15	The maximum severity of all active alarms for the managed node after this alarm transition
16	The variable bindings in the poll or trap that caused the transition. These variable bindings are formatted as follows: Attribute ncTransitionVarBinds = <i>attribute.instance=value;attribute=value;...</i>
17	The identification number of the alarm instance

Integrating NerveCenter with CA Unicenter TNG

NerveCenter provides the event correlation engine that helps reduce the barrage of events typically displayed in CA Unicenter TNG. In order to integrate NerveCenter with Unicenter, you must install NerveCenter’s Universal Platform Adapter. See *Installing NerveCenter* for complete installation details.

This chapter describes how to operate the Universal Platform Adapter in a way that facilitates integration between NerveCenter and Unicenter. It includes the following sections:

Section	Description
<i>Starting and Stopping Platform Integration with CA Unicenter TNG</i> on page 112	Explains how to start and stop the Universal Platform Adapter from the command line.
<i>How to Specify the Destination of Inform Packets Sent to CA Unicenter TNG</i> on page 112	Explains how to specify the destination of inform packets sent by a NerveCenter Server to Unicenter.
<i>How to Configure CA Unicenter TNG to Integrate with the NerveCenter Universal Platform Adapter</i> on page 115	Describes ways you can configure Unicenter to further integrate your platform with NerveCenter.
<i>Unicenter Integration Reference</i> on page 116	Provides information you may need to reference occasionally when integrating NerveCenter and CA Unicenter TNG.

Starting and Stopping Platform Integration with CA Unicenter TNG

During a typical installation, the NerveCenter Universal Platform Adapter is installed as an automatic Windows service. Therefore, whenever you boot Unicenter's host machine, the NerveCenter Universal Platform Adapter will automatically be started.

However, there may be times when you wish to start or stop the NerveCenter Universal Platform Adapter manually.

- ♦ To start the Universal Platform Adapter, type at the command line:

```
paserver -u ON
```

- ♦ You can stop the Universal Platform Adapter in the Windows Services applet in the Control Panel or by typing at the command line:

```
paserver -u OFF
```

For a complete discussion of command line switches and how they are used, see *Command line reference for Integrating NerveCenter with Unicenter* on page 116.

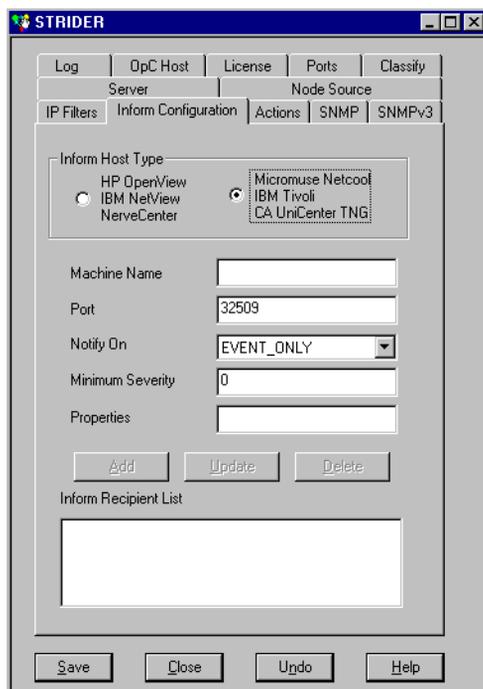
How to Specify the Destination of Inform Packets Sent to CA Unicenter TNG

One of the most powerful characteristics of NerveCenter's platform integration is how it informs CA Unicenter TNG. Since NerveCenter's inform packets use the Transmission Control Protocol (TCP), the alert sent to Unicenter is more reliable than a standard SNMP trap. As you create or modify a behavior model to notify Unicenter, you determine the specific inform number it will receive. However, before you can use this behavior model, NerveCenter must know which machine or machines will receive the inform.

The following procedure will step you through the process of declaring one or more recipients of NerveCenter informs.

- ❖ **To specify the destination of NerveCenter informs sent to Unicenter:**
 1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
 2. Select the Inform Configuration tab.

The Inform Configuration tab appears.



3. In the Inform Host Type field, select the radio button beside Unicenter.
Selecting this option enables the NerveCenter Server to recognize the inform recipient as a platform needing the NerveCenter Universal Platform Adapter.
4. In the Machine Name field, type the name of the machine hosting Unicenter.
5. In the Port field, type the port number your NerveCenter Server will use when communicating with the NerveCenter Universal Platform Adapter.
By default, NerveCenter uses the port number 32509.
6. In the Notify On field, select EVENT_ONLY.
NerveCenter send events to Unicenter when the Inform Platform action is invoked.
7. In the Minimum Severity field, type the number representing the minimum severity an alarm must reach before triggering a message to this platform.

This option enables you to be selective about which events are sent to particular platforms. For example, a local platform could get all events, while a lead or central platform could get only critical events. When NerveCenter sends Informs to your platform, NerveCenter first checks the minimum severity value entered here to ensure that the trap value for the Inform matches or exceeds that severity.

Note There is one case when NerveCenter disregards the minimum severity value specified in Administrator: After NerveCenter sends an Inform, if the condition returns to a normal state—that is, a state below the minimum severity threshold you configure—it’s important that NerveCenter notify the platform of this change. Therefore, if a node transitions the alarm from a severity above the minimum value to a severity below the minimum value, and the transition includes an Inform action, NerveCenter will send a Normal Inform to the platform. This allows the platform to reset the mapped severity color associated with the node.

Note The values associated with each severity in NerveCenter can be viewed and altered in the NerveCenter Client in the **Severity List** found under the **Admin** menu.

8. In the **Properties** field, type zero or more properties.

NerveCenter will only send an Inform packet to this platform if the managed node’s property group contains at least one of the properties listed in this field. If no events are listed, NerveCenter sends events for all managed nodes.

This option enables you to be selective in which events are sent to particular platforms. For example, one platform could receive informs only prompted by routers.

9. Select **Add**.

The platform’s host machine is added to the Inform Recipient list.

10. Repeat steps 3 through 9 for each different machine hosting a network management platform that will receive a NerveCenter inform packet.

11. Select **Save**.

When an alarm performs an Inform Platform action, the relevant platforms included in this list will receive the inform data.

How to Configure CA Unicenter TNG to Integrate with the NerveCenter Universal Platform Adapter

Once you have installed the NerveCenter Universal Platform Adapter and created your inform recipient list, there is little else you need to do to begin using NerveCenter with Unicenter.

If Unicenter's Trap Server is not currently activated you must enable it. The next section, *Configuring Unicenter's SNMP Trap Server for NerveCenter Integration* on page 115, explains how to configure Unicenter's Trap Server.

Note Unicenter will not be able to receive NerveCenter informs if the Unicenter Trap Server is not activated.

There are also a few additional ways you may need or want to configure Unicenter to make integration with NerveCenter more complete. The section *Additional Ways to Configure Unicenter's Integration with NerveCenter* on page 116 gives further suggestions on what that might look like.

Configuring Unicenter's SNMP Trap Server for NerveCenter Integration

In addition to running and installing the NerveCenter Universal Platform Adapter, you must activate Unicenter's SNMP Trap Server before being able to send inform packets to CA Unicenter TNG.

❖ **To activate Unicenter's SNMP Trap Server:**

1. Open Unicenter's Object Browser.

Note The steps in this procedure may differ depending on your version of CA Unicenter TNG.

2. In the tree underneath TNGRoot, select **Unicenter Manager**. Then select **Unicenter Common Manager**.
3. Right-click on the value in the **uuid** column.
4. Choose **Settings**.
A settings window appears.
5. Select the **Server Preferences** tab.
6. In the **Server Preferences** list, enable **SNMP Trap Server Activated** to **YES**.
7. Stop and restart your CA Unicenter TNG to have the new setting take effect.

Unicenter can now receive informs from NerveCenter.

Additional Ways to Configure Unicenter’s Integration with NerveCenter

In addition to activating Unicenter’s Trap Server, you may want to configure the integration of NerveCenter and CA Unicenter TNG in other ways:

- ♦ Should the relevant host or port change, you must configure the platform adapter accordingly. See *Command line reference for Integrating NerveCenter with Unicenter* on page 116 for further instructions.
- ♦ You can create a new or change an existing NerveCenter inform recipient at any time. See *How to Specify the Destination of Inform Packets Sent to CA Unicenter TNG* on page 112 for further instructions.

Unicenter Integration Reference

The following section includes information you may need to reference occasionally when integrating NerveCenter and CA Unicenter TNG.

This section includes:

- ♦ *Command line reference for Integrating NerveCenter with Unicenter* on page 116
- ♦ *Variable Bindings for NerveCenter Informs* on page 117

Command line reference for Integrating NerveCenter with Unicenter

During a typical NerveCenter installation, the NerveCenter Universal Platform Adapter is installed as a service or daemon. However, there may be times in which you will want to make changes from the command line. From a command prompt type the following:

```
paserver [-u ON|OFF] [-d] [-g] [-h] [-o] [-p] [-r] [-scm a|m|r|s] [-v]
        [-tcfg] [-?]
```

Table 6-1. Command Line Switches for Integrating NerveCenter with CA Unicenter TNG

Switch	Description
-u ON OFF	Enables or disables NerveCenter integration with Unicenter. On Windows, when starting paserver from the command line, you must specify either -d or -scm option in combination with either -n or -u .
-d	Runs the Universal Platform Adapter from the command line in debug mode and outputs debug messages to the console. The next time the host machine boots, the Universal Platform Adapter will run as a service or daemon again.
-g	Registers the Universal Platform Adapter as an Event Source.
-h	Displays help information for the Universal Platform Adapter switches.

Table 6-1. Command Line Switches for Integrating NerveCenter with CA Unicenter TNG (continued)

Switch	Description
-o	Records values into Registry. Any options (other than -scm) become a part of the standard configuration. To use this switch, you should first stop the Universal Platform Adapter. You must then restart the Universal Platform Adapter.
-p	Defines the platform adapter's listening port. The default is 32509. Note This number must match the Inform Recipient port in NerveCenter Administrator.
-r	Removes the Universal Platform Adapter as a service. It also removes Registry entries created at install time.
[-scm a m r s]	Changes settings in the service control manager: a Installs the Universal Platform Adapter as a service, making it as autostart. The service will start following this command. m Installs the Universal Platform Adapter as a service, making it start on demand. The service will not start following this command. r Removes the Universal Platform Adapter as a service. If the service is running, it will be stopped. s Starts the Universal Platform Adapter as a service. This may be combined with a or m.
-tcfg	Defines the full qualified path/filename for the Event Adapter configuration file. The default is /opt/OSInc/userfiles/nctec.cfg
-v	Views current Universal Platform Adapter settings.
-?	Displays help information for the Universal Platform Adapter switches.

Note paserver has many options specific to other integrations. For a complete list of options, see *Managing NerveCenter*.

Variable Bindings for NerveCenter Informs

Depending on how its behavior models are designed, a NerveCenter detecting particular network conditions can send Inform packets to CA Unicenter TNG. Although these Inform packets use TCP/IP, they are similar in content to an SNMP trap, containing trap numbers (generic and specific), an enterprise OID, and a variable-binding list. The lengthy varbinds contains information about the alarm that performed the Inform action, such as the name of alarm, the object the alarm was monitoring, and the names of the origin and destination alarm states.

The Unicenter receiving the trap can make use of the information in the variable bindings much the same way it would use variable bindings found in an SNMP trap.

Table 6-2 explains the contents of this variable-binding list.

Table 6-2. Inform Trap Variable Bindings

Variable Binding	Value
0	The name of the domain where NerveCenter is running
1	The name of the host machine running the NerveCenter Server
2	The name of the managed node associated with the alarm
3	The base object associated with the alarm (for example, ifEntry for a monitored interface)
4	The base object instance associated with the alarm (for example, 4 for the fourth interface)
5	The name of the subobject. This would include the null string if the alarm is not associated with an alarm.
6	The property group assigned to the node or the subobject
7	The name of the alarm
8	The alarm's property
9	The name of the trigger that caused the alarm transition
10	The state of the alarm before the transition
11	The severity of the state of the alarm prior to the transition
12	The state of the alarm after the transition
13	The severity of the state of the alarm after the transition
14	The maximum severity of all active alarms for the managed node before this alarm transition
15	The maximum severity of all active alarms for the managed node after this alarm transition
16	The variable bindings in the poll or trap that caused the transition. These variable bindings are formatted as follows: Attribute ncTransitionVarBinds = <i>attribute.instance=value;attribute=value;...</i>
17	The identification number of the alarm instance

Integrating NerveCenter with Tivoli TME

NerveCenter provides the event correlation engine that helps reduce the barrage of events typically displayed in Tivoli TME. In order to integrate NerveCenter with Tivoli, you must install NerveCenter's Universal Platform Adapter. See *Installing NerveCenter* for complete installation details.

This chapter describes how to operate the Universal Platform Adapter in a way that facilitates integration between NerveCenter and Tivoli. It includes the following sections:

Section	Description
<i>Starting and Stopping Platform Integration with Tivoli TME</i> on page 120	Explains how to start and stop the Universal Platform Adapter from the command line.
<i>How to Specify the Destination of Inform Packets Sent to Tivoli TME</i> on page 120	Explains how to specify the destination of inform packets sent by a NerveCenter Server to Tivoli.
<i>How to Configure Tivoli to Integrate with the NerveCenter Universal Platform Adapter</i> on page 123	Describes ways you can configure Tivoli to further integrate your platform with NerveCenter.
<i>Tivoli Integration Reference</i> on page 123	Provides information you may need to reference occasionally when integrating NerveCenter and Tivoli TME.

Starting and Stopping Platform Integration with Tivoli TME

During a typical installation, the NerveCenter Universal Platform Adapter is installed as a daemon. Therefore, whenever you boot Tivoli's host machine, the NerveCenter Universal Platform Adapter will automatically start.

However, there may be times when you want to start or stop the Universal Platform Adapter manually.

- ◆ To start the Universal Platform Adapter, type at the command line:

```
pastart
```

Note The command **pastart** is a script that runs paserver with set options. To change those options edit the script **pastart**. See *Command line reference for Integrating NerveCenter with Tivoli* on page 123 for further instructions.

- ◆ To stop the Universal Platform Adapter, type at the command line:

```
pastop
```

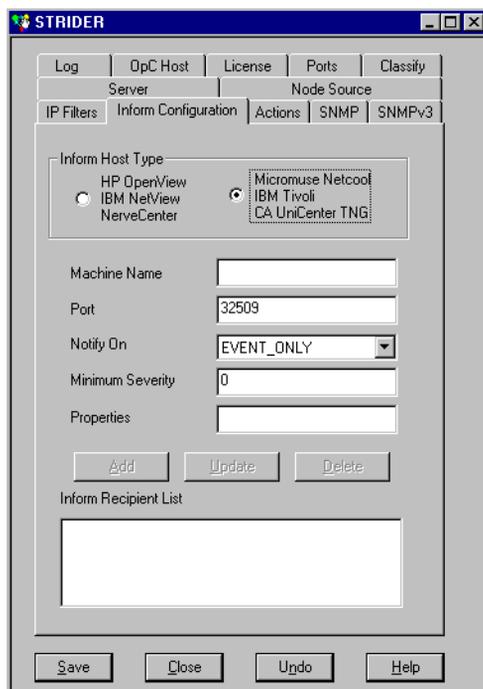
How to Specify the Destination of Inform Packets Sent to Tivoli TME

One of the most powerful characteristics of NerveCenter's platform integration is how it informs Tivoli TME. Since NerveCenter's inform packets use the Transmission Control Protocol (TCP), the alert sent to Tivoli is more reliable than a standard SNMP trap. As you create or modify a behavior model to notify Tivoli, you determine the specific inform number it will receive. However, before you can use this behavior model, NerveCenter must know which machine or machines will receive the inform.

The following procedure will step you through the process of declaring one or more recipients of NerveCenter informs.

- ❖ **To specify the destination of NerveCenter informs sent to Tivoli:**
 1. Open NerveCenter Administrator and connect to the appropriate NerveCenter Server. If you need help opening NerveCenter Administrator or connecting to a NerveCenter Server, see *Managing NerveCenter*.
 2. Select the Inform Configuration tab.

The Inform Configuration tab appears.



3. In the Inform Host Type field, select the radio button beside Tivoli.
Selecting this option enables the NerveCenter Server to recognize the inform recipient as a platform needing the NerveCenter Universal Platform Adapter.
4. In the Machine Name field, type the name of the machine hosting Tivoli.
5. In the Port field, type the port number your NerveCenter Server will use when communicating with the NerveCenter Universal Platform Adapter.
By default, NerveCenter uses the port number 32509.
6. In the Notify On field, select EVENT_ONLY.
NerveCenter send events to Tivoli when the Inform Platform action is invoked.
7. In the Minimum Severity field, type the number representing the minimum severity an alarm must reach before triggering a message to this platform.

This option enables you to be selective about which events are sent to particular platforms. For example, a local platform could get all events, while a lead or central platform could get only critical events. When NerveCenter sends Informs to your platform, NerveCenter first checks the minimum severity value entered here to ensure that the trap value for the Inform matches or exceeds that severity.

Note There is one case when NerveCenter disregards the minimum severity value specified in Administrator: After NerveCenter sends an Inform, if the condition returns to a normal state—that is, a state below the minimum severity threshold you configure—it’s important that NerveCenter notify the platform of this change. Therefore, if a node transitions the alarm from a severity above the minimum value to a severity below the minimum value, and the transition includes an Inform action, NerveCenter will send a Normal Inform to the platform. This allows the platform to reset the mapped severity color associated with the node.

Note The values associated with each severity in NerveCenter can be viewed and altered in the NerveCenter Client in the **Severity List** found under the **Admin** menu.

8. In the **Properties** field, type zero or more properties.

NerveCenter will only send an Inform packet to this platform if the managed node’s property group contains at least one of the properties listed in this field. If no events are listed, NerveCenter sends events for all managed nodes.

This option enables you to be selective in which events are sent to particular platforms. For example, one platform could receive informs only prompted by routers.

9. Select **Add**.

The platform’s host machine is added to the Inform Recipient list.

10. Repeat steps 3 through 9 for each different machine hosting a network management platform that will receive a NerveCenter inform packet.

11. Select **Save**.

When an alarm performs an Inform Platform action, the relevant platforms included in this list will receive the inform data.

How to Configure Tivoli to Integrate with the NerveCenter Universal Platform Adapter

As long as the NerveCenter Universal Platform Adapter is installed and running, NerveCenter will be able to send inform packets to Tivoli TME. There are a few additional ways you may want to configure the integration of NerveCenter and your management platform.

- ◆ Should the relevant host or port change, you must configure the platform adapter accordingly. See *Command line reference for Integrating NerveCenter with Tivoli* on page 123 for further instructions.
- ◆ By default, Tivoli TME places all inform events NerveCenter sends into a NerveCenter group. To filter these events further, see your Tivoli TME documentation.
- ◆ You can create a new or change an existing NerveCenter inform recipient at any time. See *How to Specify the Destination of Inform Packets Sent to Tivoli TME* on page 120 for further instructions.

Tivoli Integration Reference

The following section includes information you may need to reference occasionally when integrating NerveCenter and Tivoli TME.

This section includes:

- ◆ *Command line reference for Integrating NerveCenter with Tivoli* on page 123
- ◆ *Variable Bindings for NerveCenter Informs* on page 125

Command line reference for Integrating NerveCenter with Tivoli

During a typical NerveCenter installation, the NerveCenter Universal Platform Adapter is installed as a service or daemon. However, there may be times in which you will want to make changes from the command line. From a command prompt type the following:

```
paserver [-t ON|OFF] [-d] [-g] [-h] [-o] [-p] [-r] [-scm a|m|r|s]
          [-tcfg] [-thost] [-toneway] [-tport] [-ttype] [-v] [-?]
```

Table 7-1. Command Line Switches for Integrating NerveCenter with Tivoli TME

Switch	Description
-t ON OFF	Enables or disables NerveCenter integration with Tivoli. On Windows, when starting paserver from the command line, you must specify either -d or -scm option in combination with either -n or -u .
-d	Runs the Universal Platform Adapter from the command line in debug mode and outputs debug messages to the console. The next time the host machine boots, the Universal Platform Adapter will run as a service or daemon again.

Table 7-1. Command Line Switches for Integrating NerveCenter with Tivoli TME (continued)

Switch	Description
-g	(Windows only) Registers the Universal Platform Adapter as an Event Source.
-h	Displays help information for the Universal Platform Adapter switches.
-o	(Windows only) Records values into Registry. Any options (other than -scm) become a part of the standard configuration. To use this switch, you should first stop the Universal Platform Adapter. You must then restart the Universal Platform Adapter.
-p	Defines the platform adapter's listening port. The default is 32509. Note This number must match the Inform Recipient port in NerveCenter Administrator.
-r	Removes the Universal Platform Adapter as a service. It also removes Registry entries created at install time.
[-scm a m r s]	(Windows only) Changes settings in the service control manager: a Installs the Universal Platform Adapter as a service, making it as autostart. The service will start following this command. m Installs the Universal Platform Adapter as a service, making it start on demand. The service will not start following this command. r Removes the Universal Platform Adapter as a service. If the service is running, it will be stopped. s Starts the Universal Platform Adapter as a service. This may be combined with a or m.
-tcfg	Defines the full qualified path/filename for the Event Adapter configuration file. The default is /opt/OSInc/userfiles/nctec.cfg
-thost	Defines the machine on which the Tivoli Event Server is located. The default is localhost.
-toneway	Defines the best-effort delivery method to the Tivoli TME agent. The default is 0.
-tport	Defines the port the NerveCenter Universal Platform Adapter uses to communicate with Tivoli Event Server. The default is 32510.
-ttype	Defines the type of connection to be established with the Tivoli Event Server. The default is 0. The options are: 0 Connectionless delivery to agent 1 Connection-oriented (secure) delivery to agent 2 Default type of connection
-v	Views current Universal Platform Adapter settings.
-?	Displays help information for the Universal Platform Adapter switches.

Note paserver has many options specific to other integrations. For a complete list of options, see *Managing NerveCenter*.

Variable Bindings for NerveCenter Informs

Depending on how its behavior models are designed, a NerveCenter detecting particular network conditions can send Inform packets to Tivoli TME. Although these Inform packets use TCP/IP, they are similar in content to an SNMP trap, containing trap numbers (generic and specific), an enterprise OID, and a variable-binding list. The lengthy varbinds contains information about the alarm that performed the Inform action, such as the name of alarm, the object the alarm was monitoring, and the names of the origin and destination alarm states.

The Tivoli receiving the trap can make use of the information in the variable bindings much the same way it would use variable bindings found in an SNMP trap.

Table 7-2 explains the contents of this variable-binding list.

Table 7-2. Inform Trap Variable Bindings

Variable Binding	Value
0	The name of the domain where NerveCenter is running
1	The name of the host machine running the NerveCenter Server
2	The name of the managed node associated with the alarm
3	The base object associated with the alarm (for example, ifEntry for a monitored interface)
4	The base object instance associated with the alarm (for example, 4 for the fourth interface)
5	The name of the subobject. This would include the null string if the alarm is not associated with an alarm.
6	The property group assigned to the node or the subobject
7	The name of the alarm
8	The alarm's property
9	The name of the trigger that caused the alarm transition
10	The state of the alarm before the transition
11	The severity of the state of the alarm prior to the transition
12	The state of the alarm after the transition
13	The severity of the state of the alarm after the transition
14	The maximum severity of all active alarms for the managed node before this alarm transition

Table 7-2. Inform Trap Variable Bindings (continued)

Variable Binding	Value
15	The maximum severity of all active alarms for the managed node after this alarm transition
16	The variable bindings in the poll or trap that caused the transition. These variable bindings are formatted as follows: Attribute ncTransitionVarBinds = <i>attribute.instance=value;attribute=value;...</i>
17	The identification number of the alarm instance

Index

- A**
 - alarm severity colors 31, 100
 - autodelete of nodes 14, 53, 84
- C**
 - capabilities, filtering by 13, 51, 83
- D**
 - Discovery behavior model 9, 47, 79
- H**
 - HP OpenView IT/Operations
 - diverting messages to NerveCenter 63
 - sending informs to 61
 - HP OpenView Network Node Manager
 - Integration with NerveCenter 5
 - receiving NerveCenter informs 31, 100
- I**
 - Inform alarm action 26, 95
 - trap variable bindings 41, 72, 110, 118, 125
 - variable bindings 40, 72, 109, 117, 125
 - Informs
 - Supported platforms 2
 - informs
 - sending to the Universal Platform Adapter 67, 112, 120
 - IP address, filtering by 16, 54, 86
 - IT/O Platform Adapter 47
- M**
 - Micromuse Netcool/OMNibus 71, 116, 123
- N**
 - NerveCenter OpenView Platform Adapter (OVPA)
 - network management platform 9, 13, 47, 52, 79, 83
 - as a node source 12, 50, 82
 - resynchronization 12, 50, 82
 - synchronization with 12, 50, 82
 - node
 - changing a node's name 13, 51, 83
 - Node data
 - Supported platforms 2
 - node data
 - source 9, 47, 79
 - node data source 10, 48, 80
 - node list
 - filtering 13, 51, 83
 - filtering by capabilities 13, 51, 83
 - filtering by IP address 16, 54, 86
 - filtering by system object identifier 15, 53, 84
 - keeping in sync with a network management platform 12, 50, 82
 - populating using a network management platform 10, 48, 80
 - Node Source tab
 - resync parent rate 21, 59
- O**
 - OpenView Platform Adapter
 - changing settings 37, 106
 - IT/Operations
 - Overview 44
 - NetView
 - Overview 76
 - Network Node Manager
 - Overview 6
 - starting and stopping 8, 46, 78
 - OpenView Platform Adaptor
 - enabling 6, 7, 44, 45, 77, 78
- OVPA**
 - command line switches 37, 47, 106
 - resync parent rate 21, 59
 - setting destination of informs 23
- ovpa
 - setting destination of informs 92
- R**
 - Resync 12, 51, 82
 - resync parent rate 21, 59
- S**
 - starting the IT/O Platform Adapter 47
 - subnet filter
 - automatic criteria 17, 87
 - manual criteria 18, 56, 88
 - system object identifier, filtering by 15, 53, 84
 - system Object Identifiers 10, 49, 80
- T**
 - traps
 - Inform variable bindings 41, 72, 110, 118, 125
- U**
 - Universal Platform Adapter
 - starting and stopping 66
 - UNIX
 - Universal Platform Adapter 66
- V**
 - variable bindings
 - Inform alarm action traps 40, 72, 109, 117, 125
 - Inform traps 41, 72, 110, 118, 125
 - NerveCenter Inform traps 41, 72, 110, 118, 125

