Open NerveCenter™ 3.8

Getting a Quick Start with NerveCenter

UNIX and Windows

December 2002

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Printed in the USA, December 2002.

Open NerveCenter *Getting a Quick Start with NerveCenter*

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Contents

Introduction 1

The *Getting a Quick Start with NerveCenter* guide provides a short, concise introduction to Open NerveCenter™. This manual does the following:

- Teaches basic concepts without theoretical detail
- Guides you through a simple trial installation of some NerveCenter components
- Provides an overview of basic NerveCenter functions by showing you what a behavior model is and how it works

Use this guide to preview NerveCenter before actually installing it on a production machine.

Section	Description
About This Book on page 2	Describes the purpose of this book and who should read it.
Requirements for Using This Book on page 3	Defines what is required to install NerveCenter and complete the sections of this book.
Understanding NerveCenter on page 4	Provides a brief overview of NerveCenter.
SNMP Basics on page 4	Summarizes the Simple Network Management Protocol (SNMP) that NerveCenter uses to monitor networks.

About This Book

This is the first of several books shipped with NerveCenter, and takes about one to two hours to complete. If you are new to NerveCenter, it is recommended that you read this book and perform its exercises before proceeding with any other NerveCenter tasks—including installation.

Getting a Quick Start with NerveCenter is primarily intended for people who:

- Have never used NerveCenter before and want a brief tour before they begin learning to customize the application
- Are evaluating NerveCenter

The material covered in this book is designed to help you acquire a degree of confidence and familiarity with NerveCenter. First, you will perform a simple NerveCenter installation that requires no configuration. Afterward, you will define a few nodes for NerveCenter to manage, and then monitor certain conditions on these nodes.

Note The stand-alone installation that you will perform using this book does not enable NerveCenter to be integrated with a network management platform, such as OpenView Network Node Manager. If you intend to set up integration, you will need to reinstall.

In addition to the above restriction, the installation here does not support SNMP v2c or v3 agents.

After completing this book, you will likely need to reinstall the software to customize NerveCenter to work with your network. The last chapter of the book, *Where To Go from Here*, expands on the information covered in the exercises. For example, the chapter describes a full range of options for node discovery, event correlation, and integration with a network management platform.

Requirements for Using This Book

You must meet the following requirements to install NerveCenter and complete the sections in this book:

Note For a full list of requirements, refer to the *Installing NerveCenter* book. Refer also to the *Release Notes* for details about supported hardware and software.

Table 1-1. Prerequisites for Installing NerveCenter and Completing *Getting a Quick Start with NerveCenter*

Prerequisite	Description
System	The machine on which you install NerveCenter will require the following: ◆ Windows: Windows NT, 2000, or XP; 256 MB RAM; 80 MB disk space ◆ Unix: Solaris or HP-UX; 48 MB RAM; 200 MB disk space In addition, the installation machine should have a color monitor with 1024x768 resolution. The machine must also have access to a CD-ROM used for installing NerveCenter.
Installation CD and license key	You must have the installation CD and serial number that were shipped with NerveCenter.
Administrator rights	You will need the following user rights: ◆ On Windows, you must be logged on as an administrator or a member of the domain administrator's group. ◆ On UNIX, you must be logged on as root or superuser.
Trap service	On Windows, the Simple Network Management Protocol (SNMP) service and SNMP trap service must be installed and enabled on your machine.
Server address	The NerveCenter Server must have a fixed address.
Internet browser	Though not required to install or use NerveCenter, you must have a browser to access the online documentation that comes with NerveCenter. Viewing the documentation is covered in this book. You can use either Netscape Navigator or Microsoft Internet Explorer.

Understanding NerveCenter

NerveCenter provides powerful management of distributed, cross-platform networks using SNMP messages. (See *SNMP Basics* on page 4 for a summary of SNMP.)

Using Perl expressions, you can manipulate SNMP messages to monitor thresholds, management information base (MIB) variables, and other indicators of network performance. NerveCenter additionally relies on Internet Control Message Protocol (ICMP) messages from your network to provide basic information about unresponsive devices. NerveCenter's correlation engine then filters all this data from your network and uses automated responses—such as informing a platform, paging, logging, sending e-mail, setting MIB values, or sending traps—to track events, notify you of critical events, and perform corrective actions.

NerveCenter implements predefined and user-defined behavior models to perform event correlation. These behavior models determine the following:

- Which nodes the behavior model monitors
- Which conditions NerveCenter detects on these nodes
- How NerveCenter correlates the conditions it detects
- How NerveCenter responds to network problems

NerveCenter handles event correlation across network workstations (Windows and UNIX), servers, routers, bridges, and other devices. NerveCenter can run coresident with a network management platform, such as Hewlett-Packard's OpenView Network Node Manager and IT/Operations. NerveCenter can additionally forward specified events to the following network management systems: Tivoli Systems TME Enterprise Console, Computer Associates Unicenter TNG, and Micromuse Netcool/OMNIbus. Finally, NerveCenter supports the extension of MIB definitions to include private, vendor-specific objects that are defined in SNMP versions 1, 2 and 3.

SNMP Basics

If you're familiar with the Simple Network Management Protocol (SNMP), you know that managed devices containing SNMP agents are associated with a management information base (MIB), which has a defined organization. This organization resembles a tree with branches that categorize managed systems and their object components, each represented as an entry in the information tree. Different devices, or agents, contain different objects. For example, a workstation wouldn't be expected to store routing-table information, whereas a router would have this information.

Attributes are associated with MIB objects. Some attributes, such as the speed of an interface, are statically defined, while others, such as the entries in a routing table, are dynamic. Still other attributes require ongoing measurement for comparison and evaluation. An example of this is the number of packets transmitted without errors during a given period of time.

While reading this book, you will learn how NerveCenter uses behavior models to monitor MIB values. This book will also show you how NerveCenter communicates with agents by sending SNMP GetRequest, GetNextRequest, and SetRequest messages, as well as by processing SNMP traps received from an agent.

Note Though NerveCenter supports SNMP v3, this book does not include instructions for configuring SNMP v3 agents for NerveCenter. For that reason, the scope of this book is limited to SNMP v1 agents.

Installing NerveCenter 2

This section guides you through a simple stand-alone installation—an installation that doesn't involve integration with a network management platform. This allows you to learn how NerveCenter behaves without affecting your network or adding the complications of external network management software. You will not install all the NerveCenter components at this time.

Caution For this installation, we recommend installing NerveCenter on a non-production (test) machine suitable for evaluating software. After completing this manual, to comply with your license agreement, uninstall this version before installing NerveCenter on a production machine.

Do not install NerveCenter over an existing version. This book doesn't cover such topics as updating or working with existing files. Those topics are covered in the *Upgrading to NerveCenter 3.8* guide that is shipped with NerveCenter.

Finally, though NerveCenter supports SNMP v3, this book does not include instructions for configuring NerveCenter to work with SNMP v2c or v3 agents. You should therefore install on a machine that uses SNMP v1.

After completing this manual, you can reinstall NerveCenter with all its components and configure the software to work with your network. For example, you may want to monitor nodes by subnet, set up mail or pager capability, integrate NerveCenter with a network management platform, and configure other settings.

Refer to the *Release Notes* for recent updates about installation.

Section	Description
NerveCenter's Architecture on page 8	Describes NerveCenter's main components.
Installing NerveCenter on UNIX on page 9	Describes how to install NerveCenter on UNIX systems.
Installing NerveCenter on Windows on page 13	Describes how to install NerveCenter on Windows systems.

NerveCenter's Architecture

NerveCenter is a distributed client/server application that includes a server, files used for storing NerveCenter data, user-interface software, and several additional tools. NerveCenter includes the following main applications:

Table 2-1. NerveCenter Applications

Module	Description
Server	The background engine that correlates network events, enables communication among the NerveCenter modules, and manages vital NerveCenter files. The procedure in this chapter includes installing the server.
Client	The interface you use to create and manage behavior models, as well as monitor and report on network activity. The procedure in this chapter includes installing the client.
Administrator	The interface you use to configure server settings and manage NerveCenter operations. The installation procedure in this chapter does not include the administrator. You will need to install it later to configure NerveCenter to work with your network.

In addition to the modules mentioned above, you should also be aware of other NerveCenter components, which are not covered in this book:

- **Platform adapter**—Enables NerveCenter to communicate with various network management platforms.
- **Web Client**—Lets you monitor your network using the Microsoft Internet Explorer or Netscape Navigator Internet browser.
- **Database management tools**—Allow you to convert, update, or migrate the NerveCenter database or data file.
- **Command line interface**—Provides access to NerveCenter functions from a Windows command prompt or UNIX shell. You can issue commands manually or from a script.

Installing NerveCenter on UNIX

You run an installation script to install and configure NerveCenter on UNIX systems.

Note You must have the appropriate rights, hardware, and software to install NerveCenter. See *Requirements for Using This Book* on page 3 to find out what's required to install NerveCenter and perform the exercises in this book.

The following sections describe how to install NerveCenter on UNIX platforms:

- *Preparing Your System for Installation* on page 9
- *Running the Installation Script* on page 10
- *Setting Environment Variables* on page 12

Preparing Your System for Installation

Prior to installing NerveCenter, you need to prepare your installation machine.

❖ To prepare for NerveCenter installation:

1. Create two new groups: ncadmins and ncusers.
2. Create a new user *nervectr* whose primary group is ncadmins. Create the user in the NIS database if the installation machine is using NIS for user authentication.
3. If you are working in an HP-UX environment, perform the following steps to ensure that the HP Services utility is configured to search NIS and /etc/services:
   a. Run sam and choose Network and Communications, then Name Service Switch.
   b. Make sure the services line includes entries for NIS and /etc/services.
   c. Select the services line.
   d. Right-click and choose Configure Name Service Switch.
   e. Set If Information is Not Found to Try Next Source.

Running the Installation Script

This section describes how to run the UNIX installation script. Prior to installation, close all applications that are running.

❖ To run the installation script:

1. Mount the NerveCenter v3.8 CD-ROM.

   On HP-UX, use the following command:

   `mount -F cdfs -o cdcase` *`CDROMdevice localMountpoint`*

   For example,

   ```
   mount -F cdfs -o cdcase /dev/dsk/c0t2d0  /cdrom
   ```

2. `cd` to *mountpoint*`/BIN`.

   where mountpoint is the directory you're using to mount.

3. Enter the name of the installation script exactly as it appears in your Bin directory, including any semicolons or versions. Enter the entire string.

   - On HP-UX systems, enter **`./INSTALL.SH\;1`**
   - On Solaris systems, enter **`./INSTALL.SH`**

   The script displays brief instructions and checks to see whether you've set up the necessary groups, as described in *Preparing Your System for Installation* on page 9.

   The script periodically prompts you to press Enter to continue.

4. Press Enter when prompted to continue.

   The script eventually displays the following:

   ```
   Where do you want to install NerveCenter? [/opt/OSInc]
   ```

5. Press Enter to accept the default directory.

   The script displays the following:

   ```
   Directory /opt/OSInc doesn't exist... Shall I create it? [y]
   ```

6. Press Enter to accept the default answer.

   The script asks which NerveCenter components you want to install.

7. Type the following letters, separating each with a space: **`c s d`**

   These letters indicate that you want to install the NerveCenter Client, Server, and online documentation.

The script checks whether processes need to be killed and the amount of available space. If asked to kill a process or provide more space, do as instructed and then repeat this procedure, starting with step 2.

Otherwise, you are prompted to begin extracting files.

8. Press Enter to continue.

   The NerveCenter files are extracted to the target directory. This may take a minute or two.

   The script then displays the following prompt:

```
Enter the path of the X motif libraries. [/usr/dt/lib]
```

9. Press Enter to accept the default path.

   The script checks to see if NIS is installed on your system and whether you want to update the services file.

10. If prompted whether to update the services file, respond as appropriate for your system and continue with the installation.

    The script prompts you to enter your license key.

11. Type the 32-character serial number provided with your NerveCenter license and press Enter.

    If you have more than one serial number, enter only the server serial number now.

Note Four characters are not used in NerveCenter serial numbers: These are 0 (zero), 1 (one), 5, and Q.

The scripts asks if you are running NerveCenter co-resident with OpenView. NerveCenter needs to know if OpenView is installed on your machine before configuring certain port settings. Because this quick-start preview installation is not intended for a production machine, you should not have OpenView installed.

12. Press Enter to accept the default value of `n`, indicating that NerveCenter is *not* co-resident with OpenView.

    You are asked to enter the path and name of your Internet browser.

13. Do one of the following:

    - Type the path and name of your Internet browser and press Enter.
    - If you don't have a browser available, type a period (.) and press Enter. You won't be able to complete the section in this book that covers viewing the online documentation.

    The script asks you if you want to start NerveCenter as a daemon.

14. Enter `n`, indicating that you want to start NerveCenter manually.

The script finishes the installation and notifies you when done. NerveCenter is installed in the `/opt/OSInc/bin` directory.

After running the script, you need to set your environment variables. Continue to the next section, *Setting Environment Variables* on page 12.

Setting Environment Variables

Depending on your environment, the installation script may have told you to run one of the NerveCenter environment scripts to set your environment variables. You should run that script now. You must perform this step before you can start NerveCenter.

❖ To set environment variables:

1. Change to the `/opt/OSInc/userfiles` directory.

This directory contains the scripts described in the following table:

Table 2-2. Scripts for Setting Environment Variables

Script/Shell suffix	When to use the script
`ncenv.ksh`	Use this script if you are working in a Korn shell.
`ncenv.sh`	Use this script if you are working in a Bourne shell.
`ncenv.csh`	Use this script if you are working in a C shell.

2. Enter the command to set the environment variables in your shell. For example, you might enter the following:

`. ./ncenv.`*shellSuffix*

After setting the environment variables, you're ready to start NerveCenter and complete the remaining sections in the book.

Installing NerveCenter on Windows

You run a setup wizard to install and configure NerveCenter on Windows.

Note You must have the appropriate rights, hardware, and software to install NerveCenter. See *Requirements for Using This Book* on page 3 to find out what's required to install NerveCenter and perform the exercises in this book.

Installing NerveCenter on Windows involves two main steps:

- *Running the Windows Setup Wizard* on page 13
- *Setting Up the NerveCenter Database on Windows* on page 18

Running the Windows Setup Wizard

This section describes how to run the Windows Setup wizard. Prior to installation, close all applications that are running.

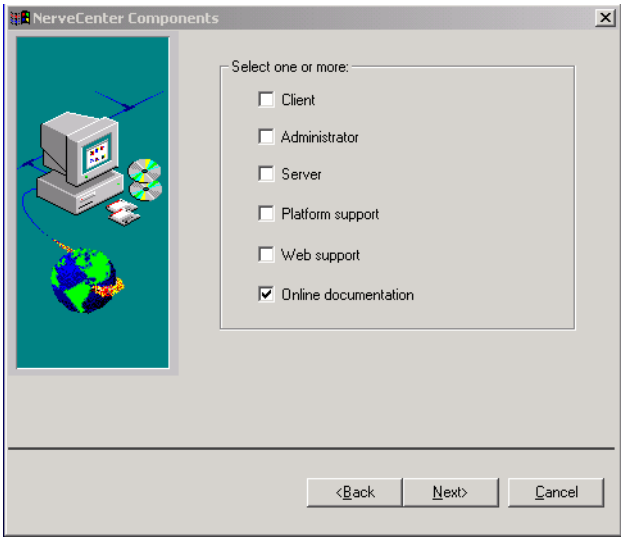
❖ To run the Windows Setup:

1. Insert the NerveCenter CD into your CD-ROM drive.
2. From the Windows Control Panel, start the Add/Remove Programs application, and select Install.

   The Welcome dialog box is displayed. This dialog box includes cautions regarding copyright and installation prerequisites. The prerequisites that concern you right now are detailed in the section *Requirements for Using This Book* on page 3.
3. Select Next.

   The license agreement is displayed.
4. Read the license agreement, and then select Yes.

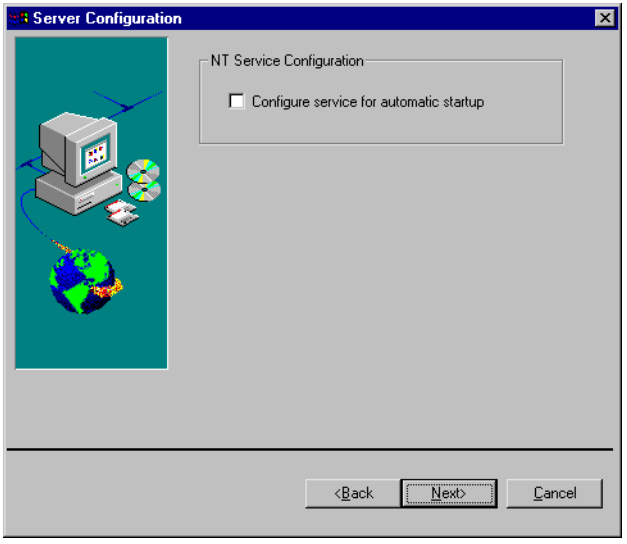
The NerveCenter Components dialog box is displayed. Here, you select the NerveCenter components you want to install.



5. Select the following checkboxes:
   - Client—Lets you monitor your network or manage behavior models.
   - Server—Monitors managed nodes, performs actions associated with alarm transitions, and maintains NerveCenter objects. The server is installed as a Windows service by default.
   - Online Documentation—Helps you learn to use NerveCenter.
6. Select Next.

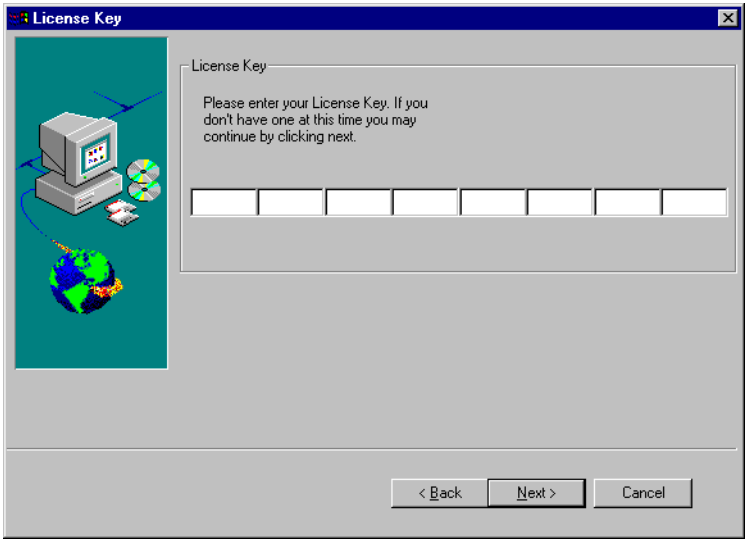
   The Destination Directory dialog box is displayed. In this dialog box, you specify the directory where you want NerveCenter to be installed.
7. Select Next to accept the default location.

The NT Service Configuration dialog box is displayed. For this installation, we will start the NerveCenter Server manually.



8. Select Next without making any changes.

   The License Key dialog box is displayed. The license provided with NerveCenter limits the number of clients that can connect to the server and the number of nodes that can be managed.

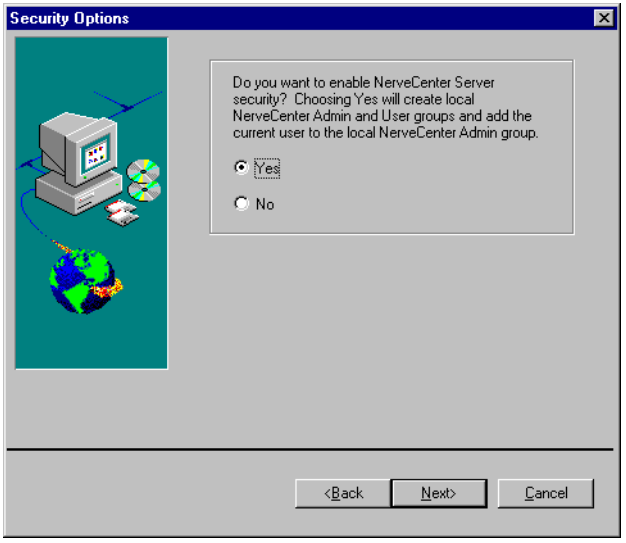


9. Enter the serial number you received with your NerveCenter license by typing four characters in each of the eight fields. If you have more than one serial number, enter only the server serial number now.

Note Four characters are not used in NerveCenter serial numbers: These are 0 (zero), 1 (one), 5, and Q.

When you are finished, select Next.

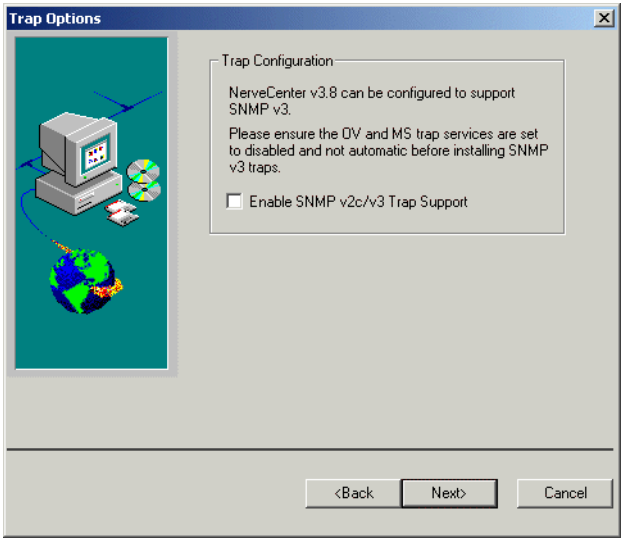
The Security Options dialog box is displayed. This dialog box lets you set up the groups that NerveCenter uses to authenticate users.



10. Select Next without changing the default value.

Note Your name is automatically added to the NerveCenter Admins group.

The Trap Options dialog box is displayed. This dialog box lets you decide whether NerveCenter will process traps from SNMP v3 entities (in addition to traps from SNMP v1 and v2c agents). For this installation, we will not support SNMP v3.



11. Select Next without making any changes.

For the remaining dialog boxes, select Next to accept the default values. Setup copies all files to your disk. When the files are copied, the Setup Complete dialog box is displayed. This dialog box reminds you to add users to your groups and to configure NerveCenter using the Administrator module. Since you did not install the Administrator at this time, you will not be making these settings.

12. Select Finish.

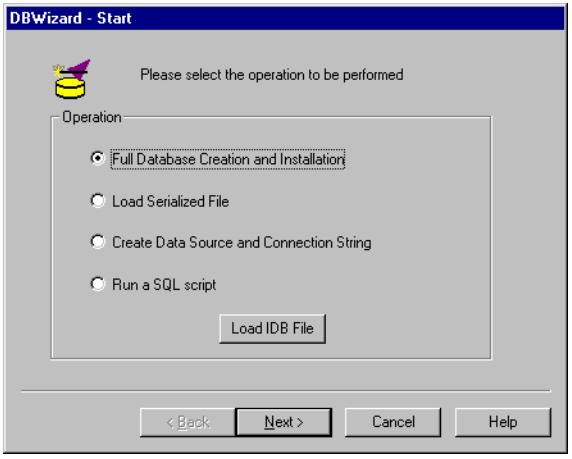
The DBWizard application is displayed so that you can set up a database. Continue to the next section, *Setting Up the NerveCenter Database on Windows* on page 18.

Setting Up the NerveCenter Database on Windows

After you have completed the Setup instructions detailed in the previous section, the DBWizard application is displayed. Using the wizard, you can set up your NerveCenter database.

This section describes how to set up a Microsoft Access database. Access does not have to be installed on your system for you to create the database.

Figure 2-1. DBWizard Dialog Box



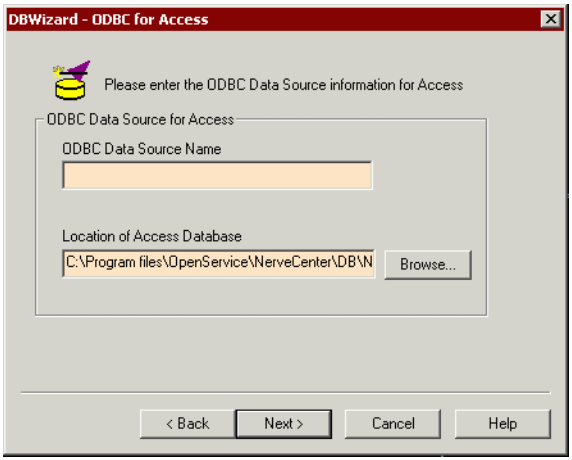
❖ To create an Access database:

1. Select Full Database Creation and Installation and select Next.

   The Select DBMS dialog box is displayed.

2. Select MS Access and select Next.

   The ODBC for Access dialog box is displayed. This dialog box enables you to provide a name for the ODBC data source you want to use. It also lets you specify the name and location of the database. For your installation, use the default NCAccess.mdb.



3. In the ODBC Data Source Name field, enter a name that can easily be identified as the data source for this installation of NerveCenter v3.8, and then select Next.

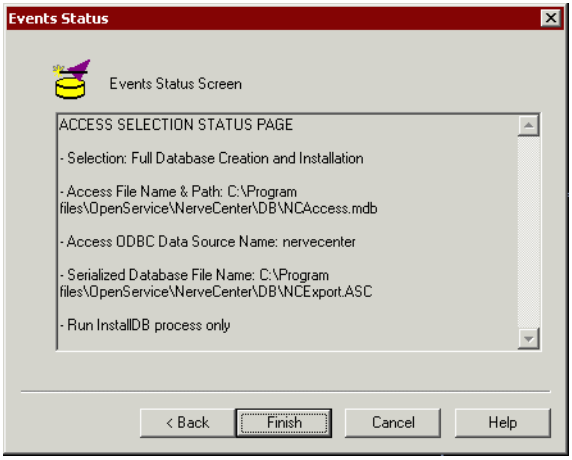
   The NerveCenter Paths and Files dialog box is displayed.

4. Accept the default values and select Next.

   The Finish dialog box is displayed.

5. Select the Create and Execute InstallDB checkbox and select Next.

   The Events Status dialog box displays the information you have specified for your database.



6. Verify that the information is correct, and then select Finish.

   The InstallDB Status Screen dialog box shows you the status of your database installation.

7. Select OK when it becomes enabled.

   The installation process is completed.

When prompted to restart, select Yes.

After your computer restarts and you log back on, you are ready to use NerveCenter.

Preparing To Use NerveCenter 3

Before you can work with behavior models, you must start the software modules that you installed and add some nodes to the NerveCenter database.

Section	Description
Starting the NerveCenter Server on page 22	Describes how to start the NerveCenter Server.
Starting the NerveCenter Client on page 22	Describes how to start the NerveCenter Client and connect it to the server.
Adding Nodes to the Database on page 26	Shows you how to define the nodes you want to monitor and check your connection with those nodes.

Starting the NerveCenter Server

Though NerveCenter can be installed to start automatically as a UNIX daemon or Window service, we installed NerveCenter so that the Server must be started manually.

❖ To start the server:

- Depending on your platform, do one of the following:
  - In a UNIX shell, type
    `ncserver &`

    Then, press Enter. If the server is unable to start, make sure you have correctly set your environment variables. See *Setting Environment Variables* on page 12.
  - On Windows, choose NerveCenter Service from the OpenService program group on the Start menu.

The NerveCenter Server is started on your machine.

Starting the NerveCenter Client

The NerveCenter Client is the interface you use to monitor network conditions, create and modify the behavior models used to track events, and perform other tasks such as generating reports. Before you can monitor network conditions or work with behavior models, you must start the NerveCenter Client and connect to the NerveCenter Server.

Note The Server must already be running before you can establish a connection to it. See *Starting the NerveCenter Server* on page 22 for details.

❖ To start the client and connect to the server:

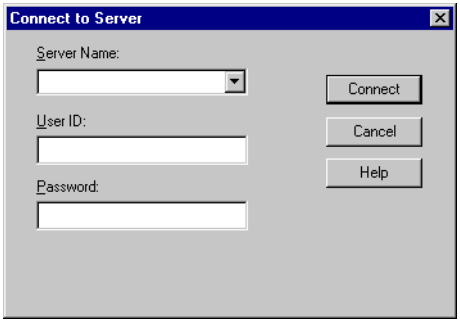
1. Depending on your platform, do one of the following:
   - In a UNIX shell, type
     `client &`

     Then, press Enter. If the client is unable to start, make sure you have correctly set your environment variables. See *Setting Environment Variables* on page 12.
   - On Windows, choose Client from the OpenService NerveCenter program group on the Start menu.

   The client window is displayed.

2. From the Server menu, select Connect.

The Connect to Server window is displayed.



3. In the Server Name field, type the name of the machine on which NerveCenter is installed.

4. Type your user name and password in the User ID and Password fields.

   If you are using Windows and have multiple accounts with the same user ID (on your local machine and domain or in multiple domains), the passwords must all be the same. If not, your logon could fail.

5. Select Connect.

When the client successfully connects to the server, all of the buttons in the toolbar become enabled, and the Aggregate Alarm Summary window is displayed. Later, you will use this window to monitor your network alarms.

Figure 3-1. NerveCenter Client Aggregate Summary Window

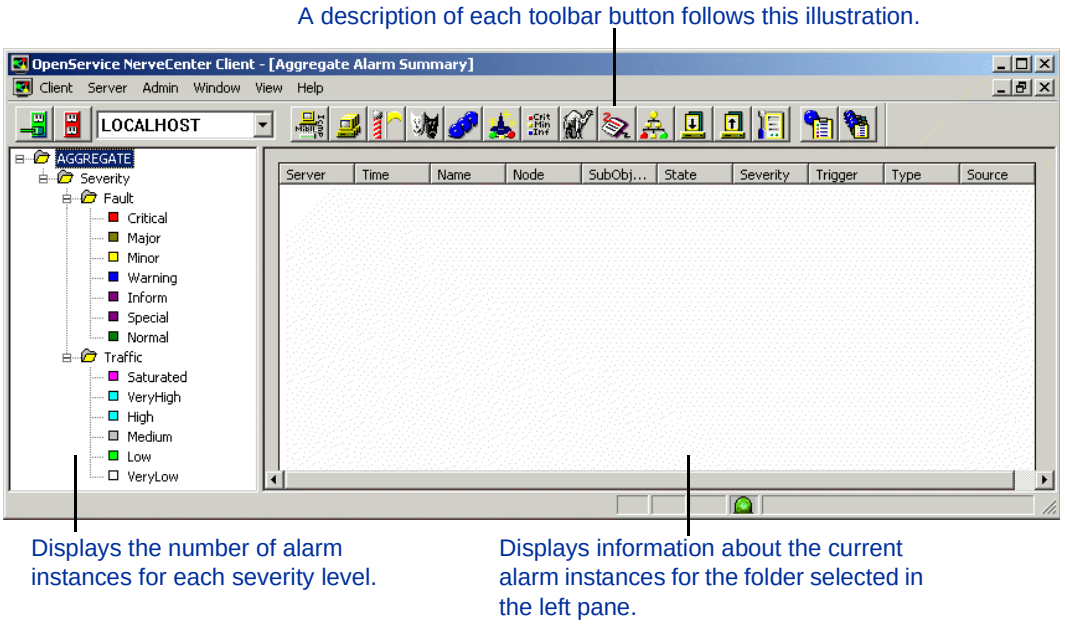


Table 3-1 lists the functions you can perform and the information you can access from the client's toolbar.

Table 3-1. Client Toolbar

Button	Description
	Establishes a connection with a NerveCenter Server.
	Disconnects you from a NerveCenter Server.
	Displays a list of currently defined property groups and the properties contained in each group.
	Displays a list of currently defined nodes. You will open the node list when you define nodes later in this chapter.
	Displays a list of currently defined polls. You will take a look at some polls later in this book.
	Displays a list of currently defined trap masks that NerveCenter uses to detect and filter SNMP traps.

Table 3-1. Client Toolbar (continued)

Button	Description
	Displays a list of currently defined alarms. Later in this book, you will open the alarm list to examine and enable alarms.
	Displays a list of currently defined correlation expressions. Correlation expressions enable you to create alarms from boolean expressions.
	Display's a list of currently defined severities. You will look at severities while monitoring alarms later in this book.
	Displays a list of currently defined Perl subroutines used with NerveCenter alarm actions.
	Displays a list of available reports generated by Seagate Software's Crystal Reports.
	Displays a list of defined Action Router rules that enable alarms to perform assigned actions based on conditions that you specify.
	Enables you to import a behavior model.
	Enables you to export NerveCenter objects individually or in groups.
	Opens the Server Status window that contains the current settings for any NerveCenter to which you are connected.
	Opens the Alarm Summary window. This window displays information about the current alarm instances for the active server.
	Opens the Aggregate Alarm Summary window. This window displays information about the current alarm instances for all the servers to which you're connected. This window is displayed by default when you start NerveCenter.

Adding Nodes to the Database

This section describes how to add nodes to the NerveCenter database and assign attributes to those nodes. You will verify your connection to these nodes by sending ICMP messages and listening for responses.

Later in this book, you will use one or two of these nodes to cause an alarm condition, which you can monitor in the client.

The following sections describe procedures for:

- *Defining Nodes* on page 26
- *Querying Nodes* on page 28

Defining Nodes

NerveCenter's database contains definitions of attributes for every device it manages. Generally, if you have a sizable network, you'll use a discovery mechanism to gather this information and populate the database. For now, however, you will enter definitions manually for one or two network devices. Defining nodes manually helps you understand the attributes associated with nodes, such as property group and IP address.

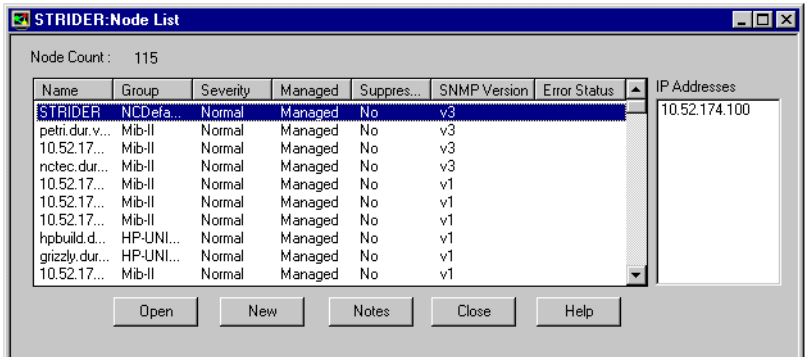
Note In order to complete the next sections of this book, at least one node must be a workstation—either Windows or UNIX—that contains one or more software applications. This node can be the one on which you installed NerveCenter. Additional nodes can be workstations or other network devices, such as routers, hubs, or bridges.

All nodes you define for this exercise must be running an SNMP agent for SNMP v1. As mentioned in *Installing NerveCenter* on page 7, this book does not include instructions for managing nodes using SNMP v2c or v3.

❖ To define a node manually:

1. From the client's Admin menu, choose Node List.

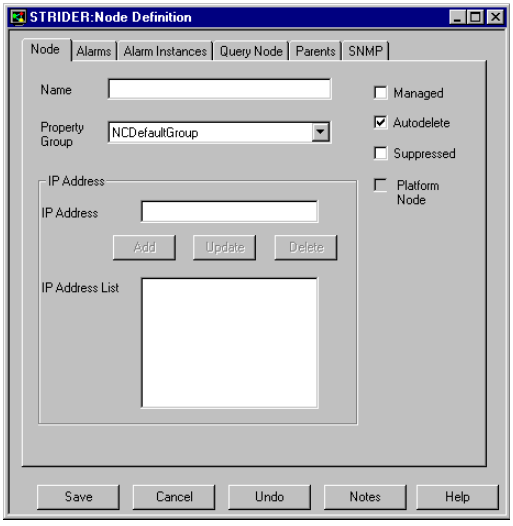
The Node List window is displayed. Note that it contains only one device—the machine on which you installed NerveCenter.



2. In the Node List window, do either of the following:

- To configure the node that appears in the list, select that node and select Open. Then, skip to step 4.
- To define a new node, select New. Proceed to the next step.

The Node Definition window is displayed. If you are defining a new node, the Name field is blank.



3. Type the name of the node in the Name field.

4. Select the MIB-II property group from the Property Group drop-down listbox. You can start typing the first few letters, and NerveCenter scrolls down to the first item that starts with the letters you typed.

   The property group you assign to a node determines which set of NerveCenter polls and alarms manage the node. The MIB-II group contains properties associated with the information you're going to monitor. By selecting the MIB-II group, you enable NerveCenter to poll this node for the related MIB attributes.

Tip NerveCenter allows you to modify property groups by adding, changing, and removing properties. You can also create new property groups. This feature will be useful later as you create and customize behavior models to fit your network management strategy.

5. Type the node's IP address in the New IP text field and select Add to add the address to the IP Address list.

6. Check the Managed checkbox. Otherwise, you will not be able to monitor this node.

7. Select Save, and then close the window.

   The node is added to the Node List window.

Repeat the above steps for every device you want to add to the NerveCenter database.

Tip Instead of creating a completely new definition for each node you want to add, you can copy node definitions. In the Node List window, select a node you've already defined, right-click, and choose Copy. Then enter the information that is unique to the new node.

Querying Nodes

After defining a node, you may want to query the node. To query a node, you can send an ICMP Echo request (ping) or SNMP GetRequest message. There are two reasons for doing this:

- To ensure that there is a connection with the node
- To obtain system information about the node

❖ To query a node:

1. From the client's Admin menu, choose Node List.

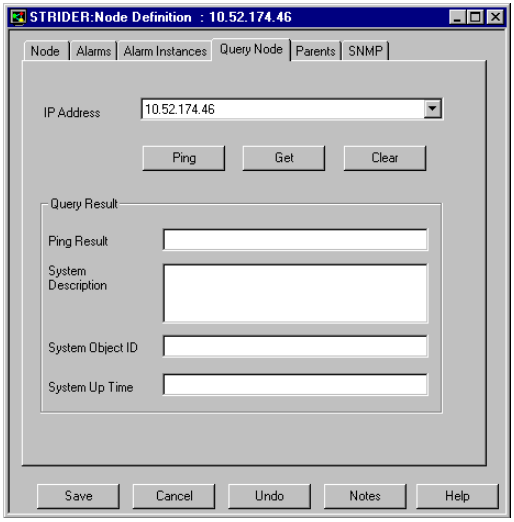
   The Node List window is displayed.

2. Highlight one of the nodes you defined and select Open.

   The Node Definition window appears.

3. Select the Query Node tab.

   The Query Node page is displayed.



4. If you entered more than one IP address for the node, choose the address you want to check from the IP Address drop-down listbox.

5. Select Ping.

   If the ping is successful, the Ping Result field displays the reply IP address and response time.

6. Select Get.

   If the command is successful, NerveCenter displays the node's description, its SNMP system object identifier, and length of time the node has been up (in hundredths of a second).

Note NerveCenter must know the node's SNMP version before it can perform a GetRequest message. When you define nodes manually, NerveCenter sets the version to SNMP v1 by default.

If your commands failed to obtain responses, check to be sure that the node is turned on. If the ping was successful but the GetRequest was not, make sure the node is running an SNMP agent. You can also check the node's network settings to be sure its community name matches the name in its definition window.

If you want to do repeated communication requests, select Clear to empty the result fields before performing each operation.

When you are finished, repeat this process for the other nodes you've defined.

Working with Behavior Models 4

NerveCenter obtains data from SNMP agents running on managed nodes. To correlate and filter this data, NerveCenter uses general models of network and system behavior that define the various problems each type of managed resource might exhibit.

In this section, you first learn how a behavior model works. Then, you will enable two models and start monitoring some events on the nodes you've defined.

Section	Description
Understanding Behavior Models on page 32	Defines the components that make up a behavior model.
How Behavior Models Operate on page 32	Describes how the components of behavior models work together to monitor network devices.
Importing the IfData_LogToFile Behavior Model on page 34	Explains how and why you import the IfData_LogToFile behavior model.
Enabling the IfData_LogToFile Behavior Model on page 35	Provides an overview of the IfData_LogToFile behavior model and describes how to turn the behavior model on.
Enabling the IfLoad Behavior Model on page 41	Provides an overview of the IfLoad behavior model and describes how to turn the behavior model on.

Understanding Behavior Models

To work with behavior models, you need to understand a behavior model's components and how they interact.

A behavior model is not a NerveCenter object. Rather, it is a construct that relies on the interaction of associated NerveCenter objects to detect and handle specific network behavior. NerveCenter uses the following objects to define behavior models:

Table 4-1. NerveCenter Objects Used with Behavior Models

Object	Description
Node	Represents either a workstation, server, or a network device, such as a router, hub, or bridge.
Property	A text string that describes the type of node or one of the node's MIB objects. Polls and alarms use properties to target specific nodes. Assigning a node to a property group that contains multiple properties allows the node to be targeted by multiple behavior models.
Poll	Periodically solicits SNMP values from the agents running on targeted nodes and fires a trigger when specified conditions are met. Polls can fire multiple triggers, which are detected by one or more alarms.
Trap mask	Detects a predefined type of SNMP trap. Trap masks can define generic and specific traps as well as traps coming from certain types of devices or whose contents match user-specified criteria. A trap mask fires a trigger when the specified type of trap is detected.
Alarm	Receives triggers, correlates one or more detected network events, and tracks each event instance. Alarms can include automated actions, which fall into four categories: notifying, logging, triggering other alarms, and correcting network conditions. Actions can also be performed conditionally using NerveCenter's Action Router.

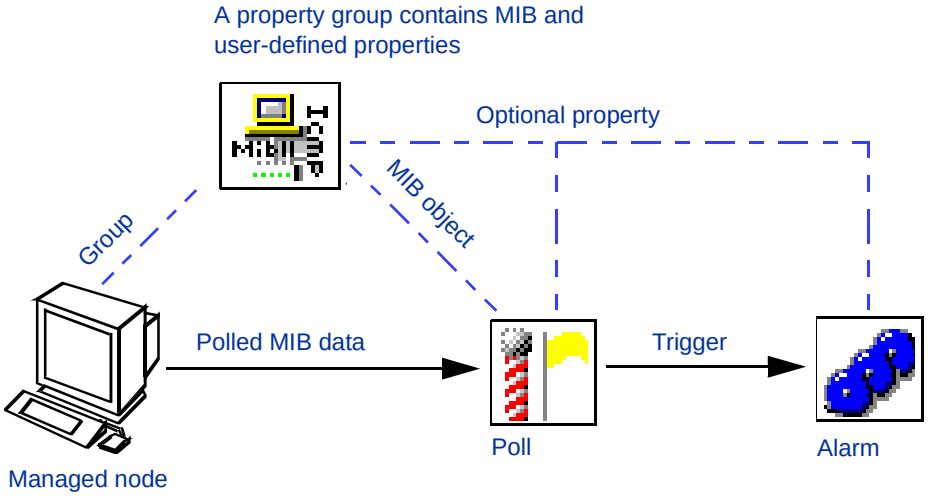
How Behavior Models Operate

A behavior model is based on the following operational construct: A NerveCenter trigger-generating object detects a network event on a targeted node and raises a trigger. This trigger generator might be a NerveCenter poll that looks for a specified network condition or a trap mask that detects a certain type of SNMP trap. NerveCenter has other trigger generators as well, such as alarm actions, Perl subroutines, and masks that detect IT/Operations messages. The node is targeted by virtue of its assigned property group.

An alarm detects the trigger coming from the trigger generator. An alarm is a finite state machine that transitions from one state to the next and performs any actions assigned to a transition.

Figure 4-1 shows the interaction of objects in a sample behavior model that uses a single poll and alarm.

Figure 4-1. Relationships Among Objects in a Simple Behavior Model



When an alarm detects its first trigger, the alarm transitions to the next state, where it remains until another trigger is received—either from the same or another trigger generator. For example, an alarm might detect a trigger from a poll when an interface on a router goes down. Continued polling would indicate whether the first trigger signified only a momentary network flutter or whether the interface is actually down. The sequence of transitions enables NerveCenter to monitor persistent, simultaneous, or sequential events that, taken together, indicate a critical or important condition.

All associated components must be operational for the behavior model to function. For example, a poll is requested only when there is at least one node targeted to receive the poll—a node whose property group contains the MIB base object defined in the poll and additionally any property assigned to the poll. Furthermore, an alarm must be enabled and contain a transition that the poll can trigger. If the alarm is assigned a property, the node's property group must include that property as well. NerveCenter implements these restrictions to control network traffic.

Note A behavior model can consist of multiple alarms and trigger generators. Conversely, any of these objects can be associated with more than one behavior model.

NerveCenter can implement a broad range of actions when an alarm is instantiated. A transition might cause NerveCenter to send a trap, e-mail, or page. NerveCenter can also log alarm data, send a message to a network management platform, and perform corrective actions such as setting SNMP attribute values. Finally, all actions can be performed conditionally, based on user-defined criteria such as time of day, severity of the alarm, type of node, and so on.

Importing the IfData_LogToFile Behavior Model

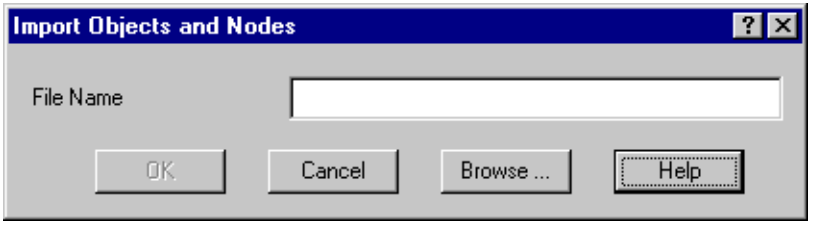
Though NerveCenter ships with a large number of behavior models, not all these behavior models are included in the default database. To limit file size, NerveCenter's database contains only those behavior models that are most commonly used. You can, however, easily import the remaining models as needed.

Of the two models you will operate during the course of this tutorial, one model—IfData_LogToFile—must be imported before you can enable its alarm.

❖ To import the IfData_LogToFile behavior model:

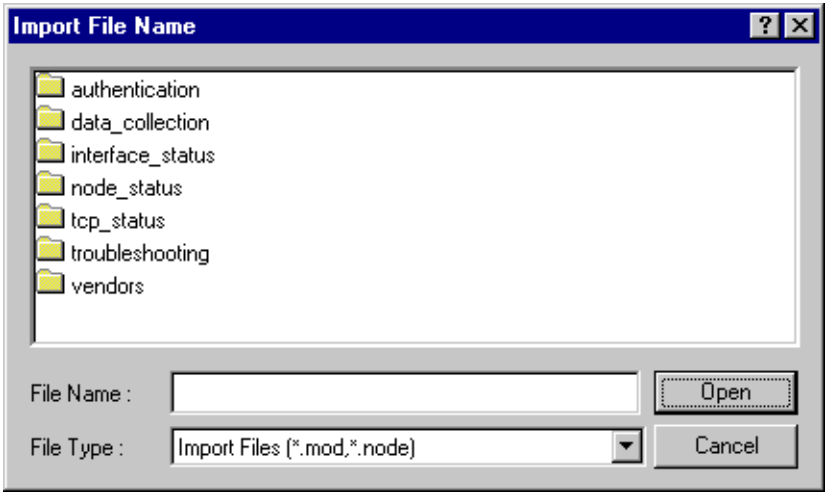
1. From the client's Server menu, choose Import Objects and Nodes.

   The Import Objects and Nodes dialog box is displayed.



2. Select Browse.

   The Import File Name dialog box is displayed. This is where you select the behavior model you want to import.



3. Double-click the data_collection folder.

The contents of that folder are displayed.

4. Select ifdata_logtofile.mod and then select Open.

   The Import File Name dialog box closes and your file name and path are displayed in the Import Objects and Nodes dialog box.

5. Select OK.

   NerveCenter displays a message box informing you that the model imported successfully.

6. Select OK.

   The IfData_LogToFile behavior model is added to the NerveCenter database. Its related alarm and poll are now available for use.

Enabling the IfData_LogToFile Behavior Model

The IfData_LogToFile behavior model repeatedly logs interface attribute values that help you track bandwidth and data-flow levels over a period of time. You can use these values to establish baselines, identify user patterns, determine network utilization, and anticipate potential problems. Because you can change the attributes that are logged, you can use this behavior model to identify and log a variety of information about your network.

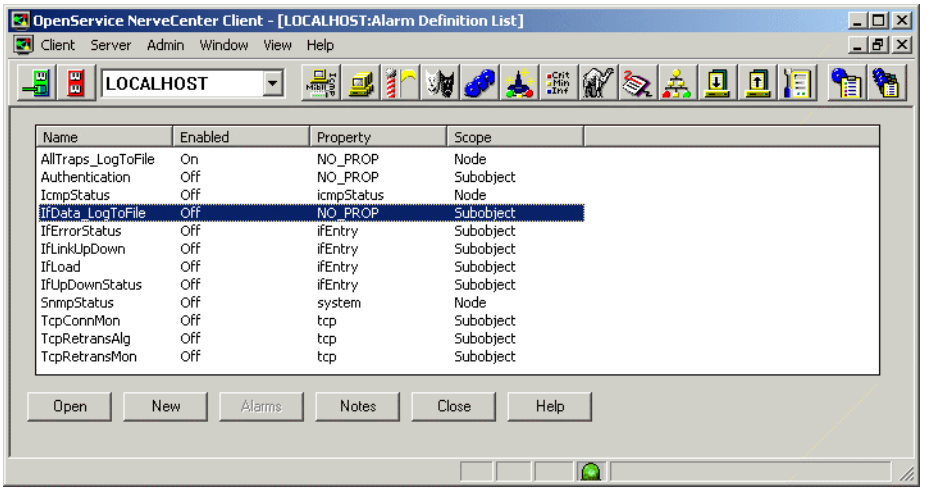
Viewing the IfData_LogToFile Alarm

The IfData_LogToFile alarm—a key element of the behavior model—is instantiated when a node returns values for all the attributes that are polled. To see how the alarm accomplishes this, open the alarm's definition window.

❖ To open the IfData_LogToFile Alarm Definition window:

1. From the client's Admin menu, choose Alarm Definition List.

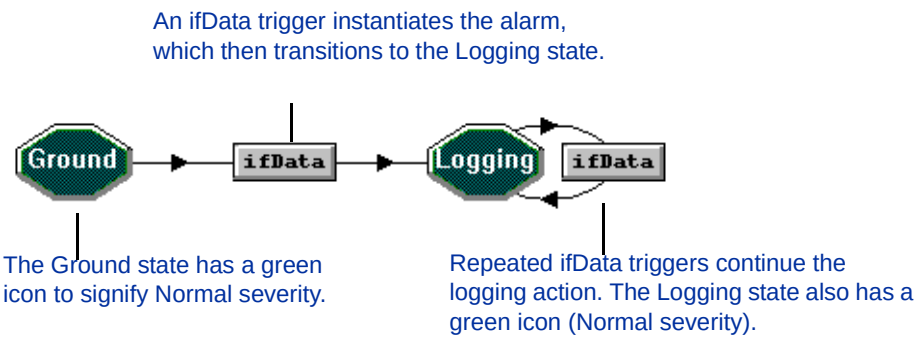
The Alarm Definition List window is displayed. All alarms are turned off by default when you install NerveCenter.



2. Select the IfData_LogToFile alarm and select Open.

The Alarm Definition window is displayed. Below is a picture of the alarm's finite state diagram.

Figure 4-2. IfData_LogToFile Alarm State Diagram



As you can see from the diagram, the alarm contains two states:

- **Ground**—NerveCenter has not received any of the specified interface values from a node.

- **Logging**—NerveCenter has received the specified interface values and has logged these values in a file.

The alarm also contains two *ifData* transitions. The name assigned to a transition is based on the name of the trigger that causes the transition to occur.

In this alarm, the first ifData trigger instantiates the alarm, which transitions to the Logging state and automatically writes alarm data to a file. Subsequent ifData triggers continue the logging action.

Tip To see where either logging action is stored, double-click on the respective ifData transition. From the Transition Definition dialog box that is displayed, double-click the Log to File action to see its properties.

Click Cancel when you're done viewing the action and transition. Later, when you work with behavior models, you'll learn how to change, delete, and add actions.

Both states in the diagram have green icons. The color of a state icon indicates the severity level associated with that state. In this case, both states have a severity of Normal.

Note To find out what severity is associated with an alarm state, double-click the state.

Severities help you quickly identify alarm instances that are urgent. If you will be working with a network management platform, NerveCenter's severities can be mapped to those of your platform. The *Designing and Managing Behavior Models* book provides a more detailed discussion of severities.

Select Notes to see a description of the alarm, including its severities, any polls or masks that trigger the alarm, any actions associated with a transition, and other useful information.

Tip Notes provide an easy way to obtain information about NerveCenter objects. In addition to using the Notes button here, you can access notes about an alarm from the Alarm Definition List window. Notes are available for most NerveCenter objects.

Poll that Triggers the Alarm

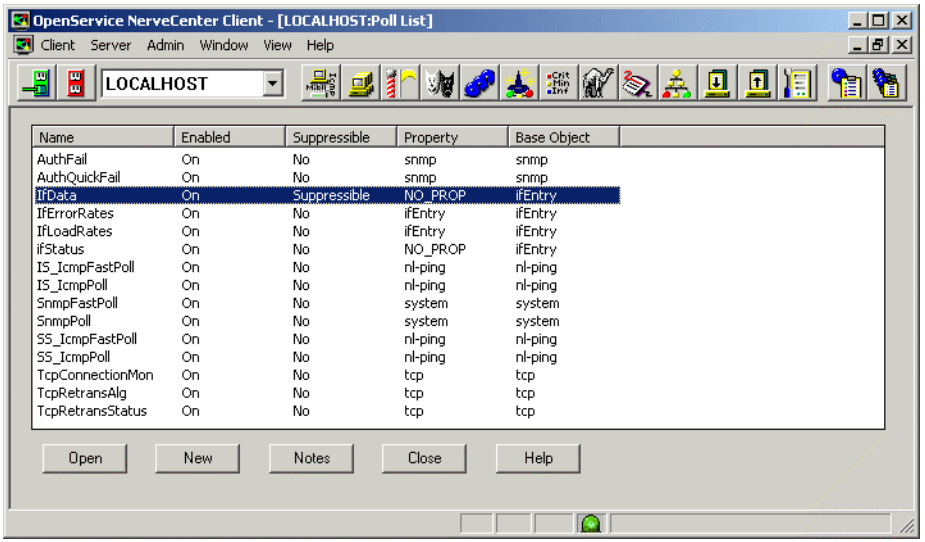
Only one poll is associated with this alarm—the IfData poll. This poll is configured to solicit attribute values for certain base object attributes belonging to the interfaces MIB-II group. The poll fires the ifData trigger when these values are detected in a node.

To see how the poll accomplishes this, open the poll's definition window.

❖ To open the IfData Poll Definition window:

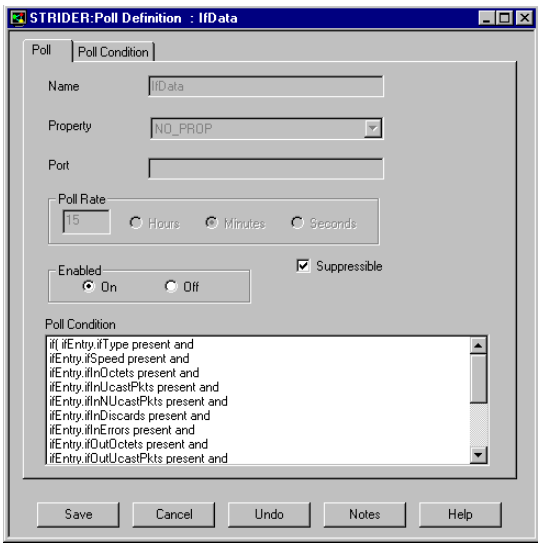
1. From the client's Admin menu, choose Poll List.

The Poll List window is displayed. All polls are turned on by default when you install NerveCenter.



2. Select the IfData poll and select Open.

The IfData Poll Definition window is displayed.



The *Designing and Managing Behavior Models* book shipped with NerveCenter describes polls in detail. For now, however, you will take only a cursory look at the IfData poll. Note specifically the following poll attributes:

- **Property**—The poll is not assigned any particular property. However, because the IfData poll detects ifEntry MIB object values, a node's property group must include these attributes before the node can be polled. For this reason, you assigned the MIB-II property group to your nodes.

  If you were to assign a property to the poll, you could further restrict the poll to an even more limited set of nodes.

- **Poll Rate**—The polling period is set to 15 minutes by default. This means that, when you enable the alarm, you must wait that long between polls.

- **Poll Condition**—The poll condition contains the interfaces (ifEntry) MIB objects that the poll is configured to detect.

- **Trigger**—The poll condition also includes a FireTrigger() command that fires the ifData trigger when the MIB objects are detected.

The data-entry fields in the definition window are unavailable when the poll is on. If you want to make changes, for example by changing the poll rate, you must do the following:

❖ To make changes to a poll:

1. In the Poll Definition window, select the Enable Off radio button.
2. Make the changes you want to the poll.
3. Select Save.
4. Select the Enable On radio button and then select Save.

   This turns the updated poll back on.

The ifData poll solicits information for MIB values found in the Interfaces group in MIB-II. Each value represents one instance of the Interfaces ifEntry base object. Table 4-2 contains a brief description of these MIB values:

Table 4-2. MIB Values Detected by the ifData Poll

Value	Description
ifType	Specific type of interface, for example, Ethernet.
ifSpeed	The interface's current estimated bandwidth measured in bits per second.
ifInOctets	The total number of octets received by the interface.
ifInUcastPkts	The number of subnetwork unicast packets delivered to the interface.
ifInNUcastPkts	The number of subnetwork nonunicast packets delivered to the interface.

Table 4-2. MIB Values Detected by the ifData Poll (continued)

Value	Description
ifInDiscards	The number of inbound packets that were discarded for reasons other than errors.
ifInErrors	The number of inbound packets that were not delivered to the interface because of errors.
ifOutOctets	The total number of octets sent from the interface.
ifOutUcastPkts	The number of packets requested to be transmitted to a subnet unicast address.
ifOutNUcastPkts	The number of packets requested to be transmitted to a subnet nonunicast address.
ifOutDiscards	The number of outbound packets that were discarded for reasons other than errors.
ifOutErrors	The number of outbound packets that were not sent because of errors.

Turning on the Alarm

You enable the IfData_LogToFile behavior model by turning on its alarm and poll. In our case, because all polls are turned on by default when you install NerveCenter, you need only turn on the alarm.

❖ To turn on the IfData_LogToFile alarm:

1. From the client's Admin menu, choose Alarm Definition List.

   The Alarm Definition List window is displayed.

2. Select the IfData_LogToFile alarm and select Open.

   The Alarm Definition window is displayed.

3. Select the Enabled On radio button.

4. Select Save.

Tip You can also turn on an alarm from the Alarm Definition List window. Right-click the alarm in the list and choose On from the pop-up menu.

The IfData_LogToFile alarm is now enabled and will transition when the defined MIB attributes are detected on one of the nodes you defined.

Enabling the IfLoad Behavior Model

The IfLoad behavior model monitors each interface on managed nodes and determines whether device load is low, medium, or high. Load is the amount of interface traffic compared to the media's capacity, expressed as a percentage. There are two definitions for each load level—one for point-to-point networks and one for broadcast networks.

This model can give an immediate impression of network and system utilization. By measuring traffic against capacity, you can determine, for example, whether more file servers need to be added to the network. The model can also be used to track traffic-related trends and identify runaway processes that are using network resources.

Viewing the IfLoad Alarm

The IfLoad alarm is instantiated when the load on a node changes from low to medium or high. To see how the alarm monitors load conditions, open the alarm's definition window.

❖ To open the IfLoad Alarm Definition window:

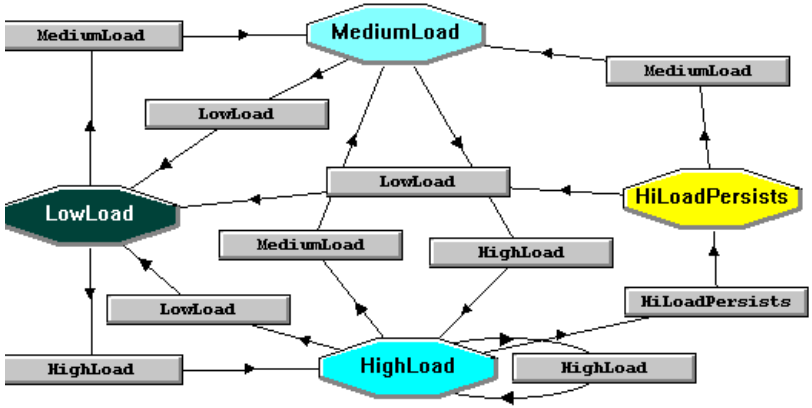
1. From the client's Admin menu, choose Alarm Definition List.

   The Alarm Definition List window is displayed.

2. Select the IfLoad alarm and select Open.

   The Alarm Definition window is displayed. Below is a picture of the alarm's finite state diagram.

Figure 4-3. IfLoad Alarm State Diagram



As you can see from the diagram, the alarm contains four states:

- **LowLoad**—For point-to-point networks, indicates that the load is less than 10% of maximum utilization. For broadcast networks, the load is less than 0.1% of maximum utilization. This state has a severity level of Normal, indicated by a green icon.

Tip Double-click the state to see what severity it has, or select the Notes button for a full description of the alarm.

- **MediumLoad**—For point-to-point networks, indicates that the load is 10-75 percent of maximum utilization. For broadcast networks, the load is 0.1-1 percent of maximum utilization. The alarm enters this state when it detects a mediumLoad trigger. This state has a light blue icon, indicating a traffic severity of Medium.
- **HighLoad**—For point-to-point networks, indicates that the load is greater than 75 percent of maximum utilization. For broadcast networks, the load is greater than 1 percent of maximum utilization. The alarm enters this state when it detects a highLoad trigger. This state has a cyan icon, indicating a traffic severity of High.

  The HighLoad state fires a trigger after the alarm has received its third HighLoad trigger. The trigger transitions the alarm to the HighLoadPersists state and can be seen by double-clicking the HighLoad circular transition.
- **HighLoadPersists**—The interface being monitored has experienced a high load for three successive polls, at which time an inform is sent to the platform. This state has a yellow icon, indicating a minor fault severity.

When the alarm has entered the MediumLoad, HighLoad, or HighLoadPersists state, receiving a lowLoad trigger returns the alarm to Low and clears any alarm instances.

Poll That Triggers the Alarm

The ifLoadRates poll is responsible for triggering the high, medium, and low states in the IfLoad alarm.The poll solicits load information from managed nodes and fires one of three triggers when its specified condition is detected in a node. Each trigger transitions the corresponding state in the IfLoad alarm.

To see how the ifLoad alarm is instantiated, open the definition window for the ifLoadRates poll.

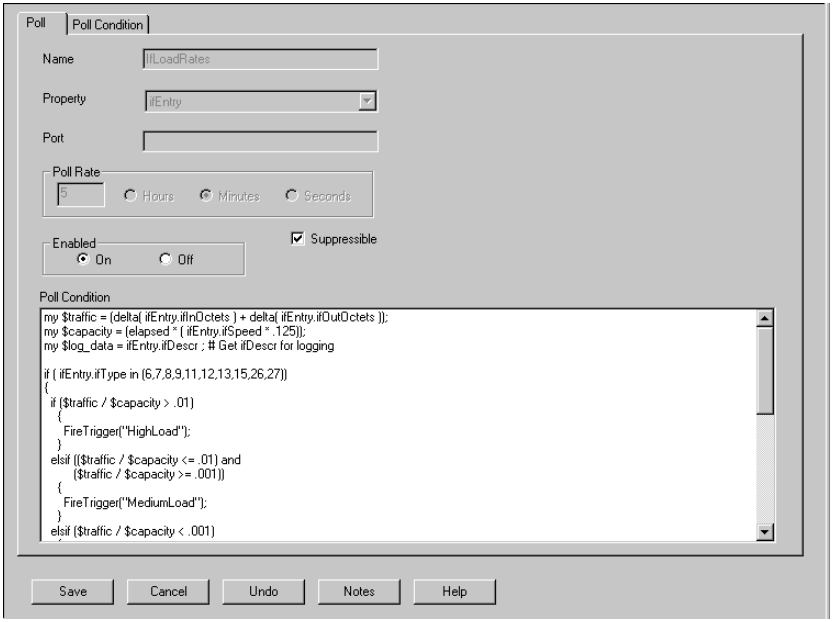
❖ To open the ifLoadRates Poll Definition window:

1. From the client's Admin menu, choose Poll List.

   The Poll List window is displayed.

2. Select the ifLoadRates poll and select Open.

The ifLoadRates Poll Definition window is displayed.



The *Designing and Managing Behavior Models* book shipped with NerveCenter describes polls in detail. For now, however, you will take only a cursory look at the ifLoadRates poll. Note specifically the following poll attributes:

- **Property**—Though the poll is not assigned a specific property, it is configured to detect certain ifEntry MIB object values. This means that a node's property group must include these attributes before it can be polled.
- **Poll Rate**—The polling period is set to five minutes by default. This means that, when you enable the alarm, you must wait that long between polls.
- **Poll Condition**—The poll condition contains a formula that determines when the increase in a node's traffic exceeds a predefined value. There are two sets for each poll—one for point-to-point networks and one for broadcast networks.
- **Triggers**—A FireTrigger() command fires one of three triggers when the corresponding condition is detected in a node. The triggers are: HighLoad, MediumLoad, and LowLoad.

Turning on the alarm

You enable the behavior model by turning on its alarm and polls. In our case, because all polls are turned on by default when you install NerveCenter, you need only turn on the alarm.

❖ To turn on the IfLoad alarm:

1. From the client's Admin menu, choose Alarm Definition List.

   The Alarm Definition List window is displayed.

2. Select the IfLoad alarm and select Open.

   The Alarm Definition window is displayed.

3. Select the Enabled On radio button.

4. Select Save.

Tip You can also turn an alarm on from the Alarm Definition List window. Right-click the alarm in the list and choose On from the pop-up menu.

The IfLoad alarm is now enabled and will transition when any of its associated polls detect a medium or high load condition on a managed node.

Generating an Alarm Instance

Your next step is to make sure one of your managed nodes causes an IfLoad alarm instance. One easy way to do this is to start a fairly large software application on the node, thus temporarily increasing its load.

❖ To increase the load on a node:

- On your machine or on one of the nodes you're managing, start a software application that has moderate-to-high CPU utilization.

  An alarm should be instantiated for this node during the next poll.

Monitoring Alarms 5

After you have enabled a behavior model, you can monitor its alarms and obtain information about the nodes it manages.

Both the NerveCenter Client and the NerveCenter Web Client provide information about current alarm instances. Though you will not use the Web Client now, you can learn more about it in the section *The Web Client* on page 66.

Section	Description
Viewing Alarm Instances on page 46	Describes the Alarm Summary window that displays alarm instances.
Analyzing Historical Detail for an Alarm Instance on page 48	Explains how you can obtain more information about the events leading up to an alarm instance.
Reading Logged Data on page 50	Explains how to view the log file created by the IfData_LogToFile alarm and describes the information contained in the file.
Resetting and Disabling Alarms on page 52	Describes how to reset and turn alarms off.
Suggestions for Customizing the Behavior Models on page 53	Suggest ways in which you may want to modify the IfData_LogToFile and ifLoad behavior models to suit your network management strategy.

Viewing Alarm Instances

NerveCenter displays information about current alarm instances in the Alarm Summary window. If your network later includes more than one NerveCenter Server, you can use the Aggregate Alarm Summary window to view alarm instances from all servers at once. For now, you will use the Alarm Summary window, which displays alarm instances for one server at a time.

❖ To open the Alarm Summary window:

- From the client's Admin menu, choose Alarm Summary.

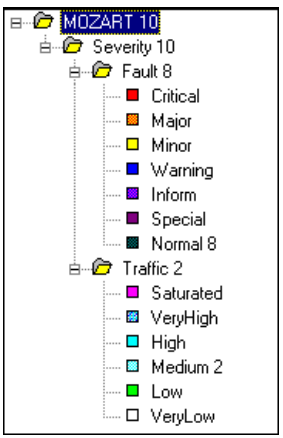
  The Alarm Summary window is displayed.

The Tree View

The left pane contains a tree that displays the total number of current alarm instances, the number of instances in each severity group (Fault and Traffic), and the number of instances of each severity. If there is no number next to a severity, there are no active alarm instances of that severity.

Figure 5-1 shows a sample tree.

Figure 5-1. Alarm Summary Tree



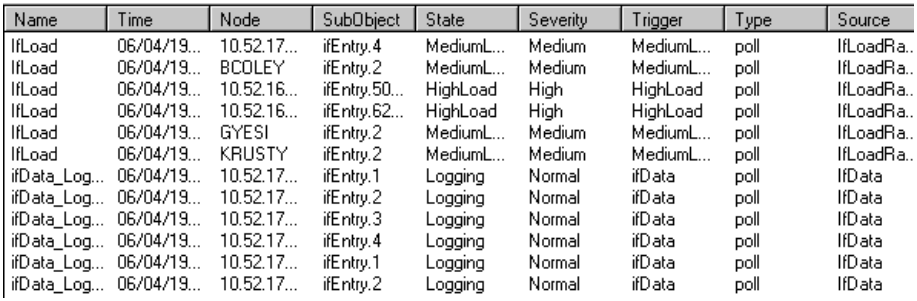
❖ To view information in the tree:

- To expand a level and display the items within it, select the [+] next to the folder you want to expand.
- To view information for any level—for example, all instances in the Fault folder or all instances of a particular severity—select the level. The information is displayed in the right pane.

The Alarm Detail View

The right pane provides detailed information about each current alarm instance related to the folder that is highlighted in the tree view. You can monitor the IfData_LogToFile and IfLoad alarm instances using the detail view.

Figure 5-2. Alarm Summary Detail



Name	Time	Node	SubObject	State	Severity	Trigger	Type	Source
IfLoad	06/04/19...	10.52.17...	ifEntry.4	MediumL...	Medium	MediumL...	poll	IfLoadRa..
IfLoad	06/04/19...	BCOLEY	ifEntry.2	MediumL...	Medium	MediumL...	poll	IfLoadRa..
IfLoad	06/04/19...	10.52.16...	ifEntry.50...	HighLoad	High	HighLoad	poll	IfLoadRa..
IfLoad	06/04/19...	10.52.16...	ifEntry.62...	HighLoad	High	HighLoad	poll	IfLoadRa..
IfLoad	06/04/19...	GYESI	ifEntry.2	MediumL...	Medium	MediumL...	poll	IfLoadRa..
IfLoad	06/04/19...	KRUSTY	ifEntry.2	MediumL...	Medium	MediumL...	poll	IfLoadRa..
ifData_Log...	06/04/19...	10.52.17...	ifEntry.1	Logging	Normal	ifData	poll	IfData
ifData_Log...	06/04/19...	10.52.17...	ifEntry.2	Logging	Normal	ifData	poll	IfData
ifData_Log...	06/04/19...	10.52.17...	ifEntry.3	Logging	Normal	ifData	poll	IfData
ifData_Log...	06/04/19...	10.52.17...	ifEntry.4	Logging	Normal	ifData	poll	IfData
ifData_Log...	06/04/19...	10.52.17...	ifEntry.1	Logging	Normal	ifData	poll	IfData
ifData_Log...	06/04/19...	10.52.17...	ifEntry.2	Logging	Normal	ifData	poll	IfData

Note As mentioned earlier, the ifLoad alarm reverts to its originating state when a low load condition is detected. This causes the corresponding alarm instance in the Alarm Summary window to disappear. If the node's load decreases during a poll and resets its alarm instance, you can cause another alarm instance by restarting one or two applications on the node.

Table 5-1 explains what information is available for each alarm instance.

Table 5-1. Fields in the Alarm Detail Pane

Column	Description
Name	The name of the alarm from which the alarm instance was created.
Time	The time at which the alarm instance's most recent transition occurred.
Node	The host name or IP address of the node the alarm instance is monitoring.
SubObject	The subobect associated with the alarm instance. The subobject consists of a MIB base object plus an instance number—for example, ifEntry.1. The instance often tells you which interface on a device is being monitored.
State	The current state of the alarm instance. The name of the state should indicate the condition NerveCenter is reporting. For example, an IfLoad instance might be in the Medium or High state.
Severity	The severity of the alarm instance's current state.
Trigger	The name of the trigger that caused the most recent alarm transition.

Table 5-1. Fields in the Alarm Detail Pane (continued)

Column	Description
Type	The type of trigger that caused the most recent alarm transition. So far, you've worked only with alarms that are triggered by polls. Some other possibilities are mask and alarms.
Source	The name of the object that generated the trigger.

The alarm detail pane is designed primarily for viewing. However, you can perform a couple of actions from this pane:

- You can select any of the column headings to alphabetize the entries by the values in that column. Selecting the column heading a second time reverses the order of the entries.

  This feature is useful for grouping alarm instances, for example, if you want to see at a glance all instances for a particular node.

- You can double-click the entry for an alarm instance to open an alarm history window. This is covered in the next section, *Analyzing Historical Detail for an Alarm Instance* on page 48.

Analyzing Historical Detail for an Alarm Instance

To obtain more information about an alarm instance, you can examine its alarm history. The Alarm History window displays read-only information that allows you to track an alarm's sequence of events.

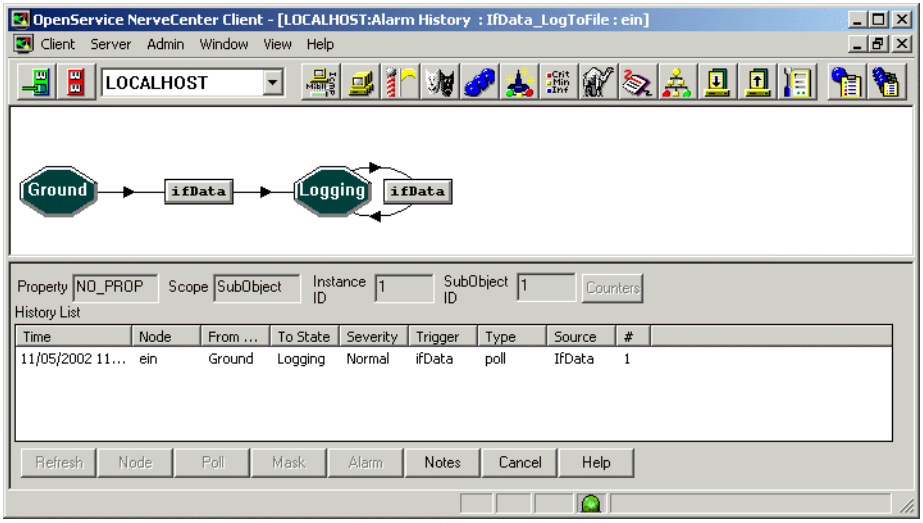
❖ To open the Alarm History window:

- From the Alarm Summary window, double-click an alarm instance.

  The Alarm History window is displayed.

The Alarm History window contains the state diagram for an alarm instance. If you selected an IfData_LogToFile instance, the window on your screen resembles Figure 5-3.

Figure 5-3. Alarm History Window for an IfData_LogToFile Alarm Instance



If you selected an ifLoad instance, however, your window would instead contain states and transitions for the ifLoad alarm.

The state diagram shows the alarm transitions and states. A list at the bottom displays the transitions leading to the current state for the instance. From this list, you can determine the most recent transition and follow along as the transitions lead to the current state of the alarm.

Note If you are looking at an ifLoad instance, you probably have only one transition in your list. The reason is that your targeted node experienced only one instance involving a significant load. When you start monitoring your full network using a variety of behavior models, you will typically see a number of lines in the history list.

❖ To follow the path of transitions:

- Select each line of the history list, first to last.

  The corresponding transition turns red.

  If Refresh becomes enabled, you can select it to update the history with any transitions that have occurred since you first opened the window.

When you select a transition from the transition list, the Node and Poll buttons become enabled. Selecting an enabled button opens a definition window for the related object, such as the poll that caused the highlighted transition. This feature is useful for analyzing and troubleshooting network events. If your alarm instance belonged to a behavior model that monitors unresponsive nodes, you could select Node and, from the node's definition window, ping the node to establish whether it was up.

When you have finished looking at the history for this alarm instance, select Cancel to close the window. Repeat the process for one or two other alarm instances in your Alarm Summary window.

Reading Logged Data

This section describes how to examine the log file that the IfData_LogToFile alarm creates.

❖ To open the log file:

1. Start a text editor or viewer on your system.
2. Open the ifdata.log file:
   - On Windows systems, this file is located in your NerveCenter *installation*`\log` directory.
   - On UNIX systems, this file is located in your NerveCenter *installation*`/userfiles/logs` directory.

Figure 5-4 shows a sample entry from a log file. Each entry in the ifdata.log file refers to a single interface on a node.

Figure 5-4. Sample Entry from Ifdata.log

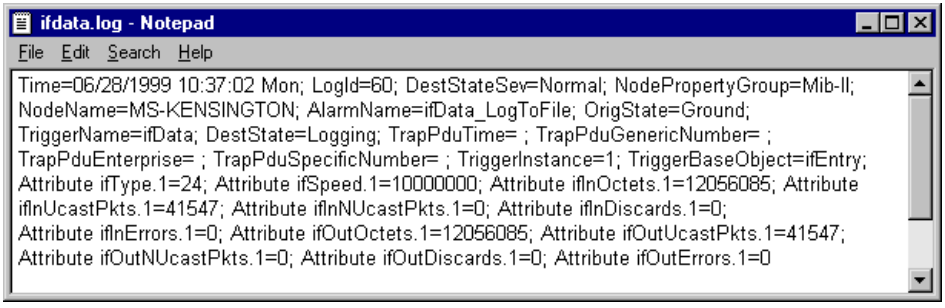


Table 5-2 explains what information the fields in this report contain. Refer to Figure 5-4 when reading the field descriptions.

Table 5-2. Fields in a Log Entry

Field	Contains
Time	Date and time the record was logged. The format of the time is *mm/dd/yyyy hh:mm:ss day* (for example, 10/29/1997 14:32:22 Sat).
LogId	Identification number of the log entry. NerveCenter assigns a sequential number to each log entry.
DestStateSev	Severity of the transition's destination state. The severity in the sample illustration is Normal.

Table 5-2. Fields in a Log Entry (continued)

Field	Contains
NodePropertyGroup	Property group of the node that caused the alarm to change states.
NodeName	Name of the node that caused the alarm to change states.
AlarmName	Name of the alarm. The alarm triggered in the previous sample illustration is IfData_LogToFile.
OrigState	Name of the state from which the alarm moves when the logged transition occurs.
TriggerName	Name of the trigger that causes the alarm to move from the Ostate to the Nstate.
DestState	State of the alarm after the logged transition occurs.
TriggerInstance	The specific base object instance for which the transition occurred.
TriggerBaseObject	The base object associated with the transition.
Attribute ...	The attribute values of the node that caused the transition. Each is printed in the format `Attribute` *attribute.instance=value*. For a description of the attributes logged by the ifData poll, see *MIB Values Detected by the ifData Poll* on page 39.

Note The log file also contains four additional labels related to traps: TrapPduTime, TrapPduGenericNumber, TrapPduEnterprise, and TrapPduSpecificNumber. These fields are not related to your polled data and are not covered in this book.

When you later create and customize alarms, you'll be able to specify precisely what data you want logged. This versatility can help you monitor specific information about certain types of nodes. NerveCenter can also log alarm information to a Windows Event log or a UNIX system log. On Windows, alarms can log data directly into the NerveCenter database.

Resetting and Disabling Alarms

Some alarms, such as IfLoad, are designed to revert to their original state when a condition is met. Others, such as IfData_LogToFile, remain in a particular state until you manually reset the alarm. When you've obtained the information you need about an alarm instance, you may want to reset some or all alarm instances. You can reset alarms using a number of methods from different NerveCenter windows. For now, we'll use the Alarm Summary window.

❖ To reset alarms:

1. From the client's Admin menu, choose Alarm Summary.

   The Alarm Summary window is displayed.

2. Select all the alarms in the list.

Tip To highlight a block of items in a list, select the first item in the block, press and hold the Shift key, and then select the last item in the block. To highlight nonconsecutive items, select the first item, press and hold the Ctrl key, and select each additional item.

3. Right-click and choose Reset to Ground from the pop-up menu.

   The alarm instances disappear from the screen.

Note If you select only one alarm instance—or the instances you select all belong to the same alarm—the pop-up menu offers you another choice besides Reset to Ground. You can also reset the instances to one of the alarm's other states. If you reset instances to a particular state, the entries in the alarm list display the state you selected. The trigger that caused the transition to that state is a NerveCenter built-in trigger named USER_RESET.

After resetting an alarm instance, if the condition that triggered the alarm persists, the alarm will again transition from its ground state. To reset an alarm so that it doesn't re-instantiate, you must turn the alarm off.

❖ To turn off the IfData_LogToFile and IfLoad alarms:

1. From the client's Admin menu, select Alarm Definition List.

   The Alarm Definition List window is displayed.

2. Highlight the IfData_LogToFile and IfLoad alarms.

3. Right-click and choose Off from the pop-up menu.

Your alarms are now disabled. Any alarm instances that were listed in the Alarm Summary window are gone.

Suggestions for Customizing the Behavior Models

Earlier, you were able to monitor the IfData_LogToFile and IfLoad behavior models without changing their polls or alarms. The only customization you provided was to define the nodes they monitored.

When you start using these behavior models later on, you may want to tailor them to match your management strategy. Following are some suggestions.

IfData_LogToFile Behavior Model Changes

You may want to make the following changes to the IfData poll:

- Change the ifEntry attributes to be polled to log information more applicable to your own network strategy.
- Change the poll's property to target certain types of nodes. The nodes must be assigned to a property group that contains the property you specify in the poll.
- Change the poll rate to reduce the amount of logging. For example, you may want to poll nodes once a day and evaluate your logged data over a period of several weeks.

IfLoad Behavior Model Changes

You may want to make the following changes to ifLoad:

- In the associated polls, change the poll rates to reduce network traffic.
- In the associated polls, change the property to target a subset of nodes.
- In the ifLoadRates poll, modify the poll condition values that determine what load values are considered to be high, medium, or low. There are two sets for each condition—one for point-to-point networks and one for broadcast networks. Change either or both to appropriate percentages for your environment.
- In the alarm, add an action to the transition to the high state. You may want NerveCenter to notify someone by e-mail or to log associated data.

Where To Go from Here 6

Now that you have seen two NerveCenter behavior models at work, you may want to read more about them. This chapter shows you how to use the online documentation that was shipped with NerveCenter and describes some of the important NerveCenter features not previously covered in this book.

When you have completed the exercises in this book, you should close the NerveCenter applications. Afterward, you will likely want to reinstall NerveCenter. You may want to integrate NerveCenter with a network management platform, install the Web Client software, or set up NerveCenter to work with a Windows SQL Server database. You will certainly want to install the Administrator module to manage NerveCenter operations. For complete information about installing or upgrading, refer to *Installing NerveCenter* and *Upgrading to NerveCenter 3.8*, both of which are available with the online documentation.

Section	Description
Viewing the Online Documentation on page 56	Provides an overview of the online documentation shipped with NerveCenter and explains how to find information.
Expanding on What You've Learned on page 61	Familiarizes you with other NerveCenter features that are important to know and directs you to sources of more information.
Shutting Down the Client on page 68	Describes how to disconnect the NerveCenter Client from the server and then exit the client.
Shutting Down the Server on page 69	Describes how to shut down the NerveCenter Server.

Viewing the Online Documentation

In addition to online help, NerveCenter is shipped with HTML documents that explain important concepts, help you learn to use NerveCenter, and provide answers to specific questions.

You must have a Web browser to view these files. You can use either Netscape Navigator or Microsoft Internet Explorer. Using other browsers can limit your ability to take advantage of documentation features such as full-text search. Refer to *Release Notes* for the browser versions supported with this release.

❖ To use the online documentation:

- From the Help menu in the client, select Online Documentation.

Tip You can also open the documentation from your browser by selecting the Index.html file located in NerveCenter's *installation*/Docs directory. If you're using Windows, the documentation is additionally available from the Open NerveCenter program group on the Start menu.

The online documentation is displayed in a tri-pane window.

We highly recommend you read through the help instructions prior to using the NerveCenter documentation. The instructions can save you time and frustration when trying to locate critical information about NerveCenter.

❖ To get help on using the documentation:

- Select the Help link in the top pane of the online documentation.

  The help topics are displayed. Read through the information provided to learn how to navigate and find information in the online documentation.

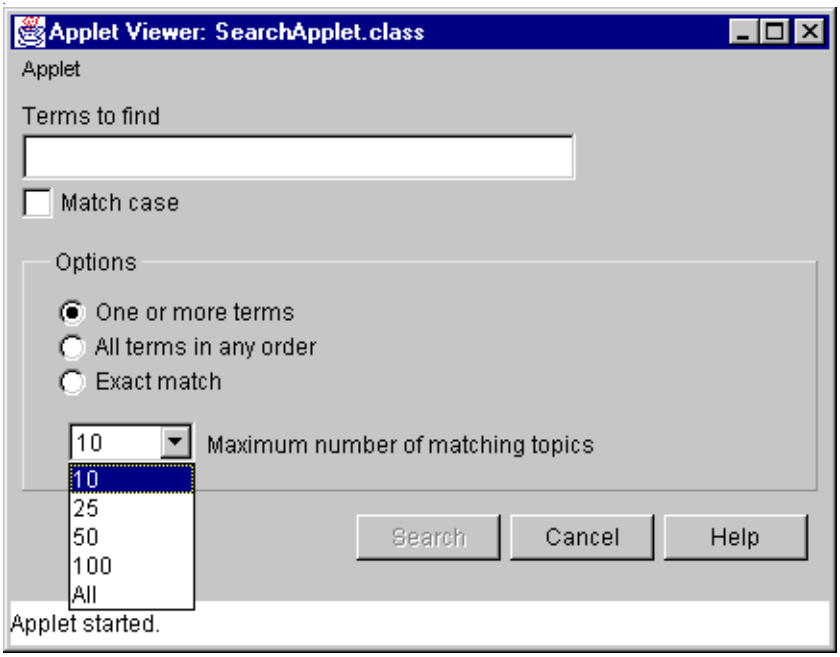
If you are not sure what book you need, use the full-text search feature to enter one or more terms and then search for topics that contain the text you entered. The following procedure describes how to perform a search.

❖ To search the documentation:

1. Select the Search link in the top pane of the online documentation.

   The Search dialog box is displayed.

Figure 6-1. Search Dialog Box



2. Type the word `alarm` in the Terms to find field.

3. Select a number from the Maximum number of matching topics drop-down listbox. The number you choose determines the maximum number of topics displayed in your browser as a result of a search.

4. Select Search.

   The dialog box closes and the search engine parses the NerveCenter documentation for files containing the word `alarm`. After a brief delay, the browser provides the following information for each matching topic found:

   - Topic title—Select this title to display the actual topic page.
   - Name of the book in which it is found— Select this item to display the first page of the book.
   - Number of hits—This number tells you how many times the specified word was located on the page.
   - The first couple lines of text—This provides a preview of the information contained on the page.

During the previous search, the NerveCenter search engine located many topics containing the word alarm and displayed up to the number selected in the Maximum number of matching topics drop-down listbox. You can reduce the number of topics by adding more criteria to your search. The next steps describe how to narrow your search.

❖ To narrow your search:

1. Select the Search this documentation link in the top pane of the online documentation.

   The Search dialog box is displayed.

2. In the Terms to find field, enter the following two words separated by a space: `alarm reset`.

3. Select the All terms in any order button. This option forces the search engine to find both `alarm` and reset in a topic before listing that topic as a hit.

Note If you select the One or more terms button instead, the search engine locates topics containing either `alarm` or `reset`.

4. Select Search.

   This time, the browser locates fewer topics, and the topics it finds include information on both alarms and resetting.

Continue viewing the information as time allows, then close your Web browser.

Each NerveCenter book and paper in the library is also available as a Portable Document Format (PDF) file that you can open and print. You must have Adobe Acrobat Reader installed to open or print the PDF files. You can download Reader free of charge from Adobe's Web Site at the following address: http://www.adobe.com/

All PDF files are located in your *`installation`*`\docs` directory. Three quick reference cards are consolidated in one file named quickreference.pdf. In addition to the files in the *`installation`*`\docs` directory, PDF files for all books are also located in the root directory of your CD so you can print them prior to installation.

Table 6-1 lists the documents that ship with NerveCenter

Table 6-1. The NerveCenter Library

Book Title	Description	Application	Audience	PDF for Print
Release Notes	Describes the features that are new in NerveCenter v3.8 and includes up-to-date information, software support, corrections, and instructions.	All	All	`relnotes.pdf`
Getting a Quick Start with NerveCenter	Provides a preview prior to installing and configuring NerveCenter for your network. Takes approximately one to two hours to complete.	All	New users	`qckstart.pdf`
Upgrading to NerveCenter 3.8	Explains how to upgrade your current version of NerveCenter to NerveCenter 3.6.	All	Installation team	`upgrading.pdf`
Installing NerveCenter	Helps you plan and carry out your NerveCenter installation. Use the *Release Notes* in conjunction with this book.	All	Installation team	`install.pdf`
Managing NerveCenter	Explains how to customize and tune NerveCenter after it has been installed.	NerveCenter Administrator	Administrator	`managing.pdf`
Integrating NerveCenter with a Network Management Platform	Explains how to integrate NerveCenter with one or more supported network management platforms.	NerveCenter Administrator	Administrator	`integrating.pdf`
Learning How to Create Behavior Models	Provides step-by-step instructions with examples for creating new behavior models.	NerveCenter Client	Users with administrative privileges	`learning.pdf`
Designing and Managing Behavior Models	Explains behavior models in depth, how to create new models or modify existing ones, and how to manage your models.	NerveCenter Client	Users with administrative privileges	`design.pdf`
Monitoring Your Network	Explains how NerveCenter works and how you can monitor your network most effectively.	NerveCenter Client and Web Client	Users	`monitor.pdf`
Behavior Models Cookbook	Describes each behavior model shipped with Open NerveCenter.	NerveCenter Client	Users with administrative privileges	`cookbook.pdf`
Open NerveCenter: Downstream Alarm Suppression	White paper that explains how NerveCenter handles downstream alarm suppression.	NerveCenter Client	Users with administrative privileges	`downstream.pdf`

Table 6-1. The NerveCenter Library (continued)

Book Title	Description	Application	Audience	PDF for Print
NerveCenter 3.8: An Overview	White paper that describes the components of NerveCenter and explains how these components interact with each other. You will also learn how NerveCenter interacts with external software, such as a network management platform.	NerveCenter Client and Administrator	Administrator and users with administrative privileges	`NCOverview.pdf`
NerveCenter Integration with Micromuse Netcool/OMNIbus	White paper that describes how NerveCenter works with Micromuse Netcool/OMNIbus to help enterprises monitor the status of their networks.	NerveCenter Client and Administrator	Administrator and users with administrative privileges	`netcoolIntegrate.pdf`
NerveCenter: Node Classification	White paper that describes how NerveCenter classifies the SNMP version of a node.	NerveCenter Client	Administrator and users with administrative privileges	`nodeclass.pdf`
Quick reference cards	PDF only. NerveCenter quick reference cards provide convenient reference material for some of the more common NerveCenter tasks. The following cards are provided: ◆ Reference for monitoring NerveCenter. ◆ Reference for installing NerveCenter. ◆ Reference for using behavior models.	NerveCenter Client and Administrator	All	`quickreference.pdf`

Expanding on What You've Learned

The preceding chapters of this book described the simplest configuration and procedures. Before you begin working with NerveCenter, you should familiarize yourself with some of the NerveCenter features not detailed in the this book. This section summarizes those features and indicates where you can find more information.

This section describes the following:

Configuration Options

NerveCenter's client/server architecture supports distributed polling across large networks. The NerveCenter Server runs as a daemon on UNIX systems or as a service on Windows systems, enabling NerveCenter to operate remotely. You can configure NerveCenter so that all polling is accomplished on local area networks rather than across a wide area network. Using this capability, you can minimize bandwidth and increase scalability by limiting the information to be monitored for each subnet and the nodes to be polled.

The size and complexity of your network are important factors in determining how to configure NerveCenter. Following is a high-level look at several options:

Table 6-2. Configuration Options

Option	Description
Single NerveCenter	If you are managing a small network, NerveCenter can discover the workstations and network devices on the network, detect network conditions, respond automatically to conditions, and display information about active alarms.
Multiple NerveCenters	For larger networks, several NerveCenters can communicate with each other and forward important messages to a central site.
NerveCenter integrated with a platform	NerveCenter can be integrated with a network management platform, such as Hewlett Packard's OpenView Network Node Manager. The platform typically discovers nodes and maps network topology. NerveCenter might monitor a subset of the nodes managed by a single platform and then forward noteworthy events to that platform.

Table 6-2. Configuration Options (continued)

Option	Description
NerveCenter working with multiple platforms	You can configure one or more NerveCenters to operate with multiple platforms. You can specify which information NerveCenter sends to each platform.

For complete information about configuring NerveCenter to operate independently or with a network management platform—along with the platforms supported by NerveCenter—refer to the *Managing NerveCenter* and *Integrating NerveCenter with a Network Management Platform* books.

Node Management

Earlier in this book, you added nodes by manually defining or copying each node's attributes. Two other methods are commonly used to manage nodes:

- The typical configuration integrates NerveCenter with a network management platform—such as Hewlett Packard's Network Node Manager—which performs node discovery, draws a graphic map containing your network topology, and provides a browser with messages about network status. Through a process called synchronization, the platform refreshes NerveCenter's node list with information about nodes that are added, changed, or removed.

  NerveCenter monitors the nodes retrieved from your platform, forwards noteworthy events back to the platform, and changes the color of node symbols in your platform's map to reflect changes in network conditions.

  Refer to the *Integrating NerveCenter with a Network Management Platform* book for details about integrating NerveCenter with a platform.

- As an alternative to using a network management platform, you can configure NerveCenter to discover nodes when they send SNMP traps to the NerveCenter Server. You can also customize NerveCenter's IPSweep behavior model, which uses an IP sweep program to populate your node list.

  Node discovery using the IPSweep behavior model must be configured in both the NerveCenter Administrator and NerveCenter Client before it can be used. This configuration is described in the *Managing NerveCenter* and *Designing and Managing Behavior Models* books.

Event Correlation

To create or customize behavior models, you need to understand event correlation. Event correlation can help you filter the amount of data generated by your network, allowing you to concentrate on important or critical events.

NerveCenter often detects many conditions before it finds a particular set of conditions that you have defined. By defining certain events and configuring how they are correlated, you can reduce network data and be informed only of those conditions that are paramount to you.

One simple method of correlating detected conditions is to search for the persistence of a problem. For example, you might want to know if an SNMP agent reports a solid link-down condition, as opposed to one that results from momentary network flutter. A finite state alarm might track this by firing a delayed-action trigger if the link-down condition that's detected remains for a certain period of time, for example three minutes. This delayed-action trigger then notifies you that the link is down. If a link-up message is received within that time, the alarm resets itself, and the trigger is not fired.

Another common type of event correlation is the identification of a set of conditions. For example, you may want to be notified when either a low-speed or a high-speed interface goes down. NerveCenter polls the SNMP agents on both types of routers and fires a trigger when either of the two sets of conditions is detected.

NerveCenter also enables you to correlate conditions by looking for sequences of conditions. For example, the downstream alarm suppression behavior model uses parent-child data to detect the following conditions:

- The node and its SNMP agents are up.
- The node is up, but its agent is down.
- The node is unreachable.
- The node is down.

For a tutorial on creating behavior models, refer to the book *Learning How to Create Behavior Models*. In addition, the *Open NerveCenter: Downstream Alarm Suppression* white paper contains information about the downstream alarm suppression behavior model.

Alarm Actions

NerveCenter's automated alarm actions make it easy for you to monitor and manage your network. You can assign one or more actions to any transition in an alarm state diagram. Each time the transition occurs, all the actions associated with that transition are performed.

Earlier in this book, you looked at NerveCenter's file-logging action. The following tables give all of NerveCenter's alarm actions, grouped by function.

Table 6-3. Notification Actions

Action	Description
Beep	Sounds a beep tone on all NerveCenter Clients connected to the NerveCenter Server managing the alarm instance.
Inform	Sends an event to a network management platform or another NerveCenter. This Inform is used with Hewlett Packard OpenView.
Inform Platform	Sends an event to the following network management platforms: Micromuse Netcool OMNIBus, IBM Tivoli Enterprise Console, or Computer Associates Unicenter TNG.
InformOpC	Sends a message to Hewlett Packard's IT/Operations.
Microsoft Mail	Sends mail using Microsoft Exchange (Windows only).
SMTP Mail	Sends mail using SMTP.
Paging	Sends a page to the specified phone number.
Notes	Displays notes about the alarm that transitioned.

Table 6-4. Logging Actions

Action	Description
EventLog	On Windows, stores alarm transition data in the standard Event Log. On UNIX, stores data in the system log.
Log to Database	Stores alarm transition data in the NerveCenter database (Windows only).
Log to File	Stores alarm transition data in a text file.

Table 6-5. Corrective Actions

Action	Description
Command	Invokes a command or script (Windows or UNIX).
Delete Node	Deletes the nodes that caused the alarm transition.
Perl Subroutine	Executes a Perl subroutine. The Perl subroutine must be created beforehand.
Set Attribute	Changes select attributes of NerveCenter nodes, polls, masks, and alarms.

Table 6-5. Corrective Actions (continued)

Action	Description
SNMP Set	Issues an SNMP SetRequest message that sets one or more values of a MIB attribute on a node.

Table 6-6. Triggering Actions

Action	Description
Fire Trigger	Issues the specified trigger.
Clear Trigger	Clears a trigger that was issued with the Fire Trigger action.
Alarm Counter	Tracks recurring events and optionally fires a trigger when a specified count is reached.
Send Trap	Generates an SNMP trap.

Note NerveCenter also includes an Action Router that performs any of the available actions conditionally based on criteria that you specify.

The *Designing and Managing Behavior Models* book describes in detail how to use each NerveCenter action.

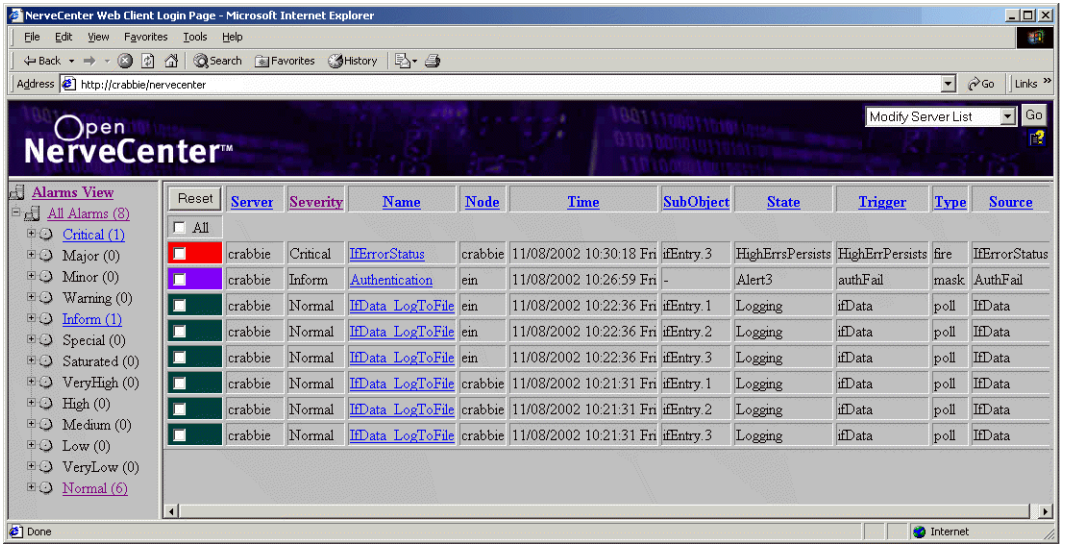
The Web Client

The NerveCenter Web Client provides a Web-based interface for monitoring your network. To use this feature, you must configure Web Server integration during installation.

The Web Client enables you to group and filter alarms in order to focus on instances associated with specific servers, property groups, severities, or IP partitions. You can track alarm instances, view alarm history, obtain information about nodes that trigger alarms, and reset alarms.

Figure 6-2 shows a typical alarm window.

Figure 6-2. NerveCenter Web Client



Refer to the *Monitoring Your Network* book for more information about the Web Client.

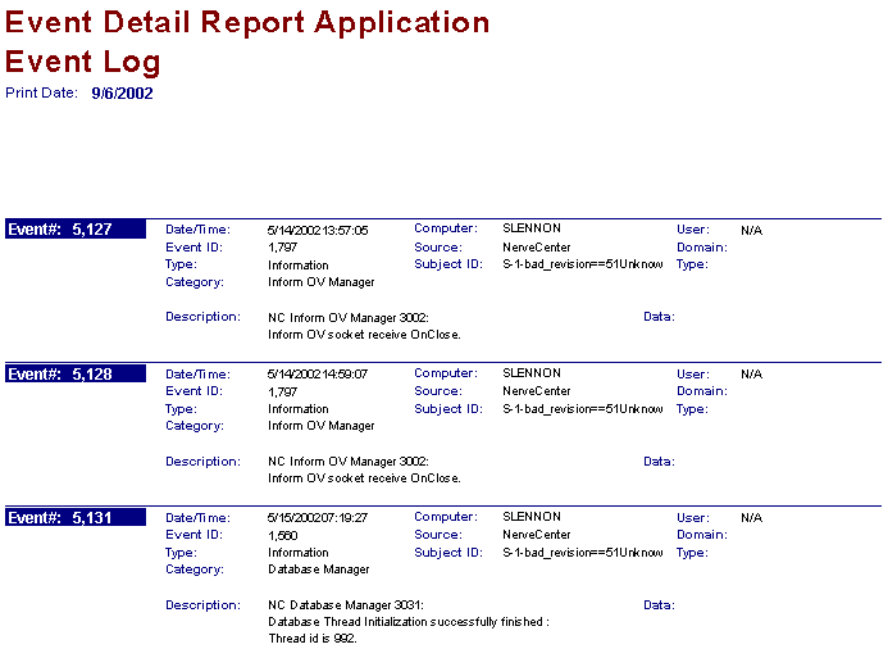
Reports

NerveCenter's reporting capability allows you to collect important network information to anticipate and avoid network problems. You can use reports to establish baselines, monitor thresholds, determine network utilization patterns, track system performance, and identify potential bottlenecks and other critical conditions.

NerveCenter is shipped with several reports developed using Seagate Software Crystal Reports on Windows. You can also create NerveCenter reports from the logs, using other ODBC-compliant tools.

Following is a sample report that is available with NerveCenter. This report summarizes the event log for a node.

Figure 7. Sample Event Log Report



Event Detail Report Application

Event Log

Print Date: **9/6/2002**

Event#: 5,127	Date/Time:	5/14/2002 13:57:05	Computer:	SLENNON	User:	N/A
	Event ID:	1,797	Source:	NerveCenter	Domain:	
	Type:	Information	Subject ID:	S-1-bad_revision==51Unknow	Type:	
	Category:	Inform OV Manager				
	Description:	NC Inform OV Manager 3002: Inform OV socket receive OnClose.			Data:	
Event#: 5,128	Date/Time:	5/14/2002 14:59:07	Computer:	SLENNON	User:	N/A
	Event ID:	1,797	Source:	NerveCenter	Domain:	
	Type:	Information	Subject ID:	S-1-bad_revision==51Unknow	Type:	
	Category:	Inform OV Manager				
	Description:	NC Inform OV Manager 3002: Inform OV socket receive OnClose.			Data:	
Event#: 5,131	Date/Time:	5/15/2002 07:19:27	Computer:	SLENNON	User:	N/A
	Event ID:	1,560	Source:	NerveCenter	Domain:	
	Type:	Information	Subject ID:	S-1-bad_revision==51Unknow	Type:	
	Category:	Database Manager				
	Description:	NC Database Manager 3031: Database Thread Initialization successfully finished : Thread id is 992.			Data:	

Refer to the book *Monitoring Your Network* for more information about generating reports on Windows.

Shutting Down the Client

When you exit the client, your connection to the NerveCenter Server is broken. There may, however, be times when you want to disconnect from the server without shutting down the client. The following procedure describes how to disconnect from the server and then shut down the client.

❖ To disconnect from the server and exit the client:

1. From the NerveCenter Client's Server menu, choose Disconnect.

   A pop-up message box asks you to confirm the disconnection.

2. Select OK.

   The NerveCenter Client is disconnected from the server.

3. To shut down the client, choose Exit from the Client menu.

   You are prompted to confirm the action.

4. Select OK to exit the client.

Though you have shut down the client, the NerveCenter Server is still running as a service or daemon. The next section explains how to stop the server.

Shutting Down the Server

When you start using NerveCenter to monitor your entire network, you will likely want to leave the server running continuously. Right now, however, you can shut it down if you are finished monitoring the nodes you defined or if you want to reinstall NerveCenter.

❖ To shut down the server:

- On Windows, open the Services dialog box from your Control Panel, select NerveCenter, and select Stop.
- On UNIX, enter the following command at the prompt:

  `ncstop`

  The server shuts down with no further prompting.

Caution After completing this manual, to comply with your license agreement, uninstall this version before installing NerveCenter on a production machine.

If you want information about installing or uninstalling NerveCenter components, refer to the *Installing NerveCenter* guide that is shipped with NerveCenter. For information about upgrading an existing version of NerveCenter, refer to the *Upgrading to NerveCenter 3.8* guide.

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Monitoring Quick Reference Card for NerveCenter 3.8

Viewing NerveCenter Objects

NerveCenter contains lists of all defined objects. You can open the following lists from the Admin menu or from the toolbar:

The *Property Group List* window displays all property groups and their properties.

The *Node List* window displays all nodes and indicates if they are managed or suppressed. This window also displays the severity associated with any node that has an active alarm instance.

The *Poll List* window displays all polls and indicates if they are on. This list also displays each poll's property and the MIB base object that the poll monitors.

The *Mask List* window displays each trap mask, its generic trap, any associated enterprise, and its trigger name.

The *Alarm Definition List* window displays each alarm, its property and scope, and whether it's on.

The *Correlation Expression List* window displays each correlation expression.

The *Alarm Severities List* window lists severity levels and types.

The *Perl Subroutine List* window displays all Perl subroutines used by alarm actions.

The *Reports* window displays all available reports, report descriptions and authors.

The *Action Router Rule* List window displays all Action Router conditions and actions.

The *Server Status* window contains the current settings for any NerveCenter to which you are connected.

To view notes about an object:

- From a NerveCenter list window, select an object and select Notes.

Monitoring Alarms

You use the following windows to monitor alarms:

The Alarm Summary window displays alarm instances for the connected server.

The Aggregate Alarm Summary window displays alarm instances collectively for all servers to which you are connected.

To change the active connected server:

- If connected to more than one server, select the server you want from the drop-down listbox on the NerveCenter toolbar.

To sort alarm instances:

- Click the button at the top of the column you want to use for sorting. Click again to reverse the sort order.

To view an alarm instance's history:

- Double-click the alarm instance. Select each item in the list to trace activity to the current state. Select a button, if enabled, to view an associated poll, node, trap mask, or alarm.

To view all instances of an active alarm:

- From the Alarm Definition List window, select the alarm and select the Alarms button.

Resetting Alarm Instances

You can reset alarm instances from the following windows:

Alarm Definition List	Right-click one or more alarms and choose Reset to Ground.
Alarm Summary	Right-click the alarms and reset to ground or another state.
Alarm Instances	Right-click the alarms and reset to ground or another state.
Node Definition	In either Alarms tab, select Reset All to reset all alarms for a node.

Filtering Alarms

NerveCenter enables you to filter alarms by severity, property group, and IP subnet. You can apply a filter to a NerveCenter Server before or after connecting to the server.

To associate an existing filter with a server:

1. From the Client menu, choose Configuration and select the Alarm Filter Selection tab.
2. From the Server list, select the name of the server whose alarms you want to filter.
3. Select one or more filters in the Available Filters list, and select >>.
4. Select OK.

To define or modify a filter:

1. From the Client menu, choose Configuration and select the Alarm Filter Modification tab.
2. Select New to define a filter and Edit to change an existing filter.
3. Enter your filter parameters in the Alarm Filter Definition window.
4. When finished, select OK.

Viewing Log Files

If your alarms are assigned logging actions, you can view the following logged data:.

File log	ASCII files are stored in the following locations: ◆ Windows: *installation*\Log directory on the server. ◆ UNIX: *installation*/userfiles/ logs directory on the server.
Event or system log	◆ Windows: From the Start menu, choose Administrative Tools and then Event Viewer. ◆ HP-UX: View the system log in /var/adm/syslog/syslog.log using the following command: **tail -f /var/adm/syslog/syslog.log** ◆ Solaris: View the system log in /var/adm/messages using the following command: **tail -f /var/adm/messages**
Database log	Available only on Windows in the *installation*\Db directory on the server. This data can be used in reports.

Auditing Behavior Models

Check for triggers that aren't defined in a trap mask or poll, mask/poll triggers not used in an alarm, or alarm states transitioned by undefined triggers.

To run an audit:

1. From the Admin menu, choose Audit.
2. Select one or more checkboxes corresponding to the conditions you want to audit.
3. Select Run Audit.

Exporting Behavior Models

To export an alarm and its associated objects:

- From the Alarm Definition List window, right-click the alarm and choose Export Model, then provide a name for the model file.