HP Network Node Manager i Software

For the Windows®, Linux, HP-UX, and Solaris operating systems

Software Version: 9.1x (Patch 2)

Online Help: Using the Console

Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Oracle Technology — Notice of Restricted Rights

Programs delivered subject to the DOD FAR Supplement are 'commercial computer software' and use, duplication, and disclosure of the programs, including documentation, shall be subject to the licensing restrictions set forth in the applicable Oracle license agreement. Otherwise, programs delivered subject to the Federal Acquisition Regulations are 'restricted computer software' and use, duplication, and disclosure of the programs, including documentation, shall be subject to the restrictions in FAR 52.227-19, Commercial Computer Software-Restricted Rights (June 1987). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

For the full Oracle license text, see the license-agreements directory on the NNMi product DVD.

Copyright Notice

© Copyright 2008–2011 Hewlett-Packard Development Company, L.P.

Trademark Notices

Acrobat® is a trademark of Adobe Systems Incorporated.

HP-UX Release 10.20 and later and HP-UX Release 11.00 and later (in both 32 and 64-bit configurations) on all HP 9000 computers are Open Group UNIX 95 branded products.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates.

UNIX® is a registered trademark of The Open Group.

Acknowledgements

This product includes software developed by the Apache Software Foundation. (http://www.apache.org)

This product includes software developed by the Indiana University Extreme! Lab. (http://www.extreme.indiana.edu)

Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.

- Document Release Date, which changes each time the document is updated.

- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates or to verify that you are using the most recent edition of a document, go to:

http://h20230.www2.hp.com/selfsolve/manuals

This site requires that you register for an HP Passport and sign in. To register for an HP Passport ID, go to:

http://h20229.www2.hp.com/passport-registration.html

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

Support

Visit the HP Software Support Online web site at:

http://www.hp.com/go/hpsoftwaresupport

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest

- Submit and track support cases and enhancement requests

- Download software patches

- Manage support contracts

- Look up HP support contacts

- Review information about available services

- Enter into discussions with other software customers

- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To register for an HP Passport ID, go to:

http://h20229.www2.hp.com/passport-registration.html

To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

Disclaimer for PDF Version of Online Help

This document is a PDF version of the online help. This PDF file is provided so you can easily print multiple topics from the help information or read the online help in PDF format.

Note: Some topics do not convert properly to PDF, causing format problems. Some elements of online help are completely removed from the PDF version. Those problem topics can be successfully printed from within the online help.

Contents

Chapter 1

About the NNMi Console

The HP Network Node Manager (NNMi) console is the graphical user interface for your NNMi application. The main features of the console are shown in the following diagram and <u>explained in the table below</u> .

When using the NNMi console, note the following:

- If you are using Microsoft Internet Explorer as your browser, you can sign into multiple NNMi sessions. Use a different user name for each browser session.

- If you are using Mozilla Firefox as your browser, you can only sign into a single NNMi session on each client system.

- You can bookmark the URL for the NNMi console.

- You can integrate NNMi with other applications, including HP Network Node Manager i Software Smart Plug-ins (iSPIs). Therefore, you might see user interface items such as

workspaces, views, or tabs that are not described in the NNMi online help. Contact your NNMi administrator if you have questions about any additional user interface items that are not described.

- By default, NNMi displays menus, views, and workspaces that require an additional license. If you do not have the required license, NNMi labels these features as `Unlicensed` or `Evaluation`. `Evaluation` indicates the License Type is `Instant-On` or `Temporary`.

  Note: The NNMi Administrator can configure the User Interface to hide `Unlicensed` or `Evaluation` features.

Network Node Manager Console Features

Feature	Description
1 Title bar	Used to identify the application you are running. The top-right corner contains the standard browser buttons for closing and resizing the console window.
2 Main menu bar	Commands available in the console. Command categories include File, View, Tools, Actions, and Help. See "Invoke Actions" (on page 18) and "Using Actions to Perform Tasks" (on page 98). See also "Access Help" (on page 20) and "Search the Help Topics" (on page 20) for information about the tools provided to help you learn about NNMi.
3 Workspace navigation panel	Helps you navigate between workspaces and views. See "Display Views" (on page 14) and "About Workspaces" (on page 23).
4 Workspaces	A context that represents your current scope of interest and work. Workspaces provide a means of grouping views for a related purpose or task flow. Multiple views are available in each workspace. See "Views Provided by NNMi" (on page 84).
5 Console message bar	Alerts about any problems with NNMi, itself.
6 User, Role, and Sign Out button	Your current user name, and role assignment. Your role assignment determines what you can see and do within the NNMi console.
7 Breadcrumb trail	Title of the view you selected from the workspace navigation panel and the breadcrumb trail. Each view provides access to a group of objects. More details about each object are available when you double-click the object to display that object's form. See "Using Views to Display Data" (on page 39) , "Access More Information About an Object (Forms and Analysis Pane)" (on page 15), and "Working with Objects" (on page 94) . The breadcrumb trail displays in the view title bar, so you can easily navigate to previously accessed views and forms.
8 View Toolbar	Tools available within the current view or form. These tools enable you to remove any data filters that you previously applied, restore any columns that you previously hid, and manipulate objects within the view. See "Using the View

Feature	Description
	Toolbars" (on page 30) for more information. The drop-down selectors enable you to modify the factory-set filter values applied to the visible data. See "Filter a Table View" (on page 44).
9 Content Pane	Displays the currently selected view or form.
10 Status Bar	In table views, the Status Bar shows the following information: • Total. The current number of objects in the database that match the criteria for this table (each row displays data about one object). **Note**: You might also see a LIMIT number. This indicates that HP Network Node Manager i Software Smart Plug-ins (iSPIs) software, has set a limit for the current view. This number appears when the number of objects that match the criteria for the current table exceeds the number of rows allowed. See "Help for Administrators" for more information about NNM iSPIs software. **Tip**: To reduce the number of objects displayed so that you see only the objects of interest, use filters. • Selected: Indicates the number of rows selected in the table. • Filter. Indicates if the currently displayed data is a filtered subset of available objects. See "Filter a Table View" (on page 44). • Auto Refresh. Indicates the current refresh time interval. See "Refresh a View" (on page 40). In map views, the Status Bar shows the following information: • The number of nodes displayed on the map. • Auto status refresh. Automatic refresh rate for the Refresh Status option. See "Refresh Node Status on a Map" (on page 65). To update other aspects of the map data (changes in node placement, nodes added, and nodes deleted), see "Refresh a View" (on page 40). **Note**: The Initial Discovery Progress map indicates the refresh rate for Auto full refresh, which refreshes both status and topology. In both table and map views, the Status Bar displays the Last Updated time to indicate the time at which the view was last refreshed.
11 Analysis Pane	Displays additional information about the object selected in the Content Pane. Examples of additional information include details about an incident's Source Node and Source Object or information about a node's Interfaces and IP Addresses. **Note**: This pane remains blank until an object is selected. See "About the Analysis Pane" (on page 27)for more information.

Configure How Mozilla Firefox Responds to NNMi Requests

By default, NNMi opens Online help in a new browser window.

In the main console window, opens a duplicate of the current view or form in a new browser window.

To control the number of windows generated, you can configure Mozilla Firefox so NNMi responds to requests in a new tab within the current Firefox window.

To configure how Mozilla Firefox responds to NNMi links:

1. Open a Mozilla Firefox browser window.

2. In the URL field, type `about:config` and press **Enter**.

3. At the top of the displayed form, in the field labeled **Filter**, type `newwindow`. A list of relevant attributes displays.

4. Double-click **browser.link.open_newwindow**.

5. In the **Enter integer value** dialog box, type one of the following choices:

   1 = Replace the current Firefox window/tab.

   2 = Open a new Firefox window.

   3 = Open a new tab within the current Firefox window.

6. Click **OK** to save your changes and close the dialog box.

7. Double-click **browser.link.open_newwindow.restriction**.

8. In the **Enter integer value** dialog box, type one of the following choices:

   0 = Use settings in **browser.link.open_newwindow**.

   1 = Ignore settings in **browser.link.open_newwindow**.

   2 = Use settings in **browser.link.open_newwindow** unless the URL contains other window instructions.

9. Click **OK** to save your changes and close the dialog box.

Related Topics

Configure How Microsoft Internet Explorer Responds to NNMi Requests

Note: If you are using Internet Explorer 8 and the Internet Explorer Enhanced Security Configuration, see the "Suggested Configuration Changes" appendix of the HP Network Node Manager i Software Deployment Reference.

By default, NNMi opens Online help in a new browser window.

In the main console window, opens a duplicate of the current form or view in a new browser window.

To control the number of windows generated, you can configure Microsoft Internet Explorer so NNMi responds to requests in a new tab within the current Explorer window.

To configure how Microsoft Internet Explorer responds to NNMi requests:

1. From the Microsoft Internet Explorer browser, select **Tools** → **Internet Options**

2. Select the **General** tab.

3. Under the **Tabs** section, click **Settings**.

4. In the **Tabbed Browsing Settings** dialog, locate the radio box group labeled **When a pop-up is encountered**.

5. Make your selection:

   - **Let Internet Explorer decide…**

   - **Always open pop-ups in a new window**

   - **Always open pop-ups in a new tab**

6. Click **OK** to save your configuration and close the dialog box.

7. Click **OK** to close the **Internet Options** dialog and return to the browser window.

Related Topics

Configure the Microsoft Internet Explorer Title Bar

When using Internet Explorer, browser settings determine whether the name of an NNMi view or form displays in the title bar.

To configure Microsoft Internet Explorer to display view and form titles:

1. Open the Internet Explorer browser and click the **Tools** menu.

2. Select **Internet Options**.

3. Navigate to the **Security** tab, **Trusted Sites**, **Custom Level**, **Miscellaneous** section.

4. Disable the **Allow websites to open windows without address or status bars** attribute

Chapter 2

Navigating the Console

The main window of the console is your starting point for navigation.

A *view* is a collection of related objects that are depicted as a table or map. A *form* provides all known details about a selected object.

From the main window, you can perform the following tasks:

- "Display Views" (on page 14)
- "Access More Information About an Object (Forms and Analysis Pane)" (on page 15)
- "Invoke Actions" (on page 18)
- "Use the Tools Menu" (on page 19)
- "Access Help" (on page 20)
- "Search the Help Topics" (on page 20)
- "Mark Your Favorite Help Topics" (on page 22)

Display Views

Views contain information about the objects in your network. A view can be a table (a list of objects) or a view can be a map with icons. For example, to assist you in managing incidents, NNMi provides the Open Key Incidents and My Open Incidents table views.

To display a view:

1. Click a workspace name in the workspaces navigation panel to display a group of views. The workspaces provided by NNMi are shown below:

2. Select the view you want.

When you select another view from the workspaces navigation panel, the selected view replaces the current view.

If you open a view using the 🔲 **Show View in New Window** icon, the view opens in a new window.

If the view has more than one page of information, use the scroll bar or the page controls to navigate through each page of the view. See "Using the View Toolbars" (on page 30) for more information about using page control.

See "Using Actions to Perform Tasks" (on page 98) for more information about views that are accessible from the console's **Actions** menu.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

Access More Information About an Object (Forms and Analysis Pane)

You can access more information about any object. For example, in your current view, you can obtain more information about a node or interface that was reported as having problems. From within the node or interface form, you can access the associated incidents.

Access all object attributes and related objects by displaying the form:

- **To open a form using Tools → Find Node**:

  See the "Use the Tools Menu" (on page 19) for more information.

- **To open a form from a table view**:

Double-click the row representing an object.

The form appears, containing the details about the object. For more information, see "Working with Objects" (on page 94).

- **To open a form from a map view**:

  Do one of the following:

  - Select the map object. Then, click the Open icon in the toolbar.

  - Double-click the map object.

  Note: If the map object is a Child Node Group, double-clicking the Child Node Group object replaces the current map with a map containing each of the nodes in the Child Node Group. To access a Child Node Group form, use the Open icon in the toolbar.

  The form appears, containing the details about the object. For more information, see "Working with Objects" (on page 94).

- **To open multiple forms from a table view**:

  CTRL-Click each row representing an object of interest.

  A form for each object appears, containing the details about the object. For more information, see "Working with Objects" (on page 94).

- **To open multiple forms from a map view**:

  a. Select each object of interest by using CTRL-Click.

  b. Click the Open icon in the toolbar.

     A form for each object appears, containing the details about the object. For more information, see "Working with Objects" (on page 94).

Access more details about an object using the Analysis Pane:

To access the Analysis Pane from a table view:

1. Select the workspace of interest (for example, **Inventory**).

2. Select the view that contains the object of interest (for example, the **Nodes** view).

3. Select the row that contains the object of interest.

4. NNMi displays detailed information at the bottom of the view in the Analysis Pane.

To access the Analysis Pane in a map view:

1. Select the workspace of interest (for example, **Topology Maps**).

2. Select a map view (for example, select **Routers**).

   Note: If the map requires a starting node before it displays, enter the name or IP Address for the starting node you want to use.

3. Click the map object of interest.

4. NNMi displays detailed information at the bottom of the view in the Analysis Pane.

To access the Analysis Pane in a form:

- Click the form's toolbar 📝 Show Analysis icon to display information about the current form's top-level object in the Analysis Pane.

  Note: 📝 Show Analysis always displays the top-level object's information.

- Click a row in a table on one of the form's tabs to display detailed information about the selected object in the Analysis Pane.

NNMi displays detailed information at the bottom of the form in the Analysis Pane. See Working with Objects for more information about forms.

Note the following:

- Look for one of the following at the bottom of the display area:

Analysis	⊼	= Opened
Analysis - Summary - < selected object >	⊻	= Closed

  Open the Analysis Pane if necessary by clicking the ⊻ expand button.

- Place your mouse cursor over the title bar to display the ↕ symbol, then resize as necessary.

- The Analysis Pane remains blank until an object is selected.

- If you select multiple objects or clear a selection, NNMi retains the Analysis Pane's contents.

- If you change views, NNMi clears the Analysis Pane.

- Click any 🔄 Refresh icon in the Analysis Pane to update a subset of displayed information.

- NNMi automatically refreshes the entire Analysis Pane's contents when you save a form.

- The Gauges tab shows real-time SNMP gauges to display State Poller and Custom Poller SNMP data.

  - These gauges are displayed for Nodes, Interfaces, Custom Node Collections, Custom Node Instances, and for Node Components of type CPU, Memory, Buffers, or Backplane.

  - NNMi displays a gauge for each significant MIB Object Identifier (OID) that the node or interface supports, up to the default maximum of 24. (If you are an NNMi administrator, see the "NNMi Console" chapter of the Network Node Manager i Software Deployment Reference for information about using the nms-ui.properties file to change this default.)

  - Each gauge displays the current OID value, using the default refresh rate of 15 seconds. (If you are an NNMi administrator, see the "NNMi Console" chapter of the Network Node Manager i Software Deployment Reference for information about using the nms-ui.properties file to change this default.)

  - The value range displayed indicates the OID minimum and maximum values that NNMi has encountered.

  - There is not a one-to-one match between the OIDs used to analyze monitoring thresholds and those displayed in the Analysis Pane. For example, the Analysis Pane might display a **Cisco Memory Pool** OID value that does not match the value used to calculate whether the **Memory Utilization** Monitored Attribute threshold is reached or exceeded. This is because some threshold metrics require more complex calculations than a single OID allows.

> **Tip**: If a gauge label appears to be a duplicate value, mouse over the label to view the more complete tooltip name that is displayed.

- When configuring performance metrics NNMi uses complex calculations for NNMi does not track or indicate whether a monitoring threshold is configured for the OID.

- For any gauge that tracks percentage values, NNMi uses a red line to indicate where the OID value is near 100 percent.

- To launch an SNMP Line Graph for the selected metric, click the icon that appears at the bottom of each gauge.

- To select and copy the tooltip information, double-click the gauge. NNMi displays a text window that enables you to select and copy the tooltip information.

Invoke Actions

To perform an action, you select an action from the **Actions** menu. The **Actions** menu is accessible from the NNMi console main menu toolbar and from the menu toolbar in any view or form that is opened in a new window.

Note: The actions available to you depend on your user role and on the object selected. If no actions are available for a particular object, the Actions menu is empty.

- **To invoke an action from a table or map view**:
  a. If you do not have a view displayed, from the workspace navigation panel, select a view:

     Tip: For multiple selection, use CTRL-click.

     ○ In a table view, single-click a row.

     ○ In a map view, single-click the object of interest.

  b. Select the **Actions** menu in the menu toolbar.

     Tip: You can right-click any object in a table or map view to access the **Actions** menu.

  c. Select the action you want to perform from the list of available actions.

- **To invoke an action from a form**:
  a. If you do not have a form open, from the workspace navigation panel, select the table view you want to access.

  b. From the table view, double-click the row representing the object instance (for example, node) you want to update.

  c. From the menu toolbar, select Actions and then the action you want. For example, select **In Progress** to change the Lifecycle State of the selected incident to **In Progress**.

When invoking actions, note the following:

- If you are running an action that modifies attributes on a form, the action takes effect immediately. You do not have to select 💾 Save.

- An action might cause a new window to open.

- In the Actions menu, your administrator can add menu choices. Those action items won't be described in NNMi Help.

- If you selected the wrong number of objects for an action, you can de-select all objects by clicking twice in the row. (The first click selects the object and the second click de-selects the object.)

Related Topics

"Using Actions to Perform Tasks" (on page 98)

Use the Tools Menu

Several tools are provided beneath the **Tools** menu. The list of tools changes depending on the role to which you are assigned. The tools listed in the following table are available to Operator Level 2.

NNMi Tools Menu Options

Tool	Description
Find a Node	Searches the NNMi database for the *case-sensitive* string of characters you provide. NNMi finds the associated Node. If multiple Nodes match, NNMi displays the Node form of the first match. NNMi checks the following Node attributes for a match: • Name • Hostname (*fully-qualified*) • IP address • MIB-II sysName
Find Attached Switch Port	Identifies the switch port to which the selected node is attached.
MIB Browser	Displays the responses to NNMi's SNMP requests made to a particular node in your network environment, starting from a Management Information Base (MIB) object identifier (OID) within the Internet MIB tree.
NNMi Status	Displays a list showing the status of each process and service of NNMi. When NNMi is functioning properly, each process and service should be running. If one is not running, contact your NNMi administrator.
Restore All Default View Settings	Removes all view customizations, and resets all views to their default settings. See "Restore Table Defaults" (on page 59) for more information.
Status Distribution Graphs	Displays the overall health of your network by providing Stacked Area Graphs that display the distribution of Node, Interface, and IP Address Status information over time.
Visio Export (NNM iSPI NET)	Exports topology maps displayed in NNMi to Visio documents for later use.

Access Help

Note: Context-sensitive help is not available when pressing [F1]. Use the NNMi Help menu, instead.

If you have a Guest user role, start with the topics in **Help → Using the Console**. More information about each view is in **Help → Help for Operators**. If you need more information about a form, use the **Help → Using the <*name*> form** within the form.

If you are an Operator, task information is provided in **Help → Help for Operators**. If you are an Administrator, all the resources described in the table below are valuable.

To access the help:

1. Select **Help** from the NNMi console main menu.

2. From the help you can access all the information described in the table below.

Help → Links

Help Link	Description
Using the <*name*> form	Context-sensitive help for the current form.
Using the Console	Explains how to use the NNMi console, including how to navigate within the console, as well as how to access and use the forms and views NNMi provides.
Help for Operators	Describes how to use the views, forms, and additional NNMi features that are useful for monitoring and troubleshooting the network.
Help for Administrators	Explains how NNMi works and how you can configure NNMi to meet your needs. Describes how to use the Configuration workspace that lets you configure a variety of objects and settings for NNMi.
Documentation Library	Provides access to Reference Pages (command line tool information), the Installation Guide, and Release Notes.
HP Software Support Website	Accesses the HP Software support web site.
System Information	Health information about NNMi. See "Displaying NNMi System Information" (on page 103).
About HP Network Node Manager i Software	Current NNMi licensing information (total licensed capacity limit compared to the number of nodes currently managed). See "Displaying NNMi Version and License Information" (on page 105).

Related Topics

"Search the Help Topics" (on page 20)

"Mark Your Favorite Help Topics" (on page 22)

Search the Help Topics

To search for specific information across all help topics:

1. In the navigation pane of the Help window, click the **Search** tab.

2. Type in a search string (see table).

3. Click the **Search** button. The order of the resulting list of topics is based on a ranking order, with highest ranking topics at the top of the list.

Search Variables

Description	Variable	Example
Search for one or more words. When you enter a group of words into the search field, "or" is inferred.		node interface
Search for a phrase.	" " (wrap a text string in quotes)	"navigation pane"
Search for "either of" or "any of" specific strings.	OR (case insensitive) | (pipe symbol)	node or interface or address "node name"|"interface status"
Search for two or more specific strings.	AND (case insensitive) + (plus symbol) & (ampersand)	node And interface And address "node name"+address "node name"&"interface"
Search for all topics that do not contain something.	NOT (case insensitive) ! (exclamation mark)	not node ! node
Search for all topics that contain one string and do not contain another.	^ (carat symbol)	node ^ interface
Combinations of the above.	( ) parenthesis	node and (name or status) node or vlan (!address)

Note: Results returned are case insensitive. However, results ranking takes case into account and assigns higher scores to case matches. Therefore, a search for "templates" followed by a search for "Templates" would return the same number of help topics, but the order in which the topics are listed would be different.

Mark Your Favorite Help Topics

Use the Favorites tab in the Help system to set favorites for your commonly used help topics.

When using this feature, note the following:

- This feature is not related to the Favorites option in your Web browser.

- Any time you delete your Web browser cookies, your help topic favorites list is deleted.

Chapter 3

About Workspaces

A workspace is a collection of views that represent a scope of interest and work. Workspaces group views with a related purpose or task flow.

When you click the name of a workspace, the views associated with that workspace display below the workspace in the workspace navigation panel. After you select a view, the view display panel shows the requested data. See "About the NNMi Console" (on page 9) and "Display Views" (on page 14) for more information about the workspace navigation and view display panels.

The views within workspaces provide convenient access to information associated with each object type represented. A view displays all the objects of a given type that meet the filter criteria specified for that view.

Note: Some workspaces appear under folders. To access the list of workspaces available for a folder, click the + (plus sign) that precedes the folder name.

NNMi includes the following workspaces:

- 🔥 Incident Management

  Use the 🔥 **Incident Management** workspace to access the incidents that are most important to the network Operator and that often require more immediate action, (incidents with the Lifecycle State equal to 🔄 **Registered**, ➡ **In Progress**, or ✅ **Completed**). **Key Incident**[1] views include:

  - **Open Key Incident** views that include those incidents with a Correlation Nature equal to any of the following:

Incident Correlation Nature	Description
Dedup Stream Correlation	Dedup Stream Correlation incidents track the number of duplicate incidents generated. This value is captured as the Duplicate Count attribute and is incremented on the Duplicate Correlation Incident.
Info	This Correlation Nature is meant to be informational.
None	Indicates there is no incident correlation for this incident.
Rate Stream Correlation	Indicates the incident tracks incident patterns *based on the number of incident reoccurrences within a specified time period*. After the count within the specified time period is reached, NNMi emits a Rate Correlation incident

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

Incident Correlation Nature	Description
	and continues to update the Correlation Notes with the number of occurrences within that rate.
Root Cause	Indicates the incident that reports the root cause of a problem.
Service Impact	*Used in NNMi 8.xx only*. Indicates a relationship between incidents in which a network service is effected by other incidents. By default, NNMi generates Service Impact incidents for Router Redundancy Groups. For example, an Interface Down incident can effect a Router Redundancy Group that is part of an HSRP service. The Service Impact incident helps to identify the service that is affected.
	This Correlation Nature is available for use by HP Network Node Manager i Software Smart Plug-ins (iSPIs). See "Help for Administrators" for more information about NNM iSPIs.
Stream Correlation	*Used in NNMi 8.xx only*. Indicates the correlations that NNMi's event pipeline establishes as it recognizes patterns in the flow of events through the pipeline. Correlations are created as NNMi analyzes events and traps to determine the root cause incident for a problem. Examples of stream correlations include Dedup (duplication of events) and Rate (occurrence of events by time) correlations.

- **Unassigned Open Key Incident** views include any unassigned Key Incidents.

- **My Open incidents** view includes all incidents that are assigned to the current user.

- 🔺 Topology Maps

  The **Topology Maps** workspace includes a Node Group map view of all top-level Node Groups created in your network, as well as map views of your Network Device Infrastructure, Layer 3 (routers) and Layer 2 (switches) network. See "About Node and Interface Groups" (on page 48) for more information about Node Groups. An NNMi administrator, or a role assigned by the NNMi administrator, can change the map views listed in this workspace. See "Help for Administrators" for more information.

  The **Topology Maps** workspace also includes the Initial Discovery Progress or Network Overview map, which displays a map containing the most highly connected nodes in the Layer 3 network.

  Note: The **Initial Discovery Progress** map displays a maximum of 100 nodes. This maximum number cannot be changed. The Network Overview map displays a maximum of 250 nodes by default. The NNMi administrator can change this maximum number using a configuration file. If you are an NNMi administrator, see the "NNMi Console" chapter in the HP Network Node Manager i Software Deployment Reference for more information.

- 🖥️ Monitoring

The **Monitoring** workspace includes views to check for those nodes, interfaces, IP addresses, Router Redundancy Groups, and Node Groups that have a Status of Critical or other than Normal. This workspace also provides views for checking the health of node components, Custom Polled Collections, and Custom Polled Instances.

- Troubleshooting

  Within the **Troubleshooting** workspace, you can access a variety of map views, including the following:

  - Layer 2 Neighbor View

  - Layer 3 Neighbor View

  - Path View

  - Node Group Map

  The Layer 2 Neighbor View map displays Layer 2 network connectivity. The Layer 3 Neighbor View map displays Layer 3 network connectivity. The Path View map displays the active IPv4 addresses in the path between a source and destination node. The Path View map is useful when troubleshooting data flow problems. The Node Group Map view displays all nodes within a specified group.

- Inventory

  Each view in the Inventory workspace contains information related to the object listed. For example, the Nodes view contains information related to the Nodes object. The Interfaces view contains information related to the Interface object. The IP Subnets view contains information related to the IP Subnet object.

  Within the **Inventory** workspace are the following views:

  - Nodes

  - Interfaces

  - IP Addresses

  - IP Subnets

  - VLANs

  - Cards

  - Ports

  - Node Components

  - Layer 2 Connections

  - Custom Nodes

  - Custom Interfaces

  - Custom IP Addresses

  - MIB Variables

  - Card Redundancy Groups

- Router Redundancy Groups (*NNMi Advanced*)

- Router Redundancy Members (*NNMi Advanced*)

- Node Groups

- Interface Groups

- Management Mode

  This workspace includes views of discovered network elements that are not currently being managed by NNMi:

  - Unmanaged Nodes

  - Unmanaged Interfaces

  - Unmanaged IP Addresses

  - Unmanaged Cards

  - Unmanaged Node Components

- Incident Browsing

  The **Incident Browsing** workspace includes the following views related to any **Key Incident**[1]:

  - Open Key Incidents

  - Closed Key Incidents

  Each of these Key Incident views is filtered based on where the incident resides in its Lifecycle State. For example, the Open Key Incidents view displays all Key Incidents that has a Lifecycle State value other than **Closed**. The Closed Key Incidents view displays all incidents that have a Lifecycle State of Closed.

  The **Incident Browsing** workspace also includes views for incidents based on their Correlation Nature. Examples include Open Root Cause and Service Impact incidents.

  You can also use the **Incident Browsing** workspace to view all incidents.

  NNMi provides the Custom Incident and Custom Open Incident views that include all of the attributes available for an incident . These views are provided so that you can customize the incident views to include only the incident attributes of interest.

  This workspace also includes views of incidents generated from NNM 6.x/7.x Events and SNMP Traps.

Note: If your role includes Administrator privileges, you also can access the Management Mode and Configuration workspaces. See "Help for Administrators" for more information.

Related Topics

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

Chapter 4

About the Analysis Pane

The Analysis Pane displays related details about the selected object. NNMi performs the appropriate analysis on the selected object to determine the most important information to display. Any hyperlink within the Analysis Pane displays more information about the selected detail. For example: When you select an Incident, the Analysis Pane might include important details about the incident's Source Node and Source Object. When you select a Node, the Analysis Pane might include important information about the node's Interfaces and IP Addresses.

To access the Analysis Pane from a table view:

1. Select the workspace of interest (for example, ![icon] **Inventory**).

2. Select the view that contains the object of interest (for example, the **Nodes** view).

3. Select the row that contains the object of interest.

4. NNMi displays detailed information at the bottom of the view in the Analysis Pane.

To access the Analysis Pane in a map view:

1. Select the workspace of interest (for example, ![icon] **Topology Maps**).

2. Select a map view (for example, select **Routers**).

   Note: If the map requires a starting node before it displays, enter the name or IP Address for the starting node you want to use.

3. Click the map object of interest.

4. NNMi displays detailed information at the bottom of the view in the Analysis Pane.

To access the Analysis Pane in a form:

- Click the form's toolbar ![icon] Show Analysis icon to display information about the current form's top-level object in the Analysis Pane.

   Note: ![icon] Show Analysis always displays the top-level object's information.

- Click a row in a table on one of the form's tabs to display detailed information about the selected object in the Analysis Pane.

NNMi displays detailed information at the bottom of the form in the Analysis Pane. See Working with Objects for more information about forms.

Note the following:

- Look for one of the following at the bottom of the display area:

| Analysis | ⌃ | = Opened |
| Analysis - Summary - < selected object > | ⌄ | = Closed |

   Open the Analysis Pane if necessary by clicking the ⌄ expand button.

- Place your mouse cursor over the title bar to display the ↕ symbol, then resize as necessary.

- The Analysis Pane remains blank until an object is selected.

- If you select multiple objects or clear a selection, NNMi retains the Analysis Pane's contents.

- If you change views, NNMi clears the Analysis Pane.

- Click any 🔄 Refresh icon in the Analysis Pane to update a subset of displayed information.

- NNMi automatically refreshes the entire Analysis Pane's contents when you save a form.

- The Gauges tab shows real-time SNMP gauges to display State Poller and Custom Poller SNMP data.

  - These gauges are displayed for Nodes, Interfaces, Custom Node Collections, Custom Node Instances, and for Node Components of type CPU, Memory, Buffers, or Backplane.

  - NNMi displays a gauge for each significant MIB Object Identifier (OID) that the node or interface supports, up to the default maximum of 24. (If you are an NNMi administrator, see the "NNMi Console" chapter of the Network Node Manager i Software Deployment Reference for information about using the nms-ui.properties file to change this default.)

  - Each gauge displays the current OID value, using the default refresh rate of 15 seconds. (If you are an NNMi administrator, see the "NNMi Console" chapter of the Network Node Manager i Software Deployment Reference for information about using the nms-ui.properties file to change this default.)

  - The value range displayed indicates the OID minimum and maximum values that NNMi has encountered.

  - There is not a one-to-one match between the OIDs used to analyze monitoring thresholds and those displayed in the Analysis Pane. For example, the Analysis Pane might display a **Cisco Memory Pool** OID value that does not match the value used to calculate whether the **Memory Utilization** Monitored Attribute threshold is reached or exceeded. This is because some threshold metrics require more complex calculations than a single OID allows.

    Tip: If a gauge label appears to be a duplicate value, mouse over the label to view the more complete tooltip name that is displayed.

  - When configuring performance metrics NNMi uses complex calculations for NNMi does not track or indicate whether a monitoring threshold is configured for the OID.

  - For any gauge that tracks percentage values, NNMi uses a red line to indicate where the OID value is near 100 percent.

  - To launch an SNMP Line Graph for the selected metric, click the icon that appears at the bottom of each gauge.

  - To select and copy the tooltip information, double-click the gauge. NNMi displays a text window that enables you to select and copy the tooltip information.

Tip: Some views are also accessible from the console's **Actions** menu. See <u>"Using Actions to Perform Tasks" (on page 98)</u> for more information.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

For more information about the types of information displayed, see <u>Use the Analysis Pane</u>.

Related Topics

<u>"Use Table Views" (on page 41)</u>

"Use Map Views" (on page 62)

Chapter 5

Using the View Toolbars

NNMi provides toolbars for the following types of views:

- Table views toolbar
- Node Group Map views toolbar
- Neighbor views toolbar
- Path View toolbar
- Network Overview toolbar

Table View Toolbar

This is the table view display panel toolbar:

Use the table view toolbar to perform the following tasks within the displayed view.

View Toolbar Icons

Icon	Description
	Show View in New Window. Displays the current view in a new window.
	New. *NNMi Administrators only*. Opens the form to create a new object instance.
	Open. Displays the form for the selected object. See "Access More Information About an Object (Forms and Analysis Pane)" (on page 15).
	Refresh. Refreshes the current view. See "Refresh a View" (on page 40) for more information. Restarts periodic refresh if it has been disabled.
	Stop Periodic Refresh. Temporarily disables the periodic refresh of a view. See "Stop Periodic Refresh of a View" (on page 44) for more information.

Icon	Description
↺	**Restore Default Settings**. Resets default settings, including the resizing of table columns, sort selections, and filters. Any hidden columns are restored to the view. See "Hide a Column" (on page 42).
⛉	**Restore Default Filters**. Clears any currently applied filters. See "Filter a Table View" (on page 44).
✖	**Delete**. If your role allows, deletes the selected object instance and any objects contained in that object. For example, deleting a node also deletes the interface and address instances associated with that node, and the history of those objects.
🗗	**Close**. Close the current view.
<Time Span> ▾	Selects a time period filter. This filter only appears in incident views.
<Set Node or Interface Group Filter> ▾	Selects an available node group or interface group filter.

◁◁ ◁ | 1 - 14 of 42 | ▷ ▷▷

The page controls only appears when viewing tables. They let you page through table information by rows.

Use ◁**Previous** or [Page Up] to move up one page.

Use ▷**Next** or [Page Down] to move down one page.

Use ◁◁**First** or [Home] to move to the top of the table.

Use ▷▷**Last** or [End] to move to the end of the table.

Use the [↑]up arrow key to scroll up one row.

Use the [↓] down arrow key to scroll down one row.

The page control displays the total number of rows in the current table, as well as which group of rows within that total is currently visible.

If the page control displays `<maximum_table_size value>`, this means the table row count exceeds the maximum table size specified by NNMi.

To view the actual table size, look for the **Total** value in the table status bar. NNMi displays the total number of rows for the table, followed by the display limit set for the table.

When the table size exceeds the maximum table size value, also note the following:

- NNMi recomputes the actual number of rows in the table each time you refresh the table view or update the table filter.

Icon	Description
●	When you scroll to the last row of the table, NNMi displays a dialog explaining that the table is larger than the specified limit and recommending that you filter the table view. See "Filter a Table View" (on page 44) for more information about how to filter a table view.
🔳 or 🔳	Toggles text-wrap on or off.

Node Group Map Toolbar

This is the Node Group Map display panel toolbar:

The Node Group Map view toolbar lets you perform the following tasks within the displayed map.

Node Group Map Toolbar Icons

Icon	Description
🔳	**Show View in New Window**. (Only available from the main console.) Displays the current view in a new window.
📂	**Open**. Displays the form for the selected object. See "Access More Information About an Object (Forms and Analysis Pane)" (on page 15).
🔳	**Open Node Group Map**. Opens the Node Group Map for the selected *Child* Node Group. The *Child* Node Group map replaces the current map and displays each node within the *Child* Node Group. **Note**: You can also double-click the 🟩 Node Group symbol to open the *Child* Node Group Map. See "About Node and Interface Groups" (on page 48) for more information about Node Groups.
🔳	**Save Layout**. Saves the current position of each of the nodes on the current Node Group Map. **Note**: Each time you use this option, any previous location information is deleted.
🔄	**Refresh**. Refreshes the current view. See "Refresh a View" (on page 40) for more information.
🔄	**Refresh Status**. Refreshes only the status of each node in the map. See

Icon	Description
	"Refresh Node Status on a Map" (on page 65) for more information.
	Fit Content. Adjusts the size of the node symbols so that all members of the Node Group fit within the current window. See "Adjust the Zoom Factor" (on page 64) for more information.
1:1	**Actual Size**. Cancels any current zoom setting. See "Adjust the Zoom Factor" (on page 64) for more information.
	Zoom Out. Zooms out 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
	Zoom In. Zooms in 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
	Close. Close the current view.
Node Group:	Enables you to identify the Node Group for the map you want to display. **Note**: As you type, NNMi provides a selection list of all current valid entries matching your criteria (case sensitive). You must use one of the suggested values.
or	**Find**. Toggles on or off highlighting the identified Node in the current map and ensures that node is in the map's display area. See "Find a Node in a Map" (on page 65).
or	**Indicate Key Incidents**. Toggles on or off NNMi's enlarging any map symbol that has an associated **Key Incident**[1]. See "Node Group Map Objects" (on page 76) for more information.
or	**Tool Tips**. Toggles on or off Tool Tips information that pops up when the mouse cursor is placed over an object on a map. See "Control Tool Tips Information on a Map" (on page 66) for more information.

Neighbor View Toolbar

This is the neighbor view display panel toolbar:

The neighbor view toolbar lets you perform the following tasks within the displayed view.

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

Neighbor View Toolbar Icons

Icon	Description
	Show View in New Window. (Only available from the main console.) Show View in New Window. Displays the current view in a new window.
	Open. Displays the form for the selected object. See "Access More Information About an Object (Forms and Analysis Pane)" (on page 15).
	Refresh. Refreshes the current view. See "Refresh a View" (on page 40) for more information.
	Refresh Status. Refreshes only the status of each node in the map. See "Refresh Node Status on a Map" (on page 65) for more information.
	Fit Content. Adjusts the size of the node symbols so that all members of the Node Group fit within the current window. See "Adjust the Zoom Factor" (on page 64) for more information.
1:1	**Actual Size**. Cancels any current zoom setting. See "Adjust the Zoom Factor" (on page 64) for more information.
	Zoom Out. Zooms out 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
	Zoom In. Zooms in 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
	Close. Close the current view.
Node or IP:	Specify the starting node for the neighbors you want to map. Populate this field with the current value of the node's Name attribute or one of the Node's IP addresses. **Note**: As you type, NNMi provides a selection list of all current valid entries matching your criteria. You must use one of the suggested values.
Number of Hops: 1	Select the number of hops to be displayed within the map view. A hop is a node representing any network device, such as a workstation, gateway, or switch, which is connected by a link with no intermediate nodes.
or	**Find**. Toggles on or off highlighting the identified Node in the current map and ensures that node is in the map's display area. See "Find a Node in a Map" (on page 65).
or	**Tool Tips**. Toggles on or off Tool Tips information that pops up when the mouse cursor is placed over an object on a map. See "Control Tool Tips Information on a Map" (on page 66) for more information.

Path View Toolbar

This is the Path View display panel toolbar:

```
Path View

 ⟑  │  🗁  │  🔄  🔄  │  ⬚  1:1  🔍  🔍  │  🗔

 Source:  [                    ▼]  ◫  Destination:  [              ▼]  ⚙  🔍  🗎

 Please enter a valid Node name or IP address for the Source and (optionally) Destination fields
```

The Path View toolbar lets you perform the following tasks within the displayed view.

Path View Toolbar Icons

Icon	Description
⟑	**Show View in New Window**. (Only available from the main console.) Displays the current view in a new window.
🗁	**Open**. Displays the form for the selected object. See "Access More Information About an Object (Forms and Analysis Pane)" (on page 15).
🔄	**Refresh**. Refreshes the current view. See "Refresh a View" (on page 40) for more information.
🔄	**Refresh Status**. Refreshes only the status of each node in the map. See "Refresh Node Status on a Map" (on page 65) for more information.
⬚	**Fit Content**. Adjusts the size of the node symbols so that all members of the Node Group fit within the current window. See "Adjust the Zoom Factor" (on page 64) for more information.
1:1	**Actual Size**. Cancels any current zoom setting. See "Adjust the Zoom Factor" (on page 64) for more information.
🔍	**Zoom Out**. Zooms out 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
🔍	**Zoom In**. Zooms in 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
🗔	**Close**. Close the current view.
Source: [▼]	Specify the source node to be used in the Path View. **Caution**: Do not specify a node that is a switch. Populate this field with the current value of the node's Hostname attribute (*case-sensitive*) or one of the node's IPv4 addresses. These are the values from the Node form. **Note**: As you type, the auto-complete feature displays a list of possible matches. Select any item from the list. *NNMi Advanced*. Path View works only with IPv4 addresses. The NNMi Advanced IPv6 address values are not valid choices for Path View. Any devices in your network that are configured with IPv6 addresses cannot be displayed on Path View maps.

Icon	Description
〔▯▮〕	**Swap Nodes**. Swaps the source and destination nodes in the Path View.
Destination: ⌄	Specify the destination node in the Path View.
	Caution: Do not specify a node that is a switch.
	Populate this field with the current value of the node's Hostname attribute (*case-sensitive*) or one of the node's IPv4 addresses. These are the values from the Node form.
	Note: As you type, the auto-complete feature displays a list of possible matches. Select any item from the list.
	NNMi Advanced. Path View works only with IPv4 addresses. The NNMi Advanced IPv6 address values are not valid choices for Path View. Any devices in your network that are configured with IPv6 addresses cannot be displayed on Path View maps.
⚙	**Compute Path**. Computes the Path View.
	Note: Also use this icon to re-compute the Path View.
🔍 or 🔍	**Find**. Toggles on or off highlighting the identified Node in the current map and ensures that node is in the map's display area. See "Find a Node in a Map" (on page 65).
🛈 or 🛈	**Tool Tips**. Toggles on or off Tool Tips information that pops up when the mouse cursor is placed over an object on a map. See "Control Tool Tips Information on a Map" (on page 66) for more information.

Network Overview Toolbar

This is the Network Overview display panel toolbar:

Network Overview
〔🗗 | 📂 | 🔄 🔄 | ⛶ 1:1 🔍 🔍 | 🗗〕   🔍 🛈

The Network Overview toolbar lets you perform the following tasks within the displayed view.

Network Overview Toolbar Icons

Icon	Description
🗗	**Show View in New Window**. (Only available from the main console.) Displays the current view in a new window.
📂	**Open**. Displays the form for the selected object. See "Access More Information About an Object (Forms and Analysis Pane)" (on page 15).
🔄	**Refresh**. Refreshes the current view. See "Refresh a View" (on page 40) for more information.

Icon	Description
	Refresh Status. Refreshes only the status of each node in the map. See "Refresh Node Status on a Map" (on page 65) for more information.
	Fit Content. Adjusts the size of the node symbols so that all members of the Node Group fit within the current window. See "Adjust the Zoom Factor" (on page 64) for more information.
1:1	**Actual Size**. Cancels any current zoom setting. See "Adjust the Zoom Factor" (on page 64) for more information.
	Zoom Out. Zooms out 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
	Zoom In. Zooms in 25% of current size. See "Adjust the Zoom Factor" (on page 64) for more information.
	Close. Close the current view.
or	**Find**. Toggles on or off highlighting the identified Node in the current map and ensures that node is in the map's display area. See "Find a Node in a Map" (on page 65).
or	**Tool Tips**. Toggles on or off Tool Tips information that pops up when the mouse cursor is placed over an object on a map. See "Control Tool Tips Information on a Map" (on page 66) for more information.

Chapter 6

Using the Form Toolbar

This is the form toolbar:

If your role allows, the toolbar lets you perform the following tasks within the form. The group of available actions can change from form to form:

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

Form Toolbar Icon Actions

Icon	Action
	Show Form in New Window. Displays the current form in a new window. **Note**: NNMi closes the current form before displaying the form in a new window.
	Show Analysis. Displays the Analysis Pane information for the current form. See "About the Analysis Pane" (on page 27) for more information.
	Save. Saves the current form.
	Save and New. Saves the current form, and opens a new empty form where you can create a new object instance.
	Save and Close. Saves and closes the current form.
	Refresh. Refreshes the data in the current form.
	Delete. Deletes the selected object instance and any objects contained in that object. For example, deleting a node also deletes the interface and address instances associated with that node, and the history of those objects. **Note**: When you delete an object instance that is created using a filter, such as a Node Group or Interface Group, NNMi deletes only the Node or Interface Group filter. NNMi does not remove the nodes or interfaces that belong to the selected group.
	Close. Closes the current form.

Related Topics

"Access More Information About an Object (Forms and Analysis Pane)" (on page 15)

Chapter 7

Using Views to Display Data

A view is the primary mechanism for displaying data. In the console, many views are available to help you visualize your network.

Type of Views in the NNMi Console

View Type	Strength
Table Views	Present summary information for a list of objects in a sorted order. Examples include: viewing a list of incidents sorted by Status and filtered by Lifecycle State.
Map Views	Display graphical relationships among objects.

To access a view, select a workspace and then click the view that you want to display. Some views are also accessible from the console's **Actions** menu. See "Using Actions to Perform Tasks" (on page 98) for more information.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

Note: Your NNMi administrator can delete nodes and other objects from the NNMi database. Any node that has been deleted appears as a transparent icon on the map until the map is refreshed using the **Refresh** icon. After **Refresh**, the deleted node is removed from the map. NNMi does not automatically refresh the connectivity or set of nodes in a map view, except on the **Initial Discovery Progress** and **Network Overview** maps.

From a view, you can:

- "Select Multiple Objects" (on page 40)
- "Refresh a View" (on page 40) ( )
- "Refresh Node Status on a Map" (on page 65) ( )
- "Stop Periodic Refresh of a View" (on page 44) ( )
- "Using the View Toolbars" (on page 30) to Display a View in a New Window ( )
- "Invoke Actions" (on page 18)

NNMi User Accounts assigned to the NNMi Role of **Administrator** can create and delete instances of some objects from the view. If you are an NNMi administrator, see **Help → Help for Administrators** for more information.

Related Topics

"Use Table Views" (on page 41)

"Use Map Views" (on page 62)

Select Multiple Objects

You can select or deselect multiple objects when using a table or map view. This feature is useful when you want to access details or invoke an action on multiple objects, such as nodes, IP addresses, or interfaces.

Multiple Objects in Table Views

Tip: Look in the status bar of each table view to see the number of objects currently selected as well as the total number of objects in the view.

To select multiple objects in a table view:

Press CTRL-Click and select the row for each object you want to select.

To de-select an object in a table view:

Re-select the row for each object you want to de-select.

Multiple Objects in Map Views

To select multiple objects in a map view:

Use CTRL-Click to select each object of interest on the map.

Each object you select changes to indicate it has been selected.

To de-select an object in a map view:

Re-select an object of interest on the map.

Each object you de-select returns to normal on the map.

Related Topics

"Select all Rows in a Table" (on page 42)

Refresh a View

You can manually refresh a view at any time so that you are viewing the latest set of information. You cannot change the automatic refresh rate that was set by NNMi for each view.

To refresh a table view:

Click the ⟳ Refresh icon in the table view toolbar to manually refresh your view.

The table view status bar displays the refresh rate and whether the refresh rate is enabled or disabled. (If disabled, clicking the ⟳ Refresh icon enables periodic refresh.)

To refresh a map view:

Click the ⟳ Refresh icon in the map view toolbar to update changes in node placement, nodes added, and nodes deleted.

To refresh the status of nodes on a map, see "Refresh Node Status on a Map" (on page 65).

Related Topics

"Stop Periodic Refresh of a View" (on page 44)

Use Table Views

Table views display data in tabular format. Each row displays data about one object. If there are more rows than fits on a single screen, you can scroll through the table view using the scroll bar.

If a table contains more rows than the maximum limit set for a table, filter your table view to reduce the number of rows. See "Using the View Toolbars" (on page 30) for more information about how NNMi indicates the table has exceeded the maximum limit specified. See "Filter a Table View" (on page 44) for information about how to filter a table view.

From a table view, in addition to the tasks accessed with the view display panel toolbar, you can perform the following tasks:

- "Resize a Column" (on page 41)
- "Hide a Column" (on page 42)
- "Sort Column Data " (on page 43)
- "Filter a Table View" (on page 44)
- "Restore Table Defaults" (on page 59)
- "Export Table Information" (on page 60)
- "Invoke Actions" (on page 18)
- "Access More Information About an Object (Forms and Analysis Pane)" (on page 15)

The following customizations are saved across browser sessions:

- Column width
- Hidden columns
- Sort column and order
- Column filters
- Quick filter value
- Node or interface group filter
- Time period filter (for incidents)

See "Limits to View Settings" (on page 61) for more information about the number of tables that have customizations that can be stored.

Resize a Column

You can resize columns using your mouse.

To resize a column in the table:

1. Mouse over the edge of the column until you see a ↔ resize icon.

2. Drag the column edge to the width you want.

Related Topics

"Hide a Column" (on page 42)

"Sort Column Data " (on page 43)

Hide a Column

If you find you no longer want to include a column of information in your view, you can hide a specified column.

To hide a table column:

1. Right-click the column of interest.

2. Select **Visibility**.

    The list of column names appears.

3. Click to clear the check box ☐ that precedes the name of the column you want to hide.

Related Topics

"Display a Hidden Column" (on page 42)

"Resize a Column" (on page 41)

"Sort Column Data " (on page 43)

Display a Hidden Column

If you want to display a hidden column.

To display a hidden table column:

1. Right-click the column of interest.

2. Select **Visibility**.

    The list of column names appears.

3. Click to check the check box ☑ that precedes the name of the column you want to display.

Related Topics

"Hide a Column" (on page 42)

"Resize a Column" (on page 41)

"Sort Column Data " (on page 43)

Select all Rows in a Table

If you want to select all rows in a table.

To select all rows in a table:

1. Right-click in the table view.

2. Select **Select All**.

    Tip: You can also use CTRL-A to select all rows in a table.

    The table view data appears highlighted.

Related Topics

"Filter a Table View" (on page 44)

"Hide a Column" (on page 42)

Sort Column Data

By sorting columns, you can get the most important information at the top of your table. For example, at times you might want to view all critical nodes. At other times, you might need to find node contact information.

To sort by columns:

1. Right-click the column heading or data cell on which you want to sort.

2. To sort the column in ascending order, select **Sort:** → **Ascending**

3. To sort the column in descending order, select **Sort:** → **Descending**

When sorting column data, note the following:

- You can click the column header to initiate a sort on the column values. Clicking the column heading again, reverses the sort direction.

- HP Network Node Manager i Software Smart Plug-ins (iSPIs) might provide table views in which sorting is disabled for one or more columns.

- Sorting tables that contain large amounts of data (for example, viewing all interfaces or incidents), can sometimes result in slow response times. In this case, it is better to first filter the table information so that it contains only the values of interest before performing your sort.

More About Sorting

When sorting table columns, note the following:

- You can sort on only one column heading at one time.

- Capital letters are sorted separately from lowercase.

- NNMi sorts some table columns using lexicographical ordering. This might produce unfamiliar orders for strings such as Object IDs that contain numbers. For example you might expect the following order when sorting the sysObjectID data type:
  - 1.3.6.1.4.1.1

  - 1.3.6.1.4.1.3

  - 1.3.6.1.4.1.20

  Using lexicographical ordering, these system object ID values are ordered as follows:

  - 1.3.6.1.4.1.1

  - 1.3.6.1.4.1.20

  - 1.3.6.1.4.1.3

- Some table columns, such as Status and IfType, display data types which have a natural sort order that is distinct from an alphabetical order. When sorting these columns, the values are sorted according to a natural or pre-determined order rather than alphabetically. For example when sorting the Status column, you always see the following order (ascending) or the reverse

(descending): **Critical**, **Major**, **Minor**, **Warning**, **Unknown**, **Disabled**, **Normal**, and **No Status**.

- Your sort choices are saved across user sessions.

Related Topics

Stop Periodic Refresh of a View

You can manually stop the periodic refresh of the group of items displayed in a table view at any time.

Note: The status of this group of objects is always updated on a regular basis, you are only stopping updates based on network objects being added or deleted from the NNMi database.
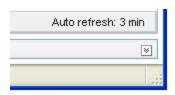
NNMi's status bar displays the refresh rate and whether the refresh rate has been disabled.

To stop the periodic refresh of a table view:

1. Click the ⬚ Stop Periodic Refresh icon. In the bottom right corner of the NNMi console, the following message displays:

2. If you want to restart the refresh rate, click the ⬚ Refresh icon in the view display panel toolbar. In the bottom right corner of the NNMi console, the following message displays:

   Note: You cannot change the *refresh rate*. NNMi sets that default rate for each view.

Related Topics

Filter a Table View

When using table views, you can reduce the amount of information displayed by filtering a view using one of the object's attribute values. For example, you can access only those incidents that have a Status of **Critical**, or only those incidents that have a Description that is **Interface Down**.

Filtering a table view is also useful to reduce the number of rows when a table contains more rows than the maximum limit set for a table. See "Using the View Toolbars" (on page 30) for more information about how NNMi indicates the table has exceeded the maximum limit specified.

When a view is first displayed, it displays a set of filtered columns based on the view definition provided by NNMi.

Note: The view status bar indicates if one or more filters have been set for the view. FILTER:ON indicates that one or more filters have been set. These are filters that you can modify. In some views, NNMi provides factory set filters that cannot be changed. For example, the My Open Incidents view is filtered on the Assigned To attribute, which cannot be changed. FILTER:OFF indicates no modifiable filters have been set for the view. These views might have factory set filters.

When specifying filters, you can perform the following tasks:

Drop-Down List Selection Filters

- "Filter Tables by Node or Interface Group" (on page 46)

- "Filter by Time Period (Incident Views Only)" (on page 49)

Column Selection Filters

- "Filter by Attribute Value" (on page 49)

- "Modify a Table View Filter" (on page 55)

- "Remove a Filter" (on page 58)

- "Restore Default Filters" (on page 58)

- "Display Current Filter Settings" (on page 59)

When using filters, note the following:

- You can filter on multiple table columns. The resulting filter is a logical AND of the filters for all of the columns.

- HP Network Node Manager i Software Smart Plug-ins (iSPIs) might provide table views in which filtering is disabled for one or more columns.

- NNMi matches to the milliseconds when filtering on columns that represent time values (for example, **Last Occurrence**). Therefore, only those times that match to the milliseconds are included in your view. Try using the **less than or equal** or **greater than or equal** filter options to include a wider range of time values.

- NNMi restricts certain filter operations or options per data type. Only the filter options that apply to the attribute data type appear. The data types and valid filter options are described in the table below.

- A different subset of these filter options appears depending on whether you are clicking a data cell, a column header, or a blank row. A data cell filter menu includes filters that use the value of the selected data cell.

Filter Options Available

Data Type	Valid Filter Options
All data types	Equals this value

Data Type	Valid Filter Options
	Not equal to this value See "Filter by Attribute Value" (on page 49) for more information.
Text (String) Numeric Enumerated List IP Address Date and Time	Create Filter...
Boolean data types	Is true Is false
Numeric (Integer, IP address, and date)	Greater than or equal to this value Less than or equal to this value See "Filter by Attribute Value" (on page 49) for more information.

Addtional Filter Options Available

Data Type	Valid Filter Options
Group Filter	Provides a drop-down menu in the view display panel toolbar of the node and interface groups available to you. See "Filter Tables by Node or Interface Group" (on page 46) for more information about group filters.
Quick Filter	Provides a drop-down menu in the view display panel toolbar of all of the possible values for an attribute. These drop-down menus are provided for table views that include "by" in the view name.
Time Period Filter	Provides a drop-down menu in the view display panel toolbar in incident views. This filter lists a variety of time periods for which you can filter your incident views. Possible values include: **Last 5 minutes**, **Last Hour**, **Last 8 Hours**, **Last Day**, **Last 3 Days**, **Last Week**, **Last Month**, and **All**. See "Filter by Time Period (Incident Views Only)" (on page 49) for more information.

Filter Tables by Node or Interface Group

NNMi lets you filter your table views by node or interface group. For example, you might want to view all of the important Cisco routers, or all of the Voice-Over-IP interfaces within your network.

Your NNMi administrator creates these groups. They are listed in a "group selector" drop-down menu list on the view toolbar as shown below:

<Set Node or Interface Group Filter>   ▾

Node Group filters are available for:

- Node views

- Interface views

- IP address views

- Incident views

    Note: Node Group filters are not available for the **NNM 6.x/7.x Events** view.

Interface group filters are available for:

- Interface views

- IP address views

- Card views

- Node Component views

To filter a view by node or interface group:

1. Navigate to the view of interest.

    a. From the workspace navigation panel, select the workspace that contains the view you want to use; for example, **Inventory**.

    b. Select the view of interest; for example, **Interfaces**.

2. In the <Set Node or Interface Group Filter> ▾ group selector drop-down list, select the Node Group or Interface Group you want to use as a filter.

When using Node Group or Interface Group filters, note the following:

- You can use NNMi's autocomplete feature to select the Node Group or Interface Group filter. Start typing the first few letters (case-sensitive) of the name of the Node Group or Interface Group you want to select. The list displayed includes all potential existing Node Group or Interface Group names that match the letters as you enter them.

- By default, table views are not filtered by node or interface group.

- If a view can be filtered by both Node Group and Interface Group, the selection box lists the Node Groups first, followed by the Interface Groups. Each list appears in alphabetical order.

- If the Node Group or Interface Group list is more than 100, select **More Choices...** to view additional selections. Use **Previous Choices...** to return to a previous list.

- When the filter is applied, the view automatically refreshes to show the appropriate set of objects.

- If you set a Node Group or Interface Group filter, NNMi combines the group filter with any other filters using the AND Boolean operator.

- To clear the group filter, return the selection value to "<Set node group filter>" or "<Set node or interface group filter>".

Related Topics

"Filter by Attribute Value" (on page 49)

"Modify a Table View Filter" (on page 55)

"Remove a Filter" (on page 58)

"Modify a Filter Value"

"Restore Default Filters" (on page 58)

"Display Current Filter Settings" (on page 59)

About Node and Interface Groups

When monitoring your network, you might be interested in only viewing information for a particular set of nodes or interfaces. Your network administrator can group sets of nodes or interfaces into node or interface groups. An example Node Group could be all important Cisco routers, or all routers in a particular building. As another example, all interfaces used for Voice-Over-IP might be grouped together in your network.

Your administrator configures Node Groups based on any of the following:

- Vendor or model SNMP object identifiers.

- Specific devices identified by name or IP address.

- Devices identified with wildcard characters to define a Node Group. These groups might be based on a naming strategy that is set in place for your organization.

Note: Node Groups can also control how NNMi monitors network devices. For example, your administrator might configure each group to have a different health monitoring interval.

You can display the definition of a group:

- **Node Group definitions**

  a. From the workspace navigation panel, select the **Inventory** workspace.

  b. Select the **Node Groups** view.

  c. Double-click the row representing the Node Group.

  d. The Node Group form displays.

  e. When finished, click the Close icon.

- **Interface Group definitions**

  a. From the workspace navigation panel, select the **Inventory** workspace.

  b. Select the **Interface Groups** view.

  c. Double-click the row representing the Interface Group.

  d. The Interface Group form displays.

Interface group definitions match the way your team identifies important network devices. Each interface group can include one or more interface-type specifications (based on industry-standard IANA ifType-MIB variables).

  e. When finished, click the 🖼️ Close icon.

Special Actions are provided for Node Groups and Interface Groups. See Using Actions to Perform Tasks.

Filter by Time Period (Incident Views Only)

Incident views enable you to filter your view by time period. Filtering using the time period filter lets you focus on the most recent incidents of interest. The available time periods include:

- Last 5 Minutes

- Last Hour

- Last 8 Hours

- Last Day

- Last 3 Days

- Last Week

- Last Month

- All

Note: A month is defined as 31 days.

Filter by Attribute Value

When specifying filters based on attribute (column) values, some filter options require that you specify the value by selecting the value in an object instance and some require that you open a Create Filter... dialog to specify the value. You can also specify a filter based on whether an attribute contains a value.

- "Select Filter Values" (on page 49)

- "Create a Filter to Specify Values" (on page 51)

- "Use Null Value Filters" (on page 54)

Select Filter Values

The following filter options require an attribute value as the basis for the filter.

Note: When using the filter options listed below, first right-click the value in the table on which you want to filter.

Filter Settings

Filter Option	Description
Equals this value	NNMi displays only instances that contain the attribute value you specify.

Filter Option	Description
Not equal to this value	NNMi displays only instances that have an attribute value that does *NOT* contain the value specified. You can specify multiple values for this filter; but can only supply one value each time you select this option. **Note**: For certain attributes, this option can also filter values that are "empty" or null.
Greater than or equal to this value	NNMi displays only instances that contain the attribute values that are greater than or equal to the value you specify.
Less than or equal to this value	NNMi displays only instances that contain the attribute values that are less than or equal to the value you specify.
Is true	NNMi displays only instances that have an attribute value that contains the value **true**.
Is false	NNMi displays only instances that have an attribute value that contains the value **false**.

You can change a filter at any time. NNMi saves filters per user so that the filters you specify are maintained during subsequent user sessions. See "Limits to View Settings" (on page 61) for information about the number of tables that have customizations that can be saved based on your web browser. See "Restore Table Defaults" (on page 59) for information about how to remove table view customizations.

To filter your view by selecting an attribute value in the table:

1. Right-click the attribute value on which you want to base your filter.

2. Select one of the following filter options:

   - **Equals this value**

   - **Not equal to this value**

   - **Greater than or equal to this value**

   - **Less than or equal to this value**

   - **Is true**

   - **Is false**

   NNMi displays a table view of all instances that have been selected based on the filter option and attribute values you specified or selected.

   Each filtered column is indicated using the ▽ filter icon.

Related Topics

"Use Null Value Filters" (on page 54)

"Type Filter Values"

Create a Filter to Specify Values

NNMI enable you to provide attribute values on which you want to filter. You can provide attributes values by creating a filter for any of the following types of values:

- Text (String)

- Numeric

- Enumerated List

- IP Address

- Date and Time

To filter information by specifying one or more values:

1. Right-click the column or attribute on which you want to filter.

2. Select **Create filter…**

   NNMi displays the Filter Dialog that is appropriate for the selected column's data type.

3. In the Create Filter ... Dialog displayed:

   a. Select a Filter Option (see Filter Option tables) .

   b. Specify one or more valid values (see Valid Filter Values)

4. Click **Apply**.

   NNMi displays a table view of all instances that have been selected based on the filter option and attribute values you specified or selected.

   Each filtered column is indicated using the ▽ filter icon.

Text (String) Filter Options

Filter Option	Description
starts with	NNMi displays only instances that have an attribute value that starts with the text string value specified. Use this option when you are looking for an entry that begins with a specific string value. For example if all of your Cisco devices started with the text string "Cisco", and you wanted to find all Cisco devices, you could use the value string "Cisco".
contains	NNMi displays only those instances that have an attribute value that contains the text string value you enter. You can use the wildcard character ('*') to match one or more characters within the contains value. For example, **c*m** matches the following values: 3**com**9000 **callm**gr1

Filter Option	Description
matches	NNMi displays only those instances that have an attribute value that matches the text string value you enter. Use the question mark (?) to match one character. Use the asterisk (*) as a wildcard character to match zero or more characters.
less than or equal to	NNMi performs an alphabetical (lexicographical) comparison and displays all text string values that are before the text string value you enter.
greater than or equal to	NNMi performs an alphabetical (lexicographical) comparison and displays all text string values that are after the text string value you enter.

Numeric Filter Options

Filter Option	Description
equals	NNMi displays only instances that contain the numeric value or values you specify.
not equals	NNMi displays only instances that have an attribute value that does *NOT* contain the numeric value or values specified. **Note**: For certain attributes, this option can also filter values that are "empty" or null.
greater than or equal to	NNMi performs an alphabetical (lexicographical) comparison and displays all text string values that are after the text string value you enter.
less than or equal to	NNMi displays all values that are less than or equal to the numeric value you enter

Enumerated List Filter Options

Filter Option	Description
equals	NNMi displays only instances that contain the value or values you select.
not equals	NNMi displays only instances that have an attribute value that does *NOT* contain the value or values you selected. **Note**: For certain attributes, this option can also filter values that are "empty" or null.

IP Address Filter Options

Filter Option	Description
equals	NNMi displays only instances that contain the IP Address value you specify.
range	NNMi displays only instances that are within the IP Address range you specify.
is empty	NNMi displays only the instances that do not have a value for this attribute.
is not empty	NNMi displays only the instances that contain a value for this attribute.

Date and Time Filter Options

Filter Option	Description
on or after	NNMi displays only instances that have date and time values that occur on or after the date and time you specify.
on or before	NNMi displays only instances that have date and time values that occur on or before the date and time you specify.
between	NNMi displays only instances that have date and time values that occur after the first date and time you specify and before the second date and time you specify. Use the between operator when you want to filter on instances that occur within a specified hour or day.

Valid Filter Values

Data Type	Description
Text	Enter the value for which you want NNMi to search. Text (string) filters are case sensitive.
Numeric	Enter the numeric value or values for which you want NNMi to search. To enter more than one numeric value, enter a comma-separated list.
Enumerated List	Select one or more values from the enumerated list.
IP Address	Enter an IP Address (IPv4 or IPv v6). You can specify ranges using two IP addresses separated by a '-' or using Classless Inter-Domain Routing (CIDR) notation: IPv4 examples: 10.168.0.1 - 10.168.13.1 10.2.120.0/21 IPv6 examples (i-Advanced only):

Data Type	Description
	2001:d88:a00:: - 2001:d88:aff:ffff:ffff:ffff:ffff:ffff 2001:d88:0:a00::/56
Date and Time	You must enter either a date or time or both. When entering a date only the day is required. When entering the time only the minutes are required. **Note**: NNMi uses a 24-hour clock, beginning at midnight (which is 0000 hours). For example, 1:00 AM is 0100 hours, 2:00 AM is 0200 hours, and 11:00 PM is 2300 hours.

Related Topics

"Select Filter Values" (on page 49)

"Use Null Value Filters" (on page 54)

Use Null Value Filters

NNMi provides the following filter options to filter your view based on whether the attribute contains a value. These filter options appear for data types that do not require a value:

- Is not empty

- Is empty

To filter your view based on null values:

1. Right-click the column or attribute value on which you want to filter.

2. Select from the filter options described in the table below.

3. NNMi displays a table view of all instances that have been selected based on the filter option and any attribute values you specified or selected.

   Each filtered column is indicated using the ▽ filter icon.

   You can change a filter at any time. NNMi saves filters per user so that the filters you specify are maintained during subsequent user sessions.

Filter Choices

Filter Option	Description
Is not empty	NNMi displays only the instances that contain a value for this attribute.
Is empty	NNMi displays only the instances that do not have a value for this attribute.

Related Topics

"Select Filter Values" (on page 49)

"Type Filter Values"

Modify a Table View Filter

You can change a filter for a table view at any time. NNMi saves filters per user so that the filters you specify are maintained during subsequent user sessions.

To modify a filter :

1. Right-click the column or attribute on which you want to filter.

2. Select **Modify filter...**

   Note the following:

   - If a filter is not created for the selected table column, the **Modify filter..**. option does not appear.

   - If you have used an existing attribute value with the **Not equal to this value** filter, you can select an additional attribute value and select **Not equal to this value also**.

   - NNMi displays the filter dialog that is appropriate for the selected column's data type. If the filter was created using the "Not equal to this value" option with the Text (String) or IP address data type, NNMi does not include the values for the current filter.

3. In the Modify Filter ... dialog displayed:

   a. Select a Filter Option (see Filter Option tables) .

   b. Specify one or more valid values (see Valid Filter Values)

4. Click **Apply**.

   NNMi replaces the previous filter with the new filter values. NNMi displays a table view of all instances that have been selected based on the filter option and attribute values you specified or selected.

   Each filtered column is indicated using the ▽ filter icon.

Text (String) Filter Options

Filter Option	Description
start with	NNMi displays only instances that have an attribute value that starts with the text string value specified.
	Use this option when you are looking for an entry that begins with a specific string value. For example if all of your Cisco devices started with the text string "Cisco", and you wanted to find all Cisco devices, you could use the value string "Cisco".
contains	NNMi displays only those instances that have an attribute value that matches the text string value you enter.
	You can also use a wildcard character (*) within your string value.
	If a wildcard is not specified, this filter option finds those values that exactly match the value string you enter. For example, if you wanted to find only the Cisco1 device from the following list of values, you would use "Cisco1" as your value string:

Filter Option	Description
	• Cisco1 • Cisco12 • Cisco123 In this example, NNMi would not include Cisco12 and Cisco123.
matches	NNMi displays only those instances that have an attribute value that matches the text string value you enter. **Note**: Do not use the asterisk (*) within your string value unless you want NNMi to match * (asterisk).
less than or equal	NNMi performs an alphabetical (lexicographical) comparison and displays all text string values that are before the text string value you enter.
greater than or equal	NNMi performs an alphabetical (lexicographical) comparison and displays all text string values that are after the text string value you enter.

Numeric Filter Options

Filter Option	Description
equal	NNMi displays only instances that contain the numeric value or values you specify.
not equal	NNMi displays only instances that have an attribute value that does *NOT* contain the numeric value or values specified.
greater than or equal	NNMi performs an alphabetical (lexicographical) comparison and displays all text string values that are after the text string value you enter.
less than or equal	NNMi displays all values that are less than or equal to the numeric value you enter.

Enumerated List Filter Options

Filter Option	Description
equal	NNMi displays only instances that contain the value or values you select.
not equal	NNMi displays only instances that have an attribute value that does *NOT* contain the value or values you selected.

IP Address Filter Options

Filter Option	Description
equal	NNMi displays only instances that contain the IP Address value you specify.
range	NNMi displays only instances that are within the IP Address range you specify.

Date and Time Filter Options

Filter Option	Description
on or after	NNMi displays only instances that have date and time values that occur on or after the date and time you specify.
on or before	NNMi displays only instances that have date and time values that occur on or before the date and time you specify.
between	NNMi displays only instances that have date and time values that occur after the first date and time you specify and before the second date and time you specify. Use the between operator when you want to filter on instances that occur within a specified hour or day.

Valid Filter Values

Data Type	Description
Text	Enter the value for which you want NNMi to search. Text (string) filters are case sensitive.
Numeric	Enter the numeric value or values for which you want NNMi to search. To enter more than one numeric value, enter a comma-separated list.
Enumerated List	Select one or more values from the enumerated list.
IP Address	You can enter IP Address ranges in either a wildcard or prefix notation. IPv4 examples: 10.2-3.*.1 10.2.120.0/21 IPv6 examples (i-Advanced only): 2001:D88:0:A00-AFF:*:*:*:* 2001:d88:0:a00::/56

Data Type	Description
Date and Time	You must enter either a date or time or both. When entering a date only the day is required. When entering the time only the minutes are required. **Note**: NNMi uses a 24-hour clock, beginning at midnight (which is 0000 hours). For example, 1:00 AM is 0100 hours, 2:00 AM is 0200 hours, and 11:00 PM is 2300 hours.

Related Topics

"Filter Tables by Node or Interface Group" (on page 46)

"Filter by Attribute Value" (on page 49)

"Remove a Filter" (on page 58)

"Restore Default Filters" (on page 58)

"Display Current Filter Settings" (on page 59)

Remove a Filter

NNMi lets you remove a filter for a selected column at any time.

To remove a filter:

1. Right-click the column that has a filter that you want to remove.

2. Select **Remove filter** from the drop-down menu.

NNMi removes all existing filters that have been set for that column.

Related Topics

"Modify a Table View Filter" (on page 55)

"Modify a Table View Filter" (on page 55)

"Restore Default Filters" (on page 58)

Restore Default Filters

You can restore the default filters for a view. This option removes any filters that you have defined for the current view.

To restore the default filter settings:

In the table toolbar, click the 🌸 **Restore Default Filters** icon.

Note: If you are viewing a table that appears in the form, open the table in a new window using the
🖼 **Show View In New Window** icon, and then click the 🌸 **Restore Default Filters** icon.

All filters are reset to the default values and any filters that you have created are removed for the current view.

Note: You will lose any selections you have in the view.

Related Topics

"Display Current Filter Settings" (on page 59)

Display Current Filter Settings

To keep track of the filters you have created, you can view the filter that has been set on a column by column basis.

To view a column's filter:

Mouse over the column of interest.

The example below shows the filter option and the string provided for that filter:

The following table explains the symbols used for each filter option

Filter Definitions

Symbol	Filter Option
<=	Less than or equal to this value
>=	Greater than or equal to this value
=	Equals this value
NOT IN	Not equal to this value
IS NULL	Is empty
IS NOT NULL	Is not empty
LIKE	Contains string... Starts with string... Matches string...

Note: The percent sign (%) represents the wildcard character.

Related Topics

Restore Table Defaults

You can remove the types of table view customizations described in the following table. Remove customizations when you no longer find them useful or when you reach the limit for the maximum number of customizations that can be stored. See "Limits to View Settings" (on page 61) for more information about the number of tables that have customizations that can be stored.

If you are concerned about reaching your table view settings limit, remove view settings for tables that are not important.

Note: The 🥔 **Restore Default Filters** icon and 🍂 **Restore Default Settings** icon do not appear on table views in forms. If you want to clear settings from a table view that appears in a form, use the 🖼 Show in New Window icon to open the table view in a new window and perform these operations.

Restore Default Table View Settings

What You can Remove	How	Description
Only table view filters	From the view display panel toolbar, select 🥔 **Restore Default Filters**.	Clears all customizations to filters for the table view and refreshes the view with the view's default filter settings.
All customizations for all table views	Select **View → Restore All Default View Settings**	Clears all customizations (and cookies) for all table view customizations. See "Limits to View Settings" (on page 61) for more information about how NNMi uses cookies to store table view customizations.

Related Topics

"Filter a Table View" (on page 44)

"Hide a Column" (on page 42)

"Resize a Column" (on page 41)

"Restore Table Defaults" (on page 59)

"Select all Rows in a Table" (on page 42)

Export Table Information

You can export the contents of a table view for use in other applications. You can choose to export only the rows that are selected or all of the rows in your table.

Note: You must have a minimum of Operator Level1 Role to export table information.

When printing table information, note the following:

- The first column of table information does not appear in the exported version. The contents of this column is for selection purposes only.

- You can copy and paste the table data to other applications, such as Microsoft Excel, for additional editing and manipulating, such as getting a list of hostnames.

To export selected table rows:

1. Right-click any cell or column header within the table.

2. Select **Export to CSV**.

    NNMi displays the Export to CSV dialog.

3. Select **Selected Rows**.

4. To included the table column headings in the exported data, click to check ☑ **Include Column Headings**.

5. NNMi stores date and enumerated values in both localized (Jul 12, 2010 10:07 AM) and raw (1278950859739) format. By default, NNMi exports only the localized (human readable) format for date and enumerated values.

   Select the **Raw Data** option to include only the raw (computer readable) format for both date and enumerated values.

   Select the **Localized Data** option to include only the localized (human readable) format for both dates and enumerated values.

6. In the **File Download** dialog, select one of the following options.
   a. **Open** to view the file contents.

   b. **Save** to save the file to a specified file name.

To export all table rows:

1. Right-click any cell or column header with the table.

2. Select **Export to CSV**

   NNMi displays the Export to CSV dialog.

3. Select **All Rows**.

4. To included the table column headings in the exported data, click to check ☑ **Include Column Headings**.

5. NNMi stores date and enumerated values in both localized (Jul 12, 2010 10:07 AM) and raw (1278950859739) format. By default, NNMi exports only the localized (human readable) format for date and enumerated values.

   Select the **Raw Data** option to include only the raw (computer readable) format for both date and enumerated values.

   Select the **Localized Data** option to include only the localized (human readable) format for both dates and enumerated values.

6. In the **File Download** dialog, select one of the following options.
   a. **Open** to view the file contents.

   b. **Save** to save the file to a specified file name.

Related Topics

Limits to View Settings

NNMi automatically saves the following kinds of table view settings.:

- Column width

- Hidden columns

- Sort column and order

- Filters

When customizing table views, note the following:

- All settings for each table are stored in a corresponding cookie for that table.

- The number of tables that have settings that can be saved, and the behavior when the limit is reached depends the browser you use:

  Microsoft Internet Explorer discards your oldest cookie and lets you continue creating customizations. If you are using Microsoft Internet Explorer, the cookie limit is 48.

  If you are using Mozilla Firefox, the cookie limit is 48. If you reach the 48 limit, Mozilla Firefox removes the next to last cookie before saving the latest cookie created.

- Table view settings are specific to each operating system user. Therefore, if you log on as a different operating system user, you will have *different* view settings. If you sign into NNMi as a different NNMi user, but as the same operating system user, you will have *the same* view settings.

Note: NNMi displays a warning message when your last cookie and subsequent table settings are being saved.

You can remove the customizations for all of your tables using the **View** → **Restore All Default View Settings**. See "Restore Table Defaults" (on page 59) for more information.

Related Topics

"Restore Default Filters" (on page 58)

"Hide a Column" (on page 42)

"Resize a Column" (on page 41)

"Select all Rows in a Table" (on page 42)

Use Map Views

A map view is a powerful way to display information about your network. In a map view, nodes, interfaces, IP address, and subnets are represented as symbols on the map. The lines between the nodes and interfaces represent the connection or relationship between these objects.

For each symbol, a background shape indicates the type of device, such as router or switch. See "About Map Symbols" (on page 71). The color of this background shape indicates the current health of the device. See "About Status Colors" (on page 66) for more information about map color values

On the maps, a foreground image is placed over the background shape. The foreground image identifies the make and model of the network device.

You access map views from the Topology Maps and Troubleshooting workspaces. You can also open maps from table views using the **Actions** menu. See "Access Maps Provided by NNMi" (on page 81) and "Using Actions to Perform Tasks" (on page 98) for more information.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

Depending on the type of map you are viewing, NNMi uses additional conventions to depict other kinds of objects on the map:

"Node Group Map Objects" (on page 76)

"Layer 2 Neighbor View Map Objects" (on page 77)

"Layer 3 Neighbor View Map Objects" (on page 79)

"Path View Map Objects" (on page 79)

Note: Your NNMi administrator can delete nodes and other objects from the NNMi database. Any node that has been deleted appears as a transparent icon on the map until the map is refreshed using the 🔄 **Refresh** icon on the map toolbar. After **Refresh**, the deleted node is removed from the map. NNMi does not automatically refresh the connectivity or set of nodes in a map view, except on the **Initial Discovery Progress** and **Network Overview** maps.

You can perform the following operations in a map view:

- "Access More Information About an Object (Forms and Analysis Pane)" (on page 15)
- "Refresh a View" (on page 40)
- "Change the Map Layout" (on page 63)
- "Adjust the Zoom Factor" (on page 64)
- "Pan Around the Map" (on page 64)
- "Refresh Node Status on a Map" (on page 65)
- "Control Tool Tips Information on a Map" (on page 66)

If you use the Mozilla Firefox browser and have any timeout issues; for example, being prompted to click **Continue** before a map appears, see "Configure Mozilla Firefox Timeout Interval".

Related Topics

"Use Table Views" (on page 41)

Navigate Maps

NNMi enables you to navigate within map views in the following ways:

"Change the Map Layout" (on page 63)

"Adjust the Zoom Factor" (on page 64)

"Pan Around the Map" (on page 64)

"Find a Node in a Map" (on page 65)

Change the Map Layout

If you prefer a different layout for the symbols on your map, you can change the placement (see "About Map Symbols" (on page 71)).

To change the map layout:

Click and then drag any map symbol to the location you want on the map.

This placement persists until you refresh or otherwise reload the map.

In Node Group Maps, if your role allows, you can manually reposition symbols on a map and save the location settings. See **Help → Help for Operators** for more information.

Related Topics

"Adjust the Zoom Factor" (on page 64)

"Pan Around the Map" (on page 64)

"Find a Node in a Map" (on page 65)

Adjust the Zoom Factor

If you need to make a portion of the map larger, you can adjust the zoom factor by using the buttons on the map toolbar (see "Using the View Toolbars" (on page 30)).

To adjust the zoom, select the following toolbar icons or keyboard characters:

- To zoom in, do one of the following:

  - Click 🔍.

  - Press **+** (PLUS SIGN).

    Note: Do not use the + (PLUS SIGN) on the numeric keypad.

- To zoom out, do one of the following:

  - Click 🔍.

  - Press **-** (MINUS SIGN).

- To fit the map to the screen size, do one of the following:

  - Click 📐.

  - Press **=** (EQUALS SIGN).

- To display the map at 100 percent (actual size), do one of the following:

  - Click 1:1

  - Press 1 (ONE).

    NNMi adds scroll bars to the map if needed.

Related Topics

"Change the Map Layout" (on page 63)

"Pan Around the Map" (on page 64)

"Find a Node in a Map" (on page 65)

Pan Around the Map

If the node of interest is not easily visible on the map, you can move to other sections of the map.

To pan to other sections of the map:

Use the map's scroll bars to move to other sections of the map.

Related Topics

Find a Node in a Map

You can easily find a particular Node in a map.

To find a Node in the current map:

1. In the Map toolbar, toggle the Find button on:

2. In the text box [▼], do one of the following:

   - Click the [▼] drop-down icon to display the complete list of choices within this map. Select any item from the list.

   - Type the Name attribute value (*not case-sensitive*) of the Node you want to find in the map. This is the Name attribute value from the Node form, that becomes the map icon label.

     As you type, the auto-complete feature displays a list of possible matches. Select any item from the list.

3. NNMi selects the Node that has a Name attribute value that matches your choice. If necessary, NNMi pans to the appropriate area in the Map.

4. To navigate elsewhere in the map, toggle the Find button off:

Related Topics

Refresh Node Status on a Map

In map views, you can refresh the node status on a map while maintaining the layout of the nodes. This feature enables you to quickly refresh a view when you are only concerned with status updates for one or more nodes on your map.

NNMi automatically refreshes node status on a map every 30 seconds. The 30 second counter begins after the completion of the last status refresh.

Note: If a map is taking longer than expected to refresh, the maximum number of nodes that are displayed on a map might be set too high. The NNMi administrator can set this value. See "Help for Administrators" for more information.

You can refresh the node status manually.

To refresh only the node status:

Click the **Refresh Status** icon in the toolbar to manually refresh node status on your map view.

The last update time is changed and the status of each node is refreshed on the map. Nodes are not added, deleted, or rearranged. Connectivity is not recalculated.

Note: NNMi does not automatically refresh the connectivity or set of nodes in a map view, except on the **Initial Discovery Progress** and **Network Overview** maps. Your NNMi administrator can delete nodes and other objects from the NNMi database. Any node that has been deleted appears as a transparent icon on the map until the map is refreshed using the 🔄 **Refresh** icon in the view toolbar. After **Refresh**, the deleted node is removed from the map.

Related Topics

"Using the View Toolbars" (on page 30)

"Refresh a View" (on page 40)

Control Tool Tips Information on a Map

When you place the mouse cursor over an object on a map, NNMi displays Tool Tips information for the current object. Tool Tips information is a subset of the information contained in the object's form.

Each time you open a map, the 🔲 **Tool Tips** button is enabled.

To disable Tool Tips popups, click the 🔲 **Tool Tips** button. NNMi closes any open Tool Tip dialog boxes.

Related Topics

"Using the View Toolbars" (on page 30)

Understand Maps

To understand how to interpret the contents of maps provided by NNMi, you want to know the following:

"Node Group Map Objects" (on page 76)

"Layer 2 Neighbor View Map Objects" (on page 77)

"Layer 3 Neighbor View Map Objects" (on page 79)
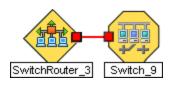
"Path View Map Objects" (on page 79)

"About Map Symbols" (on page 71)

"About Status Colors" (on page 66)

About Status Colors

The color of the background shape of each map symbol conveys the most recent health status. The color of each connection icon (the line) conveys the most recent health status of each connection. For example:

The color of each interface or address icon also conveys the most recent health status.

NNMi calculates the appropriate Status for objects:

"Status Color for Objects" (on page 67)

"Status Color for Aggregator Objects (NNMi Advanced)" (on page 69)

Status Color for Objects

NNMi displays the status color for the following objects:

Background Shapes Status Color

Network Connections Status Color

The following table describes the meaning for each status color for a background shape that represents a Node, Interface, or IP address that might appear on a map.

Background Shapes Status Color

Color	Meaning	Description
	Unknown	Indicates the object is unreachable and cannot be polled.
	Normal	Indicates there are no known problems related to the associated object.
	Warning	Indicates there might be a problem related to the associated object.
	Minor	Indicates NNMi detected problems related to the associated object that require further investigation.
	Major	Indicates NNMi detected problems related to the associated object to be resolved before they become critical.
	Critical	Indicates NNMi detected problems related to the associated object that require immediate attention.
	Disabled	Indicates the object is administratively *disabled*.
	No Status	Indicates one of the following: ● NNMi's current configuration excludes this object from monitoring. The Status is not calculated because the object is set to Not Managed/Out Of Service. ● The object has just been added to the NNMi database and the Causal Engine has not yet calculated its health status.
	Node not in the NNMi Database	Indicates information about the node is not stored in the NNMi database.

The following table describes the meaning for each status color for a single network connection.

Network Connections Status Color

Color	Meaning	Description
	Unknown	Indicates that due to other network problems, the status of one interface cannot be determined at this time.
	Normal	Indicates both interfaces in the connection are responding.
	Warning	Indicates there might be a problem with either interface.
	Minor	Indicates the interface on one end is not responding. The interface on the other end is responding.
	Critical	Indicates neither interface or IP address is responding.
	Disabled	Indicates one or both interfaces are administratively *disabled*.
	No Status	Indicates one of the following: • NNMi's current configuration excludes one or both interfaces from monitoring. The Status is not calculated because the interface is set to Not Managed/Out Of Service. • The interface has just been added to the NNMi database and the Causal Engine has not yet calculated its health status.

The following table describes the meaning for each status color for a **multiconnection**[1].

Multiconnections Status Color and Meaning

Color	Meaning	Description
	Unknown	Indicates that all connections in the multiconnection have a Status of Unknown.
	Normal	Indicates that all connections in the multiconnection have a Status of Normal.

---

[1]A multiconnection is a thick line on a map view between two Node icons, two Node Group icons, or between a Node icon and a Node Group icon (with no Interface icon or IP Address icon at either end of the line). This thick line represents a set of multiple connections that have been combined to preserve space and simplify the map. Your NNMi administrator specifies the number of connections that must exist before NNMi condenses them into a multiconnection line (User Interface Configuration's Multiconnection Threshold attribute). Double-click the thick line to convert it into the original set of connections with Interface icons or IP Address icons at either end of the lines.

Color	Meaning	Description
	Warning	Indicates one of the following: • All connections in the multiconnection have a Status of Warning. • All connections in the multiconntection do not have the same Status and none of the connections have a Status of Major or Minor.
	Major	All connections but one in the multiconnection have a Status of Critical. One connection has a Status of either Normal, Warning, Minor, or Major.
	Minor	Indicates all connections but one in the multiconnection are Normal. The Status of one connection is Minor, Warning, or Critical.
	Critical	Indicates that all connections in the multiconnection have a Status of Critical.
	Disabled	Indicates that all connections in the multiconnection have a Status of Disabled.
	No Status	Indicates that all connections in the multiconnection have a Status of No Status.

Related Topics

"Status Color for Aggregator Objects (NNMi Advanced)" (on page 69)

Status Color for Aggregator Objects (*NNMi Advanced*)

Link Aggregation[1] protocols allow network administrators to configure a *set of interfaces* on a switch as one *Aggregator Interface*, creating an *Aggregator Layer 2 Connection* to another device using multiple interfaces in parallel to increase bandwidth, increase the speed at which data travels, and increase redundancy.

---

[1]Protocols used on Switches to configure multiple Interfaces (Aggregation Member Interfaces) to function as if they were one (an Aggregator Interface). When two Aggregator Interfaces establish a connection, that connection is an Aggregator Layer 2 Connection. The Aggregator Layer 2 Connection appears on Layer 2 Neighbor View maps as a thick line with an Interface icon at each end (representing the Aggregator Interface). When you double-click the thick line, it converts into multiple thin lines representing the participating Aggregation Member Layer 2 Connections with their Aggregation Member Interfaces at each end of the lines.

Example Link Aggregation

Thick Line on Layer 2 Neighbor View Map =
one Aggregator Layer 2 Connection:
- Logical unit (not physical)
- Functions as if it were one
- 6 Aggregation Member Layer 2 Connections

two Aggregator Interfaces:
- Logical units (not physical)
- Each functions as if it were one
- Each has 6 Aggregation Member Interfaces

When you see a thick line on a Layer 2 Neighbor View map, the line represents an Aggregator Layer 2 Connection (group of multiple Layer 2 Connections that are functioning as one, the Aggregation Member Layer 2 Connections). The icon representing an Interface at either end of that thick line represents an Aggregator Interface (a *logical* interface representing many interfaces that are functioning as one, the Aggregation Member Interfaces). See "Layer 2 Neighbor View Map Objects" (on page 77) for more information.

The following table describes the meaning of status colors for an Aggregator Interface.

Aggregator Interface Status Color

Color	Status	Meaning
▫	Unknown	Indicates all of the participating Aggregation Member Interfaces are unreachable and cannot be polled.
▫	Normal	Indicates all of the participating Aggregation Member Interfaces have a Status of Normal.
▫	Minor	Indicates at least one (but not all) of the participating Aggregation Member Interfaces has a Status of Critical.
▪	Critical	Indicates all of the participating Aggregation Member Interfaces have a Status of Critical.
▫	Disabled	Indicates all of the participating Aggregation Member Interfaces are administratively *disabled*.
▫	No Status	Indicates one of the following: • NNMi's current configuration excludes all of the participating Aggregation Member Interfaces from monitoring, so the Status is not calculated. For example, the entire device or the Aggregator Interface is set to Not Managed/Out Of Service.

Color	Status	Meaning
		• All of the participating Aggregation Member Interfaces have just been added to the NNMi database and the Causal Engine has not yet calculated their health status.

The following table describes the meaning of status colors for an Aggregator Layer 2 Connection.

Aggregator Layer 2 Connection (thick line) Status Color

Color	Meaning	Description
	Unknown	Indicates all of the participating Aggregation Member Layer 2 Connections are unreachable and cannot be polled.
	Normal	Indicates all of the participating Aggregation Member Layer 2 Connections have a Status of Normal.
	Minor	Indicates at least one (but not all) of the participating Aggregation Member Layer 2 Connections has a Status of Critical.
	Critical	Indicates all of the participating Aggregation Member Layer 2 Connections have a Status of Critical.
	Disabled	Indicates all of the participating Aggregation Member Layer 2 Connections are administratively down.
	No Status	Indicates one of the following: • NNMi's current configuration excludes all of the participating Aggregation Member Layer 2 Connections from monitoring, so the Status is not calculated. For example, the entire device or the Aggregator Interfaces on both ends of the connection are set to Not Managed/Out Of Service. • All of the Layer 2 Connections within the Aggregator Layer 2 Connection have just been added to the NNMi database and the Causal Engine has not yet calculated their health status.

Related Topics

"Status Color for Objects" (on page 67)

About Map Symbols

Map symbols represent nodes or node groups. Each map symbol that represents a single node has a background shape and a superimposed foreground image (default images shown in the table below). Custom foreground images might represent specific vendors and models. The background shape conveys the following information:

• The type of device.

• The most recent health status (see "About Status Colors" (on page 66)).

• All connections:

- In Layer 2 Neighbor View maps, as well as Node Group or Path View maps using Layer 2 connectivity, small squares around the parent symbol represent each connected interface. Lines of a normal thickness indicate one-to-one connections. Special icons indicate one-to-many connections.

  NNMi Advanced. Thick lines between Interface icons represent Aggregator Layer 2 Connections between Aggregator Interfaces using **Link Aggregation**[1] protocol. See Interface Form: Link Aggregation tab.

- In Layer 3 Neighbor View maps, as well as Node Group maps using Layer 3 connectivity, small hexagons around the parent symbol represent each connected address. Lines indicate one-to-one connections. Special icons indicate subnets or clouds.

- In all maps, except Path View, thick lines between Node icons or between Node Group icons indicate that multiple connections exist between the objects. NNMi uses the term **multiconnection**[2] to refer to these groups of multiple connections.

  Note the following about multiconnections:

  ○ No Interface or IP address icon appears at either end of the thick line.

  ○ To view the individual connections and the associated interfaces within a multiconnection, double-click the multiconnection of interest.

  ○ To collapse the expanded view of the individual connections for a multiconnection, use the Refresh icon to refresh the map.

  ○ To view summary information about the multiconnection, place the mouse cursor over the multiconnection of interest.

- In Path View maps, a black arrow or empty black circle at the end of a connection indicates that NNMi was not able to determine a status value because the connection or interface is not in the NNMi database. Reasons a connection or interface are not stored in the NNMi database include the following:

  ○ NNMi is unable to collect information about a node in the path because it is a non-SNMP node.

---

[1]Protocols used on Switches to configure multiple Interfaces (Aggregation Member Interfaces) to function as if they were one (an Aggregator Interface). When two Aggregator Interfaces establish a connection, that connection is an Aggregator Layer 2 Connection. The Aggregator Layer 2 Connection appears on Layer 2 Neighbor View maps as a thick line with an Interface icon at each end (representing the Aggregator Interface). When you double-click the thick line, it converts into multiple thin lines representing the participating Aggregation Member Layer 2 Connections with their Aggregation Member Interfaces at each end of the lines.
[2]A multiconnection is a thick line on a map view between two Node icons, two Node Group icons, or between a Node icon and a Node Group icon (with no Interface icon or IP Address icon at either end of the line). This thick line represents a set of multiple connections that have been combined to preserve space and simplify the map. Your NNMi administrator specifies the number of connections that must exist before NNMi condenses them into a multiconnection line (User Interface Configuration's Multiconnection Threshold attribute). Double-click the thick line to convert it into the original set of connections with Interface icons or IP Address icons at either end of the lines.

○ A node in the path is not managed by NNMi.

○ The discovery information for a node is not up-to-date (for example, interface information is missing).

Each Child Node Group has a narrow hexagon background shape and does not include a foreground image.

Note: You can integrate NNMi with other applications, including HP Network Node Manager i Software Smart Plug-ins (iSPIs). Therefore, you might see foreground shapes that are not described in the following table. Contact your NNMi administrator if you have questions about any additional foreground shapes.

Background and Foreground Shapes for Specific Devices

Background Shape	Foreground Shape \ Meaning	Background Shape	Foreground Shape \ Meaning
	= Chassis = Computer = Server = Workstation = Other **Note**: *Other* includes non-SNMP nodes.		= Analyzer = Firewall = Load Balancer = Network Appliance = Power Supply = Printer = Wireless Access Point
	= ATM Switch = Switch		= Gateway = Hub = Router = Switch-Router = Voice Gateway
	Child Node Group		= IP Phone
	Network		

Icons for Special Connections
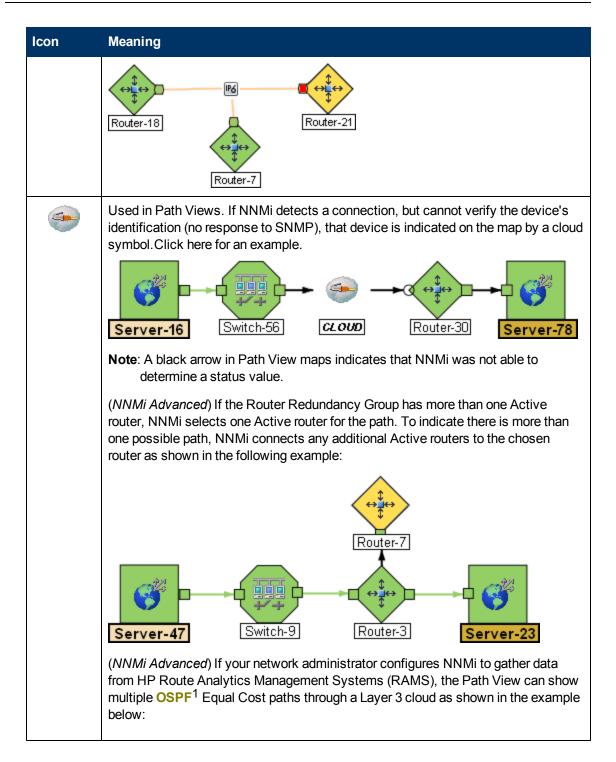
Icon	Meaning
	Used in maps to represent Point-to-Multipoint (a connection with multiple interfaces) when NNMi concludes that a shared media, such as a hub or a mesh, connects multiple devices. Click here for an example. If you double-click the line or the icon, the Layer 2 Connection Form displays.

Icon	Meaning
	Used in maps to represent Point-to-Multipoint (a connection with multiple interfaces) Layer 3 edge connectivity across wide-area-networks (WANs). The icon represents an unidentified set of devices between two nodes on the map (most likely a Service Provider's network or WAN).Click here for an example.
	NNMi accomplishes this by following special rules for subnets with prefix lengths between 28 and 31. These special rules are called Subnet Connection Rules. NNMi administrators can configure these rules.
	If you double-click the line or the icon, the Layer 2 Connection Form displays and the **Topology Source** value is SUBNETCONNECTION.
	Used in maps to represent IPv4 subnets.Click here for an example.
	(*NNMi Advanced*) Used in maps to represent IPv6 subnets.Click here for an example.

Icon	Meaning
	Used in Path Views. If NNMi detects a connection, but cannot verify the device's identification (no response to SNMP), that device is indicated on the map by a cloud symbol.Click here for an example. **Note**: A black arrow in Path View maps indicates that NNMi was not able to determine a status value. (*NNMi Advanced*) If the Router Redundancy Group has more than one Active router, NNMi selects one Active router for the path. To indicate there is more than one possible path, NNMi connects any additional Active routers to the chosen router as shown in the following example: (*NNMi Advanced*) If your network administrator configures NNMi to gather data from HP Route Analytics Management Systems (RAMS), the Path View can show multiple **OSPF**[1] Equal Cost paths through a Layer 3 cloud as shown in the example below:

---

[1]Open Shortest Path First Protocol

Icon	Meaning
	(*NNMi Advanced*) Used in RAMS MPLS WAN Map views. If NNMi detects an MPLS connection across the network, it is indicated on the map by a cloud symbol. Click here for an example.

Related Topics

"Working with Objects" (on page 94)

Node Group Map Objects

Tip: See "Help for Operators" for more information about Node Group maps.

Node Group maps show members of a Node Group (as defined by the NNMi administrator). Each Node Group Map shows either Layer 2 or Layer 3 information.

The map displays the status of each member, connection, and Child Node Group. To provide context for your environment, the NNMi administrator might also add a background image (for example, a map of North America).

NNMi can enlarge the map symbol of any node associated with a **Key Incident**[1]. Use the **Indicate Key Incidents** button in the map view toolbar (see Using the View Toolbars: Node Group Map Toolbar Icons):

 (on) = When the this Node Group map opens, NNMi enlarges any objects on a Node Group map that are Source Objects for a **Key Incident**[2]. (For example, when viewing the Node Group map, NNMi enlarges any node on a Node Group map that has an open root cause incident associated with it.)

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.
[2]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

[icon] (off) = When the this Node Group map opens, NNMi does not indicate the objects on a Node Group map that are Source Objects for a **Key Incident**[1].

To view the associated incident for the node, double-click the node symbol. In the Node form, select the Incidents tab.

Because these maps are based on Node Groups rather than connectivity, some nodes might not have any connections on the map.

A hexagon (as shown below) indicates a Child Node Group:

[icon]

See "Views Provided by NNMi" (on page 84) for information about the Node Group maps that NNMi provides.

Related Topics

"About Map Symbols" (on page 71)

"About Status Colors" (on page 66)

Layer 2 Neighbor View Map Objects

Layer 2 Neighbor View maps show a map view of a selected device and any connected devices within a specified number of hops from the selected device. This view is useful for understanding the **switch connectivity** between devices. See "Help for Operators" for more information.

During discovery, NNMi reads the Forwarding Database (FDB) tables from Ethernet switches within a network to help NNMi determine communication paths between network devices. NNMi searches these FDB tables for information about discovered nodes. When an NNMi management server finds FDB references to duplicate **MAC addresses**[2]:

- If two or more discovered nodes contain an interface associated with the same Media Access Control (MAC) address, NNMi disregards the communication paths reported for those duplicate MAC addresses in the FDB. This might result in missing connections on NNMi maps in network areas that include those duplicate MAC addresses.

  (*NNMi Advanced - Global Network Management feature*) If two NNMi management servers discover nodes that contain an interface associated with the same Media Access Control (MAC) address, the Global NNMi management server's maps could be missing connections that are visible on the Regional NNMi management server's maps.

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.
[2]The Media Access Control address (hardware address or physical address) that the factory burns into a network adapter or device with built-in networking capability. A MAC address has six pairs of hexadecimal digits, separated by colons or dashes. For example 02:1F:33:16:BC:55

- If a single node contains multiple interfaces that have the same MAC address, NNMi gathers all communication path information for those interfaces and displays that information on NNMi maps.

In Layer 2 Neighbor View maps, interfaces are indicated by little squares around the background shape of the parent node. Each interface also has a status color. Green indicates the interface is working properly. Red indicates the interface is down.

Connection Lines	Meaning of Connection Line
SwitchRouter_3 Switch_9	Thin lines between devices indicate communication channels between the two devices (connections). The lines also show status color indicating the current health of that connection. See "Status Color for Objects" (on page 67).
Switch_9 Switch_1	*NNMi Advanced*. Thick lines (connections) indicate that **Link Aggregation**[1] protocols are in use. These protocols allow network administrators to configure a set of interfaces on a switch as one Aggregator Interface, creating an Aggregator Layer 2 Connection to another device using multiple interfaces in parallel to increase bandwidth, increase the speed at which data travels, and increase redundancy.
	Double-click the thick line (the Aggregator Layer 2 Connection) to convert the thick line into multiple thin lines. Each thin line represents an Aggregate Member Layer 2 Connection.
	NNMi calculates the status of the thick line (Aggregator Layer 2 Connection) based on the status of the entire group of Aggregation Member Layer 2 Connections. See "Status Color for Aggregator Objects (NNMi Advanced)" (on page 69) for more information.
	Note: A thick line that does not have any interface icon at both ends is a **multiconnection**[2], instead of an Aggregator Layer 2 Connection.

See "Help for Operators" for more information about Layer 2 Neighbor View maps.

---

[1]Protocols used on Switches to configure multiple Interfaces (Aggregation Member Interfaces) to function as if they were one (an Aggregator Interface). When two Aggregator Interfaces establish a connection, that connection is an Aggregator Layer 2 Connection. The Aggregator Layer 2 Connection appears on Layer 2 Neighbor View maps as a thick line with an Interface icon at each end (representing the Aggregator Interface). When you double-click the thick line, it converts into multiple thin lines representing the participating Aggregation Member Layer 2 Connections with their Aggregation Member Interfaces at each end of the lines.
[2]A multiconnection is a thick line on a map view between two Node icons, two Node Group icons, or between a Node icon and a Node Group icon (with no Interface icon or IP Address icon at either end of the line). This thick line represents a set of multiple connections that have been combined to preserve space and simplify the map. Your NNMi administrator specifies the number of connections that must exist before NNMi condenses them into a multiconnection line (User Interface Configuration's Multiconnection Threshold attribute). Double-click the thick line to convert it into the original set of connections with Interface icons or IP Address icons at either end of the lines.
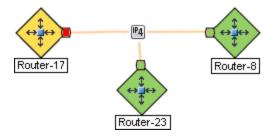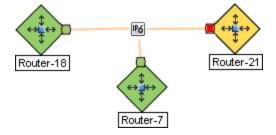
Related Topics

Layer 3 Neighbor View Map Objects

Layer 3 Neighbor View maps show a selected device and its connected devices within a specified number of hops from the selected device. This view is useful for understanding the **router connectivity** between devices.

In Layer 3 Neighbor View maps, addresses connected to neighbors within the same subnet are indicated by hexagons around the background shape of the parent node. Each address has a status color. Green indicates the address is working properly. Red indicates the address is not responding. The line between devices indicates the subnet. The subnet does not have any status:

NNMi Advanced. IPv6 subnets are indicated by this symbol:

See "Help for Operators" for more information about Layer 3 Neighbor View maps.

Related Topics
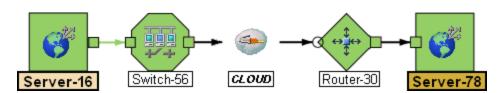
Path View Map Objects

Path View maps show an active network path between a source and destination end point.

The main objects in the displayed path in a Path View map are routers and switches.

Caution: Do not specify a switch as a Source or Destination node in Path View maps. To view connectivity between switches, use the Layer 2 Neighbor View.

When NNMi cannot determine the nodes within a portion of the path, it uses a Cloud object as shown in the example below:

Note: A black arrow or empty black circle at the end of a connection indicates that NNMi was not able to determine a status value because the connection or interface is not in the NNMi database. Click here for more information.
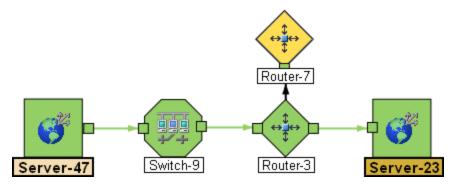
Reasons a connection or interface are not stored in the NNMi database include the following:

- NNMi is unable to collect information about a node in the path because it is a non-SNMP node.

- A node in the path is not managed by NNMi.

- The discovery information for a node is not up-to-date (for example, interface information is missing).

Path View maps also show objects included in Layer 2 Neighbor View maps and Layer 3 Neighbor View maps. See "Help for Operators" for more information.
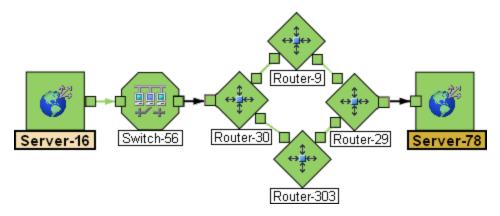
NNMi Advanced. Path View works only with IPv4 addresses. The NNMi Advanced IPv6 address values are not valid choices for Path View. Any devices in your network that are configured with IPv6 addresses cannot be displayed on Path View maps.

(*NNMi Advanced*) If your network administrator configures NNMi to gather data from Router Redundancy Groups that have more than one Active router, NNMi selects one Active router for the path. To indicate there is more than one *possible path*, NNMi connects any additional routers to the Active router as shown in the example below:

(*NNMi Advanced*) If your network administrator configures NNMi to gather data from Route Analytics Management Systems (RAMS), the Path View can show multiple **OSPF**[1] Equal Cost paths through a Layer 3 cloud as shown in the example below:

---

[1]Open Shortest Path First Protocol

Related Topics:

"About Map Symbols" (on page 71)

"About Status Colors" (on page 66)

Access Maps Provided by NNMi

You can access maps in the following ways:

- From table views using the **Actions** menu

- From the 🔺 Topology Maps and 🗐 Troubleshooting workspaces

Table Views

To display a map view from a table view:

See "Using Actions to Perform Tasks" (on page 98) for more information about using the **Actions** menu.

1. Select the table view you want from the workspaces navigation panel. (For example, select the **Inventory** workspace, **Nodes** view.)

2. In the table view, click the row that contains the object of interest.

3. Select the **Actions** menu in the main toolbar and select the map view you want.

   Note: You can also access map views from the **Actions** menu in a form. See "About the NNMi Console" (on page 9), for more information.

   Tip: You can right-click any object in a table or map view to access the **Actions** menu.

   The label for the starting node appears in bold text on the map.

4. If you are displaying either Layer 2 or Layer 3 Neighbor views, after the map view appears, you

can change the number of **hops**[1].

In the **Number of Hops** drop-down list, select the number of hops to display. The default number of hops is 1. The maximum number of hops is 9.

Topology Maps Workspace

To display a Node Group map:

1. Select the **Topology Maps** workspace.

2. Select **Node Group Map** name of interest.

Troubleshooting Workspace

- To display a Layer 2 or Layer 3 Neighbor View map:

  a. Select the **Troubleshooting** workspace.

  b. Select the type of map you want to generate.

  c. In Layer 2 Neighbor View and Layer 3 Neighbor View maps, you can designate the starting node using either the node name or IP address. The label for the starting node appears in bold text on the map.

     Note: After you begin to type the node name or IP address, NNMi displays a list that includes all potential existing names or IP addresses that match the letters or numbers as you enter them.

  d. After the map view appears, you can change the number of **hops**[2].

     In the **Number of Hops** drop-down list, select the number of hops to display. The default number of hops is 1. The maximum number of hops is 9.

- To display a Path View:

  a. Select the **Troubleshooting** workspace.

  b. Select **Path View**.

  c. In the **Source** and **Destination** fields, designate the nodes at both ends of the path using either the node name or IPv4 address.

     Note: After you begin to type the node name or IPv4 address, NNMi displays a list that includes all potential existing names or IPv4 addresses that match the letters or numbers as you enter them.

     NNMi Advanced. Path View works only with IPv4 addresses. The NNMi Advanced IPv6 address values are not valid choices for Path View. Any devices in your network that are configured with IPv6 addresses cannot be displayed on Path View maps.

- To display a Node Group map:

---

[1]A hop is a node representing any network device, such as a workstation, gateway, or switch, which is connected by a link with no intermediate nodes.
[2]A hop is a node representing any network device, such as a workstation, gateway, or switch, which is connected by a link with no intermediate nodes.

a. Select the **Troubleshooting** workspace.

b. Select **Node Group Map**.

c. In the Node Group field, specify the name of the Node Group that contains the nodes you want to display.

> **Note**: After you begin to type the Node Group name, NNMi displays a list that includes all potential existing names (case-sensitive) that match the letters or numbers as you enter them.

Chapter 8

Views Provided by NNMi

NNMi offers several out-of-the-box views to determine a managed device's status. Each of these is described in the following tables.

Note: Depending on your NNMi user role, you might not be able to see all of the views described.

- Views for Incident Management
- Views of Topology Maps
- Views to Assist You with Monitoring Network Devices
- Views to Assist You with Troubleshooting
- Views with Inventory Lists
- Management Mode Views
- Views for Incident Browsing

Views for Incident Management

View Title	Description
Open Key Incidents	Shows the incidents that are most important to network Operators (any **Key Incident**[1]) and that often require more immediate action. The Open Key Incidents view includes those incidents that have a Correlation Nature that is any of the following:

Incident Correlation Nature	Description
Root Cause	Indicates the incident that reports the root cause of a problem.
Service Impact	*Used in NNMi 8.xx only*. Indicates a relationship between incidents in which a network service is effected by other incidents. By default, NNMi generates Service Impact incidents for Router Redundancy Groups. For example, an Interface Down incident can effect a Router Redundancy Group that is part of an HSRP service. The Service Impact incident helps to identify the service that is affected.

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

View Title	Description		
	Incident Correlation Nature	**Description**	
		This Correlation Nature is available for use by HP Network Node Manager i Software Smart Plug-ins (iSPIs). See "Help for Administrators" for more information about NNM iSPIs.	
	Stream Correlation	*Used in NNMi 8.xx only*. Indicates the correlations that NNMi's event pipeline establishes as it recognizes patterns in the flow of events through the pipeline. Correlations are created as NNMi analyzes events and traps to determine the root cause incident for a problem. Examples of stream correlations include Dedup (duplication of events) and Rate (occurrence of events by time) correlations.	
	Rate Stream Correlation	Indicates the incident tracks incident patterns *based on the number of incident reoccurrences within a specified time period*. After the count within the specified time period is reached, NNMi emits a Rate Correlation incident and continues to update the Correlation Notes with the number of occurrences within that rate.	
	Info	This Correlation Nature is meant to be informational.	
	None	Indicates there is no incident correlation for this incident.	
Unassigned Open Key Incidents	Shows any open **Key Incident**[1] that has not yet been assigned. This view is useful for identifying the most recent Key Incidents that must be assigned.		
My Open Incidents	Shows the incidents that have been assigned to the name associated with the current user.		

Views of Topology Maps (See "Help for Operators" for more information about Node Group Maps.)

View Title	Description
Node Group Overview	Displays a map containing all (top-level) Node Groups that do not have parent Node Groups.
Initial Discovery Progress	**Tip**: Create a Node Group map to monitor your network topology. See Create Node Groups for information about Node Groups..

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

View Title	Description
(Layer 3)	Displays a map containing the most highly connected nodes (largest subnets) in the Layer 3 network. Use this map to display the initial discovery progress of the Routers, Switches, and Switch-Routers, for up to 100 nodes. **Note**: NNMi displays this map only if the NNMi administrator has configured the NNMi console's Initial View to be **Installation Default** and the network has less than or equal to a total of 100 routers, switches, and switch-routers. After NNMi has discovered more than 100 connectors, this map view changes to the Open Key Incidents table view. To determine which nodes to display, NNMi uses the following algorithm until it has displayed a maximum of 100 nodes: • Display the largest subnets (Layer 3 connectivity) based on discovered routers • Display the most highly connected switches within the subnets displayed • Display the most highly connected nodes within the subnets displayed • Display any remaining nodes up to a total of 100 Note the following: • NNMi polls only management IP addresses by default. Therefore, the status of IP addresses on the map might appear as No Status (▫). • Because the connections on a Layer 3 represent subnets, which are not monitored in NNMi, the connections on a the Initial Discovery Progress map appear as No Status (_____). • The **Initial Discovery Progress** map displays a maximum of 100 nodes. This maximum number cannot be changed. This map periodically updates both topology and status. The update interval is more frequent when the view is first displayed by any user, then slowly refreshes less frequently. **Note**: Automatic refresh cancels any modifications, such as selecting or zooming, you make to this view. To view the Layer 2 (switch) connectivity for a particular node, select the node of interest and use the **Actions → Layer 2 Neighbor View**. To view the Layer 3 (router) connectivity for a particular node, select the node of interest and use **Actions → Layer 3 Neighbor View**. **Tip**: You can right-click any object in a table or map view to access the **Actions** menu.
Network Overview (Layer 3)	This map is similar to the **Initial Discovery Progress** map with the following exceptions: • Network Overview displays a map containing the most highly connected nodes (largest subnets) in the Layer 3 network for up to 250 nodes.

View Title	Description
	- The NNMi administrator can change the maximum number of nodes displayed. If you are an NNMi administrator, see "NNMi Console" in the HP Network Node Manager i Software Deployment Reference for more information. - The refresh rate is 5 minutes. - The NNMi administrator must have configured the NNMi console's Initial View to be **Network Overview**.
Networking Infrastructure Devices	Displays representative Node Groups for the Switches and for the Routers in your network. Each of the following device types, if applicable, are also included on the map: - Chassis - Firewalls - Voice Gateways **Note**: Your NNMi Administrator can remove this map from the Topology Maps workspace. See "Help for Operators" for more information about Node Group Maps.
Routers	Displays a Node Group Map of the Router and Layer 3 connectivity in your network. **Tip**: See "About Node and Interface Groups" (on page 48) for more information about Node Groups. **Note**: If the number of Node Groups in your network is greater than the maximum number of map objects configured to be displayed on the map, NNMi filters the map to display routers that have interfaces with addresses in the largest number of overall subnets in the network. Your NNMi administrator can configure the maximum number of nodes to be displayed on a map. See "Help for Administrators" for more information. **Note**: Your NNMi Administrator can remove this map from the Topology Maps workspace.
Switches	Displays a Node Group map of the Switches and Layer 2 connectivity in your network. **Tip**: See "About Node and Interface Groups" (on page 48) for more information about Node Groups. **Note**: If the number of nodes in your network is greater than the maximum number of nodes configured to be displayed on the map, NNMi filters the map to display switches that are the most highly connected. Your NNMi administrator can configure the maximum number of nodes to be displayed on a map. See "Help for Administrators" for more information.

View Title	Description
	Note: Your NNMi Administrator can remove this map from the Topology Maps workspace.

Views to Assist You with Monitoring Network Devices

View Title	Description
Non-Normal Node Components	Identifies the nodes that might need operator attention due to a problem with the health of a node component.
Non-Normal Cards	Identifies the cards that might need operator attention.
Non-Normal Interfaces	Identifies all of the interfaces that might need operator attention.
Non-Normal Nodes	Identifies all of the nodes that might need operator attention.
Non-Normal SNMP Agents	identifies all of the SNMP Agents that have a state that is other than Normal.
Not Responding Addresses	Identifies all of the addresses that have a state of Not Responding. A **Not Responding** state indicates that the address is not responding to ICMP ping.
Interface Performance	(*HP Network Node Manager iSPI Performance for Metrics Software*) Helps you identify the over-used and under-used interfaces for the nodes in your managed network.
Card Redundancy Groups	Shows the Card Redundancy Groups that NNMi discovered. See "Help for Operators" for more information about Card Redundancy Groups.
Router Redundancy Groups	Shows the available Router Redundancy Groups created by the NNMi administrator. Each Router Redundancy Group is a set of two or more routers that use one or more virtual IP addresses to help ensure that information packets reach their intended destination. See "Help for Operators" for more information about Router Redundancy Groups.
Node Groups	Shows the Node Groups created by the NNMi administrator. Node Groups enable the NNMi administrator to define groups of nodes based on several criteria, including by hostname or location. See "About Node and Interface Groups" (on page 48) for more information about Node Groups.

View Title	Description
Custom Node Collections	Shows the Custom Node Collections that have been created using NNMi's Custom Poller. A Custom Node Collection identifies a topology node that has at least one associated Custom Poller Policy. See "Help for Operators" for more information about Custom Node Collections.
Custom Polled Instances	Shows the Custom Polled Instances that have been created using NNMi's Custom Poller. NNMi creates Custom Polled Instances the first time a MIB Expression is validated with discovery information. See "Help for Operators" for more information about Custom Polled Instances.

Views to Assist You with Troubleshooting

View Title	Description
Layer 2 Neighbor View	Shows a map view of a selected device and its connector devices within a specified number of hops from the selected device. This view is useful for understanding the **switch connectivity** between devices. The background color of a node in a network map indicates the node's or interface's status. For example, green indicates the node is up. Red indicates the node or interface is down.
Layer 3 Neighbor View	Shows a map view of a selected device and it connector devices within a specified number of hops from the selected device. This view is useful for understanding the **router connectivity** between devices. The background color of a node in a network map indicates the node's or interface's status. For example, green indicates the node is up. Red indicates the node or interface is down.
Path View	Shows an active network path between a source and destination end point. **Caution**: Do not specify a switch as a Source or Destination node in Path View maps. To view connectivity between switches, use the Layer 2 Neighbor View. This view is useful for diagnosing connectivity problems; for example, when one node cannot communicate with another or when you are not able to access a particular node, such as a client PC not being able to contact the Microsoft Exchange server. **Note**: *NNMi Advanced*. Path View works only with IPv4 addresses. The NNMi Advanced IPv6 address values are not valid choices for Path View. Any devices in your network that are configured with IPv6 addresses cannot be displayed on Path View maps.
Node Group Map	Shows the pre-defined members of a Node Group in the context of not only status and connectivity, but of a pre-defined background image (for example, a map of North America). See "Help for Operators" for more information about Node Group Maps.

Views with Inventory Lists

View Title	Description
Nodes	Shows the status for all nodes discovered by NNMi. Sorting this view by status lets you see all of the nodes that are down or somehow disabled.
Interfaces	Shows the information about all network interfaces discovered by NNMi. Sorting this view by associated node Name value (Hosted on Node) lets you see all of the network interfaces per node. Sorting the view by Administrative or Operations Status helps you determine the interfaces or nodes that are down or somehow disabled.
IP Addresses	Shows the status for all IP addresses hosted on Nodes that are discovered by NNMi. (The Node form: IP Addresses tab also displays relevant addresses from this view.)
IP Subnets	Shows the status for all IP subnets. Sorting this view by status lets you quickly see all of the IP addresses that have a status that indicates there is a current or potential problem.
VLANs	Shows the switch port VLANs discovered in your network environment. A device can participate in multiple VLANs. And a port can be assigned to multiple VLANs.
Cards	Shows the cards NNMi discovered in your network environment.
Ports	Shows the ports NNMi discovered in your network environment.
Node Components	
Layer 2 Connections	Shows the Layer 2 connections discovered or added in your network environment.
Nodes by Management Server	(*NNMi Advanced*) When multiple NNMi management servers share the workload in your network environment, this view lets you identify which nodes each NNMi management server is responsible for discovering and monitoring.
Custom Nodes	Provides a Node view of all Node attributes. Sort and filter this view to meet your needs.
Custom Interfaces	Provides an Interface view of all Interface attributes. Sort and filter this view to meet your needs.
Custom IP Addresses	Provides an IP Address view of all IP Address attributes. Sort and filter this view to meet your needs.
MIB Variables	Shows the MIB variables available from the MIBs that are loaded in the NNMi database.

View Title	Description
Card Redundancy Groups	Shows the Card Redundancy Groups that NNMi discovered. See "Help for Operators" for more information about Card Redundancy Groups.
Router Redundancy Groups	(*NNMi Advanced*) Shows the available Router Redundancy Groups created by the NNMi administrator. Each Router Redundancy Group is a set of two or more routers that use one or more protected (virtual) IP addresses to help ensure that information packets reach their intended destination. See "Help for Operators" for more information about Router Redundancy Groups.
Router Redundancy Members	(*NNMi Advanced*) Shows the members of the Router Redundancy Groups created by the NNMi administrator.
Node Groups	Shows the Node Groups provided by NNMi and created by the NNMi administrator. See "About Node and Interface Groups" (on page 48) for more information about Node Groups.
Interface Groups	Shows the Interface Groups provided by NNMi and created by the NNMi administrator. See "Help for Operators" for more information about Interface Groups.
Management Stations (6.x/7.x)	Shows the 6.x/7.x Management Stations that have been configured to forward 6.x or 7.x events to NNMi.
MPLS WAN Clouds (RAMS)	(*NNMi Advanced*) Shows the information about all MPLS WANs discovered by NNMi.

Management Mode Views

View Title	Description
Unmanaged Nodes	Shows all of the nodes that have a management mode set to **Not Managed** or **Out of Service**. These nodes are no longer being monitored nor updated.
Unmanaged Interfaces	Shows all of the interfaces that have a management mode set to **Not Managed** or **Out of Service**. These interfaces are no longer being monitored nor updated.
Unmanaged IP Addresses	Shows all of the addresses that have a management mode set to **Not Managed** or **Out of Service**. These addresses are no longer being monitored nor updated.
Unmanaged Cards	Shows all of the cards that have a management mode set to **Not Managed** or **Out of Service**. These cards are no longer being monitored nor updated.
Unmanaged Node Components	Shows all of the node components that have a management mode set to **Not Managed** or **Out of Service**. These components are no longer being monitored nor updated.

Views for Incident Browsing

View Title	Description
Open Key Incidents	Shows the incidents that are most important to network Operators (any **Key Incident**[1]) and that often require more immediate action. The Open Key Incidents view includes those incidents that have a Correlation Nature that is any of the following:

Incident Correlation Nature	Description
Root Cause	Indicates the incident that reports the root cause of a problem.
Service Impact	*Used in NNMi 8.xx only*. Indicates a relationship between incidents in which a network service is effected by other incidents. By default, NNMi generates Service Impact incidents for Router Redundancy Groups. For example, an Interface Down incident can effect a Router Redundancy Group that is part of an HSRP service. The Service Impact incident helps to identify the service that is affected. This Correlation Nature is available for use by HP Network Node Manager i Software Smart Plug-ins (iSPIs). See "Help for Administrators" for more information about NNM iSPIs.
Stream Correlation	*Used in NNMi 8.xx only*. Indicates the correlations that NNMi's event pipeline establishes as it recognizes patterns in the flow of events through the pipeline. Correlations are created as NNMi analyzes events and traps to determine the root cause incident for a problem. Examples of stream correlations include Dedup (duplication of events) and Rate (occurrence of events by time) correlations.
Rate Stream Correlation	Indicates the incident tracks incident patterns *based on the number of incident reoccurrences within a specified time period*. After the count within the specified time period is reached, NNMi emits a Rate Correlation incident and continues to update the Correlation Notes with the number of occurrences within that rate.
Info	This Correlation Nature is meant to be informational.
None	Indicates there is no incident correlation for this incident.

Closed Key	Shows the key incidents that have been closed. This view is useful for identifying

---

[1]Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

View Title	Description
Incidents	the root cause incidents that have been resolved. This view might be particularly useful for reporting on how many incidents were closed within a given time period.
Open Root Cause Incidents	Shows the root cause incidents that have not yet been closed. This view is useful for identifying the root cause incidents that need to be resolved.
Service Impact Incidents	Indicates incidents that have a relationship to other incidents in which a network service is affected. For example, an Interface Down incident can effect a Router Redundancy Group that is part of an HSRP service. The Service Impact incident helps to identify the service that is affected. This Correlation Nature is available for use by HP Network Node Manager i Software Smart Plug-ins (iSPIs). See "Help for Administrators" for more information about NNM iSPIs.
All Incidents	Shows all incidents. This view is useful for determining all of the incidents that have been generated within a certain time period.
Custom Open Incidents	Enables you to choose the columns of incident information for all Open incidents, to better meet your needs. For example, you might want to filter the view to display only the incidents related to a particular set of devices. You might also want to filter the view to display only the incidents assigned to you.
Custom Incidents	Lets you create a customized view for your incident information. For example, you might want to filter this view to include only the incidents assigned to you.
NNM 6.x/7.x Events	Shows all of the incidents forwarded from Network Node Manager 6.x and 7.x management stations in your network environment.
SNMP Traps	Shows all of the traps that were received from devices in your network environment. Your NNMi administrator must configure specific traps before they are displayed within NNMi incident views

Related Topics

Chapter 9

Working with Objects

Objects are database records of information about your environment and events that occur within it. Each type of object represents a particular kind of information. For example, incident objects represent situations or events that arise in your environment.

An object is defined by its attributes. For example, an incident object includes a status attribute and a source node (among many others). Different object types have different amounts and types of attributes. Some attribute values are simple things, such as numbers and text strings. Other attribute values are more complex, such as a reference to a related object. For example, when an SNMP Agent attribute appears in a Node form, it represents the SNMP Agent that is related to the selected node.

If more than one of a certain type of object can be related to the selected object (for example, incidents related to a node), the form contains a tab that displays a table with the entire list of related objects.

A *view* is a collection of related objects that are depicted graphically as a table or map. A *form* provides all stored attributes about a selected object. The attributes on the form can be attributes of the selected object or related objects.

Operations that can be performed on objects are called actions. Actions are simply shortcuts to simple or complex tasks. A particular action can be associated with a specific object type. For example, when displaying a node table view, you might want to open a map showing all of that node's Layer 2 neighbors.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

To access an object's form from a table view:

Double-click the row representing an object.

NNMi displays the form for the selected object.

To access an object's form from a map view:

Do one of the following:

- Select the node of interest and click the 📄 Open icon.
- In most cases, double-click the object of interest.

  Note: If the map object is a Child Node Group, double-clicking the Child Node Group object replaces the current map with a map of the nodes in the Child Node Group. To access a Child Node Group form, select the Child Node Group object and click the 📄 Open icon. See "Help for Operators" for more information.

NNMi displays the form for the selected object.

Tip: A red asterisk (*) that precedes an attribute on a form indicates the attribute requires a value.

From an object form, you can:

"Modify Object Attribute Values" (on page 96)

Access a Subset of the Available Information About a Related Object

While investigating the available information for an object (within that object's form), some information represents attributes of the object itself and some information is about related objects. The related objects are indicated by a [icon] Lookup icon. For example, when viewing information for an Interface object, you can access information about the Node in which that interface resides.

This is an example Lookup Field:

To display a subset of information about a related object from within a form:

1. Locate the field for the related object that you want to learn more about.

2. Click the [icon] Lookup icon, and select [icon] **Show Analysis** from the drop-down menu.

3. The Analysis Pane appears showing information about the related object. See "About the Analysis Pane" (on page 27) for more information.

   Note: NNMi displays only the information that the NNMi Security configuration permits you to access. See Determine which NNMi Role to Assign in "Help for Administrators" for more information.

4. Mouse-over any [icon] Refresh icon to see the last time the details were updated.

   Click any [icon] Refresh icon to gather the most recent data.

Access All Information About a Related Object

While investigating the details for one object using a form, you can access information about another related object. For example, when viewing all information stored for a node, you can access all available information for an interface for that node to determine the interface status.

You can open another form from within a form for any object that is contained in the form you are viewing. Such objects are indicated using a [icon] Lookup icon.

This is an example Lookup Field:

To open another form from within a form:

1. Locate the field of an object about which you want to see more information.

2. Click the [icon] Lookup icon, and select [icon] **Open** from the drop-down menu.

A new form appears showing all of the attributes for that object. Any default values specified for the object are pre-populated in the form

Modify Object Attribute Values

When viewing details for an object, such as a node, subnet, or interface, you can change one or more of its attribute values. For example, you can add notes to an incident to explain steps that were taken to date to resolve the problem. Until the problem is resolved you can enter information related to a workaround. Finally, after a solution is determined, you can add information describing how the problem was resolved.

Note: If you have Guest user role, you cannot modify any attributes.

Two kinds of fields indicate that you can modify an attribute.

To modify information in a text box:

1. Move your cursor to the modifiable field of interest.

2. Type the new value. For example, the Notes attribute is a modifiable field:

   Tip: If the attribute appears to be a modifiable field, but it does not permit text entry, it is a memo field.

   Tip: Click the attribute label to access a dialog box that enables you to view or edit text. Using this feature, you can insert more text or view a text field that is longer than the original display area.

3. When you are finished with your edits:

   - Click [icon] **Save** to save your changes.

   - Click [icon] **Save and Close** to save your changes and close the form.

To modify information in a [icon] **Lookup field**:

1. Look for this icon to the right of a text box [icon]. For example:

2. Do one of the following:

   - Start to type into the text box. NNMi displays a list of all valid choices. You can select from the list to complete your choice.

- Click the Lookup icon, and choose Quick Find to display a list of valid choices:

3. When you are finished with your edits:

   - Click **Save** to save your changes.

   - Click **Save and Close** to save your changes and close the form.

Chapter 10

Using Actions to Perform Tasks

Actions let you perform operations on selected items. The actions available to you depend on your NNMi user role. Administrators have more action choices than operators. If SPIs are installed in your environment, the list of actions could expand.

See the NNMi Actions table for a description of possible actions.

Note: Actions that change an object's attribute value or that require log on access to a node (for example, telnet) are also not included in this list.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

To perform any of the actions described, you select an action from the **Actions** menu. The **Actions** menu is accessible from the NNMi console main menu bar and from the menu bar in any form or view that is opened in a new window. See "Invoke Actions" (on page 18) for more information about how to access actions.

Tip: You can right-click any object in a table or map view to access the **Actions** menu.

NNMi Actions

Action	Description
Layer 2 Neighbor View	**Maps → Layer 2 Neighbor View** Displays a map of the Layer 2 network. Layer 2 maps help you better understand your switch connectivity. See "Help for Operators" for more information.
Layer 3 Neighbor View	**Maps → Layer 3 Neighbor View** Displays a map of the Layer 3 network. Layer 3 network maps help you better understand your router connectivity. See "Help for Operators" for more information.
Path View	**Maps → Path View** Displays a map showing the route between two specified nodes. The Source and Destination nodes should not be switches. **Note**: *NNMi Advanced*. Path View works only with IPv4 addresses. The NNMi Advanced IPv6 address values are not valid choices for Path View. Any devices in your network that are configured with IPv6 addresses cannot be displayed on Path View maps.
MPLS WAN Clouds Map	(*NNMi Advanced*) Displays a map of the Layer 3 connectivity across MPLS WAN Clouds. See "Help for Operators" for more information.

NNMi Actions Specific to Incidents

Action	Description
Interface Actions	**Only available for incidents that have a Source Object that is an interface**. Provides access to all of the actions available for an interface. See Actions Specific to Nodes, Interfaces, and IP Addresses for more information about the actions available for interfaces.
IP Address Actions	**Only available for incidents that have a Source Object that is an IP address**. Provides access to all of the actions available for an IP address. See Actions Specific to Nodes, Interfaces, and IP Addresses for more information about the actions available for IP addresses.
Node Actions	Provides access to all of the actions available for a node. See Actions Specific to Nodes, Interfaces, and IP Addresses for more information about the actions available for nodes. The action is applied to the incident's Source Node.
Node Group Members	*Island Node Group incidents only*. Displays a table of the nodes that are members of the Island Node Group that is the Source Object for the selected incident. An Island Node Group is a group of fully-connected nodes discovered by NNMi, and NNMi determines this group is not connected to the rest of the topology. **Note**: Incidents that have a Source Object that is an Island Node Group include **Remote site** in the incident message.

Action	Description
Node Group Map	**Maps → Node Group Map** Displays the lowest level Node Group map to which the Source Node belongs. For example, if the node belongs to a Child Node Group, the Child Node Group displays. If the Source Node is a member of more than one Node Group at the lowest level, NNMi prompts you to select the Node Group map you want to display. If the incident's Source Object is an Island Node Group, NNMi displays the Island Node Group map. An Island Node Group is a group of fully-connected nodes discovered by NNMi, and NNMi determines this group is not connected to the rest of the topology. **Note**: Incidents that have a Source Object that is an Island Node Group include **Remote site** in the incident message. See "Help for Operators" for more information. When the selected Source Node is not a member of any Node Group, and you select the **Node Group Map** action, NNMi displays an information message.
Source Node	Opens the Node form for the Source Node of the current incident.
Source Object	Opens the Source Object's form for the current incident. For example, if the Source Object is a Layer 2 Connection, NNMi opens the Layer 2 Connection form.
Graph Custom Poller Results	Graphs all MIB expressions from each of the Custom Poller Collections associated with the selected incident's Source Node.

Actions Specific to Nodes, Interfaces, and IP Addresses

Action	Description
Node Group Map	**Maps → Node Group Map** This action displays the lowest level Node Group map to which the Source Node, or selected interface or IP address on a node belongs. For example, if the node belongs to a Child Node Group, the Child Node Group displays. If the Source Node, or selected interface or IP address on a node is a member of more than one Node Group at the same level, NNMi prompts you to select the Node Group map you want to display. When the selected Source Node, interface, or IP address is not a member of any Node Group, and you select the **Node Group Map** action, NNMi displays an information message.
Graphs	Graphs in real time the SNMP data configured to be displayed for the selected nodes or interfaces. The graph name should help to identify the type of data in

Action	Description
	the graph.
	NNMi provides a set of Line Graphs. See "Help for Operators" for more information. An NNMi administrator or HP Network Node Manager i Software Smart Plug-ins (iSPIs) might configure additional Line Graphs that appear in the **Actions** menu list.

Actions Provided for Node Groups

Action	Description
Node Group Map	**Maps → Node Group Map** Displays a current map of all nodes that belong to the selected Node Group.
Show Members	**Node Group Details → Show Members** Displays a list of all nodes that belong to the selected Node Group.
Show All Incidents	**Node Group Details → Show All Incidents** Checks for any Incidents associated with the selected Node Group.
Show All Open Incidents	**Node Group Details→ Show All Open Incidents** Checks for any open Incidents associated with the selected Node Group.
Status Details	**Node Group Details→** Status Details Displays a report about the status of all members of the selected Node Group.

Actions Provided for Interface Groups

Action	Description
Show Members	**Node Group Details → Show Members** Displays a list of all nodes that belong to the selected interface Group.

Actions Specific to Custom Polled Instances

Action	Description
Graph Polled Instance	Graphs the line representing the Custom Poll results for the selected Custom Polled Instance.

HP Network Node Manager iSPI Performance for Metrics Software Actions

(*HP Network Node Manager iSPI Performance for Metrics Software*) An additional choice is available in the Actions menu that displays the HP Network Node Manager iSPI Performance for Metrics Software Report Menu. The context of the Report Menu changes depending on the currently selected object (Node, Node Group, Interface, or Interface Group). When selecting more than one object, multiple HP Network Node Manager iSPI Performance for Metrics Software reports open (one for each object, maximum 5).

No matter where you are in the NNMi console, the following option appears under the Actions menu:

- **Reporting - Report Menu**

In a Path View, this additional option appears under the Actions menu:

- **Reporting - Path Health**

See "Invoke Actions" (on page 18) for more information about how to access actions.

Chapter 11

Displaying Information About NNMi

Two menu items provide a wealth of current information about your installed NNMi:

- **Help → System Information**

  See "Displaying NNMi System Information" (on page 103) for more information.

- **Help → About HP Network Node Manager i Software**

  See "Displaying NNMi Version and License Information" (on page 105) for more information.

Displaying NNMi System Information

Select **Help → System Information**.

Information is provided on several tabs:

- **Product** tab: Displays the following product information:

  - Product name

  - Current locale (language) in use

  - Status of NNMi health

  - User information, including the user Name, **NNMi Role**[1], and User Group Name.

  - A link to your NNMi license information

- **Health** tab: Displays summary level information regarding NNMi health, including NNMi's overall status as well as information and any issues related to the following:

  - Memory

  - The NNMi database

  - System resources

  - Disk usage

  - SNMP requests and queues

  - Global Network Management (NNMi Advanced)

  Note: NNMi administrators can view more details by clicking the View Detailed Health Report button on the Health tab.

  Click here for more information about NNMi's overall health Status.

  NNMi uses the following Statuses when monitoring its health:

---

[1]Determined by your membership in one of four special NNMi User Groups. This membership determines what you can see and do within the NNMi console.

NNMi Overall Health Status

Status	Description
Warning	Indicates performance issues that are not significantly affecting NNMi.
Minor	Indicates problems that might result in out of date data. For example, a component, such as State Poller might be out of synch because it is operating outside of expected ranges.
Major	Indicates problems that are significantly affecting the NNMi management server's operations, but are not yet critical. Major Status usually indicates that some action is required. For example, a trap threshold is reached.
Critcal	Indicates NNMi is not functioning. For example, NNMi is out of memory, all database connections are lost, or a major component has failed.

- **Server** tab: Displays information about the NNMi management server.

  Hostname, IP address, fully qualified domain name (FQDN), operating system, memory usage, status information, and the path to the Install and Data directories.

  (*NNMi Advanced*) When using the Global Network Management feature:

  - If your NNMi management server is a Global Manager, the displayed information's heading is **Global Management Server**.

  - If your NNMi management server is a Regional Manager, the displayed information's heading on this tab is **Management Server**.

- **Global Network Management** tab: (*NNMi Advanced*) If the Global Network Management feature is enabled:

  - If your NNMi management server is a Global Manager, the displayed information's heading is **Regional Managers Reporting to this Global Manager**.

  - If your NNMi management server is a Regional Manager, the displayed information's heading on this tab is **Reporting to Global Managers**.

- **Database** tab: Displays a list showing the number of each type of object stored in the NNMi database. Possible objects include Nodes, SNMP Agents, Interfaces, Addresses, Layer 2 Connections, Incidents, Subnets, VLANs, and Node Components.

  (*NNMi Advanced*) Also displays the number of Router Redundancy Groups.

- **State Poller** tab: State Poller health statistics:

  - State Poller status.

  - Collections requested and completed.

  - Execution and collection times.

  - Queue lengths.

  - Types of objects being monitored.

- The number of objects being monitored for each object type.

- The current monitoring rates.

- The number of nodes being polled.

- **Custom Poller** tab: Custom Poller health statistics:

  - Custom Poller status.

  - Collections requested and completed.

  - Execution and collection times.

  - Queue lengths.

  - Types of objects being monitored.

  - The number of objects being monitored for each object type.

  - The current monitoring rates.

  - The number of nodes being polled.

  - Instance discovery statistics

- **Extensions** tab: Lists the name, identifier, and version number for any additional software deployed on your NNMi management server.

  There are three possible categories:

  a. HP Network Node Manager i Software Smart Plug-ins (iSPIs) that are included with NNMi licensing.

  b. HP Network Node Manager i Software Smart Plug-ins (iSPIs) that require additional licensing. (NNMi displays the hostname of the server on which the NNM iSPI software and device extensions are installed.)

  c. Other extensions that enhance NNMi functionality.

- **Component Versions** tab: Displays a list of all components of your NNMi software and the version number of each.

Displaying NNMi Version and License Information

Select **Help** → **About HP Network Node Manager i Software** to display the following information:

- The current version number of NNMi.

- A link to current Network Node Manager i Software license information.

Glossary

A

AES

Advanced Encryption Standard

Anycast Rendezvous Point IP Address

Rendezvous Point addresses are loopback addresses used for routers in multi-cast network configurations.

B

BGP

Border Gateway Protocol

C

Causal Engine

The NNMi Causal Engine analyzes the health of your network and provides the ongoing health status reading for each device. The Causal Engine also extensively evaluates problems and determines the root cause for you, whenever possible, sending incidents to notify you of problems. Any incident generated from a Causal Engine management event has an Origin of NNMi in your incident views.

CBC

Cipher Block Chaining

CE

Customer Edge router. The router in your network that sends data to an Internet Service Provider's router (the Provider Edge) on the path to the data's final desination.

Custom User Groups

Custom User Groups are the User Groups that you create. These User Groups are additional to the NNMi User Groups, which are those User Groups that NNMi provides.

D

DES

Data Encryption Standard

E

EIGRP

Enhanced Interior Gateway Routing Protocol

EVPN

Ethernet Virtual Private Network.

G

global unicast address

(2000:: to 3fff:ffff:ffff:ffff:ffff:ffff:ffff:ffff) A publically routable IPv6 unicast address, used for communication between nodes anywhere on the internet. The first part of the address is a global routing prefix in the 2000::/3 address space for your organization (assigned by the Internet Service Providers). The complete host address can either be manually configured or automatically assigned using IPv6 auto-configuration and neighbor discovery.

H

HMAC

Hash-based Message Authentication Code

hops

A hop is a node representing any network device, such as a workstation, gateway, or switch, which is connected by a link with no intermediate nodes.

HSRP

Hot Standby Router Protocol

I

ISIS

Intermediate System to Intermediate System Protocol

K

Key Incident

Incidents with both: (1) Severity = other than Normal. (2) Correlation Nature = equal to Root Cause, Service Impact, Stream Correlation, Rate Stream Correlation, Info, or None.

L

Layer 2

Refers to the Data Link layer of the multilayered communication model, Open Systems Interconnection (OSI). The Data Link layer moves data across the physical links in the network. The switches and switch-routers are devices that redirect data messages at the layer 2 level, using the destination Media Access Control (MAC) address to determine where to direct the message.

Layer 3

Refers to the Network layer of the multilayered communication model, Open Systems Interconnection (OSI). The Network layer is concerned with knowing the address of the neighboring nodes in the network, selecting routes and quality of service, and recognizing and forwarding incoming messages to local host domains. The router and switch-router are the devices that redirect data messages at the Layer 3 level. Everything in a subnet is connected at the Layer 3 (IP) level.

Link Aggregation

Protocols used on Switches to configure multiple Interfaces (Aggregation Member Interfaces) to function as if they were one (an Aggregator Interface). When two Aggregator Interfaces establish a connection, that connection is an Aggregator Layer 2 Connection. The Aggregator Layer 2 Connection appears on Layer 2 Neighbor View maps as a thick line with an Interface icon at each end (representing the Aggregator Interface). When you double-click the thick line, it converts into multiple thin lines representing the participating Aggregation Member Layer 2 Connections with their Aggregation Member Interfaces at each end of the lines.

link-local address

A non-routable IPv6 unicast address only used for communication with other nodes on the same link (LAN or VLAN). Link local addresses cannot be used for communication that must be forwarded through a router. IPv6 auto-configuration automatically assigns a unique link local address in the fe80::/10 address space to each IPv6-enabled interface on a system.

loopback address

The address associated with the loopback interface. The loopback interface is a virtual interface on a device that provides a route for internal communication. Many vendors provide a specially configured loopback for management purposes. Exact details of how loopbacks are configured varies by vendor and model. See each device's documentation for details. NNMi identifies these loopback addresses by using IfType 24, softwareloopback from the IANA ifType-MIB.

M

MAC address

The Media Access Control address (hardware address or physical address) that the factory burns into a network adapter or device with built-in networking capability. A MAC address has six pairs of hexadecimal digits, separated by colons or dashes. For example 02:1F:33:16:BC:55

MAC addresses

The Media Access Control address (hardware address or physical address) that the factory burns into a network adapter or device with built-in networking capability. A MAC address has six pairs of hexadecimal digits, separated by colons or dashes. For example 02:1F:33:16:BC:55

MD5

Message-Digest algorithm 5

MPLS

Multiprotocol Label Switching

multicast address

Used to identify a group of hosts joined into a group, IPv4 multicast addresses are in the range 224.0.0.0 to 239.255.255.255 and IPv6 multicast addresses have the prefix ff00::/8

multiconnection

A multiconnection is a thick line on a map view between two Node icons, two Node Group icons, or between a Node icon and a Node Group icon (with no Interface icon or IP Address icon at either end of the line). This thick line represents a set of multiple connections that have been combined to preserve space and simplify the map. Your NNMi administrator specifies the number of connections that must exist before NNMi condenses them into a multiconnection line (User Interface Configuration's Multiconnection Threshold attribute). Double-click the thick line to convert it into the original set of connections with Interface icons or IP Address icons at either end of the lines.

N

NNMi Role

Determined by your membership in one of four special NNMi User Groups. This membership determines what you can see and do within the NNMi console.

NNMi User Group

NNMi User Groups are those User Groups provided by NNMi. Users cannot access the NNMi console until their User Account is mapped to at least one of the following NNMi User Groups: NNMi Administrators, NNMi Level 2 Operators, NNMi Level 1 Operators (with less access privileges than Level 2 Operators), and NNMi Guest Users

O

OSPF

Open Shortest Path First Protocol

P

PE

Provider Edge router. The Internet Service Provider's router that receives your data on the path to your data's final desination. The Customer Edge (CE) router in your network connects to this PE.

private IP addresses

These are IPv4 addresses that can be reused in home and office local area networks (LANs). Following the standards set by RFC 1918 and RFC 4193 (10.*.*.*, 169.254.*.*, 172.16-31.*.*, and 192.168.*.*)

R

RAMS

HP Router Analytics Management System

routing prefixes

A network protocol technique used to shorten or filter the amount of required routing information in each packet by declaring a prefix for an entire group of packets. This prefix also indicated the number of bits in the address.

S

SHA

Secure Hash Algorithm

U

unique local address

(fd00:: to fdff:ffff:ffff:ffff:ffff:ffff:ffff:ffff) A privately routable IPv6 unicast address used only for communication between nodes within your organization. The unique local addresses cannot be routed to the public internet. The address consists of a routing prefix in the fd00:/8 address spaces, assigned locally by your organization. And the full host address might be manually configured or automatically assigned using IPv6 auto-configuration and neighbor discovery.

Unmanaged

Indicates the Management Mode is "Not Managed" or "Out of Service".

UUID

Universally Unique Object Identifier, which is unique across all databases.

V

VRRP

Virtual Router Redundancy Protocol