HP Network Node Manager i-series Software Incident and Availability Report Pack

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

Software Version: 1.2
for HP Network Node Manager i-series Software (NNMi) 8.1x, 9.00
and HP Performance Insight 5.41

User Guide

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1 Report Pack Overview

This chapter describes the HP Network Node Manager i-series Software (NNMi) Incident and Availability Report Pack for NNMi 8.1x, 9.00 and HP Performance Insight (PI) 5.41:

- Consolidating PI and NNMi Data
- Directories and Reports
- Options for Customizing Reports
- Related Documents

Consolidating PI and NNMi Data

The NNMi Incident and Availability Report Pack consolidates PI and NNMi data into reports.

Collecting and Processing Data with PI

PI collects data from many sources, performs in-depth trend analysis, maintains performance baselines, and provides users with convenient, web-based reporting.

PI includes features such as the following:

- Distributed architecture
- Easy-to-scale architecture (supports data collection from thousands of agents)
- CODA/PA agent support
- Multiple-company security model
- Data warehousing
- Near Real Time reporting
- Forecasting
- Multiple aggregations (by day, week, and month; by location; and by customer)
- Thresholding and alerting
- Easy-to-spot bottlenecks and easy-to-assess capacity trends
- Accurate and timely documentation for management

Defining Incidents with NNMi Attributes

NNMi 8.1x and 9.00 define incidents using the following attributes:

- Category
- Customer
- Device
- Device Type
- Severity
- Vendor

Generating Reports with the Report Pack

The NNMi Incident and Availability Report Pack collects and processes data, and makes the results available to you in the following ways:

- Uses SOAP calls to collect incident and downtime data from any configured NNMi stations.
- Uploads the collected data to the PI tables on the PI server.
- Processes the collected data by running summarizations and aggregations, and displays the results in report templates.

You can use the reports to do the following:

- Check whether the availability of a particular device is improving or worsening.
- Check whether the availability of a particular customer is improving or worsening.
- View the distribution of incidents across alarm categories.
- View the trend line for each incident category.
- View the distribution of severity levels.
- View the trend line for each severity level.
- Determine which devices are responsible for most of the alarms in each incident category.

Directories and Reports

When you install the NNMi Incident and Availability Report Pack, PI creates the `NNMI_Report` directory.

This directory contains the following subdirectories:

- `Availability`
- `INCIDENT`

The `Availability` subdirectory contains five reports:

- Detailed Availability Report on Node Level
- Detailed Availability Report on Station Level
- Availability: Forecast by Customer
- Availability: Forecast by Vendor
- Availability: SLA

The `INCIDENT` subdirectory contains the following subdirectories:

- `Category`
- `Severity`
- `Consolidated`

In addition, the `INCIDENT` subdirectory contains some general reports.

General Subdirectory: 10 Reports

The `General` subdirectory contains the following reports:

- Executive Summary by Customer
- Executive Summary by Vendor
- Forecast by Category
- Forecast by Severity
- Hot Spot Reports
- Hot Spots: Top 20 by Device
- Incident Summary by Customer
- Incident Summary by Device Type
- Incident Summary by NNMi Station
- Incident Summary by Vendor

Category Subdirectory: 4 Reports

The `Category` subdirectory contains the following reports:

- NNMi Incident by Category and Device
- NNMi Incident by Category and Device Type
- NNMi Incident by Category and Severity
- NNMi Incident by Category and Vendor

Severity Subdirectory: 4 Reports

The `Severity` subdirectory contains the following reports:

- NNMi Incident by Severity and Category
- NNMi Incident by Severity and Device
- NNMi Incident by Severity and Device Type
- NNMi Incident by Severity and Vendor

Consolidated Subdirectory: 5 Reports

The `Consolidated` subdirectory contains the following reports:

- Executive Summary by Category
- Executive Summary by Severity
- Hot Spot Report
- NNMi Incident by Category
- NNMi Incident by Severity

Options for Customizing Reports

You can customize reports to do the following:

- Share reports with customers.
- Limit what you see in reports.
- Change how you view tables and graphs.

Sharing Reports with Customers

If you want to share reports with your customers, you have to configure PI to produce customer-specific reports.

To share reports with customers, follow these steps:

1. Use Common Property Tables to import customer names and device locations.
2. Create a group account for all the users affiliated with each customer.
3. Create a group filter for each group account.

For more about group filters, see the *HP Performance Insight Administration Guide*.

Limiting What is Displayed in Reports

You can limit what you see in reports by changing parameter values. Changing a parameter value applies a constraint to the reports, so they show only the data you want to see.

The NNMi Incident and Availability Report Pack supports the following parameters:

- Category
- Category ID
- Customer
- Customer ID
- Device
- Device Type
- NNMi Station
- Severity
- Severity ID
- Vendor

Changing a Parameter Value in Report Viewer

To change a parameter value in Report Viewer, follow these steps:

1. In the menu bar, select **Edit** → **Parameter Values**.
2. In the Modify Parameter Values window, click the **Current Value** field.
3. Enter a new value.
4. Click **OK**.

Changing a Parameter Value in Web Access Server

To change a parameter value in Web Access Server, follow these steps:

1. In the lower-right corner of the report, click the **Edit** icon.
2. In the Edit Parameters window, type the constraint in the appropriate field.
3. Click **Submit**.

Changing the View of Tables and Graphs

You can customize reports to display tables and graphs the way you prefer to view them. You can change the default view for any table or graph. To find out how to change the view of tables and graphs, see Appendix A, Changing How You View Tables and Graphs.

Related Documents

The demo package for the NNMi Incident and Availability Report Pack contains a sample of every report in the package. If you want to see what fully populated reports look like, install the demo package.

For information about the latest enhancements to this package, and any known issues affecting how this package operates, see the *NNMi Incident and Availability Report Pack 1.2 Release Notes* in the PI Report Packs, CD-ROM.

For more information related to the NNMi Incident and Availability Report Pack, see the following documents:

- *Common Property Tables User Guide*
- *Integrating HP Network Node Manager and HP Performance Insight User Guide*
- *PI Report Packs, CD-ROM Release Notes, September 2009*
- *HP Network Node Manager i-series Software Online Help*
- *HP Network Node Manager i-series Software Deployment and Migration Guide*

You can download these documents from the following website:

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

Use the following keywords to find specific documents:

- **Performance Insight**

  User guides for PI

- **Performance Insight Report Packs**

  User guides for report packs and datapipes

- **Network Node Manager**

  User guides for NNMi

Each user guide includes a publication date. If the manual is revised and reposted, the date changes. Revised manuals are posted on a regular basis. Make sure to download the latest web editions.

2 Installing the Report Pack

This chapter explains how to install the HP Network Node Manager i-series Software (NNMi) Incident and Availability Report Pack:

- Installation Requirements
- Installing the Report Pack
- Viewing the Deployed Reports
- Uninstalling the Report Pack

Installation Requirements

You cannot use the NNMi Incident and Availability Report Pack unless your NNMi and HP Performance Insight (PI) servers are integrated, and the system clocks on both servers are synchronized. If your servers are not yet integrated, integrate them now. To find out how to enable integration on the NNMi server, as well as how to run the Integration Wizard on the PI server, see the *Integrating HP Network Node Manager and HP Performance Insight User Guide*.

Before installing the NNMi Incident and Availability Report Pack, make sure that:

- **On the PI server**, the following software is running:
  - HP Performance Insight 5.41
  - All available Service Packs for PI 5.41
  - Common Property Tables 3.92
- **On the NNMi server**, you have set up access to an NNMi account that is assigned to the Web Service Client User Account, as described in Creating a Web Service Client User Account on page 18.

Creating a Web Service Client User Account

Before you can access the NNMi web services, you need to set up a Web Service Client User Account on the NNMi server.

To create a Web Service Client User Account, follow these steps:

1. On the NNMi server, go to the User Account form.
2. From the workspaces navigation panel, select the **Configuration** workspace.
3. Select the **User Roles and Accounts** view.
4. Do one of the following:
   - To create a new configuration, click the **New** icon.
   - To edit an existing configuration, select a row and click the **Open** icon.
5. In the Account Mapping form, locate the Role attribute.
6. From the drop-down menu, select a role.
7. In the Account Mapping form, locate the Account attribute and click the **Lookup** icon.
8. Do one of the following:
   - To select an existing account, click the **Quick Find** icon and select an account from the list.
   - To edit the current account, click the **Open** icon and continue.
   - To create new account, click the **New** icon and continue.
9. Provide the required information.
10. Click **Save and Close** to return to the Account Mapping form.
11. In the Role form, do one of the following:
    - To save your changes and return to the User Accounts and Roles view, click **Save and Close**.
    - To add another user account, click **Save and New**.

Installing the Report Pack

To install the NNMi Incident and Availability Report Pack, perform the following tasks:

- Task 1: Extracting Packages from the Report Pack CD
- Task 2: Upgrading Common Property Tables
- Task 3: Installing the Report Pack

Extracting Packages from the Report Pack CD

To stop the OVPI Timer and extract report packs from the report pack CD, follow these steps:

1 Log on to the system.

On UNIX systems, log on as `root`.

2 Stop the OVPI Timer and wait for processes to terminate.

- *Windows*

  Select **Control Panel→Administrative Tools→Services**.

- *UNIX*

  As `root`, run the following:

  — *HP-UX*

  ```
  sh /sbin/init.d/ovpi_timer stop
  ```

  — *Solaris*

  ```
  sh /etc/init.d/ovpi_timer stop
  ```

3 Insert the report pack CD in the CD-ROM drive.

4 Do the following:

- *Windows*
  - — If auto run is *disabled*, run the **`setup.bat`** command.
  - — If outrun is *enabled*, a Main Menu appears.
- *UNIX*
  - — If the CD does not mount automatically, mount the CD manually.
  - — Run the **`setup`** command.

5 Type **1** to select PI report packs in the choice field and press **Enter**.

The install script displays a percentage complete bar. When extraction is complete, the install script starts the Package Manager. The Package Manager Welcome window opens.

In the report pack, the `Packages` directory contains the following subdirectories:

- `NNMi_Incident.ap`
- `NNMi_Incident_Demo.ap` (optional)

The demo package is available as an option. You can install the demo package either by itself or together with the report pack.

Upgrading Common Property Tables

If you are running an older version of Common Property Tables, upgrade to Common Property Tables 3.92. When the installation completes, click **Done** to return to the management console.

If you are *not* running any version of Common Property Tables, do *not* upgrade Common Property Tables. Do *not* install any other packages while upgrading Common Property Tables to the newest version.

Installing the Report Pack

To install the NNMi Incident and Availability Report Pack, follow these steps:

1. Start the Package Manager.
2. In the Package Manager Welcome window, click **Next**.

   The Package Location window opens.
3. Click **Install**.

   If necessary, approve the default installation directory or use the browse feature to select a different directory.
4. Click **Next**.
5. In the Report Deployment window, do the following
   a. Accept the default settings for Deploy Reports.
   b. Accept the defaults for the application server name and port.
6. Enter your user name and password for the PI Application Server.
7. Click **Next**.

   The Package Selection window opens.
8. Select the check box next to the following packages:
   - Common Property Tables 3.92 (if not already installed)
   - NNMi_Incident 1.2
   - NNMi_Incident_Demo 1.1

   The Package Manager displays the name of the package currently being installed:
   - `NNMi_INCIDENT`
   - `NNMi_Incident_Demo.ap` (optional)
9. Click **Next**.

   The Type Discovery window opens.
10. To run Type Discovery immediately after package installation, *unselect* Type Discovery and click **Next**.

    The Selection Summary window opens.
11. Click **Install**.

    The Installation Progress window opens and the install process begins. When the install process is complete, an installation complete message appears.
12. Click **Done**.

13 Restart the OVPI Timer.

- *Windows*

  Do the following:

  a Select **Control Panel→Administrative Tools→Services.**

  b Select OVPI Timer from the list of services.

  c From the Action menu, select **Start**.

- *UNIX*

  As root, run the following:

  — *HP-UX*

  ```
  sh /sbin/init.d/ovpi_timer start
  ```

  — *Solaris*

  ```
  sh /etc/init.d/ovpi_timer start
  ```

Viewing the Deployed Reports

When you install the report pack, as described in Installing the Report Pack on page 20, you enable the Deploy Reports option. As a result, the reports in this package (as well as any forms that come with it) are deployed to the PI Application Server.

After reports reside on the PI Application Server, you can view them in two different ways:

- PI client applications
- Web browser

If the client applications are installed on your system, you have access to Report Viewer, Report Builder, and the management console. If you do *not* have the clients, use a web browser to reach the Web Access Server.

For more information about the clients, see the *HP Performance Insight Installation and Upgrade Guide* for your database application and operating system. For details about the management console, including how to use the Object/Property Management view to launch reports related to selected object, see the *HP Performance Insight Administration Guide*.

Uninstalling the Report Pack

To uninstall the NNMi Incident and Availability Report Pack, follow these steps:

1. Log on to the system.

   On UNIX systems, log on as **`trendadm`**.

2. Stop OVPI Timer and wait for processes to terminate:

   - *Windows*

     Select **Control Panel→Administrative Tools→Services**.

   - *UNIX*

     As **`trendadm`**, run the following:

     — *HP-UX*

     ```
     sh /sbin/init.d/ovpi_timer stop
     ```

     — *Solaris*

     ```
     sh /etc/init.d/ovpi_timer stop
     ```

3. Start the Package Manager.
4. In the Package Manager Welcome window, click **Next.**

   The Package Location window opens.

5. Click **Uninstall**.
6. Click **Next.**

   The Report Undeployment window opens.

7. Do one of the following:

   - If NNMi Incident and Availability reports were deployed from this server, accept the defaults for Undeploy Reports, Application Server Name, and Port.
   - Otherwise, clear the check box and go to step 9.

8. Type your user name and password for the PI Application Server.
9. Click **Next**.

   The Package Selection window opens.

10. Select the check box next to the following packages:

    - NNMi_Incident 1.2
    - NNMi_Incident_Demo 1.1

11. Click **OK.**
12. Click **Next.**

    The Selection Summary window opens.

13. Click **Uninstall**.

    The Progress window opens and the removal process begins. When the uninstall process is complete, a package removal complete message appears.

14. Click **Done** to return to the management console.

15 Restart the OVPI Timer:

- *Windows*

  Do the following:

  a Select **Control Panel→Administrative Tools→Services**.

  b From the list of services, select **OVPI Timer**.

  c From the Action menu, select **Start**.

- *UNIX*

  As **`trendadm`**, run the following:

  — *HP-UX*

  ```
  sh /sbin/init.d/ovpi_timer start
  ```

  — *Solaris*

  ```
  sh /etc/init.d/ovpi_timer start
  ```

3 Setting Up a Distributed System

This chapter explains how to set up a distributed system with the HP Network Node Manager i-series Software (NNMi) Incident and Availability Report Pack:

- Steps to Set Up a Distributed System
- Reporting in a Distributed System
- Synchronizing System Clocks
- Installing the Report Pack
- Configuring the Central Server
- Configuring a Satellite Server

Steps to Set Up a Distributed System

This section outlines the steps you need to follow to set up a distributed system:

- Decide whether or not you want local reporting.
- Verify that the system clocks in your environment are synchronized.
- Install the correct set of packages (NNMi Report Pack packages) on each server.
- Register your satellite servers.
- If you are not copying rate data to the central server, enable LIR on the central server.
- If you enable LIR, add LIR mapping with the time type set to rate.
- Verify that you have all the copy policies you need.
- Configure the central server (manual edits to `trendtimer.sched` and `.pro` files).
- Configure each satellite server (manual edits to `trendtimer.sched` and `.pro` files).

Reporting in a Distributed System

If you want to set up a distributed system, you can implement local reporting or you can implement centralized reporting. If you want local reporting, you need to deploy reports when you install the report pack on each satellite server, and you need to allow summarizations to run on each satellite server. If you do not want local reporting, then you do not need to deploy reports when you install a report pack on a satellite server and you can disable the scripts that run summarizations on each satellite server.

Before Location Independent Reporting (LIR) was available, our recommendation to anyone setting up a distributed system was to deploy reports on satellite servers, keep rate data on satellite servers, copy hourly data to the central server, and disable summarizations above the hourly level on satellite servers. The advantage to this approach was that it kept a large volume of rate data off the network and it decreased the processing load on the central server. The disadvantage is that the central server could not display a Near Real Time (NRT) report. The only NRT report was a local NRT report, on a satellite server. LIR overcomes this disadvantage. If you enable LIR, you can open an NRT report on the central server and drill-down on table selections. The selections you make cause the central server to query a satellite server for locally aggregated data. Of course, if you would rather copy rate data to the central server, you can. If you do that, then enabling LIR is not necessary.

The NNMi Incident and Availability Report Pack and several other report packs in the February 2009 release have a new copy policy import file. When you install the NNMi Incident and Availability Report Pack, PI uses this file to generate copy policies. As a result, you do not need to use the Management Console to create copy policies yourself. Instead, your only task is to verify that the copy policies you need already exist.

Because you are likely to have multiple satellite servers, we designed the hourly process files to be satellite-server friendly. This means that most of the time, most of the defaults are correct. But some defaults will be incorrect, or less than optimal, and so to improve performance you should change them. These manual edits, as well as the other steps listed above, are spelled out in detail below.

Synchronizing System Clocks

Make sure that the system clock on each satellite server is synchronized with the system clock on the central server.

Installing the Report Pack

Install the correct set of packages (NNMi Incident and Availability Report Pack packages) on each server. For details, see Chapter 2, Installing the Report Pack.

Configuring the Central Server

To configure the central server, perform the following tasks:

- Task 1: Registering the Satellite Server
- Task 2: Optional: Enabling LIR
- Task 3: Optional: Adding LIR Mappings
- Task 4: Verifying Copy Policies
- Task 5: Editing Process Files

Registering the Satellite Server

To register a satellite server by setting the database role, follow these steps:

1. Start the management console.
2. Log on with Administrator privileges.
3. In the navigation pane, click the **Systems** icon.
4. In the PI Databases folder, select the database system.
5. Click **Database Properties**.
6. In the Database Role list, select the **Satellite Server** role.
7. Enter any information necessary to configure the Satellite Server role.

➤ To add a new database reference, you can use the Add Database Reference Wizard in the System and Network Administration application.

Optional: Enabling LIR

You enable LIR only if you do *not* want to copy rate data to the central server.

➤ If you copy rate data to the central server, you do *not* need to enable LIR. If you enable LIR, you must add LIR mappings, as described in Optional: Adding LIR Mappings on page 28.

To enable LIR, follow these steps:

1. Start the management console.
2. Log on with Administrator privileges.
3. In the navigation pane, click the **Systems** icon.
4. In the PI Databases folder, select the central server.
5. Click **LIR Configuration**.
6. Select the **LIR Enabled** check box.

Optional: Adding LIR Mappings

If you add LIR mappings, a copy policy is automatically generated for the hourly data and for each LIR mapping that you add. The data type you select (in step 10 below) when adding an LIR mapping determines the type of data copied (defined in the generated copy policy). The type of data copied is one summarization level greater than the data type selected in the LIR mapping. For example, if you select an hourly data type, you generate a daily data copy policy.

If you enable LIR, as described in Optional: Enabling LIR on page 27, you *must* add LIR mappings.

To add LIR mappings, follow these steps:

1. Start the management console.
2. Log on with Administrator privileges.
3. In the navigation pane, click the **Systems** icon.
4. In the PI Databases folder, select the central server.
5. Click **LIR Configuration**.
6. Click **Add Mapping**.
7. In the Select Satellite Server list, select a satellite server to which to add a mapping.
8. Select the **Category** data table option.
9. In the drop down list, select **NNMI_Incident**.
10. Select the **Rate** data type.
11. Click **Add to List**.

    To add a new database reference, you can use the Add Database Reference Wizard in the System and Network Administration application.
12. *Optional:* If you want to add additional LIR mappings, do the following:
    a. Click **Add to List**.
    b. Repeat step 6 through step 11.
13. Click **OK**.
14. Click **Apply**.

Verifying Copy Policies

The NNMi Incident and Availability Report Pack contains a copy policy import file. When you install the Report Pack, PI uses this file to generate copy policies automatically. As a result, you do not need to use the management console to create copy policies yourself. Instead, your only task is to verify that the copy policies you need already exist.

Verifying Automatically Generated Copy Policies

The NNMi Incident and Availability Report Pack generates copy policies automatically. After installation, you must verify that a copy policy has been generated for the appropriate tables.

To verify the automatically generated copy policy, follow these steps:

1. Start the management console.
2. Log on with Administrator privileges.
3. In the navigation pane, click the **Copy Policy** icon to start the Copy Policy Manager.
4. Make sure that the copy type is set to Property and Data for each of the following tables:
   - `SH_NNMI_INCIDENT`
   - `SH_NNMI_Avail`
   - `RVNNMI_Avail`

   A copy policy is required for `RVVNNMI_Avail` only if the `cust_id`, `make` and `node_type` variables are unique on each satellite server. If these variables are *not* unique, and a copy policy exists for this table, delete the copy policy.

Generating a Copy Policy Manually

The NNMi Incident and Availability Report Pack generates copy policies automatically. After installation, you must verify that a copy type is generated for the appropriate tables. If a copy policy has *not* been generated for a table, you must generate it manually.

To generate a copy policy for a table manually, follow these steps:

1. Do one of the following:
   - Click the **New Copy Policy** icon.
   - In the Copy Policy Manager, select **File** → **New Copy Policy**.

   The Copy Policy Wizard opens.
2. Click **Next**.

   The Satellite Server and Copy Policy Selection Page opens.
3. Select a satellite server from the drop-down list.

   Data is copied from this satellite server to the central server.
4. Select **Single Table** and select the table from the drop-down list.
5. Click **Next**.

   The Copy Type Selection Page displays.
6. Select **Property and Data**.
7. Click **Next**.

The Summary page displays.

8 Verify the information in the summary window.

If the information is *not* correct, you can modify it after clicking **Back**.

9 Click **Finish**.

10 For all missing tables., repeat step 4 through step 9.

Setting the Copy Type Manually

The NNMi Incident and Availability Report Pack generates copy policies automatically. After installation, you must verify that the copy type is set to Property and Data. If the copy type is *not* set to Property and Data, you must set it manually.

To set the Property and Data copy type, follow these steps:

1 Double-click the copy policy.

2 Select the **Property and Data** copy type.

3 Click **OK**.

Editing Process Files

In NNMi, the hourly process files are designed for multiple satellite servers. Most of the defaults are correct most of the time. However, some defaults are incorrect, or less than optimal. To improve performance, you should change these less-than-optimal defaults.

Modifying the hourly_NNMI_INCIDENT.pro File

If the central server is non-collecting, modify the `hourly_NNMI_INCIDENT.pro` file.

To modify the `hourly_NNMI_INCIDENT.pro` file, follow these steps:

1 Open the `hourly_NNMI_INCIDENT.pro` file in the following directory:

{DPIPE_HOME}`/scripts/hourly_NNMI_INCIDENT.pro`

In this path, *{DPIPE_HOME}* is the directory in which PI is installed.

2 If the server is a non-collecting central server, comment out `block0`.

Modifying the hourly_NNMI_Avail.pro File

To modify the `hourly_NNMI_Avail.pro` file, follow these steps:

1 Open the `hourly_NNMI_Avail.pro` file in the following directory:

{DPIPE_HOME}`/scripts/hourly_NNMI_Avail.pro`

In this path, *{DPIPE_HOME}* is the directory in which PI is installed.

2 In `block1`, comment out the following line:

{DPIPE_HOME}`/bin/trend_sum -f` *{DPIPE_HOME}*`/scripts/hourly_NNMI_Avail.sum`

3 *Optional:* In `block1`, comment out the following line:

{DPIPE_HOME}`/bin/trend_sum -f` *{DPIPE_HOME}*`/scripts/hourly_NNMI_Avail_allnnm.sum`

Complete this step only if you did *not* configure a copy policy for the `RVNNMI_Avail` table, as described in Modifying the hourly_NNMI_INCIDENT.pro File on page 30.

Configuring a Satellite Server

In NNMi, the hourly process files are designed for multiple satellite servers. Most of the defaults are correct most of the time. However, some defaults are incorrect, or less than optimal. To improve performance, you should change these less-than-optimal defaults.

To configure a satellite server, follow these steps:

1. Modify the `hourly_NNMI_INCIDENT.pro` file:
   a. Open the file in the following directory:

      `{DPIPE_HOME}/scripts/hourly_NNMI_INCIDENT.pro`

      In this path, *`{DPIPE_HOME}`* is the directory in which PI is installed.

   b. Make the following changes:

      — Comment out `block1_init`.

      — Uncomment `block2`, including the begin and end lines.

2. Modify the `hourly_NNMI_Avail.pro` file:
   a. Open the file in the following directory:

      `{DPIPE_HOME}``/scripts/hourly_NNMI_Avail.pro`

      In this path, *`{DPIPE_HOME}`* is the directory in which PI is installed.

   b. Make the following changes:

      — If you configured a copy policy for the `RVNNMI_Avail` table on the central server (as described in Modifying the hourly_NNMI_INCIDENT.pro File on page 30), comment out the following two lines in `block1`:

      ```
      {DPIPE_HOME}/bin/trend_sum -f {DPIPE_HOME}/scripts/
      hourly_NNMI_Avail_allnnm.sum

      {DPIPE_HOME}/bin/ovpi_run_sql -sqlscript
      {DPIPE_HOME}/scripts/{DBVENDOR}/update_SH_NNMI_Avail.sql -logfile
      {DPIPE_HOME}/tmp/update_SH_NNMI_Avail.out
      ```

      — In `block2`, uncomment the following three lines:

      ```
      begin: block2 wait

      {DPIPE_HOME}/bin/trendcopy -t SH_NNMI_Avail

      end: block2
      ```

      — If you configured a copy policy for the `RVNNMi_Avail` table on the central server (as described in Modifying the hourly_NNMI_INCIDENT.pro File on page 30), uncomment the following line in `block2`:

      ```
      {DPIPE_HOME}/bin/trendcopy -t RVNNMI_Avail
      ```

3. Make sure that each satellite server is collecting data from a disjoint set of NNMi stations.

4 Collecting Data from the NNMi Station

This chapter describes how to collect data from the HP Network Node Manager i-series Software (NNMi) station:

- Adding and Modifying Properties
- Creating, Updating, or Removing Property Data in PI Forms
- Collecting PI Data
- Synchronizing Node and Category Information
- Troubleshooting NNMi Stations

To collect incident and availability data, you need a list of NNMi stations.

Adding and Modifying Properties

Property information comes from the following sources:

- Forms bundled with the NNMi Incident and Availability Report Pack
- Common Property Tables batch-mode property import
- Common Property Tables (Device, Customer, Vendor)
- Category List Table
- NNMi List Table
- NNMi List Table “add new” and “update” forms
- Category List Table “add new” and “update” forms
- Automatic feed from the network

If you have customers associated with specific devices or specific interfaces, or if you have vendors associated with specific devices, use Common Property Tables to import this information.

You can produce a list of NNMi stations by using PI forms to add, update or remove property data. For details, see Creating, Updating, or Removing Property Data in PI Forms on page 34.

Creating, Updating, or Removing Property Data in PI Forms

You can use Performance Insight (PI) forms to create, update, or remove property data:

- Adding or Updating an NNMi Station
- Removing an NNMi Station
- Adding or Updating Category Information
- Removing an Alarm Category
- Updating the Availability Threshold

Navigating PI Forms

You can navigate all of the PI forms in the same way:

- **Launching a Form**

  To launch a form, click the **Objects** icon in the left pane of the management console window. The Object/Property Management view opens. Object Manager shows a list of objects. The type of object presented depends on which Object Manager View is open. The default view is the Device view, showing a list of devices.

- **Changing a View**

  To change the view, select **View→ Change View** and use the pop-up window to select a different view. After the type of object you are interested in updating is in view, select the particular object you want to update.

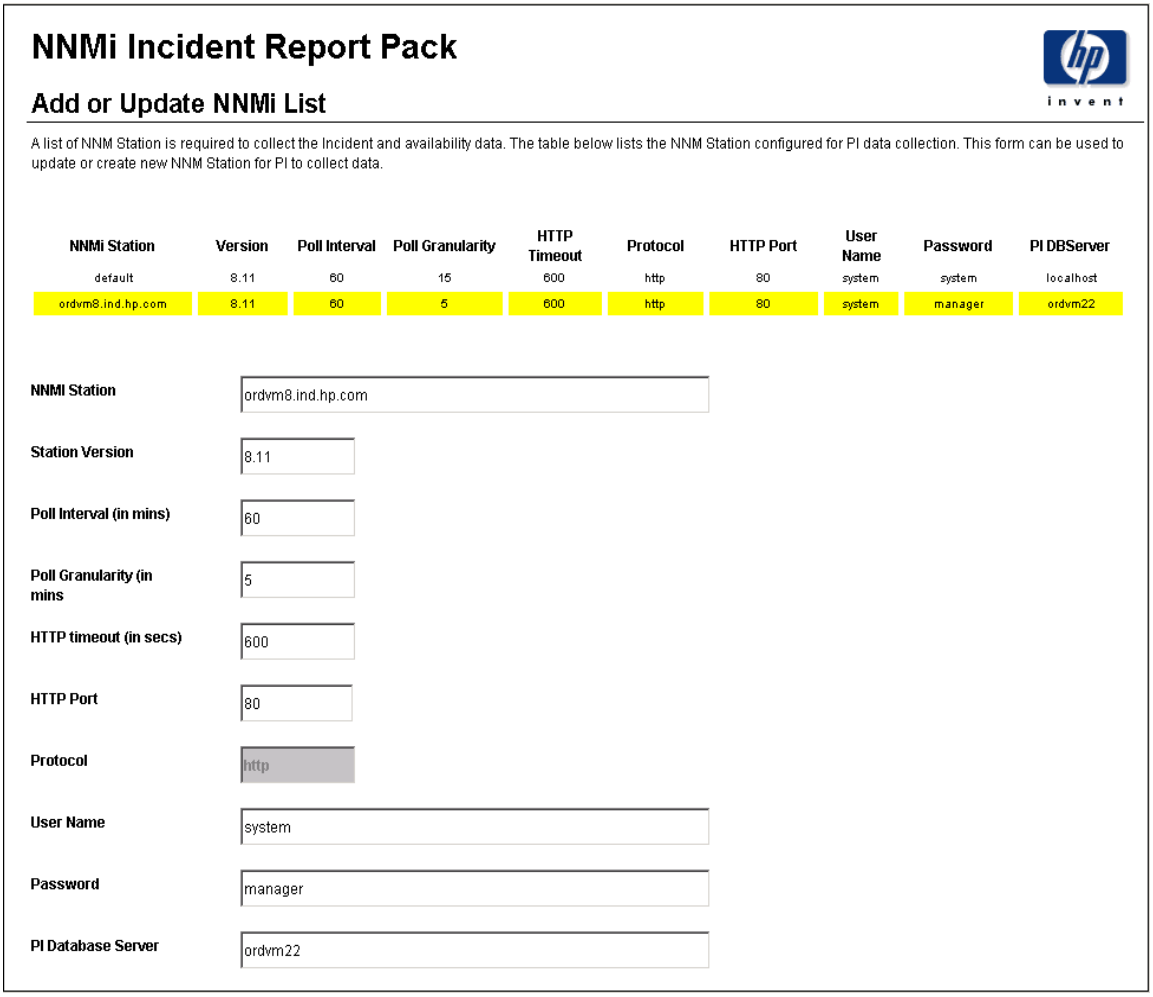
- **Closing a Form**

  When you select the object, Object Specific Tasks appears in the right pan. Double-click and open the form. Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

Adding or Updating an NNMi Station

To add a new NNMi station, or modify an existing NNMi station, you use the Add or Update NNMi List form, shown in Figure 1.

Figure 1 Add or Update NNMi List Form



Use this form to do the following:

- Add a new NNMi station.
- Modify the following details for an existing NNMi station:
  - NNMi Station
  - Station Version
  - Polling Interval (in minutes)
  - Polling Granularity (in minutes)
  - HTTP time-out (in seconds)
  - HTTP Port
  - Protocol
  - User Name (NNMi User)
  - Password (NNMi User Password)
  - PI Database Server (<*Name*> tag from `Systems.xml` file for this database block)

Adding a New NNMi Station

To add a new NNMi station, follow these steps:

1. Launch the management console.
2. Click the **Objects** icon.

   The Add or Update NNMi List form appears under General Tasks, as shown in Figure 1 on page 35.
3. Select any row.
4. In the NNMi Station field, enter the name of the NNMi station.
5. Change other values, as required.
6. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Currently, SSL is not supported. As a result, you cannot change the protocol from HTTP to HTTPS.

Updating an Existing NNMi Station

To update an existing NNMi station, follow these steps:

1. Launch the management console.
2. Click the **Objects** icon.

   The Add or Update NNMi List form appears under General Tasks, as shown in Figure 1 on page 35.
3. Select the NNMi station you want to update, and then double-click the **Add or Update NNMi List** form.
4. Highlight the row that contains the data you want to change.
5. If required, change the Polling Granularity, and then change the following entry in the `$DPIPE_HOME/trendtimer.sched` file:

   ```
   01:00 - - {DPIPE_HOME}/bin/trend_proc -f {DPIPE_HOME}/scripts/
   NNMI_INCIDENT.pro
   ```

   For example, if the Polling Interval is 180 minutes, you would change the entry as follows:

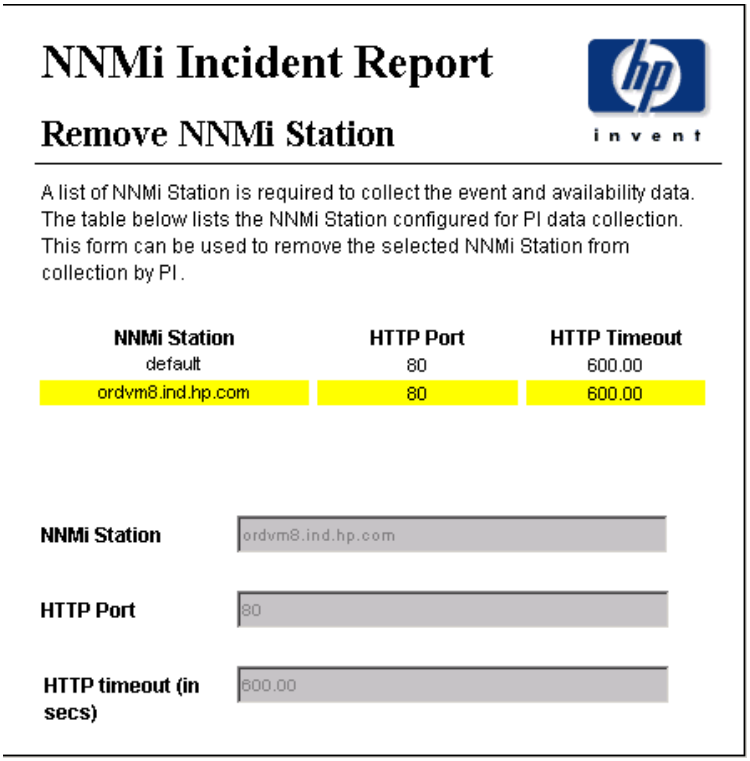
   ```
   03:00- - {DPIPE_HOME}/bin/trend_proc -f {DPIPE_HOME}/scripts/
   NNMI_INCIDENT.pro
   ```

   Polling Granularity is the result of duration units divided by Polling Interval. For a given Polling Interval, data collected from incidents can be aggregated over smaller units of duration (called Polling Granularity). For example, if the Polling Interval is 60 minutes, the Polling Granularity can have values such as 15, 30, and 60 minutes.
6. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Removing an NNMi Station

You can use the Remove NNMi Station form to remove a single NNMi station, as shown in Figure 2.

Figure 2 NNMi Remove NNMi Station Form



To remove a single NNMi station, follow these steps:

1. Launch the management console.
2. Open the Object/Property Management view.

   Select **View→Change View.**

   A pop-up window lists the existing NNMi stations
3. Select the NNMi view you want to remove.
4. Select the NNMi station you want to remove.
5. Under Object Specific Tasks, double-click the **Remove NNMi Station** form.

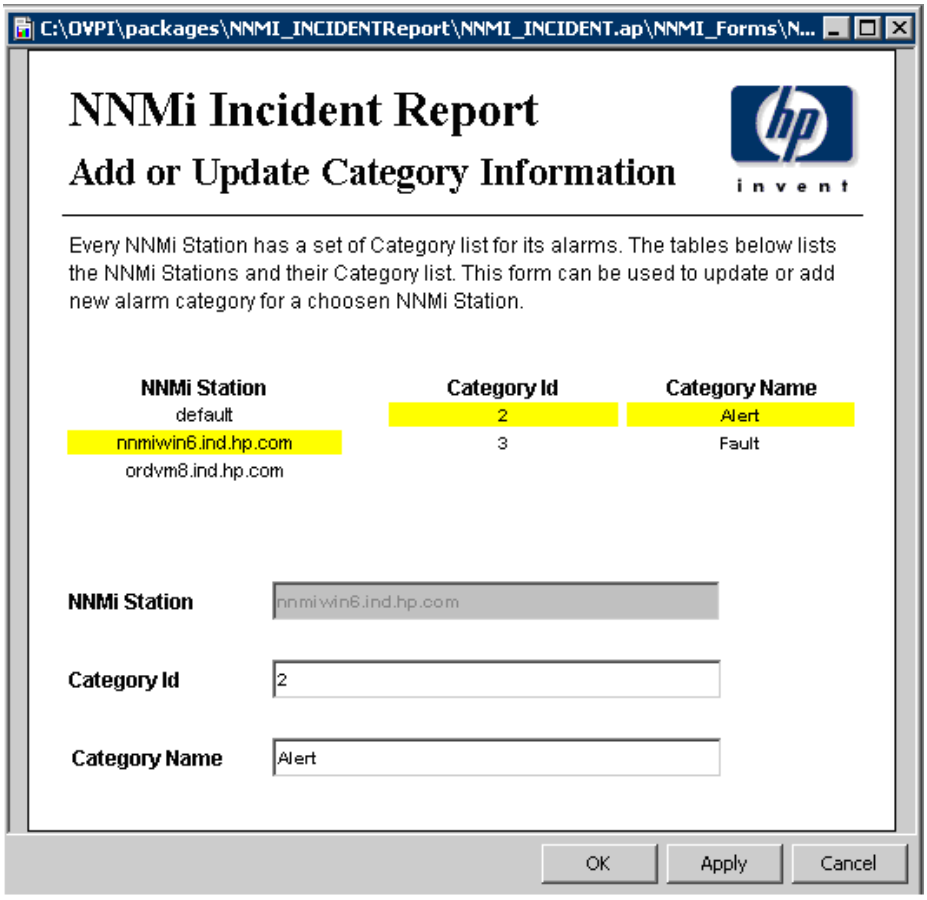
   The form opens, showing NNMi stations configured for PI data collection.
6. Highlight the row that contains the NNMi station that you want to remove, as shown in Figure 2 on page 37.

   After you remove an NNMi station, the NNMi station stops collecting data. Existing data is still available.
7. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Adding or Updating Category Information

You can use the Add or Update Category Information form to add or update alarm categories for an NNMi station, as shown in Figure 3.

Figure 3 Add or Update Category Information



Adding an Alarm Category for a New NNMi Station

To add an alarm category for a new NNMi station, follow these steps:

1. Launch the management console.
2. Click the **Objects** icon.

   The Add or Update Category Information form appears under General Tasks, as shown in Figure 3 on page 38.
3. Select any row.
4. Enter the new Category Id and Category Name.
5. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Updating the Alarm Category for an Existing NNMi Station

To update the alarm category for an existing NNMi station, follow these steps:

1. Launch the management console.
2. Click **Objects.**

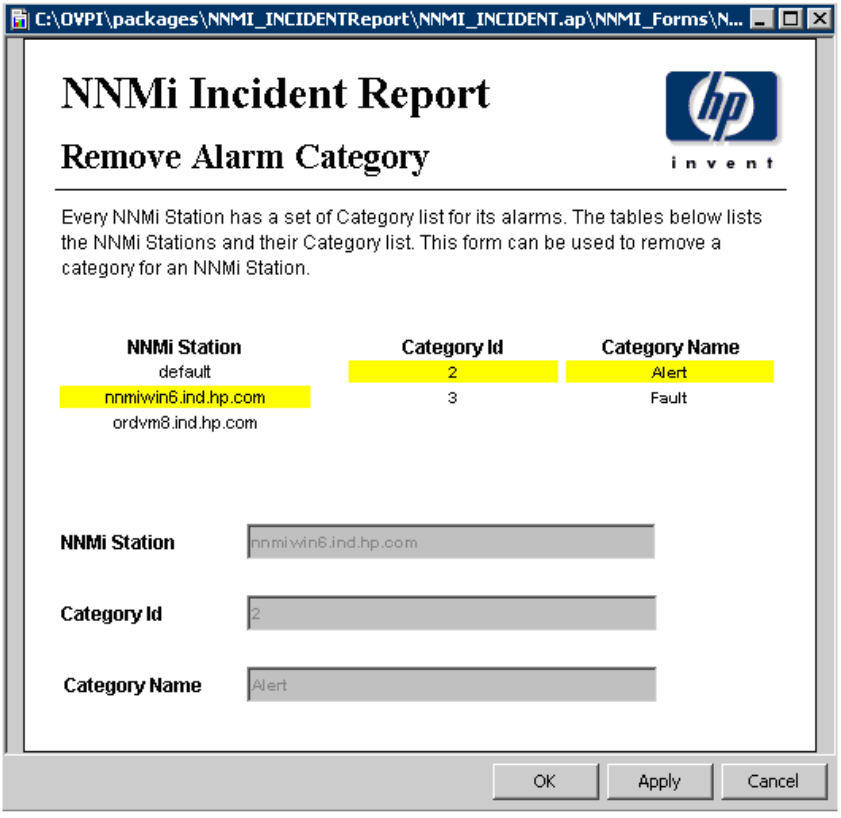
   The Add or Update Category Information form is listed under General Tasks.
3. Double-click the form.
4. Double-click the NNMi station you want to update.

   The form opens, showing category information.
5. Highlight the row that contains the data you want to change, as shown in Figure 3 on page 38.
6. Make the changes.
7. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Removing an Alarm Category

You can use the Remove Alarm Category form to remove a category for an NNMi station, as shown in Figure 4.

Figure 4 Remove Alarm Category Form



To remove a category for an NNMi station, follow these steps:

1. Launch the management console.
2. Open the Object/Property Management view.

   Select **View→Change View.**

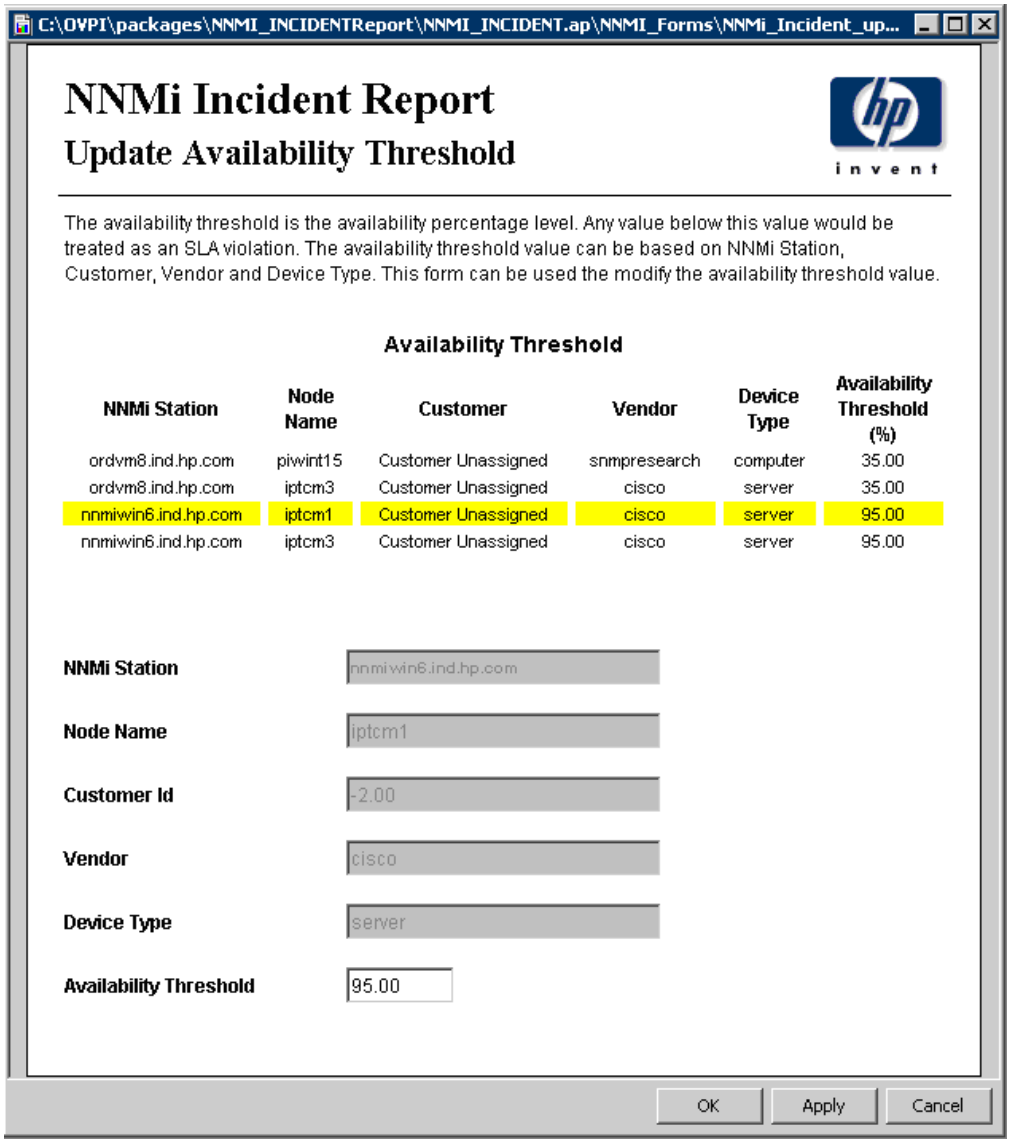
   A pop-up window lists the existing NNMi stations
3. Select the NNMi station you want to remove, as shown in Figure 4 on page 39.
4. Under Object Specific Tasks, double-click the **Remove Alarm Category** form.

   The form opens, showing NNMi stations, Category Id, and Category Name.
5. Highlight the row you want to remove.
6. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Updating the Availability Threshold

The availability threshold (percentage of availability) values are based on NNMi station, Node Name, Customer Id, Vendor, and Device type. The threshold is the line between normal and abnormal performance. When this line is crossed, an exception is recorded. Thresholds are set to default values that are easily changed to reflect individual needs. You can use the Update Availability Threshold form to change the threshold value, as shown in Figure 5.

Figure 5 Update Availability Threshold Form



To change the availability threshold value, follow these steps:

1. Launch the management console (by using `piadmin`).
2. Click **Objects.**
3. Under General Tasks, double-click the **Update Availability Threshold** form.

   The forms opens, listing the NNMi stations and an availability threshold for each station, as shown in Figure 5 on page 41.
4. Highlight the row that contains the availability threshold you want to change.
5. Make the changes.
6. Do one of the following:
   - Click **Apply** to save changes.
   - Click **OK** to save changes and close the form.
   - Click **Cancel** to close the form without saving changes.

Collecting PI Data

After the NNMi stations list is provisioned, the system is ready for collection.

During the first collection, the data collection tool does the following automatically:

1. Gets the nodes from NNMi with Device Type, Vendor, and Category information.
2. Gets data for the last two days from the NNMi station or as available in NNMi, whichever is faster.
3. Puts the Device Type, Vendor, and Category information list into HP Performance Insight (PI).

By default, the PI server collects data hourly, with 15 minute granularity.

Synchronizing Node and Category Information

To synchronize the node information from all NNMi stations, use the `get_nnmi_aggincident.pl` tool.

To update the NNMi Incident and Availability Report Pack with current node information from NNMi, use the following script:

```
$DPIPE_HOME/bin/perl $DPIPE_HOME/scripts/get_nnmi_aggincident.pl -i
```

Category and severity information are synchronized automatically. You *cannot* synchronize this information manually.

Troubleshooting NNMi Stations

To troubleshoot problems related to the datapipe for NNMi stations, check the following log files, in sequence:

1. On PI, check the collection details for all NNMi stations in the following log file:

   `$DPIPE_HOME/log/trend.log`

   Check for entries with `get_nnmi_aggincident.pl`, the module that collects incident data from NNMi stations.
2. On NNMi, check the collection details and failures, if any, in the following datapipe-specific log file:

   `$DPIPE_HOME/log/NNM8i_Datapipe.log`

5 Sample Reports

This chapter provides samples of the following HP Network Node Manager i-series Software (NNMi) Incident and Availability Report Pack reports:

- Sample 1: Detailed Availability Report on Station Level
- Sample 2: Detailed Availability Report on Node Level
- Sample 3: Availability Forecast by Customer
- Sample 4: Availability: SLA Report
- Sample 5: Executive Summary by Vendor
- Sample 6: Incident Summary by NNMi Station
- Sample 7: Forecast by Severity
- Sample 8: Hot Spots: Top 20 by Device
- Sample 9: NNMi Incidents by Category and Device
- Sample 10: NNMi Incidents by Severity and Device
- Sample 11: Executive Summary by Severity

Calculating Availability

The incidents coming from NNMi station are collected and stored in Performance Insight for further calculation and reporting. By default the polling interval is one hour, and the polling granularity is 15 minutes.

Note that only those managed nodes that had an NNMi incident are considered by Performance Insight for calculations. Only such nodes appear on the Availability reports. If a node did not have an incident, it will not appear on the Availability reports. The nodes that are not shown on the reports are interpreted by Performance Insight as 100 percent available over the specified time interval.

Availability Metrics

Following are the description and calculation of the metrics displayed on the PI reports:

- **Mean Time between Failures (MTBF)** - This term denotes the mean time in seconds for which the device was up and running before it went down again.
- **Mean Time to Repair (MTTR)** - This term denotes the mean time to repair or bring up the device. This metric is also termed as downtime.
- **Availability %** - This term denotes the percentage of time the device was available or up and running during the specified time period. The Availability % metric is calculated as follows:

Availability % = ((Total Time - Downtime) / Total Time) * 100

- **Downtime** - This term denotes the time in seconds when the device was down. Downtime is the same as MTTR.
- **Total Outage** - This term denotes the number of times a device went down in the specified time duration.

Example

The sample row in the following partial snapshot of a report shows the following metrics for the selected NNMi station:

- Total number of outages = 1
- MTTR or Downtime metric value = 1524 seconds.
- Since the polling interval is by default one hour or 86400 seconds, consider

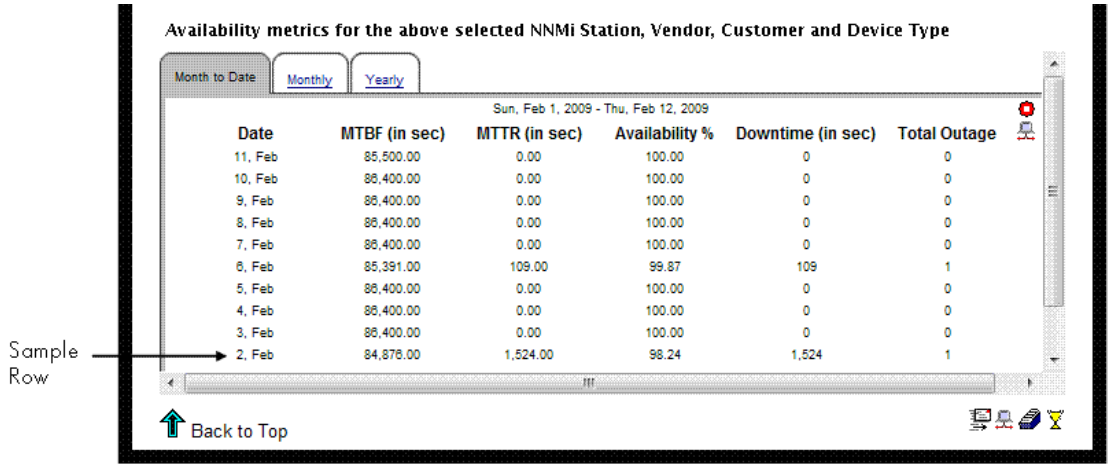
  Total Time = 86400 seconds.

Therefore, the Availability % is calculated as:

- Availability % = ((Total Time - Downtime) / Total Time) * 100

  = ((86400-1524)/86400) * 100

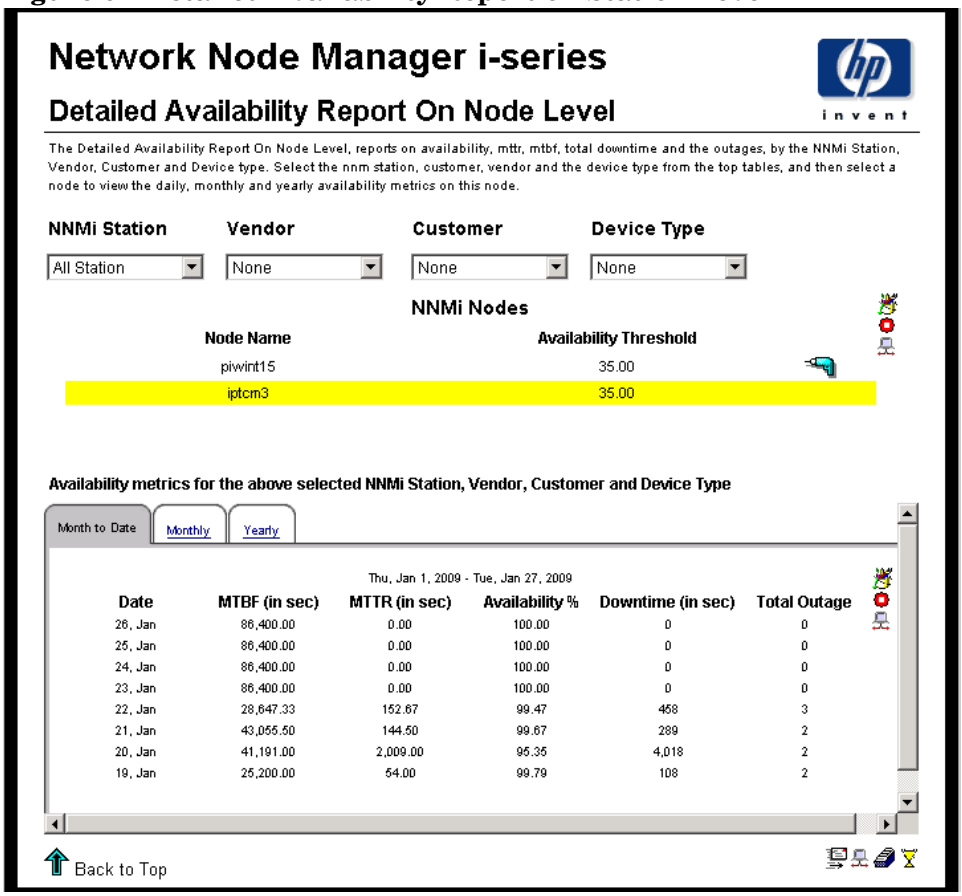
  = 98.24 percent.



Sample 1: Detailed Availability Report on Station Level

The Detailed Availability Report on Station Level provides daily, monthly, and yearly availability information for a selected customer and type of device, on a per-vendor basis, as shown in Figure 6. The report does *not* show availability across multiple NNMi stations. It aggregates data at the NNMi station level.

Figure 6 Detailed Availability Report on Station Level



You select the NNMi station, and then select a vendor, customer, and device type.

The table below the selection fields provides statistics for the following:

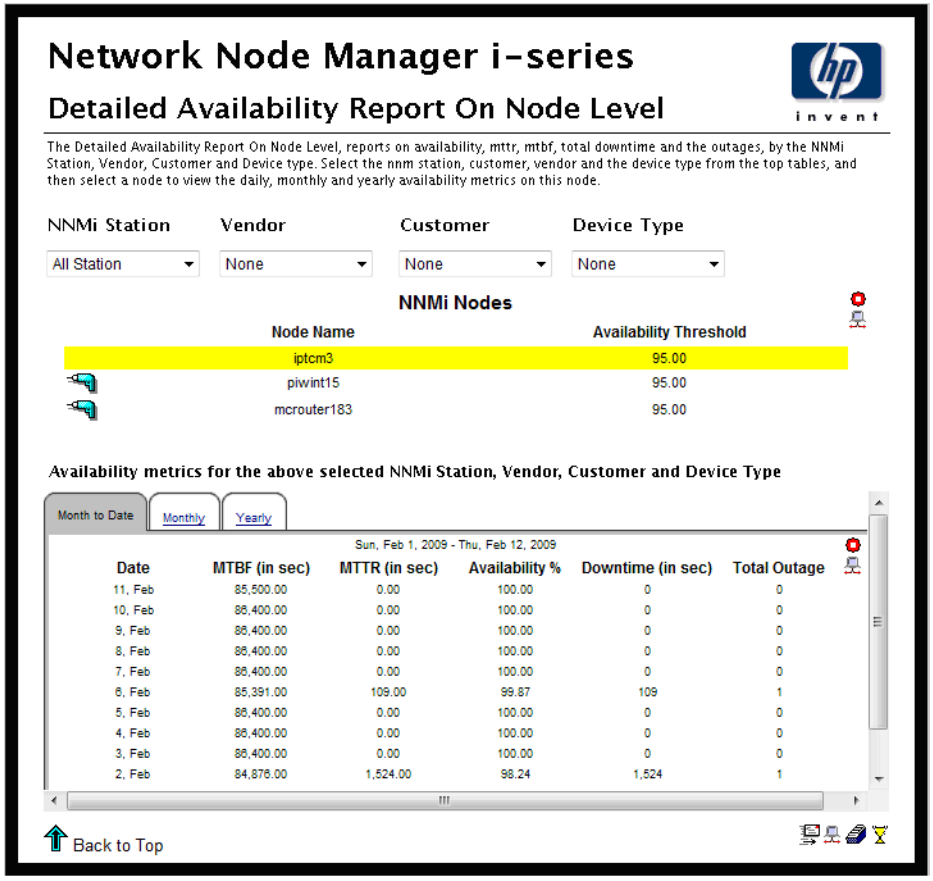
- Availability
- MTTR
- Total downtime
- MTBF
- Outage count

You can use the report to check whether the availability for a particular device type managed by a particular NNMi station is improving or worsening

Sample 2: Detailed Availability Report on Node Level

The Detailed Availability Report on Node Level provides daily, monthly, and yearly availability information for a selected customer and type of device, on a per-vendor basis, as shown in Figure 7. The report does *not* show availability across multiple NNMi stations. It aggregates data at the NNMi node level.

Figure 7 Detailed Availability Report on Node Level



You select the NNMi node, and then select a vendor, customer, and device type.

The table below the selection fields provides statistics for the following:

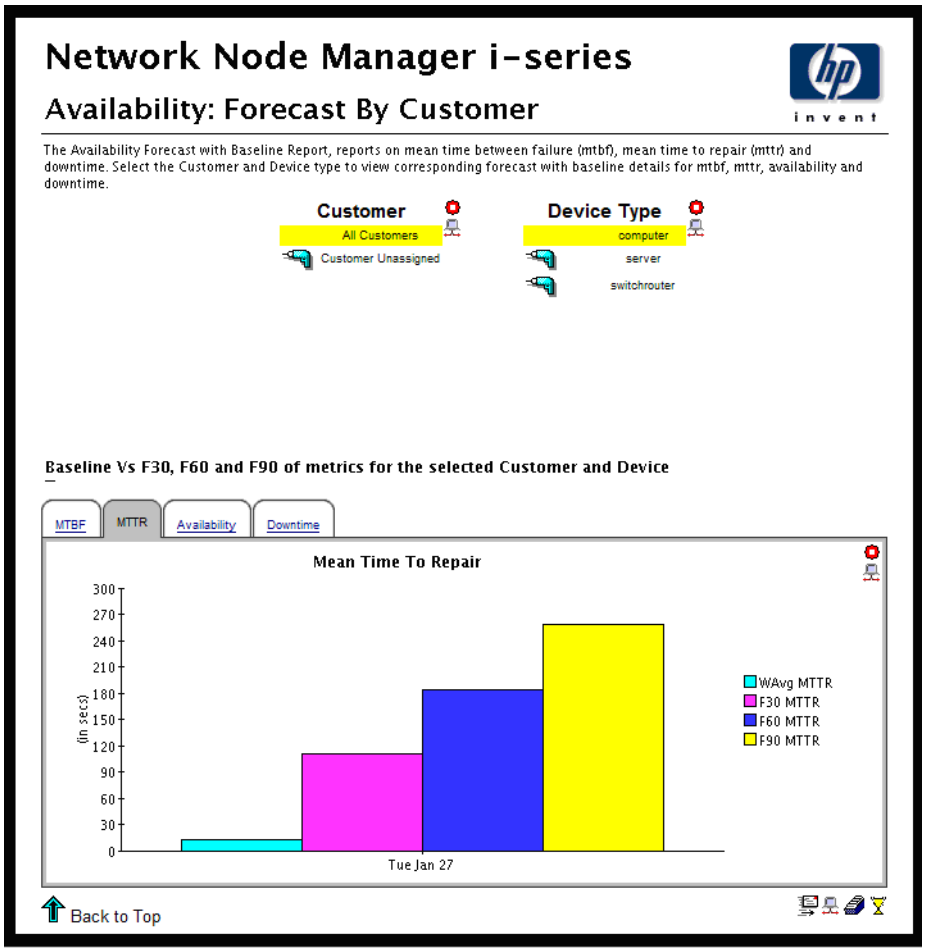
- Availability
- MTTR
- Total downtime
- MTBF
- Outage count

You can use the report to check whether the availability for a particular device type managed by a particular NNMi node is improving or worsening.

Sample 3: Availability Forecast by Customer

If multiple NNMi stations are in use, the Availability Forecast by Customer report aggregates data from all of them, and rolls the data up to the customer level, as shown in Figure 8. After you select a customer, you can either select all device types or a particular device type.

Figure 8 Availability Forecast by Customer Report



The bar graph provides baseline, F30, F60, and F90 values for the following:

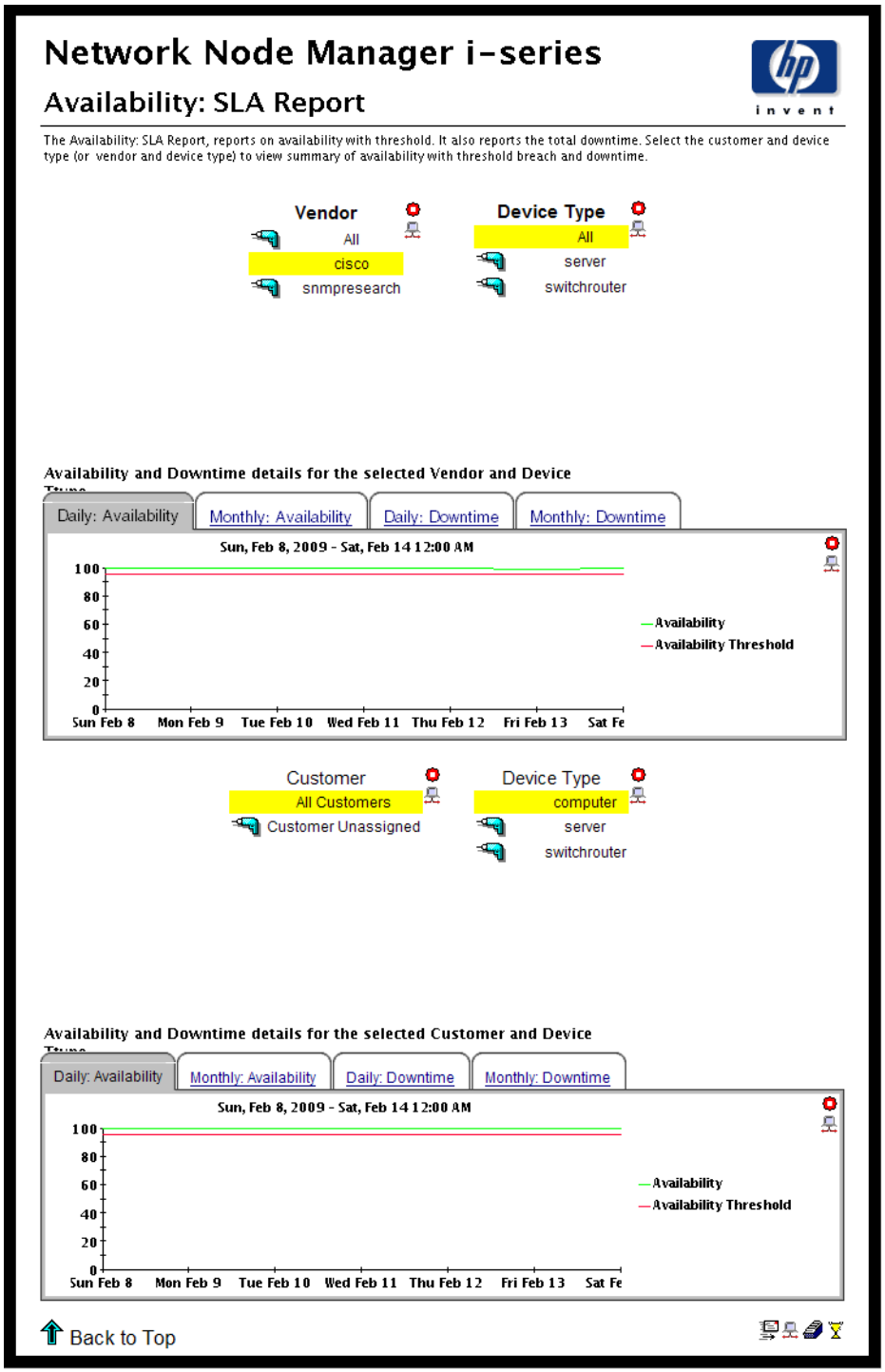
- MTBF
- MTTR
- Availability
- Downtime

You can use the report to check whether the customer you selected is expected to see improved availability metrics or degraded availability metrics.

Sample 4: Availability: SLA Report

The Availability: SLA Report aggregates data for multiple NNMi stations, as shown in Figure 9.

Figure 9 Availability: SLA Report



The report answers four questions:

- On average, is a particular vendor operating above or below the threshold for availability?
- Is a particular device type from one vendor operating above or below the threshold?
- On average, are the devices owned by a customer operating above or below the threshold?
- Is a device type owned by a particular customer operating above or below the threshold?

The report looks at downtime details as well as availability details.

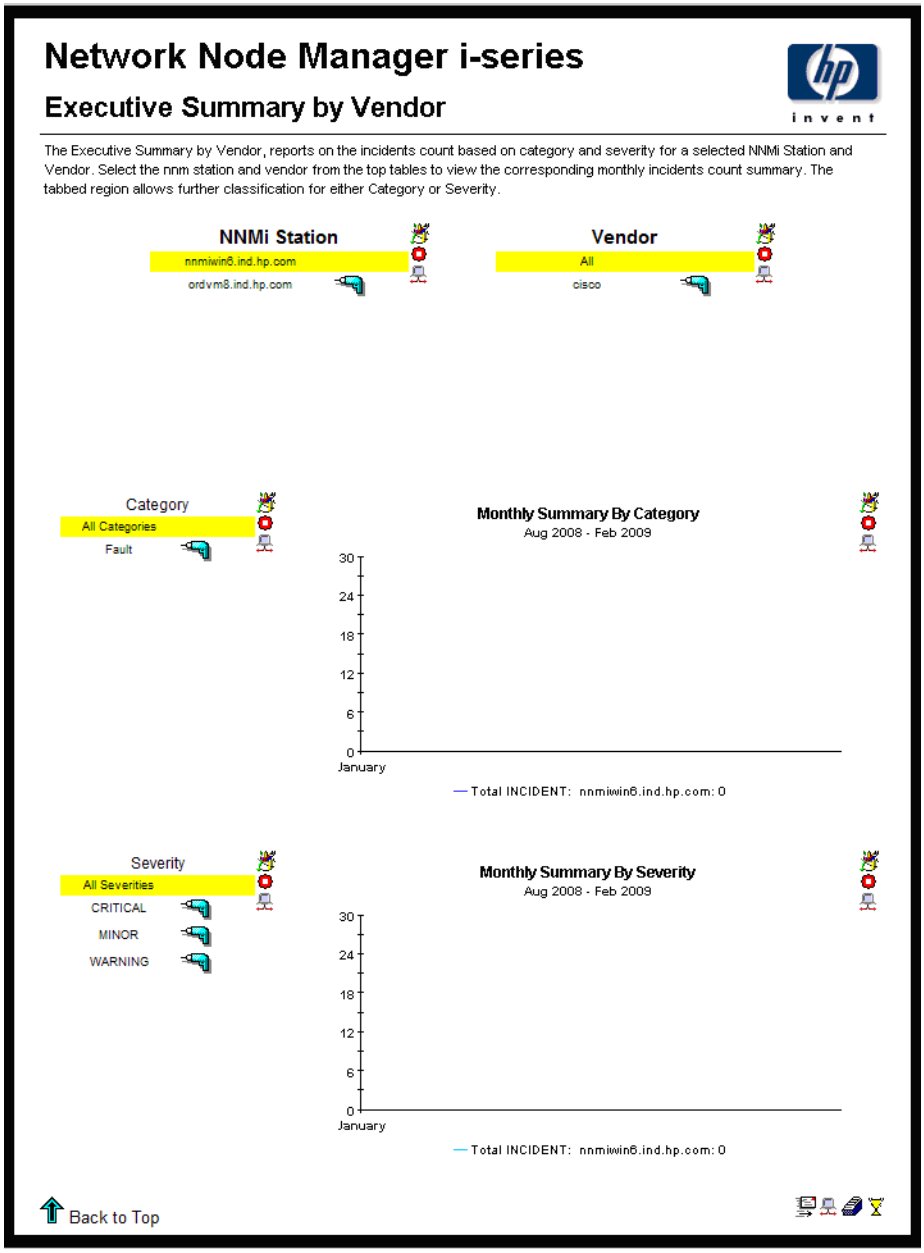
You can compare the following:

- Actual availability to the SLA value (the threshold for availability)
- Actual downtime to the SLA value (the threshold for downtime)

Sample 5: Executive Summary by Vendor

The Executive Summary by Vendor report aggregates alarm category and alarm severity data at the vendor level, on a station-by-station basis, as shown in Figure 10.

Figure 10 Executive Summary by Vendor Report



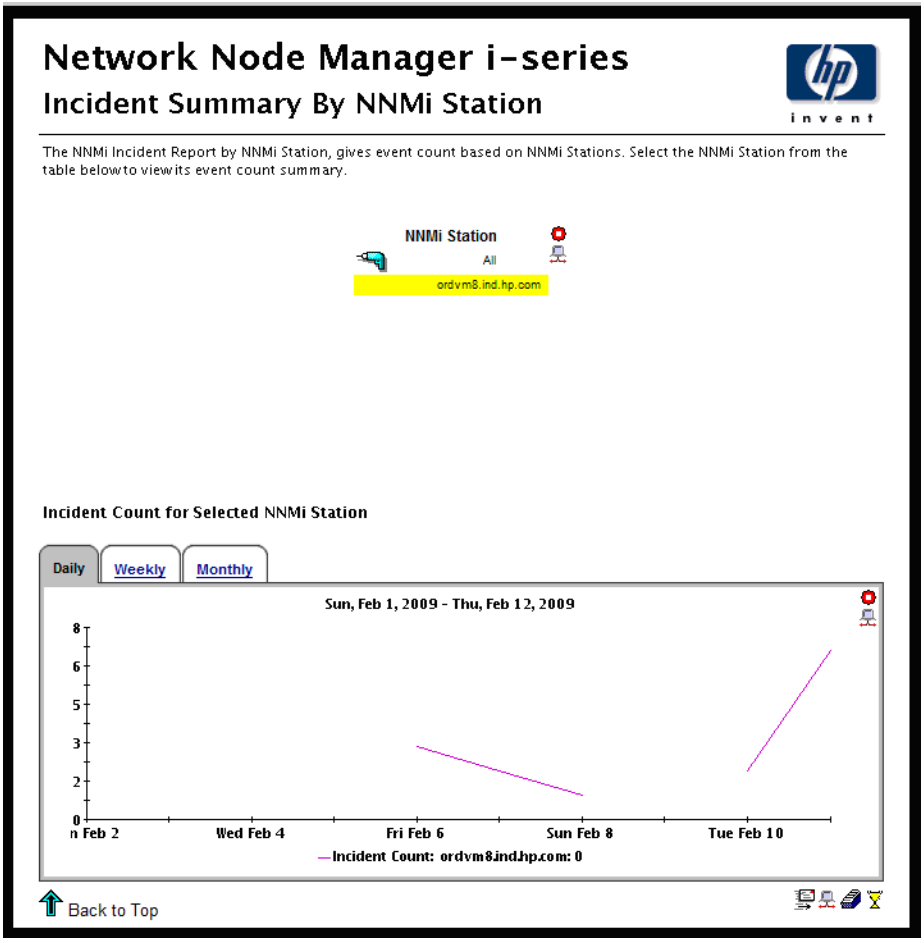
You can use this report to determine the following:

- Distribution of alarms across alarm categories
- Whether the number of alarms per category is increasing or decreasing
- Distribution of severity levels
- Whether the number of alarms per severity level is increasing or decreasing

Sample 6: Incident Summary by NNMi Station

The Incident Summary by NNMi Station report aggregates the total number of incidents on a station-by-station basis, as shown in Figure 11.

Figure 11 Incident Summary by NNMi Station Report



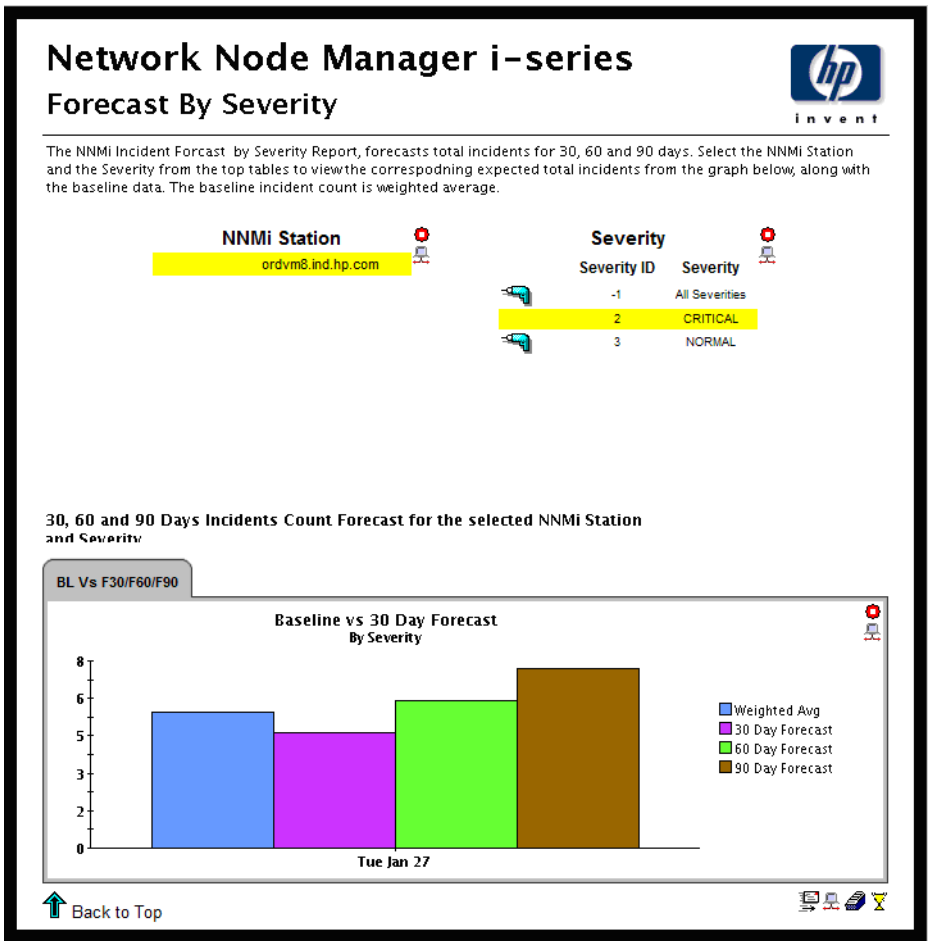
You can use the report to determine the following:

- Total for each NNMi station
- Whether the total is increasing or decreasing

Sample 7: Forecast by Severity

The Forecast by Severity report produces an alarm severity forecast, as shown in Figure 12. The report aggregates severity data across all devices on a station-by-station basis, calculates a baseline value for each severity level, and enables you to compare the baseline value to F30, F60, and F90.

Figure 12 Forecast by Severity Report



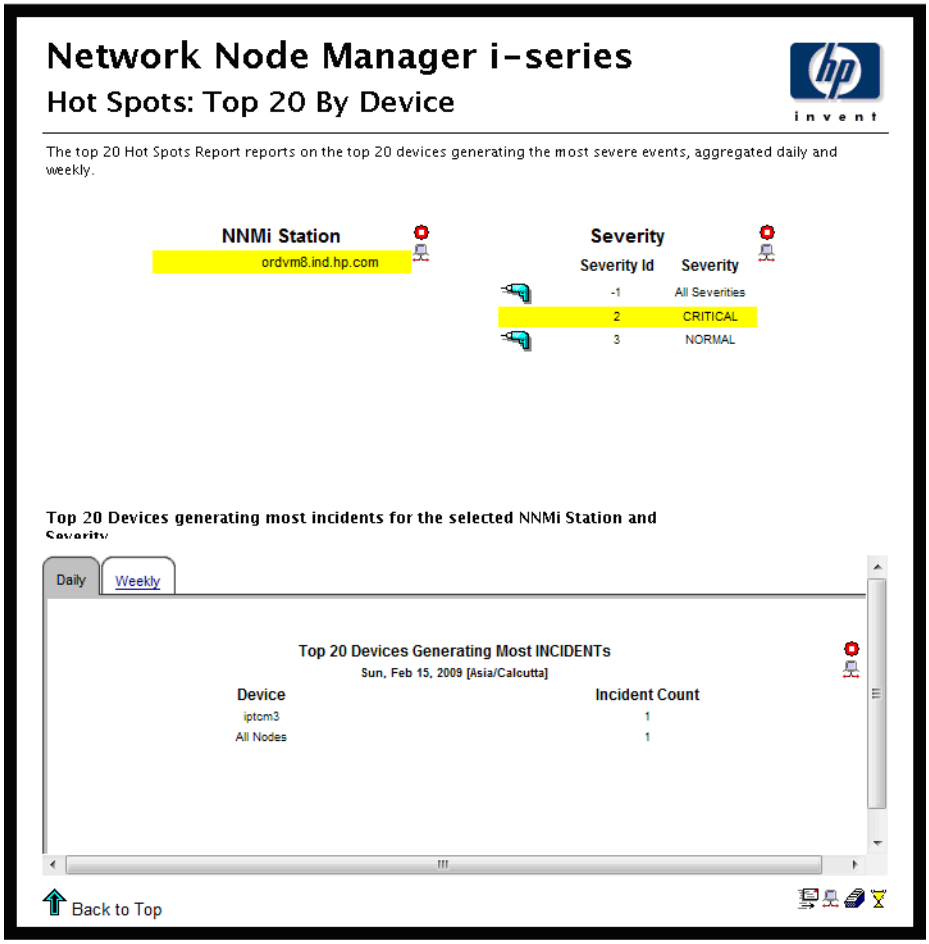
You can use the report to determine the following:

- Which severity level was most prevalent over the baseline period
- How each severity level is expected to behave in the future

Sample 8: Hot Spots: Top 20 by Device

The Hot Spots: Top 20 by Device report aggregates incidents for each device on a station-by-station basis, as shown in Figure 13. You can use the report to determine which devices are responsible for the most incidents. You select a station, and then select a severity level. The graph below the report produces a list of devices, ranked by the number of incidents, from highest to lowest. The graph enables you to see incident statistics for the 20 devices responsible for the majority of incidents.

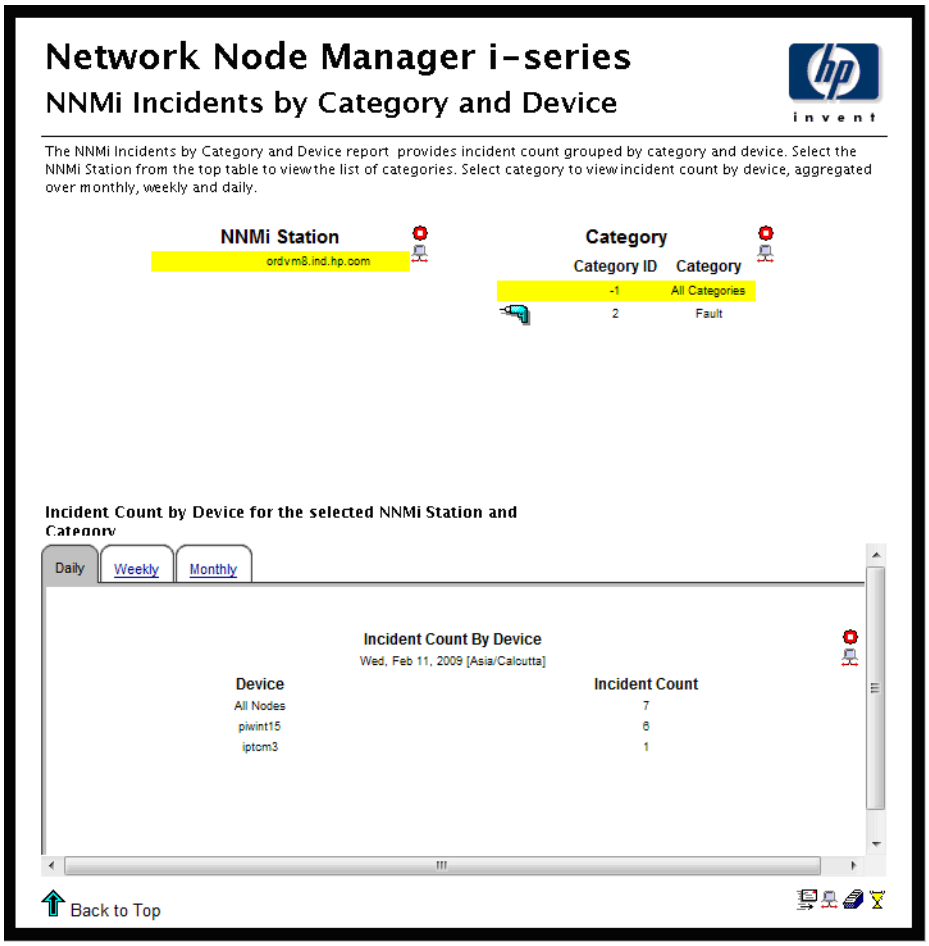
Figure 13 Hot Spots: Top 20 by Device Report



Sample 9: NNMi Incidents by Category and Device

The NNMi Incidents by Category and Device report aggregates incident category statistics on a station-by-station basis, as shown in Figure 14. You can use the report to drill down from an incident category to a list of the devices responsible for the alarms in that category. The devices are ranked by the number of incidents in that alarm category, from highest to lowest. You can use the report to determine which devices are responsible for the majority of incidents in each alarm category.

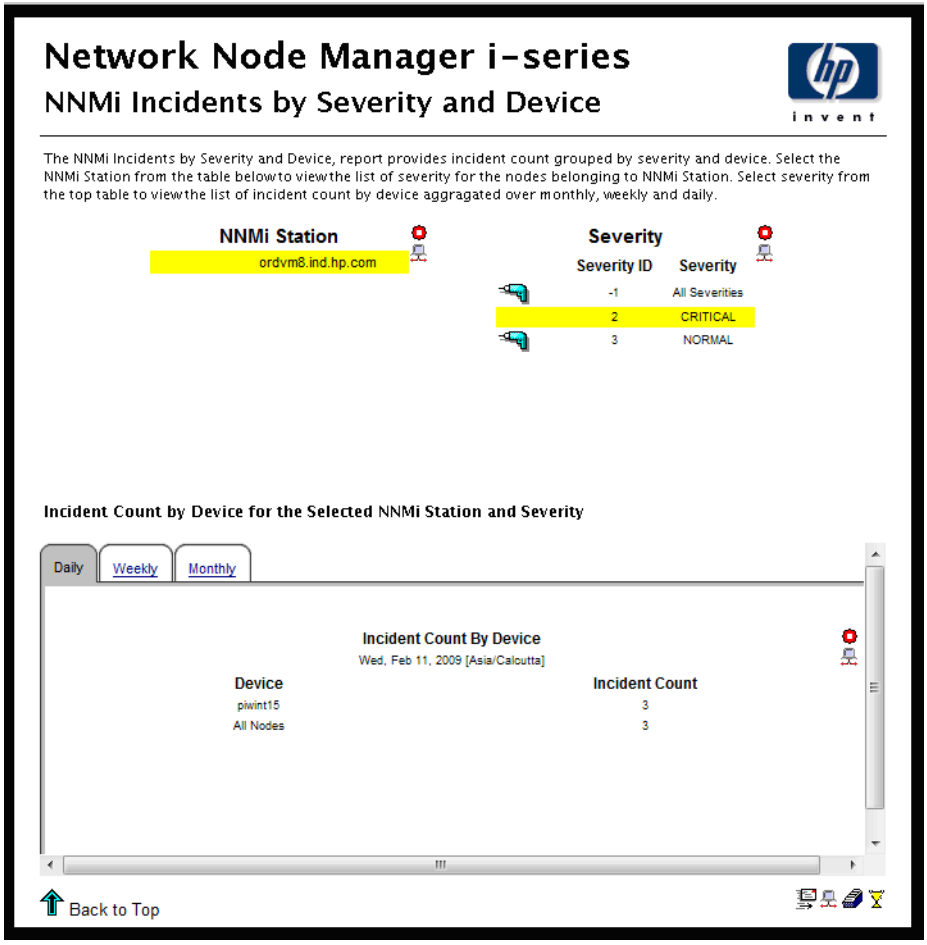
Figure 14 Incidents by Category and Device Report



Sample 10: NNMi Incidents by Severity and Device

The NNMi Incidents by Severity and Device report aggregates severity level statistics on a station-by-station basis, as shown in Figure 15. You can use the report to drill down from a severity level to a list of the devices responsible for the alarms in that level. The devices are ranked by number of incidents in that severity level, from highest to lowest. You can use the report to determine which devices are responsible for the majority of incidents in each severity level.

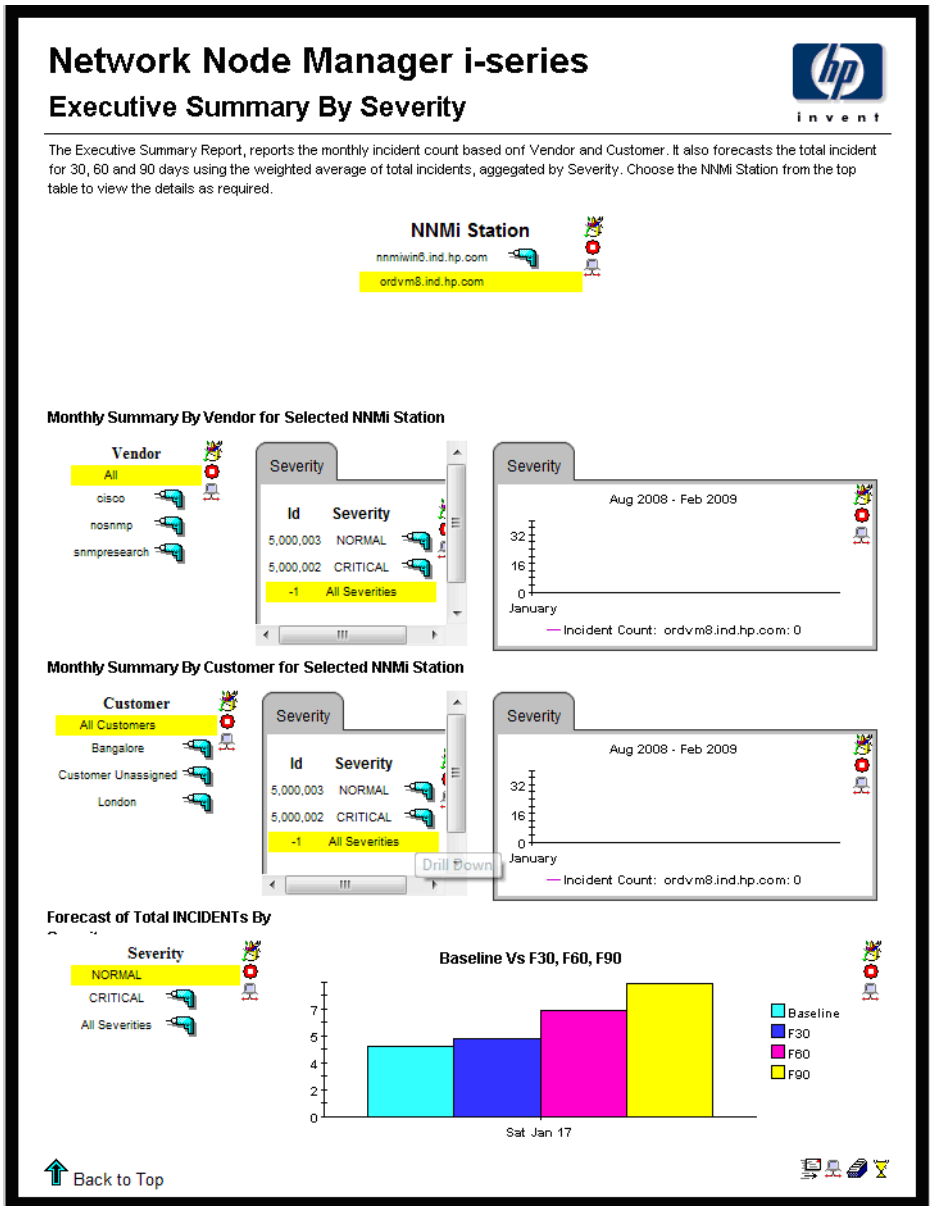
Figure 15 NNMi Incidents by Severity and Device Report



Sample 11: Executive Summary by Severity

The Executive Summary by Severity report compiles data about the number of incidents per severity level, as shown in Figure 16. The results are available on a vendor-by-vendor basis and on a customer-by-customer basis. After selecting the NNMi station, select a vendor and a severity level. The graph to the right shows the trend line for the number of incidents for this particular device and this particular severity level. You can also select a customer and a severity level. The graph to the right shows the trend line for the number of incidents for this particular customer and this particular severity level. You can use the report to determine whether the incident count for a severity level is increasing or decreasing.

Figure 16 Executive Summary by Severity Report



A Changing How You View Tables and Graphs

This appendix describes the how to change the view options for tables and graphs in HP Network Node Manager i-series Software (NNMi).

Changing View Options

You can view any table or graph in several ways. Although the default view is usually adequate, you can easily change to a different view.

Changing View Options in Report Viewer

If you are using Report Viewer, right-click the object to open a list of view options.

Changing View Options in Web Access Server

To change the default view of a table or graph using the Web Access Server, follow these steps:

1. In the links bar, click **Preferences**.
2. In the navigation frame, expand **Reports**.
3. Click **Viewing**.
4. Select the **Allow Element Editing** box.
5. Click **Apply**.
6. Click the **Edit** icon next to the table or graph.

View Options for Tables

NNMi provides a wide variety of options that enable you to modify the way you view tables.

Opening a List of Table View Options

To open a pop-up menu of table view options, do one of the following:

- *Report Viewer*

  Right-click a table.

- *Web Access Server*

  Select the **Edit Table** icon.

The table view options menu is shown in Figure 17.

Figure 17 Table View Options Menu

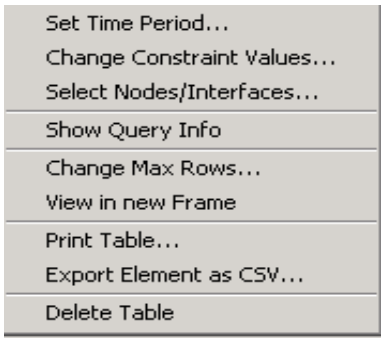


Table View Options

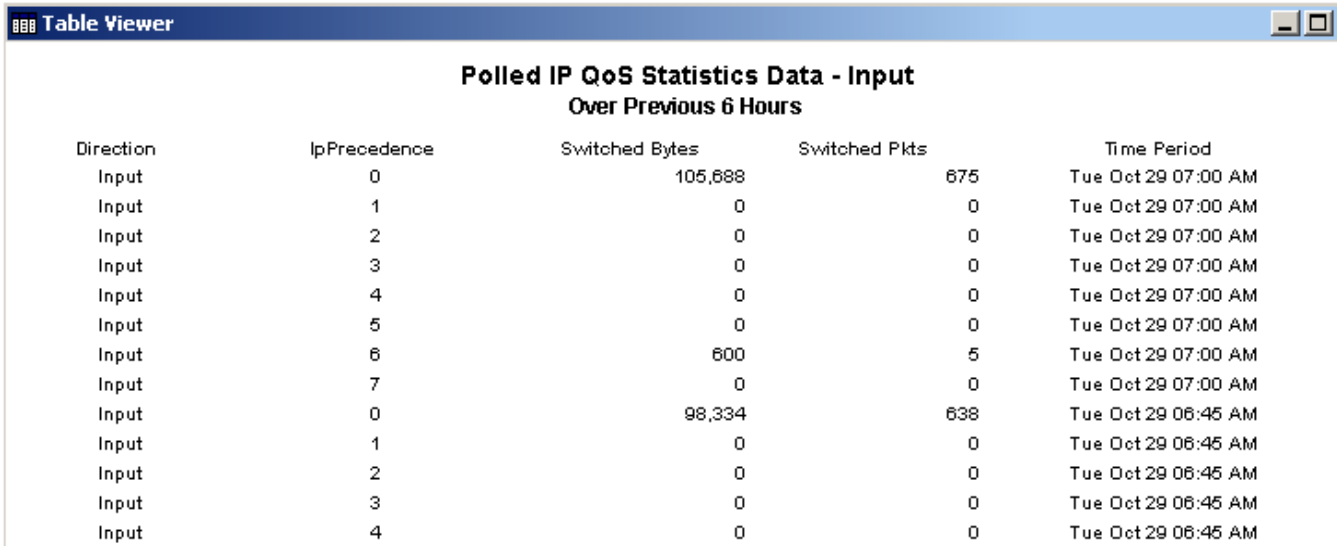
You can change a wide variety of table view options, as described in Table 1.

Table 1 Table View Options

Option	Function
Set Time Period	Alters the relative time period (relative to now) or set an absolute time period.
Use Absolute Time	Shortens the period of time covered by the table from (for example, from 42 days to 30 or 7 days). If you are interested in a specific period of time that starts in the past and stops *before* yesterday, select a **Start Time** and an **End Time**.
Change Constraint Values	Loosens or tightens a constraint, thereby raising or lowering the number of elements that conform to the constraint. To loosen a constraint, set the value lower. To tighten a constraint, set the value higher.
Select Nodes/Interfaces	Enables you to change the scope of the table by limiting the table to specific nodes, specific interfaces, or a specific group of nodes or interfaces.
Show Query Info	This option shows the database queries that have been executed to obtain the records. It helps to debug the reports.
Change Max Rows	Increases or decreases the number of rows in a table. The default is 50. If you expand the default, the table may take more time to open. If you are trending a large network, using the default ensures that the table opens as quickly as possible.
View in New Frame	Opens the table in a Table Viewer window, as shown in Figure 18. If required, make the data in the table more legible by resizing the window

Figure 18 show the Table Viewer window opened by the View in New Frame option.

Figure 18 Table Viewer Window



View Options for Graphs

NNMi provides a wide variety of options that enable you to modify the way you view graphs.

Opening a List of Graph View Options

To open a pop-up list of graph view options, do one of the following:

- *Report Viewer*

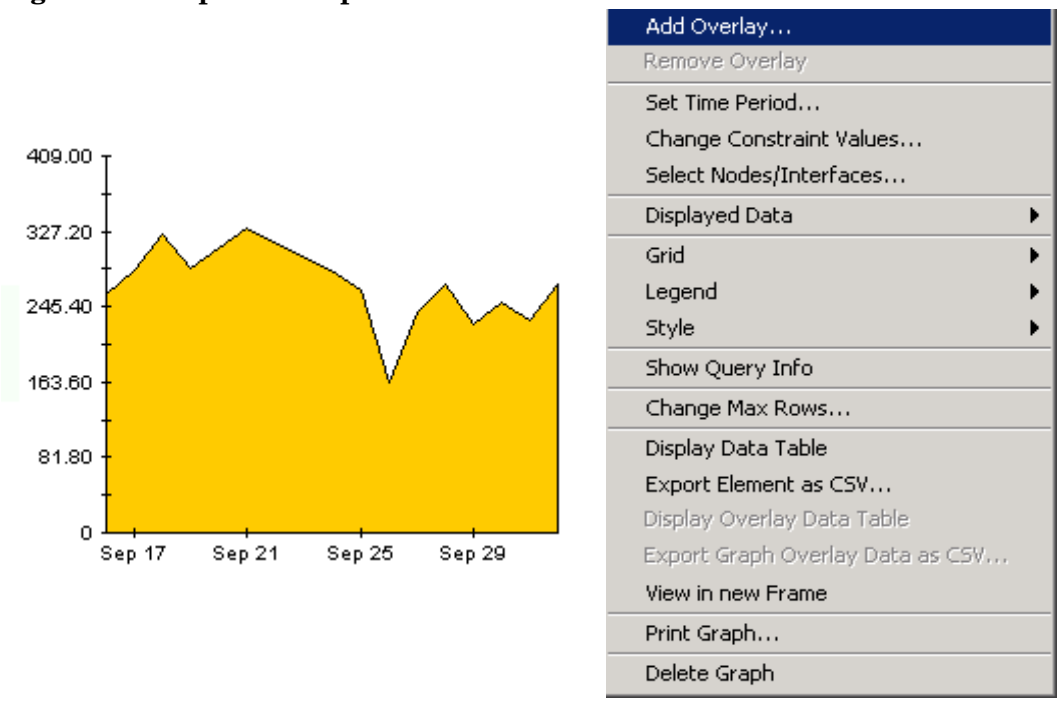
  Right-click a graph.

- *Web Access Server*

  Select the **Edit Graph** icon.

The graph view options menu is shown in Figure 17.

Figure 19 Graph View Options Menu



Graph View Options

You can change a wide variety of graph view options, as described in Table 1.

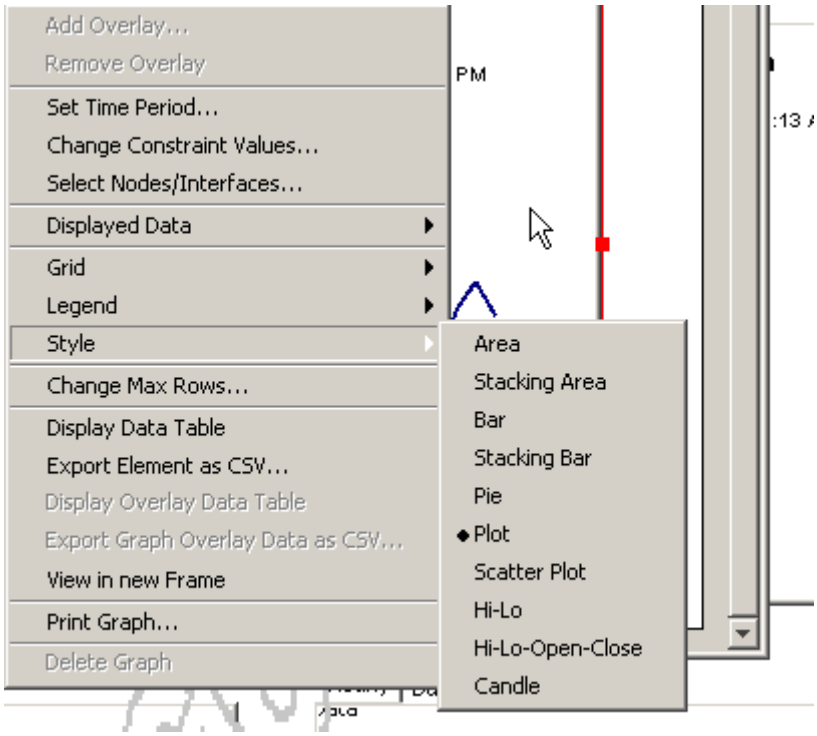
Table 2 Graph View Options

Option	Function
Set Time Period	Alters the relative time period (relative to now) or set an absolute time period.
Change Constraint Values	Loosens or tightens a constraint, thereby raising or lowering the number of elements that conform to the constraint. To loosen a constraint, set the value lower. To tighten a constraint, set the value higher.
Select Nodes/Interfaces	Enables you to change the scope of the table by limiting the table to specific nodes, specific interfaces, or a specific group of nodes or interfaces.
Displayed Data	For every point on a graph, displays data in a spreadsheet.
Grid	Add the following to the graph: • X axis grid lines • Y axis grid lines • X and Y axis grid lines
Legend	Deletes or repositions the legend.
Style	See Style Menu Options on page 62.
Show Query Info	Shows the database queries that have been executed to obtain the records. It helps to debug the reports.
Change Max Rows	Increases or decreases the number of rows in a table. The default is 50. If you expand the default, the table may take more time to open. If you are trending a large network, using the default ensures that the table opens as quickly as possible.
Display Data Table	Changes a graph to a spreadsheet, as shown in Figure 27 on page 66.
Export Element as CSV...	Exports this element into the CSV file.
View in New Frame	Opens graph in a Graph Viewer window, as shown in Figure 28 on page 66.
Print Graph	Prints the table or graph that you have chosen.

Style Menu Options

To display a list of seven view options for graphs, select **Style** from the main menu, as shown in Figure 1.

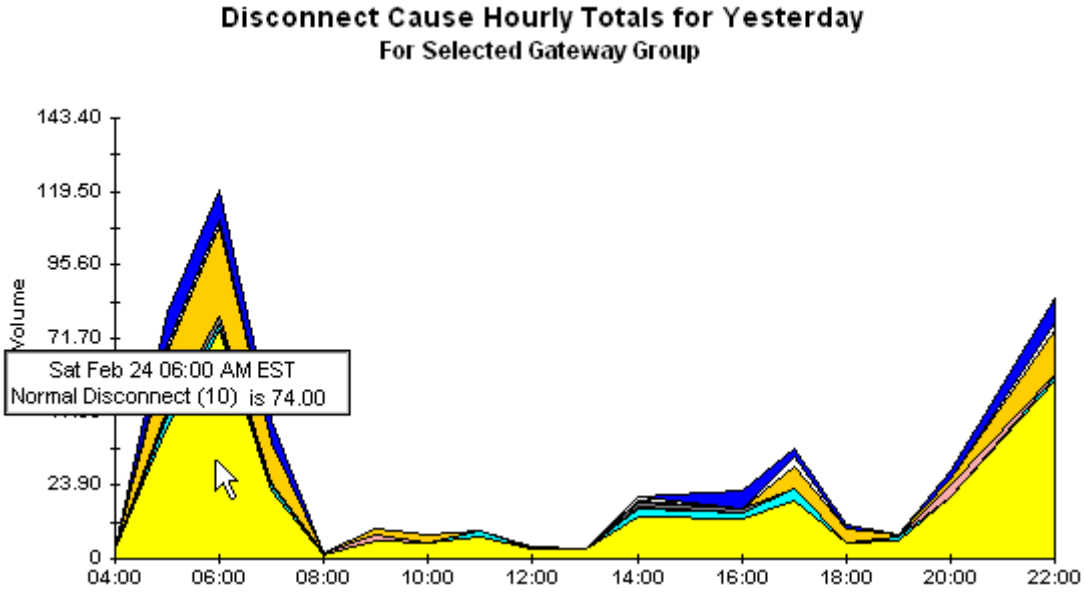
Figure 20 Style Menu



Area Option

The Area option changes the plot or bar chart to an area graph, as shown in Figure 21.

Figure 21 Style Menu: Area Option



Relative values and total values are easy to view in this format. However, absolute values for smaller data types may be hard to see.

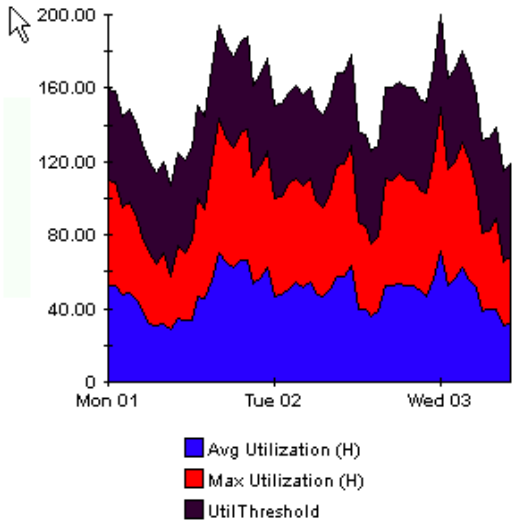
To display the exact value for that location, click anywhere within a band of color.

To shorten the time span of a graph, press SHIFT+ALT and hold down the mouse button to highlight the time span on which you want to focus. Release the mouse button to display the selected time span.

Stacking Area Option

The Stacking Area option changes the area or plot graph to a stacking area graph, as shown in Figure 22. This view is suitable for displaying a small number of variables.

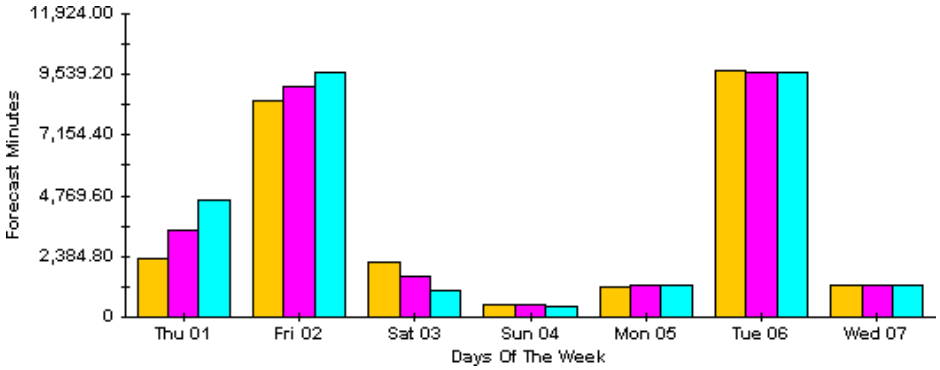
Figure 22 Style Menu: Stacking Area Option



Bar Option

The Bar option changes the graph to a bar chart. This view is suitable for displaying relatively equal values for a small number of variables. There are three variables in the graph shown in in Figure 23.

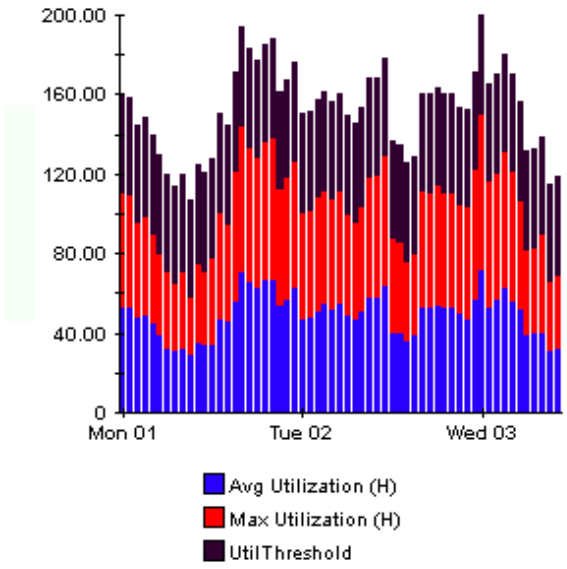
Figure 23 Style Menu: Bar Option



Stacking Bar Option

The Stacking Bar option changes the plot or area graph to a stacking bar chart, as shown in Figure 24. If you increase the width of the frame, the time scale becomes hourly. If you increase the height of the frame, the call volume shows in units of ten.

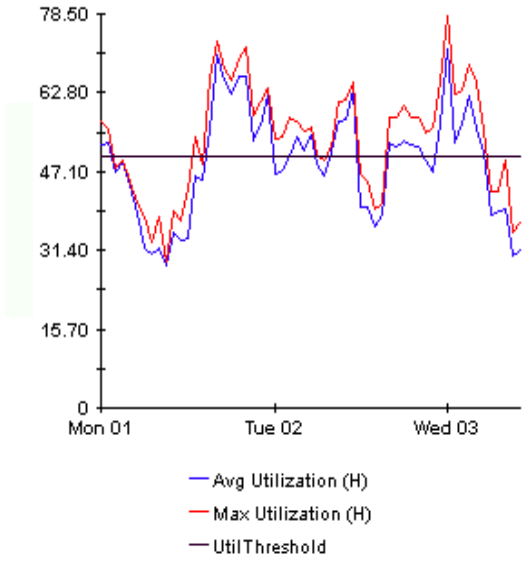
Figure 24 Style Menu: Stacking Bar Option



Plot Option

The Plot option changes bands of color in an area graph to lines, as shown in Figure 25. If you adjust the frame width, you can make the data points align with hour. If you adjust the frame height, you can turn call volume into whole numbers.

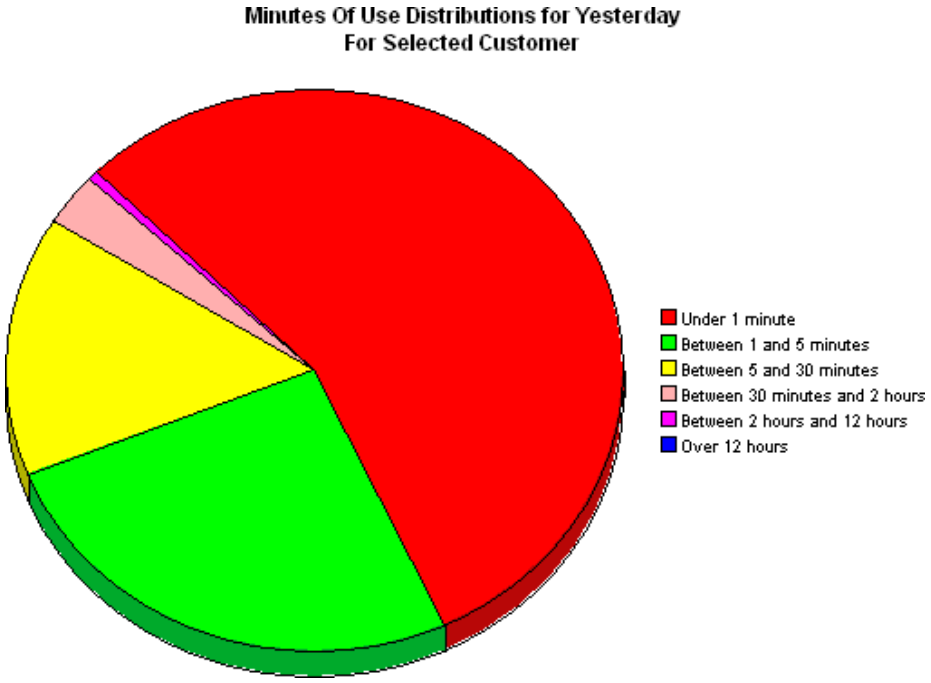
Figure 25 Style Menu: Plot Option



Pie Option

The Pie options changes an area graph to a pie chart, as shown in Figure 26. Bands in an area graph convert to slices of a pie and the pie constitutes a 24-hour period. This view is helpful when a small number of data values are represented and you are looking at data for one day. If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

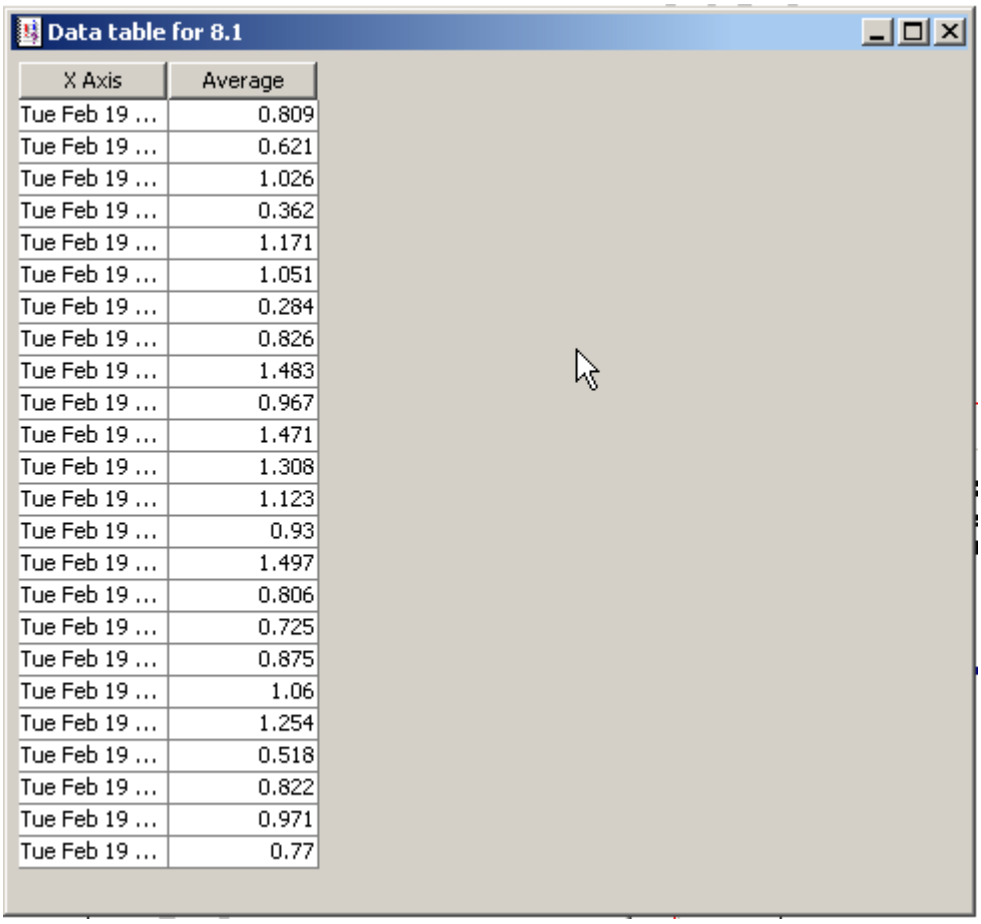
Figure 26 Style Menu: Pie Option



Display Data Table Option

The Display Data Table option changes a graph to a spreadsheet, as shown in Figure 27.

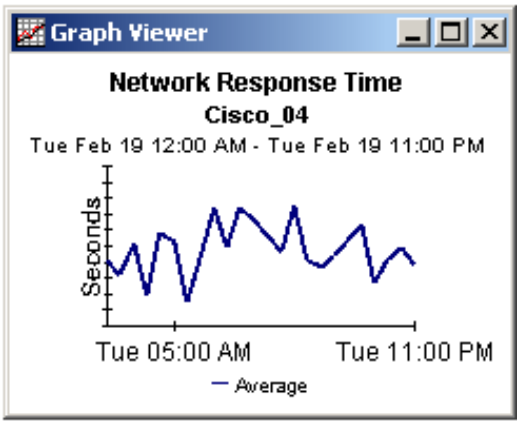
Figure 27 Display Data Table Option



View in New Frame Option

The View in New Frame option opens a graph in a Graph Viewer window, as shown in Figure 28. You can improve legibility by resizing the window.

Figure 28 View in New Frame Option



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