HP Network Node Manager iSPI Performance for Traffic Software

For the Windows ® and Linux operating systems

Software Version: 10.00

Online Help

Document Release Date: July 2014

Software Release Date: July 2014

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.

Copyright Notice

© Copyright 2009 - 2014 Hewlett-Packard Development Company, L.P.

Trademark Notices

Adobe™ is a trademark of Adobe Systems Incorporated.

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

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

Red Hat® Enterprise Linux® is a registered trademark of Red Hat, Inc. in the United States and other countries.

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.

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

HP Software Solutions Now accesses the HPSW Solution and Integration Portal Web site. This site enables you to explore HP Product Solutions to meet your business needs, includes a full list of Integrations between HP Products, as well as a listing of ITIL Processes. The URL for this Web site is **http://h20230.www2.hp.com/sc/solutions/index.jsp**

Contents

Chapter 1: Introduction to the HP Network Node Manager iSPI Performance for Traffic Software

The HP Network Node Manager iSPI Performance for Traffic Software (NNM iSPI Performance for Traffic) extends the capability of HP Network Node Manager i Software (NNMi) to monitor the performance of the network.

The NNM iSPI Performance for Traffic enriches the obtained data from the IP flow records that are exported by the routers in your NNMi network.

The NNM iSPI Performance for Traffic aggregates the IP flow records, correlates the IP flow records with the NNMi topology, and enables you to generate performance reports by exporting data to the Network Performance Server (NPS). It also enables you to configure deployment-specific enrichment attributes such as site and applications, and provides traffic-related information in the form of inventory views and maps in the NNMi console.

Chapter 2: Configuring the NNM iSPI Performance for Traffic

The NNM iSPI Performance for Traffic Configuration form enables you to configure the different elements required for creating the network traffic monitoring environment. You can configure the Leaf Collectors[1] and Master Collector[2] to receive the traffic data from different devices. You can create filters to filter out the unnecessary information and retain only the data that you are interested in.

> **Note:** To use the Configuration form, you must log on to the NNMi console as an administrator.

To log on to the NNM iSPI Performance for Traffic Configuration form, follow these steps:

1. Log on to the NNMi console with the administrator privileges.
2. Go to the Configuration workspace.
3. Double-click **NNM iSPI Performance for Traffic Configuration.** The NNM iSPI Performance for Traffic form opens.
4. Log on to the NNM iSPI Performance for Traffic form with the `system` user account created during the installation of the Master Collector.

The following table lists the configuration tasks:

Configure the NNM iSPI Performance for Traffic

What You Can Configure	Description
Leaf Collectors	Using the Leaf Collector Systems view, you can add the details of Leaf Collector systems.
Master Collectors	Using the Master Collector Systems view, you can add the details of Master Collector systems.
Flow Forwarders	Using the Flow Forwarder view, you can add the details of Flow Forwarders associated with Leaf Collectors.
Filters	Using the Filters view, you can create filters to filter out unwanted data and retain only the information that is relevant to you.

[1] The Leaf Collector receives flow packets from different flow-enabled devices and summarizes the data into flow records.

[2] The Master Collector receives the processed IP flow from the Leaf Collectors and exports the data to the NPS to generate performance reports.

Configure the NNM iSPI Performance for Traffic, continued

What You Can Configure	Description
Application Mapping	Using the Application Mapping view, you can associate different flow attributes with different applications running on your network.
Sites	Using the Sites view, you can define sites in your environment. With this configuration, you can generate traffic reports with the data obtained from specific sites.
Type of Service Groups	Using the Type of Service Groups view, you can group flow packets based on the Type of Service (ToS) values.

After installing the NNM iSPI Performance for Traffic, follow these steps:

1. Configure Leaf Collector systems.
2. Configure Leaf Collector instances.
3. Configure the Master Collector.
4. Configure additional properties:
   a. Configure sites.
   b. Configure filters.
   c. Define a new application.
   d. Configure Classes of Service.
5. Associate all the additional properties with the Leaf Collector instance.

Configuring Leaf Collector Systems

The NNM iSPI Performance for Traffic Configuration form enables you to configure multiple Leaf Collector instances to deploy on the network. You can start and configure multiple Leaf Collector instances on a single system. But before configuring individual Leaf Collector instances, it is important to add the Leaf Collector systems first in the NNM iSPI Performance for Traffic Configuration form.

The Leaf Collector Systems view displays all the configured Leaf Collector systems on the network (systems where you installed the Leaf Collector). You can open an existing Leaf Collector system to view the details of the configuration. You can modify the properties of the Leaf Collector system using this view.

To view the Leaf Collector Systems view, go to the NNM iSPI Performance for Traffic Configuration form, and then click **Leaf Collector Systems**. The Leaf Collector Systems view opens.

The following table lists the tasks you can perform using this view:

Tasks performed using Leaf Collector Systems View

Task	Description
Add a new Leaf Collector system	Open a new form to add a new Leaf Collector system by clicking **Add.**
View the details of existing Leaf Collector systems	The view presents the details of all the Leaf Collector systems that are already added.
Edit the properties of existing Leaf Collector systems	Open a new form by clicking **Open** to edit the properties (such as host name, password, or port) of an existing system.
Delete a Leaf Collector system that was configured with the monitoring solution	Open a new form to delete an existing Leaf Collector from the list of configured Leaf Collector systems by clicking **Open.**

The following table lists the basic attributes of the Leaf Collector System view:

Attribute	Description
Collector System Hostname	The fully qualified domain name of the Leaf Collector system.
Use Encryption	If disabled, the Master Collector uses HyperText Transfer Protocol (HTTP) and plain sockets to access the Leaf Collector system. This is the default option. If enabled, the Master Collector uses secure sockets layer encryption (HTTPS/SSL) to access the Leaf Collector system. **Note:** You must import certificates from the Leaf Collector to the Master Collector to use encryption to access the Leaf Collector. For more information, see the *Enabling Secure Communication between the Master Collector and the Leaf Collector* section in the HP Network Node Manager iSPI Performance for Traffic Software *Deployment Reference*.
HTTP(S) Port	The port number for HTTP or HTTPS access to the server on the Leaf Collector system. The default port numbers are as follows: • HTTP: 11080 • HTTPS: 11043. You must type this value in the HTTP(S) Port field if you select the **Use Encryption** option.
JNDI Port	The JNDI port number of the Leaf Collector system.
Leaf Count	Number of Leaf Collector instances running on the system.

Adding Leaf Collector Systems

You must configure the NNM iSPI Performance for Traffic by adding Leaf Collector instances in the Leaf Collector view. You cannot use the data provided by Leaf Collectors unless you add the Leaf Collector instances and Leaf Collector systems to the NNM iSPI Performance for Traffic views.

To add a Leaf Collector system, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collector Systems**.
2. Click **Add.** A new form opens.
3. In the form, specify the necessary details in the following fields:
   - Collector System Hostname: Type the fully-qualified domain name of the Leaf Collector system.
   - Leaf Password: Type the password of the `system` account on the Leaf Collector system (this is the password that you specified during the installation of the Leaf Collector).
   - JNDI Port: Type the JNDI port number for the Leaf Collector system. 11099 is the default JNDI port number.
   - Use Encryption: Enable this option if you want the Master Collector to use secure sockets layer encryption (HTTPS/SSL) to access the Leaf Collector system.
   - HTTP(S) Port: Type the port number of the Leaf Collector system.
     - Type the HTTP port number if you do not select the **Use Encryption** option. 11080 is the default HTTP port number of the Leaf Collector system.
     - Type the HTTPS port number if you select the **Use Encryption** option. 11043 is the default HTTPS port number of the Leaf Collector system.
4. Click **Save & Close**.

Modifying Leaf Collector Systems

The Leaf Collector Systems view enables you to change the properties of existing Leaf Collector systems that have already been added to the view. You must edit the properties of a Leaf Collector system if you change one or all of the following properties of the system:

- The administrative or root password of the system
- JNDI port
- Use Encryption
- HTTP (S) port

To modify the properties of a Leaf Collector system, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collector Systems**.
2. Select the Leaf Collector system that you want to edit.
3. Click **Open**. A new form opens. The form presents two sections:
   - Collector System Details: This section enables you to modify the properties of the system.
   - Leaf Collectors on this System: This section shows the details of all the Leaf Collectors that are running on the system.
4. In the Collector System Details section, modify the values in the following fields:
   - Leaf Password
   - JNDI Port
   - Use Encryption
   - HTTP(S) Port
5. Click **Save & Close.**

Deleting Leaf Collector Systems

Before you remove a specific Leaf Collector System from the environment, you must use the Leaf Collector view to delete the Leaf Collector instances configured for that system.

To delete a Leaf Collector system from the view, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collector Systems**.
2. Select the Leaf Collector system that you want to delete.
3. Click **Delete**.

Configuring Leaf Collector Instances

The NNM iSPI Performance for Traffic Configuration form enables you to configure individual Leaf Collector instances that you want to deploy on the network. You can create and configure multiple Leaf Collector instances on a single system.

Before configuring multiple Leaf Collector instances to run on a single system, make sure you have sufficient resources on the system.

The Leaf Collectors view provides you with an interface to add and modify collector instances to the view. You can delete an existing collector instance from the Leaf Collectors view. The view also displays all the configured Leaf Collector instances on the network and helps you start or stop the collector instances of your choice.

To display the Leaf Collectors view, go to the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collectors**. The Leaf Collectors view opens.

The following table lists the tasks you can perform using this view:

Tasks performed using Leaf Collectors View

Task	Description
Add a new Leaf Collector instance	Open a new form to add a new Leaf Collector instance by clicking **Add.**
View the details of existing Leaf Collector instances	The view presents the details of all the Leaf Collector instances that are already added.
Edit the properties of existing Leaf Collector instances	Open a new form by clicking **Open** to edit the properties of a collector instance that was already added.
Delete a Leaf Collector instance that was configured with the monitoring solution	Open a new form to delete an existing Leaf Collector instance from the list of configured Leaf Collector instances by clicking **Open.**

The following table lists the basic attributes of the Leaf Collectors view:

Leaf Collector Attributes

Attribute	Description
Collector Name	The name of the Leaf Collector instance.
Status	The status of the Leaf Collector system.
IP	The IP address of the Leaf Collector system. The default value is `0.0.0.0`.
Collector Type	The type of Leaf Collector instance running on the system. Possible values are: • Netflow • Sflow • JFlow • IPFIX
Container Hostname	The Fully qualified domain name of the system that hosts the collector instance.
Listen Port	The Port where the collector instance listens for incoming traffic packets.

Adding Leaf Collector Instance

You must configure the NNM iSPI Performance for Traffic by adding Leaf Collector instances in the Leaf Collector view.

To add a Leaf Collector instance, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collectors**.

2. Click **Add**. A new form opens. The form shows the following two different sections:
   - Leaf Collector Details: You must specify the necessary details of the collector here.

   - The other section shows multiple tabs to display additional properties associated with the collector.

3. In the Leaf Collector Details section, specify the values in the following fields:
   - Collector Type: Select one of the following collector types:
     - netflow: [1]

     - ipfix: [2]

     - sflow: [3]

   - Listen Port: Specify the port where the collector listens for incoming flow packets (must be in the range of 1024-65535).

   - IP: Type the IP address of the Leaf Collector system. The default value is `0.0.0.0`.

   - Store Flow in File: Select **true** if you want to store the incoming flow packets in a file on the Leaf Collector system.

     Use this feature only for troubleshooting. This option has a significant impact on the performance of the Leaf Collector.

     If you select true, the flow packet files are created in the following directory on the Leaf Collector system:
     On Windows:
     <*Data_Dir*>`\nmsas\traffic-leaf\data\`<*Leaf_Collector_Instance*>\<*IP_Address_of_Source*>
     On Linux:
     `/var/opt/OV/nmsas/traffic-leaf/data/`<*Leaf_Collector_Instance*>/<*IP_Address_of_Source*>

     In this instance:
     <*Data_Dir*>: Data directory that you chose during the installation of the Leaf Collector.
     <*Leaf_Collector_Instance*>: Name of the Leaf Collector instance.
     <*IP_Address_of_Source*>: IP address of the device where the flow packet originated.

   - Source IP DNS Lookup: Set this to **true** if you want to enable DNS lookup of the source of the flow packet.

[1] Select this option, if you want the new Leaf Collector to process NetFlow traffic.
[2] Select this option, if you want the new Leaf Collector to process IPFIX traffic.
[3] Select this option, if you want the new Leaf Collector to process sFlow traffic.

- Destination IP DNS Lookup: Set this to **true** if you want to enable DNS lookup of the destination of the flow packet.

4. *Optional.* Add secondary properties of the collector in the other section:
   - In the Filter Groups tab, associate a filter group with the Leaf Collector.
   - In the All TOS Groups, tab, associate a TOS group with the Leaf Collector.
5. In the All Application Mapping Groups tab, associate an application mapping group with the Leaf Collector. If you have not created any application mapping groups, you *must* select the `DefaultAppMapGroup` to be able to sort and rank metrics by applications on reports.
6. In the All Leaf Collector Systems tab, select the host name of the system where you installed the Leaf Collector.
7. Click **Save & Close**.

Modifying Leaf Collector Instance

The Leaf Collector view enables you to change the properties of collector instances that you provided to your NNM iSPI Performance for Traffic deployment.

To modify the properties of a Leaf Collector instance, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collectors**.
2. Select the Leaf Collector instance you want to edit.
3. Click **Open.** A new form opens. The form shows the following two different sections:
   - Leaf Collector Details: Lists the details of the collector.
   - The other section presents multiple tabs to display additional properties associated with the collector.
4. The Leaf Collector Details section shows the following primary properties of the collector.
   - Collector Type: Select one of the following collector types:
     - netflow: [1]
     - ipfix: [2]
     - sflow: [3]

[1] Select this option, if you want the new Leaf Collector to process NetFlow traffic.
[2] Select this option, if you want the new Leaf Collector to process IPFIX traffic.
[3] Select this option, if you want the new Leaf Collector to process sFlow traffic.

- Listen Port: Specify the port where the collector listens for incoming flow packets (must be in the range of 1024-65535).

- IP: Displays the IP address of the Leaf Collector system. You cannot modify the value in this field.

- Store Flow in File: Select **true** if you want to store the incoming flow packets in a file on the Leaf Collector system.

  > **Note:** Use this feature only for troubleshooting. This option has a significant impact on the performance of the Leaf Collector.

  If you select true, the flow packet files are created in the following directory on the Leaf Collector system:
  On Windows:
  <*Data_Dir*>`\nmsas\traffic-leaf\data\`<*Leaf_Collector_Instance*>\<*IP_Address_of_Source*>
  On Linux:
  `/var/opt/OV/nmsas/traffic-leaf/data/`<*Leaf_Collector_Instance*>/<*IP_Address_of_Source*>

- Source IP DNS Lookup: Set this to **true** if you want to enable DNS lookup of the source of the flow packet.

- Destination IP DNS Lookup: Set this to **true** if you want to enable DNS lookup of the destination of the flow packet.

5. Modify the secondary properties of the collector. The other pane on this form enables you to view and modify the association of the collector with existing filters, applications, and ToS groups.
   - Applied Filter groups: In the Filter Groups tab, select a filter group you want to apply on the collector or deselect a filter group that you want to dissociate from the collector.

   - Applied Application Mapping groups: In the Applied Application Mapping Groups tab, select the application group you want to apply on the collector or deselect an application group that you want to dissociate from the collector.

   - ToS groups: In the TOS Groups tab, select a ToS group you want to apply on the collector or deselect a ToS group that you want to dissociate from the collector.

   - Flow Forwarding Destinations: In the Flow Forwarding Destinations tab, select a Flow Forwarder you want to associate with the collector or deselect a Flow Forwarder you want to dissociate from the collector.

   - Flow Exporters: In the Flow Exporters tab, select a Flow Exporter you want to associate with the collector or deselect a Flow Exporter you want to dissociate from the collector.

- Collector Statistics History: Displays the last 11 flush entries that the Leaf Collector has processed and flushed to the Master Collector.

- Collector Health: Displays the health of the Leaf Collector. This tab lists the following details:
  - All the problems that the selected Leaf Collector encountered during its operation. The Start Time and End Time columns display the time when the problem started and got resolved.

  - Suggestions to resolve the problems

  - Status of the problems

6. Click **Save & Close**.

Deleting Leaf Collector Instance

Before you remove the Leaf Collector from your environment, you must delete the Leaf Collector instance from the Leaf Collectors view.

To delete a Leaf Collector instance, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collectors**.

2. Select the Leaf Collector instance you want to delete.

3. Click ✖ **Delete**.

Starting and Stopping Leaf Collector Instance

To start a Leaf Collector instance, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collectors**.

2. Select the Leaf Collector instance you want to start.

3. Click ▷ **Start.**

To stop a Leaf Collector instance, follow these steps:

1. Go to the Leaf Collectors view.

2. Select the Leaf Collector instance you want to stop.

3. Click ⊘ **Stop.**

Configuring Leaf Collector Sampling

When Leaf Collector receives a large number of flow records, you can sample the flow records to improve the performance. You can enable the NNM iSPI Performance for Traffic to sample the flow records received at the Leaf Collector based on the sampling rate and mode of sampling. When you enable sampling, the NNM iSPI Performance for Traffic processes one out of N flow records, where N is the sampling rate configured in the NNM iSPI Performance for Traffic. For more information on sampling in the NNM iSPI Performance for Traffic, see the *HP Technical White paper Sampling Support in the NNM iSPI Performance for Traffic*.

To enable Leaf Collector sampling, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Collector Sampling**.

2. In the Leaf Collector Sampling form, click Edit **Edit** to update any of the following fields:

Attribute	Description
Sampling	Indicates whether the Leaf Collector sampling is enabled or not. Possible values are: ▪ true ▪ false Set this to **true** if you want to sample the flow records received at the Leaf Collector. The default value is false.
Sampling Mode	Indicates the mode based on which the flow records are sampled when the Leaf Collector sampling is enabled. Possible values are: ▪ Random: Select this option if you want the records to be sampled randomly. Random mode enables you to sample one record out of every N records randomly. ▪ Top Flow Record: Select this option if you want the records to be sampled based on the top value of the byte counter. Top Flow Record mode enables you to sample one record (with maximum value of byte counter) out of every N records. The default value is Random.

Attribute	Description
Sampling Rate	Indicates the rate at which the records are sampled when the Leaf Collector sampling is enabled. For example, if the value of sampling rate is five, the NNM iSPI Performance for Traffic samples one record in every five records received at the Leaf Collector. HP recommends you to select a whole number from 2 through 10 as the sampling rate for better accuracy. However, the acceptable range is from 2 through 100. The default value is 3.

3. Click Save **Save**.

Configuring Master Collectors

After adding all the details of Leaf Collectors in the NNM iSPI Performance for Traffic Configuration form, you must set up the Master Collector in your environment, which includes adding details such as the host name of the Master Collector system and the flush record limit of the collector in the NNM iSPI Performance for Traffic Configuration form.

You must set up only one Master Collector in your environment. However, in a GNM setup, you can add a Master Collector belonging to a different regional manager to your region.

To configure the Master Collector, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Master Collector**.

2. In the Master Collector form, click Edit **Edit** to update any of the following fields:

Attribute	Description
Master Hostname	Indicates the hostname of the Master Collector. Type the FQDN of the Master Collector system.

Attribute	Description
Source IP DNS Lookup	Indicates whether the NNM iSPI Performance for Traffic must perform IP DNS lookup at the source or not. Possible values are : - true - false Set this to **true** if you want to enable DNS lookup of the source of a flow packet. Do not set this field to true if you have already configured DNS lookup for sources for NNM iSPI Performance for Traffic. The default value is false.
Destination IP DNS Lookup	Indicates whether the NNM iSPI Performance for Traffic must perform IP DNS lookup at the destination or not. Possible values are: - true - false Set this to **true** if you want to enable DNS lookup of the destination of a flow packet. Do not set this field to true if you already configured DNS lookup for destinations for the NNM iSPI Performance for Traffic. The default value is false.
Flush Record Limit	Indicates the record limit for the NNM iSPI Performance for Traffic to flush the IP flow data records to the NPS database. After the number of records in the NNM iSPI Performance for Traffic reaches the limit specified in this field, the NNM iSPI Performance for Traffic flushes the records to NPS.

Attribute	Description
DNS Lookup Type	Indicates whether the NNM iSPI Performance for Traffic must retrieve the IP address of the specified domain name in case sensitive manner or not. Possible values are: ▪ As-Is:[1] ▪ Uppercase:[2] ▪ Lowercase:[3]
Interface Traffic Data Flush	Indicates whether the NNM iSPI Performance for Traffic must flush the Interface Traffic data. Possible values are: ▪ Enable Flush: If you select this value, the Leaf Collector flushes Interface Traffic data to the Master Collector and the Master Collector generates the data for the extension pack Interface_Traffic. ▪ Disable Flush: If you select this value, the Leaf Collector does not flush Interface Traffic data to the Master Collector and the Master Collector stops generating the data for the extension pack Interface_Traffic. This is the default value.
Long Term Flush Period	Indicates the period (in minutes) after which the Leaf Collector flushes the aggregated data for long term reports to the Master Collector. By default, the Leaf Collector flushes the aggregated data to the Master Collector every 5 minutes. You can modify this flush period and provide value in the range of 5 through 15.

[1] The NNM iSPI Performance for Traffic retrieves the IP address for the specified domain name without converting the case of the domain name. This is the default value.

[2] The NNM iSPI Performance for Traffic retrieves the IP address for the specified domain name after converting the domain name to uppercase.

[3] The NNM iSPI Performance for Traffic retrieves the IP address of the specified domain name after converting the domain name to lowercase.

Attribute	Description
Short Term Reporting	Indicates whether the Interface Traffic_1_min reports are enabled or not. These reports are disabled by default. Possible values are: ▪ Enable: If you select this value, the Leaf Collector flushes the 1-minute Interface Traffic data that is aggregated every minute to the Master Collector and the Master Collector generates the data for the extension pack Interface_Traffic_1_min. ▪ Disable: If you select this value, the Leaf Collector does not flush 1-minute Interface Traffic data that is aggregated every minute to the Master Collector and the Master Collector stops generating the data for the extension pack Interface_Traffic_1_min. This is the default value. **Note:** After you enable the Short Term Reporting, the Leaf Collector immediately starts flushing the 1-minute Interface Traffic data that is aggregated every minute to the Master Collector. However, the Interface Traffic_1_min reports are available only after the Interface_Traffic_1_min extension pack installation is complete.
Noise Reduction	Indicates whether the NNM iSPI Performance for Traffic is enabled to drop the flow records that are considered as noise. Flow Records are considered as noise when the value of byte counter[1] is less than the configured threshold value. It is assumed that such records do not affect the calculation of top contributors. Possible values are: ▪ Enable: If you select this value, flow records with value of byte counter less than the Noise Threshold value are dropped. ▪ Disable: If you select this value, no flow records are dropped. This is the default value.
Noise Threshold	Indicates the threshold value with which the byte counter of flow records is compared when Noise Reduction is enabled. The NNM iSPI Performance for Traffic considers the flow records with value of byte counter less than this threshold value as noise and drops these records. The Noise Threshold value is in Bytes.

[1] Number of bytes associated with an IP Flow.

Attribute	Description
Traffic Master Collector Flow Record Queue	Indicates the maximum number of flow records that the Master Collector can queue while accepting the input from the Leaf Collectors.

3. Click Save **Save**.

Configuring Flow Forwarders

Flow Forwarders are configured on a Leaf Collector. This configuration enables forwarding of IP flow records to a specified location. The destination where the flow data needs to be sent is identified with the IP address and port number combination. You can configure multiple flow forwarding destinations for each Leaf Collector instance.

To configure a Flow Forwarder, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Flow Forwarders**.
2. In the Flow Forwarders view, click **Add.** A new form opens with the following sections:
   - Flow Forwarder Details: In this section, you must specify the primary details of the Flow Forwarder you want to add.
   - The other section lists the available Leaf Collectors in the environment. You can use the check boxes (□) to associate Leaf Collectors to the Flow Forwarder.
3. In the Flow Forwarder Details section, specify the following details:
   - Flow Forwarder Name: Type the name of the Flow Forwarder.
   - Forwarding IP: Type the IP address of the Flow Forwarding system.
   - Forwarding Port:Type the port number of the Flow Forwarding system.
4. In the other section, select the check boxes (□) to associate Leaf Collectors to the Flow Forwarder. You can link multiple Leaf Collectors with a Flow Forwarder.
5. Click **Save**.

Modifying Flow Forwarders

The Flow Forwarders view in the NNM iSPI Performance for Traffic Configuration form lists the configured Flow Forwarders. You can edit the properties of the existing Flow Forwarders from this view.

To modify a Flow Forwarder, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Flow Forwarders**.

2. In the Flow Forwarders view, select a Flow Forwarder you want to edit.

3. Click **Open.** A new form opens with the following sections:
   - Flow Forwarder Details: In this section, you can modify the primary details of the Flow Forwarder.

   - The other section lists the available Leaf Collectors in the environment. You can use the check boxes (□) to modify the relationship of a Flow Forwarder with Leaf Collectors.

4. In the Flow Forwarder Details section, you can modify the following details:
   - Flow Forwarder Name:The name of the Flow Forwarder.

   - Forwarding IP: The IP address of the Flow Forwarding system.

   - Forwarding Port: The port number of the Flow Forwarding system.

5. In the other section, select the check boxes (□) to associate Leaf Collectors to the Flow Forwarder or clear the check boxes (□) to dissociate Leaf Collectors from the Flow Forwarder. You can link multiple Leaf Collectors with a Flow Forwarder.

6. Click **Save**.

Starting and Stoping Flow Forwarders

After adding a new Flow Forwarder or modifying an existing Flow Forwarder, you must start it.

To start a Flow Forwarder, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Flow Forwarders**.

2. In the Flow Forwarders view, select a Flow Forwarder you want to start.

3. Click **Start.**

To stop a Flow Forwarder, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Flow Forwarders**.

2. In the Flow Forwarders view, select a Flow Forwarder you want to stop.

3. Click **Stop.**

Deleting Flow Forwarders

You can delete Flow Forwarders from the Flow Forwarders view in the NNM iSPI Performance for Traffic Configuration form.

To delete a Flow Forwarder, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Flow Forwarders**.
2. In the Flow Forwarders view, select a Flow Forwarder you want to delete.
3. Click ✗ **Delete.**

Flow Exporters

Flow Exporters are the nodes or devices on the network that host the flow collector interfaces. With every Leaf Collector instance, you must associate a flow collector interface that is capable of sending the traffic flow information. When you configure a Leaf Collector instance, you must specify the Flow Exporter details (see "Adding Leaf Collector Instance" on page 13). The Flow Exporters view provides you with a list of available devices that send traffic flow information to Leaf Collectors.

Viewing the Flow Exporter History

You can view the record of all the exchanges done by a Flow Exporter. You can launch a new view from the Flow Exporter view, which presents the historical data. This view shows the following details in a tabular form, where each row represents a flush:

- IP: The IP address of the Flow Exporter.
- Flush time: Date and time when the Flow Exporter flushed data to the Leaf Collector.

  > **Tip:** Click ↻ **Refresh** to retrieve the details of the most recent flush.

- Number of flows: The number of flow packets transmitted to the Leaf Collector with the flush.

To view the Flow Exporter history, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Flow Exporters.**

   The Flow Exporters view opens. The view lists all the available devices on the network that send traffic flow information to Leaf Collectors.

2. In the Flow Exporters view, select a Flow Exporter and click ✎ **Open.**

Configuring Sites

The NNM iSPI Performance for Traffic Configuration form enables you to define sites in your networking environment. You can view traffic reports for specific sites to identify site-specific performance bottlenecks in your organization's network infrastructure.

When a flow collector sends a flow packet to the Leaf Collector, the source and destination sites of the flow packet are computed by the Leaf Collector based on the sites you configure using the NNM iSPI Performance for Traffic Configuration form.

You can define a site by a specific IP address or a range of IP addresses. The NNM iSPI Performance for Traffic associates the flow with a site if the origin or destination of the flow is a system whose IP address that defines the site. You can also use the wildcard character (*) in the IP address while defining a site. Before you use the NNM iSPI Performance for Traffic Configuration form to define sites, see "Defining a Site" below.

Site Priority

By defining the site priority, you can configure the Leaf Collector to process site information of received flow packets in a specific order. The Leaf Collector prioritizes processing of flow packets associated with high priority sites.

Defining a Site

Follow these guidelines when you define sites in the NNM iSPI Performance for Traffic Configuration form:

- You can use an IP address, an IP address range, or an IP address with the wildcard character (*) to define a site.
- You can use the wildcard character in one or more (or all) octets of the IP address to define a site.

  When you use wildcard characters for all the four octets, the NNM iSPI Performance for Traffic associates the site to all flow packets collected from the network. If the IP address pattern matches the SrcIP of the flow, NNM iSPI Performance for Traffic maps it to a Source Site Name field.
- You can use an IP address range instead of a single IP address for defining a site. You can use ranges in one or more (or all) octets of the IP address. For example, 179.16.2-20.1-100.

Adding Sites

Although it is optional to add site definitions in the NNM iSPI Performance for Traffic Configuration form, you can enrich traffic reports with the option to group data by sites.

To add a new site, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Sites**.
2. In the Sites view, click **Add**. A new form opens with the following sections:
   - Site Details: In this section, you must specify the primary details of the site you want to add.
   - The other section displays the list of similar sites that exist in the environment.
3. In the Site Details section, specify the following details:
   - Site Name: Type the name of the Site. Do not use any special characters other than the hyphen (-) and underscore (_).

- Tenant: Select a NNMi tenant from the list of tenants created in NNMi.

  NNMi provides a tenant named Default Tenant and assigns each newly discovered node to the Default Tenant and the Security Group attribute value configured for the Default Tenant. As an NNMi administrator, you can create new tenants and security groups. See *Configure Tenants* and *Configuring Security* in *HP Network Node Manager i Software Online Help: Help for Administrators*.

  You can select the following options based on the selected tenant:

  - Sites with higher, lower, or equal priority
  - Sites in the same IP range

- *Optional.* Site Description: Type a description of the site.

- *Optional.* Site Priority: Type the priority of the site (an integer between 0 and 65535). The NNM iSPI Performance for Traffic considers value 0 as high priority and the value 65535 as low priority.

  To view the sites with higher priority, click **Show Higher Priority Sites**. The Higher Priority Sites tab shows all the existing sites that have a higher priority assigned to them.

  To view the sites with lower priority, click **Show Lower Priority Sites**. The Lower Priority Sites tab shows all the existing sites that have a lower priority assigned to them.

  To view the sites with same priority, click **Show Same Priority Sites**. The Same Priority Sites tab displays all the existing sites that have the same priority assigned to them.

  NNM iSPI Performance for Traffic shows the sites with higher, lower, or same priority for the selected tenant.

- Site IP Configuration: In this section, type the following:
  New IP/Range: Type the IP address or range of IP addresses to define the site. You can use the wildcard character (*) when specifying the IP address. For guidelines on specifying this parameter, see "Defining a Site" on the previous page.
  If the `SrcIP` or `DstIP` attribute (or both) of a packet matches the IP address (or the IP address range) specified in this field, the NNM iSPI Performance for Traffic associates the packet to the site.
  For example, if you specify 172.16.*.*, flow packets with 172.16.2.1 as the `SrcIP` or `DstIP` attribute are associated to the site.

  After typing the value, click **Add**.

  To include more IP addresses (or IP address ranges) in the site definition, type the address or range in the New/IP Range box, and then click **Add**.

  If you specify an IP address range, click **Show Sites in the Same IP Range** to view the sites that are in the same IP range. The Sites in the Same IP Range tab shows sites that are in the same IP range.

NNM iSPI Performance for Traffic shows the sites within the same IP range for the selected tenant.

4. Click **Save & New** to save and create another site, or click **Save & Close** to save and close the form.

Modifying Sites

You can modify the definitions of the existing sites.

To modify a site, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Sites**.
2. In the Sites view, select a site, and then click **Open**. A new form opens with the following sections:
   - Site Details: In this section, you can modify the primary details of the site you selected.
   - The other section lists similar sites that exist in the environment.
3. In the Site Details section, you can modify the following details:
   - Site Name: The name of the Site. Do not use any special characters other than the hyphen (-) and underscore (_).
   - Tenant: Select a NNMi tenant from the list of tenants created in NNMi.

     NNMi provides a tenant named Default Tenant and assigns each newly discovered node to the Default Tenant and the Security Group attribute value configured for the Default Tenant. As an NNMi administrator, you can create new tenants and security groups. See *Configure Tenants* and *Configuring Security* in *HP Network Node Manager i Software Online Help: Help for Administrators*.
   - Site Description: The description of the site.
   - Site Priority: The priority of the site (an integer between 0 and 65535). The NNM iSPI Performance for Traffic considers value 0 as high priority and the value 65535 as low priority.

     To view the sites with higher priority, click **Show Higher Priority Sites**. The Higher Priority Sites tab shows all the existing sites that have a higher priority assigned to them.

     To view the sites of lower priority, click **Show Lower Priority Sites**. The Lower Priority Sites tab shows all the existing sites that have a lower priority assigned to them.

To view the sites with the same priority value, click **Show Same Priority Sites**. The Same Priority Sites tab shows all the existing sites that have the same priority assigned to them.

- Site IP Configuration: In this section, you can modify the following:

New IP/Range: The IP address or range of IP addresses to define the site. You can use the wildcard character (*) while specifying the IP address. For guidelines on specifying this parameter, see "Defining a Site" on page 26.
If the `SrcIP` or `DstIP` attribute (or both) of a packet matches the IP address (or the IP address range) specified in this field, the NNM iSPI Performance for Traffic associates the packet to the site.
For example, if you specify 172.16.*.*, flow packets with 172.16.2.1 as the `SrcIP` or `DstIP` attribute are associated to the site.

After typing the value, click **Add.**

To include more IP address (or IP address ranges) in the site definition, type the address or range in the New/IP Range box, and then click **Add.**

If you specify an IP address range, click **Show Sites in the Same IP Range** to view the sites that are in the same IP range. The Sites in the Same IP Range tab shows the sites that are in the same IP range.

When editing a site, the tabs in the right pane continue to show the site with its old properties. For example, if you change the priority of a site from 2 to 3, and then if you click Higher Priority Sites tab, the same site is displayed there with the priority 2. Changes take effect only after you click **Save &Close.**

4. Click **Save & Close.**

Deleting Sites

To delete a site, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Sites.**
2. In the Sites view, select the site you want to delete and click ☒ **Delete.**
3. In the confirmation dialog box, click **Delete.**

Configuring Filters

Filters enable to filter out flow packets that are not of your interest. The NNM iSPI Performance for Traffic Configuration form enables you to define filters to utilize only the relevant flow packets for traffic flow monitoring. The filtering mechanism of the NNM iSPI Performance for Traffic enables you to either **drop** or **keep** flow packets based on the filter definitions you create.

You can create filtering conditions using the following attributes of a flow packet:

- ProducerIP: IP address of the system where the flow collector is located.
- SrcIP: IP address of the system where the traffic flow originated.
- DstIP: IP address of the system where the traffic flow terminated.
- IPProtocol: Protocol used by the traffic flow.
- NFSNMPInputIndex: SNMP index of the egress interface
- NFSNMPOutputIndex: SNMP index of the ingress interface
- DstPort: Ingress port
- TCPFlags: TCP flag of the traffic flow
- IPToS: Type of Service property of the traffic flow

The NNM iSPI Performance for Traffic enables you to define a filter with multiple conditions by using the AND operator.

Adding Filters

The NNM iSPI Performance for Traffic Configuration form enables you to add filter conditions to filter out unnecessary flow packets. Although optional, creating filters simplifies the process of analyzing the traffic flow packets by discarding irrelevant and unnecessary flow packets.

To add a new filter, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Filters.**
2. In the Filters view, click **Add.** A new form opens with the following sections:
   - Filter Details: In this section, you must specify the primary details of the filter you want to add.
   - The other section lists related details.
3. In the Filter Details section, select the filter operation.
   If you select **keep,** the NNM iSPI Performance for Traffic retains only the packets that satisfy the condition of the filter and discards all other packets.
   If you select **drop,** the NNM iSPI Performance for Traffic discards only the packets that satisfy the condition of the filter and retains all other packets.
4. You can create new conditions and delete or modify the existing conditions.
   To create a new condition:
   a. Select an attribute.
   b. Select an operator. For the ProducerIP, SrcIP, and DstIP attributes, you can choose the like, equals, or not-equals operator. For the other attributes, you can choose the =, !=, <=,

or >= operator.
The Filter Text Configuration tab in the right pane shows the condition that you define in the Filter Details section. The All Filter Groups tab shows the list of all defined filter groups.

c. Specify the value to be compared.

d. Click **Add**. Another row of attributes and operators appears.

e. To add another condition, repeat the above steps. If you define multiple conditions, the NNM iSPI Performance for Traffic assigns the AND operator on them when performing the filtering action.

f. *Optional.* If filter groups are already defined, you can associate the filter with a filter group from the All Filter Groups tab. By default, the NNM iSPI Performance for Traffic places the new filter in DefaultFilterGroup.

5. Click **Save &Close.**

Modifying Filters

You can use the NNM iSPI Performance for Traffic Configuration form to edit the existing filters.

To modify a filter, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Filters.**

2. In the Filters view, select the filter you want to modify, and click **Open.** A new form opens with the following sections:
   - Filter Details: In this section, you can modify the primary details of the filter you want to add.
   - The other section lists related details.

3. In the Filter Details section, select the filter operation.
   If you select **keep,** the NNM iSPI Performance for Traffic retains only the packets that satisfy the condition of the filter and discards all other packets.
   If you select **drop,** the NNM iSPI Performance for Traffic discards only the packets that satisfy the condition of the filter and retains all other packets.

4. You can create new conditions and delete or modify the existing conditions.
   To create a new condition:

   a. Select an attribute.

   b. Select an operator. For the ProducerIP, SrcIP, and DstIP attributes, you can choose the like, equals, or not-equals operator. For the other attributes, you can choose the =, !=, <=, or >= operator.
   The Filter Text Configuration tab in the right pane shows the condition that you define in the Filter Details section. The All Filter Groups tab shows the list of all defined filter groups.

   c. Specify the value to be compared.

   d. Click **Add**. Another row of attributes and operators appears.

   e. To add another condition, repeat the above steps. If you define multiple conditions, the NNM iSPI Performance for Traffic assigns the AND operator on them while performing the filtering action.

5. To modify an existing condition, modify the operator or the value to be compared from an existing condition.

6. To delete a condition, click **Remove** next to the condition.

7. You can change the group membership of the filter from the Group Membership of this Filter tab.

   If you remove the group membership of the filter from every filter group, the NNM iSPI Performance for Traffic automatically places the filter in DefaultFilterGroup.

8. Click **Save & Close**.

Deleting Filters

You can use the NNM iSPI Performance for Traffic Configuration form to delete the existing filters.

To delete a filter, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Filters.**

2. In the Filters view, select the filter you want to delete and click ❌ **Delete.**

Defining Filter Groups

You can define filter groups to group a set of defined filters. By default, the NNM iSPI Performance for Traffic provides you with DefaultFilterGroup.

You can use the Filter Mapping Groups view in the NNM iSPI Performance for Traffic Configuration form to define new filter groups, associate filters with existing filter groups, view and modify the existing filter groups, and delete filter groups.

To view the Filter Groups view, click **Filter Groups** in the NNM iSPI Performance for Traffic Configuration form.

The basic attributes of the Filter Groups view are:

Attributes	Description
Filter Group Name	The name of the group.
Number of Filters	The number of filters associated with the group.

Adding Filter Group

By default, the NNM iSPI Performance for Traffic provides you with a filter group—DefaultFilterGroup. You can also define new filter groups by using the NNM iSPI Performance for Traffic Configuration form.

To add a new filter group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Filter Groups.**
2. In the Filter Groups view, click **Add.** A new form opens.
3. In the Filter Group Details section, specify the name of the filter group. You can use alphanumeric characters, hyphens (-), and underscores (_).
4. The All Filters tab shows the list of all filters and their association with the filter groups. To associate a filter with the new filter group, select the **select** check box (□) next to the filter.
5. Click **Save & Close.**

Modifying Filter Group

You can edit a filter group's association with filters by using the NNM iSPI Performance for Traffic Configuration form. You cannot change the name of a filter group.

To modify a filter group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Filter Groups.**
2. In the Filter Groups view, click **Open.** A new form opens. The Group Members of This Filter tab shows all the existing filters and their association with all the groups.
3. To associate a filter with the group, select the **select** check box (□) next to the filter. To dissociate a filter from the group, clear the **select** check box (□) next to the filter.

   > **Note:** Before removing the group membership of a filter from the group, make sure the filter is associated with at least one filter group. A filter cannot exist without a membership to a group and gets automatically deleted if you dissociate it from all the existing groups.

4. Click **Save & Close.**

Deleting Filter Group

You can delete a filter group by using the NNM iSPI Performance for Traffic Configuration form.

To delete a filter group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Filter Groups.**

2. In the Filter Groups view, select the filter group you want to delete, and click ✕ **Delete.**

Viewing Application Mapping

The application mapping feature enables you to associate flow packets with specific applications in your organization. This helps you correlate the flow packets with applications. The NNM iSPI Performance for Traffic provides you with a set of default application mapping definitions and a default application mapping group—DefaultAppMapGroup.

You can use the Application Mappings view in the NNM iSPI Performance for Traffic Configuration form to define new applications, map flow packets to existing applications, view and modify the current application mapping setting, and delete application definitions.

To view the Application Mappings view, click **Application Mappings** in the NNM iSPI Performance for Traffic Configuration form.

The following table lists the basic attributes of the Application Mappings view:

Attributes	Description
Application Name	The name of the application.
Condition Configuration	The expression that defines association of flow packets with an application.
Application Groups	Application mapping groups where the application belongs. An application can belong to multiple application groups.

Defining New Application Mapping

The NNM iSPI Performance for Traffic provides you with a set of default application mapping definitions and a default application mapping group—DefaultAppMapGroup. You can also define new applications by using the NNM iSPI Performance for Traffic Configuration form. By default, 300 application mapping definitions are provided.

Note: An application mapping cannot have more than 10 individual conditions.

To define a new application mapping, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Application Mappings.**

2. In the Application Mappings view, click ✚ **Add**. A new form opens with the following sections:

- Application Mapping Details: In this section, you must specify the primary details of the application you want to add.

- The other section lists related details.

3. In the Application Mapping Details section, specify the following details:
   a. Application Name: Type the name of the application. You can use alphanumeric characters, hyphens (-), and underscores (_).

   b. Define the condition expression: The NNM iSPI Performance for Traffic enables you to map a flow packet to an application with the help of conditions created with different attributes of the flow packet.You can define the condition expression with a single condition or combine multiple conditions using Boolean Operators, AND and OR. To define the condition expression, you must first add the Boolean operators and then add conditions to these operators.

      To add the Boolean operator (s): Use the Application Mapping buttons to insert, append, and replace Boolean Operators based on the rule that you want to create.

      Application Mapping Buttons

Button	Description
AND	Inserts the AND Boolean Operator at the selected cursor location. **Note:** View the condition expression displayed under Filter String to see the logic of the expression as it is created.
OR	Inserts the OR Boolean Operator at the current cursor location. **Note:** View the condition expression displayed under Filter String to see the logic of the expression as it is created.
Delete	Deletes the selected Boolean Operator. If the Boolean Operator is selected, all the conditions associated with the Boolean Operator are deleted.

Click here for more information about using the Boolean Operators.

- Add your highest level Boolean operator first.

- The AND and OR Boolean Operators must contain at least two conditions.

- Add each additional Boolean Operator before adding the condition to which it applies.

- Place the cursor on the Boolean Operator that you want to append to or replace.

To add a condition: Use the Mapping Rule components to insert, append, and replace a condition.

Mapping Rule Components

Component	Description
Flow Attribute	The attribute on which you want NNM iSPI Performance for Traffic to search. See Flow Attributes[1] for a description of available Flow A ttributes.
Operator	The operator that establishes the relationship between the Attribute and Operand. For the ProducerIP, SrcIP, and DstIP attributes, you can choose the `like`, in, `equals`, or `not-equals` operator. For other attributes, you can choose the =, !=, <=, or >= operator.
Operand	The operand that completes the criteria required to define the condition.

i. Select an attribute from the Flow Attribute field.

ii. Select an operator from the Operation field.

iii. Specify the value to be compared in the Operand field.

iv. Click **Insert, Append,** or **Replace.**

v. To add another condition, repeat the above steps.

4. Click **Save & Close.**

[1] **Flow Attributes**

Attribute	Description
ProducerIP	IP address of the system where the flow collector is located
SrcIP	IP address of the system where the traffic flow originated
DstIP	IP address of the system where the traffic flow terminated
IPProtocol	Protocol used by the traffic flow
NFSNMPInputIndex	SNMP index of the egress interface
NFSNMPOutputIndex	SNMP index of the ingress interface
DstPort	Ingress port
TCPFlags	TCP flag of the traffic flow
IPToS	Type of Service property of the traffic flow

Click here for examples to define condition expressions.

Example 1

```
IPProtocol = 4000
```

To add the above condition, after you are in the Application Mapping Details section, follow these steps:

1. Type the name of the application in the Application Name field.
2. Select **IPProtocol** in the Flow Attribute field.
3. In the Operator field, select **=**.
4. In the Operand field, enter **4000.**
5. Click **Insert.**
6. Click **Save and Close.**

Example 2

```
IPProtocol = 4000 OR DstPort = 1000
```

To add the condition expression above, after you are in the Application Mapping Details section, follow these steps:

1. Type the name of the application in the Application Name field.
2. Click **OR**.
3. Select the OR you just added to the condition expression.
4. Follow these steps to add the condition, `IPProtocol = 4000`:
   a. Select **IPProtocol** in the Flow Attribute field.
   b. In the Operator field, select **=**.
   c. In the Operand field, enter **4000**.
5. Click **Insert**.
6. Follow these steps to add the condition, `DstPort = 1000`:
   a. Select **DstPort** in the Flow Attribute field.
   b. In the Operator field, select **=**.
   c. In the Operand field, enter **1000**.
7. Click **Save and Close**.

Example 3

```
((DstPort = 10000 OR DstPort = 20000) AND (DstIP equals 192.168.0.0 OR DstIP
equals 192.168.0.10))
```

To add the condition expression above, after you are in the Application Mapping Details section, follow these steps:

1. In the Application Name field, type the name of the application.

2. Click **AND**.

3. Follow these steps to add the condition expression, `DstPort = 10000 OR DstPort = 20000`:
   a. Click **OR**.

   b. Select the OR you just added to the condition expression.

   c. Follow these steps to add the condition, `DstPort = 10000`:
      i. In the Flow Attribute field, select **DstPort**.

      ii. In the Operator field, select **=**.

      iii. In the Operand field, enter **10000**.

   d. Click **Insert**.

   e. Follow these steps to add the condition, `DstPort = 20000`:
      i. In the Flow Attribute field, select **DstPort**.

      ii. In the Operator field, select **=**

      iii. In the Operand field, enter **20000.**

   f. Click **Append**.

4. Select the AND that you added previously to the condition expression.

5. Follow these steps to add the condition expression, `DstIP equals 192.168.0.0 OR DstIP equals 192.168.0.10`:
   a. Click **OR**.

   b. Select the OR you just added to the condition expression.

   c. Follow these steps to add the condition, `DstIP = 192.168.0.0`:
      i. In the Flow Attribute field, select **DstIP**.

      ii. In the Operator field, select **equals**.

      iii. In the Operand field, enter **192.168.0.0**.

   d. Click **Insert**.

   e. Follow these steps to add the condition, `DstIP = 192.168.0.10`:
      i. In the Flow Attribute field, select **DstIP**.

      ii. In the Operator field, select **equals**.

      iii. In the Operand field, enter **192.168.0.10**.

   f. Click **Append**.

6. Click **Save and Close**.

Modifying Application Mapping Definition

You can use the NNM iSPI Performance for Traffic Configuration form to edit an existing application mapping definition.

To modify an application mapping definition, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Application Mappings**.

2. In the Application Mappings view, select an application and then click the Open icon. A new form opens with the following sections:
   - Application Mapping Details: In this section, you can modify the primary details of the application you selected.

   - The other section lists related details.

3. In the Application Mapping Details section, you can modify the following details:
   - Application Name: You can modify the name of the application. You can use alphanumeric characters, hyphens (-), and underscores (_).

   - Modify the condition expression: You can modify the Boolean Operators and conditions in the condition expression for an existing application mapping. You can view the modifications displayed under the Filter String and in the Application Mapping Text Configuration tab.

4. Click **Save & Close**.

Deleting an Application

You can use the NNM iSPI Performance for Traffic Configuration form to delete an application mapping definition.

To delete an application, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Application Mappings.**

2. In the Application Mappings view, select the application you want to delete.

3. Click ✕ **Delete.**

Viewing Application Mapping Groups

You can define application mapping groups to group a set of defined applications. The NNM iSPI Performance for Traffic provides you with a default application mapping group—DefaultAppMapGroup.

You can use the Application Mapping Groups view in the NNM iSPI Performance for Traffic Configuration form to define new application mapping groups, associate applications with existing application mapping groups, view and modify the current application mapping groups, and delete application mapping groups.

To view the Application Mapping Groups view, click **Application Mapping Groups** in the NNM iSPI Performance for Traffic Configuration form.

The basic attributes of the Application Mapping Groups view are the following:

Attributes	Description
Application Group	The name of the group.
Number of Application Mappings	The number of applications associated with the group.

Defining New Application Mapping Group

The NNM iSPI Performance for Traffic provides you with adefault application mapping group—DefaultAppMapGroup. You can also define new application mapping groups by using the NNM iSPI Performance for Traffic Configuration form.

To define a new application mapping group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Application Mapping Groups.**
2. In the Application Mapping Groups view, click **Add.** A new form opens.
3. In the Application Mapping Groups Details section, specify the name of the application mapping group. Follow the rules given below when naming an Application Mapping Group:
   - Names of Application Mapping Groups must start with an alphabet.
   - Do **not** use numeric characters at the beginning of an Application Mapping Group name.
   - You can use alphanumeric characters, hyphens (-), and underscores (_) in the Application Mapping Group names. Do **not** use spaces or any other special characters.

     For example, you can create an Application Mapping Group called AppMap1Grp, but not 1AppMapGrp.

4. The All Application Mappings tab shows the list of all applications and their association with the application mapping groups. To associate an application with the new application mapping group, select the application.

5. Click **Save & Close.**

Modifying Application Mapping Group

You can modify an application mapping group's association with applications by using the NNM iSPI Performance for Traffic Configuration form. You cannot change the name of an application mapping group.

To modify an application mapping group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Application Mapping Groups.**

2. In the Application Mapping Groups view, click **Open**. A new form opens.The Application Mapping Group Members tab shows all the existing applications and their association with all the groups.

3. To associate an application with the group, select the application. To dissociate an application from the group, clear the **select** check box (☐) next to the application.

   > **Note:** Before removing the group membership of an application from the group, make sure the application is associated with at least one application mapping group. An application cannot exist without a membership to a group and gets automatically deleted if you dissociate it from all the existing groups.

   > **Note:** You cannot remove an application from the application mapping group if the application belongs to the Top N inclusion list. If you try to remove the application from the application mapping group by clearing the check box (☐) next to the application, the following message appears: `No changes done in application mapping group:<group_name> mapping group modified, but some of the application mappings that belong to the Inclusion List have not been removed`. You must first remove the application from the Top N Application Inclusion List before removing the application from the group.

4. Click **Save & Close.**

Deleting Application Mapping Group

You can delete an application mapping group by using the NNM iSPI Performance for Traffic Configuration form.

To delete an application mapping group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Application Mapping Groups.**

2. In the Application Mapping Groups view, select the application mapping group you want to delete, and click ❌ **Delete.**

Creating Filter Groups and Application Mapping Rules from the Command Line

Using the `nmstrafficfiltappmaptool.ovpl` command, you can create filter groups and application mapping from the command line. The `nmstrafficfiltappmaptool.ovpl` command accepts inputs from a text file (where the definition for filter groups and application mapping exists) and creates filter groups and application mapping rules in the NNM iSPI Performance for Traffic configuration console.

To create filter groups, follow these steps:

1. Log on to the Master Collector system with the administrative or root privileges.

2. With the help of a text editor, create a new text file.

3. In the text file, add the following entry:
   <*Condition_definition*>, Action = <*keep/drop*> [, FilterGroups = <*Filter_Group_Name*>]
   In this instance:
   <*Condition_definition*> is the condition defined on the flows.
   <*Filter_Group_Name*> is the name of the filter group that you want to create.
   Specify **keep** to retain the match.
   Specify **drop** to discard the match.
   You can specify multiple condition definitions separated by commas and multiple filter group names separated by spaces.

4. Save the file.

5. Go to the following directory:
   <*TrafficMasterInstallDir*>`/bin`

6. Run the following command:
   nmstrafficfiltappmaptool.ovpl [--userName=<*user name*>**] [--password=**<*password*>**] --import** <*file name*>
   In this instance,
   <*user name*> is the user name to log on to the NNM iSPI Performance for Traffic configuration console. `[userName]` is an optional parameter.
   <*password*> is the password for the above user. `[password]` is an optional parameter.
   <*file name*> is the name of the text file that you created (specify the file name with the complete location).
   The NNM iSPI Performance for Traffic creates the filter groups based on the definition provided in the text files and new groups appear in the configuration console.

To create application mapping rule, follow these steps:

1. Log on to the Master Collector system with the administrative or root privileges.

2. With the help of a text editor, create a new text file.

3. In the text file, add the following rule:
   <*Condition definition*>**, App =**<*Application Name*> **[, AppGroups =** <*Application Group Name*>**]**
   In this instance:
   <*Condition_definition*> is the condition defined on the flows.
   <*Application Name*> is the name of the application that you want to map to the expression.
   Optional. <*Application Group Name*> is the group name for the application.
   You can combine multiple conditions using the Boolean Operators, AND and OR, to create a condition expression. For example, condition expression (DstPort = 22000 AND (DstIP equals 192.168.0.0 OR DstIP equals 192.168.0.1)) is created using AND and OR to combine three conditions.

4. Save the file.

5. Go to the following directory:
   <*TrafficMasterInstallDir*>`/bin`

6. Run the following command:
   nmstrafficfiltappmaptool.ovpl [--userName=<*user name*> **][--password=**<*password*>**]--import** <*file name*>
   In this instance,
   <*user name*> is the user name to log on to the NNM iSPI Performance for Traffic configuration console. `[userName]` is an optional parameter.
   <*password*> is the password for the above user. `[password]` is an optional parameter.
   <*file name*> is the name of the text file that you created (specify the file name with the complete location).
   The NNM iSPI Performance for Traffic creates the application mapping groups based on the definition provided in the text files and new groups appear in the configuration console.

Configuring Classes of Service

The NNM iSPI Performance for Traffic enables you to enrich every traffic flow by adding the Class of Service attribute to the flow. You can define this attribute by using the NNM iSPI Performance for Traffic Configuration form. If defined, you can sort or group different values of traffic metrics on reports by this attribute.

Defining Class of Service

To use the Class of Service property to rank traffic metric values, you must define Class of Service first by using the NNM iSPI Performance for Traffic Configuration form.

To define a class of service, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Type Of Service Groups.**
2. In the Type Of Service Groups view, click **Add.** A new form opens.
3. In the new form, follow these steps:
   a. In the TOS Group Name box, type a name. While configuring a Leaf Collector instance (see "Adding Leaf Collector Instance" on page 13), you can associate this TOS group name with the Leaf Collector.

   b. In the Type Of Service Group Details section, select a Type of Service (ToS) value, select an operation (= or `between`), and then select a ToS value (select two values if you choose the `between` operation).

   c. In the Operand box, type the name of the class of service. This class of service name appears in the 'Grouping By' metric list on reports if you associate the TOS group with a Leaf Collector instance.

   d. If you want to add another class of service, click **Add,** and then repeat step c.
4. Click **Save & Close.** The newly defined TOS group appears in the Type Of Service Groups view.

Modifying Class of Service Definitions

You can modify the existing Class of Service definitions by using the NNM iSPI Performance for Traffic Configuration form.

To modify a class of service, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Type Of Service Groups.**
2. In the Type Of Service Groups view, select a TOS group, and then click **Open.** A new form opens.
3. In the new form, follow these steps:
   a. In the Type Of Service Group Details section, modify existing class of service definitions by changing the Type of Service (ToS) value or operation (= or `between`).

   b. In the Operand box, you can change the name of the class of service.

   c. If you want to add another class of service, click **Add.** If you want to remove an existing class of service, click **Remove.**
4. Click **Save & Close.**

Deleting TOS Groups

By using the NNM iSPI Performance for Traffic Configuration form, you can delete TOS groups that you have created.

To delete a TOS group, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Type Of Service Groups.**

2. In the Type Of Service Groups view, select the TOS group you want to delete, and click ✖ **Delete.**

Adding Top N Application Inclusion List

The Top N Application Inclusion List view enables you to configure the NNM iSPI Performance for Traffic to always include select applications on the Top N reports in Interface_Traffic_Aggregated reports folder. In Leaf Collector only top contributors to traffic are retained for a time interval and the rest are grouped into a single 'Anonymous' bucket. In the case of applications, you can configure a set of applications such that traffic data for them are always retained irrespective of their contribution to the traffic volume.

To open the Top N Application Inclusion List view, open the NNM iSPI Performance for Traffic Configuration form, and click **Top N Application Inclusion List.**

To add an application to the list of applications that always appear on Top N reports, follow these steps:

1. Select an application mapping group.

2. From the left pane, select the applications that you want to add to the list.

3. Click **Add.** The selected applications appear on every Top N report.

To remove an application from the list, select the application from the right pane, and then click **Remove.**

If you define multiple applications with the same name, the NNM iSPI Performance for Traffic Configuration form lets you add only one application from among the applications with the same name.

Configuring Threshold to Monitor Traffic Flow

The NNM iSPI Performance for Traffic thresholds enable you to monitor the volume of traffic passing through an interface. Use Threshold Configuration feature to specify the set of interfaces for which you want to monitor threshold. You can select a group of interfaces, all interfaces in a selected node, or all interfaces for a selected site for threshold configuration. The NNM iSPI Performance for Traffic monitors each interface of the node or site individually based on the configured threshold.

The NNM iSPI Performance for Traffic uses the following metrics for threshold monitoring.

- Volume: Refers to the number of bytes flowing through the interface. The units that the NNM iSPI Performance for Traffic uses to measure the traffic volume are Bytes, Kilobytes, Megabytes, and Gigabytes.

- Application Bandwidth: Refers to the bandwidth consumed by an application on an interface. The units that the NNM iSPI Performance for Traffic uses to measure the traffic bandwidth are bps, Kbps, Mbps, and Gbps. You can also set the Application Bandwidth threshold as Percent Utilization. Percent Utilization refers to the threshold based on the percentage of the interface bandwidth consumed by an application out of the total bandwidth available on an interface. For example, consider that you set an Application Bandwidth threshold on the Interface Fa0/0 for application A as x Percent Utilization. If the bandwidth utilized by the application A exceeds x percent of the total available bandwidth on the interface, an incident is raised.

> **Note:** The above metrics are applied to both ingress and egress traffic flows and both are monitored for threshold violations.

The NNM iSPI Performance for Traffic computes the metric values for the selected set of thresholds every five minutes. It generates or clears the incidents based on the computed values and configured threshold values.

The NNM iSPI Performance for Traffic performs the following actions if the threshold for an interface is breached:

- Creates an incident for the breached threshold

  For information about incident types supported by the NNM iSPI Performance for Traffic, see Incident Types Supported.

- Updates the threshold state of the interface in Flow Interfaces view.
- Updates the threshold state of the related node.

For example, if you have configured a threshold on the Interface Fa0/0 of Node A, and the traffic volume passing through Interface Fa0/0 crosses the threshold value, the NNM iSPI Performance for Traffic automatically raises an incident and updates the threshold state for the following:

- Flow interface Fa0/0
- Hosting node Node A

When the traffic volume comes back to the acceptable range, the NNM iSPI Performance for Traffic clears the incident and updates the status of the flow interface and the node accordingly.

The following workspaces enable you to view the interfaces and nodes affected by a threshold:

- Threshold Exceptions Reporting Interfaces
- Threshold Exceptions Reporting Nodes

Launching the Threshold Configuration Panel

To launch the threshold configuration form, follow these steps:

1. Log on to HP Network Node Manager i Software (NNMi) console using your user name and password.

   You must have administrator privileges.

2. Click **Configuration.** The Configuration tab expands.

3. Select **NNM iSPI Performance for Traffic Configuration**

4. On the Configuration panel, click **Threshold.**

You can perform the following tasks using the Threshold Configuration panel:

Icon	Description
⊞	Enables you to create a new threshold.
✎	Performs the following operations: • Opens the Threshold Details form for the selected threshold. • Enables you to edit the selected threshold configuration.
✖	Deletes the selected threshold.
⟳	Retrieves the last saved threshold configuration from the database and displays the configured thresholds in the Threshold Configuration panel.

Any changes made to the threshold settings are applied to the poller immediately.

Adding New Threshold Settings Using the Threshold Details Form

To add a new threshold, follow these steps:

1. Launch the Threshold Configuration panel.

2. Click ⊞ **New** in Threshold Configuration panel to open the Threshold Details form.

3. NNM iSPI Performance for Traffic assigns the new threshold to the interfaces configured for an existing group of interfaces, nodes, or sites. Specify the following information in the Threshold Details form:

Field Name	Description
Metric	Select one of the following metrics for the threshold: ■ Volume:[1] ■ Bandwidth:[3]
High Value	Type a high value for the threshold. ■ If you have selected Volume in the metric field, you can select Bytes, KB, MB, or GB for the threshold. ■ If you have selected Bandwidth in the metric field, you can select bps, Kbps, Mbps, Gbps, or Percent Utilization for the threshold. If the traffic volume or data bandwidth for the interfaces cross this high value, the NNM iSPI Performance for Traffic creates an NNMi incident and updates the status for the node for which the interfaces are configured.
High Rearm Value	Type a high rearm value for the threshold. The high rearm value specifies the acceptable range of traffic volume or data bandwidth for the selected interfaces. The NNM iSPI Performance for Traffic performs the following tasks after the traffic volume or data bandwidth for the selected interfaces reach the high rearm value: ■ Updates the life-cycle state of the NNMi incident to Closed state ■ Updates the node status

[1] Selecting this metric enables the threshold to monitor the volume of traffic passing through the selected interfaces.[2]

[2] Selected interfaces for a threshold could specify the interfaces in the selected interface group, or the interfaces configured for the selected node or site.

[3] Selecting this metric enables the threshold to monitor the application bandwidth for the selected interfaces.

Application or ToS - Set Threshold By	Select one of the following types for the threshold: - Application: Select this option if you want NNM iSPI Performance for Traffic to monitor each application for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. On the Application Mappings tab, select the application names you want to monitor. Make sure that you select at least one application. - All Applications: Select this option if you want NNM iSPI Performance for Traffic to monitor all applications for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. - ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor each class of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. On the Type of Service Mappings tab, select the class of service names that you want to monitor. Make sure that you select at least one class of service. - All ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor all classes of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. - None: Select this option if you want NNM iSPI Performance for Traffic to monitor the total volume of traffic passing through each interface in the selected interface group, node, or site. NNM iSPI Performance for Traffic monitors the traffic volume across all applications and classes of services if you select this option. You can select this option only if you have selected Volume as the threshold metric. On the Type of Service Mappings tab, if the ToS Operator column displays the value EQUALS, the ToS Second Number column displays the value -1. The ToS Second Number column displays the upper ToS range only if the ToS Operator column displays the value IN. The value IN specifies that you have selected 'between' in the Operation field when creating the ToS group. For more information about creating ToS groups, see Add Class of Service Definitions.

Topology Filters - Set Threshold By	Select one of the following options to select a topology filter for the threshold: - Interface: Select this option if you want the threshold to monitor a group of interfaces. On the Flow Enabled Interfaces tab, select the interfaces for the threshold. - Node: Select this option if you want the threshold to monitor all the interfaces configured for a selected node. On the Flow Enabled Nodes tab, select the nodes for the threshold. The threshold monitors all interfaces configured for the selected nodes. - Site: Select this option if you want the threshold to monitor all the interfaces configured for a selected site. On the Sites tab, select the sites for the threshold. The threshold monitors all interfaces configured for all the nodes in the selected sites.

4. Click **Save and Close** to save the threshold configuration and close the Threshold Details form.

If you do not select any value in the Application or ToS and Topology Filters section, the configured threshold used by NNM iSPI Performance for Trafficis applied to all applications, ToS, interfaces, nodes, and sites.

Adding New Threshold Settings for Interfaces Using the Traffic Analysis Workspace

You can use the views displayed in the Traffic Analysis workspace to configure thresholds for interfaces.

To add a new threshold for an interface, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select one of the following views:
   - Traffic Reporting Interfaces
   - Threshold Exceptions Reporting Interfaces
3. Right-click a interface and select **Configure Traffic Threshold** to open the Threshold Details form.
4. NNM iSPI Performance for Traffic assigns the new threshold to the interface that you selected in the view. Specify the following information in the Threshold Details form:

Field Name	Description
Metric	Select one of the following metrics for the threshold: ▪ Volume:[1] ▪ Bandwidth:[3]
High Value	Type a high value for the threshold. ▪ If you have selected Volume in the metric field, you can select Bytes, KB, MB, or GB for the threshold. ▪ If you have selected Bandwidth in the metric field, you can select bps, Kbps, Mbps, Gbps, or Percent Utilization for the threshold. If the traffic volume or data bandwidth for the interfaces cross this high value, the NNM iSPI Performance for Traffic creates an NNMi incident and updates the status for the node for which the interfaces are configured.
High Rearm Value	Type a high rearm value for the threshold. The high rearm value specifies the acceptable range of traffic volume or data bandwidth for the selected interfaces. The NNM iSPI Performance for Traffic performs the following tasks after the traffic volume or data bandwidth for the selected interfaces reach the high rearm value: ▪ Updates the life-cycle state of the NNMi incident to Closed state ▪ Updates the node status

[1] Selecting this metric enables the threshold to monitor the volume of traffic passing through the selected interfaces.[2]

[2] Selected interfaces for a threshold could specify the interfaces in the selected interface group, or the interfaces configured for the selected node or site.

[3] Selecting this metric enables the threshold to monitor the application bandwidth for the selected interfaces.

Application or ToS - Set Threshold By	Select one of the following types for the threshold: - Application: Select this option if you want NNM iSPI Performance for Traffic to monitor each application for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. On the Application Mappings tab, select the application names you want to monitor. Make sure that you select at least one application. - All Applications: Select this option if you want NNM iSPI Performance for Traffic to monitor all applications for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. - ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor each class of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. On the Type of Service Mappings tab, select the class of service names that you want to monitor. Make sure that you select at least one class of service. - All ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor all classes of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. - None: Select this option if you want NNM iSPI Performance for Traffic to monitor the total volume of traffic passing through each interface in the selected interface group, node, or site. NNM iSPI Performance for Traffic monitors the traffic volume across all applications and classes of services if you select this option. You can select this option only if you have selected Volume as the threshold metric. On the Type of Service Mappings tab, if the ToS Operator column displays the value EQUALS, the ToS Second Number column displays the value -1. The ToS Second Number column displays the upper ToS range only if the ToS Operator column displays the value IN. The value IN specifies that you have selected 'between' in the Operation field when creating the ToS group. For more information about creating ToS groups, see Add Class of Service Definitions.

Topology Filters - Set Threshold By	NNM iSPI Performance for Traffic automatically selects the option **Interface** when you create the threshold from the Traffic Analysis interface views. The interface that you selected in the Traffic Analysis interface view appears as selected in the Flow Enabled Interfaces tab.

5. Click one of the following options:
   - Save and Close:[1]
   - Save and New:[2]

To add a new threshold for a site, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Sites** view.
3. Right-click a site and select **Configure Traffic Threshold** to open the Threshold Details form.
4. NNM iSPI Performance for Traffic assigns the new threshold to the interfaces configured for the site that you selected in the view. Specify the following information in the Threshold Details form:

Field Name	**Description**
Threshold Name	Enter a unique name for the threshold. NNM iSPI Performance for Traffic identifies the threshold by its name.
Metric	Select one of the following metrics for the threshold: ▪ Volume:[3] ▪ Bandwidth:[5]

[1] To save the threshold configuration and close the Threshold Details form.

[2] To save the threshold configuration and create a new threshold.

[3] Selecting this metric enables the threshold to monitor the volume of traffic passing through the selected interfaces.[4]

[4] Selected interfaces for a threshold could specify the interfaces in the selected interface group, or the interfaces configured for the selected node or site.

[5] Selecting this metric enables the threshold to monitor the application bandwidth for the selected interfaces.

High Value	Type a high value for the threshold. ▪ If you have selected Volume in the metric field, you can select Bytes, KB, MB, or GB for the threshold. ▪ If you have selected Bandwidth in the metric field, you can select bps, Kbps, Mbps, Gbps, or Percent Utilization for the threshold. If the traffic volume or data bandwidth for the interfaces cross this high value, the NNM iSPI Performance for Traffic creates an NNMi incident and updates the status for the node for which the interfaces are configured.
High Rearm Value	Type a high rearm value for the threshold. The high rearm value specifies the acceptable range of traffic volume or data bandwidth for the selected interfaces. The NNM iSPI Performance for Traffic performs the following tasks after the traffic volume or data bandwidth for the selected interfaces reach the high rearm value: ▪ Updates the life-cycle state of the NNMi incident to Closed state ▪ Updates the node status

Application or ToS - Set Threshold By	Select one of the following types for the threshold: - Application: Select this option if you want NNM iSPI Performance for Traffic to monitor each application for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. On the Application Mappings tab, select the application names you want to monitor. Make sure that you select at least one application. - All Applications: Select this option if you want NNM iSPI Performance for Traffic to monitor all applications for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. - ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor each class of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. On the Type of Service Mappings tab, select the class of service names that you want to monitor. Make sure that you select at least one class of service. - All ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor all classes of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. - None: Select this option if you want NNM iSPI Performance for Traffic to monitor the total volume of traffic passing through each interface in the selected interface group, node, or site. NNM iSPI Performance for Traffic monitors the traffic volume across all applications and classes of services if you select this option. You can select this option only if you have selected Volume as the threshold metric. On the Type of Service Mappings tab, if the ToS Operator column displays the value EQUALS, the ToS Second Number column displays the value -1. The ToS Second Number column displays the upper ToS range only if the ToS Operator column displays the value IN. The value IN specifies that you have selected 'between' in the Operation field when creating the ToS group. For more information about creating ToS groups, see Add Class of Service Definitions.

Topology Filters - Set Threshold By	NNM iSPI Performance for Traffic automatically selects the option **Site** when you create the threshold from the Traffic Sites view in the Traffic Analysis workspace. The site that you selected in the Traffic Sites view appears as selected in the Sites tab.

5. Click **Save and Close** to save the threshold configuration and close the Threshold Details form.

If you do not select any value in the Application or ToS and Topology Filters section, the configured threshold used by NNM iSPI Performance for Trafficis applied to all applications, ToS, interfaces, nodes, and sites.

Adding New Threshold Settings for Nodes Using the Traffic Analysis Workspace

You can use the views displayed in the Traffic Analysis workspace to configure thresholds for nodes.

To add a new threshold for a node, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select one of the following views:
   - Traffic Reporting Nodes
   - Threshold Exceptions Reporting Nodes
3. Right-click a node and select **Configure Traffic Threshold** to open the Threshold Details form.
4. NNM iSPI Performance for Traffic assigns the new threshold to the interfaces configured for the node that you selected in the view. Specify the following information in the Threshold Details form:

Field Name	Description

Metric	Select one of the following metrics for the threshold: ▪ Volume:[1] ▪ Bandwidth:[3]
High Value	Type a high value for the threshold. ▪ If you have selected Volume in the metric field, you can select Bytes, KB, MB, or GB for the threshold. ▪ If you have selected Bandwidth in the metric field, you can select bps, Kbps, Mbps, Gbps, or Percent Utilization for the threshold. If the traffic volume or data bandwidth for the interfaces cross this high value, the NNM iSPI Performance for Traffic creates an NNMi incident and updates the status for the node for which the interfaces are configured.
High Rearm Value	Type a high rearm value for the threshold. The high rearm value specifies the acceptable range of traffic volume or data bandwidth for the selected interfaces. The NNM iSPI Performance for Traffic performs the following tasks after the traffic volume or data bandwidth for the selected interfaces reach the high rearm value: ▪ Updates the life-cycle state of the NNMi incident to Closed state ▪ Updates the node status

[1] Selecting this metric enables the threshold to monitor the volume of traffic passing through the selected interfaces.[2]

[2] Selected interfaces for a threshold could specify the interfaces in the selected interface group, or the interfaces configured for the selected node or site.

[3] Selecting this metric enables the threshold to monitor the application bandwidth for the selected interfaces.

Application or ToS - Set Threshold By	Select one of the following types for the threshold: ▪ Application: Select this option if you want NNM iSPI Performance for Traffic to monitor each application for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. On the Application Mappings tab, select the application names you want to monitor. Make sure that you select at least one application. ▪ All Applications: Select this option if you want NNM iSPI Performance for Traffic to monitor all applications for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. ▪ ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor each class of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. On the Type of Service Mappings tab, select the class of service names that you want to monitor. Make sure that you select at least one class of service. ▪ All ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor all classes of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. ▪ None: Select this option if you want NNM iSPI Performance for Traffic to monitor the total volume of traffic passing through each interface in the selected interface group, node, or site. NNM iSPI Performance for Traffic monitors the traffic volume across all applications and classes of services if you select this option. You can select this option only if you have selected Volume as the threshold metric. On the Type of Service Mappings tab, if the ToS Operator column displays the value EQUALS, the ToS Second Number column displays the value -1. The ToS Second Number column displays the upper ToS range only if the ToS Operator column displays the value IN. The value IN specifies that you have selected 'between' in the Operation field when creating the ToS group. For more information about creating ToS groups, see Add Class of Service Definitions.

Topology Filters - Set Threshold By	NNM iSPI Performance for Traffic automatically selects the option **Node** when you create the threshold from the Traffic Analysis node views. The node that you selected in the Traffic Analysis node view appears as selected in the Flow Enabled Nodes tab.

5. Click **Save and Close** to save the threshold configuration and close the Threshold Details form.

If you do not select any value in the Application or ToS and Topology Filters section, the configured threshold used by NNM iSPI Performance for Traffic is applied to all applications, ToS, interfaces, nodes, and sites.

Adding New Threshold Settings for Sites Using the Traffic Analysis Workspace

You can use the views displayed in the Traffic Analysis workspace to configure thresholds for sites.

To add a new threshold for a site, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Sites** view.
3. Right-click a site and select **Configure Traffic Threshold** to open the Threshold Details form.
4. NNM iSPI Performance for Traffic assigns the new threshold to the interfaces configured for the site that you selected in the view. Specify the following information in the Threshold Details form:

Field Name	Description

Metric	Select one of the following metrics for the threshold: ▪ Volume:[1] ▪ Bandwidth:[3]
High Value	Type a high value for the threshold. ▪ If you have selected Volume in the metric field, you can select Bytes, KB, MB, or GB for the threshold. ▪ If you have selected Bandwidth in the metric field, you can select bps, Kbps, Mbps, Gbps, or Percent Utilization for the threshold. If the traffic volume or data bandwidth for the interfaces cross this high value, the NNM iSPI Performance for Traffic creates an NNMi incident and updates the status for the node for which the interfaces are configured.
High Rearm Value	Type a high rearm value for the threshold. The high rearm value specifies the acceptable range of traffic volume or data bandwidth for the selected interfaces. The NNM iSPI Performance for Traffic performs the following tasks after the traffic volume or data bandwidth for the selected interfaces reach the high rearm value: ▪ Updates the life-cycle state of the NNMi incident to Closed state ▪ Updates the node status

[1] Selecting this metric enables the threshold to monitor the volume of traffic passing through the selected interfaces.[2]

[2] Selected interfaces for a threshold could specify the interfaces in the selected interface group, or the interfaces configured for the selected node or site.

[3] Selecting this metric enables the threshold to monitor the application bandwidth for the selected interfaces.

Application or ToS - Set Threshold By	Select one of the following types for the threshold: ▪ Application: Select this option if you want NNM iSPI Performance for Traffic to monitor each application for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. On the Application Mappings tab, select the application names you want to monitor. Make sure that you select at least one application. ▪ All Applications: Select this option if you want NNM iSPI Performance for Traffic to monitor all applications for each of the selected interfaces. If you select **Bandwidth** as the threshold metric, you can select either Application or All Applications as the threshold type. ▪ ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor each class of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. On the Type of Service Mappings tab, select the class of service names that you want to monitor. Make sure that you select at least one class of service. ▪ All ToS: Select this option if you want NNM iSPI Performance for Traffic to monitor all classes of service for each of the selected interfaces. Make sure that you select this threshold type if you have selected **Volume** as the threshold metric. ▪ None: Select this option if you want NNM iSPI Performance for Traffic to monitor the total volume of traffic passing through each interface in the selected interface group, node, or site. NNM iSPI Performance for Traffic monitors the traffic volume across all applications and classes of services if you select this option. You can select this option only if you have selected Volume as the threshold metric. On the Type of Service Mappings tab, if the ToS Operator column displays the value EQUALS, the ToS Second Number column displays the value -1. The ToS Second Number column displays the upper ToS range only if the ToS Operator column displays the value IN. The value IN specifies that you have selected 'between' in the Operation field when creating the ToS group. For more information about creating ToS groups, see Add Class of Service Definitions.

Topology Filters - Set Threshold By	NNM iSPI Performance for Traffic automatically selects the option **Site** when you create the threshold from the Traffic Sites view in the Traffic Analysis workspace. The site that you selected in the Traffic Sites view appears as selected in the Sites tab.

5. Click **Save and Close** to save the threshold configuration and close the Threshold Details form.

If you do not select any value in the Application or ToS and Topology Filters section, the configured threshold used by NNM iSPI Performance for Trafficapplies to all applications, ToS, interfaces, nodes, and sites.

Modifying Threshold Settings Using the Threshold Details Form

To modify an existing threshold, follow these steps:

1. Launch the Threshold Configuration panel.

2. Select the threshold you want to modify.

   You can select multiple thresholds. The NNM iSPI Performance for Traffic displays each threshold in a separate Threshold Details form.

3. Click **Open** in Threshold Configuration panel to open the Threshold Details form.

4. You can modify only the following values for an existing threshold:

Field Name	**Description**
High Value	Type a high value for the threshold. ▪ If you have selected Volume in the metric field, you can select Bytes, KB, MB, or GB for the threshold. ▪ If you have selected Bandwidth in the metric field, you can select bps, Kbps, Mbps, Gbps, or Percent Utilization for the threshold. If the traffic volume or data bandwidth for the interfaces cross this high value, the NNM iSPI Performance for Traffic creates an NNMi incident and updates the status for the node for which the interfaces are configured.

High Rearm Value	Type a high rearm value for the threshold. The high rearm value specifies the acceptable range of traffic volume or data bandwidth for the selected interfaces. The NNM iSPI Performance for Traffic performs the following tasks after the traffic volume or data bandwidth for the selected interfaces reach the high rearm value: ▪ Updates the life-cycle state of the NNMi incident to Closed state ▪ Updates the node status

5. Click **Save and Close** to save the modified threshold configuration and close the Threshold Details form.

Iif you did not select any value in the Topology Filters section when creating the threshold, NNM iSPI Performance for Traffic applies the threshold to all applications, ToS, interfaces, nodes, and sites. In such a scenario, the Threshold Details form does not display any value in the following tabs:

- Sites
- Flow Node/Interface
- Type of service Mappings
- Application Mappings

Deleting Threshold Settings Using the Threshold Details Form

To delete an existing threshold, follow these steps:

1. Launch the Threshold Configuration panel.
2. Select the threshold you want to delete.

   You can select multiple thresholds for deletion.
3. Click ✕ **Delete**in Threshold Configuration panel.

The NNM iSPI Performance for Traffic performs the following tasks when you delete a threshold:

- Rearms all the related incidents in the Exceeded state. Rearming the incidents sets the incident state to Normal state.
- Sets the node state to Normal state if all the incidents belonging to the node are set to the Normal state.

Chapter 3: Diagnosing the Health of the NNM iSPI Performance for Traffic

The Traffic Health view enables you to monitor the health of the NNM iSPI Performance for Traffic. The view presents a comprehensive list of all the problems encountered by the selected NNM iSPI Performance for Traffic Leaf Collector during its operation.

To open the Traffic Health view, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Traffic Health.**
2. Click **Refresh** to refresh the list of Leaf Collectors available on the view.
3. Select a Leaf Collector and click **Open** to open the Traffic Health view for the Leaf Collector.

The basic attributes of the view are the following:

Attributes	Description
Problem ID	ID of the problem encountered by the NNM iSPI Performance for Traffic
Severity	Severity of the problem
Start Time	Time when the problem started
End Time	Time when the problem got resolved
Status	Status of the problem
Message	Problem description
Suggestion	Suggestions to resolve the problem

Verifying the Installation Configuration Parameters for Master Collector

For error-free performance, make sure that the NNM iSPI Performance for Traffic can communicate with the following applications and application components:

- NNMi
- NPS
- Shared drive between NNMi, NPS, and the NNM iSPI Performance for Traffic Master Collector.
- Secondary NNMi Server (if you have configured the NNM iSPI Performance for Traffic for high

availability)

If the secondary NNMi server is configured correctly, the NNM iSPI Performance for Traffic can work even if the primary NNMi server is not configured correctly.

The NNM iSPI Performance for Traffic Installation Verification form enables you to view, verify and modify the configuration parameters you entered when installing the NNM iSPI Performance for Traffic Master Collector.

The form displays the status of each configuration category.

Click Validate **Validate** to display the invalid configuration settings in red and the highlight the invalid configuration settings.

To modify a configuration parameter, follow these steps:

1. On the Installation Verification form, click Edit **Edit** to modify the value for any of the following parameters:

   The NNM iSPI Performance for Traffic Installation Verification form lists the following parameters:

Parameter Title	**Parameter Detail**	**Details Description**
Primary NNMi Server Details		
NNM HTTPS Port	com.hp.ov.nms.spi.traffic-master.Nnm.https.port	The HTTPS port that the primary NNMi server uses to communicate with the NNM iSPI Performance for Traffic Master Collector
NNM Password	com.hp.ov.nms.spi.traffic-master.Nnm.password	The administrator password for the primary NNMi server
NNM Username	com.hp.ov.nms.spi.traffic-master.Nnm.username	The administrator user name for the primary NNMi server
NNM Hostname	com.hp.ov.nms.spi.traffic-master.Nnm.hostname	The Fully Qualified Domain Name (FQDN) for the primary NNMi server

NNM HTTP Port	com.hp.ov.nms.spi.traffic-master.Nnm.port	The HTTP Port that the primary NNMi server uses to communicate with the NNM iSPI Performance for Traffic Master Collector
Secondary NNMi Server Details (Applicable Only If the NNM iSPI Performance for Traffic is Configured for High Availability)		
NNM SECONDARY Username	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.username	The administrator username for the secondary NNMi server
NNM SECONDARY HTTPS Port	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.https.port	The HTTPS port that the secondary NNMi server uses to communicate with the NNM iSPI Performance for Traffic Master Collector
NNM SECONDARY Hostname	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.hostname	The Fully Qualified Domain Name (FQDN) for the secondary NNMi server
NNM SECONDARY Present	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.present	Specifies whether the secondary NNMi server is configured for High Availability and Application Failover True if Secondary NNM has been configured and failover enabled
NNM SECONDARY HTTP Port	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.port	The HTTP port that the secondary NNMi server uses to communicate with the NNM iSPI Performance for Traffic Master Collector
NNM SECONDARY Password	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.password	The administrator password for the secondary NNMi server
Primary Shared Drive Details		

NNM SPI Data Path	com.hp.ov.nms.spi.traffic-master.Nnm.perfspidatapath	The shared folder on the primary NNMi server that the Master Collector and NPS use for storing the data collected by the NNM iSPI Performance for Traffic
Secondary Shared Drive Details (Applicable Only If NNM iSPI Performance for Traffic is Configured for High Availability)		
NNM SECONDARY SPI Data Path	com.hp.ov.nms.spi.traffic-master.Nnm.secondary.perfspidatapath	The shared folder on the secondary NNMi server that the Master Collector and NPS use for storing the data collected by the NNM iSPI Performance for Traffic
NPS Details		
NPS Port	com.hp.ov.nms.spi.traffic-master.nps.port	The port that the Master Collector uses to communicate with the NPS server NPS and the NNM iSPI Performance for Traffic must use same mode of communication protocol. That is, if NPS uses HTTPS, the NNM iSPI Performance for Traffic must also use HTTPS protocol.
NPS Sybase Username	com.hp.ov.nms.spi.traffic-master.nps.sybase.user	The administrator user name for the NPS database
NPS Sybase Password	com.hp.ov.nms.spi.traffic-master.nps.sybase.password	The administrator password for the NPS database
NPS Hostname	com.hp.ov.nms.spi.traffic-master.nps.hostname	The Fully Qualified Domain Name (FQDN) for the system where NPS and NNM iSPI Performance for Metrics are installed

2. Specify the configuration value in the Value field.

3. Click Save **Save** to save the modified value.

4. The NNM iSPI Performance for Traffic validates your changes. If the values you specified are incorrect, the Installation Verification form displays an error message for the incorrect configuration setting.

5. Restart the NNM iSPI Performance for Traffic Master Collector to apply the changes.

> **Note:** Using this form, you can update the configuration parameters defined in the following properties files:
>
> - `nnm.extended.properties`
> - `nps.extended.properties`
> - `nms-traffic-master.address.properties`
>
> You can find these properties files at the following location:
>
> *Windows:* `<Data_Dir>\nmsas\traffic-master\conf\`
>
> *Linux:* `/var/opt/OV/nmsas/traffic-master/conf/`

Viewing Unresolved IPs

You can view the IP addresses of interfaces (which are capable of reporting the traffic flow data) that the NNM iSPI Performance for Traffic failed to resolve. The Unresolved NNM IP view in the NNM iSPI Performance for Traffic Configuration form enables you to view the list of IP addresses of interfaces that could not be resolved by the HP Network Node Manager i Software.

To view the unresolved IPs of flow reporting interfaces, click **Unresolved NNM IP** in the NNM iSPI Performance for Traffic Configuration form.

The view shows the following details:

- IP address: IP address of the interface that is configured to report the traffic flow data.
- Interface index: Index of the interface.
- Last attempt time: Time-stamp of the last attempt made by the NNM iSPI Performance for Traffic to resolve the IP address.

Click 🔄 **Refresh** to refresh the list of attempts.

Listing the Undefined Applications for a Leaf Collector

When a flow record contains applications that do not satisfy any existing application mapping rule, the NNM iSPI Performance for Traffic marks these applications as "Undefined Application".

The NNM iSPI Performance for Traffic Undefined Applications form enables you to list and view the applications for which no application mapping exists.

If you see these Undefined Applications generating significant volume of traffic, you can create the application mappings to identify the applications contributing to traffic volume.

The Undefined Applications form lists the following parameters:

Column Name	Description
Destination Port	The port that does not have any application mapping configured
Number of Bytes	Traffic volume generated from this port
Node Name	The node for which the port is configured
Interface Name	The interface for which the port is configured
Ingress/Egress	Type of traffic generated from the port

Viewing the Threshold Exceptions Reporting Nodes

The Threshold Exceptions Reporting Nodes view shows the list of all nodes on the network that host at least one interface that breached a NNM iSPI Performance for Traffic threshold.

To view the Threshold Exceptions Reporting Nodes, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Threshold Exceptions Reporting Nodes** view.

For each node displayed, you can see the following information:

- Threshold State: Threshold state for the node. The states can be Exceeded or Normal.
- Node Name: Hostname of the node that exports flows.
- Traffic Type: Type of traffic data passing through the node.
- Tenant Name: Name of the tenant to which the node is assigned to.
- Traffic Master Server: Fully Qualified Domain Name (FQDN) of the Master Collector that is processing the flows.
  When the NNM iSPI Performance for Traffic is configured in GNM, the column displays the FQDN of the regional Master Collector that processes and forwards the flows to the Global Master Collector.

For more details about each node, open the Traffic Reporting Node form.

Analysis Pane in the Threshold Breached Reporting Nodes view

The Analysis Panel in the Threshold Breached Reporting Nodes view provides additional details on the selected node.

The Summary pane displays the analysis period for the traffic passing through the node.

The rightmost pane displays the following tabs:

- Top Apps-In:[1]
- Top Apps-Out:[2]
- Top ToS-In:[3]
- Top ToS-Out:[4]
- Top IP Protocol-In:[5]
- Top IP Protocol-Out:[6]

Viewing the Threshold Exceptions Reporting Interfaces

The Threshold Exceptions Reporting Interfaces view presents the list of all interfaces on the network that breached a NNM iSPI Performance for Traffic threshold.

To view the Threshold Exceptions Reporting Interfaces, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Threshold Exceptions Reporting Interfaces** view.

For each interface displayed, you can see the following information:

- Threshold State: Threshold state for the node. The states can be Exceeded or Normal.
- Interface Name: Qualified interface name for the interface
- Hosted On: Hostname of the node on which the interface is hosted
- Traffic Type: Type of traffic data passing through the interface

[1] In this tab, a pie chart displays the top applications that are contributing to the ingress network traffic as reported by all the interfaces hosted on the node.

[2] In this tab, a pie chart displays the top applications that are contributing to the egress network traffic as reported by all the interfaces hosted on the node.

[3] In this tab, a pie chart displays the top Type-of-Service values that are contributing to the ingress network traffic as reported by all the interfaces hosted on the node.

[4] In this tab, a pie chart displays the top Type-of-Service values that are contributing to the egress network traffic as reported by all the interfaces hosted on the node.

[5] In this tab, a pie chart displays the top IP protocols that are contributing to the ingress network traffic as reported by all the interfaces hosted on the node.

[6] In this tab, a pie chart displays the top IP protocols that are contributing to the egress network traffic as reported by all the interfaces hosted on the node.

- Flow Processing Enabled: Shows if the interface is enabled to collect flow packets
- Tenant Name: Name of the tenant to which the node is assigned to
- Is Active: Shows active and inactive flow-enabled interfaces
- Traffic Master Server: Fully Qualified Domain Name (FQDN) of the Master Collector that is processing the flows.
  When the NNM iSPI Performance for Traffic is configured in GNM, the column displays the FQDN of the regional Master Collector that processes and forwards the flows to the Global Master Collector.

For more details about each interface, open the Traffic Reporting Interface form.

Analysis Pane in the Threshold Breached Reporting Interfaces view

The Analysis Panel in the Threshold Exceptions Reporting Interfaces view provides additional details on the selected node.

The Summary pane displays the analysis period for the traffic passing through the interface.

The rightmost pane displays the following tabs:

- Top Apps-In:[1]
- Top Apps-Out:[2]
- Top ToS-In:[3]
- Top ToS-Out:[4]
- Top IP Protocol-In:[5]
- Top IP Protocol-Out:[6]

[1] In this tab, a pie chart displays the top applications that are contributing to the ingress network traffic as reported by the interface.
[2] In this tab, a pie chart displays the top applications that are contributing to the egress network traffic as reported by the interface.
[3] In this tab, a pie chart displays the top Type-of-Service values that are contributing to the ingress network traffic as reported by the interface.
[4] In this tab, a pie chart displays the top Type-of-Service values that are contributing to the egress network traffic as reported by the interface.
[5] In this tab, a pie chart displays the top IP protocols that are contributing to the ingress network traffic as reported by the interface.
[6] In this tab, a pie chart displays the top IP protocols that are contributing to the egress network traffic as reported by the interface.

Incident Types Supported by the NNM iSPI Performance for Traffic

The NNM iSPI Performance for Traffic supports the incident types listed below. All the incidents have Critical severity.

1. InterfaceTraffic: Signifies the following:
   - High traffic $mtype $metric reported through an interface $interfaceName on the node $nodeName.

   - Configured threshold: $configuredValue and Measured value: $reportedValue.

   - Measurement time is: $reportedTime

2. InterfaceApplicationTraffic: Signifies the following:
   - High traffic $mtype $metric reported through an interface $interfaceName on the node $nodeName for the application $application.

   - Configured threshold: $configuredValue and Measured value: $reportedValue.

   - Measurement time is: $reportedTime

3. InterfaceApplicationSiteTraffic: Signifies the following:
   - High traffic $mtype $metric reported through an interface $interfaceName on the node $nodeName in site $siteName for an application $application.

   - Configured threshold: $configuredValue and Measured value: $reportedValue.

   - Measurement time is: $reportedTime

4. InterfaceSiteTraffic: Signifies the following:
   - High traffic $mtype $metric reported through an interface $interfaceName on the node $nodeName for site $siteName.

   - Configured threshold: $configuredValue and Measured value: $reportedValue.

   - Measurement time is: $reportedTime

5. InterfaceTosTraffic: Signifies the following:
   - High traffic $mtype $metric reported through an interface $interfaceName on the node $nodeName for the ToS $tos.

   - Configured threshold: $configuredValue and Measured value: $reportedValue.

   - Measurement time is: $reportedTime

6. InterfaceTosSiteTraffic: Signifies the following:
   - High traffic $mtype $metric reported through an interface $interfaceName on the node $nodeName for the ToS $tos in site $siteName.
   - Configured threshold: $configuredValue and Measured value: $reportedValue.
   - Measurement time is: $reportedTime
7. NodeTraffic: Signifies that one or more interfaces on node: $node has breached the traffic thresholds, where:
   - $mtype is INGRESS or EGRESS
   - $metric is BANDWIDTH or VOLUME
   - $interfaceName is InterfaceName
   - $nodeName is nodeName
   - $configuredValue threshold condition
   - $reportedValue value reported
   - $reportedTime reporting time
   - $siteName is site name
   - $tos is tos.
   - $app is Application

Chapter 4: Viewing the NNM iSPI Performance for Traffic Maps

The NNM iSPI Performance for Traffic Maps feature enables you to view the traffic flow information of NNM iSPI Performance for Traffic enabled nodes in the network in a graphical form. NNM iSPI Performance for Traffic maps obtain information all the nodes that send traffic flow to your network.

You can view all the top destinations and applications that contribute to the traffic flow in your network at any given point of time. The following NNM iSPI Performance for Traffic maps are available in the NNMi console:

- Destination and Application Map
- Top Sources by Destination Map
- Traffic Path View

Accessing Maps

To access the maps, follow these steps:

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 selection box corresponding to the required node.
3. Select the **Actions** menu in the main toolbar and select **Traffic Maps.**
4. Select the required map from the list.
5. Filter the information as required.
6. Click **Get Data** in the selected map form.

Types of Maps

The NNM iSPI Performance for Traffic shows the following types of maps:

- **Destination and Application Map:** This map displays the top destinations and applications that contribute to the traffic flow to your network. If the applications are directly connected to an IP address, the IP address is considered a destination. Some destination IP addresses may be connected to multiple applications. The map is neither a network topology map nor a device centric map. It represents the logical views of traffic flows in a network. Top N means top N application and top N destinations grouped together.

- **Top Sources by Destination Map:** This map displays the top source IP addresses that contribute to the traffic flow to a destination. You can get the information about the top contributors of traffic on your network. The map is displayed based on the IP address specified in the NNMi console. This selected IP address is considered as the source of the traffic flow. The IP address of the node from which the map is launched, should be recognized by the respective Leaf Collector.
  This map enables you to:
  - View the traffic flow heading to any destination IP address in the network. It is not necessary for the IP address to be managed by NNMi.
  - Generate the logical views of traffic flowing from the Top N sources to the specified destination in a network. This map is neither a network topology map nor a device centric map.
  - Display the traffic flowing from each IP address if a flow generator (router or switch) has multiple IP addresses. The colors of destination IP addresses displayed in the NNM iSPI Performance for Trafficmap are not associated with the status colors in NNMi.
- **Traffic Path View:** This map displays the flow of network traffic. Path View calculates the route that data flows between two IP addresses where NNM iSPI Performance for Traffic is enabled, and provides a map of that information. The two IP addresses can be assigned to any combination of end nodes or routers. To display meaningful information in the Path View map, make sure that you select valid IP addresses in the Source Node and Destination Node fields.
  This map enables you to:
  - Generate a topology map where the NNM iSPI Performance for Traffic information is overlaid on the NNMi information.
  - Display the direction of the traffic flow.
  - Deduce the metric data on the inflow side based on the reported flows on the first flow exporter in the path.
  - Deduce the destination metric data by the last flow exporter on the path.
  - Query the destination host IP address in the database for IP addresses entered in the map controls and Destination Host Name for the FQDN. When accessing the Traffic Path view map, besides applying the common filters, in the Source and Destination fields, you must designate the IP addresses at both ends of the path using either the IPv4 address.

Chapter 5: Global Network Management Environment

You can deploy the NNM iSPI Performance for Traffic in the Global Network Management (GNM) setup, which consists of regional NNMi management servers and a global NNMi management server.

In a GNM setup, you can add Master Collector and Leaf Collectors that belong to a different regional manager to your local configuration as remote collectors.

The NNM iSPI Performance for Traffic offers full support for deployment in a Global Network Management environment. Each instance has the following components:

- NNMi
- Network Performance Server
- The NNM iSPI Performance for Traffic Master Collector
- The NNM iSPI Performance for Traffic Leaf Collectors

The NNMi in the Global Manager receives data from the regional managers. The Master Collector in the global manager can be configured to receive data from the regional Master Collectors in the following ways:

- The Master Collector in the global manager can receive data from the Master Collector in the regional manager. In this case, you must add the regional Master Collector as a remote Master source in the Global Master Collector. This ensures that the complete set of data received by the regional Master Collector is forwarded to the Global Master Collector. In the above scenario, the global Master Collector receives data processed by both Traffic Leaf 1 and Traffic Leaf 2.
- The Master Collector in the global manager can receive data directly from a regional Leaf Collector system, bypassing the regional Master Collector. In this case, the regional Leaf Collector (Traffic Leaf 3 in the above scenario) can be added as a leaf remote source to the global Master Collector. This ensures that the data received by all the Leaf Collectors on the remote Leaf Collector system is sent to the regional Master Collector as well as the global Master Collector. The regional Master Collector or the regional Leaf Collector can only be configured to send data to the global Traffic Master Collector. The global Master Collector cannot administer and manage these components.

Best Practice

Add all the regional Master Collectors as remote Master sources to the global Master Collector.

Adding Remote Leaf Collectors

The NNM iSPI Performance for Traffic Configuration form enables you to add Leaf Collectors that belong to a different regional NNMi to your local configuration.

To add a remote Leaf Collector, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Remote Sources.**
2. In the Leaf Remote Sources view, click **Add.** A new form opens.
3. In the new form, specify the following details:
   - Remote Leaf Hostname: Type the hostname of the remote Leaf Collector system.
   - Leaf Password: Type the password of the Leaf Collector configured during the installation of the collector.
   - JNDI Port: Type the JNDI port number for the Leaf Collector system. 11099 is the default JNDI port number.
   - Use Encryption: Enable this option if you want the global Master Collector to use secure sockets layer encryption (HTTPS/SSL) to access the remote Leaf Collector system. This option is disabled by default.

     > **Note:** If the Master Collector is not installed on the NNMi management server, you must import certificates from the Leaf Collector to the Master Collector to use encryption to access the Leaf Collector. For more information, see the *Enabling Security between the Master Collector and the Leaf Collector* section in the *HP Network Node Manager iSPI Performance for Traffic Software Interactive Installation Guide*.
     >
     > If the Master Collector is installed on the NNMi management server, you can configure the global network management feature to use self-signed certificates. For more information, see the *Configuring the Global Network Management Feature to use Self-Signed Certificates* section in the *HP Network Node Manager i Software Deployment Reference Guide*.

   - HTTP(S) Port: Type the port number of the Leaf Collector system:
     - Type the HTTP port number if you do not select the Use Encryption option. 11080 is the default HTTP port number of the Leaf Collector system.
     - Type the HTTPS port number if you select the Use Encryption option. 11043 is the default HTTPS port number of the Leaf Collector system.
4. Click **Save & Close.**

Modifying Remote Leaf Collectors

The NNM iSPI Performance for Traffic Configuration form enables you to edit the existing remote Leaf Collectors in your configuration.

To modify a remote Leaf Collector, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Leaf Remote Sources.**
2. In the Leaf Remote Sources view, select a Leaf Collector, and then click **Open.** A new form opens.
3. In the new form, you can modify the following:
   - Leaf Password
   - JNDI port
   - Use Encryption
   - HTTP(S) Port
4. Click **Save & Close.**

Adding Remote Master Collectors

The NNM iSPI Performance for Traffic Configuration form enables you to add Master Collectors that belong to a different regional NNMi to your local configuration. You can use this procedure to associate all the regional managers with the global manager.

To add a remote Master Collector, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Master Remote Sources.**
2. In the Master Remote Sources view, click **Add.** A new form opens.
3. In the new form, specify the following details:
   - Remote Master Hostname: Type the hostname of the remote Master Collector system.
   - Master Password: Type the password for the Master Collector configured during the installation of the Master Collector.
   - JNDI Port: Type the JNDI port number for the Master Collector system. 12099 is the default JNDI port number.
   - Use Encryption: Enable this option if you want the global Master Collector to use secure sockets layer encryption (HTTPS/SSL) to access the remote Master Collector system. This option is disabled by default.

     > **Note:** If the Master Collector is not installed on the NNMi management server, you must import certificates from the Leaf Collector to the Master Collector to use encryption to access the Leaf Collector. For more information, see the *Enabling Security between the Master Collector and the Leaf Collector* section in the *HP Network Node Manager iSPI Performance for Traffic Software Interactive Installation Guide*.

> If the Master Collector is installed on the NNMi management server, you can configure the global network management feature to use self-signed certificates. For more information, see the *Configuring the Global Network Management Feature to use Self-Signed Certificates* section in the *HP Network Node Manager i Software Deployment Reference Guide*.

- HTTP(S) Port: Type the port number of the Master Collector system.
  - Type the HTTP port number if you do not select the Use Encryption option. 12080 is the default HTTP port number of the Master Collector system.
  - Type the HTTPS port number if you select the Use Encryption option. 12043 is the default HTTPS port number of the remote Master Collector system.

4. Click **Save & Close.**

Modifying Remote Master Collectors

The NNM iSPI Performance for Traffic Configuration form enables you to edit the existing remote Master Collectors in your configuration.

To modify a remote Master Collector, follow these steps:

1. In the NNM iSPI Performance for Traffic Configuration form, click **Master Remote Sources.**
2. In the Master Remote Sources view, select a Master Collector, and then click **Open.** A new form opens.
3. In the new form, you can modify the following:
   - Master password
   - JNDI port
   - Use Encryption
   - HTTP(S) Port
4. Click **Save & Close.**

Chapter 6: Accessing Details of Traffic Data Sources

Interfaces with flow reporting capability on the network can be configured to send the traffic data to Leaf Collectors. The Leaf Collectors process and aggregate the data obtained from different devices and send the data to the Master Collector.

The NNMi console provides you with the **Traffic Analysis** workspace to monitor the availability and status of the following critical components:

- Traffic Reporting Interfaces: Interfaces on the devices that are configured to send the traffic data to Leaf Collectors.
- Traffic Reporting Nodes: Nodes (devices) that host the above interfaces.

These details are presented in the following views: Traffic Reporting Interfaces and Leaf Collectors. Each view lists items in a tabular format. The Analysis pane, available with each view, shows additional details about the item selected in the view.

Viewing Traffic Reporting Nodes

The Traffic Reporting Nodes view shows the list of all nodes on the network that host flow collector interfaces that are capable of sending the traffic data to Leaf Collectors.

To view the Traffic Reporting Nodes view, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Reporting Nodes** view.

For each node displayed, you can see the following information:

- Threshold State: Threshold state for the node. The states can be Exceeded or Normal.
- Node Name: Hostname of the node that exports flows.
- Traffic Type: Type of traffic data passing through the node.
- Tenant Name: Name of the tenant to which the node is assigned to.
- Traffic Master Server: Fully Qualified Domain Name (FQDN) of the Master Collector that is processing the flows.
  When the NNM iSPI Performance for Traffic is configured in GNM, the column displays the FQDN of the regional Master Collector that processes and forwards the flows to the Global Master Collector.

For more details about each node, open the "Viewing Traffic Reporting Node Form" on page 83.

Analysis Pane in the Traffic Reporting Nodes view

The Analysis Pane in the Traffic Reporting Nodes view provides additional details about the selected node.

The Summary Panel displays the analysis period for the traffic reporting interface hosted on the node.

The rightmost pane displays the following tabs:

- Top Apps-In: This tab displays a pie-chart for the applications that contribute the maximum amount of the incoming traffic volume for the selected node or interface. The chart shows the distribution of the traffic flow data for the last one hour, with each application represented by a unique color. Click a section to view the application name and its contribution to the total volume of incoming traffic. Click a section to view the application group name and its contribution to the total volume of incoming traffic.

- Top Apps-Out Pie Chart: This tab displays a pie-chart for the applications that contribute to the maximum amount of the outgoing traffic volume for the selected node or interface. The chart shows the distribution of the traffic flow data for the last one hour, with each application represented by a unique color. Click a section to view the application name and its contribution to the total volume of outgoing traffic. Click a section to view the application group name and its contribution to the total volume of outgoing traffic.

- Top ToS-In Pie Chart: In this tab, a pie chart displays the top Type-of-Service values that are contributing to the ingress network traffic as reported by all the interfaces hosted on the node.

- Top ToS-Out Pie Chart: In this tab, a pie chart displays the top Type-of-Service values that are contributing to the egress network traffic as reported by all the interfaces hosted on the node.

- Top IP Protocol-In Pie Chart: In this tab, a pie chart displays the top IP protocols that are contributing to the ingress network traffic as reported by all the interfaces hosted on the node.

- Top IP Protocol-Out Pie Chart: : Top IP Protocol-In Pie Chart: In this tab, a pie chart displays the top IP protocols that are contributing to the egress network traffic as reported by all the interfaces hosted on the node.

- Performance: The Performance tab for a selected flow enabled interface displays the following graphs for the last one day:

  - CPU and Memory Utilization for the selected node[1]

  - CPU and Memory Exception Rate for the selected node[2]

[1] Analyzes the Memory Utilization (avg) and CPU Utilization (avg) metrics. Displayed only if NNM iSPI Performance for Metrics is installed.

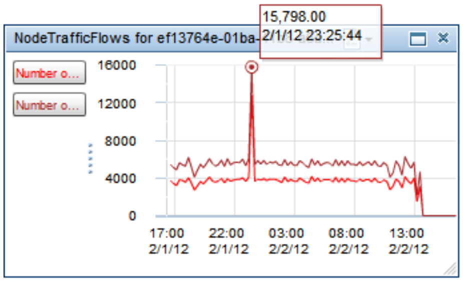
[2] Analyzes the CPU Utilization - Threshold Exception Rate (avg) and Memory Utilization - Threshold Exception Rate (avg) metrics. Displayed only if NNM iSPI Performance for Metrics is installed.

- Interface Traffic Flows for the selected node[1]
- Traffic Volume for the selected node[2]

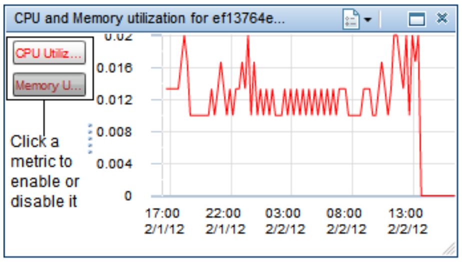
These metrics may display different values in these graphs than those displayed in the NNM iSPI Performance for Traffic report graphs, due to different time grain selected for metrics summarization.

You can change the metrics and the time range for these graphs as follows:

To display the metric value for a specific point of time, hover the mouse pointer on the graph.



To display or hide a metric, click the metric name on the legend.



Click a metric to enable or disable it

To view the graph as a table, follow these steps:

a. Click **Options**.

b. Select **View as Table**.

To select a date range for the graphs, follow these steps:

a. Click **Show Date Range Panel** on the top right corner of the Performance tab.

b. Click the graph that you want to change.

   To apply the new date range on all graphs, select **All** on the Date Range panel.

[1] Analyzes the Node Traffic Flows for the selected node - Outgoing (sum) and Node Traffic Flows for the selected node - Incoming (sum) metrics

[2] NNM iSPI Performance for Traffic displays this graph only if the node exports Netflow (versions 5 or 9), SFlow version 5, or IPFIX traffic data. This graph analyzes the Volume - In Bytes (sum) and Volume - Out Bytes (sum) metrics.

c. Select a time range for the graphs.

Viewing Traffic Reporting Node Form

The Traffic Reporting Node form provides details about the selected Traffic Reporting node.

The Threshold Exceptions Reporting Nodes view shows the list of all nodes on the network that host at least one interface that breached a NNM iSPI Performance for Traffic threshold. For information about the nodes that breached a threshold, see Threshold Exceptions Reporting Nodes View.

To view a Traffic Reporting Node form, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Reporting Nodes** view.
3. Select a node you want, and click **Open.**

The General pane of the form enables you to analyze the following information for the selected node:

- Node Name: Name of the node that exports flows
- Traffic Type: Type of the traffic data that the node handles
- Tenant Name: Name of the tenant to which the node is assigned to

The right pane shows the following details for ingress and egress flows collected by the interface:

- Top 5 Sources
- Top 5 Destinations
- Top 5 Conversations
- Traffic Reporting Interfaces
- Applicable Threshold
- Incidents

To view operational details of the interface (and the device that hosts the interface), click , and then click **Open**.

The Analysis pane displays additional details on the selected node. For more information about Analysis pane, see Traffic Reporting Nodes View.

Dashboard for Traffic-Reporting Nodes

The dashboard for a traffic-reporting node provides a snapshot of the network traffic originating from the node.

To launch the dashboard for a traffic-reporting node, right-click a node in the Traffic Reporting Nodes view under the Traffic Analysis workspace, and then click **Open Dashboard**.

This dashboard displays the following tables and charts:

Dashboard View of a Traffic-Reporting Node

Dashboard Item	Description
Top Applications in Incoming Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - In Bytes (sum)` metric for the top ten applications with highest `Volume - In Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top 10 Applications in Outgoing Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - Out Bytes (sum)` metric for the top ten applications with highest `Volume - Out Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top 10 Destinations in Incoming Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - In Bytes (sum)` metric for the top ten destinations with highest `Volume - In Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top 10 Destinations in Outgoing Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - Out Bytes (sum)` metric for the top ten destinations with highest `Volume - Out Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top Apps-in - Pie chart	The pie chart shows top six applications with highest `Volume - In Bytes (sum)` values.
Top Apps-out - Pie chart	The pie chart shows top six applications with highest `Volume - Out Bytes (sum)` values.
Top ToS-in - Pie chart	The pie chart shows top six types of service with highest `Volume - In Bytes (sum)` values.
Top ToS-out - Pie chart	The pie chart shows top six types of service with highest `Volume - Out Bytes (sum)` values.
Top IP Protocol-in - Pie chart	The pie chart shows top six protocols with highest `Volume - In Bytes (sum)` values.

Dashboard View of a Traffic-Reporting Node, continued

Dashboard Item	Description
Top IP Protocol-out - Pie chart	The pie chart shows top six protocols with highest `Volume - Out Bytes (sum)` values.
Performance	This panel shows the performance graph of the selected node.

> **Note:** All panels (except for the Performance panel) show the data for the last one hour by default. You can use the Time Filter option to change the time period.

Viewing Traffic Reporting Interfaces

The Traffic Reporting Interfaces view shows the list of all interfaces on the network that send the traffic data to Leaf Collectors.

To view the Traffic Reporting Interfaces, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Reporting Interfaces** view.

For each node displayed, you can see the following information:

- Threshold State: Threshold state for the node. The states can be Exceeded or Normal.
- Interface Name: Name of the interface.
- Hosted On: Hostname of the system that hosts the flow reporting interface.
- Traffic Type: Type of traffic data that the interface forwards to the Leaf Collector.
- Flow Processing Enabled: Shows if the interface is enabled to collect flow packets.
- Tenant Name: Name of the tenant to which the node is assigned to.
- Is Active: Shows whether the device is actively sending the traffic data to the Leaf Collector or not.
- Traffic Master Server: Fully Qualified Domain Name (FQDN) of the Master Collector that is processing the flows.
  When the NNM iSPI Performance for Traffic is configured in GNM, the column displays the FQDN of the regional Master Collector that processes and forwards the flows to the Global Master Collector.

For more details about each interface, open the Traffic Reporting Interface form.

Also, you can select an interface and open a dashboard specific to the selected interface (see "Dashboard for Traffic-Reporting Interfaces" on page 89).

Analysis Pane in the Traffic Reporting Interfaces view

The Analysis Pane in the Traffic Reporting Interfaces view provides additional details about the selected interface.

The Summary Pane displays the following details:

- Traffic Interface Class: The class name of the interface.
- Provider Date: The date when the data was requested from the interface for the last time.
- Total In: Total incoming traffic (in bytes) to the interface.
- Total Out: Total outgoing traffic (in bytes) from the interface.

The rightmost pane displays the following tabs:

- Top Apps-In: This tab displays a pie-chart for the applications that contribute the maximum amount of the incoming traffic volume for the selected node or interface. The chart shows the distribution of the traffic flow data for the last one hour, with each application represented by a unique color. Click a section to view the application name and its contribution to the total volume of incoming traffic. Click a section to view the application group name and its contribution to the total volume of incoming traffic.
- Top Apps-Out: This tab displays a pie-chart for the applications that contribute to the maximum amount of the outgoing traffic volume for the selected node or interface. The chart shows the distribution of the traffic flow data for the last one hour, with each application represented by a unique color. Click a section to view the application name and its contribution to the total volume of outgoing traffic. Click a section to view the application group name and its contribution to the total volume of outgoing traffic.
- Top ToS-In: In this tab, a pie chart displays the top Type-of-Service values reported by the interface that are contributing to the ingress network traffic.
- Top ToS-Out: In this tab, a pie chart displays the top Type-of-Service values reported by the interface that are contributing to the egress network traffic.
- Top IP Protocol-In: In this tab, a pie chart displays the top IP protocols reported by the interface that are contributing to the ingress network traffic.
- Top IP Protocol-Out: In this tab, a pie chart displays the top IP protocols reported by the the interface that are contributing to the egress network traffic.
- Performance: The Performance tab for a selected flow enabled interface displays the following graphs for the last one day:
    - Average Utilization for the selected interface[1]
    - Availability for the selected interface[2]

[1] Analyzes the Utilization (avg), Utilization In (avg), and Utilization Out (avg) metrics. This is displayed only if NNM iSPI Performance for Metrics is installed.

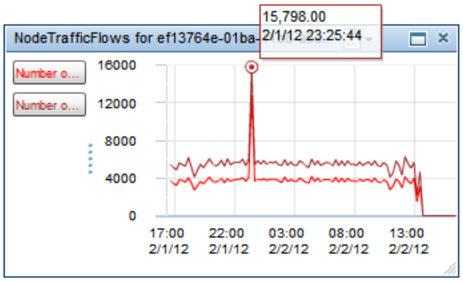
[2] Analyzes the Availability (avg) metric. This is displayed only if NNM iSPI Performance for Metrics is installed.

- Interface Traffic Flows for the selected interface[1]
- Traffic Volume for the selected interface[2]

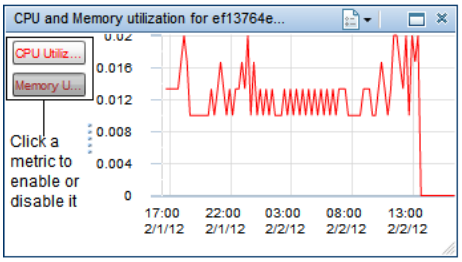
These metrics may display different values in these graphs than those in the NNM iSPI Performance for Traffic report graphs, due to different time grain selected for metrics summarization.

You can change the metrics and the time range for these graphs as follows:

To display the metric value for a specific point of time, hover the mouse pointer on the graph.



To display or hide a metric, click the metric name on the legend.



Click a metric to enable or disable it

To view the graph as a table, follow these steps:

a. Click **Options.**

b. Select **View as Table.**

To select a date range for the graphs, follow these steps:

a. Click **Show Date Range Panel** on the top right corner of the Performance tab.

b. Click the graph that you want to change.

   To apply the new date range on all graphs, select **All** on the Date Range panel.

c. Select a time range for the graphs.

[1] Analyzes the Number of Flows - Outgoing (sum) and Number of Flows - Incoming (sum) metrics.
[2] Analyzes the Volume - In Bytes (sum) and Volume - Out Bytes (sum) metrics.

Viewing Traffic Reporting Interface Form

The Traffic Reporting Interface form provides details about the selected Traffic Reporting interface.

The Threshold Exceptions Reporting Interfaces view shows the list of all interfaces on the network that breached a NNM iSPI Performance for Traffic threshold. For information on the interfaces that breached a threshold, see Threshold Exceptions Reporting Interfaces View.

To view a Traffic Reporting Interface form, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Reporting Interfaces** view.
3. Select an interface and click **Open.**

The General pane enables you to analyze the following information for the selected flow-enabled interface:

- Interface Name: Qualified name of the interface.
- Hosted on: Hostname of the system that hosts the flow reporting interface.
- Traffic Type: Type of the traffic data the interface sends to the Leaf Collectors.
- Flow Processing Enabled: Shows if the interface is enabled to collect flow packets.
- Threshold State: Shows the threshold state for the node. The state can be Exceeded or Normal.
- Tenant Name: Shows the name of the tenant to which the node is assigned to.

The Activity State pane shows the following information for the selected flow-enabled interface:

- Is Active: Shows active and inactive flow-enabled interfaces. When a flow-enabled interface does not send traffic data for a specified detection interval, the interface is shown as inactive and does not contribute to license point consumption.
- Last Flow Received At: Shows when the Leaf Collector received the last flow packet. If you restart the Master Collector, this field shows 'No flows received since Master start'. This field is automatically updated when the Master Collector receives traffic data.

The default detection interval to determine the inactive status of the flow-enabled interface is 720 minutes. When flow is detected on the inactive flow-enabled interface before the next polling starts, this interface is marked as active again in the next polling cycle. The default polling interval is 60 minutes. You can modify the polling interval as follows:

1. On the Master Collector system, go to the following directory:
   On Windows
   `%nnmdatadir%\nmsas\traffic-master\conf`

On Linux
`/var/opt/OV/nmsas/traffic-master/conf`

2. Use a text editor to open the `nms-traffic-master.address.properties` file.

3. Set the `inactive-flow.detection.interval` property to a required value (in minutes) of the detection interval that determines the inactive status of the flow-enabled interface.

4. Set the `inactive-flow.detector.thread.wake-up.interval` property to a required value (in minutes) of polling interval. Reducing this time interval significantly might impact the performance of the Master Collector. You can reduce the polling interval to a minimum value of 1 minute.

5. Save and close the file.

The right pane shows the following details for ingress and egress flows collected by the interface:

- Top 5 Sources
- Top 5 Destinations
- Top 5 Conversations
- Applicable Threshold
- Incidents

Click ▾, and then click **Open** to open the Interface form for the selected interface.

The Analysis pane displays additional details about the selected interface. For more information about Analysis pane, see Traffic Reporting Interfaces View.

Dashboard for Traffic-Reporting Interfaces

The dashboard for a traffic-reporting interface provides a snapshot of the network traffic originating from the interface.

To launch the dashboard for a traffic-reporting interface, right-click an interface in the Traffic Reporting Interfaces view under the Traffic Analysis workspace, and then click **Open Dashboard.**

This dashboard displays the following tables and charts:

Dashboard View of a Traffic-Reporting Interface

Dashboard Item	Description
Top Applications in Incoming Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - In Bytes (sum)` metric for the top ten applications with highest `Volume - In Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.

Dashboard View of a Traffic-Reporting Interface, continued

Dashboard Item	Description
Top Applications in Outgoing Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - Out Bytes (sum)` metric for the top ten applications with highest `Volume - Out Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top Destinations in Incoming Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - In Bytes (sum)` metric for the top ten destinations with highest `Volume - In Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top Destinations Outgoing Traffic (Bytes) - Graph	The graph shows the area graph of the `Volume - Out Bytes (sum)` metric for the top ten destinations with highest `Volume - Out Bytes (sum)` values. You can select the line, bar, or scatter graph for a detailed analysis.
Top Talkers by Total Volume - Table	Ranks top 10 talkers (source-destination interface pairs) with highest `Total Volume - Bytes (sum)` values in a table.
Top Apps-in - Pie chart	The pie chart shows top six applications with highest `Volume - In Bytes (sum)` values.
Top Apps-out - Pie chart	The pie chart shows top six applications with highest `Volume - Out Bytes (sum)` values.
Top ToS-in - Pie chart	The pie chart shows top six types of service with highest `Volume - In Bytes (sum)` values.
Top ToS-out - Pie chart	The pie chart shows top six types of service with highest `Volume - Out Bytes (sum)` values.
Top IP Protocol-in - Pie chart	The pie chart shows top six protocols with highest `Volume - In Bytes (sum)` values.
Top IP Protocol-out - Pie chart	The pie chart shows top six protocols with highest `Volume - Out Bytes (sum)` values.
Performance	This panel shows the performance graph of the selected interface.

Note: All panels (except for the Performance panel) show the data for the last one hour by default. You can use the Time Filter option to change the time period.

Disabling Interfaces to Report Flow Data

You can configure the NNM iSPI Performance for Trafficto stop processing flows from select interfaces. As a result, flows reported by the selected interfaces are not analyzed and those flows do not contribute to the reports. The NNM iSPI Performance for Traffic provides you with a command line utility to perform this configuration.

To configure the NNM iSPI Performance for Traffic to stop processing flows, follow these steps:

1. Log on to the Master Collector system with the root or administrator privileges.

2. Go to the following directory:
   On Windows:
   <Master_Install_Dir>`\nonOV\traffic-master\bin`
   On Linux:
   `/opt/OV/nonOV/traffic-master/bin`

3. Run the following command:
   ```
   nmstrafficdisableflow.ovpl --username=<username> --password=<password> --
   uuid=<interface_uuid>
   ```
   In this instance,
   <username> is the user name of the Master Collector system user (created during installation)
   <password> is the password for the Master Collector system user (created during the installation)
   <Interface_UUID> is the UUID of the flow reporting interface that you want to exclude.

   The status of the interface in the Flow Reporting Interfaces view appears as `Disabled`. As a result, the license consumption of the NNM iSPI Performance for Traffic is also reduced accordingly. For example, if you stop processing flows from a NetFlow interface, the license consumption of the NNM iSPI Performance for Traffic gets reduced by five iSPI points.

   > **Tip:** To find the UUID of an interface, go to the Interfaces View (inventory) in the NNMi console and select the interface. Open the Interface form, and then go to the Registration tab. The UUID of the interface is displayed in the Registration tab.

To include the flows from the interface again, run the following command:

```
nmstrafficenableflow.ovpl --username=<username> --password=<password> --
uuid=<interface_uuid>
```

Viewing the NNM iSPI Performance for Traffic Leaf Collectors

The NNM iSPI Performance for Traffic Leaf Collectors view displays a list of the existing Leaf Collector instances.

Using this form, you can view properties and performance of the collector instances available in your NNM iSPI Performance for Traffic deployment.

To view the NNM iSPI Performance for Traffic Leaf Collectors view, follow these steps:

1. In the Workspaces navigation pane, select the **Configuration** workspace.
2. Select the **NNM iSPI Performance for Traffic Leaf Collectors** view.
3. Select the Leaf Collector instance you want to view.
4. Click **Open.** For each Leaf Collector displayed, you can view the following information:
   - General Information
   - Collector Statistics History
   - Flow Processing Status

Viewing Collector Statistics History

You can view the list of activities performed by a Leaf Collector from the NNM iSPI Performance for Traffic Leaf Collectors view.

To view Leaf Collector statistics, follow these steps:

1. In the NNM iSPI Performance for Traffic Leaf Collectors view, double-click a collector. The Leaf Collector form opens.
2. In the Leaf Collector form, go to the Collector Statistics History tab, and then double-click an entry. The Collector Statistics History form opens.

The Collector Statistics History tab shows the following details:

- Last Flush Time
- Number of Flows
- Number of Flushed
- Number of Packets

Viewing Flow Processing Status

You can view the history of flow records processed by a Leaf Collector from the NNM iSPI Performance for Traffic Leaf Collectors view.

To view the flow processing status, follow these steps:

1. In the NNM iSPI Performance for Traffic Leaf Collectors view, double-click a collector. The Leaf Collector form opens.

2. In the Leaf Collector form, go to the Flow Processing Status tab, and then double-click an entry. The Flow Processing Status form opens.

The Flow Processing Status tab shows the following details:

- Open Time: [1]
- Closed Time: [2]
- Status: [3]
- Message: [4]
- Suggested Solution: [5]

Viewing Traffic Sites

Using the Traffic Sites view, you can view the list of the **site**[6]s created in your environment.

The sites inherit the security features set for the flow reporting interfaces. You can assign nodes to Tenant and Security Group settings using NNMi. The flow reporting interfaces inherit these Tenant and Security Group settings from the associated nodes.

To view the Traffic Sites, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Sites** view.

[1] Displays the starting time for the flow processing
[2] Displays the time when the flow processing was stopped
[3] Displays the status of the flow
[4] Displays the reason or problem because of which the flow processing stopped
[5] Displays the suggested solution to resolve the problem
[6] A logical organization of networking devices. In the scope of enterprise networks, a site can be a logical grouping of networking devices generally situated in similar geographic location. The location can include a floor, building or an entire branch office or several branch offices which connect to head quarters or another branch office via WAN/MAN. Each site is uniquely identified by its name. In case of the service provider networks the Virtual Routing and Forwarding (VRF) on a Provider Edge (PE) router or a Customer Edge (CE) routers can be defined as a site. Logically grouping the networking devices into sites enables you to get an overview of your network performance.

For each site displayed, you can see the site name, **site priority**[1], site description, and the tenant name for the site.

Analysis Pane in the Traffic Reporting Interfaces view

The Analysis pane displays the following attributes of the selected site:

Name	Description
Site Summary	The Site Summary pane displays the following information: • Current Time • Analysis period for the selected site
Source Site - Top Apps - In	Displays the top five applications that generate the maximum volume of incoming (ingress) traffic for the last one hour. Considers only the traffic flow records generated from the selected site.
Source Site - Top Apps - Out	Displays the top five applications that generate the maximum volume of outgoing (egress) traffic for the last one hour. Considers only the traffic flow records generated from the selected site.
Destination Site - Top Apps - In	Displays the top five applications that generate the maximum volume of incoming (ingress) traffic for the last one hour. Considers only the traffic flow records flowing towards the selected site.
Destination Site - Top Apps - Out	Displays the top five applications that generate the maximum volume of outgoing (egress) traffic for the last one hour. Considers only the traffic flow records flowing towards the selected site.
Source Site - Top ToS - In	Displays the top five classes of service that generate the maximum volume of incoming (ingress) traffic for the last one hour. Considers only the traffic flow records generated from the selected site.
Source Site - Top ToS - Out	Displays the top five classes of service that generate the maximum volume of outgoing (egress) traffic for the last one hour. Considers only the traffic flow records generated from the selected site.

[1] An interface can be associated to only one site. While creating the site, you need to specify an ordering number for the site to resolve conflicts in case an interface matches multiple sites. The NNM iSPI Performance for Traffic associates the interfaces with the site that has the lowest ordering number. If you do not provide an ordering number for the site, the NNM iSPI Performance for Traffic assigns default ordering. Default ordering for a site is given the lowest priority. If an interface matches multiple sites, the site with the lower ordering gains priority to associate with the interface.

Destination Site - Top ToS - In	Displays the top five classes of service that generate the maximum volume of incoming (ingress) traffic for the last one hour. Considers only the traffic flow records flowing towards the selected site.
Destination Site - Top ToS - Out	Displays the top five classes of service that generate the maximum volume of outgoing (egress) traffic for the last one hour. Considers only the traffic flow records flowing towards the selected site.

Viewing Traffic Site Form

The Traffic Site form provides details about the selected Traffic site.

To view a Traffic Site form, follow these steps:

1. In the **Workspaces** navigation pane, select the **Traffic Analysis** workspace.
2. Select the **Traffic Sites** view.
3. Select a site you want, and click **Open.**

The General pane of the form enables you to analyze the following information for the selected site:

- Site Name
- **Site Priority**[1]
- Tenant Name
- Site Description

The right pane shows the following details for the nodes associated to the site:

- Traffic Reporting Nodes
- Applicable Thresholds

The Analysis pane displays additional details on the selected site. For more information about Analysis pane, see Traffic Sites View.

[1] An interface can be associated to only one site. While creating the site, you need to specify an ordering number for the site to resolve conflicts in case an interface matches multiple sites. The NNM iSPI Performance for Traffic associates the interfaces with the site that has the lowest ordering number. If you do not provide an ordering number for the site, the NNM iSPI Performance for Traffic assigns default ordering. Default ordering for a site is given the lowest priority. If an interface matches multiple sites, the site with the lower ordering gains priority to associate with the interface.

Chapter 7: Storing and Analyzing Flow Packets

The NNM iSPI Performance for Traffic provides you with a mechanism to store and analyze raw flow packets obtained from different sources by the Leaf Collector. When adding a new Leaf Collector, you can specify if you want to collect raw flow packets. After the NNM iSPI Performance for Traffic stores the flow packets on the Leaf Collector system, you can use the `nmstrafficinspectiontool.ovpl` utility to analyze the flow packets.

When you add a new Leaf Collector instance or edit an existing Leaf Collector instance, select **true** for the Store Flow in the File field. The Leaf Collector stores the received flow packets in the following directory:

- *On Windows:*
  <Data_Dir>`\nmsas\traffic-leaf\data\`*<Leaf_Collector_Instance>\<IP_Address_of_Source>*

- *On Linux:*
  `/var/opt/OV/nmsas/traffic-leaf/data/`*<Leaf_Collector_Instance>/<IP_Address_of_Source>*

  > **Tip:** Use this feature only for troubleshooting. This option has a significant impact on the performance of the Leaf Collector.

For more information about adding or editing Leaf Collector instance, see Add a Leaf Collector Instance and Edit a Leaf Collector Instance.

In this instance:
<Data_Dir>: Data directory that you chose during the installation of the Leaf Collector.
<Leaf_Collector_Instance>: Name of the Leaf Collector instance
<IP_Address_of_Source>: IP address of the device where the flow packet originated.

To disable the mechanism to store flow packets, follow these steps:

1. Go to the Leaf Collector view.

2. Select the Leaf Collector instance for which you want to disable the flow packet storing mechanism.

3. Click **Open**. A new form opens.

4. In the new form, set Store Flow in File to **false**.

5. To remove the existing flow packet files, remove the `*.flow` files from the following directory:
   - *On Windows:*
     <Data_Dir>`\nmsas\traffic-leaf\data\`*<Leaf_Collector_Instance>\<IP_Address_of_Source>*

- *On Linux:*
  `/var/opt/OV/nmsas/traffic-leaf/data/`*<Leaf_Collector_Instance>*/*<IP_Address_of_Source>*

Do not delete the directories; delete only the `*.flow` files. If you delete the directory, the Leaf Collector fails to store flow packets when you enable the storing mechanism again.

In this instance:
<*Data_Dir*>: Data directory that you chose during the installation of the Leaf Collector.
<*Leaf_Collector_Instance*>: Name of the Leaf Collector instance
<*IP_Address_of_Source*>: IP address of the device where the flow packet originated.

Viewing and Analyzing Flow Packets

The `nmstrafficinspectiontool.ovpl` utility enables you to view and analyze the flow packets (`*.flow` files) that are stored in the following directory:

- *On Windows:*
  <*Data_Dir*>`\nmsas\traffic-leaf\data\`<*Leaf_Collector_Instance*>\<*IP_Address_of_Source*>

- *On Linux:*
  `/var/opt/OV/nmsas/traffic-leaf/data/`<*Leaf_Collector_Instance*>/<*IP_Address_of_Source*>

The raw flow packets are saved by the Leaf Collector with the following file name format:

<*IP_Address_of_Source*>_<*Date*>_<*Time*>_<*FlowType*>_<*Leaf_Collector_Instance*>`.flow`

In this instance:

<*Data_Dir*>: Data directory that you chose during the installation of the Leaf Collector.
<*Leaf_Collector_Instance*>: Name of the Leaf Collector instance.
<*IP_Address_of_Source*>: IP address of the device where the flow packet originated.
<*Time*>: The time (in the *hour_minute* format) when the collector starts storing the flow packet on the system.

<*FlowType*>: The type of the flow packet. Possible values are NetFlowV5, NetFlowV9, sFlow, IPFIX, and JFlow.

<*Leaf_Collector_Instance*>: Name of the Leaf Collector instance that receives the packet.

For example: `172.16.10.5_21-May-2010_11-20_NetflowV5_collector125.flow`

To view stored flow packets, follow these steps:

1. Log on to the Leaf Collector system with the root (Linux) or administrator (Windows) privileges.
2. Go to the following directory:
   On Windows: <*Data_Dir*>`\nmsas\traffic-leaf\data\`<*Leaf_Collector_Instance*>\<*IP_Address_of_Source*>

   On Linux: `/var/opt/OV/nmsas/traffic-leaf/data/`<*Leaf_Collector_Instance*>/<*IP_Address_of_Source*>
3. To view the contents of all the flow packet files stored by the Leaf Collector, run the following command:
   nmstrafficinspectiontool.ovpl
   The contents of all the flow packet files appear in the command line console.
4. In addition to viewing the contents of all the flow packet files available in the directory, you can perform the following operations:
   - **Filter the output**
     You can filter out the contents of flow packets that are not of your interest by using the `-filter` option.
     To filter out flow packets, run the following command:
     nmstrafficinspectiontool.ovpl -[f|file] <*FlowPacketFileName*> **-filter** <*filter_condition*>*,*<*filter_condition*>*,...*
     In this instance, <*filter_condition*> is the filter condition created with one of the attributes of flow packets. The command shows the contents of the flow packets that match the filter condition. For example, the command **nmstrafficinspectiontool.ovpl -filter SrcIP 172.17.10.*** shows the contents of the flow packets that originated from systems with the given source IP address.

   - **View selected attributes**
     To view only select attributes of packet files, run the following command:
     nmstrafficinspectiontool.ovpl -[f|file] <*FlowPacketFileName*> **-[hc|hidecolumns]** <*attribute_name*>*,*<*attribute_name*>*,***...**
     In this instance:
     <*FlowPacketFileName*> is the name of the flow packet file (`*.flow` file).
     <*attribute_name*> is the name of the attribute that you want to hide.

   - **View a single file**
     To view the contents of a particular file, run the following command:
     nmstrafficinspectiontool.ovpl -[f|file] <*FlowPacketFileName*>
     In this instance, <*FlowPacketFileName*>is the name of the flow packet file (`*.flow` file).
     The contents of the file appear in the command line console.

   - **Export the contents of packet files to CSV files**
     To export the contents of the files into a CSV file, run the following command:
     nmstrafficinspectiontool.ovpl -[d|dir] <*directoryPath*> **-csv -csvdir** <*csvDirectory*> **-csvname** <*csvFileName*>
     In this instance:
     <*directoryPath*> is the full directory path where the flow packets are stored on the Leaf Collector.

<*csvDirectory*> is the directory on the Leaf Collector system where the CSV file is saved.
<*csvFileName*> is the file name with which the Leaf Collector saves the CSV file.

- **Export the contents of a particular file to a CSV file**
  To export the contents of a particular file to a CSV file, run the following command:
  nmstrafficinspectiontool.ovpl [-f|file] <*FlowPacketFileName*> -**csv -csvdir** <*csvDirectory*> **-csvname** <*csvFileName*>
  In this instance:
  <*FlowPacketFileName*>is the name of the flow packet file (`*.flow` file).
  <*csvDirectory*> is the directory on the Leaf Collector system where the CSV file is saved.
  <*csvFileName*> is the file name with which the Leaf Collector saves the CSV file.

- **Export filtered contents to a CSV file**
  You can combine the -csv and -filter options to export filtered content to a CSV file.
  To export filtered content to a CSV file, run the following command:
  nmstrafficinspectiontool.ovpl -filter <*filter_condition*>*,*<*filter_condition*>*,...* **-csv -csvdir** <*csvDirectory*> **-csvname** <*csvFileName*>
  In this instance:
  <*filter_condition*> is the filter condition created with one of the attributes of flow packets. The command shows the contents of the flow packets that match the filter condition.
  <*csvDirectory*> is the directory on the Leaf Collector system where the CSV file is saved.
  <*csvFileName*> is the file name with which the Leaf Collector saves the CSV file.

- **Inspect the files based on the time range**
  To inspect the files based on the time range, run the following commands:
  nmstrafficinspectiontool.ovpl -[d|dir] <*directoryPath*> **-[fr|from]** <*fromTime*> **-[to]** <*toTime*>
  In this instance:
  <*directoryPath*> is the full directory path where the flow packets are stored on the Leaf Collector*.*
  <*fromTime*> is the start time (in the `MM/dd/yyyy HH:mm:ss` format) from which you want to inspect the files.
  <*toTime*> is the end time (in the `MM/dd/yyyy HH:mm:ss` format) after which you do not want to inspect the files.
  You can also combine the `filter` and `hidecolumns` options to inspect files based on a time range.

- **Export the contents from a directory to a CSV file based on time range**
  To export the contents from a directory to a CSV file based on time range, run the following command:
  nmstrafficinspectiontool.ovpl -[d|dir] <*directoryPath*> **-[f|from]** <*fromTime*> **-[t|to]** <*toTime*> **-csv -csvdir** <*csvDirectory*> **-csvname** <*csvFileName*>
  In this instance:
  <*directoryPath*> is the full directory path where the flow packets are stored on the Leaf Collector.
  <*fromTime*> is the start time (in the `MM/dd/yyyy HH:mm:ss` format) from which you want to inspect the files.
  <*toTime*> is the end time (in the `MM/dd/yyyy HH:mm:ss` format) after which you do not want to inspect the files.

<*csvDirectory*> is the directory on the Leaf Collector system where the CSV file is saved.
<*csvFileName*> is the on the Leaf Collector system where the CSV file is saved.

- **View the error messages**
  To print the errors on screen, run the following command:
  nmstrafficinspectiontool.ovpl [-f|file] <*FlowPacketFileName*> **-e**
  In this instance, <*FlowPacketFileName*>is the name of the flow packet file (`*.flow` file). The errors appear on the console.

For more information on the `nmstrafficinspectiontool.ovpl` command, see reference pages.

Contents of the Flow Packet Files

A flow packet file includes the following details in its content:

- Router: The router or switch that sent the flow packet to the Leaf Collector.
- SrcIP: IP address of the system where the IP flow originated.
- DstIP: IP address of the destination system of the IP flow.
- IPProtocol: IP protocol used by the flow.
- NFSNMPInputIndex: SNMP index of the egress interface.
- NFSNMPOutputIndex: SNMP index of the ingress interface.
- SrcPort: Egress port.
- DstPort: Ingress port.
- TCPFlags: TCP flag of the traffic flow.
- IPToS: Type of Service property of the traffic flow.
- NumPacket: Number of packets in the traffic flow.
- NumBytes64: Number of bytes in the traffic flow.
- StartTime: Time when the traffic flow originated from the source system.
- EndTime: Time when the traffic flow arrived on the destination system.

Limiting the Number of the Flow Packet Files

Once configured, the Leaf Collector continues to create flow packet files on the system, which eventually consume a significant amount of disk space. When the available disk space of the Leaf Collector system decreases to 10%, the Leaf Collector automatically stops creating any new flow packet files. The NNM iSPI Performance for Traffic provides you with a mechanism to control the maximum number of flow packet files on the system.

To limit the number of flow packet files, follow these steps:

1. Log on to the Leaf Collector system.

2. Go to the following location:
   - *On Windows:*
     <*DataDir*>`\nmsas\traffic-leaf\conf`
     In this instance, <*DataDir*> is the directory where you chose to place the data files while installing the Leaf Collector.

   - *On Linux:*
     `/var/opt/OV/nmsas/traffic-leaf/conf`

3. Open the `nms-traffic-leaf.address.properties` file with a text editor.

4. Set the `max.dump.hours` property to the number of hours for which you want to store the flow packet files.

5. Save the file.

6. Enable the packet file storing mechanism.
   After creating a flow packet file, the Leaf Collector retains the file for the number of hours specified for the `max.dump.hours` property.
   For example, if you set the `max.dump.hours` property to 1, the Leaf Collector instance retains a flow packet file only for 1 hour after its creation.

We appreciate your feedback!

If you have comments about this document, you can contact the documentation team by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on Online Help (Network Node Manager iSPI Performance for Traffic Software 10.00)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to docfeedback@hp.com.