HP Network Node Manager i Software Smart Plug-in Performance for Traffic

For the Windows® and Linux operating systems

Software Version: 9.01

Online Help: Reports

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Introduction

The HP Network Node Manager iSPI Performance for Traffic software extends the capability of HP Network Node Manager(NNMi) to monitor the performance of the network with respect to the data that is flowing through it. The iSPI Performance for Traffic software aggregates and enriches the data from the IP flow records that is exported by the routers. The product also gives an insight into network traffic and helps to monitor network performance by analyzing the traffic flow.

The iSPI Performance for Traffic, with NNMi, you can perform the following tasks:

- Generate traffic data performance reports by exporting data to the Network Performance Server.
- Flow data filtering and enrichment of applications, dns names
- Historical traffic analysis and reporting fields in the flow records.
- Correlation of obtained IP flow records with NNMi toplogy for context based analysis.
- Understand the network traffic patterns.
- Network application performance management and root cause analysis

Accessing Reports

You can access the HP NNMi Traffic interface Performance Reports in the following ways:

1. From the HP NNMi Console
2. From the BI Health reports

To access reports from the NNMi Console, follow these steps:

1. Log on to the NNMi Console.
2. You can also launch the reports scoped by a required topology context. You can select the topology entries before launching the report. The following entities support context based scoping:
    a. Interfaces
    b. Interface groups
    c. Nodes
3. Select **Action > Reporting**. The available report category window opens.
4. Select the **Interface Traffic** tab.

You can use the following options to navigate between the reports or to change the values:

- **Cancel** : Click to perform report cancellation.
- **Back**: Click to go back to the previous page.
- **Next**: Click to move to the next page.
- **Finish**: Click to view the created report.

To access reports from the BI Health reports, follow these steps:

1. Log on to the NNMi Console.
2. Click the **BI Server Portal** link. The Cognos 8 Welcome page opens.
3. Click **Cognos Connection**. The Cognos Connection window opens.
4. Select **Public Folders**.
5. Click **Interface Traffic**

Metrics

A network metric is a measure used to calculate the attributes of both the in-coming and out-going IP flow from the routers.

The Traffic iSPI uses these metrics of the IP flow to create Performance reports:

- Volume- In- Bytes
- Volume- Out- Bytes
- Number of Packets -Incoming (sum)
- Number of Packets -Outgoing(sum)
- Number of Flows - Incoming (sum)
- Number of flows - Outgoing(sum)
- Sample Count
- Period Length

In addition to the above, there is an option to select the 'count' of each attribute of a flow as additional metric. These metrics appear as countDistinct(<attribute name string>), for example countDistinct(Destination Host Name). By selecting any of these category of metrics, the operator can find out the number of distinct occurrences of that attribute value for the report. For example if for a particular source host, the countDistinct(Destination Host Name) is used in a top N report, it will show the hosts which are exporting traffic to the maximum number of destination hosts.

In certain reports like Chart Detail, two metrics are shown. These are designated as:

- Primary Metric
- Secondary Metric

You can select one of the metric as primary metric and compare with secondary metric and view both graphs. The X axis measure represents the time period and the Y axis measure represents bytes.

Metric Definitions

Period Length

Period Length is the amount of time for which an individual record represents data.

Volume -in- Bytes

Volume -in- Bytes metric represents the volume of incoming flow records to the specified node or interface measured in bytes.

Volume -out-Bytes

Volume -out- Bytes metric represents the volume of outgoing flow records to the specified node or interface measured in bytes.

Number of Packets (Incoming)

Number of Packets (Incoming) represents the number of in-coming packets to the specified node or component.

Number of Packets (Outgoing)

Number of Packets (Outgoing) represents the number of out-going packets to the specified node or component.

Number of flows (Incoming)

Number of flows (Incoming) represents the number of in-coming IP flows to the specified node or component.

Number of flows (Outgoing)

Number of flows (Outgoing) represents the number of out-going IP flows to the specified node or component.

Sample Count

Sample Count is the number of flow records in the database for that time period.

countDistinct (<attribute name>)

This is a category of metrics designed to give the operator an insight into the number of unique occurrences of individual attribute values that describe a flow. For example, if for a particular source host, the countDistinct (Destination Host Name) is used in a top N report, it will show the hosts which are exporting traffic to the maximum number of destination hosts.

Note:

A flow refers to a unique instance of byte transmission between a source and destination IP address that is routed through a particular interface on a router. Incoming means that the data is reported from an ingress interface on the router.Outgoing means that the data was reported from an egress interface on the router.

Topology filter

An NNMi network topology consists of mapped elements such as interfaces, nodes, host systems, and destination systems.

A topology filter facilitates you to apply filter on the attributes of the elements on the network.

The following table lists the attributes of the element, and also its content:

Attribute	What it contains
Interface Group name	the list of available Interface Group Names for the specified topology
Destination Host Name	the list of available Destination Host Names for the specified topology
Qualified interface name	the list of available Qualified interface names for the specified topology
Node name	the list of available Node names for the specified topology
Source Host name	the list of available Source Host names for the specified topology
Flow Version	the list of available Flow versions for the specified topology
IP Protocol	the list of available IP Protocol for the specified topology
IP TOS	the list of available IP TOS for the specified topology
Source Port	the list of available Source Ports for the specified topology
Destination Port	the list of available Destination Ports for the specified topology
Source VLAN ID	the identifier of the vlan from which the traffic originated
Destination VLAN ID	the identifier of the vlan to which the traffic is being forwarded
Source VLAN	the nnm vlan name for the source vlan
Destination VLAN	the nnm vlan name for the destination vlan
Collector Name	the list of available Collector Names for the specified topology

Note: In the case the VLAN is not identified in NNM topology, it is marked as untagged. Also VLAN which have the ID as 0 is tagged as management VLAN.

Scoping is a process where multiple topology filters are combined and filtered to create a single report.You can select multiple topology filters and scope them together to view the consolidated report.

The following example provides information on scoping the topology filter:

The administrator selects the following topology filters for creating a report, they are:Collector Name, Destination Host, and Qualified Interface Name.

The metric data is filtered initially by the Collector name, Destination Host and then by the Qualified Interface Name selected. The report is created by the combination of these applied filters. The following figure illustrates this:

Report Types

The iSPI Performance for Traffic provides the following types of reports for you to view the health and performance of the traffic flow in the network.

- "Calendar report" (on page 12):The Calendar report provides the performance report in a weekday format.
- "Chart Detail" (on page 14): The Chart Detail Report provides the network performance report in a plot graph format.
- "High traffic hosts" (on page 18): The High Traffic Hosts report provides the performance report of the host systems with high traffic flow in the network.
- "Heat Chart" (on page 16)The Heat Chart report provides the network performance report in a 24-hour color coded format.
- "Most changed" (on page 20) The Most Changed Report provides the performance report of the elements of the network that have recorded the maximum change over a period of time with respect to a single metric.
- "Top N" (on page 22) The Top N report provides the performance report of the top contributors to a chosen traffic metric over the selected period of time.

Calendar report

The Calendar report provides the performance report in a weekday format.

Calendar report usage:

You can create the Calendar report by following these steps:

Specify time controls

The Traffic interface provides **Time Controls** option that helps you to enter the time period for a report creation.

To provide the time period, follow these steps:

1. Click  . The Calendar window opens.
2. Select the date from the Calendar window. The current date is the default date.
3. Select the hour, minutes and meridian separately to set the time. The time is in (hh:mm AM) format.
   You can also to set the required time using  .
4. Select the **Time Range** from the drop-down list.
5. Select the hour from the **Hour of the day** drop-down list.
6. Click **Confirm Selection**.

Note:

Using the Auto Refresh field, you can view the refreshed data. You must turn-on the Auto Refresh option, as by default Auto Refresh is OFF.

Apply Topology filter

You can select the following options to obtain more granular information on topology filter:

Options	Functions
Multi-Value select	You can use this function select all the available values in the topology element.
Single-Value select	You can use this function select the single available value in the topology element.
	You can use this function to search and select the particular value in the topology element.
Search Options Options	You can use this function to improve the searching of the attributes of elements. Using this option you can: • search case sensitive values in the NNMi network • search the values containing all or part of the keyword. • search the values that begin with keyword.
Search Search Field	The Search results are displayed in this field.
Insert Insert option Remove Remove option	You can use these options to insert the selected value. You can use these options to remove the selected value.
Select all Select all Deselect all De-select all	You can select this option to select all the values. You can use this option to deselect all the values.
	You can select this option to hide the content.
Hide	

To apply a topology filter, follow these steps:

1. Select a topology filter from the Topology filter window.
2. Select **Single value select** or **Multi value select** for the required topology filter.
3. You can also select the **Search** drop-down list to search the particular topology element.
4. Click **Option** link to refine searching process. The **Search** field displays the search result. You can use **Insert** option to insert the value, and **Remove** option to remove the selected value.
5. After setting the filters, click **Confirm Selection**.

Set report options

To select filter options for Calendar and Chart Detail reports, follow these steps:

1. Select the **Primary Metric** from the drop-down list.
2. Select the **Secondary Metric** from the drop-down list.
3. Click **Confirm Selection**.

The Calendar report contains user specified time period, scoped output of the topology filter and selected metric values.

For example, if you select time period as current date, application name as the topology filter, with Volume-In-bytes and Volume-out-bytes as primary and secondary metrics. The report created displays the data with weekdays marked on top of the report. The X axis displays the user specified time period and Y axes displays the primary and secondary metrics.

Chart Detail

The Chart Detail Report provides the network performance report in a plot graph format.

Chart Detail report usage:

The Chart Detail report contains user specified time period, scoped output of the topology filter and selected metric values.

You can create the Chart Detail report by following these steps:

Specify time controls

The Traffic interface provides **Time Controls** option that helps you to enter the time period for a report creation.

To provide the time period, follow these steps:

1. Click  . The Calendar window opens.
2. Select the date from the Calendar window. The current date is the default date.
3. Select the hour, minutes and meridian separately to set the time. The time is in (hh:mm AM) format.
   You can also to set the required time using  .
4. Select the **Time Range** from the drop-down list.
5. Select the hour from the **Hour of the day** drop-down list.
6. Click **Confirm Selection**.

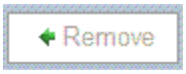
Note:

- Using the Auto Refresh field, you can view the refreshed data. You must turn-on the Auto Refresh option, as by default Auto Refresh is OFF.
- The Chart Detail report provides **Display Grain** drop-down list option. You can select the time granularity interval for creating a report.

Apply Topology filter

You can select the following options to obtain more granular information on topology filter:

Options	Functions
 Multi--Value select	You can use this function select all the available values in the topology element.
 Single-Value select	You can use this function select the single available value in the topology element.

Options	Functions
	You can use this function to search and select the particular value in the topology element.
Search Options Options	You can use this function to improve the searching of the attributes of elements. Using this option you can: • search case sensitive values in the NNMi network • search the values containing all or part of the keyword. • search the values that begin with keyword.
 Search Field	The Search results are displayed in this field.
 Insert option  Remove option	You can use these options to insert the selected value. You can use these options to remove the selected value.
Select all Select all Deselect all De-select all	You can select this option to select all the values. You can use this option to deselect all the values.
	You can select this option to hide the content.
Hide	

To apply a topology filter, follow these steps:

1. Select a topology filter from the Topology filter window.
2. Select **Single value select** or **Multi value select** for the required topology filter.
3. You can also select the **Search** drop-down list to search the particular topology element.
4. Click **Option** link to refine searching process. The **Search** field displays the search result. You can use **Insert** option to insert the value, and **Remove** option to remove the selected value.
5. After setting the filters, click **Confirm Selection**.

Set report options

To select filter options for Chart Detail reports, follow these steps:

1. Select the **Primary Metric** from the drop-down list.
2. Select the **Secondary Metric** from the drop-down list.
3. Click **Confirm Selection**.

The Chart Detail Report depicts primary metric and the secondary metric in two different colored lines. The dots and peaks in the graph represents the variation in traffic flow pattern.

The Chart Detail provides time granularity option. Using this option, you can create Chart Detail report for various time interval range. The time granularity ranges from five minutes to a month. For example, if the you select the time granularity as five minutes, then the report is created for a five-minute time interval.

Heat Chart

The Heat Chart report provides the network performance report in a 24- hour color coded format.

Heat Chart report usage:

You can create a Heat chart report by following these steps:

Specify time controls

The Traffic interface provides **Time Controls** option that helps you to enter the time period for a report creation.

To provide the time period, follow these steps:

1. Click  . The Calendar window opens.
2. Select the date from the Calendar window. The current date is the default date.
3. Select the hour, minutes and meridian separately to set the time. The time is in (hh:mm AM) format.
   You can also to set the required time using  .
4. Select the **Time Range** from the drop-down list.
5. Select the hour from the **Hour of the day** drop-down list.
6. Click **Confirm Selection**.

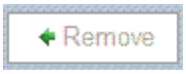
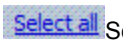
Note:

Using the Auto Refresh field, you can view the refreshed data. You must turn-on the Auto Refresh option, as by default Auto Refresh is OFF.

Apply Topology filter

You can select the following options to obtain more granular information on topology filter:

Options	Functions
 Multi-Value select	You can use this function select all the available values in the topology element.
 Single-Value select	You can use this function select the single available value in the topology element.
	You can use this function to search and select the particular value in the topology element.
 Search  Options	You can use this function to improve the searching of the attributes of elements. Using this option you can: • search case sensitive values in the NNMi network

Options	Functions
	• search the values containing all or part of the keyword. • search the values that begin with keyword.
 Search Field	The Search results are displayed in this field.
 Insert option  Remove option	You can use these options to insert the selected value. You can use these options to remove the selected value.
 Select all  Deselect all	You can select this option to select all the values. You can use this option to deselect all the values.
	You can select this option to hide the content.
 Hide	

To apply a topology filter, follow these steps:

1. Select a topology filter from the Topology filter window.
2. Select **Single value select** or **Multi value select** for the required topology filter.
3. You can also select the **Search** drop-down list to search the particular topology element.
4. Click **Option** link to refine searching process. The **Search** field displays the search result. You can use **Insert** option to insert the value, and **Remove** option to remove the selected value.
5. After setting the filters, click **Confirm Selection**.

Set report options

To select the report options for the Heat Chart report, follow these steps:

1. Select the **Primary Metric** from the drop-down list.
2. Click **Confirm Selection**.

The Heat Chart report displays the percentile value of the user selected metric, with selected time period and scoped output of the topology filters.The Heat chart displays traffic flow by using color code for various severity level.

In the Heat Chart report, each day of the month is depicted with hourly divisions. You can determine the exact hour and day, when the traffic flow is high or low.

The Heat Chart report contains a Legend toolbar that depicts the range of the color codes, for the levels of traffic flow. The Heat Chart also displays the minimum and maximum values present in the report data.

For example, if you select time period as current date, application name as the topology filter, with Volume-In-bytes as the primary metric. The report created displays the data with colored slots depicting the severity of the traffic flow and also the minimum and maximum values present in the report data.

High traffic hosts

The High Traffic Hosts report provides the performance report of the host systems producing high traffic flow in the network. It allows you to perform a top N computation and sort on a selected metric by the source host names. It displays the primary metric as well as the values of additional metrics on the final report.

High traffic hosts report usage:

The High traffic hosts report contains user specified time period, scoped output of the topology filter and selected metric values.

You can create the High traffic hosts report by following these steps:

Specify time controls

The Traffic interface provides **Time Controls** option that helps you to enter the time period for a report creation.

To provide the time period, follow these steps:

1. Click  . The Calendar window opens.
2. Select the date from the Calendar window. The current date is the default date.
3. Select the hour, minutes and meridian separately to set the time. The time is in (hh:mm AM) format.
   You can also to set the required time using  .
4. Select the **Time Range** from the drop-down list.
5. Select the hour from the **Hour of the day** drop-down list.
6. Click **Confirm Selection**.

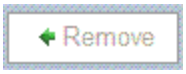
Note:

Using the Auto Refresh field, you can view the refreshed data. You must turn-on the Auto Refresh option, as by default Auto Refresh is OFF.

Apply Topology filter

You can select the following options to obtain more granular information on topology filter:

Options	Functions
 Multi-Value select	You can use this function select all the available values in the topology element.
 Single-Value select	You can use this function select the single available value in the topology element.
	You can use this function to search and select the particular value in the topology element.
 Search  Options	You can use this function to improve the searching of the attributes of elements. Using this option you can: • search case sensitive values in the NNMi network • search the values containing all or part of the

Options	Functions
	keyword. • search the values that begin with keyword.
 Search Field	The Search results are displayed in this field.
 Insert option  Remove option	You can use these options to insert the selected value. You can use these options to remove the selected value.
 Select all  De-select all	You can select this option to select all the values. You can use this option to deselect all the values.
	You can select this option to hide the content.
 Hide	

To apply a topology filter, follow these steps:

1. Select a topology filter from the Topology filter window.
2. Select **Single value select** or **Multi value select** for the required topology filter.
3. You can also select the **Search** drop-down list to search the particular topology element.
4. Click **Option** link to refine searching process. The **Search** field displays the search result. You can use **Insert** option to insert the value, and **Remove** option to remove the selected value.
5. After setting the filters, click **Confirm Selection**.

Set report options

To select report options for the High Traffic Hosts report, follow these steps:

1. Select the **Top N** range from the drop-down list. The drop-down list ranges from Top 5 to Top 25..
2. Use **Sorting by** drop-down list to select the required metric on which you want the top N computation to be performed from the drop-down list.
3. Click **Confirm Selection**.

Using the High Traffic Hosts report you can determine the host systems with high traffic flow and various measures that add to the data. The following measures are displayed:

- Number of incoming and outgoing bytes across a host system
- Number of incoming and outgoing packets across a host system
- Volume of incoming and outgoing packets across a host system

The High Traffic host report displays the top hosts contributing to the selected metric over the selected period of time using bar graph formats.

Show Chart

This option shows the variation of the metric for the different entries in the bar graph over the selected period as a stacked chart graph. In Heap chart, different colors are used to represent each host name to obtain accurate data. **Note:** The Show Chart option executes a time consuming query, therefore it is provided as an option.

Most changed

The Most Changed Report provides the performance report of the elements of the network which have recorded the maximum change over a period of time with respect to a single metric.

Most changed report usage:

You can obtain Most changed report with user specified metric, applied on the topology filter for the selected time interval.

You can create the Most changed report by following these steps:

Specify time controls

The Traffic interface provides **Time Controls** option that helps you to enter the time period for a report creation.

To provide the time period, follow these steps:

1. Click  . The Calendar window opens.
2. Select the date from the Calendar window. The current date is the default date.
3. Select the hour, minutes and meridian separately to set the time. The time is in (hh:mm AM) format.
   You can also to set the required time using  .
4. Select the **Time Range** from the drop-down list.
5. Select the hour from the **Hour of the day** drop-down list.
6. Click **Confirm Selection**.

Note:

- Using the Auto Refresh field, you can view the refreshed data. You must turn-on the Auto Refresh option, as by default Auto Refresh is OFF.
- The Chart Detail report provides **Display Grain** drop-down list option.

Apply Topology filter

You can select the following options to obtain more granular information on topology filter:

Options	Functions
 Multi-Value select	You can use this function select all the available values in the topology element.
 Single-Value select	You can use this function select the single available value in the topology element.
	You can use this function to search and select the particular value in the topology element.

Options	Functions
Search Options Options	You can use this function to improve the searching of the attributes of elements. Using this option you can: • search case sensitive values in the NNMi network • search the values containing all or part of the keyword. • search the values that begin with keyword.
Search Field	The Search results are displayed in this field.
Insert option Remove option	You can use these options to insert the selected value. You can use these options to remove the selected value.
Select all Select all Deselect all De-select all	You can select this option to select all the values. You can use this option to deselect all the values.
	You can select this option to hide the content.
Hide	

To apply a topology filter, follow these steps:

1. Select a topology filter from the Topology filter window.
2. Select **Single value select** or **Multi value select** for the required topology filter.
3. You can also select the **Search** drop-down list to search the particular topology element.
4. Click **Option** link to refine searching process. The **Search** field displays the search result. You can use **Insert** option to insert the value, and **Remove** option to remove the selected value.
5. After setting the filters, click **Confirm Selection**.

Set report options

To select report options for the Most Changed report, follow these steps:

1. Select the **Top N** range from the drop-down list. The drop-down list ranges from Top 5 to Top 25.
2. Select the required metric from the drop-down list.
3. Use **Element level** drop-down list to select the attribute of the element for which you want group.
4. Click **Confirm Selection**.

The Most Changed Report depicts the traffic flow data for the selected period and the previous period. The Most Changed reports contains the elements with highest change in traffic flow in the NNMi network. You can also determine the following from the report:

- Previous period traffic flow rate
- Current period traffic flow rate
- Growth rate of traffic flow in percentage
- Actual Change in traffic flow

Using Most Changed report, you can identify the network elements that are affected by the change in traffic flow. You can also perform root cause analysis of the network congestion.

Top N

The Top N Report provides the performance report of the top most metric on the applied topology filter for the selected time interval.

Top N report usage:

You can create the top N report by following these steps:

Specify time controls

The Traffic interface provides **Time Controls** option that helps you to enter the time period for a report creation.

To provide the time period, follow these steps:

1. Click  . The Calendar window opens.
2. Select the date from the Calendar window. The current date is the default date.
3. Select the hour, minutes and meridian separately to set the time. The time is in (hh:mm AM) format.
   You can also to set the required time using  .
4. Select the **Time Range** from the drop-down list.
5. Select the hour from the **Hour of the day** drop-down list.
6. Click **Confirm Selection**.

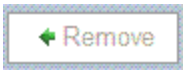
Note:

- Using the Auto Refresh field, you can view the refreshed data. You must turn-on the Auto Refresh option, as by default Auto Refresh is OFF.
- The Chart Detail report provides **Display Grain** drop-down list option.

Apply Topology filter

You can select the following options to obtain more granular information on topology filter:

Options	Functions
 Multi-Value select	You can use this function select all the available values in the topology element.
 Single-Value select	You can use this function select the single available value in the topology element.
	You can use this function to search and select the particular value in the topology element.

Options	Functions
 Search  Options	You can use this function to improve the searching of the attributes of elements. Using this option you can: • search case sensitive values in the NNMi network • search the values containing all or part of the keyword. • search the values that begin with keyword.
 Search Field	The Search results are displayed in this field.
 Insert option  Remove option	You can use these options to insert the selected value. You can use these options to remove the selected value.
 Select all  De-select all	You can select this option to select all the values. You can use this option to deselect all the values.
	You can select this option to hide the content.
 Hide	

To apply a topology filter, follow these steps:

1. Select a topology filter from the Topology filter window.
2. Select **Single value select** or **Multi value select** for the required topology filter.
3. You can also select the **Search** drop-down list to search the particular topology element.
4. Click **Option** link to refine searching process. The **Search** field displays the search result. You can use **Insert** option to insert the value, and **Remove** option to remove the selected value.
5. After setting the filters, click **Confirm Selection**.

Set report options

To select report options for the Top N report, follow these steps:

1. Select the Top N range from the drop-down list. The drop-down list ranges from Top 5 to Top 25.
2. Select the required metric from the drop-down list.
3. Use **Grouping by** option to select the attribute of the element for which you want group.
4. Click **Confirm Selection**.

The Top N report displays the high traffic hosts using bar graph by default and also heap chart formats optionally.

Show Chart

This option shows the variation of the metric for the different entries in the bar graph over the selected period as a stacked chart graph. In Top N report, different colors are used to represent each contributing entity to obtain accurate data.

Note: The Show Chart option executes a time consuming query, therefore it is provided as an option.

The High Performance Traffic Reports

In a large enterprise network, source and destination IP addresses and ports often show large cardinality, which means .these networks often have a very large number of unique IP addresses and ports. Hence, the hourly data aggregation may not be able to reduce the volume of data significantly. As a result, the volume of aggregated data in the Network Performance Server (NPS) grows drastically in a large deployment scenario. If you may need to generate reports for multiple days, the number of records in NPS may cause the report queries to perform poorly.

NNM iSPI Performance for Traffic summarizes these records to reduce the data volume significantly. The High Performance Traffic reports enable you to generate the following performance reports faster than the conventional Top N reports:

- Top N Applications Report
- Top N Sources Report
- Top N Destinations Report

NNM iSPI Performance for Traffic performs the following tasks on the aggregated records to resolve this problem. The new set of Top N reports enable you to retrieve high volume of records for multiple days quickly and generate the Top N reports:

- Group the records and aggregate the number of bytes, flows, and packets for each topology attribute. For more information on the topology attributes used, see Topology Attributes Used to Enhance Top N Report Performance. Additionally, NNM iSPI Performance for Trafficuses the following attribute combinations to group the records:
  - Source Host, Destination Host, and Application Name
  - Source Host and Destination Host
- Sort these aggregated record sets by the number of bytes.
- Select the top N and bottom N records; for example, top 100 and bottom 100 records, that is a maximum of 200 records for each attribute.
- Flush the smaller record set to NPS along with the original set of aggregated records.
- Generate the Top N reports based on the smaller set of records.

Example

In this example, we make the following assumptions:

- Only the Source IP and Destination IP attributes are available.
- The Leaf Collectors send 200,000 records to the Master Collector in five minutes.
- These records have 3000 unique Source IPs and 4000 unique destination IPs.

After grouping, we shall have the following additional sets of records:

- 3000 aggregated records for each unique Source IP. The records are aggregated based on the number of bytes sent.
- 4000 aggregated records for each unique Destination IP. The records are aggregated based on the number of bytes sent.

Now NNM iSPI Performance for Traffic sorts both sets of aggregated records based on the number of bytes sent. So we now have two sorted sets, one for each attribute.

NNM iSPI Performance for Traffic selects the top 100 and bottom 100 records from each sorted record set.

Thus, now we have 400 sorted records; two sets of records, each for the source and destination IP attributes.

NNM iSPI Performance for Traffic sends these 400 records to NPS via the Master Collector. Each of these records is marked with the type of the topology attribute it is related to.For example, NNM iSPI Performance for Traffic marks the record set related to Source IP attribute with the attribute type "Source IP".

Now with reduced number of flushed record sets, the Top N reports are generated faster.

Topology Attributes Used to Enhance Top N Report Performance

The following table describes the attributes that the Master Collector uses to aggregate the record sets received from the Leaf Collector:

Topology Attribute Name	Description
Source IP	Source IP address for the flow record
Destination IP	Destination IP address for the flow record
Source Host	System that generated the flow record
Destination Host	System that received the flow record
Application Name	Application name that produced or consumed the IP flow
Type of Service (ToS)	Type of the IP service specified in the flow record. A router maintains a ToS value for each route in its routing table. Routes learned through a protocol that does not support ToS are assigned a ToS of zero. Routers use the ToS to choose a destination for the packet.
IP Protocol	IP protocol used for the flow record
Node Name	Node that generated the flow record This topology attribute is an implicit key for any aggregation operation.
Interface Name	Interface that generated the flow record This topology attribute is an implicit key for any aggregation operation.

Top N Sources Report

This report ranks the selected source hosts, by the metric you select. Use this report to spot the source node that is producing extreme numbers of IP flows.

You can use this report to go back in time and investigate sampled data for process that are exhibiting unusual utilization levels.

Some of the topology filters that you use to generate this report are as follows:

- Source Host Name
- Interface Group Name

- Interface ID
- Interface Name
- Qualified Interface Name
- Node Name

Using this report you can:

- Detect if any source node is causing a persistent performance problem in the network traffic.
- Detect the source node that is producing a large number of IP flows.
- Detect the node, interface, or interface group mapped to the source node that is producing large volume of IP flows.
- Drill down to the Top N Interface report to view the performance of the interface mapped to the source host system.
- Drill down to the Heat Chart report to view how the selected system performance affects the network performance, or the Chart Detail report to view a trend analysis for the performance of the selected system.

Example

Some of the nodes in your network are performing poorly. Using this report, you can group the source hosts producing the highest number of outgoing IP flows. The source host reporting the highest number of outgoing IP flows is ranked first.

NNM iSPI Performance for Traffic Top N Report Options

- Top or Bottom N Select a rank betw een top or bottom five, ten, 25, 50, 100, all descending, and all ascending for the selected topology element.
- Metric Select the m etric based on which you want to generate the report. The metric that you select is used to rank the report.
- Display Time Series Chart Select Yes to view the detail chart with the table. Select No to hide the chart and display only the table. By default the Top N report does not display the Time Series Chart.

However, this report has the following constraints:

- The report displays only a fixed set of topology attributes.
- The Group By option is not enabled.

Top N Destinations Report

This report ranks the selected destination hosts, by the metric you select. Use this report to spot the destination host that is receiving extreme numbers of IP flows.

You can use this report to go back in time and investigate sampled data for process that are exhibiting unusual utilization levels.

Some of the topology filters that you use to generate this report are as follows:

- destination Host Name
- Interface Group Name
- Interface ID
- Interface Name

- Qualified Interface Name
- Node Name

Using this report you can:

- Detect if any destination host is causing a persistent performance problem in the network traffic.
- Detect the destination hosts that is receiving a large number of IP flows.
- Detect the node, interface, or interface group mapped to the destination hosts that are receiving the highest or lowest number of IP flows.
- Drill down to the Top N Interface report to view the performance of the interface mapped to the destination host system.
- Drill down to the Heat Chart report to view how the performance of the selected system affects the network performance, or the Chart Detail report to view a trend analysis for the performance of the selected system.

Example

Some of the nodes in your network are performing poorly. Using this report, you can group the destination hosts receiving the highest number of incoming IP flows. The destination host reporting the highest number of incoming IP flows is ranked first.

NNM iSPI Performance for Traffic Top N Report Options

- Top or Bottom N Select a rank betw een top or bottom five, ten, 25, 50, 100, all descending, and all ascending for the selected topology element.
- Metric Select the m etric based on which you want to generate the report. The metric that you select is used to rank the report.
- Display Time Series Chart Select Yes to view the detail chart with the table. Select No to hide the chart and display only the table. By default the Top N report does not display the Time Series Chart.

However, this report has the following constraints:

- The report displays only a fixed set of topology attributes.
- The Group By option is not enabled.

Top N Applications Report

This report ranks the selected applications, by the metric you select. Use this report to spot the application that is producing or consuming an extreme traffic metric.

You can use this report to go back in time and investigate sampled data for process that are exhibiting unusual utilization levels.

Some of the topology filters that you use to generate this report are as follows:

- Application Name
- Interface Group Name
- Interface ID
- Interface Name
- Qualified Interface Name
- Node Name

Using this report you can:

- Detect if any application running on a specific node or interface is causing a persistent performance problem in the network traffic.
- Detect the application that is producing or consuming a large number of IP flows.
- Detect the node, interface, or interface group on which such applications are running.
- Drill down to the Top N Interface report to view the performance of the interface on which the application is running.
- Drill down to the Heat Chart report to view how the application performance affects the network performance, or the Chart Detail report to view a trend analysis for the performance of the selected application.

Example

Some of the nodes in your network are performing poorly. Using this report, you can group the applications producing the highest number of incoming and outgoing IP flows for each of the destination nodes. The application reporting the highest number of incoming and outgoing IP flows is ranked first.

NNM iSPI Performance for Traffic Top N Report Options

- Top or Bottom N Select a rank betw een top or bottom five, ten, 25, 50, 100, all descending, and all ascending for the selected topology element.
- Metric Select the m etric based on which you want to generate the report. The metric that you select is used to rank the report.
- Display Time Series Chart Select Yes to view the detail chart with the table. Select No to hide the chart and display only the table. By default the Top N report does not display the Time Series Chart.

However, this report has the following constraints:

- The report displays only a fixed set of topology attributes.
- The Group By option is not enabled.

Report Assessment

Drill-down for the particular data

You can perform drill-down assessment on each point of the report.

To perform drill-down of the report, follow these steps:

1. After creating the report, click on the appropriate point on the graph.
2. Click **Show links**. The Report Menu opens.
3. Select the required tab, and click the report type under the selected tab.

You can view the report with the particular data in the selected performance extension and report type.

Drill-down for the entire report

After creating a report, you can use the same report and navigate across another report, to view in different Performance SPI.

To view the report in different performance extension, follow these steps:

1. After creating the report, click **Show links**. The Report Menu window opens.
2. Select the required tab, and click the report type under the selected tab.