

# HP Network Node Manager i Software Smart Plug-in for IP Multicast

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

Software Version: 9.00

---

[Online Help](#)

Document Release Date: March 2010

Software Release Date: March 2010





## HP Network Node Manager i Software iSPI for IP Multicast

### 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.

For information about third-party license agreements, see the license-agreements directory on the product installation media.

#### Copyright Notices

© Copyright 2008, 2010 Hewlett-Packard Development Company, L.P. All rights reserved.

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>). Portions Copyright © 1999-2003 The Apache Software Foundation. All rights reserved.

This product includes ASM Bytecode Manipulation Framework software developed by Institut National de Recherche en Informatique et Automatique (INRIA). Copyright © 2000-2005 INRIA, France Telecom. All Rights Reserved.

This product includes Commons Discovery software developed by the Apache Software Foundation (<http://www.apache.org/>). Copyright © 2002-2008 The Apache Software Foundation. All Rights Reserved.

This product includes Netscape JavaScript Browser Detection Library software, Copyright © Netscape Communications 1999-2001.

This product includes Xerces-J xml parser software developed by the Apache Software Foundation (<http://www.apache.org/>). Copyright © 1999-2002 The Apache Software Foundation. All rights reserved.

This product includes software developed by the Indiana University Extreme! Lab (<http://www.extreme.indiana.edu/>). Xpp-3 Copyright © 2002 Extreme! Lab, Indiana University. All rights reserved.

#### Trademark Notices

Acrobat® is a trademark of Adobe Systems Incorporated.

DOM4J® is a registered trademark of MetaStuff, Ltd.

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

Java™ is a US trademark of Sun Microsystems, Inc.

Oracle® is a registered trademark of Oracle Corporation and/or its affiliates.

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

UNIX® is a registered trademark of The Open Group.

**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 USA, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

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

## Table of Contents

---

<b>HP Network Node Manager i Software iSPI for IP Multicast</b> .....	<b>3</b>
	3
Legal Notices .....	3
<b>Table of Contents</b> .....	<b>5</b>
<b>Overview of the iSPI for IP Multicast Reports</b> .....	<b>7</b>
Accessing the iSPI for IP Multicast Reports .....	8
Time Controls .....	9
Report Options .....	10
Topology Filters .....	11
IP Multicast Interface Report .....	12
Calendar Report .....	12
Report Options .....	12
Using the iSPI for IP Multicast Calendar Report .....	13
Multicast traffic flow is slow .....	13
Heat Chart Report .....	14
Report Options .....	14
Using the iSPI for IP Multicast Interface Heat Chart Report .....	14
Chart Detail Report .....	15
Report Options .....	15
Using the iSPI for IP Multicast Interface Chart Detail Report .....	15
Multicast traffic passing through the selected qualified PIM interface is slow or the number of octets outgoing from a qualified PIM interface is less than the octets received by the qualified interface .....	16
Most Changed Report .....	16
Report Options .....	17
Using the iSPI for IP Multicast Most Changed Report .....	17
Top N Report .....	18
Report Options .....	18
Using the iSPI for IP Multicast Interface Top N Report .....	19
Managed Inventory Report .....	20
IP Multicast Interface Report Metrics and Topology Filters .....	20
IP Multicast Flow Report .....	21
Calendar Report .....	22

---

---

Report Options .....	22
Using the iSPI for IP Multicast Calendar Report .....	23
Multicast traffic flow is slow .....	23
Heat Chart Report .....	23
Using the iSPI for IP Multicast Flow Heat Chart Report .....	24
Chart Detail Report .....	24
Report Options .....	25
Using the iSPI for IP Multicast Flow Chart Detail Report .....	25
Most Changed Report .....	26
Report Options .....	26
Using the iSPI for IP Multicast Most Changed Report .....	26
Top N Report .....	27
Report Options .....	27
Using the iSPI for IP Multicast Flow Top N Report .....	28
Check the multicast flow with the lowest flow rate .....	28
Compare the flow rate and total number of bytes passing through the selected node .....	28
Managed Inventory .....	29
IP Multicast Flow Report Metrics and Topology Filters .....	29
<b>Appendix B: Index .....</b>	<b>31</b>

## Overview of the iSPI for IP Multicast Reports

The iSPI for IP Multicast uses the basic capabilities of the HP NNMi iSPI Performance for Metrics (iSPI Performance for Metrics) and Network Performance Server (NPS) to present the reports.

The iSPI for IP Multicast introduces the following extension packs:

- IP\_Multicast\_Interface
- IP\_Multicast\_Flow

The extension packs provide you user-friendly reports that help you investigate and troubleshoot the performance of the multicast traffic passing through the network. The extension packs use data collected by the iSPI for IP Multicast.

### Extension Pack

Type	Purpose
IP Multicast Interface	Shows report for IP multicast traffic passing through the multicast nodes and Protocol-Independent Multicast (PIM) interfaces on the network.
IP Multicast Flow	Shows report for the active IP multicast flows (Source, Group) passing through the selected nodes on the network.

The iSPI for IP Multicast reports help you to perform the following tasks:

- Identify the multicast traffic passing through a multicast-enabled node or PIM interface for a specific time period. Check the Calendar report.
- Investigate and troubleshoot the multicast network congestion. You can use the drill-down reports to help you conclude the issue faster. You can launch the IP Multicast reports from NNMi reports. Check the Top N and Chart Detail report.
- Rank the network element (node, interface, or flow) based on the metric values. Check the Top N report.
- Monitor the important and critical multicast flows in the network. Check the Most Changed report.
- Find the multicast traffic patterns in the network. Check the Heat Chart report.
- Measure the IP multicast traffic flow rates throughout the network.
- Capacity planning for the Multicast-enabled nodes or interfaces for the traffic passing through the network.

### Related Topics:

[IP Multicast Interface Report](#)

[IP Multicast Flow Report](#)

## Accessing the iSPI for IP Multicast Reports

The iSPI for IP Multicast reports are available from the HP NNMi iSPI Performance for Metrics Software console. You can access and view the IP Multicast reports after you install Network Performance Server and iSPI Performance for Metrics from the NPS/iSPI Performance for Metrics DVD.

The Multicast-specific tabs appear on the Report Menu page. You can use the following tabs to access the IP Multicast reports:

- IP\_Multicast\_Interface
- IP\_Multicast\_Flow

You can select the policies and metric definitions for the IP Multicast reports from the iSPI Performance for Metrics console. Before you view the iSPI for IP Multicast reports, make sure that the HP NNMi iSPI Performance for Metrics software server is up and running.

To view the iSPI for IP Multicast report by selecting a node, flow, or an interface, follow these steps:

1. From the iSPI for IP Multicast inventory, select a node, flow, or an interface. Based on your selection, the iSPI for IP Multicast opens the appropriate extension packs.
2. From the NNMi console, select **Actions > Reporting > Report Menu**.
3. Select the type of the report (Calendar, Heat Chart, Chart Detail, Most Changed, or Top N) to view the IP Multicast report.
4. Select any one of the following time range:
  - **Hourly (H)** for the report showing information for past one hour.
  - **Daily (D)** for the report showing information for past one day.
  - **Weekly (W)** for the report showing information for past seven days.
  - **Monthly (M)** for the report showing information for past 30 days.
5. Select a report control to customize the report. These report controls appear in the Report Menu page. Each report provides the following control links to customize the report:
  - [Time Controls](#)
  - [Options](#)

For more information, see *iSPI for Metrics help, Report Controls*.

If you select a node, flow, or an interface, you need not use the Topology Filters to set the filters again to launch reports.

The IP Multicast report appears with the selected filters such as time controls, metrics, and options.

To view the iSPI for IP Multicast report, follow these steps:

1. From the iSPI for IP Multicast inventory, select **Actions > Reporting-Report Menu**
2. Click the **IP\_Multicast\_Interface** tab or the **IP\_Multicast\_Flow** tab.
3. Select the type of the report (Calendar, Heat Chart, Chart Detail, Most Changed, or Top N) to view the IP Multicast report.
4. Select any one of the following time range:
  - **Hourly (H)** for the report showing information for past one hour.
  - **Daily (D)** for the report showing information for past one day.



- **Weekly (W)** for the report showing information for past seven days.
  - **Monthly (M)** for the report showing information for past 30 days.
5. Select a report control to customize the report. Each report provides the following control links to customize the report:
- [Time Controls](#)
  - [Topology Filters](#)
  - [Options](#)

For more information, see *Help for iSPI Performance for Metrics, Report Controls*.

The IP Multicast report appears with the selected filters such as time controls, topology filters, metrics, and options.

## Time Controls

You can select the time control filters from the iSPI Performance for Metrics console. Set the time range for your reports by the following options:

### Time Control Filters

Option	Description
Date From: Start Date and Time	Select the date and time from the drop-down list. By default, the date is set to the start date of the report. The report shows the time and date.
Time Range	Select the appropriate time from the <b>Time Range</b> box.
Display Grain	A time interval to show the multicast report. For example, if you select 5 minute as your display grain, your report appears in the interval of five minute. To get appropriate reports, select your display grain from the following values: <ul style="list-style-type: none"><li>● As Polled</li><li>● 1 minute</li><li>● 5 minutes</li><li>● 1 Hour</li><li>● 1 Day</li></ul>
Auto Refresh	Selecting an option automatically refreshes the report with the fresh samples of data.
Hour of Day	Select the hour for which you want to view your report.
Day of Week	Select the day for which you want to view your report.

## Report Options

Select the report options from the iSPI Performance for Metrics console to customize your report. The Report Options are as follows:

### Report Options

Option	Description
Primary Metric	The iSPI for IP Multicast report is based on at least one metric. Select the primary metric from the <b>Metric</b> drop-down list. You can select the primary metric for the following reports: <ul style="list-style-type: none"><li>• Heat Report</li><li>• Most Changed Report</li></ul>
Secondary Metric	The iSPI for IP Multicast report provides you an option to select two metrics. Select both metrics (Primary and Secondary) from the drop-down list. You can select the primary and secondary metric for the following reports: <ul style="list-style-type: none"><li>• Calendar Report</li><li>• Chart Detail Report</li><li>• Top N Report</li></ul>
Top / Bottom N	Select number and order of network elements for the report. You can select the Top / Bottom N option for the following reports: <ul style="list-style-type: none"><li>• Top N</li><li>• Most Changed report</li></ul>
Grouping By	Select the metric based on which you want to group the report data. You can select more than one metric to group the report. The <b>Grouping by</b> option is available for the following reports: <ul style="list-style-type: none"><li>• Top N Report</li><li>• Most Changed Report</li></ul>
Display Time Series Chart	By default, all reports show the time series chart. Select <b>No</b> if you want to disable this option.

For more information about IP Multicast metric definitions, see

- [IP Multicast Interface Report Metric Definitions](#)
- [IP Multicast Flow Report Metric Definitions](#)

## Topology Filters

The topology filter enables you to filter and select a network element from your topology. Select a filter and view the IP Multicast report according to your interest or requirement. For example, select a node (Node1067) from the Topology Filter. After selecting the metric value and grouping by option, the IP Multicast report appears for the selected filter (Node1067).

For more information, see *Help for iSPI Performance for Metric*.

## IP Multicast Interface Report

The iSPI for IP Multicast Interface Report helps you perform in-depth trend analysis for the multicast traffic passing through the selected PIM interface on the network. The report shows the incoming and outgoing traffic passing through a PIM interface.

The iSPI for IP Multicast uses the following reports:

- [Calendar Report](#)
- [Heat Chart Report](#)
- [Chart Detail Report](#)
- [Most Changed Report](#)
- [Top N Report](#)
- [Managed Inventory](#)

Use the IP Multicast Interface report to perform the following tasks:

- Monitor the interface utilization with the multicast traffic.
- Capacity planning to allocate the bandwidth for multicast traffic. For example, you can find out the interfaces in the network with maximum multicast traffic or more traffic rate.
- Compare the incoming and outgoing multicast traffic for a PIM interface or interfaces over a period of time. Check the Chart Detail report.
- Investigate and troubleshoot the interfaces with the high exception counts (utilization or traffic rate). For example, you can investigate if the volume of the bytes passing through the selected PIM interface is more or irregular.
- Cross launch to NNMi Interface Health report from the IP Multicast Interface report. For example, select the Top N report for the qualified interface, launch the Interface Health.
- Rank the interface or interfaces based on the selected interface utilization metric. Check the Top N report.
- Monitor the qualified interfaces by traffic volume.

### Related Topics:

[Accessing the iSPI for IP Multicast Reports](#)

## Calendar Report

The iSPI for IP Multicast Interface Calendar report helps you to monitor the multicast traffic passing through the selected PIM interface for a specific time range. The calendar report is available for 1 day (D), 7 days (W) or 31 days (M).

Use this report to perform the following tasks:

- Compare the traffic performance for an interface or interfaces over a period of time.
- Identify a specific time period to find out any unusual behavior in the multicast traffic passing through the PIM interface.

## Report Options

The Calendar report shows the following options:

---

- [Primary Metrics](#)<sup>1</sup>
- [Secondary metrics](#)<sup>2</sup>

For information about metric definitions, see [IP Multicast Interface Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Calendar Report](#).

## Using the iSPI for IP Multicast Calendar Report

The following example demonstrates the use of the iSPI for IP Multicast Calendar report:

### **Multicast traffic flow is slow.**

Check the IP Multicast Flow Calendar report to analyze the multicast flow (S, G) for a specified period of time passing through a node. If the Discard Rate (avg) is more than the Flow Rate (avg), the multicast traffic is slow.

To view the IP Multicast Calendar report, follow these steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>3</sup>
2. Click the **IP Multicast Flow** tab.
3. Select one of the following time ranges for the Calendar Report:
  - **Daily (D)** for the report showing information for past one day.
  - **Weekly (W)** for the report showing information for past seven days.
  - **Monthly (M)** for the report showing information for past 30 days.

In this case, we select **W**.

4. Click **Topology Filters** to select a filter of your interest. For example, Node Name.
5. Click **Options** and select the following metrics:
  - **Flow Rate (bps) (avg)** as the primary metric.
  - **Discard Rate (avg)** as the secondary metric.
6. Select **Confirm Selection**.

The IP Multicast Calendar report opens. The sample report shows a weekly report for a multicast flow (S, G) in the network.

---

<sup>1</sup>Select the metric based on which you want to generate the report. The primary metric appears on the left Y axis of the report.

<sup>2</sup>Select the metric to compare with the primary metric. The secondary metric appears on the right Y axis of the report.

<sup>3</sup>From the NNMi console, click **Actions->Reporting-Report Menu**.

## Heat Chart Report

The IP Multicast Interface Heat Chart report helps you to view the traffic performance based on a single metric over a time frame.

The heat chart shows different colors to display the different states of a metric. These states show traffic performance for the selected network element. For example, select a weekly Heat Chart report to find the performance of a metric (**Octets In (avg)**) for the selected network element (**Interface Name**)

Use this report to perform the following tasks:

- Track the hourly performance of the multicast traffic passing through an interface.
- Quickly isolate and resolve problems affecting the selected time range by different colors.

### Report Options

The Heat Chart report shows the following option:

Metric<sup>1</sup>

For information about metric definitions, see [IP Multicast Interface Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Interface Heat Chart Report](#).

## Using the iSPI for IP Multicast Interface Heat Chart Report

The following example demonstrates the use of the iSPI for IP Multicast Heat Chart Report:

### Monitor the critical multicast traffic passing through the PIM interface.

Check the IP Multicast Interface Heat Chart report to analyze the traffic passing through the selected qualified interface for one day.

To view the IP Multicast Heat Chart report, follow the steps:

1. Navigate to the HP NNM iSPI Performance for Metrics Software console.<sup>2</sup>
2. Click the **IP\_Multicast\_Interface** tab.
3. Select one of the time ranges for the heat report. For example, select **D**
4. Click **Topology Filters** and select the Qualified Interface Name.

---

<sup>1</sup>Select the metric based on which you want to view the report.

<sup>2</sup>From the NNMi console, click **Actions->Reporting-Report Menu**

5. Click **Options** and select **Utilization In** as a metric.
6. Select **Confirm Selection**.

The IP Multicast Heat Chart report opens.

The sample report shows the different states of the metric (Utilization In (average)) for the selected qualified interface.

## Chart Detail Report

The IP Multicast Interface Chart Detail report helps you compare the sampled data for any two metrics. For example, select a weekly Chart Detail report to compare the number of octets received and sent out from the selected qualified interface.

Use this report to perform the following tasks:

- Analyze the trend of traffic passing through an interface based on one unit of time. Each unit of time is known as a **Display Grain**. Make sure to set the display grain greater than the polling interval to view the correct report. You can measure the **Display Grain** as follows:
  - Five minutes for an hourly report
  - One hour for a daily report
  - One day for a weekly report
  - One day for a monthly report
- Compare the incoming and outgoing multicast traffic for a set of interfaces or qualified interfaces over a period of time.
- Detect any persistent problem in the traffic performance.

## Report Options

The Chart Detail report shows the following options:

- [Primary Metrics](#)<sup>1</sup>
- [Secondary Metrics](#)<sup>2</sup>

For information about metric definitions, see [IP Multicast Interface Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Chart Detail Report](#).

## Using the iSPI for IP Multicast Interface Chart Detail Report

The following example demonstrates the use of the iSPI for IP Multicast Interface Chart Detail report:

---

<sup>1</sup>Select the main metric based on which you want to view the report. The primary metric appears on the left Y axis of the report.

<sup>2</sup>Select the metric to compare with the primary metric. The secondary metric appears on the right Y axis of the report.

**Multicast traffic passing through the selected qualified PIM interface is slow or the number of octets outgoing from a qualified PIM interface is less than the octets received by the qualified interface.**

Check the IP Multicast Interface report to find the actual bandwidth utilization for multicast traffic. Compare the number of bytes received and sent out from the selected PIM interface.

To view the report, follow these steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>1</sup>
2. Click the **IP Multicast Interface** tab.
3. Select one of the time ranges for the report. For example, select **D**
4. Click **Topology Filters** and select a filter to view the report. For example, **Interface Name** or **Qualified Interface Name**.
5. Click **Options** and select the following metrics:
  - **Throughput In (Mbps) (max)** as the primary metric.
  - **Throughput Out (Mbps) (max)** as the secondary metric.
5. From **Grouping by** option, select **Qualified Interface Name**. You can select more than one metrics to group.
6. Select **Confirm Selection**.

The IP Multicast Interface Chart Detail report appears.

The IP Multicast Interface report shows the following:

- X axis: Time Interval
- Y axis: Throughput In (Mbps) (max) and Throughput Out (Mbps) (max)

View the significant drop or rise in the number of octets received by the interface for a specific time interval. In addition, compare the incoming and outgoing traffic for the selected PIM interface. Check the iSPI for IP Multicast Inventory views for the incidents and status of the interface.

This report helps you in capacity management. In addition, helps you to find if the interface utilization is more than the expected traffic, you can route the multicast traffic from a different node and PIM interface.

## Most Changed Report

The iSPI for IP Multicast Interface Most Changed report helps you to compare one metric for two different (consecutive) time frames. In addition, you can find the changes and growth percentage in the metric value. For example, select a weekly report to compare a metric (**Octets In (avg)**) that is grouped by a network element (**Interface Name**).

Use this report to perform the following tasks:

- Compare the multicast traffic performance based on a metric value.
- Find the growth rate of the traffic flow passing through an interface based on a single metric.

---

<sup>1</sup>From the NNMi console, click **Actions->Reporting-Report Menu**



## Report Options

The Most Changed report shows the following option:

- Top N<sup>1</sup>
- Metric<sup>2</sup>
- Grouping By<sup>3</sup>

For information about metric definitions, see [IP Multicast Interface Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Most Changed Report](#)

:

## Using the iSPI for IP Multicast Most Changed Report

The following example demonstrates the use of a Most Changed Report:

### **Compare the changes in the discard rate for the current and previous time period.**

Check the IP Multicast Most Changed report to analyze the multicast flow on the metric value (Discard Rate) over a specified period of time. The higher discard rate results in slower traffic.

To view the IP Multicast Most Changed report, follow the steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>4</sup>
2. Click the **IP\_Multicast\_Flow** tab or the **IP\_Multicast\_Interface** tab.
3. Select one of the time ranges available for the Most Changed Report. In this case, we select **W**.
4. Click **Topology Filters** and select Flow (S, G).

---

<sup>1</sup>Select the type of report from the available rank-list. The rank-list includes top or bottom 5,10, 25 ranks for the selected network element. The ranks are available either in ascending order or descending order.

<sup>2</sup>Select the metric based on which you want to view the report.

<sup>3</sup>Select the network element to group the metric. You can select more than one value to group the metric.

<sup>4</sup>From the NNMi console, click **Actions->Reporting-Report Menu**

5. Click **Options** and select the following metrics:

- **Discard Rate** as the primary metric.
- **Node Name** as the Grouping by metric.

6. Select **Confirm Selection**.

The IP Multicast Most Changed report opens. The following sample report shows a weekly comparative study to find out the change in the metric value for the consecutive time period.

## Top N Report

The iSPI for IP Multicast Interface Top N report ranks the selected network element based on a single metric. The Top N report lists the network elements in the descending order; that is from the highest value of the selected metric to the lowest value of the selected metric.

For example, select a daily Top 10 report to view the top 10 interfaces with the metric value. The report is grouped by the selected interface name and the metric value (**Volume-Flow Bytes (sum)**) in the network.

The Top N list includes the following:

- Top / Bottom 5 - Shows the Top / Bottom 5 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 10 - Shows the Top / Bottom 10 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 25 - Shows the Top / Bottom 25 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 50 - Shows the Top / Bottom 50 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 100 - Shows the Top / Bottom 100 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.

Use this report to perform the following tasks:

- Detect the reason to find out the network performance for the network element.
- Monitor the critical and important multicast interfaces.
- Compare the network element with the selected metric values for a quick overview of the network. You can find the cause of network performance by using the drill-down reports.
- Analyze the historical data to monitor and find the trend in network performance.

## Report Options

The report shows the following options:

- [Top N](#)<sup>1</sup>
- [Metric](#)<sup>2</sup>
- [Display Time Series Chart](#)<sup>3</sup>
- [Grouping By](#)<sup>4</sup>

For information about metric definitions, see [IP Multicast Interface Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Interface Top N Report](#).

## Using the iSPI for IP Multicast Interface Top N Report

Use the IP Multicast Top N report by following the sample report:

### Find the Top 25 Multicast traffic passing through the qualified interfaces.

Check the IP Multicast Interface report to find the Top 25 qualified interfaces in the network.

To view the Top 25 multicast traffic passing through the network, follow the steps:

1. Navigate to the HP NNM iSPI Performance for Metrics Software console.<sup>5</sup>
2. Click the **IP Multicast Interface** tab.
3. Select one of the time ranges for the Top N report. In this case, we select **W**.
4. Click **Topology Filters** to select a filter of your interest.
5. Click **Options** and select the following metrics:
  - **Throughput In (Kbps) (avg)** as the primary metric.
  - **Qualified Interface Name** as Grouping by metric.
6. Select **Confirm Selection**.

The IP Multicast Interface Top N report appears.

---

<sup>1</sup>Select the type of report from the available rank-list. The rank-list includes top or bottom 5,10, 25, 50, 100 ranks for the selected network element. The ranks are available either in ascending order or descending order.

<sup>2</sup>Select the main metric based on which you want to view the report. The primary metric appears on the left Y axis of the report.

<sup>3</sup>Select **Yes** to view the detail chart with the table. Select **No** to hide the chart and show only the graph. The Top N report shows the Time Series Chart.

<sup>4</sup>Select an option to group the report data. You can select more than one option.

<sup>5</sup>From the NNMi console, click **Actions->Reporting-Report Menu**.

## Managed Inventory Report

The IP Multicast Interface Managed Inventory report enables you to view the node and interface attributes in the multicast flows.

Use this report to perform the following tasks:

- Find the type of topology items (for example, Interface Name, Qualified Interface Name) in the multicast flow.
- Find the count of the topology items.

For information about metric definitions, see [IP Multicast Interface Metric Definitions](#).

## IP Multicast Interface Report Metrics and Topology Filters

The following Metrics and Topology Filters are available in the IP Multicast Interface report.

### Metrics

Name	Description
Volume Bytes In (sum)	Total number of bytes received by the selected PIM interface.
Volume Bytes Out (sum)	Total number of bytes sent out from the selected PIM interface.
Volume KB In (sum)	Total number of kilobytes received by the selected PIM interface.
Volume KB Out (sum)	Total number of kilobytes sent out from the selected PIM interface.
Volume MB In (sum)	Total number of megabytes received by the selected PIM interface.
Volume MB Out (sum)	Total number of megabytes sent out from the selected PIM interface.
Throughput In (maximum) (minimum) (average)	The number of octets received by the selected PIM interface. Possible units are bps, Kbps, and Mbps.
Throughput Out (maximum) (minimum) (average)	The number of octets sent out from the selected PIM interface. Possible units are bps, Kbps, and Mbps.
Utilization In (maximum) (minimum) (average)	The bandwidth used by the incoming multicast traffic. This metric helps to evaluate whether an interface in the network is overloaded.

Name	Description
Utilization Out (maximum) (minimum) (average)	The bandwidth used by the outgoing multicast traffic. This metric helps to evaluate whether an interface in the network is overloaded by the multicast traffic.

**Topology Filters**

Name	Description
Interface Name	The name of the selected multicast PIM interface.
Qualified Interface Name	The name of the selected multicast interface on the multicast-enabled nodes.
Node Name	The name of the multicast-enabled node.
Interface Index	Interface MIB variable for the row number in the interface table (ifTable) for the selected interface. The row number can change with each reboot.
Interface Speed	Interface MIB variable for the interface's bandwidth in bits per second. Depending on the device vendor, this value may indicate current speed or potential speed.
Interface Alias	Optional Interface MIB variable for ifAlias assigned to the interface. This value is set by the device administrator. An ifAlias could be useful if the interface vendor did not provide an ifName value.
McastInterface UUID	The Universally Unique Identifier of the selected multicast interface.
Interface UUID	The Universally Unique Identifier of the selected interface.
Node UUID	The Universally Unique Identifier of the selected node.

## IP Multicast Flow Report

The iSPI for IP Multicast Flow Report helps you to monitor the active IP multicast flows (Source, Group) passing through the selected nodes in the network. The report shows the multicast traffic flow (flow packets, packet discards, and flow bytes) passing through a node or nodes.

The iSPI for IP Multicast uses the iSPI Performance for Metrics and NPS report templates to show the reports. The available reports are:

- [Calendar Report](#)
- [Heat Chart Report](#)
- [Chart Detail Report](#)
- [Most Changed Report](#)
- [Top N Report](#)
- [Managed Inventory](#)

Use the IP Multicast Flow report for the following:

- Monitor the multicast flows (S, G) by traffic volume.
- Monitor the most changed or critical flows. Check the Most Changed or Heat Chart report.
- Capacity planning for the multicast flows passing through the multicast-enabled nodes.
- Rank the multicast flows (S, G) based on the selected metrics. Check the Top N report.
- Troubleshoot and investigate the reason for the multicast flow to receive the degraded signal. Check the Top N report and Chart Detail report.
- Count the topology objects in the multicast flow. Check the Managed Inventory report.

**Related Topics:**

[Accessing the iSPI for IP Multicast Reports](#)

## Calendar Report

The IP Multicast Flow Calendar report helps you to monitor the multicast (S, G) passing through the selected node or nodes for a specific time range. In addition, the report shows a comparative study of the selected metrics for a specific time range. The calendar report is available for 1 day (D), 7 days (W), or 31 days (M).

Use this report to perform the following tasks:

- Monitor and compare the multicast traffic flow performance over a period of time.
- Identify a specific time period to find out any unusual behavior such as degraded flow signal in the multicast traffic flow.

### Report Options

The Calendar report shows the following options:

- [Primary Metrics](#)<sup>1</sup>
- [Secondary metrics](#)<sup>2</sup>

For information about metric definitions, see [IP Multicast Flow Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Calendar Report](#).

---

<sup>1</sup>Select the metric based on which you want to view the report. The primary metric appears on the left Y axis of the report.

<sup>2</sup>Select the metric to compare with the primary metric. The secondary metric appears on the right Y axis of the report.

## Using the iSPI for IP Multicast Calendar Report

The following example demonstrates the use of the iSPI for IP Multicast Calendar report:

### Multicast traffic flow is slow.

Check the IP Multicast Flow Calendar report to analyze the multicast flow (S, G) for a specified period of time passing through a node. If the Discard Rate (avg) is more than the Flow Rate (avg), the multicast traffic is slow.

To view the IP Multicast Calendar report, follow these steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>1</sup>
2. Click the **IP Multicast Flow** tab.
3. Select one of the following time ranges for the Calendar Report:
  - **Daily (D)** for the report showing information for past one day.
  - **Weekly (W)** for the report showing information for past seven days.
  - **Monthly (M)** for the report showing information for past 30 days.

In this case, we select **W**.

4. Click **Topology Filters** to select a filter of your interest. For example, Node Name.
5. Click **Options** and select the following metrics:
  - **Flow Rate (bps) (avg)** as the primary metric.
  - **Discard Rate (avg)** as the secondary metric.
6. Select **Confirm Selection**.

The IP Multicast Calendar report opens. The sample report shows a weekly report for a multicast flow (S, G) in the network.

## Heat Chart Report

The IP Multicast Flow Heat Chart report helps you to view the traffic performance based on a single metric over a time frame.

The heat chart shows different colors to show different states of a metric. These states show traffic performance for the selected network element. For example, select a weekly Heat Chart report to find the performance of a metric (**Discard Rate (avg)**) for the selected flow.

Using this report you can:

- Track the hourly performance of the multicast traffic flow.
- Quickly isolate and resolve problems affecting in the selected time range by different colors.

---

<sup>1</sup>From the NNMi console, click **Actions->Reporting-Report Menu**.

## Report Options

The Heat Chart report shows the following option:

Metric<sup>1</sup>

For information about metric definitions, see [IP Multicast Flow Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Heat Chart Report](#).

## Using the iSPI for IP Multicast Flow Heat Chart Report

The following example demonstrates the use of the iSPI for IP Multicast Flow Heat Chart report:

**The transmission of the BBC channel (a multicast flow) is disrupted for a week from 1400 Hrs to 1800 Hrs.**

Find the nodes participating in the multicast flow. Check the IP Multicast Flow Heat Chart report to analyze the traffic pattern for a week. Check the Flow Rate to find out the reason of the traffic performance.

To view the IP Multicast Heat Chart report, follow the steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>2</sup>
2. Click the **IP\_Multicast\_Flow** tab.
3. Select one of the time ranges for the heat report. For example, select **W**.
4. Click **Topology Filters** and select the Node Name for which you want to check the flow (S, G).
5. Click **Options** and select **Flow Rate** as a metric.
6. Select **Confirm Selection**.

The IP Multicast Heat Chart report opens. The following sample report shows the hourly states of the Flow Rate (average) for the selected Node Name.

## Chart Detail Report

The IP Multicast Flow Chart Detail report helps you to compare the sampled data for any two metrics. For example, select a weekly Chart Detail report to compare the flow rate and discard rate for the selected flow passing through a source node.

Use this report to perform the following tasks:

- Analyze the trend of traffic flow for multiple interfaces based on one unit of time. Each unit of time is known as a **Display Grain**. Make sure to set the display grain greater than the polling interval to view the correct report. You can measure the **Display Grain** as follows:
  - Five minutes for an hourly report
  - One hour for a daily report
  - One day for a weekly report
  - One day for a monthly report

---

<sup>1</sup>Select the metric based on which you want to view the report.

<sup>2</sup>From the NNMi console, click **Actions->Reporting-Report Menu**



- Compare the incoming and outgoing multicast traffic flow over a period of time.
- Detect any persistent problem in the multicast traffic.

## Report Options

The Chart Detail report shows the following options:

- [Primary Metrics](#)<sup>1</sup>
- [Secondary Metrics](#)<sup>2</sup>

For information about metric definitions, see [IP Multicast Flow Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Chart Detail Report](#).

## Using the iSPI for IP Multicast Flow Chart Detail Report

The following example demonstrates the use of the iSPI for IP Multicast Flow Chart Detail report:

**Multicast flow rate on the selected node is not accurate. Compare the incoming flow rate and flow volume bytes for the selected node.**

Check the IP Multicast Flow report to find the Top 10 nodes with multicast flows in the network. After finding the node with the lowest flow rate, compare the flow rate and total number of bytes passing through a node. This is an example of the drill-down report.

To view the IP Multicast Chart Detail report, follow the steps:

1. Navigate to the HP NNM iSPI Performance for Metrics Software console.<sup>3</sup>
2. Click **Options** and select the following metrics:
  - **Flow Rate (bps) (avg)** as the primary metric.
  - **Volume-Flow** as the secondary metric.
3. Select **Confirm Selection**.

You need not use the Topology Filters to set the filters again to launch reports. The node is already selected and acts as a filter in the drill-down report.

The IP Multicast Flow report details are as follows:

- X axis: Time Interval
- Y axis: Flow Rate (bps) (avg) and Volume-Flow Bytes (sum)

View the significant drop in the number of incoming flows received by the node. In addition, you can compare the incoming and total number of flows for the selected node.

---

<sup>1</sup>Select the main metric based on which you want to view the report. The primary metric appears on the left Y axis of the report.

<sup>2</sup>Select the metric to compare with the primary metric. The secondary metric appears on the right Y axis of the report.

<sup>3</sup>From the NNMi console, click **Actions->Reporting-Report Menu**

## Most Changed Report

The iSPI for IP Multicast Flow Most Changed report helps you to compare one metric over a time frame to find the changes in the multicast traffic performance. For example, you can find the change in the graph for the metric value (flow rate) for two consecutive days. You can evaluate and conclude the performance of the multicast flows.

Use this report to perform the following tasks:

- Compare the multicast traffic performance based on a metric value.
- Find out the trend of the multicast flow.
- Find the growth rate of the traffic flow passing through an interface based on a single metric.

## Report Options

The Most Changed report shows the following option:

- Top N<sup>1</sup>
- Metric<sup>2</sup>
- Grouping By<sup>3</sup>

For information about metric definitions, see [IP Multicast Flow Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Most Changed Report](#).

## Using the iSPI for IP Multicast Most Changed Report

The following example demonstrates the use of a Most Changed Report:

### Compare the changes in the discard rate for the current and previous time period.

Check the IP Multicast Most Changed report to analyze the multicast flow on the metric value (Discard Rate) over a specified period of time. The higher discard rate results in slower traffic.

To view the IP Multicast Most Changed report, follow the steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>4</sup>
2. Click the **IP\_Multicast\_Flow** tab or the **IP\_Multicast\_Interface** tab.
3. Select one of the time ranges available for the Most Changed Report. In this case, we select **W**.
4. Click **Topology Filters** and select Flow (S, G).
5. Click **Options** and select the following metrics:
  - **Discard Rate** as the primary metric.
  - **Node Name** as the Grouping by metric.
6. Select **Confirm Selection**.

---

<sup>1</sup>Select the type of report from the available rank-list. The rank-list includes top or bottom 5,10, 25 ranks for the selected network element. The ranks are available either in ascending order or descending order.

<sup>2</sup>Select the metric based on which you want to view the report.

<sup>3</sup>Select the network element to group the metric. You can select more than one value to group the metric.

<sup>4</sup>From the NNMi console, click **Actions->Reporting-Report Menu**

The IP Multicast Most Changed report opens. The following sample report shows a weekly comparative study to find out the change in the metric value for the consecutive time period.

## Top N Report

The iSPI for IP Multicast Flow Top N report ranks the selected multicast flow (S, G) based on a single metric. The Top N report lists the network elements in the descending order; that is from the highest value of the selected metric to the lowest value of the selected metric.

For example, select a daily Top 10 report to view the top 10 multicast flows. The report is grouped by the selected flow and the metric value (**Volume-Flow Bytes (sum)**) in the network.

The Top N list includes the following:

- Top / Bottom 5 - Shows the Top / Bottom 5 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 10 - Shows the Top / Bottom 10 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 25 - Shows the Top / Bottom 25 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 50 - Shows the Top / Bottom 50 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.
- Top / Bottom 100 - Shows the Top / Bottom 100 horizontal bar graphs that provide values in descending or ascending order based on the selected metric.

Use this report to perform the following tasks:

- Compare the network element with the selected metric values for a quick overview of the network. You can find the cause of network performance by using the drill-down reports.
- Monitor the critical and important multicast flows and interfaces.
- Investigate and troubleshoot the flows with the high exception counts (packets discarded and flow rate).
- Analyze the historical data to monitor and find the trend in network performance.

## Report Options

The report shows the following options:

- [Top N](#)<sup>1</sup>
- Metric<sup>2</sup>

---

<sup>1</sup>Select the type of report from the available rank-list. The rank-list includes top or bottom 5,10, 25, 50, 100 ranks for the selected network element. The ranks are available either in ascending order or descending order.

<sup>2</sup>Select the main metric based on which you want to view the report. The primary metric appears on the left Y axis of the report.

- Display Time Series Chart<sup>1</sup>
- Grouping By<sup>2</sup>

For information about metric definitions, see [IP Multicast Flow Metric Definitions](#).

For more information about how to use the report, see [Using the IP Multicast Flow Top N Report](#).

## Using the iSPI for IP Multicast Flow Top N Report

The following example demonstrates the use of a Flow Top N Report:

### The picture quality is not good for one of the IP TV channel. How do I troubleshoot this?

Compare the Top 10 IP TV channels (multicast flows) based on the flow rate. Each channel appears as a multicast flow (S, G) in the IP Multicast inventory.

To view the Top 10 multicast flows in the network, follow the steps:

1. Navigate to the HP NNMi iSPI Performance for Metrics Software console.<sup>3</sup>
2. Click the IP **Multicast Flow** tab.
3. Select one of the time ranges for the Top N report. In this case, we select **W**.
4. Click **Topology Filters** to select a filter of your interest. For example, Source Address and Group Address.
5. Click **Options** and select the following metrics:
  - **Flow Rate (Kbps) (avg)** as the primary metric.
  - **Flow** as Grouping by metric.
6. Select **Confirm Selection**.

The IP Multicast Top N report opens with ten multicast flows with the rank and flow rate.

### Check the multicast flow with the lowest flow rate.

To find the reason of the degraded picture quality, click the IP TV Channel with the lowest flow rate and find out the Top 10 nodes participating in the selected IP TV channel (multicast flow). The Top 10 nodes appear based on the flow rate. This is an example of the drill-down report.

### Compare the flow rate and total number of bytes passing through the selected node.

To view the IP Multicast Flow Chart Detail report, follow the steps:

1. Click the node name with the lowest flow rate.
2. Click **Options** and select the following metrics:
  - **Flow Rate (Kbps) (avg)** as the primary metric.
  - **Volume-Flow** as the secondary metric.
3. Select **Confirm Selection**.

---

<sup>1</sup>Select **Yes** to view the detail chart with the table. Select **No** to hide the chart and show only the graph.

The Top N Report shows the Time Series Chart.

<sup>2</sup>Select an option to group the report data. You can select more than one option.

<sup>3</sup>From the NNMi console, click **Actions->Reporting-Report Menu**

You need not use the Topology Filters to set the filter again. The node is already selected and acts as a filter in the drill-down report.

The IP Multicast flow report details are as follows:

- X axis: Time Interval
- Y axis: Flow Rate (bps) (avg) and Volume-Flow Bytes (sum)

View the significant drop in the number of incoming flows received by the node. In addition, you can compare the incoming and total number of flows for the selected node.

This report helps in multicast flow management per node. Monitor the incoming and outgoing multicast flows to view if the multicast flow is more than the expected flow rate.

## Managed Inventory

The IP Multicast Flow Managed Inventory report enables you to view the topology flow objects participating in the multicast flows.

Use this report to perform the following tasks:

- Find the type of topology objects (for example, Group Address, Node Name) in the multicast flow.
- Find the count of the topology objects.

For information about metric definitions, see [IP Multicast Flow Metric Definitions](#).

## IP Multicast Flow Report Metrics and Topology Filters

The following Metrics and Topology Filters are available in the iSPI for IP Multicast Flow report.

### Metrics

Name	Description
Volume - Flow Bytes (sum)	Total number of bytes in a selected multicast flow (S, G) in the network. The available units are KBytes, and MBytes.
Volume - Flow Packets (sum)	Total number of packets in a selected multicast flow (S, G) in the network.
Discards - Packets (sum)	Total number of packets that reach late to the destination or get dropped for the selected flow in the network.
Flow Rate (maximum)(minimum)(average)	Total number of bytes per second for the selected flow (S, G) passing through the nodes in the network. The available units are bps, Kbps, and Mbps.

Name	Description
Flow Packets Rate (maximum)(minimum)(average)	Total number of packets per second for the selected flow (S, G) passing through the nodes in the network.
Discard Rate (maximum)(minimum)(average)	Total number of packets per second that reach late to the destination or get dropped for the selected flow (S, G) in the network.

**Topology Filters**

Filters	Description
Source Address	An IP Address of the source node.
Flow (S on G)	The multicast flow passing through the selected flow group (source and group) in the network.
Node Name	The name of the multicast-enabled node.
Group Address	A multicast group address is an Internet Protocol (IP) address in the range 224.0.0.0 to 239.255.255.255 that identifies the members of an IP multicast group.

:

## Appendix B: Index

<b>A</b>		<b>M</b>	
Access		metrics	
IP Multicast Flow reports	8	Interface report	20
IP Multicast Interface reports	8	IP Multicast Flow reports	29
<b>D</b>		<b>O</b>	
Discard Rate	30	Options	
Discards - Packets	29	IP Multicast report	10
		Overview	7
<b>F</b>		<b>S</b>	
Flow Calendar report	22	sample report	
Flow Chart Detail report	24	Calendar report	13, 23
Flow Heat Chart	23	Flow Chart Detail report	25
Flow Managed Inventory	29	Flow Heat Chart report	24
Flow Most Changed report	26	FlowTop N report	28
Flow Packets Rate	30	Interface Chart Detail report	15
Flow Rate	29	Interface Heat Chart	14
Flow Top N	27	Interface Top N report	19
		Most Changed report	17, 26
<b>I</b>		<b>T</b>	
Interface Calendar report	12	Throughput In	20
Interface Chart Detail	15	Throughput Out	20
Interface Heat Chart	14	time control	
Interface Managed Inventory	20	IP Multicast report	9
Interface Most Changed	16	topology filter	11
Interface Top N	18		
IP Multicast Flow	21		
IP Multicast Interface Report	12	<b>U</b>	
IP Multicast reports		Utilization In	20
overview	7	Utilization Out	21
tasks	7		
		<b>V</b>	
		Volume - Flow Bytes	29
		Volume - Flow Packets	29

Index: Volume Bytes In – Volume MB Out

---

Volume Bytes In	20
Volume Bytes Out	20
Volume KB In	20
Volume KB Out	20
Volume MB In	20
Volume MB Out	20