

DIH 1.2

Diagnostic Utility Administration Guide

910-6511-001 Revision A

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Chapter 1

About This Help Text

Topics:

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Scope and Audience

This guide is designed to assist the user in working with Diagnostic Utility and surveillance concepts and procedures. It is designed for users with the role System Administrator, NSPMonitorManager or NSPMonitorPowerUser working with DIH to view either the overall status of sites, subsystems or servers.

About the Diameter Intelligence Hub (DIH)

The Diameter Intelligent Hub (DIH) is used to monitor a LTE network. DIH also creates a small hardware "footprint" for customers who administer 3G and 4G diameter networks. The DIH:

- Is a single blade server and storage blade collocated within a single or dual Diameter Signaling Router (DSR) enclosure(s).
- Provides filtering, data feed, tracing, decoding, and SNMP functions.
- Enables the selective collection and storage of diameter traffic within one or more instances of PMF and IXP.
- Provides nodal diameter troubleshooting.
- Provides data export for diameter messages.
- Supports both IPv4 and IPv6 traffic simultaneously.
- Provides KPI tracking using ProTrace application as well as viewing KPIs in graphic format using ProPerf dashboard configured at installation.
- Provides filtering for alarms using ProTraQ Cell filter (see system alarms online help).
- Uses diameter protocol exclusively.

Note: The DIH system can use other protocols if the Diameter mode has not been selected and system is in Standard mode. (Default setting is Standard mode. For more information on selecting Diameter mode, see Centralized Configuration Manager Administration online help, "Setting System to Diameter Mode."

The Diameter Protocol

The diameter protocol has evolved from the Radius protocol and enables diameter applications to extend the base protocol by adding new commands and/or attributes, such as those for use of the Extensible Authentication Protocol (EAP).

The diameter protocol provides for an Authentication, Authorization, and Accounting (AAA) framework that overcomes the limitations of RADIUS, (a protocol that handles AAA and EAP), which cannot effectively deal well with remote access, IP mobility and policy control. The Diameter protocol defines a policy protocol used by clients to perform Policy, AAA and Resource Control. This allows a single server to handle policies for many services.

As mentioned above, Diameter protocol provides AAA functionality, but in addition it is made more reliable by using TCP and SCTP instead of UDP. The Diameter protocol is further enhanced by the development of the 3rd Generation Partnership Project (3GPP) IP Multimedia Subsystem (IMS). Through the use of extensions, the protocol was designed to be extensible to support Proxies, Brokers, Strong Security, Mobile-IP, Network Access Servers (NASREQ), Accounting and Resource Management.

User Preferences

All applications that query xDRs, (or observe their status as in Diagnostic Utility), xDRs use a specific User Preferences option. The description outlined goes over the formatting screens.

Note: All screen shots presented here show default values.

Date/Time tab screen

Format the time parameters.

The screenshot shows the 'User preferences' dialog box with the 'Date/Time' tab selected. The 'Date/Time Formats' section contains the following fields:

- Date format:
- Time format:
- Date and time fields:
- Duration fields:
- Time zone:

Below the fields is a 'Tips' section:

Tips: above fields represents the format that will be applied to different types of fields. Here is an help about authorized values and their meanings. Separators are allowed, and will be restituted "as is". Please note that these formats are case sensitive.

- yy or yyyy: Year (number)
- dd: Day in month (number)
- EEE: Day in week (string)
- MM or MMMM: Month in year (respectively number or string)
- aa: AM/PM marker (string)
- HH: Hour in day (0-23)
- hh: Hour in AM/PM (1-12)
- mm: Minute in hour (number)
- ss: Second in minute (number)

At the bottom are buttons: , , , and .

Figure 1: Date/Time Tab Screen

Table 1: Time Tab Screen

Field	Description
Date Format	Required field - Sets date format.
Time Format	Required field - Sets time format.
Date and time fields	Required field - Sets the date and time format.
Duration fields	Sets a duration format.
Time Zone	Pull-down list for selecting the desired time zone.
Reset Button	Resets all the tabs to default values.
Reset Tab Button	Resets to default values for the specific tab.
Apply Button	Applies any changes to the system.
Cancel Button	Exits the screen.

Directory tab

Select the **Directory** tab to set the defaults directories used in transport screen.

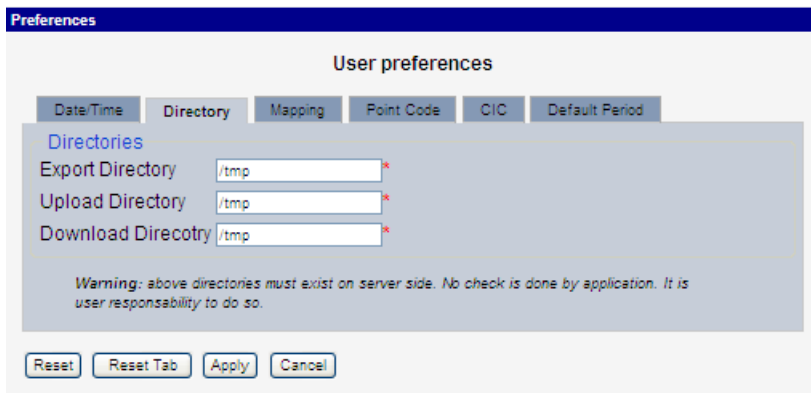


Figure 2: Directory Tab Screen

Table 2: Directory Tab Field Description

Field	Description
Export Directory	Enables you to set the default directory for exporting.
Upload Directory	Enables you to set the default directory for uploads.
Download Directory	Enables you to set the default directory for downloads.
Reset Button	Resets all the tabs to default values.
Reset Tab Button	Resets to default values for the specific tab.
Apply Button	Applies any changes to the system.
Cancel Button	Exits the screen.

Note: The directories must be present on the NSP server side. See warning at the bottom of the Directory tab screen.

Mapping tab

Select the **Mapping** tab to set the xDR display parameters.

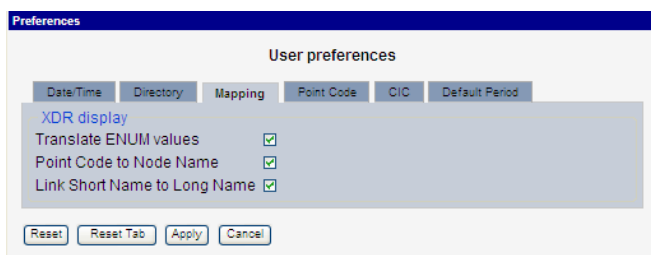


Figure 3: Mapping Tab Screen

Table 3: Mapping Tab

Field	Description
Translate ENUM values	Selects whether ENUM values are translated or not Default is to select ENUM values translation.
Point Code to Node Name	Select this if you want to use the Node Name instead of the Point Code name in the xDR display. Default is to use Node Name.
Link Short Name to Long Name	Selects whether you can use long name (Eagle) for linksets. Default is to use Long Name.
Reset Button	Resets all the tabs to default values.
Reset Tab Button	Resets to default values for the specific tab.
Apply Button	Applies any changes to the system.
Cancel Button	Exits the screen.

Point Code tab

Select the **Point Code** tab, shown and described in the figure and table.

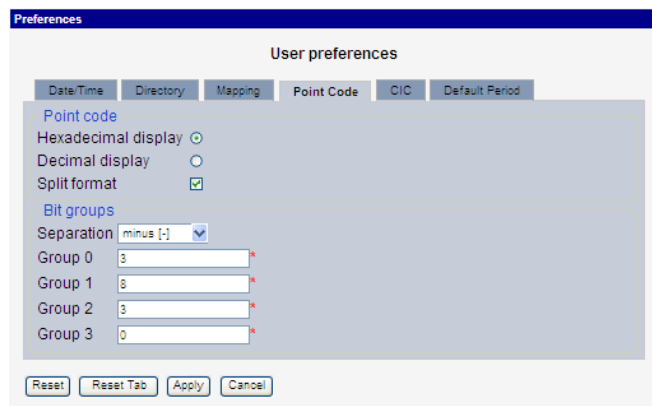


Figure 4: Point Code Tab Screen

Table 4: Point Code Tab

Field	Description
Hexadecimal display	European defaults are hexadecimal and display with Group 0-3, Group 1-8, Group 2-3, Group 3-0.
Decimal display	North American defaults are decimal and display with Group 0-7 and Group 1-5.
Split format	Select or deselect Split format .
Separation	Select a Bit Group Separation .
Group 0	Type a value. (0-7 or 1-5 see hexadecimal or decimal display)
Group 1	Type a value. (0-7 or 1-5 see hexadecimal or decimal display)

Field	Description
Group 2	Type a value. (0-7 or 1-5 see hexadecimal or decimal display)
Group 3	Type a value. (0-7 or 1-5 see hexadecimal or decimal display)
Reset Button	Resets all the tabs to default values.
Reset Tab Button	Resets to default values for the specific tab.
Apply Button	Applies any changes to the system.
Cancel Button	Exits the screen.

CIC tab

Select the **CIC** tab to set the parameters for CIC and Bit groups.

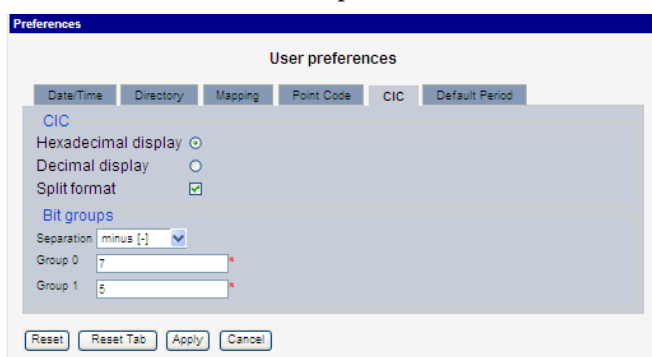


Figure 5: Formatting Rules (CIC) Screen

Table 5: CIC Tab Field Descriptions

Field	Description
Hexadecimal display	European defaults are hexadecimal and display with Group 0-7 and Group 1-5.
Decimal display	European defaults are hexadecimal and display with Group 0-7 and Group 1-5.
Split format	Select or deselect Split format .
Separation	Select a Bit Group Separation : Group 0:8, Group 1:8 .
Group 0	Type a value. (0-7 or 1-5 see hexadecimal or decimal display)
Group 1	Type a value. (0-7 or 1-5 see hexadecimal or decimal display)
Reset Button	Resets all the tabs to default values.
Reset Tab Button	Resets to default values for the specific tab.
Apply Button	Applies any changes to the system.
Cancel Button	Exits the screen.

Default Period tab

Select the **Default Period** tab, for setting the default time period for beginning and ending time for traces (ProTrace only) .

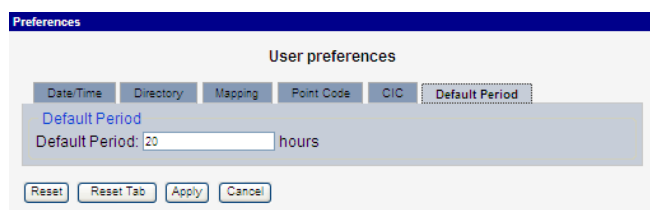


Figure 6: Default Period Tab Screen (ProTrace only)

Table 6: Default Period Tab Field Descriptions

Field	Description
Default Period (in hours)	Sets the default run time period for running traces. Default is 24 hours. Range 1-7200
Reset Button	Resets all the tabs to default values.
Reset Tab Button	Resets to default values for the specific tab.
Apply Button	Applies any changes to the system.
Cancel Button	Exits the screen.

After setting the formatting parameters, click **Next** to move to the next screen in the wizard.

Customer Care Center

The Tekelec Customer Care Center is your initial point of contact for all product support needs. A representative takes your call or email, creates a Customer Service Request (CSR) and directs your requests to the Tekelec Technical Assistance Center (TAC). Each CSR includes an individual tracking number. Together with TAC Engineers, the representative will help you resolve your request.

The Customer Care Center is available 24 hours a day, 7 days a week, 365 days a year, and is linked to TAC Engineers around the globe.

Tekelec TAC Engineers are available to provide solutions to your technical questions and issues 7 days a week, 24 hours a day. After a CSR is issued, the TAC Engineer determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, normal support procedures apply. A primary Technical Engineer is assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

Tekelec Technical Assistance Centers are located around the globe in the following locations:

Tekelec - Global

Email (All Regions): support@tekelec.com

- **USA and Canada**

Phone:

1-888-FOR-TKLC or 1-888-367-8552 (toll-free, within continental USA and Canada)

1-919-460-2150 (outside continental USA and Canada)

TAC Regional Support Office Hours:

8:00 a.m. through 5:00 p.m. (GMT minus 5 hours), Monday through Friday, excluding holidays

- **Caribbean and Latin America (CALA)**

Phone:

USA access code +1-800-658-5454, then 1-888-FOR-TKLC or 1-888-367-8552 (toll-free)

TAC Regional Support Office Hours (except Brazil):

10:00 a.m. through 7:00 p.m. (GMT minus 6 hours), Monday through Friday, excluding holidays

- **Argentina**

Phone:

0-800-555-5246 (toll-free)

- **Brazil**

Phone:

0-800-891-4341 (toll-free)

TAC Regional Support Office Hours:

8:00 a.m. through 5:48 p.m. (GMT minus 3 hours), Monday through Friday, excluding holidays

- **Chile**

Phone:

1230-020-555-5468

- **Colombia**

Phone:

01-800-912-0537

- **Dominican Republic**

Phone:

1-888-367-8552

- **Mexico**

Phone:

001-888-367-8552

- **Peru**

Phone:

0800-53-087

- **Puerto Rico**

Phone:

1-888-367-8552 (1-888-FOR-TKLC)

- **Venezuela**
Phone:
0800-176-6497
- **Europe, Middle East, and Africa**
Regional Office Hours:
8:30 a.m. through 5:00 p.m. (GMT), Monday through Friday, excluding holidays
- **Signaling**
Phone:
+44 1784 467 804 (within UK)
- **Software Solutions**
Phone:
+33 3 89 33 54 00
- **Asia**
 - **India**
Phone:
+91 124 436 8552 or +91 124 436 8553
TAC Regional Support Office Hours:
10:00 a.m. through 7:00 p.m. (GMT plus 5 1/2 hours), Monday through Saturday, excluding holidays
 - **Singapore**
Phone:
+65 6796 2288
TAC Regional Support Office Hours:
9:00 a.m. through 6:00 p.m. (GMT plus 8 hours), Monday through Friday, excluding holidays

DIH Documentation Library

DIH customer documentation and online help are created whenever significant changes are made that affect system operation or configuration. Revised editions of the documentation and online help are distributed and installed on the customer system. Consult your NSP Installation Manual for details on how to update user documentation. Additionally, a Release Notice is distributed on the Tekelec Customer Support site along with each new release of software. A Release Notice lists the PRs that have been resolved in the current release and the PRs that are known to exist in the current release.

Listed is the entire DIH documentation library of online help.

- Centralized Configuration Manager Administration Online Help

- Alarm Forwarding Administration Online Help
- Diagnostic Utility Administration Online Help
- ProTrace Online Help
- System Alarms Online Help
- ProPerf Online Help
- ProTraq Configuration Online Help
- Data Feed Export Online Help
- System Alarms Online Help

Locate Product Documentation on the Customer Support Site

Access to Tekelec's Customer Support site is restricted to current Tekelec customers only. This section describes how to log into the Tekelec Customer Support site and locate a document. Viewing the document requires Adobe Acrobat Reader, which can be downloaded at www.adobe.com.

1. Log into the [Tekelec Customer Support](#) site.

Note: If you have not registered for this new site, click the **Register Here** link. Have your customer number available. The response time for registration requests is 24 to 48 hours.

2. Click the **Product Support** tab.
3. Use the Search field to locate a document by its part number, release number, document name, or document type. The Search field accepts both full and partial entries.
4. Click a subject folder to browse through a list of related files.
5. To download a file to your location, right-click the file name and select **Save Target As**.

Diameter Intelligent Hub (DIH) - Copyright, Notice, Trademarks, and Patents

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WEEE - All products shipped to European Union member countries comply with the EU Directive 2002/96/EC, Waste Electronic and Electrical Equipment. All components that are WEEE compliant will be appropriately marked. For more information regarding Tekelec's WEEE program, contact your sales representative.

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Patents

This product may be covered by one or more of the following U.S. and foreign patents:

U.S. Patent Numbers:

6,456,845; 6,765,990; 6,968,048; 7,043,001; 7,155,512; 7,206,394; 7,215,748; 7,231,024; 7,286,516; 7,286,647; 7,401,360; 7,706,343; 7,844,033; 7,860,799;

Foreign Patent Numbers:

None.

Chapter 2

Introduction to Diagnostic Utility

Topics:

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About Diagnostic Utility

The Diagnostic Utility application is used by users with the role NSP Administrator, NSPMonitorPowerUser or NSPMonitorManager for monitoring DIH sites, subsystems (IXP and xMF ((PMF)) and servers including specific hardware components such as disk storage and network cards.

Diagnostic Utility is dependent on the IXP, and PMF subsystems.

As stated above, Diagnostic Utility supports monitoring of xMF (PMF), IXP subsystems as well as their hardware components. Listed here are the parameters for each subsystem or server that is monitored.

For xMF

- Status of servers and subsystems
- Destinations
- Card interfaces (PMF only)

For IXP

- Status of servers and subsystems
- Streams
- Sessions
- Data Flow processings
- Store
- Hardware Counters

For server hardware components

- Server parameters
- Ethernet parameters
- Disk parameters

Opening Diagnostic Utility

Note: NSP only supports versions of IE 7.0 or later and Firefox 3.6 or later. Before using NSP, turn off the browser pop up blocker for the NSP site.

After you have logged into NSP you can open Diagnostic Utility by clicking on the *Diagnostic Utility* icon from the *Surveillance* section of the NSP *Application Board*.

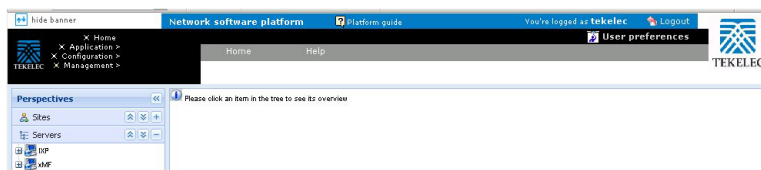


Figure 7: Diagnostic Utility Home Screen

The screen is divided into two main sections:

- Object Tree - located on the left-hand panel shows the three main perspectives and enables you to navigate through the data (drill down). The perspectives are:
 - Sites - this perspective shows you how the subsystems/servers are physically organized. This perspective is referenced from the system you have configured. You can select subsystems/servers you want to monitor. This figure shows an example of an expanded *Sites* perspective.

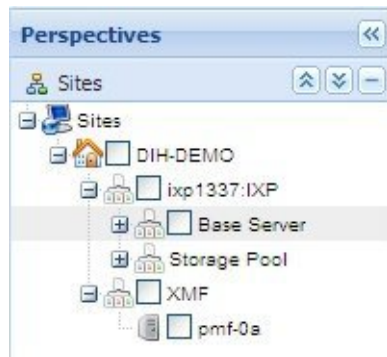


Figure 8: Sites Perspective - Expanded

- Servers - this perspective shows all subsystems/servers grouped by type (for example xMF or IXP). This perspective is used to select the subsystem or server you want monitor. This figure shows the servers perspective.

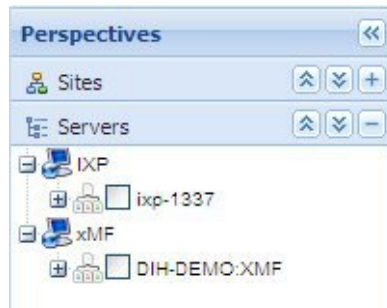


Figure 9: Servers Perspective - Expanded

- DIH Host View - This perspective shows the DIH host for the system. This figure shows an example of the DIH Host View perspective.

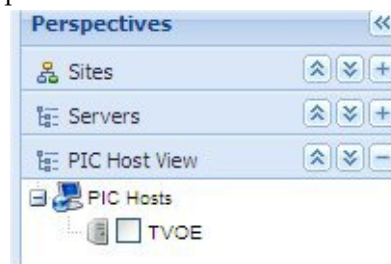


Figure 10: DIH Host View Perspective - Expanded

- Workspace - located on the right-hand section provides a table that enables you to list, sort and view counters. The figure shows a workspace area (of a single server).

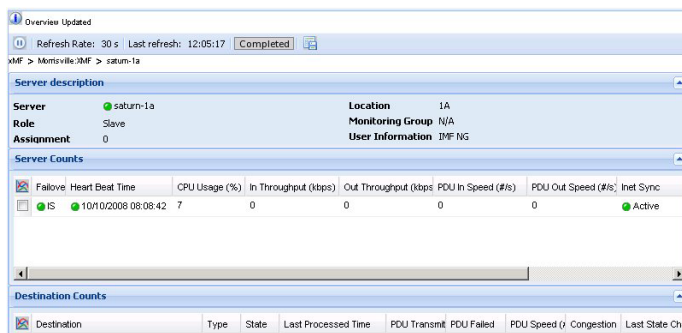


Figure 11: Workspace Area Showing Overview Screen

Collapse / Expand Buttons

The *Diagnostic Utility* application has a collapse / expand screen function shown in the figures below.

Note: You can also open each perspective by clicking on the perspective header.



Close perspective panel - clicking this button located on the perspective header collapses the panel to the left creating more room in the work space panel.



Open perspective panel - clicking this button on the perspective header opens the panel to the right showing the perspective panel



Expand all - clicking on this button expands the object tree.



Collapse all - clicking on this button collapses the object tree.



Expand perspective object tree - clicking on this button opens the perspective.



Collapse perspective object tree - clicking on this button collapses the perspective.

Understanding the Diagnostic Utility Screen

This section provides a brief overview of the screen unique to *Diagnostic Utility*. For more detailed information on common NSP screen elements such as the toolbar and function buttons, see *NSP Platform Guide*

Main Screen Functions

This section discusses the main functions on the *Diagnostic Utility* screen. Each configuration parameter is discussed in its own section. The main screen functions are:

- Screen Menu Bar - shows pull-down menus for Home and Help.
 - Home menu has the following options:
 - Home screen - selecting this menu item brings you back to the *Home* screen.
 - Preferences - selecting this menu item opens the *Preferences* screen where you can configure *Diagnostic Utility*. For more information on using *Preferences*, see “*Configuring Diagnostic Utility*.”
 - Help menu has the following options:
 - User Manual - opens the online help for *Diagnostic Utility*
 - About - provides information on the Release, Package version, Branch and Revision
- Object tree - selecting one of the elements on the left-hand section opens the appropriate screen.
 - Object tree panel buttons - selecting one of these buttons opens, closes, expands or collapses the panel or perspective
 - Object selection field - this field is for multiple site, subsystem, server viewing. To use this field, you *can only* select the same level (site, subsystem, server) to view using the multiple-view function
 - Pop-Up menu - right clicking on an object icon opens a menu. The menu changes according to the object’s properties
- Toolbar - the functions are described here

Note: The toolbar can be viewed only when an object is selected.

- Pause - pauses the monitoring process (and the screen no longer is refreshed to show any changes shown in the figure below)



Figure 12: Sample Screen Toolbar - In Paused State

- Continue - begins the monitoring process again and the screen refresh process begins again shown below

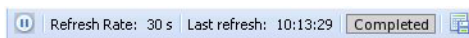


Figure 13: Sample Screen Toolbar - In Monitoring State

- Screen Refresh rate - shows currently selected time interval
 - for screen overview (for both IXP and xMF) intervals are: 30 seconds (default value), 1 , 5 and 10 minutes

Note: You can select the time intervals in the *Preferences* operation.

- Last Refresh - shows the time (either in 12 or 24 hour format in your local time) when the last screen refresh was accomplished

Note: See User Preferences in *NSP Platform Guide* for details on setting time format.

- Save As - saves the information as a *csv zip* file, for the table (counters) being monitored, for exporting zipped files in *csv* format. For more information, see [Exporting Overview Tables in CSV Format](#).

Note: Do not use the Function Keys (F1 through F12) when using the NSP. Function keys work in unexpected ways. For example, the F1 key will not open NSP help but will open help for the browser in use. The F5 key will not refresh a specific screen, but will refresh the entire session and will result in a loss of any entered information.

Column functions on Tables

Each column in *Diagnostic Utility* has a pull-down menu that provides a number of options.

Note: Column headings for each table are discussed in the separate sections.

Complete these steps to show the options.

1. Place the cursor on a **particular column** and the pull-down arrow appears.
2. Click on the **pull-down arrow**.

The sort/column menu opens shown in the figure below.

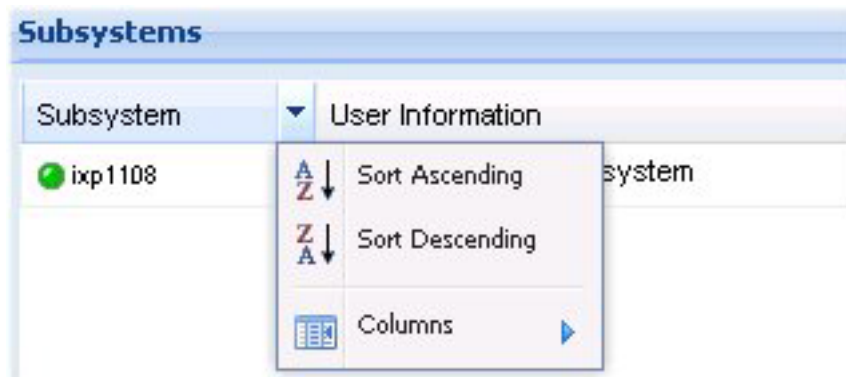


Figure 14: Sort/Column Menu

Sort Option

The sort functions enable you to sort in *Ascending* or *Descending* order.

Selecting Columns to View

You can select which table columns to view by using the *column pull-down* menu. Complete these steps to select table columns.

1. Select the **parameter table** you want to view.

The table opens shown in the figure below.

Server	Name	Last Update	Session	Received XDRM	Stored XDR/KPI	Rejected records
ixp1108-1a	BuildMonitor	09/09/2008 15:15:01	ixp1108BuildMo	63	63	0
ixp1108-1a	ISUP_ANSI_Stor	09/09/2008 15:15:01	ISUP_ANSI_Rec	140	141	0
ixp1108-1a	NK_Gb_Store_5	09/09/2008 15:15:01	GPRS_Gb_Rec	0	0	0
ixp1108-1a	NK_IuCs_Gb_St	09/09/2008 15:16:01	IuCs_G_Ctrl_Su	0	0	0
ixp1108-1a	NK_IuCs_Store_1	09/09/2008 15:15:01	IuCs_Ctrl_5_1	0	0	0
ixp1108-1a	NK_Map_Store_5	09/09/2008 15:15:01	Map_Rec_5_1	0	0	0
ixp1108-1a	StoreMonitor	09/09/2008 15:15:01	ixp1108StoreMk	19	19	0

Figure 15: Selected Table

2. Select any **column**.
3. Click the **down arrow**.

Server	Name	Last Update	Session	Received XDRM	Stored XDR/KPI	Rejected records
ixp1108-1a	BuildMonitor	Sort Ascending	ixp1108BuildMo	63	63	0
ixp1108-1a	ISUP_ANSI_Stor	Sort Descending	SUP_ANSI_Rec	106	107	0
ixp1108-1a	NK_Gb_Store_5	Columns	GPRS_Gb_Rec	0	0	0
ixp1108-1a	NK_IuCs_Gb_St		IuCs_G_Ctrl_Su	0	0	0

Figure 16: Selected Column With Pull-down Menu

4. Select **columns**.

The column selection list for that parameter opens shown in the figure below.

Server	Name	Last Update	Session	Received XDR/KPIs	Stored XDR/KPIs	Rejected records
ixp1108-1a	BuildMonitor	Sort Ascending	ixp1108BuildMo	63	63	0
ixp1108-1a	ISUP_ANSI_Stor	Sort Descending	SUP_ANSI_Rec	137		
ixp1108-1a	NK_Gb_Store_5	Columns	GPRS_Gb_Rec	0	0	0
ixp1108-1a	NK_IuCs_Gb_St		IuCs_G_Ctrl_Su	0	0	0
ixp1108-1a	NK_IuCs_Store_1	09/09/2008 15:18:01	IuCs_Ctrl_5_1	0	0	0
ixp1108-1a	NK_Map_Store_5	09/09/2008 15:18:01	Map_Rec_5_1	0	0	0
ixp1108-1a	StoreMonitor	09/09/2008 15:18:01	ixp1108StoreMk	19	19	0

Figure 17: Selected Column With Pull-down Menu

5. Select the **columns** you want to view.
6. Click **anywhere** on the screen.

The table changes to show only the selected columns shown below.

Server	Name	Last Update	Session
ixp1108-1a	UMTS_luPs_Stor	09/09/2008 15:35:01	UMTS_luPs_Ctr
ixp1108-1a	UMTS_luCs_Stor	09/09/2008 15:35:01	UMTS_luCs_Ctr
ixp1108-1a	UMTS_luCs_Ctrl	09/09/2008 15:35:01	UMTS_luCs_Ctr
ixp1108-1a	StoreMonitor	09/09/2008 15:35:01	ixp1108StoreMk
ixp1108-1a	NK_Map_Store_5	09/09/2008 15:35:01	Map_Rec_5_1
ixp1108-1a	NK_luCs_Store_1	09/09/2008 15:35:01	luCs_Ctrl_5_1
ixp1108-1a	NK_luCs_Gb_Str	09/09/2008 15:36:01	luCs_G_Ctrl_Su

Figure 18: Selected Columns

Note: Column options differ according to the object selected.

Changing Column Width

You can change the width of the column by placing the cursor on the column margin and dragging it to the desired width.

Column rollover Function

This function enables you to view a description of the column heading when you place the cursor over the column heading. The figure below shows a column heading description.

Subsystem	User Information
ixp0500	Auto-generated sub-system

Auto-generated sub-system
 Status and name of the subsystem in the form: '<Site>-IXP'
 Status of the subsystem is calculated as follows:
 Green - Status of all the servers in the subsystem is green
 Yellow - Status of some of the servers in the subsystem is not green
 Red - Status of all the servers in the subsystem is red

Figure 19: Rollover Function Showing Column Description

Moving Columns

You can also organize columns by moving them to different positions in the table. Complete these steps to move a column to a different position in the table.

1. Place the cursor on the column header you want to move shown in the figure below.

The column is highlighted.

Server	Falove Role	Locatic Monitoring Gr	Assign	Heart Beat Time	CPU Usage	In Throughpu
swit-imp-1a	IS ActMaster	1A	swit-imp-1a_1_29	18/10/2008 03:36:38	24	6

Figure 20: Sort/Column Menu

2. Drag the cursor to the desired position in the table.
 Double arrows (not shown) show the column position.

Server	Failove	CPU Usage	Role	Locatic	Monitoring Gr	Assign	Heart Beat Time
swit-imf-1a	IS	19	ActMaster	1A	swit-imf-1a_1_29		18/10/2008 03:39:44

Figure 21: Sort/Column Menu

3. Release the cursor when you have moved the column to the desired position.
The column is now in the new position.

Server	CPU Usage (%)	Type	Memory Free	Last Update Time	Start Date and Time
ixp1108-1a	2.7	Primary	290556	23/09/2008 20:30:45	23/09/2008 06:03:00

Figure 22: Sort/Column Menu

You can perform this procedure for any of the columns.

Expanding and Collapsing Table in an Overview Screen

You can expand and collapse overview tables in a monitoring screen. Each overview table has an arrow on the right-hand side of the table heading (or on the heading itself). Clicking on it will expand or collapse the overview tables.

Note: Expanding a table causes the screen to be automatically refreshed.

Overview Updated
Refresh Rate: 30 s | Last refresh: 08:49:27 | Completed

MF > Montville:MF > saturn-1a

Server description [collapse arrow]

Server Counts

Failove	Heart Beat Time	CPU Usage (%)	In Throughput (kbits)	Out Throughput (kbits)	PDU In Speed (#/s)	PDU Out Speed (#/s)	Inet Sync
IS	10/13/2008 04:53:02	4	0	0	0	0	Active

Destination Counts

Destination	Type	State	Last Processed Time	PDU Transm	PDU Failed	PDU Speed (/)	Congestion	Last State Chan
-------------	------	-------	---------------------	------------	------------	---------------	------------	-----------------

Figure 23: Collapsed (Server Description) Table In Overview Screen

Overview Updated
Refresh Rate: 30 s | Last refresh: 08:48:25 | Completed

MF > Montville:MF > saturn-1a

Server description [expand arrow]

Server	saturn-1a	Location	1A
Role	Slave	Monitoring Group	N/A
Assignment	0	User Information	IMF NG

Server Counts

Failove	Heart Beat Time	CPU Usage (%)	In Throughput (kbits)	Out Throughput (kbits)	PDU In Speed (#/s)	PDU Out Speed (#/s)	Inet Sync
IS	10/13/2008 04:52:01	3	0	0	0	0	Active

Destination Counts

Destination	Type	State	Last Processed Time	PDU Transm	PDU Failed	PDU Speed (/)	Congestion	Last State Chan
-------------	------	-------	---------------------	------------	------------	---------------	------------	-----------------

Figure 24: Expanded (Server Description) Table In Overview Screen

Drill-down Function from Overview Screens

You can use the drill-down function by clicking on the icon from an overview table. Whenever you see the “hand” icon appear in place of the cursor, you can click on it to open the next level. In the example here, the drill down begins at the *Subsystem overview* level and then proceeds down to the *Server* and finally to a specific server.



Figure 25: Subsystem Overview Screen

Clicking on the icon in the **Subsystem** column opens the *Server* overview screen shown in the figure below.

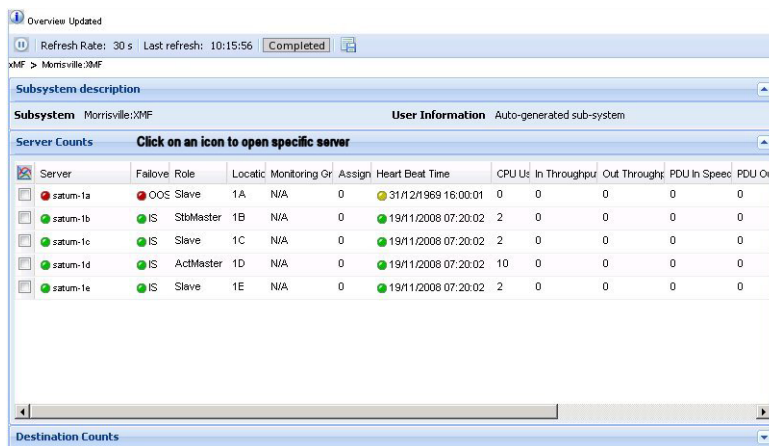


Figure 26: Server Overview Screen

Clicking on an icon in the **Server** column opens the specific server shown in the figure below.

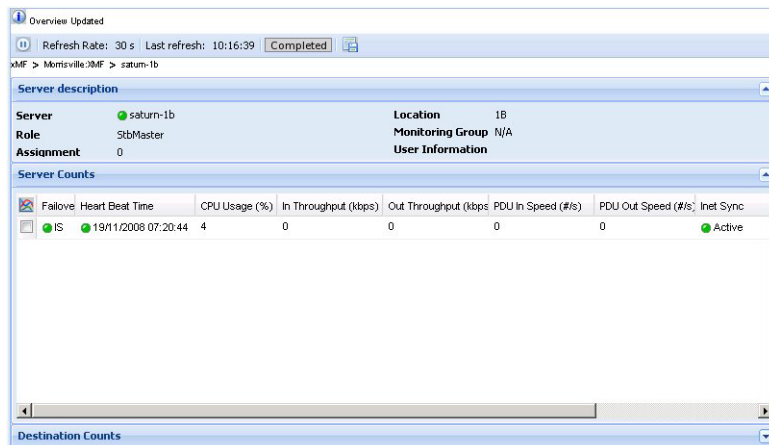


Figure 27: Specific Server Screen

About Diagnostic Utility Perspectives

The *Diagnostic Utility Object* tree provides different perspectives of the monitored elements. Each perspective is presented in a stack panel. *Diagnostic Utility* presents the data by providing two main perspectives:

- Sites – this perspective shows you how the subsystems/servers are physically organized. You can select the subsystems/servers you want to monitor.
- Servers – this perspective shows all subsystems/servers grouped by type (for example xMF or IXP). This perspective is view-only and is used only to select the subsystem or server to be monitored.

Using perspectives, you can perform the operations required to monitor an DIH system. This figure is an example of two of *Diagnostic Utility's* perspectives.

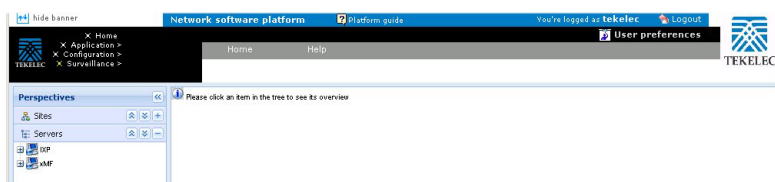


Figure 28: Diagnostic Utility Default View (Home Page)

About sites Perspective

Sites perspective structure:

The root of the tree is called Sites.

Under the root, the objects for all the sites are displayed.

Under the site tree the subsystems of this site are displayed.

Under the subsystem tree, the servers of this subsystem are displayed.

About the Sites perspective Elements right-click Menu

The right-click menu provides a convenient means of viewing specific counts for, sites, subsystems and servers. The following lists show the options available at each level.

In the *Site* perspective, you can view subsystems and servers that exist in different sites. The right-click pop-up menu for each level (root, subsystem and server) has the following options:

Sites - root level right-click Options

- Refresh - refreshes all the sites in the object tree
- Multiple sites overview - enables you to monitor multiple sites that you have selected in the object tree

Sites - site level right-click Options

- Refresh -refreshes the selected site in the object tree
- Multiple IXP subsystems - enables you to view the counts of multiple IXP subsystems you have selected within a site--select the subsystems and then click the *Site* to view them.
- Multiple IXP servers - enables you to view the counts of multiple IXP servers you have selected within a site. Select the servers using the check boxes and then right-click the Site object to view them.
- Multiple xMF subsystems - enables you to view the counts of multiple xMF subsystems you have selected within a site -- select the subsystems using the check boxes and then right-click the *Site* to view them.
- Multiple xMF servers - enables you to view the counts of multiple xMF servers you have selected within a site -- select the servers using the check boxes and then right-click the Site to view them.

Sites - IXP subsystem level right-click Options

- Refresh
- Streams
- Sessions
- Data Flow Processings
- Store
- Hardware Counters
- Multiple Servers Overview (option active only if multiple servers are selected)

Sites - IXP server level right-click Options (Base Server)

- Streams
- Data Flow Processings
- Hardware Counters

Sites - IXP server level right-click Options (Storage Server)

- Hardware Counters
- Store

Sites - xMF subsystem level right-click Options

Note: The right-click menu shows only the options available for that subsystem. For example, if there is no PMF subsystem existing in the site, the *reset* options will be grayed out.

- Refresh
- xMF servers
- Destinations
- Level 1 (PMF only)
- IP Devices (PMF only)
- Hardware Counters

- Reset Input Counts
- Reset Destination Counts
- Reset Level 1 Counts (PMF only)
- Reset IP Counts (PMF only)
- Multiple Servers Overview

Sites - xMF server level right-click Options

- xMF servers
- Destinations
- Level I (PMF only)
- IP Devices (PMF only)
- Hardware Counters

About Servers Perspective

The root of the tree is called *Servers*.

Under the root, the tree nodes for particular subsystem types are displayed. Names of these nodes are *IXP* and *xMF* (PMF).

Under the *IXP* root are the *IXP* subsystems and under the *xMF* (PMF) root are the *xMF* (PMF) subsystem.

Under the *IXP* subsystem node are the Base servers and Storage Pool servers.

Note: The Base servers include all the *IXP* servers Base and Storage Pool. The Storage Pool node only shows the storage servers.

About Server Perspective Subsystem Right-click Menu

Servers - IXP root level right-click Options

The right-click function opens a separate screen that shows the option selected.

- Multiple Subsystems - enables you to view the counts of multiple *IXP* subsystems you have selected within a site(s)

Note: If only one subsystem is present, this option is grayed out

- Multiple Servers - enables you to view the counts of multiple *IXP* servers you have selected within a site(s)

Note: If only one subsystem is present, this option is grayed out

Servers - IXP subsystem level right-click Options

The right-click function opens a separate screen that shows the option selected.

- Refresh

- Streams
- Sessions
- Data Flow Processings
- Store
- Hardware Counters
- Multiple Servers Overview

Note: If only one subsystem is present, this option is grayed out

Servers - IXP Base server level right-click Options

The right-click function opens a separate screen that shows the option selected.

- Streams
- Data Flow Processings
- Hardware Counters

Servers - IXP Storage Pool server level right-click Options

The right-click function opens a separate screen that shows the option selected.

- Store
- Hardware Counters

Servers - xMF root level right-click Options

The right-click function opens a separate screen that shows the option selected.

- Refresh - refreshes the screen
- Multiple xMF Subsystems - enables you to view the counts of multiple xMF subsystems you have selected within a site(s)

Note: If only one subsystem is present, this option is grayed out

- Multiple xMF Servers - enables you to view the counts of multiple xMF servers you have selected across one or more sites

Note: If only one subsystem is present, this option is grayed out

Servers - xMF Subsystem Level Right-click Options

The right-click function opens a separate screen that shows the option selected.

- Refresh
- xMF Servers
- Destinations
- Level 1
- IP Devices
- Hardware Counters

- Reset Input Counts
- Reset Destination Counts
- Reset Level 1 Counts
- Reset IP Counts
- Multiple Servers Overview

Note: If only one subsystem is present, this option is grayed out

Servers - xMF Server Level right-click Options

The right-click function opens a separate screen that shows the option selected.

- xMF servers
- Destinations
- Level 1
- IP Devices
- Hardware Counters

About DIH Host View Perspective

This perspective appears only when the system is configured to show DIH functionality. (For more information on configuring a system, see the Centralized Configuration Manager Administration online help.)

The root of the tree is called *DIH Host View*.

Under the root, the tree node for the DIH host is displayed with right-click options.

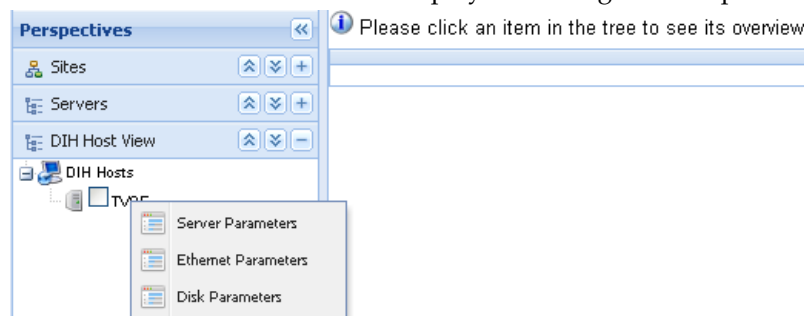


Figure 29: DIH Host Perspective

About DIH Host View Perspective Right-click Menu

Servers - DIH server level right-click Options

- Refresh
- Multiple DIH Hosts Overview

Note: There can only be one DIH host, so the Multiple DIH Host Overview option is grayed out.

Servers - DIH server level right-click Options

- Server Parameters
- Ethernet Parameters
- Disk Parameters

Chapter 3

Configuring Diagnostic Utility

Topics:

- *About Preferences.....38*
- *Selecting Overview Screen Refresh Rate.....39*
- *Configuring Preferences for IXP Overviews.....40*
- *Configuring Preferences for xMF Overviews.....44*
- *Selecting Preferences for Sites.....49*
- *Configuring Preferences for PIC Host View.....52*

Dummy file

About Preferences

You can configure the *Diagnostic Utility* screens to fit your needs by using the *Preferences* option.

Note: To set *global preferences* such as Time settings, you must use the *User Preferences* option. See *NSP Platform Guide* for information on setting global preferences.

The *Preferences* menu provides a number of options. Each option is described in this chapter and enables you to select the following options:

- Overview refresh rate
- What tables are *expanded* by default.

To open the *Preferences* screen, select from the *Diagnostic Utility Menu bar* **Home > Preferences**. The *Preferences* screen is displayed shown in the figure below.

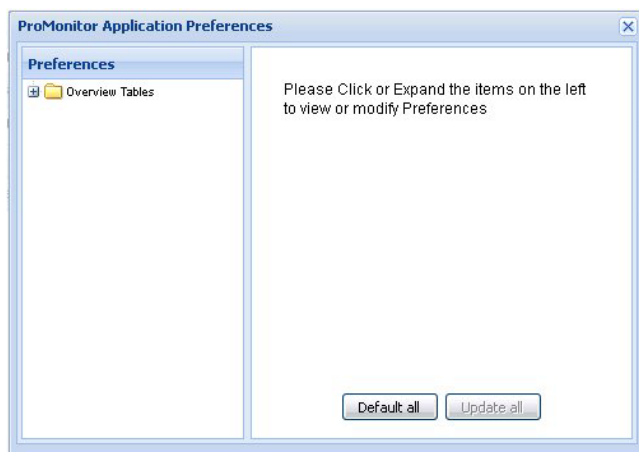


Figure 30: Preferences Screen

The *Preferences* screen has the following components:

Table 7: Preferences Field Descriptions

Field/component	Description
Object menu	lists the data objects; select the object on the left-hand panel of the screen by clicking on the expand (+) icon
Options	lists the options on the right-hand panel of the screen
Default all button	resets all the options to their default values
Update all button	updates all the changes to the screens

Selecting Overview Screen Refresh Rate

The *overview screen refresh rate* function enables you to set how frequently the overview screens are refreshed. Complete these steps to set the refresh rate.

1. Select **Home > Preferences** from the *menu bar*.

The *Preferences* screen is displayed.



Figure 31: Preferences Screen

2. Click on **Overview Tables** from the object tree.

The screen shows the refresh rate.

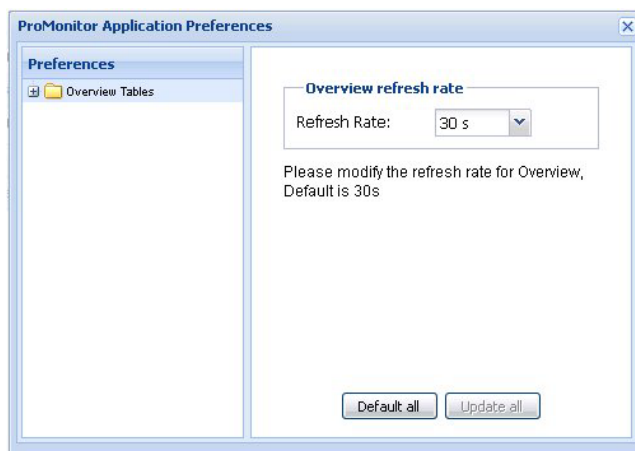


Figure 32: Overview Screen With Refresh Rate

3. Click on the **refresh rate** from the drop-down menu.
4. Click **Update all**.
The refresh rate is set.
5. Click the **x** on the top right-hand corner to close the screen.

Note: To reset the refresh rate to its default (30 seconds) click *Defaults* on the *Preferences* screen. See *Main Screen Functions* for more information on refresh rates.

Configuring Preferences for IXP Overviews

The *Preferences* operation enables you to set the various IXP overview tables to be expanded by default.

Expanding IXP Root by Default

Complete these steps to expand the IXP root by default.

1. Select **Home > Preferences** from the *menu bar*.

The *Preferences* screen is displayed.



Figure 33: Preferences Screen

2. Expand **Overview Tables** (root) from the object tree.
The screen shows the object menu.

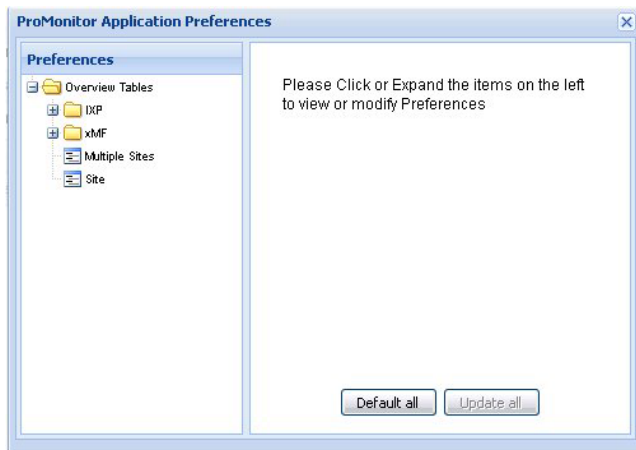


Figure 34: Expanded Overview Menu

3. Click on **IXP** on the tree.

The subsystems option screen is displayed.

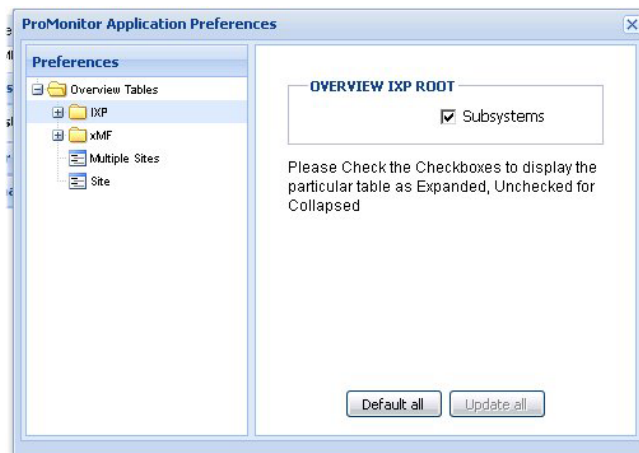


Figure 35: IXP Selected On Object Tree

4. Select or de-select the **Overview IXP root** option.
5. Click **Update all**.

The preferences are set.

Expanding IXP Multiple Subsystems as a Default Setting

Complete these steps to expand IXP multiple subsystems as a default.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Click on the **IXP table** to be expanded.
4. Click on **Multiple Subsystems**.

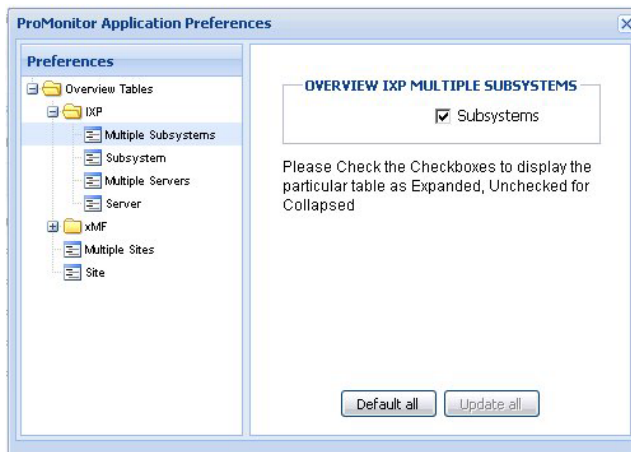


Figure 36: Selected IXP Multiple Subsystems

5. Select or de-select **Subsystems**.
Selecting *Subsystems* expands the *Subsystems* menu as a default setting.
6. Click **Update All**.
The IXP settings are updated.

Expanding Subsystem Parameters by Default

Complete these steps to expand specific subsystem overview tables by default.

1. In the Configuration screen expand the **Object** menu.
2. Click on the **IXP**.
3. Click on **Subsystem** on the object tree.

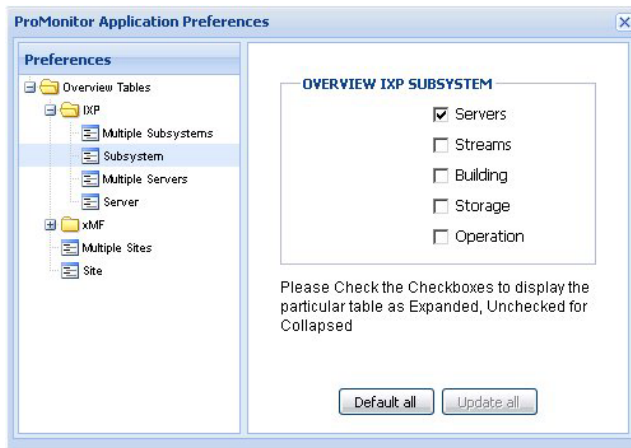


Figure 37: IXP Subsystem

4. Select or de-select the **IXP tables** you want expanded or collapsed.
 - a) Servers

- b) Streams
 - c) Building
 - d) Storage
 - e) Operation
5. Click **Update All**.
The IXP settings are updated.

Expanding Multiple Servers by Default

Complete these steps to expand multiple server overview tables by default.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Click on **IXP**.
4. Click on **Multiple Servers** on the object tree.

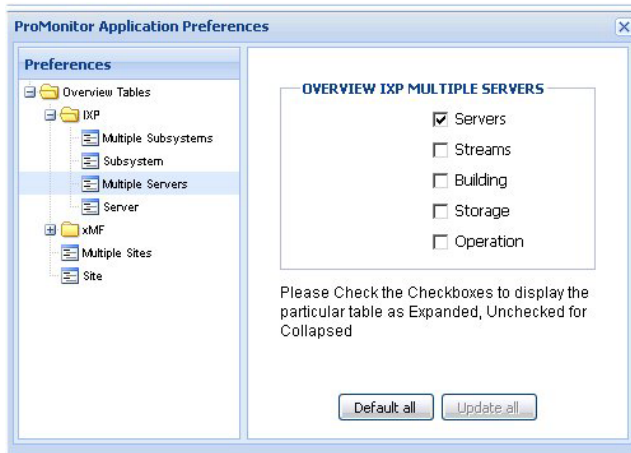


Figure 38: IXP Multiple Servers

5. Click on the appropriate **check boxes** for the items expanded on the screen.
6. Click **Update All**.
The IXP settings are updated.

Expanding a Single Server by Default

Complete these steps to expand a single server overview tables by default.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Select **IXP > Server**.

The screen shows the overview IXP server options.

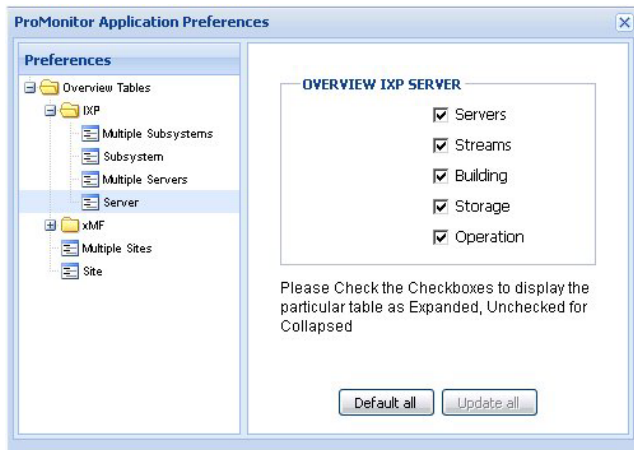


Figure 39: IXP Single Server

4. Select or de-select the **IXP tables** you want expanded or collapsed.
The options are:
 - a) Servers
 - b) Streams
 - c) Building
 - d) Storage
 - e) Operation
5. Click **Update All**.
The IXP settings are updated.

Configuring Preferences for xMF Overviews

The *Preferences* operation enables you to set the various xMF overview tables to be expanded by default.

Expanding xMF Root by Default

Complete these steps to expand the xMF root by default.

1. Select **Home > Preferences** from the *menu bar*.

The *Preferences* screen opens.

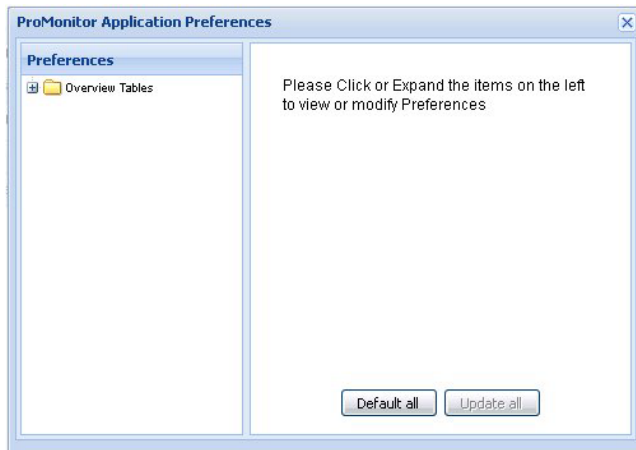


Figure 40: Preferences Screen

2. Expand **Overview Tables** (root) from the object tree.
The screen changes to show the object menu shown here.

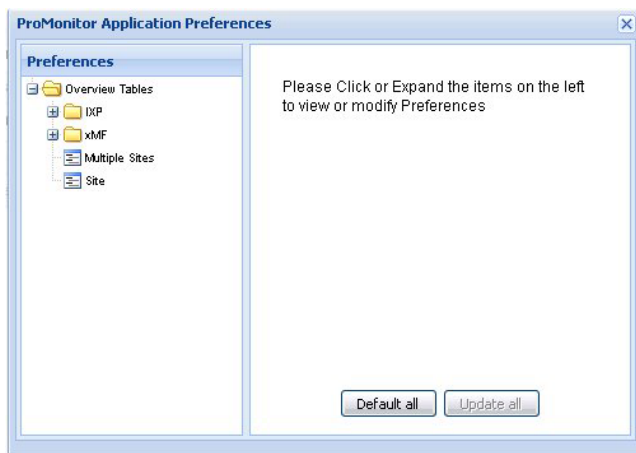


Figure 41: Expanded Overview Menu

3. Click on **xMF** on the tree.
The subsystems option screen opens shown below.

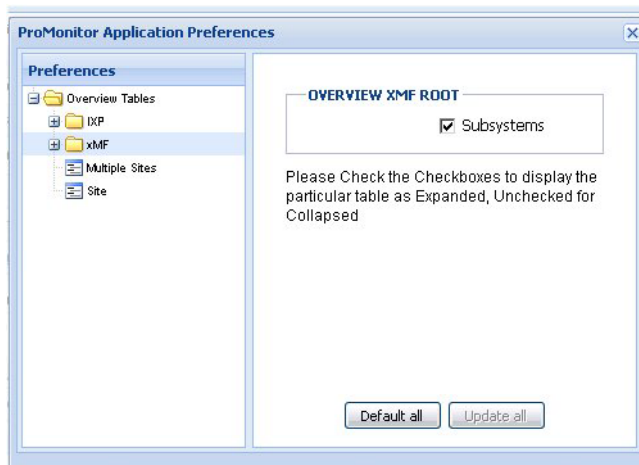


Figure 42: Xmf Selected On Object Tree

4. Select or de-select the **Overview xMF root** option to expand or collapse the subsystem table.
5. Click **Update all**.
The preferences are set.

Expanding xMF Multiple Subsystems as a Default Setting

Complete these steps to configure xMF subsystems to expand *Multiple Subsystems* as a default setting.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Click on **xMF**.
4. Click on **Multiple Subsystems**.

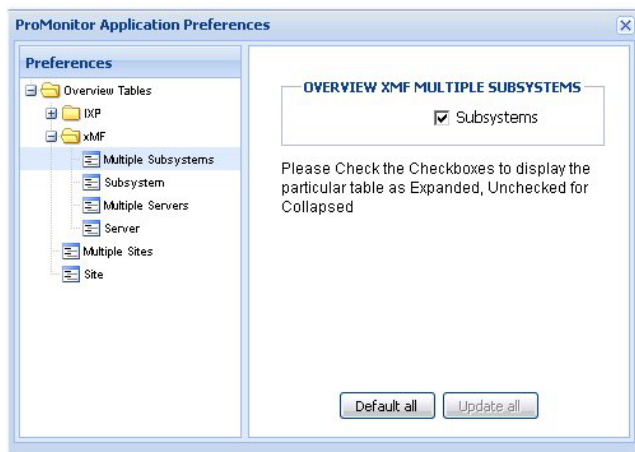


Figure 43: Selected xMF Multiple Subsystems

5. Select or un-select **Subsystems**.
Selecting Subsystems expands or collapses all subsystems by default.

6. Click **Update All**.
The xMF settings are updated.

Expanding xMF Subsystem Parameters as a Default Setting

Complete these steps to expand xMF subsystem overview tables as a default setting.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Click on **xMF**.
4. Click on **Subsystem** on the object tree.

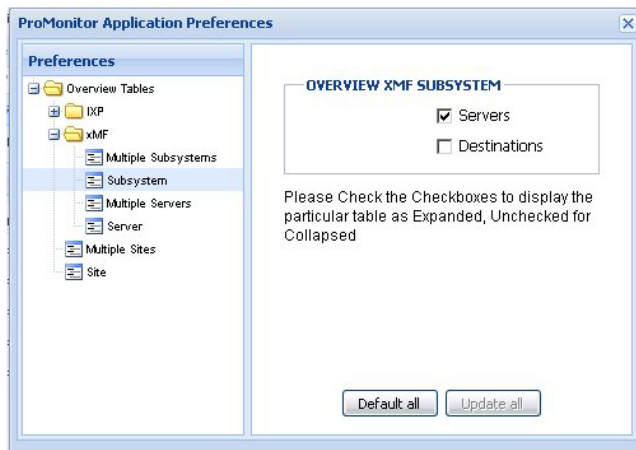


Figure 44: Xmf Subsystem

5. Select or un-select the appropriate **check boxes** for what overview tables are expanded or collapsed on the screen.
 - a) Servers
 - b) Destinations
6. Click **Update All**.
The xMF subsystem settings are updated.

Expanding xMF Multiple Servers as a Default Setting

Complete these steps to expand specific xMF multiple server tables by default.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Click on **xMF**.
4. Click on **Multiple Servers** on the object tree.

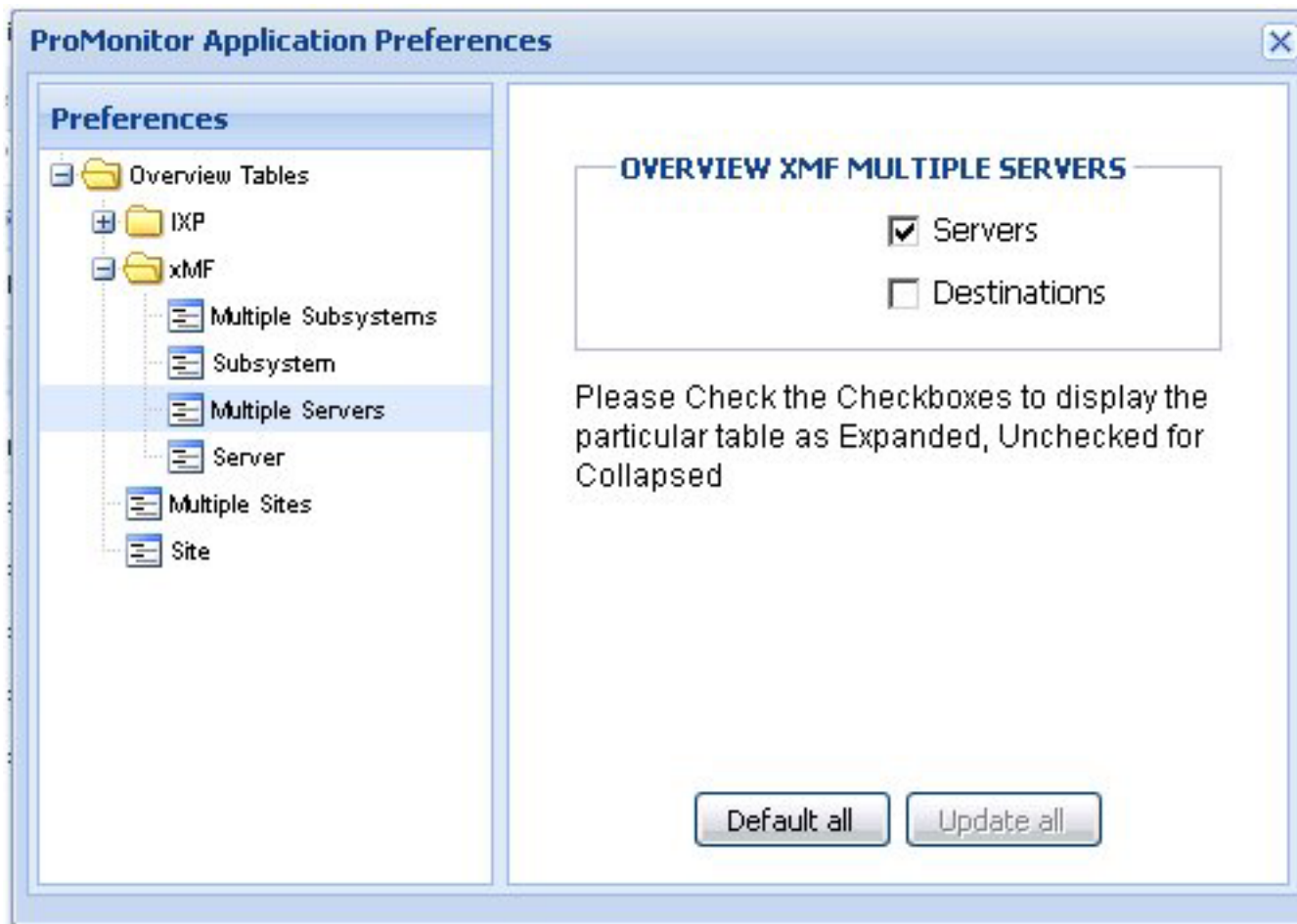


Figure 45: Xmf Multiple Subsystem

5. Select or un-select the appropriate **check boxes** for what overview tables are expanded or collapsed on the screen.
 - a) Servers
 - b) Destinations
6. Click **Update All**.
The xMF multiple servers settings are updated.

Expanding xMF a Single Server Settings by Default

Complete these steps to set xMF a single server tables to expand by default.

1. From the menu bar select **Home > Preferences**.
2. In the Configuration screen expand the **Overview Tables** menu.
3. Select **xMF > Server** from the *Object* tree.



Figure 46: xMF Server Level

4. Select or un-select the appropriate **check boxes** for what overview tables are expanded or collapsed on the screen.
 - a) Servers
 - b) Destinations
 - c) Level 1 Stats
 - d) IP Stats
5. Click **Update All**.

The xMF server settings are updated.

Selecting Preferences for Sites

Diagnostic Utility Preferences operation enables you to view the xMF or IXP servers that reside on one or more sites.

Complete these steps to expand by default the xMF or IXP servers on one or more sites.

1. Select **Multiple Sites** from the object tree.

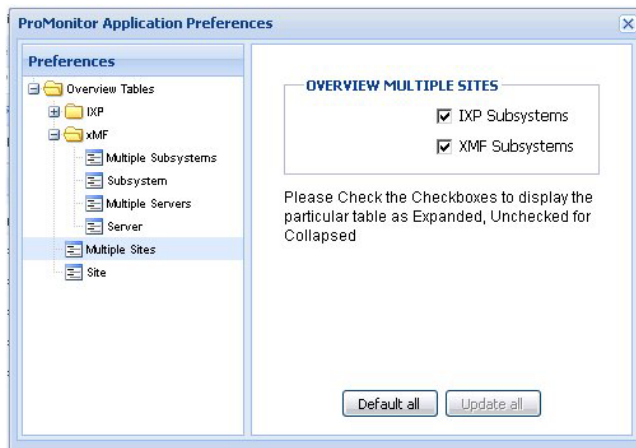


Figure 47: Multiple Sites Preference Screen

2. Select either or both:
 - a) IXP Subsystems - enables you to expand by default the IXP servers on more than one site
 - b) XMF Subsystems - enables you to expand the PMF servers that reside on more than one site

Selecting One-site Servers

Complete these steps to expand by default the servers that reside on one site.

1. Select **Site** from the object tree.

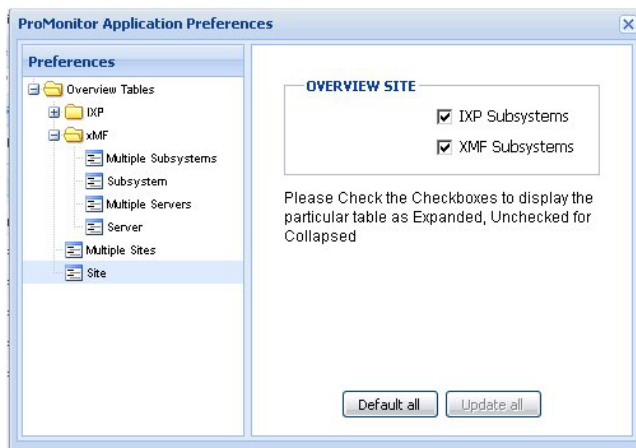


Figure 48: Selected Server

2. Select either or both
 - a) IXP Subsystems - enables you to expand all the IXP servers that reside on that site
 - b) XMF Subsystems - enables you to expand the PMF server that reside on that site
3. Click **Update all** to save your changes to the system.
4. Click the **Close Icon (X)** on the top right-hand corner to close the screen.

Configuring Multiple Sites Preference

Complete these steps to configure preferences for xMF multiple sites.

1. In the Configuration screen expand the **Multiple Sites option** on the object menu.

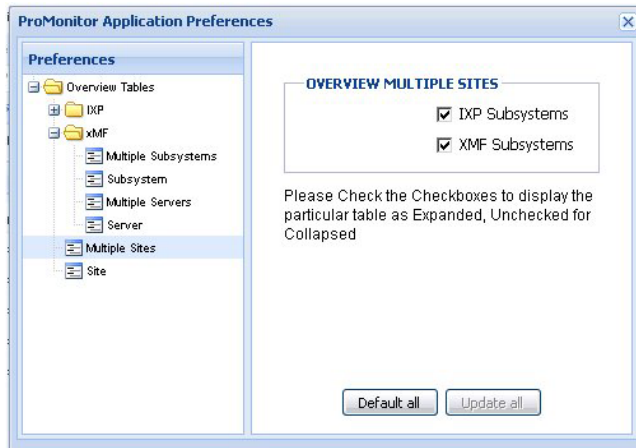


Figure 49: Multiple Sites

2. Select the appropriate **check boxes** for what tables will be expanded by default in the screen for this view.
 - a) IXP Subsystems - enables you to expand all the IXP servers that reside on more than one site
 - b) XMF Subsystems - enables you to expand all the PMF servers that reside on more than one site
3. Click **Update all** to save changes.
4. Click the **Close Icon (X)** on the top-right corner to close the screen.

Configuring Site Preferences

Complete these steps to expand by default the tables on an xMF site.

1. In the Configuration screen expand the **Site option** on the object menu.

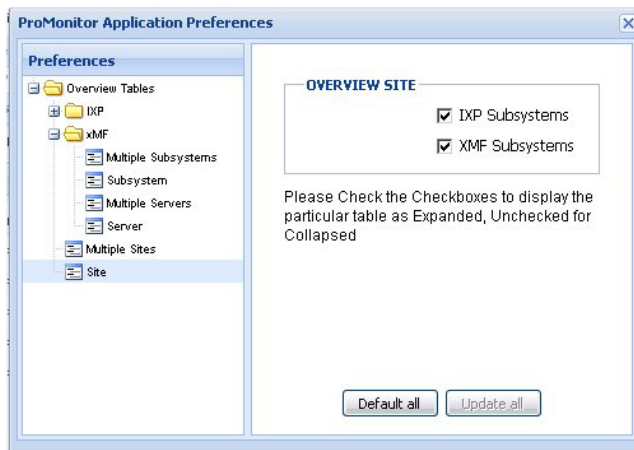


Figure 50: Sites

2. Select the appropriate **check boxes** for the tables to be expanded by default on the screen for this view.
 - a) IXP Subsystems - enables you to expand all the IXP servers that reside on that site
 - b) XMF Subsystems - enables you to expand the PMF servers that reside on that site
3. Click **Update all** to save changes.
4. Click the **Close Icon (X)** on the top right corner to close the screen.

Configuring Preferences for PIC Host View

The Preferences operation enables you to set the various PIC Host parameters.

Selecting DIH Host Preferences

Complete these steps to select what DIH Host parameters are viewed by default.

1. Select **Home > Preferences** to open the Preferences screen.
2. Click the **+** in front of the **Overview Tables** folder to expand it.
3. Click the **+** in front of the **DIH Hosts** folder to expand it.
4. Select **DIH Host**

Note: Currently only one host can be monitored.
5. Select or de-select the **Overview DIH Host** parameters to be viewed by default.

Note: Default setting is to have all three parameters selected.

 - a) Server Params
 - b) Ethernet Params
 - c) Disk Params
6. After selecting the required parameters, click **Update All**.
The DIH Host settings are updated.

Note: To return to default settings, click **Default All**.

Monitoring Functions

Topics:

- *Monitoring Multiple Sites and Subsystems.....55*
- *Monitoring One Site or Subsystem.....58*
- *Monitoring IXP Subsystems and Servers.....60*
- *The IXP Subsystem and Server Right-click Menu.....68*
- *Dataflow Processing Drill-down Procedures.....76*
- *Monitoring xMF Subsystems and Servers.....82*
- *The xMF Subsystem and Server Right-click Menu.....91*
- *About Hardware Counters.....100*
- *About Reset Count Options for xMF Subsystems.....103*
- *Exporting Overview Tables in CSV Format....104*

Monitoring Multiple Sites and Subsystems

In the Site perspective you can monitor:

- All the sites created in your system
- An entire site which includes the subsystems and servers within a particular site
- All subsystems (xMF and IXP) that exist in your system
- All the servers (xMF and IXP) that exist within your system

Monitoring Subsystems from Multiple Sites

Using *Diagnostic Utility* you can monitor the subsystems on several sites at one time.

Complete these steps to monitor IXP and xMF subsystems across multiple sites.

1. Select the **Sites** perspective.
2. Click **check boxes** to select one or more **sites**.
3. Select the **Sites** node again.
4. Right-click and select **Multiple Sites Overview** from the pop-up menu.

The Site overview screen opens, shown below divided into:

- a) IXP subsystem
- b) xMF subsystem

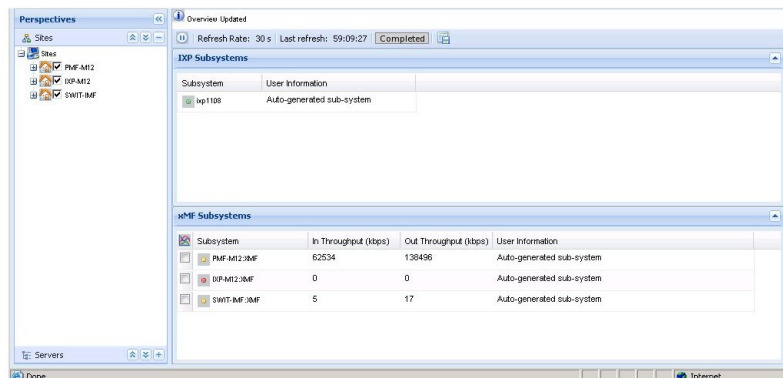


Figure 51: Multiple Site Overview

From this screen you can monitor the counts on any IXP or xMF subsystem in the selected sites.

Monitoring Multiple Subsystems within a Site

You can monitor multiple subsystems within a site by using the *Multiple IXP/xMF Subsystems Overview* options in the *right-click* menu shown in the figure below.

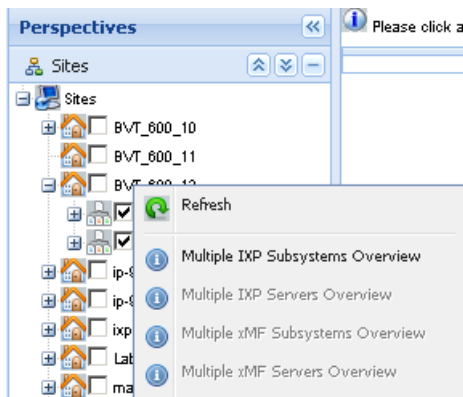


Figure 52: Right Click Pop-Up Menu With Multiple Subsystem Overview Options

Complete these steps to view multiple IXP or xMF subsystems within a site.

Note: In this example, IXP subsystems are selected.

1. Select the **Sites** perspective.
2. Expand the **site tree** to view the subsystem(s) that you want to monitor.
3. Select the **check boxes** for the **same type subsystems** (either IXP or xMF) you want to monitor.
4. Right-click on the **site** that you want to monitor.
The pop-up menu opens.
5. Select either the **Multiple IXP Subsystems Overview** or the **Multiple xMF Subsystems Overview** to show the appropriate overview.

Subsystem	User Information
<input checked="" type="checkbox"/> BrnenskyDrak	Auto-generated sub-system
<input checked="" type="checkbox"/> PlzenskyPrazdroj	Auto-generated sub-system

Figure 53: Multiple Subsystems (IXP) Overview

Monitoring Multiple Servers within a Site

You can monitor multiple subsystems within a site by using the Multiple IXP/xMF Servers Overview options in the right-click menu shown in the figure.

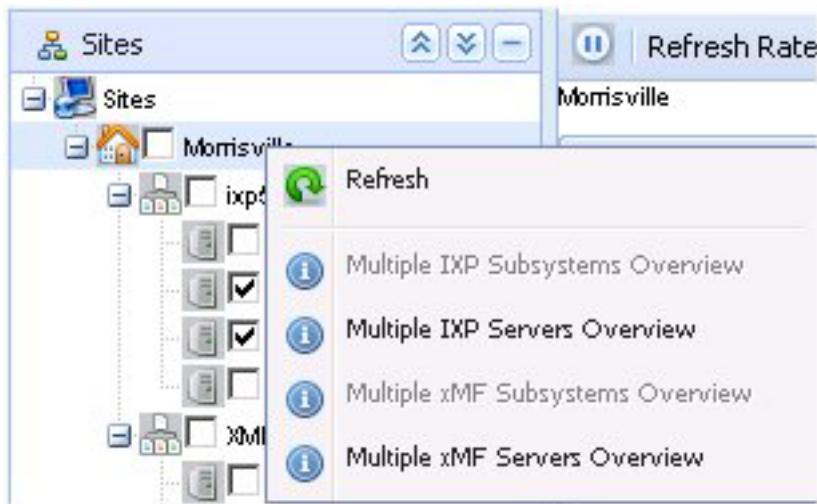


Figure 54: Pop-Up Menu With Multiple Server Overview Option

Complete these steps to view multiple IXP or xMF servers within a site.

1. Select the **Sites** perspective.
2. Expand the **site name** you want to monitor.
3. Select the **servers** to be monitored.
4. Right-click on the **site name** that you want to monitor.
The pop-up menu opens.
5. Select either the **Multiple IXP Servers Overview** or the **Multiple xMF Servers Overview** to show the appropriate overview.

(The figure below shows multiple xMF server overview.)

Note: You cannot view both IXP and xMF servers at the same time.

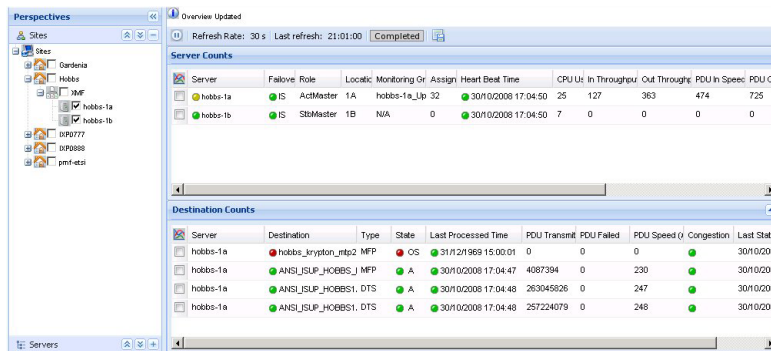


Figure 55: Multiple Xmf Servers Overview

Monitoring One Site or Subsystem

Using the *Site* perspective you can monitor all the subsystems and servers that belong to one site. Complete these steps to select a subsystem or server within a site.

1. Select the **Sites** perspective.
2. Expand the **site** you want to monitor.

The entire site (shown in the figure) is presented divided into:

- a) Site overview
- b) IXP subsystem overview
- c) xMF subsystem overview

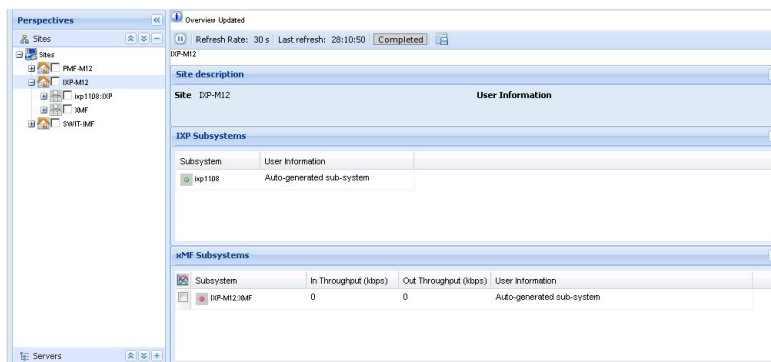


Figure 56: Entire Site Monitoring

Opening a Subsystem from the Overview Screen

Once you have opened a *Site Overview* screen. You can open any available subsystem by clicking on the **subsystem name (or the name on the tree)**. In the figure below, the *IXP subsystems* from have been opened showing all the servers belonging to that subsystem.

Note: All the procedures in this section can also be used to open xMF subsystems.

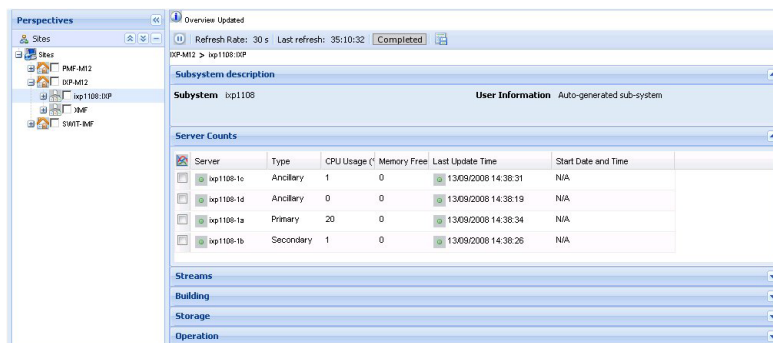


Figure 57: Subsystem Monitoring Screen (IXP)

From this screen you can chart available parameters in the subsystem. (See “Charting Subsystems and Servers”) or you can open any of the parameters on the screen. (See [Monitoring IXP Subsystems and Servers.](#))

Server Overview Screen

From the subsystem overview screen, you can open a specific server by performing either of these actions:

- Selecting the **server name** in the Server Counts table of the Subsystem overview screen(shown in the figure).
- Click on the **Server name** on the object tree

Shown below.

Note: All the procedures in this section can also be used to open xMF servers.

Note: This same procedure can also be used in the Servers perspective.

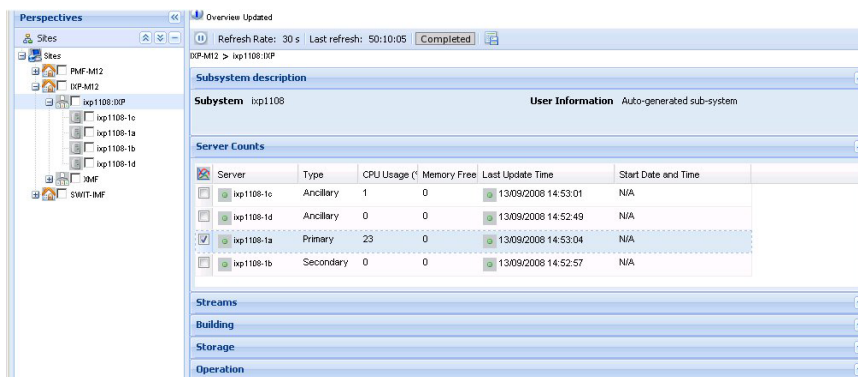


Figure 58: Selected Server for Monitoring (IXP)

The specific server monitoring screen opens shown in the figure.

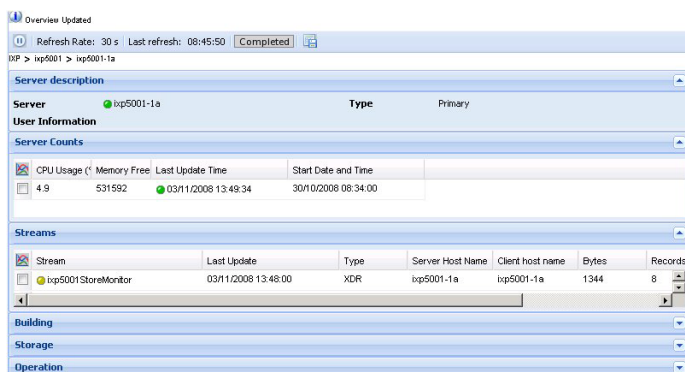


Figure 59: Server Monitoring Screen (IXP)

Monitoring IXP Subsystems and Servers

Note: You can monitor IXP subsystems and servers from either the *Sites* or *Server perspective*.

Diagnostic Utility enables you to monitor specific parameters on subsystems and servers.

You open the subsystem by either selecting it from the object menu or drilling down from the site overview table.

IXP subsystems can be divided into Base Servers and Storage Pool servers. Expanding the IXP subsystem shows all the servers within the system.

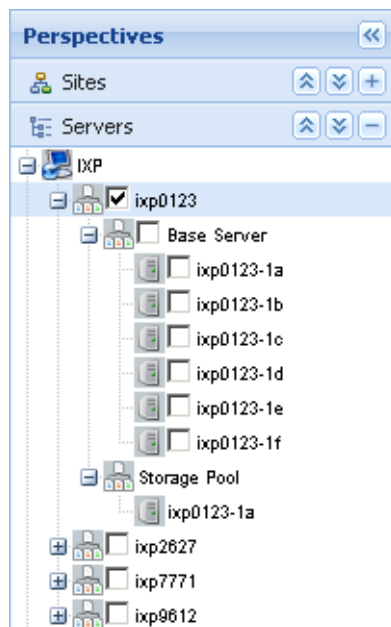


Figure 60: Expanded IXP Subsystem

Selecting any of the servers in the IXP hierarchy opens the table showing the parameters of server(s).

Monitoring IXP Subsystems

You can view all of the IXP subsystems by selecting the IXP root in the Server perspective or a single subsystem by selecting that specific subsystem in either the Sites or Servers perspective. The figure and table show graphic representation and explanations of monitoring table.

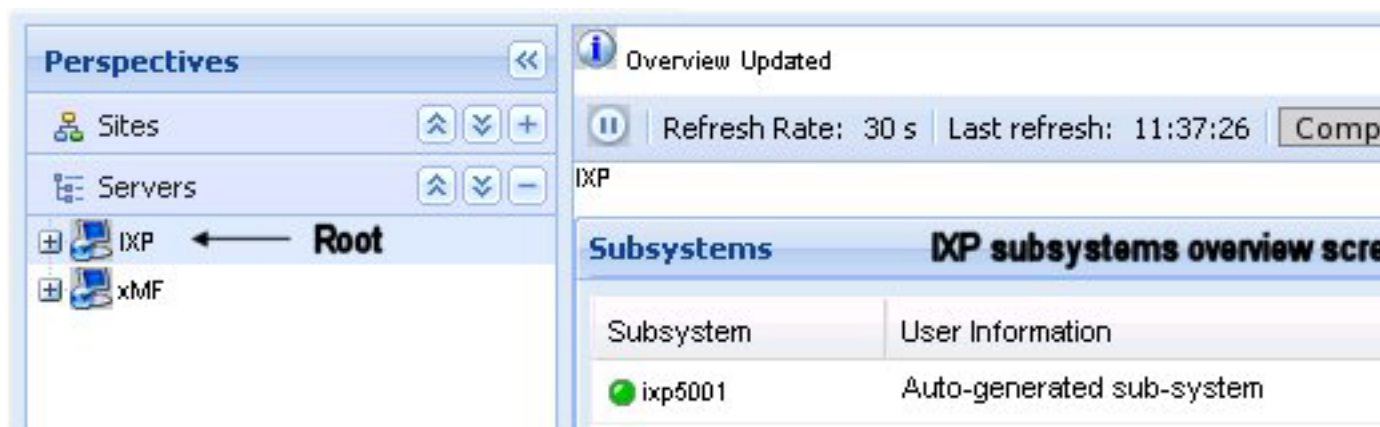


Figure 61: IXP Root Overview Screen

Table 8: IXP Root Overview Table

Parameter	Description
Subsystem Name + Subsystem status	Name of the subsystem and Status of the subsystem is calculated as follows: <ul style="list-style-type: none"> Green - Status of all the servers in the subsystem is green Yellow - Status of some of the servers in the subsystem is not green Red - Status of all the servers in the subsystem is red
User information	Shows information about the subsystem

Viewing a Specific IXP Subsystem

Once you have opened an IXP subsystem, you can monitor these parameters shown in the figures and tables. The parameters are:

- Subsystem description
- IXP server counts
- IXP input stream
- IXP xDR build process
- IXP xDR store process
- IXP xDR operate process

To see an IXP subsystem overview, click on the IXP subsystem in either the sites, or subsystems perspective. The IXP subsystem monitoring table opens.

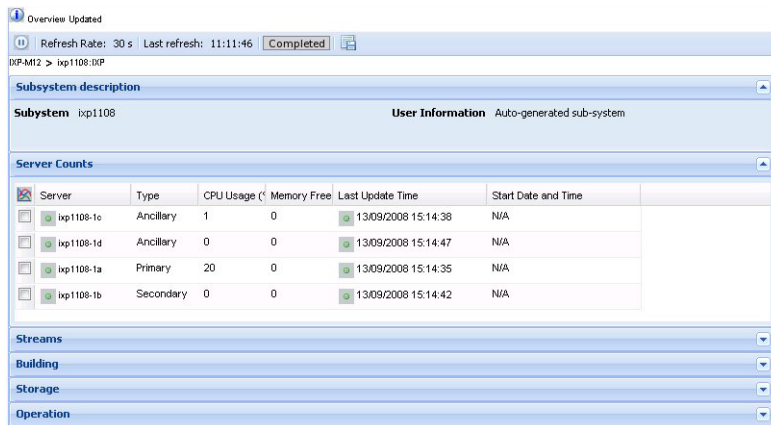


Figure 62: IXP Subsystem Monitoring

Table 9: IXP Server Overview Information

Parameters	Description
Status and Server Name	<p>Status and name of the server.</p> <p>Status can be:</p> <ul style="list-style-type: none"> Green - All the processes are in UP state (mandatory processes and other) Yellow - All mandatory processes are in UP state but there are some processes in some other state Red - None of the processes is in UP state <p>For any IXP server mandatory processes are:</p> <p>For primary server - IxpPurge, IxpMonitor, IxpManage, IxpForward, JmxAgent, IxpDbWatchdog, sshKeyIXP, inetmerge, inetsync, mysqld, autozap, idbsvc0, idbsvc1, statclerk, IxpAdapt, IxpQuery and IxpHistory</p> <p>For secondary and ancillaries server - IxpManage, IxpForward, JmxAgent, IxpDbWatchdog, sshKeyIXP, inetmerge, inetsync, mysqld, autozap, idbsvc0, idbsvc1, statclerk, IxpAdapt, IxpQuery and IxpHistory</p>
User information	Information about the user name

IXP Server Counts

The figure and table below explain the server count parameters for an IXP subsystem.

Server	Type	CPU Usage (%)	Memory Free	Last Update Time	Start Date and Time
ixp1108-1c	Ancillary	1	0	13/09/2008 15:18:08	N/A
ixp1108-1d	Ancillary	0	0	13/09/2008 15:18:19	N/A
ixp1108-1a	Primary	19	0	13/09/2008 15:18:05	N/A
ixp1108-1b	Secondary	0	0	13/09/2008 15:18:21	N/A

Figure 63: IXP Subsystem Server Count Table

Table 10: IXP Server Count Parameters

Parameter	Description
Server name*	Name of the server
Type*	Shows server role (primary, secondary, ancillary)
CPU Usage (%)	Shows percentage of CPU being used
Memory Free (KB)	Number of kilobytes of free memory
Last Update+ Status	Date and time when the last update was done for server statistics Status of the update request. It is calculated as follows: <ul style="list-style-type: none"> Green - last refresh is less than or equals 2 minutes old Yellow - refresh is more than 2 minutes old
Start date and Time	Date and time the server was started

* denotes that these parameters are viewed only at the subsystem level.

IXP Input Stream

The figure and table below explain the input stream count parameters for an IXP subsystem.

Stream	Type	Server Host Name	Client host name	Bytes	Records	First data
ixp5001BuildMonito	XDR	ixp5001-1a	ixp5001-1a	776	5	03/11/2008 18:12:00
ixp5001StreamMon	XDR	ixp5001-1a	ixp5001-1a	492	5	03/11/2008 18:12:00
ixp5001StoreMonitr	XDR	ixp5001-1a	ixp5001-1a	1344	8	03/11/2008 18:12:00
B_mick_session_6	XDR	ixp5001-1d	ixp5001-1d	115820696	579011	03/11/2008 17:23:34
B_dts_session_5	XDR	ixp5001-1b	ixp5001-1b	0	0	N/A

Figure 64: IXP Subsystem Stream Table

Table 11: IXP Input Stream

Parameter	Description
Stream	Name of the stream with status icon. The status calculation is: <ul style="list-style-type: none"> • Blue - if stream is present in the CCM but not in IXP monitoring session • Green - if stream is present in IXP monitoring session
Last Update	Date and time of last update from this processing and the status calculated is: <ul style="list-style-type: none"> • If First Data is available and Last Update time of monitoring record is older than 5 minutes from current time, the LED color is RED. • If First Data is available and Last Update time of monitoring record is older than 2 minutes from current time, the LED color is YELLOW • If First Data is available and Last Update time is current, the LED color is GREEN
Type	Type of the stream; it can either be xDR or PDU
Server Host Name	Name of the IXP server which is producer of this stream
Client host name	Name of the IXP server which is consumer of this stream
Bytes	Total number of bytes transmitted
Records	Total number of records transmitted
First data	Timestamp of the first record transmitted for the period of measure

IXP XDR Build Process

The figure and table below explain the xDR build process count parameters for an IXP subsystem.

Note: xDR builders are constructed in layers. For example, one builder has three layers. A PDU that goes through each of the three layers is counted three times therefore, in the Overview table PDU counts may not reflect the actual number of PDUs but rather the number of times a PDU is counted. Actual counts are viewed in the Dataflow Processing table.

Server	Name	Last Update	xDR Family	Session Type	Received PDUs	Unk
ixp0777-1c	TCP_TDR	N/A			0	0
ixp0777-1b	ANSI_ISUP	N/A			0	0
ixp0777-1c	ETSI_ISUP	N/A			0	0

Figure 65: IXP Subsystem Building Table

Table 12: IXP xDR Build Process Parameters

Parameter	Description
Server Name*	Name of the server running the process
Name & Status Icon	Name of the data flow processing with status icon. It is a link to the process involved in this processing Status: <ul style="list-style-type: none"> Green - difference between current time and last update time is less than or equal to two minutes Yellow - difference between current time and last update time is more than two minutes Red -
Last Update & Status Icon	Date and time of last update from this processing Status can be: <ul style="list-style-type: none"> Green - difference between current time and last update time is less than or equal to two minutes Yellow - difference between current time and last update time is more than two minutes Red - if application fails to retrieve the monitoring count
xDR Family	One of - 1 GPRS, 2 GPRS or SS7, 3 SS7, 4 IP, 5 undefined, 6 VoIP, 7 VoIP or GPRS, 8 UMTS
Session type	1 reconstitution, 2 capture, 3 configurable, 4 KPI, 5 other statistics
Received PDUs	Last Value of PDU count submitted to the builder
Unknown PDU	Count of PDU which are not of the correct type. For instance, an IP frame in SS7 transport
Filtered PDU	PDUs rejected due to filtering conditions. This can be an explicit condition like a port number, or implicit like SIO=5 for ISUP

Parameter	Description
Not Stored PDU	Count of PDUs not stored. The reasons for not storing could be in the xDR builder configuration, general parameter "Store PDUs" not set, no space left on disk, writing not allowed on all PDU disks, wrong disk sharing or mounting
Received Bytes	Last Value of total number of bytes received (including PDU headers)
Generated xDRs	Last Value of produced xDR count
Valid xDRs	Last Value of xDR that could be correlated without suspicion of error
xDRs Not Transmitted	xDRs that could not be transmitted to the consumer (for instance - operate, store)
xDRs in Progress	Maximum number of in progress xDRs
Generated Bytes	Last Value of total number of bytes sent to a session, xDR record and variable parts

* denotes that these parameters are viewed only at the subsystem level.

IXP xDR store process

The figure and table below explain the xDR store process count parameters for an IXP subsystem.

Server	Name	Last Update	Session	Received XDR	Stored XDR	Rejected records
Ixp0777-1c	ETSI_ISUP_CDF	03/11/2008 14:06:00	ETSI_ISUP_CDF	2179	2180	0
Ixp0777-1c	TCP_TDRS_store	03/11/2008 14:07:00	TCP_TDRS	66	66	0

Figure 66: IXP Subsystem xDR Storage Process Table (Aggregated)

Table 13: IXP XDR Store Process Parameters-Subsystem Level

Parameter	Description
Server Name*	Name of the server running the process
xDR Store Process & Status Icons	Name of the data flow processing with status icon. It is a link to the process involved in this processing Status can be: <ul style="list-style-type: none"> Green - process is in UP Red - process is in some other state

Parameter	Description
	<ul style="list-style-type: none"> Blue - changes are applied in CCM but process not running in IXP
Pool Name	Name of the pool where data is stored
Last Update & Status Icons	Date and time of last update from this processing <ul style="list-style-type: none"> Green - difference between current time and last update time is less than or equal to two minutes Yellow - difference between current time and last update time is more than two minutes Red - process is in some other state
Session	Name of the session in which xDR/KPI will be store
Start Time	Time the process started
End Time	Time the process ended
xDR Count	Sum of each similar storage counter for the pool
xDR per second	Average xDR per second for the period
Stored Bytes	Sum of each similar counts for the storage process
throughput Mb/s	Average MBit per second for the period
Received xDR/KPIs	Last Value of xDR/KPI count which is received by process
Lag	Delay of xDR storage calculated by Last Update Time - end time
Lifetime	Session lifetime calculated by end time - begin time
Stored xDR/KPIs	Last Value of total number of xDR/KPI count stored for this process
Rejected records	Last Value of xDR/KPI count rejected by this process

* denotes that these parameters are viewed only at the subsystem level.

IXP xDR operate process

The figure and table below explain the xDR operate process count parameters for an IXP subsystem.

Server	Name	Last Update	Received XDR	xDRs Enriched	Created KPI	Filtered XDRs
ixp0777-1b	ANSI_ISUP_CDRS	03/11/2008 14:06:01	4616	0	4	4616

Figure 67: IXP Subsystem xDR Operate Process Tables

Table 14: IXP xDR Operate Process Parameters-Subsystem Level

Parameter	Description
Server Name*	Name of the server running the process
Name & status	Name of the dataflow processing with status: <ul style="list-style-type: none"> • Green - difference between current time and last update time is less than or equal to two minutes • Yellow - difference between current time and last update time is more than two minutes
Last Update & Status Icon	Date and time of last update from this processing <ul style="list-style-type: none"> • Green - difference between current time and last update time is less than or equal to two minutes • Yellow - difference between current time and last update time is more than two minutes • Blue -changes are applied in CCM but process not running in IXP
Received xDR	Last Value of xDR count which are received for this process
xDRs enriched	Number of xDR getting at least one field enriched
Created KPI	Last Value of total number of KPIs created by this process
Filtered xDRs	Last Value of xDR count passing the corner filter

* denotes that these parameters are viewed only at the subsystem level.

The IXP Subsystem and Server Right-click Menu

The IXP subsystem or server right-click menu have the following options:

IXP subsystem right-click menu options

- Refresh - refreshes the screen to show any changes that have occurred.
- Streams (Input Streams) - enables you to monitor all the input streams in a subsystem
- Sessions - enables you to monitor all the sessions in a subsystem
- Data Flow Processings - enables you to monitor all the building and operating DFPs in a subsystem
- Store - enables you to monitor all the storage DFPs residing in a subsystem
- Hardware counters - enables you to monitor hardware parameters such as storage space, disk space and ethernet connections

- Multiple Servers Overview - enables you to view the servers on a selected IXP subsystem

IXP base server right-click menu options

Note: Base servers are those servers designated for building or operating DFPs.

- Steams (Input Streams) - enables you to monitor all the input streams in a subsystem
- Data Flow Processings - enables you to monitor all the building and operating DFPs in a subsystem
- Hardware counters - enable you to monitor hardware parameters such as storage space, disk space and ethernet connections

IXP storage pool server right-click menu options

Note: Storage pool servers are those servers designated for storing DFPs.

- Hardware counters - enable you to monitor hardware parameters such as storage space, disk space and ethernet connections
- Store - enables you to view all the storage DFPs residing on a server

Subsystem and Server Right-click Option

Diagnostic Utility right-click menu enables you view *Input Stream* information on that subsystem or a server on that subsystem. Right-click option is discussed below.

Monitoring streams (input stream)

Complete these steps to view the input streams on an IXP subsystem.

1. Select **Sites > IXP subsystem**.
2. Right-click on the **IXP subsystem (or a server on the subsystem)**.
3. Select **Streams**.

The Streams screen opens shown in the figure below.

Stream	Type	Server Host Name	Client host name	Bytes	Records	First data
ixp5001BuildMonito	XDR	ixp5001-1a	ixp5001-1a	776	5	03/11/2008 18:12:00
ixp5001StreamMon	XDR	ixp5001-1a	ixp5001-1a	492	5	03/11/2008 18:12:00
ixp5001StoreMonit	XDR	ixp5001-1a	ixp5001-1a	1344	8	03/11/2008 18:12:00
B_mick_session_6	XDR	ixp5001-1d	ixp5001-1d	115820696	579011	03/11/2008 17:23:34
B_dts_session_5	XDR	ixp5001-1b	ixp5001-1b	0	0	N/A

Figure 68: Streams Monitoring Screen

Table 15: IXP Streams Monitoring Screen

Field	Description
Stream	Name of the stream with status icon: <ul style="list-style-type: none"> • Blue - if the stream is present in CCM but not in the IXP monitoring session

Field	Description
	<ul style="list-style-type: none"> Green - if the stream is present in CCM and also session is present in IXP
Last Update	<p>Date and time of last update from the present processing with this status calculation:</p> <ul style="list-style-type: none"> Red - if First Data is available and Last Update time of monitoring record is older than 5 minutes from the current time Yellow - If the First Data is available and Last Update time of monitoring record is older than 2 minutes from current time Green - If First Data is available and Last Update time is less than 2 minutes
Type	Type of the stream it can either be XDR or PDU.
Server Host Name	Name of the IXP server which is producer of this stream
Client Host Name	Name of the IXP server which is consumer of this stream
Bytes	Total number of bytes transmitted
Records	Total number of record transmitted
First Data	Timestamp of the first record transmitted for the period of measure

From this screen you can view all the parameters listed in IXP overview screen.

Dataflow Processing

Diagnostic Utility right-click menu enables you view *Dataflow processing* information on that subsystem or a server on that subsystem. Complete these steps to view the dataflow processing on an IXP subsystem.

1. Select **Sites > IXP subsystem**.
2. Right-click on the **IXP subsystem (or a server on the subsystem)**.
3. Select **Dataflow Processing**.

The *Dataflow processing* screen opens shown in the figure below.

Server	Server IP	Data Flow Processing	Type	Input Stream	Output Stream/Sess
ixp5001-1a	10.250.39.26	StreamMonitor	Storage	ixp5001StreamMoni	ixp5001StreamMoni
ixp5001-1a	10.250.39.26	BuildMonitor	Storage	ixp5001BuildMonitor	ixp5001BuildMonitor
ixp5001-1a	10.250.39.26	OperateMonitor	Storage	ixp5001OperateMor	ixp5001OperateMor
ixp5001-1a	10.250.39.26	StoreMonitor	Storage	ixp5001StoreMonito	ixp5001StoreMonito

Figure 69: Dataflow Processing Screen

From this screen you can view and sort any of the parameters described in the table below.

Note: You can navigate back to a previous screen by selecting a link on the “railway” located above the title bar.

Table 16: IXP Dataflow Processing Summary

Parameter	Description
Subsystem+Server	Name of the subsystem and server running the data flow process
Address	Shows the IP address of server where process is running
Data Flow Processing Name and Status	Name of the data flow processing Status indicators indicate if process is running: <ul style="list-style-type: none"> • green - process is running • red - process is not running • blue - process in present in CCM but not in IXP
Type	Type of Data Flow Processing: <ul style="list-style-type: none"> • building • operation
Input Stream	Name of the stream where the data flow process is acquiring data
Output Streams/Sessions	Name of the stream where the data flow process is outputting data

Hardware counters

Diagnostic Utility right-click menu enables you to view *Hardware counter* information on a subsystem or server. The information is identical for both IXP and xMF and is described later in this chapter (see [About Hardware Counters](#)).

Sessions

Diagnostic Utility right-click menu enables you view *Sessions* information on that subsystem or a server on that subsystem. Complete these steps to view the session information on an IXP subsystem.

The session monitoring task is different from other IXP monitoring tasks in that it uses current information and not historical information.

1. Select **Sites (or Servers) > IXP subsystem**.
2. Right-click on the **IXP subsystem (or a server on the subsystem)**.
3. Select **Sessions**.

The Sessions table opens shown in the figure.

	Name	Protocol	Type
<input type="checkbox"/>	<u>POOL_ISUP_PERF1</u>	ISUP ETSI	RECONSTITUTION
<input type="checkbox"/>	<u>POOL_ISUP_PERF2</u>	ISUP ETSI	RECONSTITUTION
<input type="checkbox"/>	<u>CCM_SIP_CDRS</u>	VoIP SIP	RECONSTITUTION
<input type="checkbox"/>	<u>ixp0888AggSessionMonitor</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>ixp0888PoolMonitor</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>Test_Ptg_Session</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>PERF2ArchiveTestSU</u>	ISUP ETSI	RECONSTITUTION
<input type="checkbox"/>	<u>ixp0888StreamMonitor</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>ixp0888BuildMonitor</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>ixp0888OperateMonitor</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>ixp0888StoreMonitor</u>	N/A	STATISTICS
<input type="checkbox"/>	<u>CCM_BICC_ANSI_CDRS</u>	BICC ANSI	RECONSTITUTION
<input type="checkbox"/>	<u>CCM_ISUP_ETSI_CDRS</u>	ISUP ETSI	RECONSTITUTION

Figure 70: Session Screen

From this screen you can:

- Sort Sessions in ascending or descending order or view specific columns
- Select sessions for export using the export icon in the tool bar (in csv file format)
- View a sessions by clicking on the session name.

Table 17: IXP Session Summary

Parameter	Description
Name	Name of the session.

Parameter	Description
Protocol	Shows the protocol (ISUP, BICC, etc) of the session
Type	Type of xDR session: <ul style="list-style-type: none"> reconstitution capture statistics

Viewing a specific session

From the sessions table, you can view a specific xDR session by clicking on the **Name** of the session. The specific session information is shown.

	Name	Protocol	Type
<input type="checkbox"/>	POOL_ISUP_PERF1	ISUP ETSI	RECONSTITUTION
<input type="checkbox"/>	POOL_ISUP_PERF2	ISUP ETSI	RECONSTITUTION
<input type="checkbox"/>	CCM_SIP_CDRS	VoIP SIP	RECONSTITUTION
<input type="checkbox"/>	ixp0888AggSessionMonitor	N/A	STATISTICS
<input type="checkbox"/>	ixp0888PoolMonitor	N/A	STATISTICS
<input type="checkbox"/>	Test_Ptg_Session	N/A	STATISTICS
<input type="checkbox"/>	PERF2ArchiveTestSU	ISUP ETSI	RECONSTITUTION
<input type="checkbox"/>	ixp0888StreamMonitor	N/A	STATISTICS
<input type="checkbox"/>	ixp0888BuildMonitor	N/A	STATISTICS
<input type="checkbox"/>	ixp0888OperateMonitor	N/A	STATISTICS
<input type="checkbox"/>	ixp0888StoreMonitor	N/A	STATISTICS
<input type="checkbox"/>	CCM_BICC_ANSI_CDRS	BICC ANSI	RECONSTITUTION
<input type="checkbox"/>	CCM_ISUP_ETSI_CDRS	ISUP ETSI	RECONSTITUTION

Figure 71: Session Screen

The information is described in the table.

Table 18: IXP Session Summary

Parameter	Description
Name	Name of the session.
Protocol	Shows the protocol (ISUP, BICC, etc) of the session
Type	Type of xDR session: <ul style="list-style-type: none"> reconstitution

Parameter	Description
	<ul style="list-style-type: none"> capture statistics
Streams	Input streams connected to the session
Approximate old xDR Count	Approximate number of xDRs in the session until the previous day. This in addition to the current xDR count gives an approximation of the total number of xDRs in the session
First Date	Date of the first xDR available in the session
Last Date	Date of the most recent xDR present in the session
Current xDR Count	Total number of xDRs in the session for the current day

Store

Diagnostic Utility right-click menu enables you view Storage information on that subsystem or a server on that subsystem. Complete these steps to view the storage information on an IXP subsystem.

The storage pool monitoring task is different from other IXP monitoring tasks in that it uses current information and not historical information.

1. Select **Sites (or Servers) > IXP subsystem**.
2. Right-click on the **IXP subsystem (or a storage pool server on the subsystem)**.
3. Select **Storage**.

The Storage table opens.

Pool	DFP Name + Status	Type	Input Stream
ixp0888_Pool	● S_CCM_SIP_CDRS	Storage	B_CCM_SIP_CDRS_98,
ixp0888_Pool	● PoolMonitor	Storage	O_ixp0888PoolMonitor_89,
ixp0888_Pool	● S_ixp0888AggSessionMonitor_91	Storage	K_ixp0888AggSessionMonitor_90
ixp0888_Pool	● StreamMonitor	Storage	ixp0888StreamMonitor,
ixp0888_Pool	● BuildMonitor	Storage	ixp0888BuildMonitor,
ixp0888_Pool	● OperateMonitor	Storage	ixp0888OperateMonitor,
ixp0888_Pool	● StoreMonitor	Storage	ixp0888StoreMonitor,
ixp0888_Pool	● S_POOL_ISUP_PERF1	Storage	O_POOL_ISUP_PERF1_111,
ixp0888_Pool	● S_POOL_ISUP_PERF2	Storage	B_POOL_ISUP_PERF2_6,
ixp0888_Pool	● S_CCM_BICC_ANSI_CDRS	Storage	B_CCM_BICC_ANSI_CDRS_97,
ixp0888_Pool	● S_CCM_ISUP_ETSI_CDRS	Storage	B_CCM_ISUP_ETSI_CDRS_99,

Figure 72: Storage Screen

From this screen you can view and sort any of the parameters described in the table.

Table 19: IXP Storage Summary

Parameter	Description
Pool	Name of the storage pool
DFP Name & Status	Name of the store process Status icon indicates the following states: <ul style="list-style-type: none"> Green - process is in UP Red - process is in some other state Blue - Process is present in CCM but not in IXP
Type	Storage
Input Stream	Shows the name of the stream that the data flow process is acquiring data from

Hardware Counters

Diagnostic Utility right-click menu enables you view hardware parameters for the server, network and storage disc. Complete these steps to view the hardware counters on an IXP subsystem or server.

1. Select **Sites (or Servers) > IXP subsystem**.
2. Right-click on the **IXP subsystem (or a server on the subsystem)**.
3. Select **Hardware Counters**.

The Hardware counters table opens.

Monitoring View Updated
Refresh Rate: 30 s | Last refresh: 12:45:05

Server Parameters

Server/Subsystem Name	Period end	Type	CPU User	CPU System	Free Physical %	Total Physical %	Available Phys %	Free Virtual Me	Total Virtual Me	Availat
ixp0888-1d/ixp0888_Pool	30/07/2009 12:53:59	IXP	1	0.2	331	16244	2	8163	8191	99
ixp0888-1a/ixp0888_Pool	30/07/2009 12:54:02	IXP	2	1	314	16244	1	8156	8191	99

Ethernet Parameters

Server/Subsystem Name	Interface name	Period end	IP address	Type	Octets received	Octets sent	Bandwidth	Queue
ixp0888-1d/ixp0888_Pool	eth01	30/07/2009 12:54:17	10.250.42.175	IXP	17041	3666	20708	1000
ixp0888-1d/ixp0888_Pool	eth02	30/07/2009 12:54:17	null	IXP	0	0	0	1000
ixp0888-1d/ixp0888_Pool	lo	30/07/2009 12:54:17	127.0.0.1	IXP	1275	1275	2651	0
ixp0888-1a/ixp0888_Pool	eth01	30/07/2009 12:53:56	10.250.42.171	IXP	31565	12369	43935	1000
ixp0888-1a/ixp0888_Pool	eth02	30/07/2009 12:53:56	null	IXP	0	0	0	1000
ixp0888-1a/ixp0888_Pool	lo	30/07/2009 12:53:56	127.0.0.1	IXP	2557	2557	5115	0

Disk Parameters

Server/Subsystem Name	Period end	Partition	Type	Disk %Writing	Disk Reading	Octet Written	Octets Read	Queue For %Writing	Que
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/cciss/c0d0p1	IXP	1.6	0	63.75	1.07	15.17	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/cciss/c0d1p1	IXP	0.4	0	6.27	0	1.17	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/cciss/l1d0p1	IXP	9.9	0.97	0	0	32.91	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/mapper/vgroot	IXP	9.9	0.97	213.14	7.2	32.91	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/mapper/vgroot	IXP	9.9	0.97	213.14	7.2	32.91	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/mapper/vgroot	IXP	9.9	0.97	213.14	7.2	32.91	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/mapper/vgroot	IXP	9.9	0.97	213.14	7.2	32.91	
ixp0888-1d/ixp0888_Pool	30/07/2009 12:54:17	/dev/mapper/vgroot	IXP	9.9	0.97	213.14	7.2	32.91	

Figure 73: Hardware Counters Screen

From this screen you can view and sort any of the parameters described in the table.

Table 20: Hardware Counters Summary

Parameter	Description
Pool	Name of the storage pool
DFP Name & Status	Name of the store process Status icon indicates the following states: <ul style="list-style-type: none"> • Green - process is in UP • Red - process is in some other state • Blue - Process is present in CCM but not in IXP
Type	Storage
Input Stream	Shows the name of the stream that the data flow process is acquiring data from

Dataflow Processing Drill-down Procedures

From the *Dataflow processing* screen you can begin to *drill down* to view details on specific processes. You can use the drill-down option for each of the dataflow processing types.

- Storage dataflow processings (for IXP storage pool servers)
- Building dataflow processings
- Operating dataflow processings

Storage Dataflow Processing Drill-down Function

Select the **Name** of the storage data flow process from the list.

The *Storage* screen opens shown in the figure below.

The screenshot shows a web-based monitoring interface. At the top, there is a title bar 'Monitoring View Updated' with a refresh rate of 30 seconds and a 'Paused' button. Below this, the breadcrumb 'ixp5001-1a > BuildMonitor' is visible. The main content area is titled 'Storage' and contains a table with the following columns: DFP NAME, DWH Name, Last Update, Session, Received XDR, and Stored. The table lists 15 entries for 'BuildMonitor' with various timestamps and values for received and stored XDRs.

DFP NAME	DWH Name	Last Update	Session	Received XDR	Stored
BuildMonitor	10.250.39.26:152	03/11/2008 13:00:00	ixp5001BuildMo	10	5
BuildMonitor	10.250.39.26:152	03/11/2008 13:01:00	ixp5001BuildMo	10	15
BuildMonitor	10.250.39.26:152	03/11/2008 13:02:00	ixp5001BuildMo	10	5
BuildMonitor	10.250.39.26:152	03/11/2008 13:03:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:04:00	ixp5001BuildMo	10	15
BuildMonitor	10.250.39.26:152	03/11/2008 13:05:00	ixp5001BuildMo	10	5
BuildMonitor	10.250.39.26:152	03/11/2008 13:06:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:07:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:08:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:09:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:10:00	ixp5001BuildMo	10	15
BuildMonitor	10.250.39.26:152	03/11/2008 13:11:00	ixp5001BuildMo	10	5
BuildMonitor	10.250.39.26:152	03/11/2008 13:12:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:13:00	ixp5001BuildMo	10	10
BuildMonitor	10.250.39.26:152	03/11/2008 13:14:00	ixp5001BuildMo	10	10

Figure 74: Storage Dataflow Processing Screen

Table 21: IXP Storage DFP

Field	Description
DFP Name	Shows name of the dataflow processing to which the process belongs
DWH Name	Data warehouse where xDRs are incorporated by this process

Field	Description
Last Update	Date and time (as default) of last update from this processing
Session	Name of the session in which xDR/KPI will be store.
Received xDR/KPIs	Last Value of xDR/KPI count which is received by process.
Stored xDR/KPIs	Last Value of total number of xDR/KPI count stored for this process
Rejected Records	Last Value of xDR/KPI count rejected by this process.

Operate Dataflow Processing Drill-down Procedure

Select the **Name** of the operate data flow process from the list.

The Operate screen opens shown in the figure below.

The screenshot shows a web interface for monitoring dataflow processing. At the top, there is a status bar with 'Monitoring View Updated', a refresh rate of 30s, and a 'Paused' button. Below this, the breadcrumb path is 'ixp0777 > ANSI_ISUP_CDRS'. The main content is a table titled 'Operation' with the following columns: Server, Name, Last Update, Received XDR, xDRs Enriched, Created KPI, and Filtered XDRs. The table contains 16 rows of data, all for the server 'ixp0777-1b' and process 'ANSI_ISUP_CDRS', with 'Last Update' values ranging from 11:11 to 11:25 and 'Received XDR' values ranging from 4613 to 4497.

Server	Name	Last Update	Received XDR	xDRs Enriched	Created KPI	Filtered XDRs
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:11	4613	0	4	4613
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:12	4947	0	4	4947
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:13	4464	0	4	4464
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:14	4702	0	4	4702
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:15	4579	0	4	4579
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:16	4758	0	4	4758
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:17	4550	0	4	4550
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:18	4631	0	4	4631
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:19	4832	0	4	4832
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:20	4518	0	4	4518
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:21	4544	0	4	4544
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:22	4642	0	4	4642
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:23	4870	0	4	4870
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:24	4664	0	4	4664
ixp0777-1b	ANSI_ISUP_CDRS	01/11/2008 11:25	4497	0	4	4497

Figure 75: Operate Dataflow Processing Screen

Table 22: IXP Operate DFP

Field	Description
Server Name	Name of the server to which the process belongs
Last Update	Date and time (as default) of last update from this processing

Field	Description
	Note: If a red LED appears in this column, then DFPs are not producing any KPIs (no ProTraQ) or enriching any xDRs (no enrichment). These counts will also be 0. In this case no monitoring will be produced (since Operation monitoring is generated per ProTraQ and per enrichment configuration).
xDRs enriched	Number of xDR getting at least one field enriched
Received xDR	Last Value of xDR/KPI count which is received by process.
Created KPIs	Last Value of total number of KPIs created by this process
Filtered xDRs	Last Value of xDR count passing the corner filter.

Build Dataflow Processing Drill-down Procedure

1. Select the **Name** of the build data flow process from the list.

The Build screen opens shown in the figure below.

Server	Name	Builder Type	xDR Family	Session Type	Last Update	Received PDUs	Unknown PDU	Filtered PDU	Not Stored PDU	Recv
ixp5001-1a	SS7 Isup Ansl De	Intermediate	SS7	Reconstitution	2010/02/08 01:12:00	0	0	0	0	0
ixp5001-1a	IP Transport	Intermediate	P	Reconstitution	2010/02/08 01:12:00	0	0	0	0	0
ixp5001-1a	Initial step	Initial	Undefined	Reconstitution	2010/02/08 01:12:00	0	0	0	0	0
ixp5001-1a	SS7 ISUP ANSI CI Final	Final	SS7	Configuration deper	2010/02/08 01:12:00	0	0	0	0	0
ixp5001-1a	SS7 Transport	Intermediate	SS7	Reconstitution	2010/02/08 01:13:01	0	0	0	0	0

Figure 76: Build Data Flow Processing Summary Screen

Table 23: IXP Build Process Summary Table

Field	Description
Server	Name of the server
Builder name	Name of the xDR builder
xDR builder type	One of - <ul style="list-style-type: none"> • 1 initial • 2 intermediate • 3 final • 4 unified

Field	Description
xDR family	One of - <ul style="list-style-type: none"> • 1 GPRS • 2 GPRS or SS7 • 3 SS7 • 4 IP, 5 undefined • 6 VoIP, 7 VoIP or GPRS • 8 UMTS
Session Type	<ul style="list-style-type: none"> • 1 reconstitution • 2 capture • 3 configurable • 4 KPI • 5 other statistics
Last Update	Date and time (as default) of last update from this processing
Received PDUs	Last Value of PDU count submitted to the builder
Unknown PDU	Count of PDU which are not of the correct type. For instance, an IP frame in SS7 transport
Filtered PDU	PDUs rejected due to filtering conditions. This can be an explicit condition like a port number, or implicit like SIO=5 for ISUP.
Not Stored PDU	Count of PDUs not stored. The reasons for not storing could be in the xDR builder configuration, general parameter "Store PDUs" not set, no space left on disk, writing not allowed on all PDU disks, wrong disk sharing or mounting.
Received Bytes	Last Value of total number of bytes received (including PDU headers)
Generated XDRs	Last Value of produced xDR count.
Valid xDRs	Last Value of xDR that could be correlated without suspicion of error.
xDRs Not Transmitted	xDRs that could not be transmitted to the consumer (for instance - operate, store)

Field	Description
Generated Bytes	Last Value of total number of bytes sent to a session, xDR record and variable parts.

- To view the detail of an individual build process, click the **Name** of the process in the *Summary* screen.

The detail screen opens.

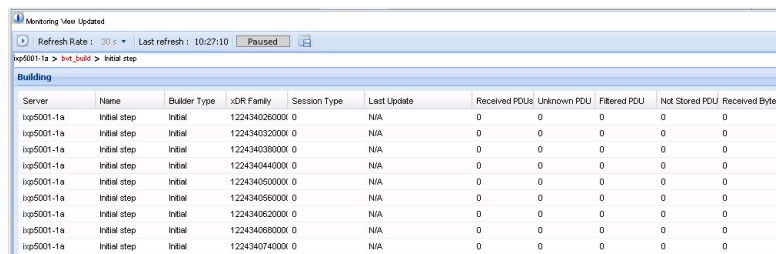


Figure 77: Build Dataflow Processing Detail Screen

Monitoring Specific IXP Servers within an IXP Subsystem

You can display an overview of one selected IXP server. Complete these steps to select and monitor a specific IXP server.

- Select **Sites Perspective** to expand it.
- Expand **Site > IXP subsystem**.
- Select the **IXP server** to be viewed.

The *table* screen opens shown in the figure below.

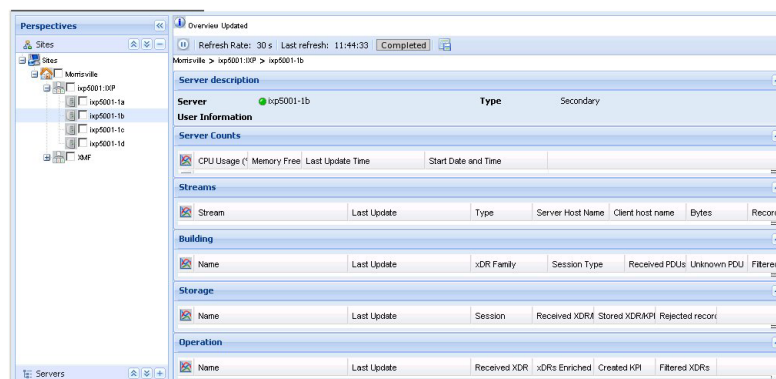


Figure 78: Specific IXP Server Monitoring

The information provided to you is the same as that provided at the subsystem level except that it is for the specific server.

Monitoring xMF Subsystems and Servers

Note: You can monitor subsystems and servers from either the *Sites* or *Server perspective*.

Diagnostic Utility enables you to monitor specific parameters on subsystems and servers.

You open the subsystem by either selecting it from the object menu or drilling down from the site overview table.

Monitoring xMF Subsystems

You can view the xMF (PMF) subsystems by selecting the xMF root in the *Server perspective*.

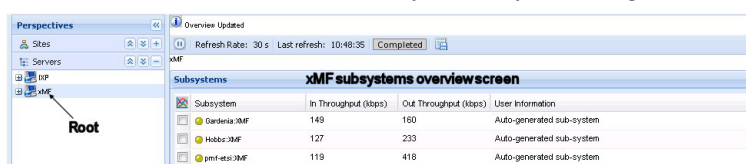


Figure 79: xMF Root Overview Screen

The table provides the following counters:

Table 24: Xmf Subsystems Overview

Parameter	Description
Subsystem Name + Subsystem status	Name of the subsystem and Status of the subsystem is calculated as follows: <ul style="list-style-type: none"> Green - Status of all the servers in the subsystem is green Yellow - Status of some of the servers in the subsystem is not green Red - Status of all the servers in the subsystem is red
In Throughput (kbps)	Sum of input throughputs of servers in this subsystem in kilobits per second
Out Throughput (kbps)	Sum of output throughputs of servers in this subsystem in kilobits per second
User Information	Information about the subsystem

At this point you can drill down and view any subsystem.

Viewing a Specific xMF Subsystem

Complete these steps to view a specific xMF subsystem.

Click on the xMF subsystem (PMF) to be monitored.

The *Subsystem monitoring* screen opens shown in the figure below.

Note: xMF subsystem selection can be made on the root overview in the site overview screen or on the object tree in the *Sites* or *Servers* perspective

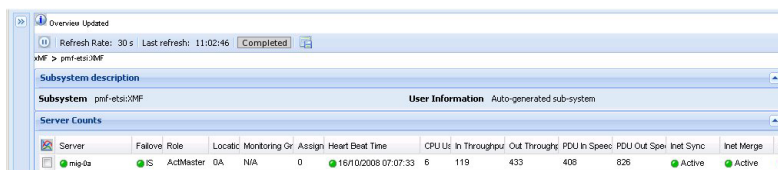


Figure 80: Xmf Subsystem Monitoring (PMF Shown)

From this screen you can monitor the following xMF *Server Counts* and *Destination counts* described in the tables below;

Table 25: Server Counts Table

Parameter	Description
Server Name + Server status*	<p>Provides the name of the xMF server</p> <p>Status of the server is calculated as follows:</p> <ul style="list-style-type: none"> • Green - all next points are true: <ul style="list-style-type: none"> • all destinations have green status • all IP interfaces have green status or all IP interfaces have gray status (if available) • all Level 1 interfaces have green status (if available) • InetSync and InetMerge statuses of the server are green • Last Update time of the server has green status • Failover state is In Service • Heart Beat time of the server has green status • Yellow - InetSync and InetMerge statuses of the server are green, Failover Status is In Service and at least one of the next points is true: <ul style="list-style-type: none"> • not all destinations are green and not all destinations are red • not all IP interfaces are green and not all IP interfaces are gray and not all IP interfaces are red (if available) • not all Level 1 interfaces are green and not all Level 1 interfaces are red (if available) • Last Update time of the server has yellow status and all destination are not red and all IP or Level 1 interfaces are not red • Heart Beat time of the server has yellow status and all destination are not red and all IP or Level 1 interfaces are not red

Parameter	Description
	<ul style="list-style-type: none"> Red - at least one of the next points is true: <ul style="list-style-type: none"> all destinations have red status all IP or Level 1 interfaces have red status InetSync/Merge status of the server is red Failover state is Out Of Service
Failover Status	Failover state of Server: <ul style="list-style-type: none"> Green - failover state is IS (In service) Red - failover state is OOS (Out of service)
Role*	Role of the server in subsystem - ActiveMaster/StandbyMaster/Slave
Location*	Location of the server in the frame.
Monitoring Group*	Name of the link group assigned to this server or N/A when no group is assigned
Assignment*	The number of links monitored by the server.
Heart Beat (HB) Time	The time stamp (date and time as default) of the last heart beat ping. Status of Heart Beat Time is calculated as follows: <ul style="list-style-type: none"> Green - heart beat time is less than 1 min old Yellow - heart beat time is more than 1 and less than 2 minutes old Red - last update time is more than 2 minutes old
CPU Usage (%)	Percentage of CPU being used currently
In Throughput (kbps)	Input throughput in kilobits per second
Out Throughput (kbps)	Output throughput in kilobits per second
PDU Out Speed (#/s)	Number of PDUs (MSUs) transmitted from xMF per second. It can be average value from last n seconds, depends on xMF setting
PDU In Speed (#/s)	Average speed of MSU input per second. It can be average value from last n seconds, depends of xMF setting

Parameter	Description
Inet Sync + Inet Sync status icon	<p>The actual state of the InetSync connections of this server to other servers in subsystem and A-node. (The working states are Active/StandBy, other states show the connection has some problem - Down, DownListening, DownConnecting, DownRejected, DownHandshake, Connected, ConnectedReinit, ConnectedIncompat, RegisterSent, RegisterAked, Inhibited, AuditWait, AuditQueue, Audit, ActiveBehind, ActiveSwitch, ActivePostAudit)</p> <p>Status of the InetSync is calculated as follows:</p> <ul style="list-style-type: none"> • Green - InetSync connections with other servers in subsystem and A-node are operable (Active or StandBy) • Red - InetSync connection to at least one server in subsystem or A-node is not operable (state is other than Active or StandBy)
Inet Merge + Inet Merge status icon	<p>The actual state of the InetMerge connection from A-node (The working state is Active, other states says the connection has some problem - Down, DownListening, DownConnecting, DownRejected, DownHandshake, Connected, ConnectedReinit, ConnectedIncompat, RegisterSent, RegisterAked, Inhibited, AuditWait, AuditQueue, Audit, ActiveBehind, ActiveSwitch, ActivePostAudit)</p> <p>Status of the InetMerge is calculated as follows:</p> <ul style="list-style-type: none"> • Green - InetMerge status from A-node is Active or StandBy • Red - InetMerge status from A-node is other than Active or StandBy
Last Update Time + Last Update Time status icon	<p>Date and time (as default) of last update of server counts in database.</p> <p>Status of Last Update Time is calculated as follows:</p> <ul style="list-style-type: none"> • Green - last update time is less than or equal to 2 min • Yellow - last update time is greater than 2 min

* denotes that these parameters are viewed only at the subsystem level.

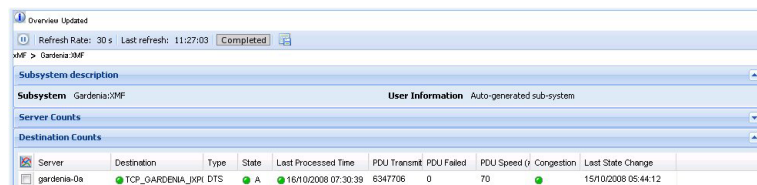


Figure 81: xMF Destination Counts

Table 26: xMF Destinations Parameter Descriptions

Parameter	Description
Server name*	Name of destination xMF server
Destination name + Destination status	Name of the destination. Status of the destination is calculated as follows: <ul style="list-style-type: none"> • Green - link has Green A status and no congestion and Last Processed Time status is green • Yellow - link has Green A status and it is in congestion or Last Processed Time status is yellow • Red - link has other status than green A or Last Processed Time status is red
Destination Type	Type of the destination. Either DST or MFP
Destination State	Link State value of destination: <ul style="list-style-type: none"> • Green - A (in service) • Red - OS (out of service)
Last Processed Time + Last Processed Time status	Time of Last Processed PDU (MSU) of the destination. Date and time (as default) of Last Processed Time is calculated as follows: <ul style="list-style-type: none"> • Green - last sync time is less or equal to 2 min old • Yellow - last sync time is more than 2 minutes old <p>NOTE - If no PDU is transmitted currently (PDU Speed = 0), then the Last Processed Time status will be Green</p>
PDU Transmitted	Number of PDUs (MSUs) transmitted from the xMF server to the destination
PDU Failed	Number of failed PDU (MSU) transmissions from the xMF server to the destination
PDU Speed (#/s)	Number of PDUs (MSUs) transmitted from xMF per second It can be average value from last n seconds, depends on xMF setting.
Congestion + Congestion status icon	Connection congested status - YES or NO Status of Congestion is calculated as follows: <ul style="list-style-type: none"> • Green - congestion is NO • Red - congestion is YES

Parameter	Description
Last State Change	Data and time (as default) of last change of Link State

* denotes that these parameters are viewed only at the subsystem level.

SigTran Filter Counters

Table 27: Sigtran Filter Counter Descriptions

Counter	Description
Server Name	The name of the server that houses the sigtran process
Last Update and Status	Data and time of the last update. Status of server is calculated as follows: <ul style="list-style-type: none"> • Green - difference between last update time and current time is less or equal to 2 minutes • Yellow - difference between last update time and current time is greater than 2 minutes.
Current reassembly failure	Total number of chunk reassembly failures
IP reassembly failure	Total number of IP reassembly failures
IP fragmented packet	Total number of IP fragmented packets

Viewing Specific xMF Servers in an xMF Subsystem

By either selecting the server from the *xMF Overview* screen, or selecting the server from the object tree, you open the *xMF Server Overview* screens.

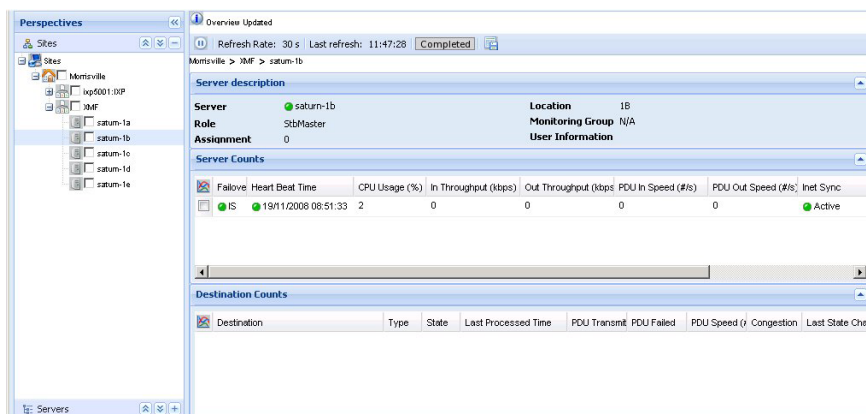


Figure 82: Xmf Server Counts Screen

The information is the same as that provided at the xMF subsystem level except that it is for the specific server selected.

Server level PMF specific parameters

Described are the PMF specific parameter tables, Level 1 counts and IP counts.

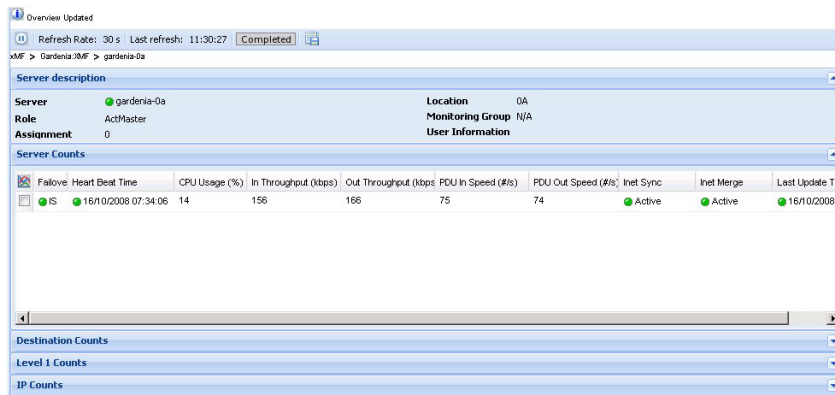


Figure 83: Xmf Server Counts Screen - Pmf Shown

Level 1 counts (PMF)

The level 1 counts are for PMF only shown in the figure.

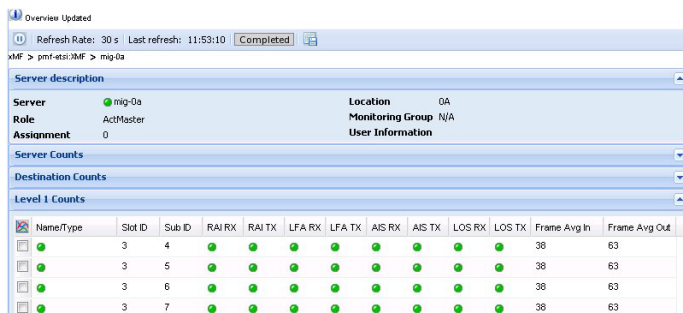


Figure 84: Pmf Level 1 Counts Overview Table

Table 28: Xmf Level 1 Counts Overview Table Pmf Only

Field	Description
Name/Type + status icon	Identification of Level 1 interface (name and type) Status of the interface is calculated as follows: <ul style="list-style-type: none"> Green - no alarm occurred Red - at least one alarm occurred
Slot ID	Slot identification number
Sub ID	Span identification number

Field	Description
RAI RX	Current state of the "Remote Alarm Identification" alarm for RX direction. Red- alarm is raised Green no alarm
RAI TX	Current state of the "Remote Alarm Identification" alarm for TX direction Red- alarm is raised Green no alarm
LFA RX	Current state of the "Loss of Frame Alignment (or LOF)" alarm for RX direction Red- alarm is raised Green no alarm
LFA TX	Current state of the "Loss of Frame Alignment (or LOF)" alarm for TX direction Red- alarm is raised Green no alarm
AIS RX	Current state of the "Alarm identification Signal" alarm for RX direction Red- alarm is raised Green no alarm
AIS TX	Current state of the "Alarm identification Signal" alarm for TX direction Red- alarm is raised Green no alarm
LOS RX	Current state of the "Loss of Signal" alarm for RX direction Red- alarm is raised Green no alarm
LOS TX	Current state of the "Loss of Signal" alarm for TX direction Red- alarm is raised Green no alarm

Field	Description
Frame Avg In	Input average frame rate (messages per second)
Frame Avg Out	Output average frame rate (messages per second)

IP counts

The IP counts table is available only in PMF.

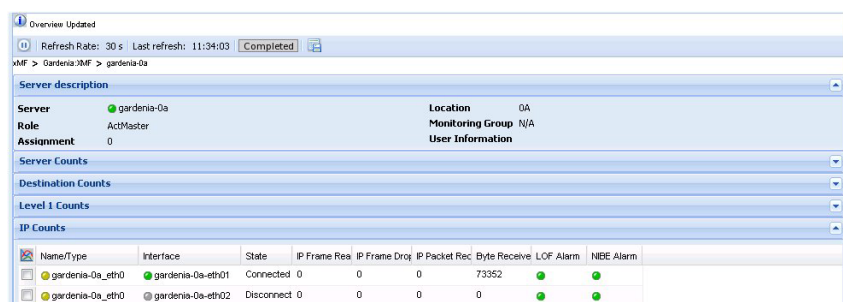


Figure 85: Pmf IP Counts Overview Table

Table 29: Xmf IP Counts Overview Table -Pmf Only

Field	Description
Name/Type + IP card status icon	Identification of IP card (name and type) Status of the card is calculated as follows: <ul style="list-style-type: none"> • Green - all card interfaces have Green status • Yellow - at least one, but not all, interface has Red or Gray status • Red - all interfaces have Red status • Gray - all interfaces have Gray status
Interface + interface status icon	Identification of card interface (name and type) Status of the card interface is calculated as follows: <ul style="list-style-type: none"> • Green - none alarm occurred • Red - at least one alarm occurred • Gray - state is "cable disconnected on the receiving side"
State	State of receiving side - cable connected or disconnected
IP Frame Read OK	Number of IP datagrams read without error
IP Frame Dropped	Number of IP datagrams dropped

Field	Description
IP Packet Received	Total number of input datagrams received from interfaces, including those received in error
Byte Received	Total number of bytes received
LOF Alarm	Current state of the "Ethernet - Loss of Frame" alarm Red- alarm is raised Green no alarm
NIBE Alarm	Current state of the "Ethernet - Network Interface Board Error" alarm Red- alarm is raised Green no alarm
MTU	Maximum Transmission Unit of the network interface.
Speed	Speed of the network interface connection MTU in Mbits/s

The xMF Subsystem and Server Right-click Menu

The xMF subsystem selection monitors the PMF. The hierarchy for xMF right click options is the following:

General xMF monitoring right-click menu options

- Refresh - refreshes the screen to reflect any changes that have occurred
- Multiple Subsystems Overview - if multiple xMF (PMF) subsystems are selected, this right-click option is operational
- Multiple Servers Overview - if multiple xMF (PMF) servers are selected, this right-click option is operational

PMF subsystem right-click menu options

- Refresh - refreshes the screen to show any changes that have occurred
- Destinations - enables the monitoring of the destination counts within the PMF subsystem
- Level 1 - enables the monitoring of level 1 counts within the PMF subsystem
- IP devices - enables the monitoring of the IP devices within that subsystem
- Hardware Counters - enables the monitoring of the server, ethernet and disk parameters on all the servers in the subsystem
- Traffic Classification Counters - enables the monitoring of the counts for traffic classifications within a PMF subsystem
- PMIA Filter Counters - enables the monitoring of the counts for PMIA within a PMF subsystem
- Sigtran Filter Counters - enables the monitoring of the sigtran filters within a PMF subsystem
- Multi-Processor NIC Counters - enables the monitoring of Tiler cards within a PMF subsystem

- Reset Input Counts (subsystem only)
- Reset Destinations Counts (subsystem only)
- Reset Level 1 Counts (subsystem only)
- Reset IP Counts (subsystem only)

PMF server right-click menu options

- xMF Servers -enables the monitoring of the PMF servers selected
- Destinations - enables the monitoring of the destination counts within the PMF server(s) selected
- Level 1 - enables the monitoring of level 1 counts within the PMF server(s)
- IP Devices - enables the monitoring of the IP devices for the server(s) selected
- Hardware Counters - enables of the hardware counts within the PMF server(s) selected
- Traffic Classification Counters - enables the monitoring of the counts for traffic classifications within the PMF server(s) selected
- PMIA Filter Counters - enables the monitoring of the counts for PMIA within the PMF server(s) selected
- Multi-Processor NIC Counters - enables the monitoring of Tiler cards within the PMF server(s) selected

PMF Right-click Menu

The PMF right-click menu opens specific parameters in tabular form.

xMF Server Counts

Table 30: xMF Server Counts Description

Parameters	Description
Name	Name of xMF server
Memory Free (KB)	Number of kilobytes of free memory
CPU Usage (%)	Percentage of CPU being used
Disk Usage (%)	Percentage of disk space being used
PDU Transmitted (#)	Number of PDUs (MSUs) transmitted from the xMF server to destinations (e.g. ICP, I)
PDU Failed (#)	Number of failed PDU (MSU) transmissions from the xMF server to destinations (e.g.
PDU Speed (#/s)	Number of PDUs (MSUs) transmitted from xMF per second. (It can be average value
In Throughput (Kbps)	Input throughput in kilobits per second
Out Throughput (Kbps)	Output throughput in kilobits per second

Parameters	Description
PDU IN Received (#)	Number of received PDUs (MSUs)
PDU IN Rejected (#)	Number of rejected PDUs (MSUs)
PDU IN Speed (#)	Average speed of PDU (MSU) input. (It can be average value from last n seconds, depends on setting)
Last Update Time	Last time the record was updated

Destination Counts

Table 31: xMF Destination Count Descriptions

Parameter	Description
Server	Name of xMF server (only filled in on)
Destination	Name of the destination (only filled in on destination row)
State	<p>Server row shows the following states:</p> <ul style="list-style-type: none"> • green A if all destinations have green A • yellow A if at least one but not all destinations have other status than green A • red OS if none destination has green A <p>Destination row where the state value of the destination is either:</p> <ul style="list-style-type: none"> • green - A - Destination is In Service • red - OS - Destination is Out of Service
PDU Transmitted	<p>Destination row - Number of PDUs (MSUs) transmitted from the xMF server to the destination</p> <p>Server row - Sum of PDU Transmitted values of destination rows on this server</p>
PDU Failed	<p>Destination row - Number of failed PDU (MSU) transmissions from the xMF server to the destination</p> <p>Server row - Sum of PDU Failed values of destination rows on this server</p>
PDU Speed (#/s)	<p>Destination row - Number of PDUs (MSUs) transmitted from xMF server per second (depends of xMF setting.)</p> <p>Server row - Sum of PDU Speed values of destination rows on this server</p>
Congestion	<p>Connection congested status - YES or NO</p> <p>Status of Congestion is calculated as follows:</p> <ul style="list-style-type: none"> • Green - congestion is NO

Parameter	Description
	<ul style="list-style-type: none"> Red - congestion is YES
Last State Change	Destination row - Data and time of last change of Link State Server row - N/A

Level 1 Counts

Table 32: xMF Level 1 PMF Descriptions

Parameter	Description
Name/Type + status	Identification of Level 1 interface (name and type) Status of the interface is calculated as follows: <ul style="list-style-type: none"> Green - no alarm occurred Red - at least one alarm occurred
Slot ID	Slot identification number
Sub ID	Interface row - Span identification number Server row - N/A
RAI RX	Current state of the "Remote Alarm Identification" alarm for RX direction; Red m
RAI RX State	Interface row - Current state of the "Remote alarm identification" alarm for RX di Server row - Number of currently raised alarms on interfaces on this server
RAI TX	Current state of the "Remote Alarm Identification" alarm for TX direction
RAI TX State	Interface row - Current state of the "Remote alarm identification" alarm for TX di Server row - Number of currently raised alarms on interfaces on this server <ul style="list-style-type: none"> Red - alarm is raised Green - other condition
LFA RX	Current state of the "Loss of Frame Alignment (or LOF)" alarm for RX direction <ul style="list-style-type: none"> Red- alarm is raised Green - no alarm
LFA RX State	Interface row - Current state of the "Loss of Frame Alignment (or LOF)" alarm fo

Parameter	Description
	Server row - Number of currently raised alarms on interfaces on this server
LFA TX	Current state of the "Loss of Frame Alignment (or LOF)" alarm for TX direction <ul style="list-style-type: none"> • Red- alarm is raised • Green no alarm
LFA TX State	Interface row - Current state of the "Loss of Frame Alignment (or LOF)" alarm for TX direction Server row - Number of currently raised alarms on interfaces on this server
AIS RX	Current state of the "Alarm identification Signal" alarm for RX direction Red- alarm is raised Green no alarm
AIS RX State	Interface row - Current state of the "Alarm identification Signal" alarm for RX direction Server row - Number of currently raised alarms on interfaces on this server
AIS TX	Current state of the "Alarm identification Signal" alarm for TX direction Red- alarm is raised Green no alarm
AIX TX State	Interface row - Current state of the "Alarm identification Signal" alarm for TX direction Server row - Number of currently raised alarms on interfaces on this server
LOS RX	Current state of the "Loss of Signal" alarm for RX direction Red- alarm is raised Green no alarm
LOS RX State	Interface row - Current state of the "Loss of Signal" alarm for RX direction Server row - Number of currently raised alarms on interfaces on this server
LOS TX	Current state of the "Loss of Signal" alarm for TX direction Red- alarm is raised Green no alarm
LOS TX State	Interface row - Current state of the "Loss of Signal" alarm for TX direction Server row - Number of currently raised alarms on interfaces on this server

Parameter	Description
CRCi	Interface row - Input CRC error rate (CRC = Cyclic Redundancy Check) Server row - Sum of interface values on this server
CRCo	Interface row - Output CRC error rate (CRC = Cyclic Redundancy Check) Server row - Sum of interface values on this server
BERi	Interface row - Input bit error rate (errors per second) Server row - Sum of interface values on this server
BERo	Interface row - Output bit error rate (errors per second) Server row - Sum of interface values on this server
resetTime	Interface row - Last time the level1 stat were reset Server row - empty
Frame RX	Interface row - Total frames received Server row - Sum of interface values on this server
Frame TX	Interface row - Total frames transmitted Server row - Sum of interface values on this server
Frame Avg Speed RX	Interface row - Input average frame rate (messages per second) Server row - Sum of interface values on this server
Fram Avg Speed TX	Interface row - Output average frame rate (messages per second) Server row - Sum of interface values on this server

IP Device Counts

Selecting the IP Device counts menu option opens the IP Device table.

Table 33: xMF IP Device Monitoring Parameters

Parameter	Description
Name	Interface row - Identification of IP device's interface Device row - Identification of IP device Server row - Name of the xMF server

Parameter	Description
State	Interface row - State of receiving side - cable connected or disconnected Device row - connected if all interfaces are connected, disconnected if all interfaces are disconnected Server row - connected if all interfaces are connected, disconnected if all interfaces are disconnected
IP Frame Read OK	Interface row - The number of IP datagrams read without error Device row - sum of interface values on this device Server row - sum of interface values on this device
IP Frame Dropped	Interface row - Number of IP datagrams dropped Device row - sum of interface values on this device Server row - sum of interface values on this server
IP Packet Received	Interface row - Total number of input datagrams received from interfaces, including errors Device row - sum of interface values on this device Server row - sum of interface values on this server
Byte Received	Interface row - The total number of bytes received Device row - sum of interface values on this device Server row - sum of interface values on this server
Error on Device	Interface row - Indicates an error was encountered with a device Device row - sum of interface values on this device Server row - sum of interface values on this server
Dropped by Device	Interface row - Number of IP packets dropped by the IP device Device row - sum of interface values on this device Server row - sum of interface values on this server
FIFO Error on Device	Interface row - Number of FIFO buffer errors on device Device row - sum of interface values on this device Server row - sum of interface values on this server
Frame Error on Device	Interface row - Number of packet framing errors Device row - sum of interface values on this device Server row - sum of interface values on this server

Parameter	Description
LOF Alarm State	Interface row - State of "Ethernet - Loss of Frame" alarm - activated, deactivate Device row - Number of currently raised alarms on interfaces on this device Server row - Number of currently raised alarms on interfaces on this server

Hardware Counts

Table 34: xMF Hardware Count Descriptions

Parameter	Description
Server Parameters	For more information, see Hardware Counters
Ethernet Parameters	For more information, see Hardware Counters
Disk Parameters	For more information, see Hardware Counters

Traffic Classification Counters

Table 35: Traffic Classification Counter Descriptions

Counter	Description
Server Name	Name of the PMF server that is running the traffic classifications
TC Name	Name of the traffic classification
Total Bytes (IDB)	Number of bytes received inside IDB
Total Bytes (PMIA)	Number of bytes received in PMIA socket
Total Packets (IDB)	Number of packets received inside IDB
Total Packets (PMIA)	Number of packets received in PMIA socket
Occupancy Rate (%)	Occupancy rate in percentage
Lost Bytes	Number of bytes lost in PMIA socket
Lost Packets	Number of packets lost in PMIA socket

PMIA Filter Counters

Table 36: PMIA Filter Counter Descriptions

Counter	Description
Server Name	PMF server name that has the PMIA

Counter	Description
Filter ID	Identifier of the PMIA filter line
Filter Name	Label that identifies the PMIA filter line
Total Bytes	Number of bytes received by the interface that match the PMIA filter line
Total Packets	Number of packets received by the interface that match the PMIA filter line

SigTran Filter Counters

Table 37: SigTran Filter Counter Descriptions

Counter	Description
Server Name	The name of the server that houses the sigtran process
Last Update and Status	Data and time of the last update. Status of server is calculated as follows: <ul style="list-style-type: none"> • Green difference between last update time and current time is less or equal to 2 minutes • Yellow - difference between last update time and current time is greater than 2 minutes
Chunk reassembly failure	Total number of chunk reassembly failures
IP reassembly failure	Total number of IP reassembly failures
IP fragmented packet	Total number of IP fragmented packets

Multi-Processor NIC Counts

Table 38: Multi-Processor NIC Counter Descriptions

Counter	Description
Server Name	Name of xMF server (PMF)
Part	Part ID
Node ID	Provides ID for the Node the card on.
Node	Provides general Node ID
Chip Temperature	Tile Pro 64 Chip Temperature in Centigrade
Board Temperature	Board Temperature in Centigrade
Number of Filtering Tiles	Number of tiles allocated for PMIA filtering

Counter	Description
CPU Load Filtering	Global tile load in percentage (%) for PMIA filtering (depending on statistical lines used per packet and packet rate)
Number of PCI Transfer Tiles	Number of tiles allocated for packets/events encapsulation for PCI capture
CPU Load CPI Transfer	Global tile load in percentage (%) for PCI encapsulation
Additional Info	Provides additional information on board, process, tile, etc.

About Hardware Counters

The right-click Hardware counters option for xMF and IXP enables you to view the *Server Parameters* table, *Ethernet Parameters* table and the *Disk Parameters* table. The information provided in this screen is the same provided for both xMF and IXP subsystems and servers. Complete these steps to view the input streams on an IXP or xMF subsystem or server.

Note: The figures and tables shown here are of an IXP subsystem.

1. Select the **Site > IXP or xMF subsystem** you want to monitor.
2. Right-click on the **IXP or xMF subsystem** to open the pop-up menu.
3. Select **Hardware Counters**.

The *Hardware Counters* screen opens.

The screenshot shows a monitoring interface with three data tables. The top table is 'Server Parameters', the middle is 'Ethernet Parameters', and the bottom is 'Disk Parameters'. Each table has columns for various metrics like CPU usage, network interface statistics, and disk I/O.

Server/Subsystem	Period end	Type	CPU User	CPU System	Free Physical M	Total Physical M	Available Phys	Free Virtual Me	Total Virtual Me	Available Virtul
ixp5001-1atxp5001	31/12/1969 17:00	IXP	27.2	0.2	475404	16632432	0	6301208	8388600	0

Server/Subsystem	Interface name	Period end	IP address	Type	Octets received	Octets sent	Bandwidth	Queue
ixp5001-1atxp5001	eth01	20/10/2008 07:37	10.250.39.26	IXP	3910876	308038	140630	0
ixp5001-1atxp5001	eth02	20/10/2008 07:37	null	IXP	0	0	0	0
ixp5001-1atxp5001	lo	20/10/2008 07:37	127.0.0.1	IXP	74908	74908	4993	0

Server/Subsystem	Period end	Partition	Type	Disk I/O	Disk Reading	Octet Written	Octets Read	Average Queue
ixp5001-1atxp5001	20/10/2008 07:37	kleviciss/cDd1	IXP	8	0	533	0	0
ixp5001-1atxp5001	20/10/2008 07:37	kleviciss/cDd2	IXP	0	0	0	0	0
ixp5001-1atxp5001	20/10/2008 07:37	kleviciss/c1d6	IXP	23	2	0	0	0

Figure 86: Hardware Counters Screen (IXP Subsystem Shown)

From this screen you can view the descriptions of the parameters shown in the figures and tables.

Server Parameters Table

Server Parameters										
Server/Subsystem	Period end	Type	CPU User	CPU System	Free Physical M	Total Physical M	Available Physic	Free Virtual Me	Total Virtual Me	Available Virtua
ixp5001-1a/ixp5001	31/12/1969 17:00	IXP	27.2	0.2	475404	16632432	0	8301208	8398600	0

Figure 87: Server Parameters Table (IXP Subsystem Shown)

Table 39: Sever Parameters Descriptions

Parameter	Description
Server + Subsystem Name	Name of the server that the data flow process belong to as well as the subsystem name
Period end	Time stamp for data
Type	Type of application running on the server (PMF, IXP)
CPU Usage (%)	Time Percentage for CPU used by the application.
CPU System (%)	Percentage of CPU used by the operating system
Total Physical Memory	Total Physical RAM (MB)
Available Physical Memory	Available Physical RAM (MB)
Free Virtual Memory	Available Virtual Memory (MB)
Total Virtual Memory	Total Virtual Memory (MB)
Available Virtual Memory	Available Virtual Memory (MB) during use

Ethernet Parameters Table

Ethernet Parameters									
Server/Subsystem	Interface name	Period end	IP address	Type	Octets receive	Octets sent	Bandwidth	Queue	
ixp5001-1a/ixp5001	eth01	20/10/2008 07:37	10.250.39.26	IXP	3910876	308038	140630	0	
ixp5001-1a/ixp5001	eth02	20/10/2008 07:37	null	IXP	0	0	0	0	
ixp5001-1a/ixp5001	lo	20/10/2008 07:37	127.0.0.1	IXP	74908	74908	4993	0	

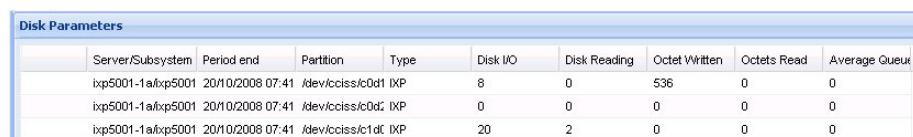
Figure 88: Ethernet Parameters Table (IXP Subsystem Shown)

Table 40: Ethernet Parameters Descriptions

Parameter	Description
Server + Subsystem Name	Name of the server that the data flow process belong to as well as the subsystem name
Interface Name	Name of the interface

Parameter	Description
Period end	Time stamp for minute per minute historical data
IP address	IP address of the host's network interface (or null)
Type	Type of application running on the server (PMF, IXP)
Octets received	Octet count received per second for each network interface
Octets sent	Octet count sent per second for each network interface
Bandwidth	Bandwidth used for each network interface
Queue	Queue size in packets for each interface. If the counter exceeds a value of 2 during a few minutes, the network interface is a bottleneck

Disk Parameters Table



Server/Subsystem	Period end	Partition	Type	Disk I/O	Disk Reading	Octet Written	Octets Read	Average Queue
ixp5001-1a/ixp5001	20/10/2008 07:41	/dev/cciss/c0d1	IXP	8	0	536	0	0
ixp5001-1a/ixp5001	20/10/2008 07:41	/dev/cciss/c0d2	IXP	0	0	0	0	0
ixp5001-1a/ixp5001	20/10/2008 07:41	/dev/cciss/c1d0	IXP	20	2	0	0	0

Figure 89: Disk Parameters Table (IXP Subsystem Shown)

Table 41: Disk Parameters Descriptions

Parameter	Description
Server + Subsystem Name	Name of the server that the data flow process belongs to as well as the subsystem name
Period end	Time stamp for data
Partition	Partition name
Type	Type of application running on the server (PMF, IXP)
Disk Writing	Writing operation count per second for each Hard Drive
Disk Reading	Reading operation count per second for each Hard Drive
Octet Written (KB/s)	Octets count written per second for each Hard Drive

Parameter	Description
Octets Read (KB/s)	Octets count read per second for each Hard Drive
Queue for Writing	Average number of writing events in queue for each Hard Drive
Queue for Reading	Average number of reading events in queue for each Hard Drive

About Reset Count Options for xMF Subsystems

Note: The reset options are available only to users with the role *NSPMonitorManager*.

Listed below are the four reset count options on the xMF right-click menu. When you select one of the options listed here. A prompt is displayed asking you to confirm the reset.

To reset counts, click **Yes**. The list below explains the different reset options.

Table 42: Reset Count Options

Reset count for server in selected xMF subsystem	Cumulative Counts*	Non-Cumulative
Reset Input Counts (xMF servers)	PDU IN Received* and PDU IN Rejected	PDU IN Speed
Reset Destination Counts (xMF servers)	PDU Transmitted and PDU Failed	PDU Speed
Reset Level 1 Counts (xMF-PMF)	RAI RX, RAI TX, AIS RX, AIS TX, LFA RX, LFA TX, LOS RX, LOS TX, Frame RX and Frame TX	Frame Average S TX
Reset IP Counts (xMF-PMF)	IP Frame Read OK and IP Frame Dropped	IP Packet Receive Dropped By Devi Error On Device

Note: This option also resets the Link State Counts. Link State Counts are displayed in the ProDiag application. See ProDiag User's Guide for more information.

* indicates cumulative counts. They begin from zero after resetting if conditions for their increment are reached.

** indicates current value and are not cumulative. Their value stays equal to zero after resetting only when data traffic is off, in other cases it will show current values again, so no reset is noticeable in this case.

Exporting Overview Tables in CSV Format

Diagnostic Utility's export function enables you to export zipped overview tables in csv format. Complete these steps to use the export function.

1. Select and open an **overview table** from the object tree.

The figure shown below shows a table with the export button highlighted.

Note: You can also export overview tables opened from the right-click menu.

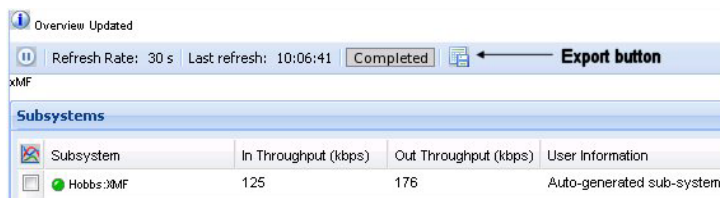


Figure 90: Export Button Highlighted In Overview Table

2. Click **export**.

The export screen opens shown below.

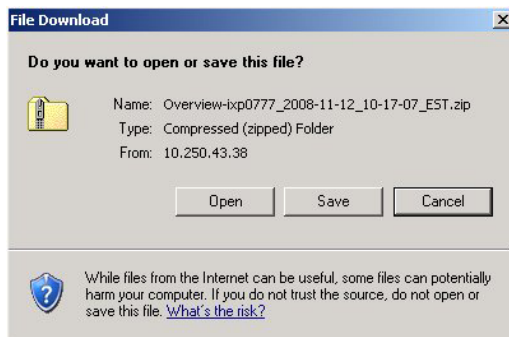


Figure 91: Export Screen

3. At this step, you can perform one of three options:
 - a) **Open** the file (see figure shown below) for inspection.
 - b) **Save** the file to the local drive.
 - c) **Cancel** the operation.

If you select **Open**, the *Browse* screen opens showing all the tables converted to csv format in a *zip* file shown in the figure below.

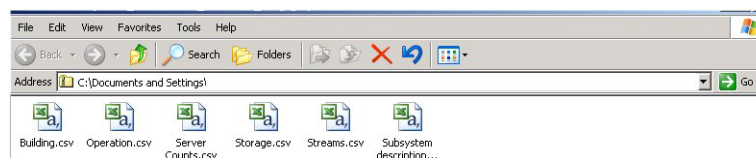


Figure 92: Zipped Table Files In CSV Format

Chapter 5

Charting Subsystems and Servers

Topics:

- *Charting operation in Diagnostic Utility.....106*
- *Charting Parameters.....108*
- *Changing Colors on Charts.....111*
- *Exporting a Chart as a PNG File.....113*

Dummy file

Charting operation in Diagnostic Utility

Diagnostic Utility provides a charting operation that enables you to view counts for selected items, (for example, subsystems, servers, destinations, dataflow processing, etc.) in chart format. You can view simple count charts where each chart displays the value of one count for several items. For each item the chart displays one chart line. You can launch one chart for several item counts simultaneously by using check boxes that are displayed by item names in the count tables. You can select up to eight items and up to four counts to be monitored.

The *Chart Monitoring* window is a full-screen window and can contain up to four charts.

The chart has an x-axis for time and y-axis for count values.

Lines for all items are switched on initially.

Charting variables for monitored Objects

Parameters charted for IXP servers

CPU Usage (%)

Memory Free (KB)

Parameters charted for IXP input streams

Bytes (total number of bytes transmitted)

Records (Total number of records transmitted)

Parameters charted for xDR build process

Received PDUs

Unknown PDU

Filtered PDU

Not Stored PDU

Received bytes

Generated xDRs

Valid xDRs

xDRs Not Transmitted

Generated bytes

Parameters charted for xDR store process

Received xDR/KPIs

Stored xDR/KPIs

Rejected records

Parameters charted for xDR operate process

Received xDR

xDRs enriched

Created KPI

Filtered xDRs

Parameters charted for xMF subsystems

In Throughput (kbps)

Out Throughput (kbps)

Parameters charted for xMF servers

CPU Usage (%)

In Throughput (kbps)

Out Throughput (kbps)

PDU In Speed (#/s)

PDU Out Speed (#/s)

PDU Transmitted (#)

PDU Failed (#)

PDU Received (#)

PDU Rejected (#)

Parameters charted for xMF destinations

PDU Transmitted

PDU Failed

PDU Speed (#/s)

Parameters charted for xMF Level 1 counts

Frame Average Speed In (#/s)

Frame Average Speed Out (#/s)

Frame RX (#)

Frame TX (#)

Alarm occurrences for RAI, LFA, AIS, LOS for RX and TX

Parameters charted for xMF IP stats

IP Frame Read OK

IP Frame Dropped

IP Packet Received

Byte Received

Dropped by Device - Number of IP packets dropped by the IP device

FIFO Error On Device - Number of FIFO buffer errors on device

Frame Error On Device - Number of packet framing errors

Using the Chart Monitoring Toolbar

The chart monitoring window has the following controls in its toolbar:

Pause/resume

Refresh rate

Time range

Export as PNG file

Change Color

Completed

These controls enable you to customize the charting capabilities for the object you are monitoring.

Charting Parameters

Complete these steps to chart parameters at either the subsystem or server level.

From either the *Site* or *Servers* perspective.

1. Select the **item(s)** from the *Overview* screen to be charted.

(In the first two figures shown below the same server is selected from both the *Sites* and the *Servers* perspective. The third figure shows multiple items selected from an xMF server.)

Note: You can select up to eight items to monitor.

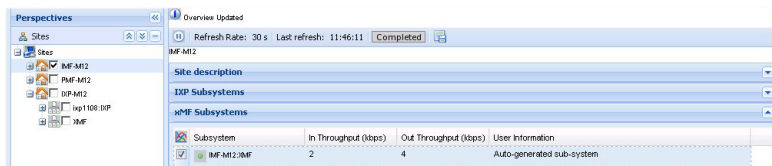


Figure 93: Selected Subsystem from Site Perspective

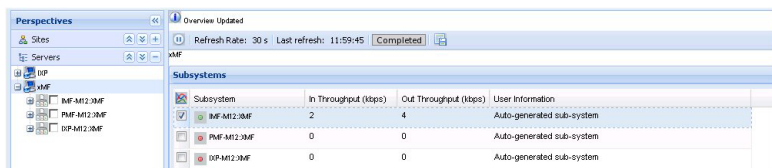


Figure 94: Selected Subsystem from Server Perspective

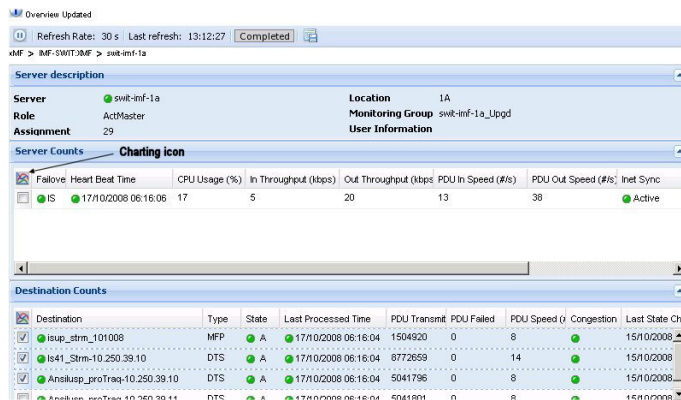


Figure 95: Selected Destinations from An xMF Server Overview Screen

- Click on the **chart** icon (highlighted in figure above).

The *Counts* pop-up screen opens shown below.

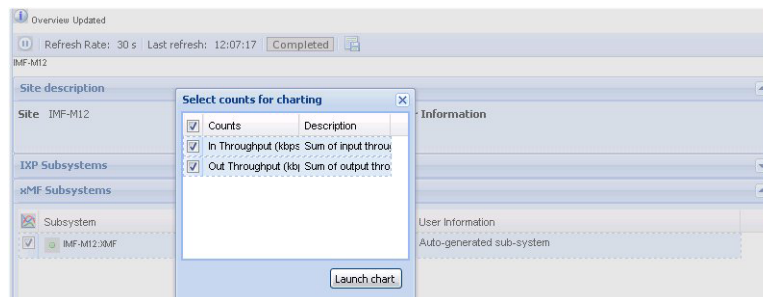


Figure 96: Counts Selection Screen (From Sites Perspective)

- Select the **counts** to be charted.
(You can select up to four counts.)
Note: To select all of the counts, select the *counts* column heading.
- Click **Launch chart**.

The chart opens shown in the figure below.

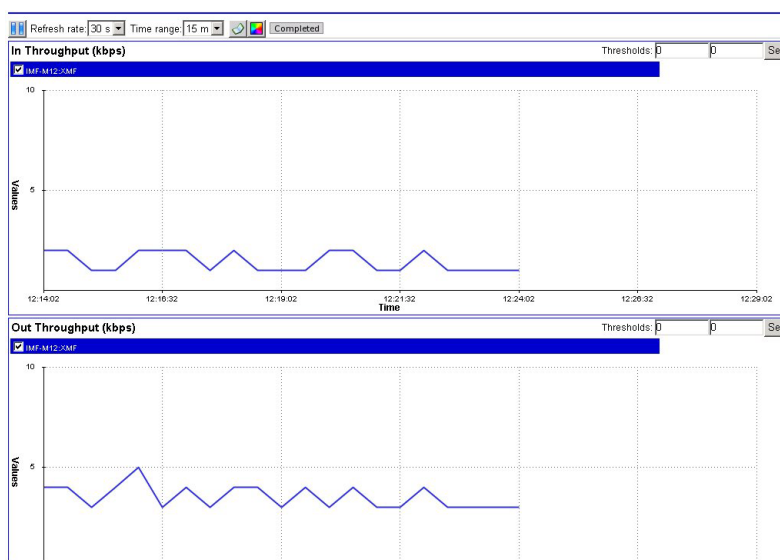


Figure 97: Counts Selection Screen

Table 43: Subsystem Counts Screen

Field/Element	Description
Pause Button	Pauses the monitoring process.
Refresh Rate	Provides the interval when the screen is refreshed.
Time Range	Shown in the x-axis and provides the length of time previous to the current time for and can run for more than the previous 24-hours.
Export to PNG File Button	Enables you to export the chart in PNG file format.
Change Colors to Chart Button	Enables you to choose the colors for each chart line being monitored.
Show line selection	A check box located at the top left corner of the graph enables you to show or not show a graph line.
Thresholds	Provides a visual aid for during the monitoring. The threshold appears as a red line. Threshold = 0 removes the threshold marker.
Set Button	Sets the threshold level which appears in the screen as a red line.
Graph Interface	Values (Y axis) - shows the values (amounts) of counts.

Field/Element	Description
	Time (X axis) - shows the time range for that chart (using the time zone setting from the preferences operation. See <i>NSP Platform Guide</i> for information on setting time preferences).

To close the chart window, click x at the top right-hand corner of the window and then click **OK**.

Setting a Threshold on a Chart

The threshold operation enables you to have a visual aid for the chart process. You can set an x-axis, y-axis or both when setting thresholds levels.

Complete these steps to create a threshold.

1. Enter an **integer** in either the x-axis and y-axis or both.

Note: Number maximum length is 10 digits (for example 1000000000). Therefore the range for a threshold is: 0 - 9999999999.

2. Click **Set**.

The thresholds are set. The figure below shows three x-axis thresholds that are set.

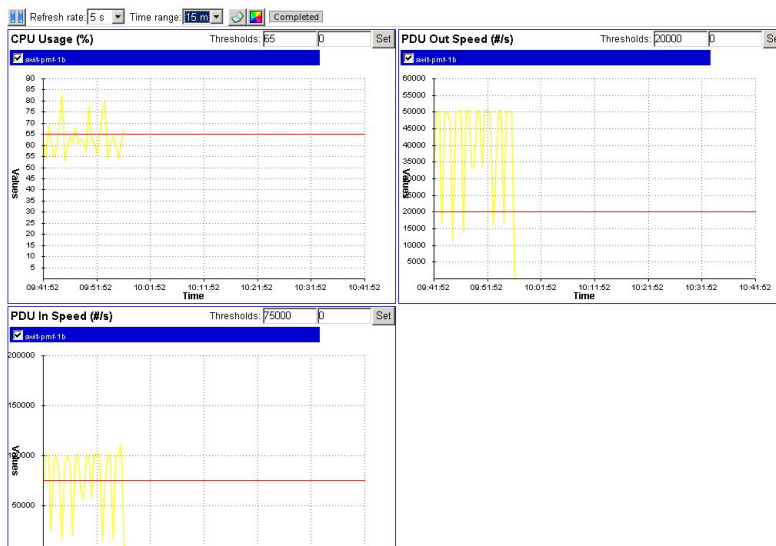


Figure 98: Thresholds Set

Changing Colors on Charts

Diagnostic Utility enables you to change the colors on the counters and their graph lines. Complete these steps to change colors on a chart.

1. Open the appropriate chart.

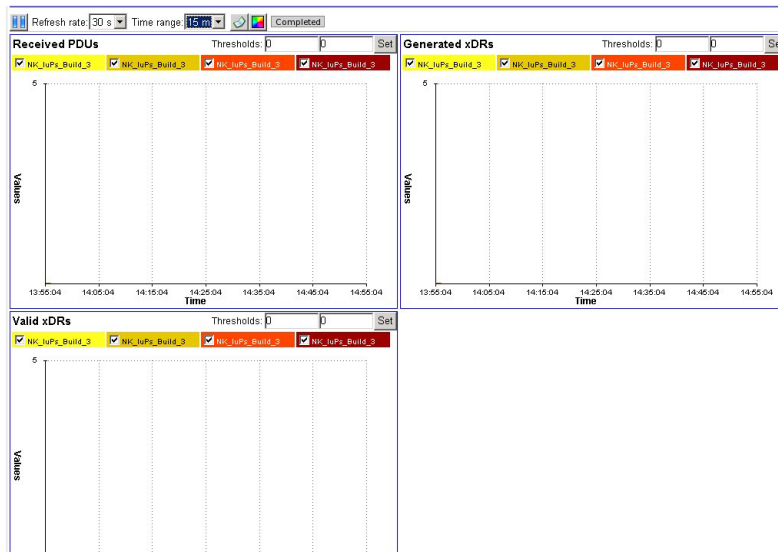


Figure 99: Selected Counters Chart

2. Click **Change colors on the chart** on the toolbar.

The *Color Settings* pop-up opens shown in the figure below.

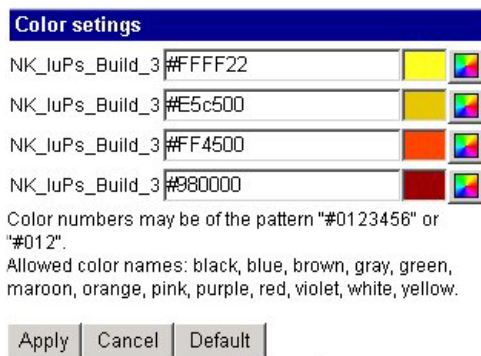


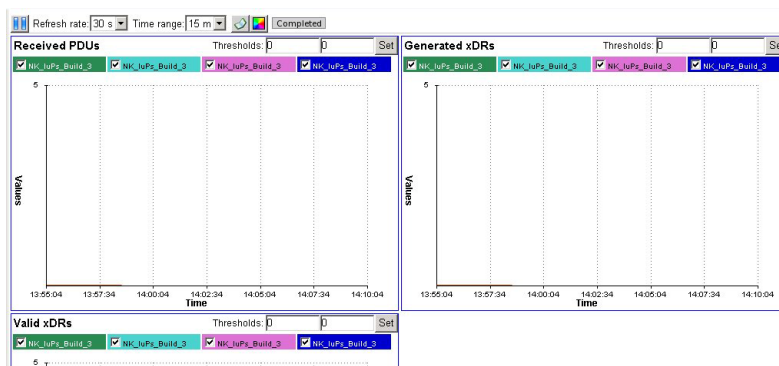
Figure 100: Color Settings Pop-Up

3. Click on the **palette** of each counter you want to change in the field.

Note: You can also type in the color code, such as #FFF22, in the field or type in one of the colors shown in the pop-up.

4. Select the **color** for the counter.
5. Click **Apply**.

The counter header and line is changed shown in the figure below.



Note: To change back to defaults, open the Color Settings pop-up and click *Default*. The default colors are restored.

Figure 101: Color Settings Completed

Exporting a Chart as a PNG File

Diagnostic Utility enables you to export the chart as a *png file* that can be viewed in a graphic editor program such as *Microsoft Office Picture Manager*.

Complete these steps to export a chart.

1. Open the **chart** that you want to export.
2. Click **Export as PNG file** on the toolbar.

The *File Download* dialog is displayed.

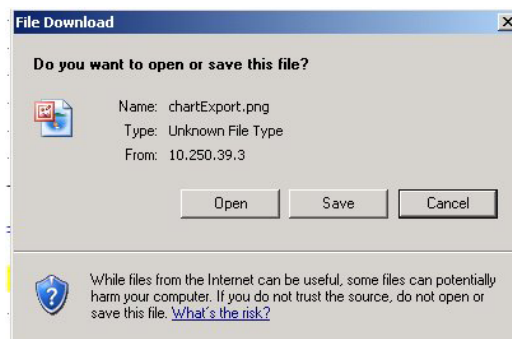


Figure 102: File Download Dialogue Box

3. You can open, save or cancel the export process.
 - a) To open the file, click **Open**.

The file opens shown below.

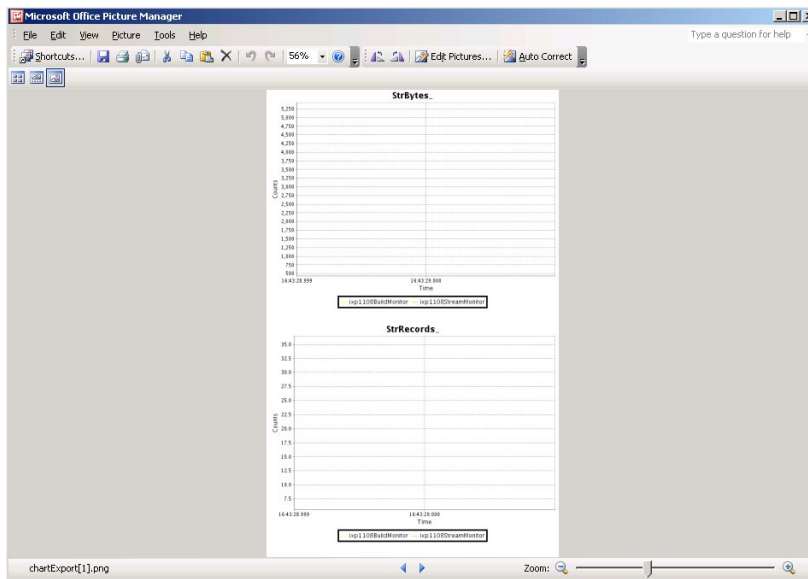


Figure 103: Open/Save Prompt For Png File Export

- b) To save a file, click **Save** and select the directory path to store the file.

Chapter 6

Resetting PMIA and Traffic Classification Counters

Topics:

- [Resetting PMIA Counters.....116](#)
- [Resetting Traffic Classification Counters.....116](#)

Resetting PMIA Counters

This option supports PMIA means Pattern Matching IP Algorithms (PMIA) configuration for PMF.

For monitoring IP traffic, CCM provides a traffic classification for each xMF (PMF) server. Each PMF server can be run in two modes either normal mode or expert mode.

In normal mode, you define IP Filters using CCM and optionally can apply on traffic classification.

In expert mode, you browse the file which can be interpreted by PMF server. While server running in expert mode, all predefined IP filters will be disabled for this server.

The counters for PMIA can be reset by logging into the PMF server and launching the `resetLink` command. Complete these steps to reset PMIA counters.

1. Login as `cfguser` on each PMF server for either standalone or frame setup.

Note: Use the `linkDisp -scommand` to display in command line.

2. Enter the `cfgPmia resetCounters` command.
3. Click **Enter** to launch the command.

Resetting Traffic Classification Counters

DIH can filter IP traffic the following protocols.

- TCP
- UDP
- ICMP
- SCTP
- RTP
- FTP
- SFTP

The counters for Traffic Classifications can be reset by logging into the PMF server and launching the `resetLink` command. Complete these steps to reset traffic classifications counters.

1. Login as **cfguser** on each PMF server, if it is a standalone setup, or on the Primary Server for a frame setup.

Note: Use the `linkDisp -scommand` to display in command line.

2. Enter the `resetLink` command.
3. Click **Enter** to launch the command.

Chapter 7

Utilizing DIH Host Features

Topics:

- *Monitoring the DIH Hosts Server.....118*
- *DIH Hosts Server Right-click Menu.....118*

Monitoring the DIH Hosts Server

The root of the tree is called DIH Host View.

Note: DIH Host View perspective only functions when the system is set to Diameter mode. See Centralized Configuration Manager Administration online help to DIH "Setting the System to Diameter Mode" for more information.

Under the root, the tree node for the DIH Hosts (Diameter Intelligence Hub (DIH)) server is shown.

Note: Only one DIH Host can be shown.

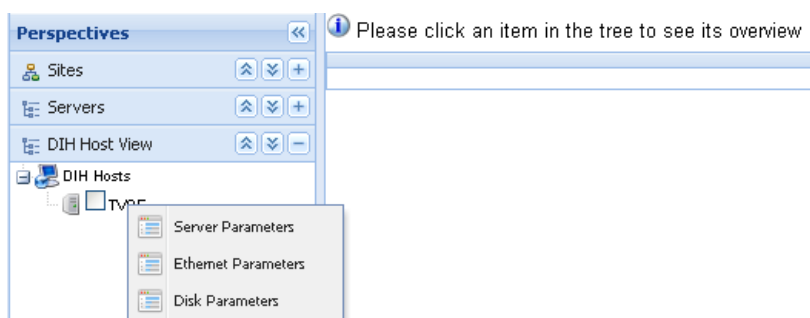


Figure 104: DIH Host View Perspective

Clicking on the server shows the hardware parameters for the server in table format shown in the figure.

The screenshot shows the 'Server Parameters' table with the following data:

Period end	CPU user	CPU system	Total Physical Memory	Free Physical Memory	Available Physical Memory	Total Virtual Memory	Free Virtual Memory	Available Virtual
08/13/2012 11:31:37	46	20	64418	34846	54 093275	70562	40990	58 09076

The screenshot also shows the 'Ethernet Parameters' table with the following data:

Interface name	Period end	IP address	Octets received	Octets sent	Bandwidth	Queue
lo	08/13/2012 11:31:37		313	313	0	0
eth01	08/13/2012 11:31:37	44 1E A1 52 8...	487	240	0	0
eth02	08/13/2012 11:31:37	44 1E A1 52 8...	9	0	0	0
eth21	08/13/2012 11:31:37	00 25 B3 B2 9...	0	0	0	0
eth22	08/13/2012 11:31:37	00 25 B3 B2 9...	0	0	0	0
eth23	08/13/2012 11:31:37	00 25 B3 B2 9...	0	0	0	0
eth24	08/13/2012 11:31:37	00 25 B3 B2 9...	0	0	0	0

The screenshot also shows the 'Disk Parameters' table with the following data:

Period end	Partition	Disk I/O	Disk Reading	Octet Written	Octets Read
08/13/2012 11:31:37	ram0	0	0	0	0
08/13/2012 11:31:37	ram1	0	0	0	0
08/13/2012 11:31:37	ram2	0	0	0	0

Figure 105: DIH Hosts Server Parameters Table

DIH Hosts Server Right-click Menu

The right-click menu on the DIH Hosts server has three hardware parameter options.

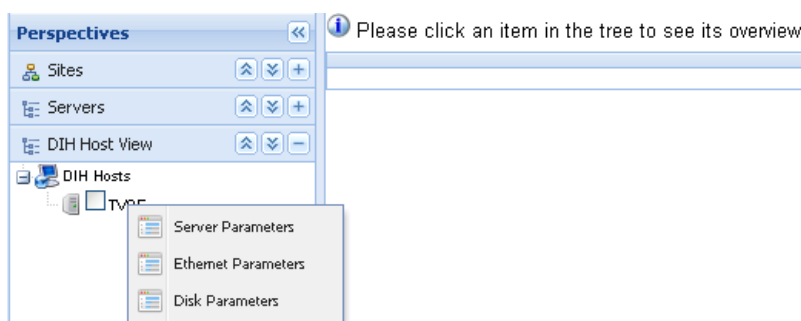


Figure 106: DIH Hosts Server Hardware Parameter Options

The three options are:

- Server Parameters
- Ethernet Parameters
- Disk Parameters

Clicking on the selected parameter opens a new window showing the list of parameters in tabular format. The specific parameters are listed in these three tables.

Table 44: Sever Parameters Descriptions

Parameter	Description
Period end	Time stamp for data
CPU Usage (%)	Time Percentage for CPU used by the application.
CPU System (%)	Percentage of CPU used by the operating system
Total Physical Memory	Total Physical RAM (MB)
Available Physical Memory	Available Physical RAM (MB)
Total Virtual Memory	Total Virtual Memory (MB)
Free Virtual Memory	Available Virtual Memory (MB)
Available Virtual Memory	Available Virtual Memory (MB) during use

Table 45: Ethernet Parameters Descriptions

Parameter	Description
Interface Name	Name of the interface

Parameter	Description
Period end	Time stamp for minute per minute historical data
IP address	IP address of the host's network interface (or null)
Octets received	Octet count received per second for each network interface
Octets sent	Octet count sent per second for each network interface
Bandwidth	Bandwidth used for each network interface
Queue	Queue size in packets for each interface. If the counter exceeds a value of 2 during a few minutes, the network interface is a bottleneck

Table 46: Disk Parameters Descriptions

Parameter	Description
Server + Subsystem Name	Name of the server that the data flow process belongs to as well as the subsystem name
Period end	Time stamp for data
Partition	Partition name
Type	Type of application running on the server (PMF, IXP)
Disk Writing	Writing operation count per second for each Hard Drive
Disk Reading	Reading operation count per second for each Hard Drive
Octet Written (KB/s)	Octets count written per second for each Hard Drive
Octets Read (KB/s)	Octets count read per second for each Hard Drive
Queue for Writing	Average number of writing events in queue for each Hard Drive
Queue for Reading	Average number of reading events in queue for each Hard Drive