

**Oracle® Communications
Performance Intelligence Center**

SigTran ProDiag User Guide

Release 9.0

February 2014

Copyright © 2003, 2014, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License (December 2007). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

Table of Contents

SigTran ProDiag User Guide	<i>Error! Bookmark not defined.</i>
Table of Contents	3
List of Figures	5
List of Tables	6
Chapter 1: About this Help Text.....	7
Scope and Audience.....	8
About the Performance Intelligence Center	8
User Preferences.....	9
Customer Care Center	14
PIC Documentation Library.....	16
Locate Product Documentation on the Customer Support Site	17
Chapter 2: Getting Started With SigTran ProDiag	18
Introduction to SigTran ProDiag.....	19
Logging into SigTran ProDiag	19
SigTran ProDiag Main Screen.....	20
SigTran ProDiag Toolbar.....	21
Workspace.....	22
SigTran ProDiag Monitoring Settings	23
Chapter 3: Working in SigTran ProDiag.....	26
Overview of SigTran ProDiag Functionality.....	27
Card Functional Specifications	27
Network Elements in SigTran ProDiag.....	28
Selecting Elements in SigTran ProDiag.....	28
Searching for Elements.....	29
How to Create Favorites	29
How to Modify Favorites	29
How to Delete Favorites	30
Selecting Themes	30
Status and State Protocol Hierarchy Structures	30
Status and State Protocol Hierarchy Constraints.....	31
Filtered Elements	33
SigTran ProDiag Monitoring Counts Capability	36
SigTran ProDiag Count Reset Capability.....	36
Element Status Values	37
Element State and Status.....	37
Monitoring State and Status of Elements Using Tabular Monitoring Function.....	38
Monitoring State and Status of Elements Using Graph Function	39
How to Configure Line Colors in Graphs	41
Hiding or Showing Counter Lines.....	41
State Counters.....	42

Status Counters	43
Status / State Color Interpretations	44
Parent Element Status Value and Color Interpretations	44
Status / State Color Interpretations for SCTP Protocol.....	44
Status / State Color Interpretations for M2PA Protocol.....	45
Status / State Color Interpretations for M3UA and SUA Protocols	46
TOP "N" Associations Capability	46
Monitoring Using Occupancy and TPS Functions	46

List of Figures

- Figure 1: PIC Overview 9
- Figure 2: Date/Time Tab Screen..... 9
- Figure 3: Directory Tab Screen 10
- Figure 4: Mapping Tab Screen 11
- Figure 5: Point Code Tab Screen 12
- Figure 6: Point Code Tab with Session Point Code Enabled 12
- Figure 7: Formatting Rules (CIC) Screen 13
- Figure 8: Default Period Tab Screen (ProTrace only) 14
- Figure 9: NSP Portal Login Screen..... 19
- Figure 10: SigTran ProDiag Main Screen 20
- Figure 11: ProDiag Toolbar..... 21
- Figure 12: SigTran ProDiag Workspace - Server Element Selected..... 22
- Figure 13: Hierarchy Root Switch Tab..... 23
- Figure 14: TOP N Association Count Tab 24
- Figure 15: Top N Association Exclusion Tab..... 25
- Figure 16: Selected Element and Related Sub-elements..... 28
- Figure 17: Linkset with IPSG and IPGW Card Links 32
- Figure 18: Hierarchy with Unconfigured Traffic 33
- Figure 19: Example 1 of Filtered Elements..... 34
- Figure 20: Linkset Selected as Root in Element Selection Screen 34
- Figure 21: State Monitoring Screen Showing First Card Selected 34
- Figure 22: State Monitoring Screen Showing Second Card Selected 35
- Figure 23: Example 2 of Filtered Elements..... 35
- Figure 24: Cards Selected as Root in Element Selection Screen 35
- Figure 25: State Monitoring Screen Showing First Card Selected 36
- Figure 26: State Monitoring Screen Showing Second Card Selected 36
- Figure 27: Example 37
- Figure 28: Tabular Monitoring Screen 39
- Figure 29: Graph Monitoring Screen with Rollover Feature 40
- Figure 30: Line Color Settings Screen..... 41
- Figure 31: Occupancy Default Monitoring Page - Column Graph 47
- Figure 32: Combination Occupancy/TPS Monitoring Page - Column Graph 48

List of Tables

- Table 1: Time Tab 10
- Table 2: Directory Tab Field Description..... 10
- Table 3: Mapping Tab 11
- Table 4: Point Code Tab 12
- Table 5: CIC Tab Field Descriptions 14
- Table 6: Default Period Tab Field Descriptions 14
- Table 7: Hierarchy Root Switch Tab Screen..... 24
- Table 8 : Top N Count Tab 24
- Table 9: Association Exclusion Tab Filed Description 25
- Table 10: Functional Expectations per Card Basis 27
- Table 11: Tabular Monitoring Page Tool Bar 38
- Table 12: Start State Graph Screen Tool Bar 40
- Table 13: Top N Monitoring Page 47

Chapter 1: About this Help Text

Topics:

- *Scope and Audience*
- *About the Performance Intelligence Center*
- *Customer Care Center*
- *PIC Documentation Library*
- *Locate Product Documentation on the Customer Support Site*

Scope and Audience

This guide is designed to assist users assigned the roles of NSPBusinessUser, NSPBusinessPowerUser and NSPBusinessManager in working with SigTran ProDiag. This application is designed to enable the user to view the operational state, (status and state), of a monitored network using SigTran regardless of whether any monitored element (association, linkset, link, cards and application server) is in an alarm state or not.

Note: In order to get the most from this user guide, the user should have a good working knowledge of SS7, SigTran and other telecom-related protocols. For more information on Eagle SigTran, refer to the Tekelec Eagle 5 SigTran User Guide.

About the Performance Intelligence Center

The Performance Intelligence Center (PIC) is a monitoring and data gathering system that provides network performance, service quality and customer experience - across various networks, technologies, protocols, etc. Beyond monitoring performance and gathering data, the solution also provides analytics, actionable intelligence and potentially an intelligent feedback mechanism. It allows Service Providers to simultaneously look across the Data Link, Network, Transport and Application layer traffic to better correlate and identify the impact of network problems on revenue generating applications and services.

PIC functionality is based on the following general flow. The Integrated Message Feeder (IMF) is used to capture SS7 and SigTran traffic. The Probed Message Feeder (PMF) is used to capture both SS7 and IP traffic. Both products forward Probe Data Units (PDUs) to the Integrated xDR Platform (IXP). The IXP stores this traffic data and correlates the data into detailed records (CDRs, IPDRs, TDRs, etc.). The IXP then stores the data on the system for future analysis. The Network Software Platform (NSP) provides applications that mine the detailed records to provide value-added services such as network performance analysis, call tracing and reporting.

PIC centralized configuration tasks fall into one of two categories:

Data Acquisition and Processing - the configuration of the probes, routing of PDUs to the xDR builder setup, KPI generation, data feeds, etc.

PIC System Administration - the configuration of monitoring sites, configuring PIC servers, setting up permissions, etc.

Note: For more information see Centralized Configuration Manager Administration Guide. This is a graphic overview of the PIC system.

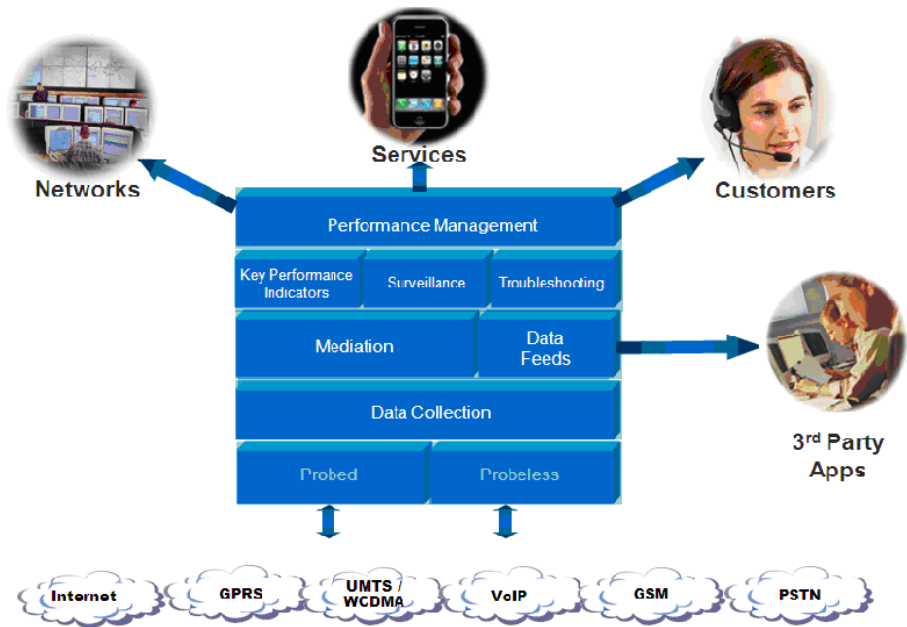


Figure 1: PIC Overview

User Preferences

All applications that query 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 a 'Preferences' window with a 'User preferences' title. The 'Date/Time' tab is selected, with other tabs like 'Directory', 'Mapping', 'Point Code', 'CIC', and 'Default Period' visible. 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 for 'Reset', 'Reset Tab', 'Apply', and 'Cancel'.

Figure 2: Date/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.

Table 1: Time Tab

Directory tab

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

The screenshot shows a 'User preferences' window with the 'Directory' tab selected. The 'Directories' section contains three text input fields: 'Export Directory', 'Upload Directory', and 'Download Directory', each containing the text '/tmp'. A warning message below the fields states: 'Warning: above directories must exist on server side. No check is done by application. It is user responsibility to do so.' At the bottom of the window are four buttons: 'Reset', 'Reset Tab', 'Apply', and 'Cancel'.

Figure 3: 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.

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.

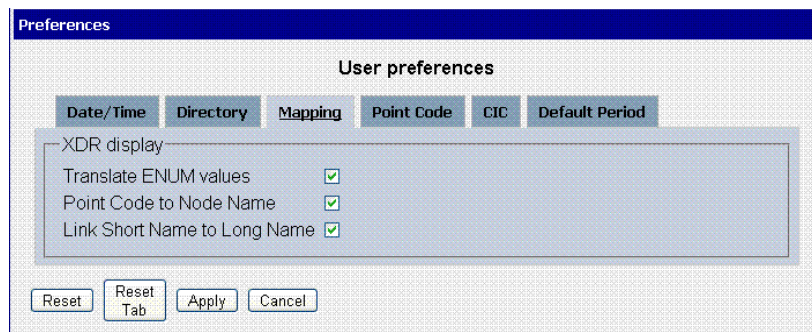


Figure 4: Mapping Tab Screen

Point Code tab

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

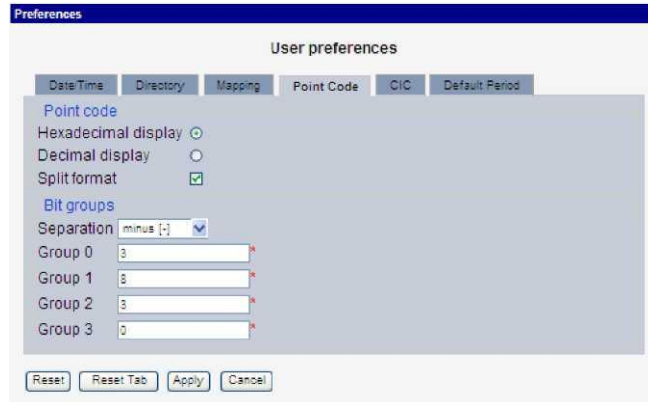


Figure 5: Point Code Tab Screen

Note: if Session Point Code feature is enabled the Point Code tab will look like

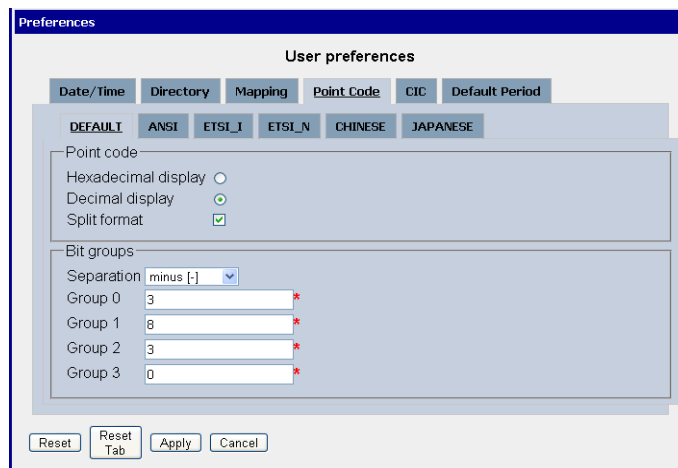


Figure 6: Point Code Tab with Session Point Code Enabled

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, and 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)

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.

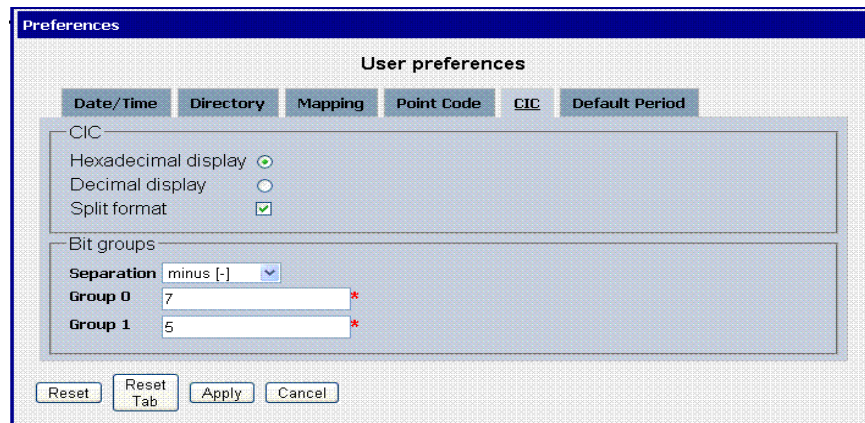


Figure 7: Formatting Rules (CIC) Screen

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.
---------------	-------------------

Table 5: CIC Tab Field Descriptions

Default Period tab

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

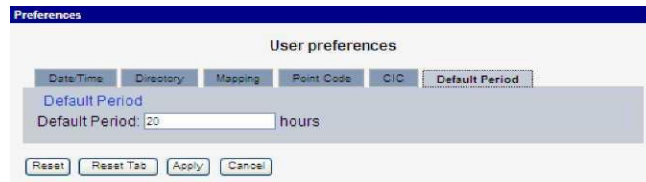


Figure 8: Default Period Tab Screen (ProTrace only)

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.

Table 6: Default Period Tab Field Descriptions

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:

800-891-4341 (toll-free)

TAC Regional Support Office Hours:

8:30 a.m. through 6:30 p.m. (GMT minus 3 hours), Monday through Friday, excluding holidays

- **Chile**

Phone:

1230-020-555-5468

- **Colombia**

Phone:

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

PIC Documentation Library

PIC 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 PIC documentation library of user guides.

- Security User Guide
- Alarms User Guide
- ProAlarm Viewer User Guide
- ProAlarm Configuration User Guide
- Centralized Configuration Manager Administration Guide
- Customer Care User Guide
- Alarm Forwarding Administration Guide
- Diagnostic Utility Administration Guide
- ProTraq User Guide
- ProPerf User Guide
- ProPerf Configuration User Guide
- System Alarms User Guide
- ProTrace User Guide
- Data Feed Export User Guide
- Audit Viewer Administration Guide
- ProDiag User Guide
- SigTran ProDiag User Guide
- Report Server Platform User Guide
- Reference Data User Guide
- Exported Files User Guide
- Scheduler User Guide
- Quick Start User Guide

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**".

Chapter 2: Getting Started With SigTran ProDiag

Topics:

- *Introduction to SigTran ProDiag*
- *Logging into SigTran ProDiag*
- *SigTran ProDiag Main Screen*

Introduction to SigTran ProDiag

SigTran ProDiag is an application developed to gather and display information pertaining to SS7 links and associations when the underlying transport mechanism is SigTran. Functioning as a near real-time application, SigTran ProDiag indicates state and status of links, linksets, associations, cards and application server(s) that make up a network. The SigTran ProDiag application is integrated into the NSP Platform and functions on a network view context. SigTran ProDiag provides the capability to view overall status of elements, as well as to drill down to individual links and associations.

When IMF based, only traffic from IPSG and IPGW cards is supported and the SigTran mechanism must be used to send data to the IMF.

Logging into SigTran ProDiag

Complete these steps to open the SigTran ProDiag application.

Note: Reference Data is an application that runs on NSP, it must be opened from the NSP application board.

1. Using a Web browser, type in the IP address of the NSP Server.

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.

Note: Contact your system administrator to obtain the IP address for the NSP Server.

Note: Reference Data runs on a Web interface and uses an IP address to access the NSP platform. The URL can be saved in the Favorites list on your browser.

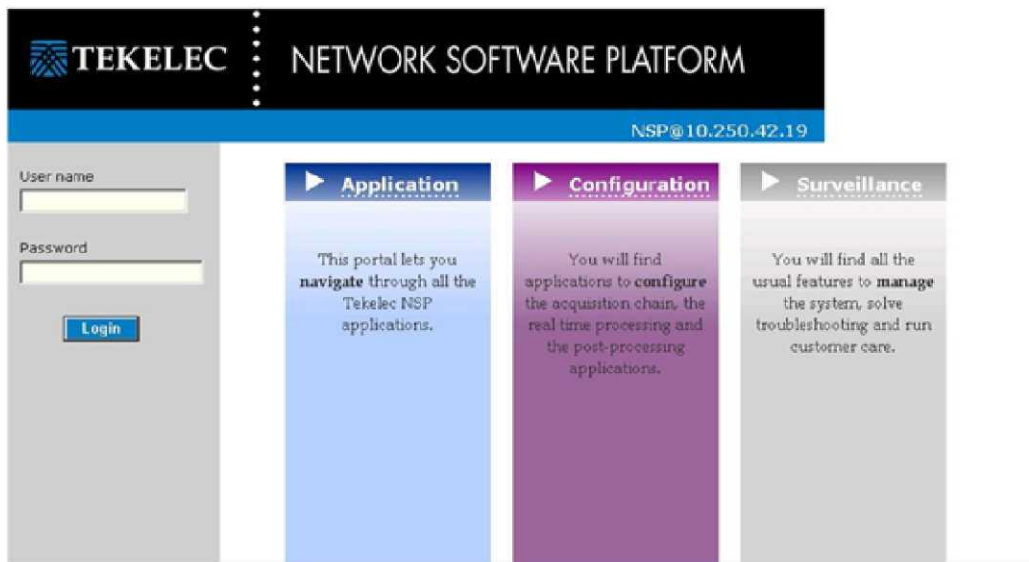


Figure 9: NSP Portal Login Screen

2. Log into NSP by typing:

- **Your Userid**
- **Your Password**

Note: Check with your system administrator for your userid and password.

3. Click the **SigTran ProDiag** icon in the application section of the portal to open the SigTran ProDiag main page.

SigTran ProDiag Main Screen

The SigTran ProDiag application monitors the state and status of the Eagle elements (application servers, application server processes, associations, linksets, links and cards), that reside on IMF. It also can monitor the state and status of PMF elements when PMF is using SigTran.

Note: For proper monitoring and viewing, the correct version and configuration of Adobe Flash Player Plug-in and Internet Explorer must be loaded on the system. (The system must have IE 7 and Flash Player 10 or later.) Please check with your Tekelec Authorized representative.

Note: Network Elements associated with IMF must be synchronized through the Centralized Configuration Manager (CCM). For more information about CCM, see the Centralized Configuration Manager Administration Guide or contact your system administrator.

Note: Unconfigured elements, (not configured in CCM), associated with PMF are also displayed in SigTran ProDiag in black (see [Status / State Color Interpretations](#) for more information).

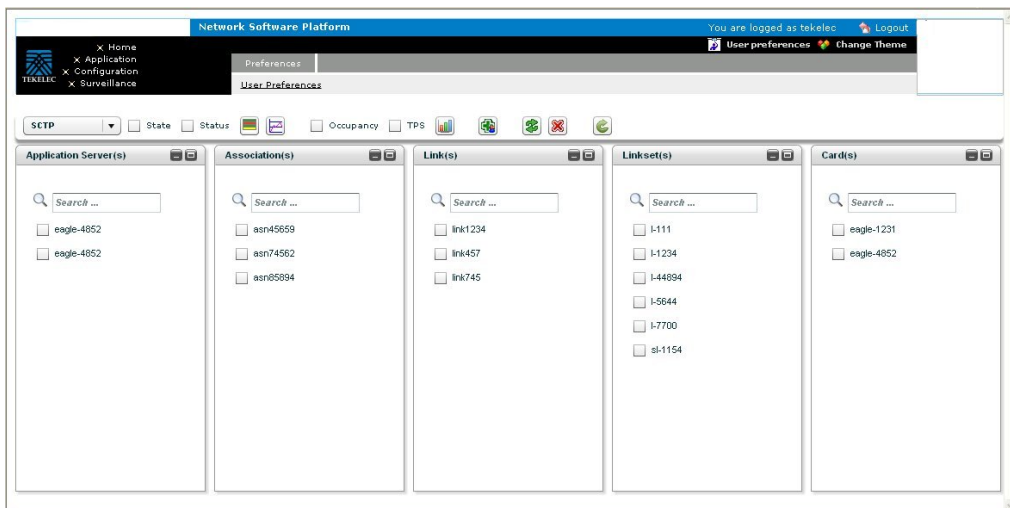


Figure 10: SigTran ProDiag Main Screen

The SigTran ProDiag main screen has the following sections. • Menu -

this section has the following menus.

- Settings - has the Monitoring Settings option, (see [SigTran ProDiag Monitoring Settings](#)).
- Help - opens online help system
- About - shows the version of SigTran ProDiag that is opened.

- Tool bar - provides function buttons for working with SigTran ProDiag. (See [SigTran ProDiag Toolbar.](#))
- Workspace - divided into columns that represent the elements monitored in SigTran ProDiag. (See [Workspace](#))

Note: All screens are configurable and allow for different table layouts (column layout button). Tables can be minimized or maximized so that the desired table can always be viewed. Record columns can to be re-arranged (by drag and drop) and sort order (ascending or descending) is changed by clicking on the column heading.

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.

SigTran ProDiag Toolbar

The SigTran ProDiag tool bar.



Figure 11: ProDiag Toolbar

The toolbar is divided into different functional groups: monitoring protocol state and status, monitoring occupancy and transactions per second as well as monitoring TOP "N" associations, saving and loading favorites, application utilities such as refreshing and resetting counts.

Monitoring Protocol State and Status

Protocol selection - a drop-down menu that shows the available protocols to monitor

- State - a check box, when selected, monitors the state of the elements selected
- Status - a check box, when selected, monitors the status of the elements selected
- Status/State Tabular Monitoring - launches a new window and displays the monitored element(s) in tabular format

Note: Both State and Status can be opened together

- Status/State Graphical Monitoring - launches a new window that displays monitored elements in graph format

Monitoring Occupancy, Transactions per Second and TOP "N"

- Occupancy - a check box, when selected, monitors the list of the associations sorted by occupancy when the TOP 'N' Monitoring function is activated
- TPS (Transactions Per Second) - a check box, when selected, monitors the list of the associations sorted by TPS when the TOP 'N' Monitoring function is activated
- Launch TOP 'N' Monitoring - function button that launches the TOP 'N' Monitoring window that shows a panel for TPS and/or Occupancy (the associations are ordered by TPS or Occupancy), the range for the number of associations is 0-100 and set in the Monitoring Settings option

Note: Both TPS and Occupancy can be opened together

Note: The associations that are listed are dependent upon user role/privilege

Application Utilities

- Save and Load Favorite - saves and loads selected element as a "favorite" stored in the system
- Refresh - reloads all lists again and clears all old lists, for example, if changes have been made in CCM, click refresh and all lists are reloaded with changes without having to restart the application
- Reset Selected Counts - resets all cumulative state monitoring counts (only functional to users with role NSPConfigManager)

Workspace

The SigTran ProDiag application workspace is divided into columns that show the elements and sub-elements that belong to a protocol. Each column is inter-dependent so that by selecting one element, all the other elements related to the selected element are highlighted.

The number of columns shown on the screen is dependent on the configured elements of the selected protocol. For example, if no links are configured for the system, the link column will not appear on the screen.

The Work area table is divided into columns (columns are dependent upon the elements configured for the particular

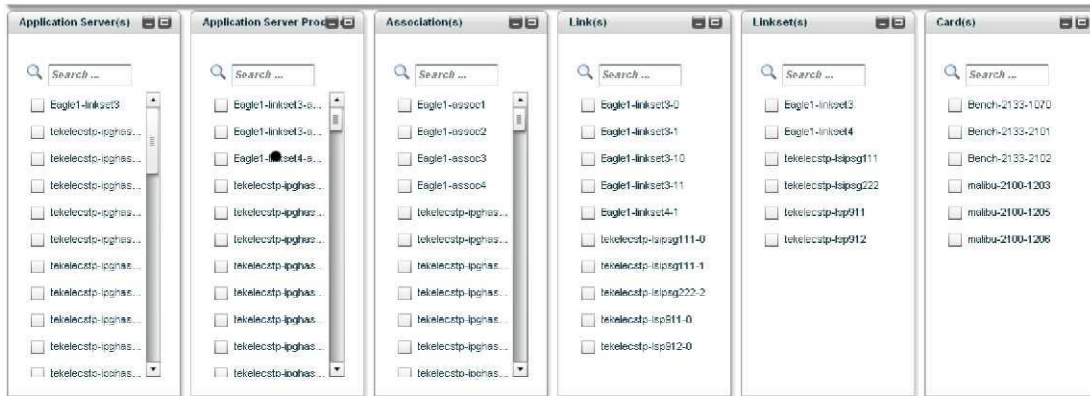


Figure 12: SigTran ProDiag Workspace - Server Element Selected

protocol). A fully configured system can have up to six columns if using all possible protocols. The possible columns are:

- Application Server(s) - provides a check box for selecting specific server(s) to monitor.
- Application Server Processes (ASPs) - provides a check box for selecting specific ASPs to monitor.
- Association(s) - provides a check box for selecting specific association(s) to monitor.
- Link(s) - provides a check box for selecting specific link(s) to monitor.
- Linkset(s) - provides a check box for selecting specific linkset(s) to monitor.
- Card(s) - provides a check box for selecting specific card(s) to monitor.

The screen also has "drag and drop" capability. Clicking on a column and dragging it to another position on the screen automatically re-organizes the screen to show the new configuration.

SigTran ProDiag Monitoring Settings

SigTran ProDiag has a Monitoring Settings menu option that enables the user to customize the following settings:

- Hierarchy Root Switch - enables the user to select the root element of the displayed hierarchies.
Note: The default hierarchy is either Linkset or Application Server (AS). The other available option for hierarchy root is Card.
- Top N Count Value - creates an upper limit to the associations displayed in the TOP N monitoring screen.
Note: Range is 0 to 100 with default value 10.
Note: The associations are listed in order of activity. The most active association first to the least active.
- Top N Association Exclusion - enables you to exclude specific associations from being displayed in the TOP N monitoring screen.
Note: Only configured associations are excluded. Unconfigured associations while visible cannot be managed in any form until they are configured in CCM.

Each screen has the following button options:

- Reset - resets all screens to default value
- Reset Tab - resets the default values for the particular tab
- Apply - applies the changes to the system
- Cancel - cancels any actions and exits the screen

Hierarchy Root Switch tab

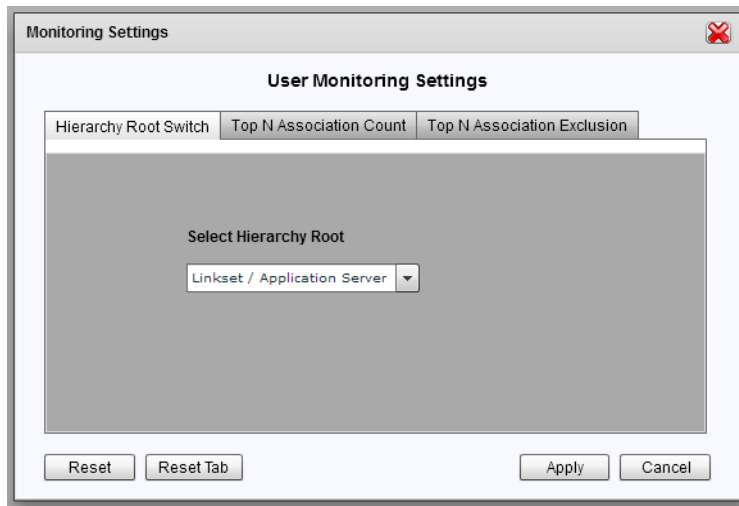


Figure 13: Hierarchy Root Switch Tab

Select the **Hierarchy Root Switch** tab to set the default hierarchy root element, (Linkset/AS or Card), used by SigTran ProDiag.

Table 7: Hierarchy Root Switch Tab Screen

Field	Description
Select Hierarchy Root	Drop-down list that allows the selection and configuration of a default root element in the selected hierarchy. Note: The default hierarchy is either Linkset or Application Server (AS). The other available option for hierarchy root is Card.

Top N Association Count Tab

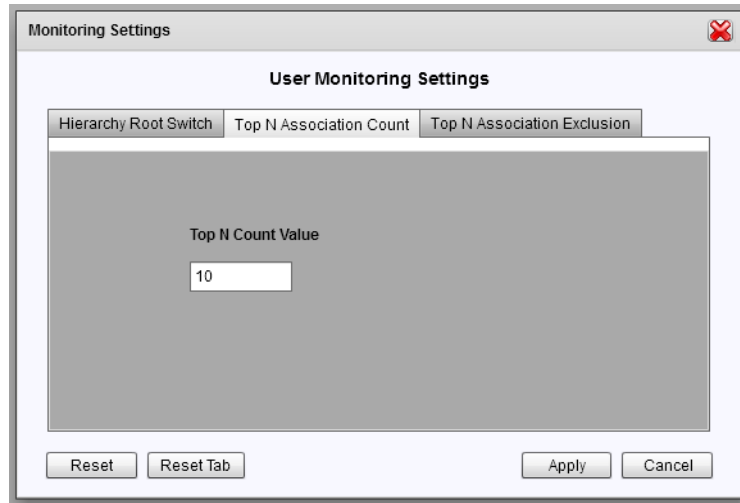


Figure 14: TOP N Association Count Tab

Select the **Top N Association Count** tab to set the number of associations to be viewed.

Table 8 : Top N Count Tab

Field	Description
Top N Count Value	A numeric field that shows the top limit of the associations displayed in the TOP N monitoring screen. Note: The minimum value is 0, the maximum value is 100, default is 10.

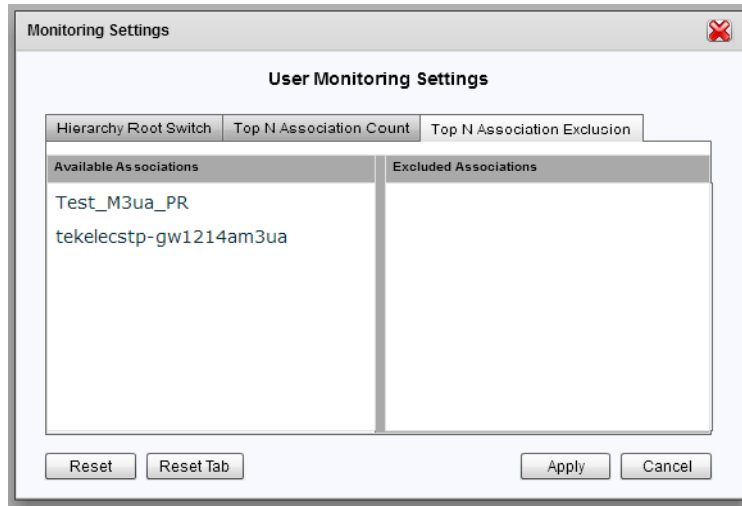


Figure 15: Top N Association Exclusion Tab

Select the **Top N Association Exclusion** tab to select specific associations that will not be displayed.

Table 9: Association Exclusion Tab Filed Description

Field	Description
Available Associations	Selection list of available associations displayed in the TOP N screen.
Excluded Associations	This shows the specific associations that are excluded from display in the TOP N screen. Note: Only configured associations are excluded. Unconfigured associations, while visible on the state/status screen, cannot be managed in any form until they are configured in CCM.

- To select associations to be excluded from the display, drag each association from the Available Associations column to the Excluded Associations column.
- Click **Apply**. The associations are excluded.
- To re-instate an association(s), drag the associations from the Excluded Associations column to the Available Associations column.
- Click **Apply**. The changes are saved to the system.

Chapter 3: Working in SigTran ProDiag

Topics:

- *Overview of SigTran ProDiag Functionality*
- **Error! Reference source not found.**
- *SigTran ProDiag Monitoring Counts Capability*

Overview of SigTran ProDiag Functionality

SigTran ProDiag supports SigTran by IMF integrated with both Eagle IPGW as well as IPSP cards.

In addition, since PMF connects directly to an IP network carrying the SigTran traffic, reference data must be supplied by the customer in order for SigTran ProDiag to accurately monitor PMF carrying SigTran traffic. This reference data is used to "instruct" the PIC system on relationships between linksets, links, associations and application servers. The reference data required also specifies the capacity and threshold for the defined element.

SigTran ProDiag performs the following functions:

- Allow monitoring of multiple cards, PMFs, linksets, links, associations, application servers and application processes
- Allows searching for specific elements utilizing a search field
- Saving Favorite List
- Monitor status and state of an element(s)
- Show missing PMF reference data for an element
- Monitor element(s) in either table or graph format
- Monitor TOP N Associations by TPS or Occupancy
- Reset capability for state counts to zero
- Choose a specific color scheme using the themes option

Card Functional Specifications

SigTran ProDiag supports SigTran by IMF integrated with both Eagle IPGW as well as IPSP cards. This table shows the functional expectations on a per card basis.

Table 10: Functional Expectations per Card Basis

Application	Hardware	GPL	Protocols	ANSI/ITU	Monitoring Type
SS7IPGW	SSEDCM	SS7IPGW	M3UA	ANSI	STC-STYLE
SS7IPGW	E5-ENET	IPGHC	SUA / M3UA	ANSI	STC-STYLE or SigTran
IPGWI	SSEDCM	IPGWI	M3UA	ITU	STC-STYLE
IPGWI	E5-ENET	IPGHC	SUA / M3UA	ITU	STC-STYLE or SigTran
IPSP	E5-ENET	IPSP	M2PA / M3UA	ANSI+ITU	STC-STYLE or SigTran

Network Elements in SigTran ProDiag

Network elements refer to customer network elements monitored by the PIC system such as:

- Application Servers
- Application Server Processes
- Associations
- Linksets
- Links
- Cards (IPSG, IPGW for IMF and third-party cards for PMF)

Selecting Elements in SigTran ProDiag

All elements belonging to a protocol are viewed from the workspace section on the main screen. In addition, when one or more elements are selected, any other element/sub-element related to the selected element(s) is highlighted. This feature allows for more refined and quicker searches and selections.

Complete these steps to select elements to be monitored.

1. Select parent **protocol** from the drop-down list.

Note: If you have selected an element(s) and change protocols, a prompt appears stating, "If you choose to change the protocol, all your selections will be lost. Do you wish to continue?" Click **yes** if you want to continue in changing protocols.

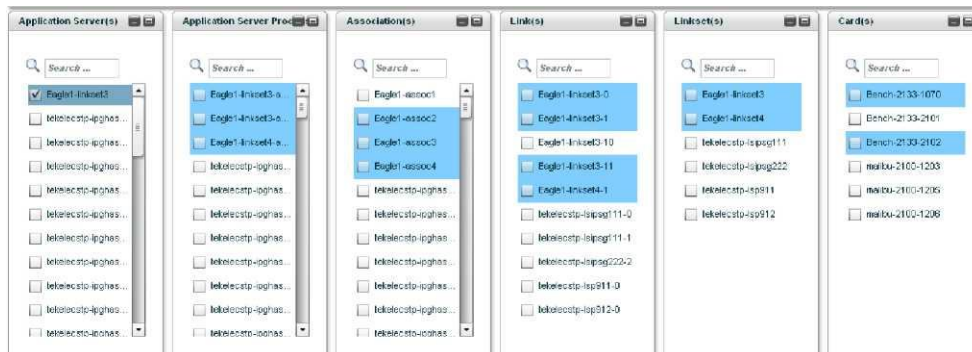


Figure 16: Selected Element and Related Sub-elements

2. Select one or more **element(s)** using the selection boxes next to the element.
3. Select either **State** or **Status** from the tool bar.
4. Click, (depending on what format is needed), either the **State/Status Tabular Monitoring** or **State/Status Graphical Monitoring** button on the tool bar.

The monitoring screen opens showing the elements being monitored in hierarchical format.

Searching for Elements

In large systems, one or more elements can be found by using the search operation. The search field is located at the top of each column. To search for an element(s) complete these steps.

1. Select parent **protocol** from the drop-down list.
2. Enter the **element** name in the search field. This activates the search function. **Using wild card in searches**

To use the wild card operation, type in the name of the element followed by "*" symbol. Those elements that meet the search criteria will appear in the appropriate column.

How to Create Favorites

If you work with specific elements (application servers, application server processes, associations, linksets, links or cards) you can save them as Favorites.

Note: Up to 25 Favorites can be saved.

Complete these steps to save specific groups of SigTran Elements as Favorites.

1. Select the **Element(s)** from the work space that is to be saved.
2. Click **Save as favorites** from the tool bar.
3. Enter the **Name** for the favorite in the bottom field.
4. Click **Save**.

A message appears at the top of the page stating the list was saved. *How to Load*

Saved Favorites

Complete these steps to open a list of elements saved in the favorites list.

1. Click **Save/Load favorites** from the tool bar.
2. Select a **Favorite** from the list in the top field.
3. Click **Load**.

The work space opens showing the element list with the selections present.

How to Modify Favorites

Complete these steps to modify an existing favorite.

1. Click **Save/Load favorites** from the tool bar.
2. Select a **Favorite** from the list.
3. Click **Load**.
4. Add or delete an **element(s)** from the screen.
5. Click **Save/Load Favorites** from the tool bar.
6. Select the **List** that was modified.
7. Click **Save**.

8. Click **OK** at the prompt. The modified list is saved.

How to Delete Favorites

Complete these steps to delete a saved favorite.

Note: It is possible to delete multiple favorites at one time.

1. Click **Save/Load Favorites** from the tool bar.
2. Select the **favorite** to be deleted.
3. Click **Delete**.
4. Click **OK** at the prompt.
The favorite is deleted.

Selecting Themes

The SigTran ProDiag application Change Theme function, allows for different screen color patterns. Complete the following steps to select a theme.

1. In the main screen, click **Change Theme** at the top right-hand corner of the screen.
2. Select one of the six **themes** on the pop-up side bar.
3. Click **Save**.

Status and State Protocol Hierarchy Structures

Each protocol can have up to two hierarchy structures depending if the card is the root or the application server/linkset is the root. Listed here are each of the protocol hierarchies that would appear in either the state or status monitoring screen when an element(s) is selected in the main screen.

Note: Wherever the element of the type defined by a particular level of hierarchy between the related elements of the selected element is not defined in CCM, the hierarchy level will be skipped in the current hierarchy. For example, using a hierarchy with the structure of **Card > Linkset > Association**. If the association A1 in the hierarchy has no linkset defined, and has only the related card C1 defined in the hierarchy, then the hierarchy shown in the monitoring screen will just be **Card > Association**.

Hierarchy structure(s) according to protocol

IMF-based protocols

IPSG SCTP (Status and State)

Card > Association

IPSG M2PA (Status and State)

Linkset > Card > Association (Link) Card > Linkset > Association (Link)

Note: Where Association and Link have 1:1 mapping, the Association and Link rows will only be one row since the counts are identical.

IPSG M3UA (Status and State)

Linkset > Association > Link Association > Link

IPGW SCTP (Status and State)

Linkset > Application Server > Association Card > Application Server > Association

IPGW M3UA (Status and State)

Linkset > Application Server > Association > Application Server Process Card > Application Server > Association > Application Server Process

IPGW SUA (Status only)

Linkset > Application Server > Association > Application Server Process Card > Application Server > Association > Application Server Process

PMF-based protocols**SCTP (Status and State)**

Application Server > Association

Third Party Card > Application Server > Association

M2PA (Status and State)

Linkset > Association (Link)

Third Party Card > Association (Link)

M3UA (Status and State)

Application Server > Association > Application Server Process

Third Party Card > Application Server > Association > Application Server Process

SUA Status

Application Server > Association > Application Server Process

Card > Application Server > Association > Application Server Process

Status and State Protocol Hierarchy Constraints

General guidelines for hierarchies

When viewing hierarchies in tabular format, the following guidelines are used:

- The selected element is always displayed in the table.
- The direct parents, grandparents, etc. (to the root), if they exist, are also displayed in the table.
- The display of children elements is filtered through the parent elements.

Additional guidelines when viewing hierarchies

- If there is no related element for some level of hierarchy, the level is skipped.

- Hierarchies can be mixed together; there can be more than one type of hierarchy shown in a table. In addition, for M3UA protocol one element can be related to multiple hierarchies. For example, a linkset, having links to both IPSP and IPGW cards, will appear in the monitoring table like this:

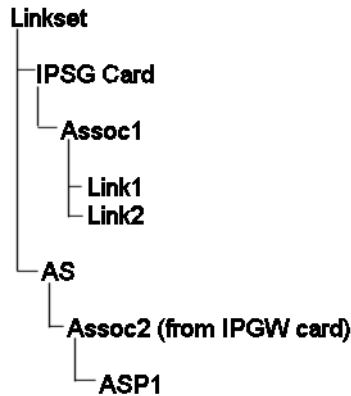


Figure 17: Linkset with IPSP and IPGW Card Links

- Any unconfigured associations for a given protocol are displayed, in *italics*, as the last elements in the table.

Note: All unconfigured elements are shown as having no children.

There are some exceptions for partially-configured associations on PMF and Network management counts on IMF (the display is the same and both are only for M3UA and SUA protocols). They are:

- If traffic exists for an association that is not configured for any ASP belonging to it, then there is a new child shown under the association that shows the counts for the unconfigured traffic - the name of this element is in *italics* and uses the same name as the association.
- If the association in the hierarchy has no AS or Linkset, the new child is shown in the hierarchy. Conversely, if the association has an Application Server or Linkset in the hierarchy, the new child is shown in the bottom table only (it is filtered out because the unconfigured traffic is not a part of that AS or Linkset) and the association with this child is repeated on the same level as the AS or Linkset and the child is visible alone in the top table. Both association name and the new child name will be in *italics*. For example, there is Assoc1 on M3UA that has ASP1 and ASP2 with an AS as its parent. In this example, Assoc1 has unconfigured traffic. The hierarchy will appear like this in the tabular monitoring screen:

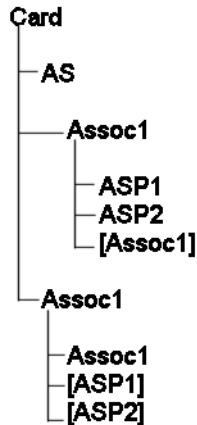


Figure 18: Hierarchy with Unconfigured Traffic

Note: the new child, (Assoc 1), will be visible in the top table and will only appear in the bottom table when the Assoc1 is selected.

Note: Brackets signify that the element is visible only in the bottom table.

Monitoring M2PA and M3UA Guidelines

When monitoring the status or state of an element using these protocols the following network configuration guidelines should be considered:

- For IMF or PMF using IPGW, the card can only support one link.
- For IMF or PMF using IPSPG, the card can support up to 16 links.
- When using the M2PA protocol use a 1:1 ratio of Associations to Links.
- When using the M3UA protocol one association can have multiple links.

Filtered Elements

The filtering function in SigTran ProDiag filters out elements that are not related to the root of the hierarchy being monitored. These unrelated elements are not visible in the top table of the monitoring screen, but are visible in the bottom table of the tabular monitoring screen when the related element is selected in the top table.

For example, in a hierarchy that has the linkset selected as the root of the hierarchy, the following can occur:

Linkset1 has two associations: A1 and A2 that has the following relationships: A1 is related to the Card 1 A2 is related to the Card 2

Card1 also has A3 and A3 is not related to the Linkset1

In this example the hierarchy: Linkset > Card > Association will be seen in the monitoring table screen.

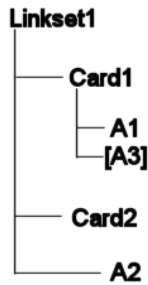


Figure 19: Example 1 of Filtered Elements

Note: Brackets [] signify that an element will not be visible in the top table and only visible in the bottom table when the parent is highlighted. In this example, A3, because it is not related to Linkset1, does not show up on the top panel of the table, but will show up in the bottom panel when Card1 is highlighted in the top panel.

Shown in this next example is the SCTP protocol where one linkset has been selected as the root. The filtered monitoring screens show the discrepancies between the top and bottom tables.

Note: Brackets [] signify that an element will not be visible in the top table and only visible in the bottom table when the parent is highlighted. In this example, A3, because it is not related to Linkset1, does not show up on the top panel of the table, but will show up in the bottom panel when Card1 is highlighted in the top panel.

Shown in this next example is the SCTP protocol where one linkset has been selected as the root. The filtered monitoring screens show the discrepancies between the top and bottom tables.

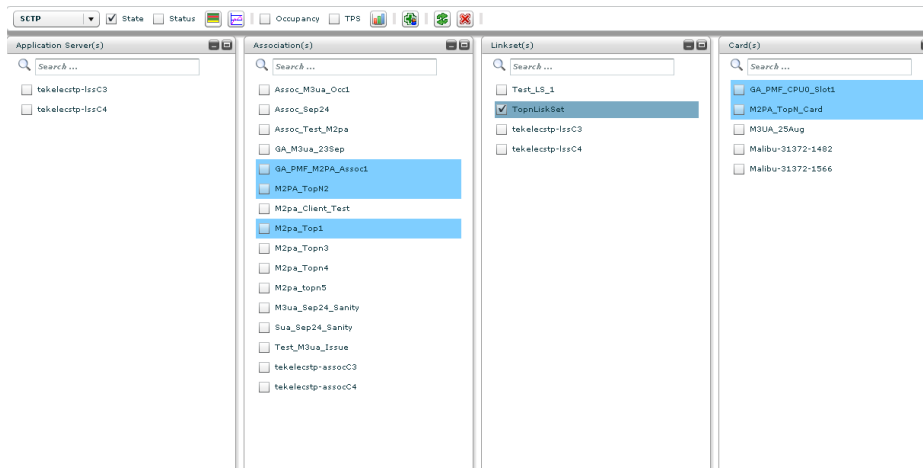


Figure 20: Linkset Selected as Root in Element Selection Screen

Name	# HeartBeats	# HeartBeats	# HeartBeats	# HeartBeats	# Operatio...	# Operatio...	# Shutdow...	# Shutdow...	# Abort Rx
GA_PMF_CPU0_Slot1	0	0	0	0	0	0	0	0	0
GA_PMF_M2PA_Assoc1	0	0	0	0	0	0	0	0	0
M2PA_TopN_Card	0	0	0	0	0	0	0	0	0
Auto_P92_268_I.6_10.I.6_S_5	0	0	0	0	0	0	0	0	0
Auto_P92_268_I.6_10.I.6_S_5	0	0	0	0	0	0	0	0	0
Assoc_Test_M2pa	0	0	0	0	0	0	0	0	0
GA_M3ua_238ep	0	0	0	0	0	0	0	0	0
GA_PMF_M2PA_Assoc1	0	0	0	0	0	0	0	0	0
M3ua_Sep24_Sanity	0	0	0	0	0	0	0	0	0
Sua_Sep24_Sanity	0	0	0	0	0	0	0	0	0
Test_M3ua_Issue	0	0	0	0	0	0	0	0	0

Figure 21: State Monitoring Screen Showing First Card Selected

Name	# HeartBe...	# HeartBe...	# HeartBe...	# HeartBe...	# Operatio...	# Operatio...	# Shudov...	# Shudow...	# Abort Rx
GA_PMF_CPU0_Slot1	0	0	0	0	0	0	0	0	0
M2PA_TopN_Card	0	0	0	0	0	0	0	0	0
M2PA_TopN2	0	0	0	0	0	0	0	0	0
M2pa_Top1	0	0	0	0	0	0	0	0	0
Auto_192.168.1.6_10.10.1.6_1_1	0	0	0	0	0	0	0	0	0
Auto_192.168.1.8_10.10.1.8_1_1	0	0	0	0	0	0	0	0	0
Auto_192.168.1.7_10.10.1.7_1_1	0	0	0	0	0	0	0	0	0
Auto_192.168.1.9_10.10.1.9_1_1	0	0	0	0	0	0	0	0	0

Figure 22: State Monitoring Screen Showing Second Card Selected

A second example shows the hierarchy is only Card > Association, (with the same relationships as in example 1).

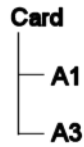


Figure 23: Example 2 of Filtered Elements

Figure 24: Cards Selected as Root in Element Selection Screen

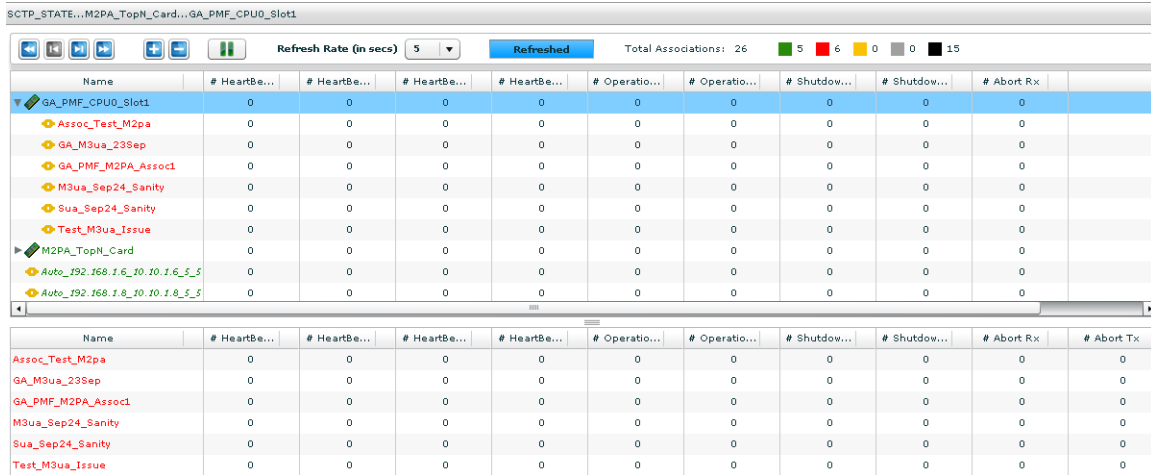


Figure 25: State Monitoring Screen Showing First Card Selected

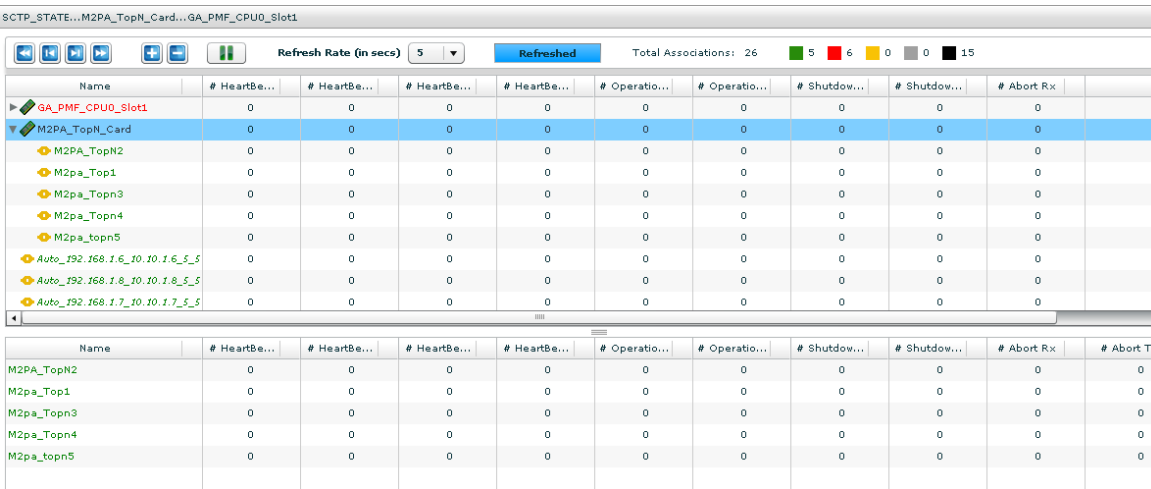


Figure 26: State Monitoring Screen Showing Second Card Selected

SigTran ProDiag Monitoring Counts Capability

SigTran ProDiag Monitoring Counts feature displays both cumulative (for State counters only) and current status (for status counts for measurements such as current throughput, current occupancy, etc). SigTran ProDiag will monitor counts in the following intervals:

- Status monitoring intervals - every 1, 3 or 5 seconds
- State monitoring intervals - every 5, 10 or 15 seconds
- Chart monitoring intervals for either state or status - 5, 10, 15, 20, 30 or 60 seconds

SigTran ProDiag Count Reset Capability

SigTran ProDiag Monitoring Counts feature allows for counts to be reset manually or automatically. When invoking the reset function, the date and time of the reset will be logged and visible in the Audit Viewer application (see Audit Viewer Administration Guide for more information).

Note: The manual count re-set is restricted to those users with role NSPConfigManager.

Note: xMF (IMF or PMF) automatically resets counters once they have reached the value of 2 to the 32 power (approx 4,300,000,000).

Element Status Values

Status values for elements can differ depending upon their context. Absolute status values, such as TPS or Heartbeat counts, are the same regardless of what hierarchy is selected. In contrast, status values can differ depending upon the status of the child elements in the hierarchy. This difference is due to the parent element status not reflecting the its own status but reflecting the status of all the children below. The status of the children can vary depending on what hierarchy is currently displayed.

(See [Parent Element Status Value and Color Interpretations](#) for more information.)

Status and coloring have different meanings for base elements versus parent elements. A base element either works or does not work, that is, it is either green (working) or red (not working). These colors represent the true status of that element. The colors and status of parent elements is an indicative status of its children. It does not really reflect a true status for that parent. It simply means that one or more of its "children" in the hierarchy has a problem. The user then can deeper into the area where the issue exists. Thus an issue somewhere in the hierarchy is not missed because a card can never be green if an application server (AS) connected to it has a problem. What is important to note is that if that card is red, it does not mean that the problem is with the card. It indicates that all related elements have a problem.

For example, if AS1 had a problem and was red, then Card1 would be yellow, even though the card itself is functioning normally, because one of the children elements related to it had a problem.

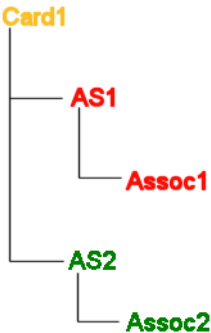


Figure 27: Example

Element State and Status

The SigTran ProDiag application allows for the viewing of both element state and status in either tabular or graph layout. Both state and status are displayed in a separate screen that opens when either function is launched.

Note: Both state and status can be selected at the same time when monitoring in either the tabular or graph format.

The tabular monitoring screen has two sections. The top section displays monitoring counts for the state or status in hierarchical format and the bottom section is a drilldown of what is selected from the top section.

Note: The drill-down function in the tabular monitoring screen is in hierarchical form and is based on the relevance of the protocol status or state counters for the particular element.

Note: In the tabular monitoring screen, element hierarchies depend on the protocol and acquisition mode (IMF or PMF) as well as the card type if IMF is being monitored.

Monitoring State and Status of Elements Using Tabular Monitoring Function

SigTran ProDiag enables the monitoring of the state and status of an element(s) using the tabular monitoring function. Complete these steps to use the table function to monitor the state of an element(s).

- Select the network element(s) to be monitored
 Note: To view elements that have not been configured in CCM, launch the tabular monitoring window without selecting any elements.
- Select either or both monitoring options (State/Status) from the tool bar.
- Click Start Tabular Monitoring button on the tool bar.
 The Monitoring page opens.

Table 11: Tabular Monitoring Page Tool Bar

Field/Element	Description
Show/Hide Column Button	Clicking this button opens a drop-down list showing all the counter columns. The screen can be customized to show only desired columns using this function.
Navigation Buttons	There are four buttons on the monitoring page. The buttons are: Move First - moves to the first element in the list of elements. Move Previous - moves to the previous element on the list. Move Next - moves to the next element on the list. Move Last - moves to the very last element on the list.
Expand All	Button with plus (+) sign - expands all the elements on the list.
Collapse All	Button with negative (-) sign - collapses all the elements on the list.
Pause Button/ Continue Monitoring	Pauses the monitoring process. When pause button is activated, the button changes to Continue Monitoring. To continue monitoring, click the button and the Pause button re-appears.
Refresh Rate	Provides the interval when the screen is refreshed Status - 1, 3 or 5 seconds State - 5, 10 or 15 sec intervals Chart (status or state) - 5, 10, 15, 20, 30 or 60 seconds.
Total Associations	Shows the total number of associations connected with the selected elements.
Association Legend	Shows the number of associations that are in a particular state (see color/state designations).
Top Table	Shows list of elements in hierarchical order filtered by parent elements.
Bottom Table	Shows list of all elements with no filtering.

Elements in italics

All elements that are in italics are not configured in CCM (black square on monitoring window tool bar that shows the number of unconfigured elements). The elements can be in any status, but they must be configured in CCM before they are represented without italics.

Upper Table

The upper table represents the monitored element in a hierarchy(ies) related to the selected protocol.

Lower Table

The lower table represents the elements that reside under an element that has been selected in the upper table.

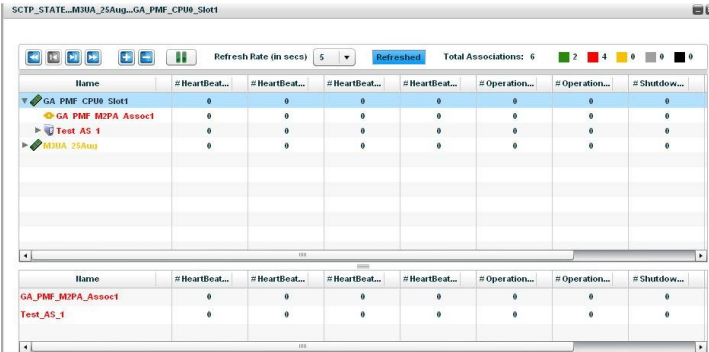


Figure 28: Tabular Monitoring Screen

- Set the screen Refresh Rate from the pull-down list. (Default is 5 seconds.)
- Select Element from the list to view the children of that element.
- When monitoring is finished close the screen by clicking the "x" on the top right-hand corner of the screen (as if closing a regular window).

Monitoring State and Status of Elements Using Graph Function

SigTran ProDiag enables you to monitor the state and status of an element(s) using the chart monitoring function. Complete these steps to use the graph function to monitor the state and status of an element(s).

- Select the network element(s) to be monitored.

Note: A maximum of eight graph windows can be displayed at one time.

Note: Depending on what functions are selected you can select from two to a maximum of eight elements to monitor. See the table for examples.

Protocol(s)	State	Status	Max # of elements
SCTP	x		8
SCTP	x	x	4
M2PA+SCTP	x	x	2

- Select the monitoring state from the tool bar (either state, status or both can be selected).
- Click Start Graph Monitoring button on the tool bar. The Monitoring page opens.

Table 12: Start State Graph Screen Tool Bar

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. It provides the length of time previous to the current time and can run for more than the previous 24-hours.
Count Value	Shown in the y-axis. It provides the number of counts for a given time span. Note: If percent counts are available, then two Y-axis are viewed. The percentage graph has a thicker border.
Select Line Color	Enables you to choose the colors or hide the line for each of the elements being monitored. (See How to Configure Line Colors.)
Threshold Min	Sets a minimum threshold to graph. Provides a visual aid during the monitoring. The threshold appears as a red line.
Threshold Max	Sets the maximum threshold to graph. Provides a visual aid during the monitoring. The maximum threshold appears as a red line.
Set Button	Sets the threshold level which appears in the screen as red lines.

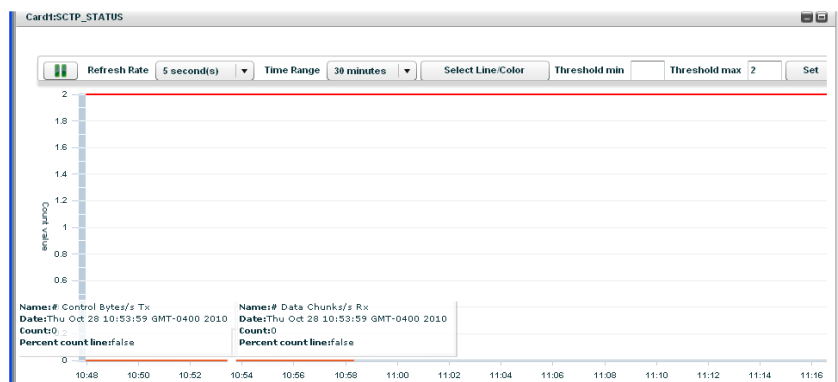


Figure 29: Graph Monitoring Screen with Rollover Feature

Note: The element graphs can be minimized. The remaining graph(s) on the screen automatically adjust in size.

- Set the screen Refresh Rate from the pull-down list. (Default is 5 seconds.)

Note: If there are two Y-axis, then the axis that shows percentage is on the right and the axis that shows the number of counts is on the left.

- Set the Time Range from the pull-down list.

The range is 15 minutes to 24 hours. (Default is 15 minutes.)

- Select the Line Color of the elements.
- Select the Minimum Threshold.

- Select the Maximum Threshold.

Note: The threshold line will not show if the threshold is set to zero.

- When monitoring is finished, close the screen by clicking the "x" on the top right-hand corner of the screen (as if closing a regular window).

How to Configure Line Colors in Graphs

SigTran ProDiag has the capability to change the colors used for the counter lines used in the graph mode. Follow these steps to change the color of a counter graph line.

1. From the Table or Chart monitoring page, click Select Line/Color.

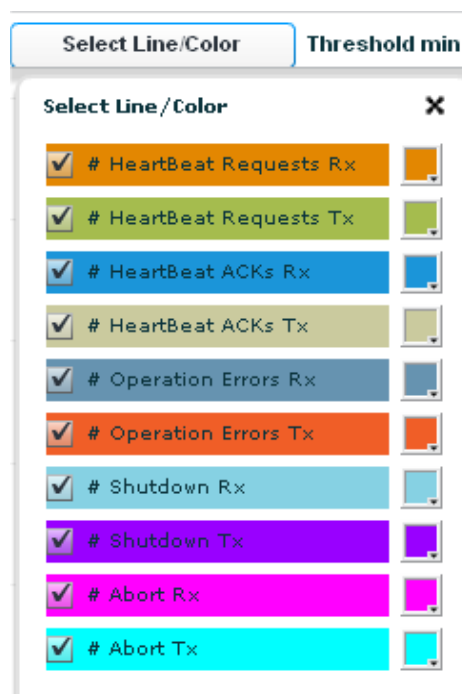


Figure 30: Line Color Settings Screen

1. Select the counter that needs a color change.
2. Select the color from the selection.
3. Click on Palette beside counter.
 - Select the color from the selection.
 - Repeat steps 2-3 to change other counter colors.
4. Close the Color Selection window.

Note: If you choose a color that is already being used, you prompted that that you must choose another color.

Hiding or Showing Counter Lines

SigTran ProDiag has the capability to hide or show counter lines in the graph screen. Complete these steps to hide or

show columns.

Note: The default is to show all counter lines.

1. Select an element.
2. Click Monitor State or Status from the tool bar.
3. Select the Monitor Graph from the tool bar.
4. Click Select Line/Color.
5. Un-select or select the check box by the counter name to hide or view the line.
6. Close the box.

The changes are saved.

State Counters

The state monitoring screen for IMF and PMF is displayed either in tabular or graph format depending on which format is chosen. This is a list of all counters for the SigTran protocols monitored.

SCTP

- Heartbeat requests Rx/Tx
- Heartbeat ACKS Rx/Tx
- Operation Errors Rx/Tx
- Shutdown Rx/Tx
- Abort Rx/Tx

M2PA

- Alignment Rx/Tx
- Proving Normal Rx/Tx
- Emergency Rx/Tx
- Out of Service Rx/Tx
- Processor Outage Rx/Tx
- Busy Rx/Tx

M3UA

- Management Messages Rx/Tx
- SSNM Messages Rx/Tx
- ASPSM Messages Rx/Tx
- ASPTM Messages Rx/Tx
- RKM Messages Rx/Tx
- Destination Unavailable Rx/Tx
- Signaling congestion Rx/Tx

Status Counters

The status monitoring screen for IMF and PMF is displayed either in table or chart format depending on which format is chosen. This is a list of all counters for the SigTran protocols monitored.

SCTP

1. # Control Chunks Rx/Tx
2. # Data Chunks Rx/Tx
3. # Control Bytes Rx/Tx
4. # Data Bytes Rx/Tx
5. Total Packets Rx/Tx
6. Total Bytes Rx/Tx

M2PA

- # UDMs Rx/Tx
- # UDM Bytes Rx/Tx
- SS7 SCCP Messages Rx/Tx
- SS7 ISUP Messages Rx/Tx
- SS7 Management Messages Rx/Tx
- SS7 Message Bytes Rx/Tx
- Total Messages Rx/Tx
- Current TPS Rx/Tx
- Occupancy % (TPS) Rx/Tx
- Reserved Occupancy % Rx/Tx

M3UA

- Non-data Messages Rx/Tx
- Non-data Message Bytes Rx/Tx
- Data Messages Rx/Tx
- Data Message Bytes Rx/Tx
- Current TPS Rx/Tx
- SCCP Message Rx/Tx
- ISUP Message Rx/Tx
- Total Messages Rx/Tx
- % Total Occupancy (TPS) Rx/Tx
- Reserved Occupancy % (TPS) Rx/Tx (Available only for links)

SUA

- Management Messages Rx/Tx
- Management Message Bytes Rx/Tx
- Data Messages (CLDT + CLDR) Rx/Tx
- Data Messages (CLDT + CLDR) Bytes Rx/Tx
- Total Messages Rx/Tx
- Total Messages Bytes Rx/Tx
- Current TPS Rx/Tx

- Total Occupancy % Rx/Tx

Status / State Color Interpretations

In the tabular monitoring screen the status or state of each element within a hierarchy is represented by a color. This table provides the interpretation of each status/state color.

Color	Interpretation
Green	Network element is up and running. It is the normal functioning state when none of the elements in the hierarchy is red.
Red	Network element is down. Action has to be taken as the element is not connected and/or traffic is not being captured.
Yellow	At least one child network element is in red state. For example, when an M3UA association is YELLOW, it means that at least one of its links is down (in red).
Gray	Associations are present but data is not available
Black	Associations are not configured in CCM

Parent Element Status Value and Color Interpretations

The status of a parent element depends on the status of its children. In other words, the status of the parent reflects the status of its children for the whole sub tree.

Note: The term children mean all children, not only ones that are visible in the hierarchy. Rules governing parent status value are:

- If the status of all children is the same, then the parent status is the same.
- If the status of the children differs, then the parent status is of the form *[...] where all statuses of the children are listed.

Note: Only part of the list can be visible if the cell is too narrow. The table shows the

parent element color and its status value interpretation:

Parent Element Color	Interpretation
Gray	All children belonging to parent have N/A (not available) status
Green	All children of parent element have green status
Red	All children of parent element have red status
Yellow	If one or more (but not all) children have status other than green

Status / State Color Interpretations for SCTP Protocol

The status display colors for the network elements using the SCTP protocol are the following:

Color	Displayed Value	Interpretation
Red	Closed	Closed
Red	Init	Initialed
Green	Established	Established
Red	Shutdown	Shutdown

Status / State Color Interpretations for M2PA Protocol

The status display colors for base network elements using the M2PA protocol are the following: **Note:** Base element is Link for IPSPG and Application Server Process (ASP) for IPGW

Color	Displayed Value	Interpretation
Red	OS	Link/ASP is Out of Service
Red	N	Link/ASP has entered Normal Alignment proving period
Red	E	Link/ASP has entered Emergency Alignment proving period
Green	A	Link/ASP is in Service
Red	PO	Link/ASP is reporting Processor Outage
Red	B	Link/ASP is reporting Busy

Status / State Color Interpretations for M3UA and SUA Protocols

The status display colors for network elements the M3PA and SUA protocols are the following:

Note: Base element is Link for IPSPG and Application Server Process (ASP) for IPGW

Color	Displayed Value	Interpretation
Red	ASPDN	ASP is down
Green	ASPAC	ASP is active
Red	ASPIA	ASP is inactive

TOP "N" Associations Capability

The SigTran ProDiag application has a Top "N" capability. This capability allows for the monitoring of the most active associations in terms of TPS, (Transactions per Second), or Occupancy, (up to 100%), in order of activity. The number of associations is configured in the "Monitoring Settings" option on the SigTran Prodiag menu. (For information on configuring TOP "N", see [SigTran ProDiag Monitoring Settings](#).)

Monitoring Using Occupancy and TPS Functions

SigTran ProDiag has the capability to monitor the occupancy and transactions per second (TPS) in both table and graph views. Complete these steps to monitor either occupancy and/or TPS in table and/or graph format.

- Select the **network element(s)** to be monitored.
- Select either the **Occupancy** or **TPS** (or both) from the tool bar.

Note: TPS shows actual number of transactions where Occupancy shows a percentage of TPS. Therefore, depending on the capacity, the ranking of the associations may differ. For example if the capacity of an element is 1000 and a TPS of 100, then the occupancy is 10%. If another element has a capacity of 100 and a TPS of 50, then the occupancy is 50%. In this example, the element that has 50 TPS would be ranked higher in occupancy graph but lower on the TPS graph.

- Click **TOP "N" Monitoring** button on the tool bar.
- The Monitoring page opens.

Table 13: Top N Monitoring Page

Field/Element	Description
Pause Button	Pauses the monitoring process.
Refresh Rate	Provides the interval when the screen is refreshed (5, 10 or 15 second intervals with 5 seconds as default).
Refresh Status	Shows if the screen is being refreshed at the specified rate.
Column Chart/Bar Chart button	Clicking this button switches between either a column graph (horizontal-default) or bar graph (vertical).
Chart	Selecting this box (selected by default) the chart view is active. De-selecting shows only the table format.
Table	Selecting this box (selected by default) the table view is active. De-selecting shows only the chart format.
Color Palette	Clicking on this icon opens the color selection box for selecting column/bar chart colors.

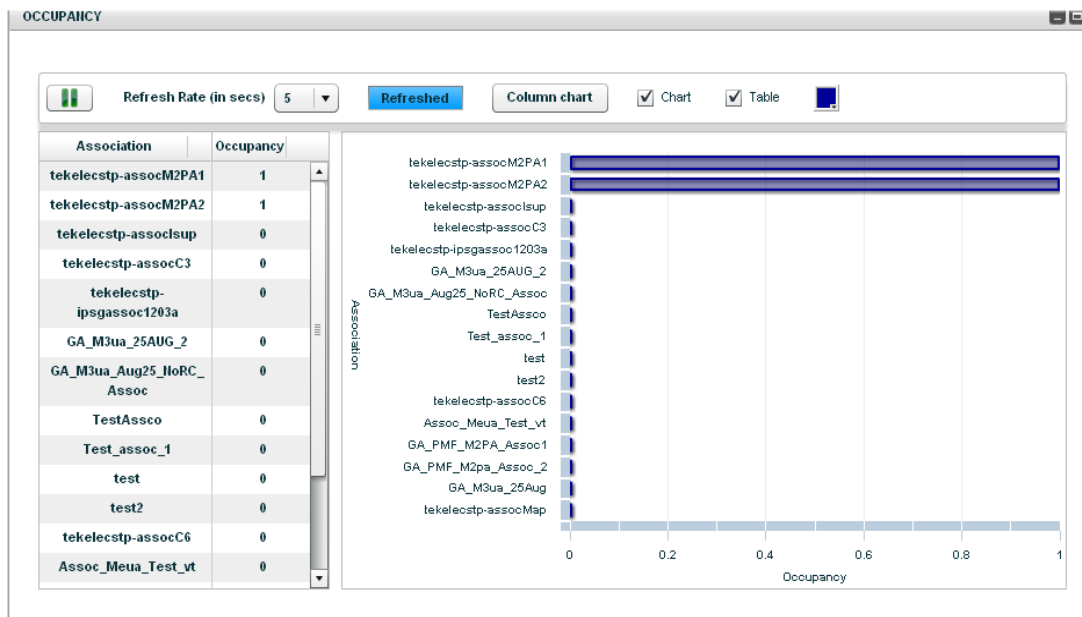


Figure 31: Occupancy Default Monitoring Page - Column Graph

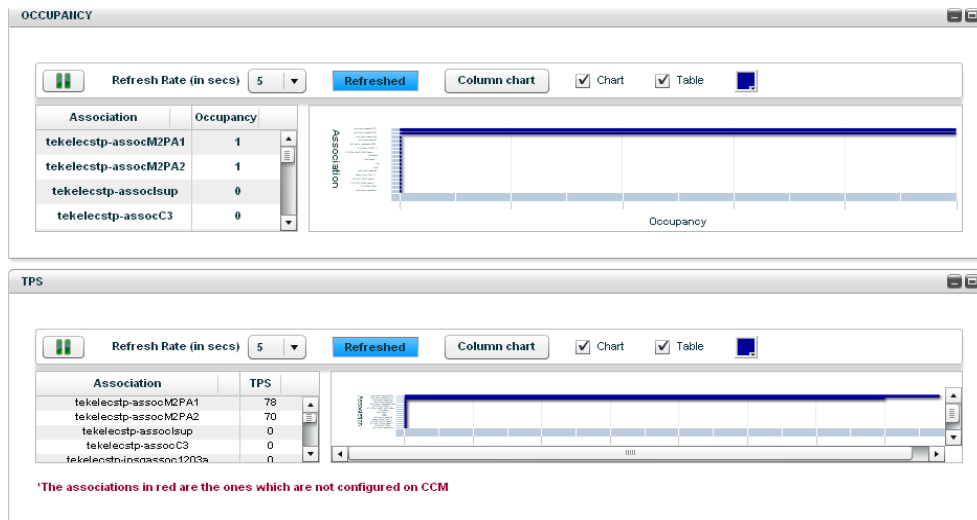


Figure 32: Combination Occupancy/TPS Monitoring Page - Column Graph

- Set the screen **Refresh Rate** from the pull-down list. Default is 5 seconds.)
 - Select the type of view **Chart or Table**.
 - (Optional) Select the **color** of the column or bar graph.
- Note:** If there are associations present that are not configured in CCM, they are marked in red. (Also shown by note at bottom of screen.)
- When monitoring is finished close the screen by clicking the "x" on the top right-hand corner of the screen (as if closing a regular window)