

Alcatel-Lucent 5620

SERVICE AWARE MANAGER

OPTICAL USER GUIDE

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Alcatel-Lucent License Agreement

SAMPLE END USER LICENSE AGREEMENT

1. LICENSE

1.1 Subject to the terms and conditions of this Agreement, Alcatel-Lucent grants to Customer and Customer accepts a nonexclusive, nontransferable license to use any software and related documentation provided by Alcatel-Lucent pursuant to this Agreement ("Licensed Program") for Customer's own internal use, solely in conjunction with hardware supplied or approved by Alcatel-Lucent. In case of equipment failure, Customer may use the Licensed Program on a backup system, but only for such limited time as is required to rectify the failure.

1.2 Customer acknowledges that Alcatel-Lucent may have encoded within the Licensed Program optional functionality and capacity (including, but not limited to, the number of equivalent nodes, delegate workstations, paths and partitions), which may be increased upon the purchase of the applicable license extensions.

1.3 Use of the Licensed Program may be subject to the issuance of an application key, which shall be conveyed to the Customer in the form of a Supplement to this End User License Agreement. The purchase of a license extension may require the issuance of a new application key.

2. PROTECTION AND SECURITY OF LICENSED PROGRAMS

2.1 Customer acknowledges and agrees that the Licensed Program contains proprietary and confidential information of Alcatel-Lucent and its third party suppliers, and agrees to keep such information confidential. Customer shall not disclose the Licensed Program except to its employees having a need to know, and only after they have been advised of its confidential and proprietary nature and have agreed to protect same.

2.2 All rights, title and interest in and to the Licensed Program, other than those expressly granted to Customer herein, shall remain vested in Alcatel-Lucent or its third party suppliers. Customer shall not, and shall prevent others from copying, translating, modifying, creating derivative works, reverse engineering, decompiling, encumbering or otherwise using the Licensed Program except as specifically authorized under this Agreement. Notwithstanding the foregoing, Customer is authorized to make one copy for its archival purposes only. All appropriate copyright and other proprietary notices and legends shall be placed on all Licensed Programs supplied by Alcatel-Lucent, and Customer shall maintain and reproduce such notices on any full or partial copies made by it.

3. TERM

3.1 This Agreement shall become effective for each Licensed Program upon delivery of the Licensed Program to Customer.

3.2 Alcatel-Lucent may terminate this Agreement: (a) upon notice to Customer if any amount payable to Alcatel-Lucent is not paid within thirty (30) days of the date on which payment is due; (b) if Customer becomes bankrupt, makes an assignment for the benefit of its creditors, or if its assets vest or become subject to the rights of any trustee, receiver or other administrator; (c) if bankruptcy, reorganization or insolvency proceedings are instituted against Customer and not dismissed within 15 days; or (d) if Customer breaches a material provision of this Agreement and such breach is not rectified within 15 days of receipt of notice of the breach from Alcatel-Lucent.

3.3 Upon termination of this Agreement, Customer shall return or destroy all copies of the Licensed Program. All obligations of Customer arising prior to termination, and those obligations relating to confidentiality and nonuse, shall survive termination.

4. CHARGES

4.1 Upon shipment of the Licensed Program, Alcatel-Lucent will invoice Customer for all fees, and any taxes, duties and other charges. Customer will be invoiced for any license extensions upon delivery of the new software application key or, if a new application key is not required, upon delivery of the extension. All amounts shall be due and payable within thirty (30) days of receipt of invoice, and interest will be charged on any overdue amounts at the rate of 1 1/2% per month (19.6% per annum).

5. SUPPORT AND UPGRADES

5.1 Customer shall receive software support and upgrades for the Licensed Program only to the extent provided for in the applicable Alcatel-Lucent software support policy in effect from time to time, and upon payment of any applicable fees. Unless expressly excluded, this Agreement shall be deemed to apply to all updates, upgrades, revisions, enhancements and other software which may be supplied by Alcatel-Lucent to Customer from time to time.

6. WARRANTIES AND INDEMNIFICATION

6.1 Alcatel-Lucent warrants that the Licensed Program as originally delivered to Customer will function substantially in accordance with the functional description set out in the associated user documentation for a period of 90 days from the date of shipment, when used in accordance with the user documentation. Alcatel-Lucent's sole liability and Customer's sole remedy for a breach of this warranty shall be Alcatel-Lucent's good faith efforts to rectify the nonconformity or, if after repeated efforts Alcatel-Lucent is unable to rectify the nonconformity, Alcatel-Lucent shall accept return of the Licensed Program and shall refund to Customer all amounts paid in respect thereof. This warranty is available only once in respect of each Licensed Program, and is not renewed by the payment of an extension charge or upgrade fee.

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6.3 Alcatel-Lucent shall defend and indemnify Customer in any action to the extent that it is based on a claim that the Licensed Program furnished by Alcatel-Lucent infringes any patent, copyright, trade secret or other intellectual property right, provided that Customer notifies Alcatel-Lucent within ten (10) days of the existence of the claim, gives Alcatel-Lucent sole control of the litigation or settlement of the claim, and provides all such assistance as Alcatel-Lucent may reasonably require. Notwithstanding the foregoing, Alcatel-Lucent shall have no liability if the claim results from any modification or unauthorized use of the Licensed Program by Customer, and Customer shall defend and indemnify Alcatel-Lucent against any such claim.

6.4 Alcatel-Lucent Products are intended for standard commercial uses. Without the appropriate network design engineering, they must not be sold, licensed or otherwise distributed for use in any hazardous environments requiring fail safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life-support machines, or weapons systems, in which the failure of products could lead directly to death, personal injury, or severe physical or environmental damage. The Customer hereby agrees that the use, sale, license or other distribution of the Products for any such application without the prior written consent of Alcatel-Lucent, shall be at the Customer's sole risk. The Customer also agrees to defend and hold Alcatel-Lucent harmless from any claims for loss, cost, damage, expense or liability that may arise out of or in connection with the use, sale, license or other distribution of the Products in such applications.

7. LIMITATION OF LIABILITY

7.1 IN NO EVENT SHALL THE TOTAL COLLECTIVE LIABILITY OF ALCATEL-LUCENT, ITS EMPLOYEES, DIRECTORS, OFFICERS OR AGENTS FOR ANY CLAIM, REGARDLESS OF VALUE OR NATURE, EXCEED THE AMOUNT PAID UNDER THIS AGREEMENT FOR THE LICENSED PROGRAM THAT IS THE SUBJECT MATTER OF THE CLAIM. IN NO EVENT SHALL THE TOTAL COLLECTIVE LIABILITY OF ALCATEL-LUCENT, ITS EMPLOYEES, DIRECTORS, OFFICERS OR AGENTS FOR ALL CLAIMS EXCEED THE TOTAL AMOUNT PAID BY CUSTOMER TO ALCATEL-LUCENT HEREUNDER. NO PARTY SHALL BE LIABLE FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, WHETHER OR NOT SUCH DAMAGES ARE FORESEEABLE, AND/OR THE PARTY HAD BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7.2 The foregoing provision limiting the liability of Alcatel-Lucent's employees, agents, officers and directors shall be deemed to be a trust provision, and shall be enforceable by such employees, agents, officers and directors as trust beneficiaries.

8. GENERAL

8.1 Under no circumstances shall either party be liable to the other for any failure to perform its obligations (other than the payment of any monies owing) where such failure results from causes beyond that party's reasonable control.

8.2 This Agreement constitutes the entire agreement between Alcatel-Lucent and Customer and supersedes all prior oral and written communications. All amendments shall be in writing and signed by authorized representatives of both parties.

8.3 If any provision of this Agreement is held to be invalid, illegal or unenforceable, it shall be severed and the remaining provisions shall continue in full force and effect.

8.4 The Licensed Program may contain freeware or shareware obtained by Alcatel-Lucent from a third party source. No license fee has been paid by Alcatel-Lucent for the inclusion of any such freeware or shareware, and no license fee is charged to Customer for its use. The Customer agrees to be bound by any license agreement for such freeware or shareware. CUSTOMER ACKNOWLEDGES AND AGREES THAT THE THIRD PARTY SOURCE PROVIDES NO WARRANTIES AND SHALL HAVE NO LIABILITY WHATSOEVER IN RESPECT OF CUSTOMER'S POSSESSION AND/OR USE OF THE FREEWARE OR SHAREWARE.

8.5 Alcatel-Lucent shall have the right, at its own expense and upon reasonable written notice to Customer, to periodically inspect Customer's premises and such documents as it may reasonably require, for the exclusive purpose of verifying Customer's compliance with its obligations under this Agreement.

8.6 All notices shall be sent to the parties at the addresses listed above, or to any such address as may be specified from time to time. Notices shall be deemed to have been received five days after deposit with a post office when sent by registered or certified mail, postage prepaid and receipt requested.

8.7 If the Licensed Program is being acquired by or on behalf of any unit or agency of the United States Government, the following provision shall apply: If the Licensed Program is supplied to the Department of Defense, it shall be classified as "Commercial Computer Software" and the United States Government is acquiring only "restricted rights" in the Licensed Program as defined in DFARS 227-7202-1(a) and 227.7202-3(a), or equivalent. If the Licensed Program is supplied to any other unit or agency of the United States Government, rights will be defined in Clause 52.227-19 or 52.227-14 of the FAR, or if acquired by NASA, Clause 18-52.227-86(d) of the NASA Supplement to the FAR, or equivalent. If the software was acquired under a contract subject to the October 1988 Rights in Technical Data and Computer Software regulations, use, duplication and disclosure by the Government is subject to the restrictions set forth in DFARS 252-227.7013(c)(1)(ii) 1988, or equivalent.

8.8 Customer shall comply with all export regulations pertaining to the Licensed Program in effect from time to time. Without limiting the generality of the foregoing, Customer expressly warrants that it will not directly or indirectly export, reexport, or transship the Licensed Program in violation of any export laws, rules or regulations of Canada, the United States or the United Kingdom.

8.9 No term or provision of this Agreement shall be deemed waived and no breach excused unless such waiver or consent is in writing and signed by the party claimed to have waived or consented. The waiver by either party of any right hereunder, or of the failure to perform or of a breach by the other party, shall not be deemed to be a waiver of any other right hereunder or of any other breach or failure by such other party, whether of a similar nature or otherwise.

8.10 This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario. The application of the United Nations Convention on Contracts for the International Sale of Goods is hereby expressly excluded.

Preface

The Preface provides general information about the 5620 Service Aware Manager documentation suite, including this guide.

Prerequisites

Readers of the 5620 SAM documentation suite are assumed to be familiar with the following:

- 5620 SAM software structure and components
- 5620 SAM GUI operations and tools
- typical 5620 SAM management tasks and procedures
- device and network management concepts

5620 SAM documentation suite

The 5620 SAM documentation suite describes the 5620 SAM and the associated network management of its supported devices. Contact your Alcatel-Lucent support representative for information about specific network or facility considerations.

Table 1 lists the documents in the 5620 SAM customer documentation suite.

Table 1 5620 SAM customer documentation suite

Guide	Description
5620 SAM core documentation	

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Guide	Description
5620 SAM Alarm Reference	The *5620 SAM Alarm Reference* provides a description of all alarms supported on the 5620 SAM, including LTE and optical alarms, the raising and clearing conditions of each alarm, and the remedial action to fix the problem. The reference is organized by network element type.
5620 SAM Chronos SyncWatch Integration Guide	The *5620 SAM Chronos SyncWatch Integration Guide* provides procedures to allow the 5620 SAM to integrate with the Chronos SyncWatch Probe and NetSMART server. The guide also provides general information about synchronization management in a 5620 SAM-managed network.
5620 SAM Glossary	The *5620 SAM Glossary* defines terms and acronyms used in all of the 5620 SAM documentation.
5620 SAM Integration Guide	The *5620 SAM Integration Guide* provides procedures to allow the 5620 SAM to integrate with other Alcatel-Lucent products and third-party products.
5620 SAM Network Element Compatibility Guide	The *5620 SAM Network Element Compatibility Guide* provides release-specific information about the compatibility of managed devices in 5620 SAM releases. This document is updated regularly; always consult the latest version on OLCS as described in Documentation and resources on the web.
5620 SAM Parameter Guide	The *5620 SAM Parameter Guide* provides: • parameter descriptions that include value ranges and default values • parameter options and option descriptions • parameter and option dependencies • parameter mappings to the 5620 SAM-O XML equivalent property names Parameters specific to LTE network elements are covered in the *5620 SAM LTE Parameter Reference*. Parameters specific to 1830 PSS network elements are covered in the *5620 SAM Optical Parameter Reference*. The 5620 SAM online help system includes a Parameter Search Tool that allows you to look up parameters or 5620 SAM and 5650 CPAM forms. See the *5620 SAM User Guide* for more information about using the Parameter Search Tool.
5620 SAM Planning Guide	The *5620 SAM Planning Guide* provides information about 5620 SAM scalability and recommended hardware configurations.
5620 SAM Release Description	The *5620 SAM Release Description* provides information about the new features associated with a 5620 SAM software release.
5620 SAM Release Notice	The *5620 SAM Release Notice* provides important information about the software release, including outstanding issues and restrictions. This document is not shipped with the on-product customer documentation and must be obtained from OLCS as described in Documentation and resources on the web.
5620 SAM Scripts and Templates Developer Guide	The *5620 SAM Scripts and Templates Developer Guide* provides information that allows users to develop, manage, and run CLI-based or XML-based scripts or templates. The guide is intended for developers, skilled administrators, and operators who are expected to be familiar with the following: • CLI scripting, XML, and the Velocity engine • basic scripting or programming • 5620 SAM functions
5620 SAM Statistics Management Guide	The *5620 SAM Statistics Management Guide* provides information about how to configure performance and accounting statistics collection and how to view counters using the 5620 SAM. Network examples are included.

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Guide	Description
5620 SAM System Administrator Guide	The *5620 SAM System Administrator Guide* provides information about the tasks performed by a user with a 5620 SAM admin role, including: • 5620 SAM security management tasks such as setting up all required user accounts and user groups • advanced configuration tasks such as configuring, maintaining, and administering the 5620 SAM operational environment • routine maintenance tasks to maintain the 5620 SAM hardware and system integrity and efficiencies
5620 SAM System Architecture Guide	The *5620 SAM System Architecture Guide* is intended for technology officers, network planners, and system administrators to increase their knowledge of the 5620 SAM software structure and components. It describes the system structure, software components, and interfaces of the 5620 SAM. In addition, 5620 SAM fault tolerance, security, and network management capabilities are discussed from an architectural perspective.

5620 SAM Troubleshooting Guide	The *5620 SAM Troubleshooting Guide* provides task-based procedures and user documentation to:
	• help resolve issues in the managed and management networks
	• identify the root cause and plan corrective action for:
	  • alarm conditions on a network object or customer service
	  • problems on customer services with no associated alarms
	• list problem scenarios, possible solutions, and tools to help check:
	  • network management LANs
	  • network management platforms and operating systems
	  • 5620 SAM client GUIs and client OSS applications
	  • 5620 SAM servers
	  • 5620 SAM databases

5620 SAM User Guide	The *5620 SAM User Guide* provides information about using the 5620 SAM to manage the service-aware IP/MPLS network, including GUI basics, service configuration, and policy management. The *5620 SAM User Guide* uses a task-based format that employs both high-level workflows and detailed procedures. 5620 SAM management information specific to LTE network elements is covered in the *5620 SAM LTE ePC User Guide* and *5620 SAM LTE RAN User Guide*. 5620 SAM management information specific to 1830 PSS network elements is covered in the *5620 SAM Optical User Guide*. 5620 SAM management information specific to 9500 MPR and 9500 MPRe devices is covered in the *5620 SAM MPR User Guide*.
5620 SAM	*5650 CPAM Installation and Upgrade Guide*	The *5620 SAM*	*5650 CPAM Installation and Upgrade Guide* provides OS considerations, configuration information, and procedures for the following: • installing, upgrading, and uninstalling 5620 SAM and 5650 CPAM software in standalone and redundant deployments • 5620 SAM system migration to a different system • conversion from a standalone to a redundant 5620 SAM system
5620 SAM MPR documentation	
5620 SAM MPR User Guide	The *5620 SAM MPR User Guide* describes how to discover, configure, and manage 9500 MPR and 9500 MPRe devices using the 5620 SAM. The guide is intended for network planners, administrators, and operators and is to be used in conjunction with other guides in the 5620 SAM documentation suite where management of 9500 MPR and 9500 MPRe devices does not differ from other network elements. Alcatel-Lucent recommends that you review the entire *5620 SAM MPR User Guide* before you attempt to use the 5620 SAM in your MPR network.
5620 SAM LTE documentation	
5620 SAM LTE Release Description	The *5620 SAM LTE Release Description* provides information about the LTE features associated with the release.

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Guide	Description
5620 SAM LTE ePC User Guide	The *5620 SAM LTE ePC User Guide* describes how to discover, configure, and manage LTE ePC devices using the 5620 SAM. The guide is intended for LTE ePC network planners, administrators, and operators and is to be used in conjunction with other guides in the 5620 SAM documentation suite where management of ePC devices does not differ from other network elements. Alcatel-Lucent recommends that you review the entire *5620 SAM LTE ePC User Guide* before you attempt to use the 5620 SAM in your LTE network.
5620 SAM LTE OSS Interface Developer Guide	The *5620 SAM LTE OSS Interface Developer Guide* provides information about developing LTE OSS applications, including information about the 3GPP OSS interface components and architecture, understanding the 5620 SAM-O schema in the context of LTE, compliance with 3GPP standards, and typical operational scenarios.
5620 SAM LTE Parameter Reference	The *5620 SAM LTE Parameter Reference* provides a list of all LTE ePC and LTE RAN parameters supported in the 5620 SAM.
5620 SAM LTE RAN User Guide	The *5620 SAM LTE RAN User Guide* describes how to discover, configure, and manage the Evolved NodeB, or eNodeB, using the 5620 SAM. The guide is intended for LTE RAN network planners, administrators, and operators and is to be used in conjunction with other guides in the 5620 SAM documentation suite where management of RAN devices does not differ from other network elements. Alcatel-Lucent recommends that you review the entire *5620 SAM LTE RAN User Guide* before you attempt to use the 5620 SAM in your LTE network.
5620 SAM optical documentation	
5620 SAM Optical Parameter Reference	The *5620 SAM Optical Parameter Reference* provides a list of all optical device parameters supported in the 5620 SAM.
5620 SAM Optical User Guide	The *5620 SAM Optical User Guide* describes how to discover, configure, and manage optical devices using the 5620 SAM. The guide is intended for optical network planners, administrators, and operators and is to be used in conjunction with other guides in the 5620 SAM documentation suite where management of optical devices does not differ from other network elements. Alcatel-Lucent recommends that you review the entire *5620 SAM Optical User Guide* before you attempt to use the 5620 SAM in your optical network.
5620 SAM-O documentation	
5620 SAM XML OSS Interface Developer Guide	The *5620 SAM XML OSS Interface Developer Guide* provides information that allows you to: • use the 5620 SAM XML OSS interface to access network management information • learn about the information model associated with the managed network • develop OSS applications using the packaged methods, classes, data types, and objects necessary to manage 5620 SAM functions
5650 CPAM documentation	
5650 CPAM Release Description	The *5650 CPAM Release Description* provides information about the new features associated with a 5650 CPAM software release.
5650 CPAM Release Notice	The *5650 CPAM Release Notice* provides important information about the 5650 CPAM software release and corresponding 7701 CPAA software release, including outstanding issues and restrictions. This document is not shipped with the on-product documentation and must be obtained from OLCS as described in Documentation and resources on the web.
5650 CPAM User Guide	The *5650 CPAM User Guide* describes how to capture, inspect, visualize, and troubleshoot IGP and BGP topologies using the 5650 CPAM.
7701 CPAA Hardware Revision 2 Setup and Software Installation Instructions	The *7701 CPAA Hardware Revision 2 Setup and Software Installation Instructions* describes the hardware setup and software installation for the 7701 CPAA Hardware Revision 2, the route analyzer component of the 5650 CPAM.

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Guide	Description
7701 CPAA Hardware Revision 1 Setup and Software Installation Instructions	The *7701 CPAA Hardware Revision 1 Setup and Software Installation Instructions* describes the hardware setup and software installation for the 7701 CPAA Hardware Revision 1, the route analyzer component of the 5650 CPAM.

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Obtaining customer documentation

You can obtain 5620 SAM customer documentation:

- from the product
- on the web

On-product documentation

The 5620 SAM on-product customer documentation is delivered in HTML and PDF. Choose Help→User Documentation from the 5620 SAM client GUI to open the help system in a web browser. For best results, use Internet Explorer or Firefox.

The help system opens to the User Documentation Index, which provides a summary of and links to all 5620 SAM customer documents.

Click on the Using the help system tab on the User Documentation Index page to find usage tips for navigating and searching within the on-product customer documentation.

You can return to the User Documentation Index at any time by clicking on the Home icon, shown in Figure 1.

Figure 1 Home icon



Documentation and resources on the web

The 5620 SAM customer documentation is available for download in PDF format from the Alcatel-Lucent Customer Support Center: http://www.alcatel-lucent.com/myaccess. If you are a new user and require access to this service, please contact your Alcatel-Lucent support representative.

Release Notices and any other documents not delivered on-product are posted to this site.

5620 SAM product alerts

Product technical alerts are used to communicate important information to customers about released loads. You can view and subscribe to product alerts for the 5620 SAM from the Alcatel-Lucent Customer Support Center.

Working with PDFs

You can download PDFs of individual guides from the Alcatel-Lucent Customer Support Center, or you can choose to download a zip of all PDFs for a particular release.

You can use the Search function of Acrobat Reader (File→Search) to find a term in a PDF of any 5620 SAM document. To refine your search, use appropriate search options (for example, search for whole words only or enable case-sensitive searching). You can also search for a term in multiple PDFs at once, provided that they are located in the same directory. For more information, see the Help for Acrobat Reader.



Note — Users of Mozilla browsers may receive an error message when opening the PDF files in the 5620 SAM documentation suite. The offline storage and default cache values used by the browsers are the cause of the error message.

Alcatel-Lucent recommends changing the Mozilla Firefox offline storage or Mozilla 1.7 cache value to 100 Mbytes to eliminate the error message.

Documentation conventions

Table 2 lists the conventions that are used throughout the documentation.

Table 2 Documentation conventions

Convention	Description	Example
Key name	Press a keyboard key	Delete
Italics	Identifies a variable	*hostname*
Key+Key	Type the appropriate consecutive keystroke sequence	CTRL+G
Key–Key	Type the appropriate simultaneous keystroke sequence	CTRL–G
*	An asterisk is a wildcard character, which means “any character” in a search argument.	log_file*.txt
↵	Press the Return key	↵
—	An em dash indicates there is no information.	—
→	Indicates that a cascading submenu results from selecting a menu item	Policies→Alarm Policies

Procedures with options or substeps

When there are options in a procedure, they are identified by letters. When there are substeps in a procedure, they are identified by Roman numerals.

Example of options in a procedure

At step 1, you can choose option a or b. At step 2, you must do what the step indicates.

1 This step offers two options. You must choose one of the following.

   a This is one option.

   b This is another option.

2 You must perform this step.

Example of substeps in a procedure

At step 1, you must perform a series of substeps within a step. At step 2, you must do what the step indicates.

1 This step has a series of substeps that you must perform to complete the step. You must perform the following substeps.

   i This is the first substep.

   ii This is the second substep.

   iii This is the third substep.

2 You must perform this step.

Measurement conventions

Measurements in this document are expressed in metric units and follow the Système international d'unités (SI) standard for abbreviation of metric units. If imperial measurements are included, they appear in brackets following the metric unit.

Table 3 lists the measurement symbols used in this document.

Table 3 Bits and bytes conventions

Measurement	Symbol
bit	b
byte	byte
kilobits per second	kb/s

Important information

The following conventions are used to indicate important information:



Warning — Warning indicates that the described activity or situation may, or will, cause equipment damage or serious performance problems.



Caution — Caution indicates that the described activity or situation may, or will, cause service interruption.



Note — Notes provide information that is, or may be, of special interest.

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Introduction

1 — What's new?

2 — 1830 PSS overview

1 — What's new?

1.1 What's new in 5620 SAM Release 12.0 for 1830 PSS *1-2*

1.1 What's new in 5620 SAM Release 12.0 for 1830 PSS

This section highlights new features for 5620 SAM Release 12.0 and provides pointers into the documentation for more information.

This section highlights new optical features for 5620 SAM Release 12.0 and provides pointers into the documentation for more information.

New features and enhancements that are specific to LTE ePC management, LTE RAN management, core 5620 SAM functions, 5620 SAM-O, 9500 MPR, and 5650 CPAM are listed and described in the following guides:

- *5620 SAM LTE ePC User Guide*
- *5620 SAM LTE RAN User Guide*
- *5620 SAM User Guide*
- *5620 SAM LTE OSS Interface Developer Guide*
- *5620 SAM XML OSS Interface Developer Guide*
- *5620 SAM MPR User Guide*
- *5650 CPAM User Guide*
- *5620 SAM MPR User Guide*

The *5620 SAM Release Description* and *5620 SAM LTE Release Description* provide Committed, Candidate, and Stretch feature lists for the entire 12.0 Release. The release description documents not only include the NMS features and nodal features that are documented in 5620 SAM customer documentation, they also identify the nodal features supported by the 5620 SAM but documented in the NE customer documentation.

Maintenance releases

Some maintenance releases may not be listed in this section, either because no new optical features are introduced, or the features introduced do not require documentation.

What's new in 5620 SAM Release 12.0 R1 for 1830 PSS

Table 1-1 lists the features and functions added in the 5620 SAM Release 12.0 R1 for 1830 PSS support. See the *5620 SAM User Guide* for more information about non-1830 PSS features and functions.

Table 1-1 5620 SAM Release 12.0 R1 1830 PSS features

Feature ID	Feature	Description	Reference
SAM-4877	Clear raw bins	The 5620 SAM supports clearing the raw bin counters of the supported PM profiles.	Procedure 15-3
SAM-7302	Physical topology map changes in optics to support existing LLDP feature	When an upper layer link is discovered between two 1830 PSS devices, the physical link between the two devices is displayed in magenta on the physical topology map.	See "Physical topology map" and "Contextual menu options" in the *5620 SAM User Guide*

(1 of 2)

Feature ID	Feature	Description	Reference
SAM-13293	Support for the 4QPA8 OT card	The 5620 SAM provides equipment support for the 4QPA8 OT card.	Section 15.8
SAM-30075	External browser launch in secure mode	The 5620 SAM enables the user to start the 1830 PSS external element browser when the 1830 PSS is in the secure mode.	Section 6.1
SAM-30402	Support discovery of services created on the 1354 PhM element manager	The 5620 SAM supports discovery of services created on the 1354 PhM element manager.	Procedure 20-3
SAM-38055	Overriding alarm severity for 1830 PSS alarms	The 5620 SAM supports overriding 1830 PSS alarm severity.	Section 23.3 Procedure 23-3

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2 — 1830 PSS overview

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2.1 System overview

The 1830 Photonic Service Switch product family provides CWDM, DWDM, and OTN capabilities. Photonic networking increases flexibility and operational automation. The 5620 SAM supports the 1830 PSS product family of devices which includes:

- 1830 PSS-32—central office device
- 1830 PSS-16—end office device
- 1830 PSS-4—edge device platform
- 1830 PSS-1—edge aggregation devices that collect lower rate signals for input to the 1830 PSS network, which include:
  - 1830 PSS-1 GBE edge device
  - 1830 PSS-1 MD4H edge device
  - 1830 PSS-1 AHP

See the current *5620 SAM Network Element Compatibility Guide* for information about the 1830 PSS support in a 5620 SAM release.

1830 PSS-32 central office device/1830 PSS-16 end office device

The 1830 PSS-32 and 1830 PSS-16 provide multi-service and multi-reach solutions. The shelves are referred to collectively as the 1830 PSS-32/1830 PSS-16. They are scalable optical transport platforms for regional and metropolitan network transport and services delivery.

- The 1830 PSS-32 central office device provides a 32-slot platform for core, central office applications.
- The 1830 PSS-16 end office device provides a 16-slot platform that can be used for end office or smaller core office applications.

For information about the hardware and capabilities supported by the shelves, see the *Alcatel-Lucent 1830 Photonic Service Switch 32/16 Product Information and Planning Guide*.

The 1830 PSS-32 network consists of standalone NE, or two or more interconnected NEs that provide SDH/SONET/GigE aggregation and transport, 10G, FC (R1.1), or transponderless wavelength services in a metropolitan or regional networking environment.

The 1830 PSS-32 and 1830 PSS-16 support bidirectional transmission over a single fiber. The devices can be configured to support applications using CWDM filters. Each bidirectional transmission requires different CWDM wavelengths in each direction. Bidirectional transmissions over a single fiber is supported with the following filters and OTs:

- SFC-2
- SFC-4
- SFC-8
- 4DPA4
- 11STAR1
- 11STAR1A
- 11STMM10
- 11DPE12(E)

See the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 Product Information and Planning Guide* and the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 (PSS-36/PSS-32/PSS-16) User Provisioning Guide* for more information.

1830 PSS-4 edge device platform

The 1830 PSS-4 edge device platform is designed for installation near the edge of the metropolitan networks. The edge device platform provides a flexible, power saving, OTN-based solution for metropolitan and access applications. The target application provides OTN-based multiple service aggregation for CWDM and DWDM networks. The application can also be configured to provide an FOADM terminal, and in-line amplifier solution for the 1830 PSS-32 networks. The platform supports non-switched and electrical switched configurations, and ensures full interworking and compatibility with other 1830 PSS product platforms.

The 1830 PSS-4 supports bidirectional transmission over a single fiber. See the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 Product Information and Planning Guide* and the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 (PSS-36/PSS-32/PSS-16) User Provisioning Guide* for more information.

See the *Alcatel-Lucent 1830 Photonic Service Switch 4 (PSS-4) User Guide* for more information.

1830 PSS-1 GBE edge device

The 1830 PSS-1 GBE edge device is a 1-RU device for installation in 19-in., ANSI, or ETSI racks. The device is based on a 12xGBE optical transponder that supports optional CWDM filters. The device provides an optimized WDM access platform that includes the following features:

- 1-RU height
- dc power (ac power adapter available)
- standard or temperature-hardened versions
  - standard 1830 PSS-1 GBE
  - hardened 1830 PSS-1 GBEH
- Black & White (B&W), CWDM, or DWDM optics
- in-band management using GCC
- stackable as a single NE
- alignment with the 1830 PSS service cards and operations
- support for single-fiber bidirectional transmission

See the *1830 Photonic Service Switch 1 (PSS-1) GBEH Edge Device User Guide* for more information.

1830 PSS-1 MD4H edge device

The 1830 PSS-1 MD4H edge device is a 1-RU device for installation in 19-in., ANSI, or ETSI racks. The MD4H designation represents the device as a multiservice dual module unit with 4 client ports per module, which is temperature hardened. The device is based on two 1830 PSS-32 4DPA4 optical transponders, which are remapped into an external device that also supports optional CWDM filters. The device provides an optimized WDM access platform that includes the following features:

- 1-RU height
- dc power (ac power adapter available)
- standard or temperature-hardened versions
- Black & White (B&W), CWDM, or DWDM optics
- in-band management using GCC
- alignment with the 1830 PSS service cards and operations
- support for single-fiber bidirectional transmission

See the *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) MD4H Edge Device User Guide* for more information.

1830 PSS-1 AHP

The 1830 PSS-1 AHP is a 1-RU edge device that supports an adapted amplifier. Two devices can be used to provide a low-cost ILA for the 1830 PSS. The 1830 PSS-1 AHP software provides the following enhanced capabilities:

- multi-shelf NE management
- IP routing (OSPF) over OSC links
- wave key assignment distribution over OSPF LSAs
- automatic/manual power management between devices
- keyed-unkeyed DWDM OCH XC provisioning and OCH trail management
- DCM shelf/card/port management

See the *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) AHP Amplifier User Guide* for more information.

Before you can use the 5620 SAM to manage one or more 1830 PSS devices, the required 1830 PSS modules and quantities must be included in the 5620 SAM software license. See “Software and license configuration procedures” in the *5620 SAM System Administrator Guide* for information about viewing and updating the license information.

2.2 About this guide

This guide provides information about how to access the 5620 SAM to configure and manage the 1830 PSS network. The 5620 SAM guides describe the GUI operations associated with each function, and indicate whether the function is available, using the OSSI. See the *5620 SAM XML OSS Interface Developer Guide* for information about using the OSSI to perform a 5620 SAM function. The guide is intended for optical network planners, administrators, and operators and is to be used in

conjunction with other guides in the 5620 SAM documentation suite where management of optical devices does not differ from other network elements. Procedures that are unique to managing the 1830 PSS are included in this document and make reference to configurable parameters described in the *5620 SAM Optical Parameter Reference*.

The document describes the features, and configurations, for the 1830 PSS-32, 1830 PSS-16 and 1830 PSS-4 as well as their hardware components, NEs, and networks. See the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 Product Information and Planning Guide* and the *Alcatel-Lucent 1830 Photonic Service Switch 4 (PSS-4) User Guide* for more information.

A high-level overview of the 1830 PSS-1 edge devices is included. For more information about the 1830 PSS-1 edge devices, see the *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) GBEH Edge Device User Guide*, the *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) MD4H Edge Device User Guide*, and the *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) AHP Amplifier User Guide*.

The guide contains the following volumes:

- Introduction—contains general 1830 PSS information such as the following:
  - features supported
  - a system overview
- System management—contains information about map management and discovery of the 1830 PSS devices using the 5620 SAM, such as the following:
  - device discovery
  - user security
  - GUI map management
  - navigation tree
  - CLI sessions and scripts
- Device and equipment management—contains information about the 1830 PSS device support and management tasks that can be performed using the 5620 SAM, such as the following:
  - in and out-of-band management
  - SONET/SDH mode switching
  - file backup and restore
  - upgrade management
  - object resynchronization
  - connection management
  - shelf, card slots, and port management
  - equipment management
  - power management
- Policy management—contains information about configuring and applying 5620 SAM policies that define rules for 1830 PSS management, or 5620 SAM operation
- OTN layer management—contains information about various OTN layers that can be managed using the 5620 SAM, such as the following:
  - ODU
  - OTU
  - OCH
  - OTS

- Performance management—contains information about the 1830 PSS performance monitoring tasks performed using the 5620 SAM, such as the following:
  - performance statistics
  - TCA profiles
- Network management—contains information about the 1830 PSS network functions, such as the following:
  - routing and forwarding
  - service tunnel management
- Service management—contains information about the 1830 PSS devices managing the optical transport services, VPLS and mirror services using the 5620 SAM , such as the following:
  - service creation and configuration
  - transport service discovery
  - ODU management
  - OTN trail management
  - VPLS service management
  - mirror service management
- Fault management—contains troubleshooting information, such as the following:
  - alarm management
  - Ethernet OAM
  - RCA audit

1830 PSS reference documentation

See the following documents for more information about the 1830 PSS:

- *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) GBEH Edge Device User Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch 1 (PSS-1) MD4H Edge Device User Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch (PSS-1) AHP Amplifier User Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch 4 (PSS-4) User Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch User Provisioning Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch Product Information and Planning Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch Maintenance and Trouble-Clearing Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch 32/16 (PSS-32/PSS-16) Installation and System Turn-Up Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Safety Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Command Line Interface Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch (PSS) TL1 Commands and Messages Guide*

- *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Engineering and Planning Tool User Guide*
- *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Commissioning and Power Balancing Tool User Guide*

2.3 IP/Optical management workflow

The following workflow describes the sequence of high-level tasks that are required to deploy the 1830 PSS and use the 5620 SAM for 1830 PSS management.

The 5620 SAM works in parallel to the planning and commissioning functions which are performed by EPT and CPB tools. There is no interaction between 5620 SAM and the EPT and CPB tools.

1 Plan the 1830 PSS deployment using the Engineering Planning Tool by considering, for example:

- network parameters
- sites
- fiber connectivity
- traffic patterns
- run automatic design synthesis
- create reports
- divide the network into downloadable systems for automatic commissioning
- create the commissioning files

See the *Alcatel-Lucent 1830 PSS Engineering and Planning Tool User Guide* for more information.

2 Install the CPB tool for provisioning, commissioning and power balancing functions of the 1830 PSS. See the *Alcatel-Lucent 1830 PSS Commissioning and Power Balancing Tool (CPB) User Guide* for more information.

3 Configure and manage the 1830 PSS device using the 5620 SAM.

i Use the 5620 SAM to discover the commissioned 1830 PSS devices; see chapter 3.

ii Configure SSH2 security for CLI sessions, if required; see chapter 7.

iii View, manage, and configure the discovered 1830 PSS device network objects.

- device objects; see chapter 8
- shelf, card, port, and LAG objects; see chapter 9
- equipment view on a specified browser; see chapter 10
- power levels; see chapter 11

iv Configure the 5620 SAM policies that specify the conditions for 5620 SAM management functions including:

- QoS policy; see chapter 12
- ACL IP filter; see chapter 13

v View, manage, and configure the OTN layers on 1830 PSS. See chapter 14.

vi View, manage, and configure the network functions, as required

- routing and forwarding; see chapter 17
- service tunnels; see chapter 18

vii View, manage, and configure the services and related functions.

- optical transport services; see chapter 20
- VPLS services; see chapter 21
- mirror services; see chapter 22

viii Collect 5620 SAM and 1830 PSS statistics see chapter 15 and the *5620 SAM Statistics Management Guide*.

1830 PSS system management

3 — 1830 PSS discovery

4 — 1830 PSS user security

5 — 1830 PSS map management

6 — 1830 PSS equipment navigation tree

7 — 1830 PSS CLI sessions

3 — 1830 PSS discovery

3.1 Device discovery overview *3-2*

3.2 1830 PSS device discovery *3-2*

3.3 SNMP management *3-2*

3.4 1830 PSS user configuration *3-3*

3.1 Device discovery overview

The 5620 SAM discovers the 1830 PSS devices and reconciles their properties with the contents of the database. The 5620 SAM discovers the devices using SNMP.

3.2 1830 PSS device discovery

During the discovery process, the IP address that is used to discover an 1830 PSS device is the Loopback IP address (also called the system ID) of the 1830 PSS device. When the system ID is used to discover a device, the management is in-band. When the management IP address of the device management port is used to discover a device, the management is out-of-band. See section 8.2 for more information about in-band and out-of-band management.



Note 1 — Before device discovery, ensure that the SNMP Source parameter of the 1830 PSS device is set to Loopback IP only using the WebUI or CLI.

Note 2 — If you need to change the system name and system ID of a device, you must unmanage and delete the device from the 5620 SAM before you change the system ID, and then rediscover the device. See Procedures “To manage, suspend, or unmanage a device” and “To delete a device” in the *5620 SAM User Guide* for information about unmanaging and deleting devices.

To discover the 1830 PSS devices, you must use the 5620 SAM Discovery Manager to create discovery rules and scan the network as specified by the rules. See “Device discovery procedures” in the *5620 SAM User Guide* for more information.

Table 3-1 Device discovery references

Topics	Chapter	Document
To configure NE mediation	Device Discovery	*5620 SAM User Guide*
To configure a discovery rule	Device Discovery	*5620 SAM User Guide*
To discover devices	Device Discovery	*5620 SAM User Guide*
To edit a discovery rule	Device Discovery	*5620 SAM User Guide*
To manage, suspend, or unmanage a device	Device Discovery	*5620 SAM User Guide*
To delete a device	Device Discovery	*5620 SAM User Guide*

3.3 SNMP management

The 1830 PSS-32/1830 PSS-16 supports the following SNMP functions:

- provisioning interface for equipment and parameters using SNMP v2c and v3
- alarm and trap reporting
- trap destination definition

For information about the 1830 PSS SNMP support, see the *1830 Photonic Service Switch 36/32/16 Product Information and Planning Guide* and the *1830 Photonic Service Switch 36/32/16 User Provisioning Guide*. For information about SSH security, see the chapter Device discovery of the *5620 SAM User Guide*.

To configure admin SNMP users using the CLI or the WebUI, see the *1830 Photonic Service Switch (PSS-1) Command Line Interface Guide* or the *1830 Photonic Service Switch 36/32/16 User Provisioning Guide*.



Note — The 5620 SAM supports SNMP v1, v2c, and v3 to manage the 1830 PSS devices.

Table 3-2 SNMP management references

Topics	Chapter	Document
SSH security	Device Discovery	*5620 SAM User Guide*
To configure SNMPv3 on a device	Device Discovery	*5620 SAM User Guide*
To verify that SSH2 is enabled on a device	Device Discovery	*5620 SAM User Guide*
To enable SSH host key persistence on a device	Device Discovery	*5620 SAM User Guide*
SNMP authentication	Security administration procedures	*1830 Photonic Service Switch 36/32/16 User Provisioning Guide*
User management and administration procedures on the WDM application using the WebUI	Security administration procedures	1830 Photonic Service Switch 36/32/16 User Provisioning Guide
config admin snmp users	Security, DCN, and DB Management commands	1830 Photonic Service Switch (PSS-1) Command Line Interface Guide

3.4 1830 PSS user configuration

The 5620 SAM supports configuration of SNMPv2 (console) and SNMPv3 users for 1830 PSS devices.

Procedure 3-1 To configure a user account to access an 1830 PSS device

1 Choose Administration→Security→NE User Configuration from the 5620 SAM main menu. The NE User Configuration form opens.

2 Click on the Create button. The NE User Global Policy (Create) form opens with the General tab displayed.

3 Perform one of the following::

a Configure the parameters for SNMPv2 (Console) user:

- User Name
- Access
- Password
- Confirm Password
- Access Privilege
- Session Inactivity Timeout (minutes)

b Configure the parameters for SNMPv3 user:

- User Name
- Access

4 Configure the authentication parameters if you have SNMPv3 permissions.

i Click on the SNMPv3 tab.

ii Configure the parameters:

- Authentication Protocol
- Privacy Protocol
- New Authentication Password
- Confirm New Auth Password
- New Privacy Password
- Confirm New Privacy Password
- Access Privilege



Note — The 1830 PSS supports only MD5 for the Authentication Protocol parameter and the AES128 for Privacy protocol parameter.

iii Click on the OK button.

5 Click on the Apply button to save the changes.

6 Close the NE User Global Policy (Create) form.

You must distribute the users to specific devices, as described in Procedure 3-2.

Procedure 3-2 To distribute the users to specific 1830 PSS devices

1 Create the user as described in Procedure 3-1.

2 Choose Administration→Security→NE User Configuration. The NE User Configuration form opens.

3 Set the filter criteria, if applicable.

4 Click on the Search button. A user list opens.

5 Choose a user and click on the Properties button. The NE User - Global Policy (Edit) form opens.

6 When the Configuration Mode parameter is Draft, the Distribute button or the Distribute option under the More Actions button, is disabled and the policy cannot be distributed to the 1830 PSS devices. You must first release the policy for distribution. If the Configuration Mode parameter is Released, go to step 7.

- **i** Click on the Switch Mode button beside the Configuration Mode parameter. A dialog box appears.
- **ii** Click on the Yes button. The configuration mode of the policy is changed to Released and the The Release - SR Local User form opens with a list of available nodes.
- **iii** Go to step 8.

7 Click on the Distribute button. If the Distribute button is not visible, click on the More Actions button and choose Distribute. The Distribute - SR Local User form opens.

8 Choose the 1830 PSS devices from the Available Nodes list and click on the right arrow button. The devices move to the Selected Nodes list on the right side of the form.

9 Click on the Distribute button. If the Distribute button is not visible, click on the More Actions button and choose Distribute. The policy is distributed to the devices.

10 Close the Distribute - SR Local User form. The NE User - Global Policy (Edit) form reappears.

11 Configure the distribution mode of the local definitions.

- **i** Click the Distribution Mode button. If the Distribution Mode button is not visible, click on the More Actions button and choose Distribution Mode. The Distribution Mode - SR Local User form opens.
- **ii** Configure the Distribution Mode parameter. The local definitions that are configured with the specified distribution mode are listed.
- **iii** Choose one ore more rows from the Available Nodes list.
- **iv** Click on the right arrow button. The devices move to the Selected Nodes list on the right side of the form.
- **v** Click on the Sync With Global or Local Edit button, depending on the distribution mode of the specified devices.
- **vi** Close the Distribution Mode - SR Local User form. The NE User - Global (Edit) form reappears.

12 Close the NE User - Global (Edit) form.

13 Close the NE User Configuration form.



Note — The SNMPv3 users cannot be distributed on 1830 PSS devices discovered using SNMPv2.

Procedure 3-3 To modify an 1830 PSS user configuration

1 Choose Administration→Security→NE User Configuration. The NE User Configuration form opens listing the NE Users.

2 Choose the user that needs to be modified and click on the Properties button. The NE User Global Policy (Edit) form opens with the General tab displayed.

3 Perform one of the following:

a Modify the global user parameters.

i Configure the parameters on the General tab

- User Name
- Access
- Password
- Confirm Password
- Access Privilege
- Session Inactivity Timeout (minutes)

ii Click on the SNMPv3 tab.

iii Configure the parameters:

- New Authentication Password
- Confirm New Auth Password
- New Privacy Password
- Confirm New Privacy Password

iv Distribute the user to specific devices. See Procedure 3-2.

b To modify local user definitions, perform the following:

i Click on the Local Definitions tab. The 1830 PSS users are listed.

ii Choose an entry and click on the Properties button. The NE User Local Policy (Edit) form opens with the General tab displayed.

iii Click on the Switch Mode button to change the Distribution Mode parameter to Local Edit Only.

iv Configure the parameters:

- Access
- Password
- Confirm Password
- Access Privilege
- Session Inactivity Timeout (minutes)

v Click on the SNMPv3 tab.

vi Configure the parameters:

- New Authentication Password
- Confirm New Auth Password
- New Privacy Password
- Confirm New Privacy Password

vii Click on the apply button to save the configurations.



Note — Depending on the distribution mode of a local policy, when you modify a global policy using the 5620 SAM, the local instance is also updated to synchronize the policy instances. If a local policy differs from the corresponding global policy because of changes to the global policy, a warning alarm is generated for the local policy.

Procedure 3-4 To delete an 1830 PSS user configuration

1 Choose Administration→Security→NE User Configuration. The NE User Configuration form opens with a list of NE Users displayed.

2 Perform one of the following:

a Choose the user that needs to be deleted and click on the Delete button.



Note — If you delete a global policy, all of the local instances are deleted.

b To delete a local user, perform the following:

i Choose the global user containing the local user that needs to be deleted and click on the Properties button. The NE User Global Policy (Edit) form opens with the General tab displayed.

ii Click on the Local Definitions tab. The 1830 PSS devices are listed.

iii Choose an entry and click on the Delete button.

4 — 1830 PSS user security

4.1 User security overview *4-2*

4.2 5620 SAM user and user group security *4-2*

4.1 User security overview

The 5620 SAM provides security functions for user groups, devices, and paths.



Note — The administrator can restrict the access of some operators to equipment and services in their domain, for example, transport or data.

4.2 5620 SAM user and user group security

You can use the 5620 SAM to configure user accounts, user groups, and spans of control, which define the 5620 SAM objects the users can view and manage. For more information about user security, see "5620 SAM user security tasks" in the *5620 SAM System Administrator Guide*.

Span of control

The span of control allows you to assign access permissions to a functional group of 5620 SAM server objects; for example, a group of NEs or services.

You can use the 5620 SAM to create a span of control, or to copy an existing span of control and modify the list of associated objects to create a span of control. The objects that are in a span of control, or that can be added to a span of control, are called span objects. The 5620 SAM has several pre-defined spans of control. Each new 5620 SAM object, for example, a discovered NE, is added to the corresponding pre-defined span of control. Optical objects, such as the wavelength service on the 1830 PSS, are added to the Default Transport Span.

For more information about the span of control, see "Span of control" in the *5620 SAM System Administrator Guide*.

You can filter the objects the map or the list displays, based on the user span of control. By default, the GUI displays only the objects that are in the View Access and Edit Access spans of control of the user.

Table 4-1 User security references

Topics	Chapter	Document
User account and group management	5620 SAM user security tasks	*5620 SAM System Administrator Guide*
User activity logging	5620 SAM user security tasks	*5620 SAM System Administrator Guide*
Sample span rule configuration	5620 SAM user security tasks	*5620 SAM System Administrator Guide*
Sample 5620 SAM user authentication configuration	5620 SAM user security tasks	*5620 SAM System Administrator Guide*
Remote authentication and authorization	5620 SAM user security tasks	*5620 SAM System Administrator Guide*
5620 SAM user security procedures	5620 SAM user security tasks	*5620 SAM System Administrator Guide*

5 — 1830 PSS map management

5.1 Map management overview *5-2*

5.2 Network topology maps *5-2*

5.3 Map management procedures *5-3*

5.1 Map management overview

This chapter describes the network topology and grouping in the 5620 SAM that apply to the 1830 PSS. The 5620 SAM uses map windows to represent network objects and paths. For the 1830 PSS, the 5620 SAM supports physical network topology maps. Each map displays network objects and information, and provides contextual menus to open forms that display additional information. See "5620 SAM topology map management overview" in the *5620 SAM User Guide* for more information about network topology.

5.2 Network topology maps

Service topology map

A service topology map can be viewed from the service properties form. See Procedure 5-1. If you move an NE in the service topology map view, the associated ports are also moved with the NE. To view the optical link properties from the topology map, double-click on the optical link. The Optical Link form opens with the General tab displayed.

Note — The optical link properties are displayed on the topology map only for external optical links.

The active path (working path or protected path) of a service or trail is highlighted in green and the standby path in blue in the Topology view, when the service or trail is operationally up. For a protected service, when the working and protection ports of an APS group are switched, using the Protection Switch parameter, the colors of the active path and standby path also changes. If the service or trail is operationally down, then both active and standby paths are highlighted in red in the topology view.

Physical topology map

When the 5620 SAM client GUI starts, the physical topology map is open in the working panel by default. The default view displays the interconnections between IP and optical devices. The 5620 SAM allows you to filter the view to display only optical interconnections or IP interconnections. See Procedures 5-2 and 5-3. See the *5620 SAM Parameter Guide* for descriptions of the parameters.

Table 5-1 5620 SAM topology map management references

Topics	Chapter	Document
5620 SAM topology map management overview	5620 SAM topology map management	*5620 SAM User Guide*
5620 SAM topology map types	5620 SAM topology map management	*5620 SAM User Guide*
Basic 5620 SAM topology map procedures	5620 SAM topology map management	*5620 SAM User Guide*
5620 SAM topology map management procedures	5620 SAM topology map management	*5620 SAM User Guide*

5.3 Map management procedures

Procedure 5-1 To view a service topology map

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the drop-down menu and click on the Search button. The list of optical transport services appears.

3 Choose a service and click on the Properties tab. The Optical Transport Service (Edit) form opens.

4 Click on the Topology View button. The service topology map appears.

Procedure 5-2 To view optical interconnections only

1 Open a physical topology map.

2 Click on the Filter button. The Topology Filter - Physical Topology form opens.

3 Choose Optical Link from the Object Filters to Add drop-down menu.

4 Click on the Add object filter icon. The Optical Link Filter panel appears.

5 Choose Endpoint A Type from the Attribute drop-down menu.

6 Choose EQUALS from the Function drop-down menu.

7 Choose Port from the Value drop-down menu.

8 Click on the Add to Filter icon.

9 Choose AND from the Operators drop-down menu. Repeat steps 5 to 8 to add Endpoint B Type.

10 Click on the Save button. The Save Filter dialog box appears.

11 Enter a Filter Name and Description and click on the Save button. The Save Filter dialog box closes.

12 Choose Network Element from the Object Filters to Add drop-down menu.

13 Click on the Add object filter icon. The Network Element Filter panel appears.

14 Choose Chassis Type from the Attribute drop-down menu.

15 Choose EQUALS from the Function drop-down menu.

16 Choose the required 1830 PSS chassis from the Value drop-down menu.

17 Click on the Add to Filter icon. The Chassis Type appears on the Filter panel.

18 Choose AND from the Operators drop-down menu. Repeat steps 12 to 17 to add the different 1830 PSS chassis types.

19 Click on the Save button, the Save Filter dialog box appears.

20 Enter a Filter Name and Description and click on the Save button. The filter is saved.

21 Click on the Apply button to apply the Optical Link filter. The Topology Filter - Physical Topology form closes and the map view is refreshed to display only devices with optical interconnections.

Procedure 5-3 To view IP interconnections only

1 Open a physical topology map.

2 Click on the Filter button. The Topology Filter - Physical Topology form opens.

3 Choose Physical Link from the Object Filters to Add drop-down menu.

4 Click on the Add object filter icon. The Physical Link Filter panel appears.

5 Choose Chassis Type from the Attribute drop-down menu.

6 Choose NOT EQUAL from the Function drop-down menu.

7 Choose the required 1830 PSS chassis from the Value drop-down menu.

8 Click on the Add to Filter icon. The 1830 PSS chassis appears on the Filter panel.

9 Choose OR from the Operators drop-down menu to add other 1830 PSS chassis types. Repeat steps 5 to 7. The 1830 PSS chassis appears on the Filter panel.

10 Click on the Save button, the Save Filter dialog box appears.

11 Enter a Filter Name and Description and click on the Save button. The filter is saved.

12 Click on the Apply button to apply the Physical Link filter. The Topology Filter - Physical Topology form closes and the map view is refreshed to display only devices with IP interconnections.

6 — 1830 PSS equipment navigation tree

6.1 Equipment navigation tree overview *6-2*

6.1 Equipment navigation tree overview

The view selector in the 5620 SAM navigation tree is a drop-down menu that lists the physical and logical network views. You can use the contextual menu for an object in the navigation tree to create, configure, and manage specific parameters for the object and child objects.

Using the 1830 PSS external element manager

You can start the 1830 PSS external element manager, ZIC interface, from the 5620 SAM GUI. The ZIC interface provides WebUI to access the 1830 PSS. The WebUI supports provisioning, administration, performance monitoring, and displaying alarms and conditions from the NE. For more information about using the WebUI with the 1830 PSS, see the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 (PSS-36/PSS-32/PSS-16) User Provisioning Guide*. Procedure 6-1 describes how to start the 1830 PSS external element manager from the 5620 SAM GUI in the normal mode. Procedure 6-2 describes how to start the 1830 PSS external element manager from the 5620 SAM GUI in the secure mode.

Procedure 6-1 To start the 1830 PSS external EMS browser in normal mode



Note — The 1830 PSS external EMS browser is supported on Internet Explorer 6.0 or later or FireFox 3.6.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on a discovered 1830 PSS device in the Equipment view and choose Launch External EMS Browser from the contextual menu. The WebUI main view screen appears in the normal mode (http).

Procedure 6-2 To start the 1830 PSS external EMS browser in secure mode



Note — This procedure requires actions to be performed both in the WebUI and the 5620 SAM GUI.

1 Start the 1830 PSS external EMS bowser in the normal mode. See Procedure 6-1. The WebUI main view screen appears.

2 Connect to the 1830 PSS device using admin credentials. The WebUI opens with the System Properties form displayed.

3 Choose Administration→Security→Encryption→SSH Key. The SSH KEY form opens.

4 Click on the Generate button. A dialog box opens.

5 Click on the OK button. The SSH key is generated.

6 Click on the close button. The SSH KEY form closes and the System Properties form reappears.

7 Configure the UI Mode parameter as Encrypted and click on the Submit button.

8 A dialog box appears. Click on the OK button. The 1830 PSS device reboots.

9 Connect to the 1830 PSS device using admin credentials. The WebUI opens with the System Properties form displayed and the UI Mode parameter set to Encrypted.

10 Choose Administration→Security→SNMP v3 Users. The SNMP v3 Users form opens.

11 Click on the Create button. The Create SNMP v3 Users form opens.

12 Configure the parameters:

- User ID
- Password
- Confirm Password
- Access Privilege

13 Click on the Apply button.

14 Perform the remaining steps in the 5620 SAM GUI.

Create an SNMPv3 user account. See Procedure 3-1.

Note — Provide the same user name and password that was provided during the SNMPv3 user creation using the WebUI.

15 Create a new SNMP mediation security policy using the SNMPv3 user created in step 14. See Procedure "To configure NE mediation" in the *5620 SAM User Guide* for more information about configuring a SNMP mediation security policy.

16 Create a discovery rule using the new SNMP mediation security policy created in step 15. See Procedure "To configure a discovery rule" in the *5620 SAM User Guide* for more information about configuring a discovery rule.

17 Right-click on the discovered 1830 PSS device in the Equipment view and choose Launch External EMS Browser from the contextual menu. The WebUI main view screen appears in the secure mode (https).

Note — The 1830 PSS external EMS browser is supported on Internet Explorer 6.0 or later or FireFox 3.6.

7 — 1830 PSS CLI sessions

7.1 CLI sessions overview *7-2*

7.2 1830 PSS CLI scripts *7-2*

7.1 CLI sessions overview

You can perform most NE management functions using the 5620 SAM client GUI. The functions that require CLI access to a managed NE include:

- validating GUI configuration actions
- configuring items that cannot be configured using the GUI; for example, creating a community on the NE
- troubleshooting using device debug files

The 5620 SAM client GUI provides CLI access to the managed NEs from the main menu, and from NE contextual menus in topology maps and navigation trees. See the chapter Device CLI sessions of the *5620 SAM User Guide* and the *1830 Photonic Service Switch (PSS-1) Command Line Interface Guide* for more information.

7.2 1830 PSS CLI scripts

Before you perform the following procedure, you must change the user name and password in the mediation policy. See "Mediation and SNMP MIBs" in the *5620 SAM User Guide* for more information about the mediation policy. See the *5620 SAM Optical Parameter Reference* for more information about configuring the parameters.



Warning — Scripts that are not correctly created or applied can cause serious damage to the network. Alcatel-Lucent recommends that the system administrators clearly define user responsibilities for CLI script usage, and ensure that the scripts are verified and validated before they are run on devices in a live network.

Table 7-1 Device CLI session references

Topics	Chapter	Document
Device CLI sessions overview	Device CLI sessions	*5620 SAM User Guide*
To configure the 5620 SAM CLI console preferences	Device CLI sessions	*5620 SAM User Guide*
To open and close a 5620 SAM device CLI session	Device CLI sessions	*5620 SAM User Guide*
All topics	All chapters	*1830 Photonic Service Switch (PSS-1) Command Line Interface Guide*

Procedure 7-1 To create, run and schedule an 1830 PSS CLI script

1 Choose Tools→Scripts from the 5620 SAM main menu. The Scripts form opens.

2 Choose CLI Script (Scripting) from the object drop-down menu and click on the Create button. The CLI Script (Create) form opens with the General tab displayed.

3 Configure the parameters:

- Auto-Assign Id
- Script ID
- Name
- Description
- Type
- Use Latest Version
- Save Results from Manual Execution
- State
- Continue on Command Failure
- Content Type

Enable the Use Latest Version parameter to associate all of the targets of the script with the latest version of the CLI script.

You can set the Content Type parameter to one of the following:

- CLI
- Velocity



Note — If you choose Velocity, you can import a script by clicking on the Import button in the right panel of the Script Manager form.

4 Specify the script target types.

i Click on the Add button in the NE Types panel. The Select Property - CLI Script form opens.

ii Choose Alcatel-Lucent 1830 PSS type and click on the OK button. The Select Property - CLI Script form closes, and the NE type is listed in the CLI Script (Create) form.

5 Click on the Apply button to apply the configuration.

6 Click on the Versions tab.

7 Click on the Create button to create a script. The Script Editor *script_name* form opens.

8 Create a version for a set of commands that must be run on the 1830 PSS. The following commands can be created:

- show version—displays the device software release information
- show xc brief —lists the cross-connects on the NE
- whoami—lists the user logged in to the NE

9 Click on the Targets tab.

10 Click on the Create button. The Target Configuration form opens.

11 Click on the Add button, to add the target on which the created script must be run. The Select Network Elements form opens.

12 Choose the target and click on the OK button. The specific target appears on the Target Configuration form.

13 Click on the OK button. The target is created and the CLI Script (Edit) form opens.

14 Perform one of the following in the right panel to run the script:

a Click on the Execute button. The script is run. Go to step 16.

b Click on the Schedule button. The Script Scheduled Task (Create) form opens.

15 Schedule a script:

i Configure the parameters:

- Scheduled Task Name
- Scheduled Task Description
- Save Results
- Administrative State

ii From the Schedule panel, click on the Select button. The Select Schedule - Script Scheduled Task form opens.

iii Click on the Create button. The SAM Schedule (Create) form opens.

iv Configure the parameters in the Information, Time Settings, Schedule Settings, and Frequency Settings panel.

v Click on the OK button. The Select Schedule - Script Scheduled Task form opens.

vi Choose the schedule task and click on the Properties button. The Script Scheduled Task (Create) form opens.

vii Click on the Apply button. The schedule is created and runs at the scheduled time.

viii After the schedule is created, the Schedule tab appears on the CLI Script (Edit) form, which displays the schedule information.

16 Click on the Show Results button to view the results of the executed script or the scheduled script.



Note — The Schedule column displays the executed script as N/A. The scheduled script displays information about the Schedule manager and the script.

17 Close the CLI Script (Edit) form.

18 Close the Scripts form.

1830 PSS device management

8 — 1830 PSS device management

9 — 1830 PSS equipment management

10 — 1830 PSS equipment view

11 — 1830 PSS power management

8 — 1830 PSS device management

8.1 Device management overview *8-2*

8.2 Out-of-band and in-band management *8-2*

8.3 Switching modes between SONET and SDH *8-5*

8.4 Backing up and restoring files on the 1830 PSS NEs *8-5*

8.5 Managing NE software upgrades *8-10*

8.6 Procedures to manage NE software upgrades *8-10*

8.7 Managing an NTP server *8-18*

8.8 Precision time protocol *8-20*

8.1 Device management overview

The 1830 PSS device must be commissioned and preconfigured before the 5620 SAM can manage the device. When the preconfiguration is complete, the 5620 SAM can discover the device. See chapter 3 and the "Device discovery procedures" in the *5620 SAM User Guide* for more information about operations related to device discovery.

You can manage or unmanage an NE. Any unmanaged NEs are displayed on the topology map of the 5620 SAM GUI as an unmanaged NE icon. See the chapter *Device discovery* of the *5620 SAM User Guide* for more information.

Note — If you unmanage an NE, all associated optical transport services are unmanaged. If the service is rediscovered the name of the service reverts to the default name.

Table 8-1 Device discovery references

Topics	Chapter	Document
To configure NE mediation	Device Discovery	*5620 SAM User Guide*
To configure a discovery rule	Device Discovery	*5620 SAM User Guide*
To discover devices	Device Discovery	*5620 SAM User Guide*
To edit a discovery rule	Device Discovery	*5620 SAM User Guide*

Procedure 8-1 To view an invalid or stale optical link

1. In the topology map, double-click on the optical link that links to the Unmanaged NEs icon.
2. The Physical Link Group List - UnmanagedNEs form displays a list of invalid or stale optical link; for example, optical links from a managed NE to an Unmanaged NE in 5620 SAM.
3. Choose an invalid or stale optical link and click on the Properties tab. The Optical Link (Edit) form opens. Information about the Managed and Unmanaged NE is displayed. The UnManaged NE EndPoint attribute displays the links that lead to the unmanaged NE.

8.2 Out-of-band and in-band management

The 5620 SAM supports in-band and out-of-band management of devices for the 1830 PSS.

Out-of-band management

When you configure a device for out-of-band management only, management traffic between the 5620 SAM and the 1830 PSS device is transmitted through the management port of the device. The 5620 SAM sends management traffic to the management IP address of the 1830 PSS device.

When you configure a device for in-band and out-of-band management, one method provides redundancy for the other method. If the IP addresses are the same, redundancy is not supported. The out-of-band connection is called the primary connection and the in-band connection is called the secondary connection.

See “Device commissioning and management” of the *5620 SAM User Guide* for out-of-band management information.

In-band management

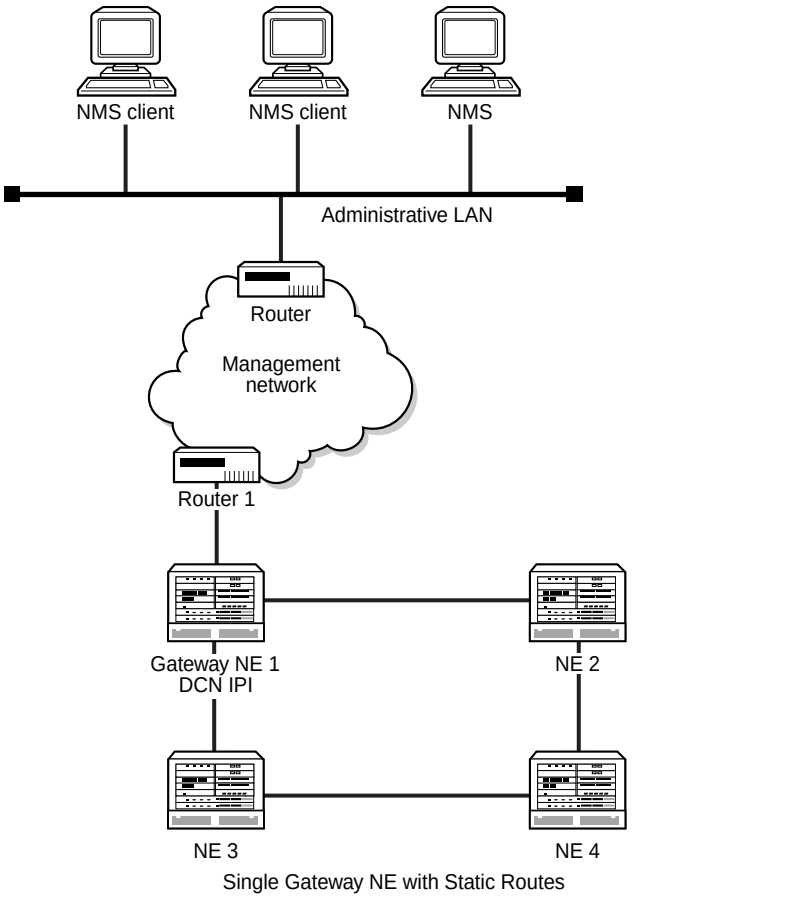
The network management system can manage an 1830 PSS-32 network by connecting to a single 1830 PSS-32 NE called a GNE. The GNE provides management connectivity to the other 1830 PSS-32 NEs in the network. The GNE communicates externally using an IP address. Non-GNE nodes are only in-band to each other. The network system does not specifically manage or configure the GNE.

The SONET, SDH, and OTN architectures support DCC and GCC, which are in-band channels that can be used for management. IP over DCC/GCC is an in-band management channel which can be used if a device is connected to a TRX-24000 client port.

Figure 8-1 shows NE 1 as the gateway NE for the ring that interconnects the cards which support OSC ports between the NEs providing inter-NE communication for network management.

See the *Alcatel-Lucent 1830 Photonic Service Switch 32/16 (PSS-32/PSS-16) Installation and System Turn-Up Guide* for more information.

Figure 8-1 In-band management



Prerequisites

You must configure the following on the 1830 PSS for a gateway NE with static routes:

- OAMP IP address
- OAMP IP address subnet mask
- Default route gateway IP address (which is redistributed)
- NE loopback IP address and subnet mask

You must configure the following for non-gateway:

- NE loopback IP address and mask

Although the 1830 PSS NEs do not exchange routing information with operating organization routers, an operating organization router that is attached to the gateway NE requires the following:

- The operating company router must have auto-negotiation enabled, or must be running in 10Mpbs half-duplex mode
- static route for the NE loopback IP address subnet

To configure the 1830 PSS to use in-band, out-of-band, or in-band and out-of-band polling at the intervals specified in a mediation policy, see the chapter Device commissioning and management of the *5620 SAM User Guide*. See the chapter Device discovery of the *5620 SAM User Guide* for information about configuring mediation policies.

Table 8-2 Out-of-band and in-band management references

Topics	Chapter	Document
In-band and out-of-band management	Device commissioning and management	*5620 SAM User Guide*
Configure GNE for management system access	S1t1and-alone node set-up	Alcatel-Lucent 1830 Photonic Service Switch 32/16 (PSS-32/PSS-16) Installation and System Turn-Up Guide

8.3 Switching modes between SONET and SDH

The 1830 PSS can be set to SONET or SDH mode using the CLI command. You cannot change the SONET or SDH mode using the 5620 SAM GUI. If you switch modes between SONET and SDH, and the mode value is changed, you would need to perform a full manual resynchronization of the NE using the 5620 SAM GUI.

When the mode is changed using a tnSysSonetSdhMode CLI command, the 5620 SAM recognizes the NE mode change and generates an alarm. The alarm must be cleared by the user. See “Alarm management” in the *5620 SAM User Guide* for more information about clearing alarms.



Caution — If the NE mode is changed to SONET or SDH, the configurations on the shelf, card, and port NE are lost. After the NE is restarted, the new mode must be reconfigured.

8.4 Backing up and restoring files on the 1830 PSS NEs

Encrypted file transfer

Database backup and restore support SFTP /TFTP data transfer. The NE communicates with an external SSH server that runs on the database backup and software repository machine. The 5620 SAM runs on the same machine.

Previous configurations supported in the CLI are valid for software configuration or database configuration. The option is available in the transfer protocol field, and must be used to initiate an SFTP-based transfer.

For software and database downloads, the applications that run on the NE are SSH or SFTP clients which connect to an external SSH server. Authentication is password-based only. Public key-based authentication is not supported. As a result, you can initiate SFTP-based database and software download operations even when an encryption key is not generated.

For more information about backup and restore, see "5620 SAM database management" in the *5620 SAM System Administrator Guide*.

Procedure 8-2 To create an 1830 PSS backup/restore policy

When the 5620 SAM performs a device configuration backup/restore, the 1830 PSS transfers files to and from the 5620 SAM server. See the *5620 SAM Optical Parameter Reference* and the *5620 SAM Parameter Guide* to configure the parameters.



Note — The default backup policy is automatically assigned to 5620 SAM-managed NEs that do not have an assigned backup policy.

1 Choose Administration→NE Maintenance→Backup/Restore from the 5620 SAM main menu. The Backup/Restore form opens with the Backup/Restore Policy tab displayed.

2 Click on the Create button. The Backup Policy (Create) form opens.

3 Perform one of the following to specify whether backup functionality is enabled:

   a Select the Enable Backup check box.

   b Deselect the Enable Backup check box. Go to step 7.

4 Configure the parameters:

- Policy ID
- Auto-Assign ID
- Name
- Policy Type (1830 PSS Node)

5 Configure the parameters in the Backup Triggering panel:

- Scheduled Backup Scheme
- Scheduled Backup Interval
- Scheduled Backup Sync Time

6 Configure the parameters in the Backup Purging panel:

- Auto-Purge Scheme
- Number of Backups

7 Configure the parameters in the PSS Backup/Restore Settings panel:



Note — If the Transfer Protocol parameter is set to SFTP, the SFTP User ID, SFTP Password, and the Server IP parameter values must be authenticated.

- SFTP User ID
- SFTP Password
- Transfer Protocol
  - SFTP
  - TFTP
- Server IP
- File Compression

8 Configure the Use Active Server parameter to save the backup files on the active server. Otherwise go to step 9.

9 Configure the Server IP parameter.

10 Click on the OK button to save the backup policy. The Backup Policy (Create) form closes.

11 Assign the policy to the 1830 PSS devices, as required.

i Choose the new policy in the list and click on the Properties button. The Backup Policy (Edit) form opens.

ii Click on the Backup/Restore Policy Assignment tab. The Backup Policy (Edit) Filter opens.

iii Apply the filter criteria as required.

iv Choose one or more 1830 PSS devices in the Unassigned Sites list and click on the right arrow key to move 1830 PSS devices to the Assigned Sites list.

v Click on the OK button. The Backup Policy (Edit) form closes and a dialog box appears.

vi Click on the Yes button. The policy is assigned to the 1830 PSS devices.

vii Click on the Copy button to make a copy of the Backup Policy.

12 Close the Backup/Restore form.

Procedure 8-3 To perform an on-demand 1830 PSS backup

1 Choose Administration→NE Maintenance→Backup/Restore from the 5620 SAM main menu. The Backup/Restore form opens with the Backup/Restore Policy tab displayed.

2 Click on the Backup/Restore Status tab. The 1830 PSS devices are listed.

3 Select a device from the list and click on the Backup button. A dialog box appears.

4 Click on the Yes button. The backup operation starts, and the current backup state for the device is indicated in the Backup State column.

5 Close the Backup/Restore form.

Procedure 8-4 To configure the 5620 SAM to save 1830 PSS configuration backups on a file system

Perform the following procedure to configure the 5620 SAM to save 1830 PSS configuration backups as files in addition to saving them in the database. By default, the 5620 SAM saves device configuration backups only in the 5620 SAM database.

1 Log in to the main server station as the samadmin user.

2 Open a console window.

3 Navigate to the server directory, /opt/5620sam/server.

4 Enter the following to create a new folder:

mkdir <new folder>

Where new folder is the folder name

The folder is created.

5 Enter the following to provide permission to the folder:

chown –R samadmin:sam <new folder>

6 Navigate to the server configuration directory, /opt/5620sam/server/nms/config.

7 Open the nms-server.xml file using a plain-text editor.



Caution — Contact your Alcatel-Lucent technical support representative before you attempt to modify the nms-server.xml file. Modifying the nms-server.xml file can have serious consequences that can include service disruption.

8 Locate the following XML tag, which marks the beginning of the section that you want to edit:

<*Pss*Backup>

9 To enable the storage of 1830 PSS backups on the new folder, configure the following parameter by inserting the storage location between the quotation marks:

*Pss*BackupDirectory="*location*"

where location is an absolute or relative file path

10 Save and close the nms-server.xml file.

11 Open a console window.

12 Navigate to the 5620 SAM server binary directory, /opt/5620sam/server/nms/bin.

13 Enter the following at the prompt:

```
bash$ ./nmsserver.bash read_config ↵
```

The 5620 SAM saves the 1830 PSS backup files in the new folder.

14 Close and relaunch the 5620 SAM client.

Procedure 8-5 To restore a device configuration backup other than the most recent

You can choose to restore an older version of the device configuration to meet special network requirements.



Caution 1 — Older backups do not have the most recent network information. Restoring an older device configuration may be service-affecting.

Caution 2 — Ensure that you back up the current device configuration using Procedure 8-3 before you proceed.

1 Choose Administration→NE Maintenance→Backup/Restore from the 5620 SAM menu. The Backup/Restore form opens.

2 Click on the Backup/Restore Status tab. The managed devices are listed.

3 Double-click on a device from the list. The NE Backup/Restore Status form for the selected device opens.

4 Click on the Backups tab. A list of configuration backups for the selected device opens, ordered from the oldest to the most recent.

5 Select a backup in the list and click on the Restore button. A dialog box appears.

6 Click on the Yes button.

7 Perform resynchronization of the device by choosing the Resync option from the NE contextual menu on the navigation tree to ensure that the latest network information is available.

8 Close the Backup/Restore form.

8.5 Managing NE software upgrades

When an 1830 PSS device needs a software upgrade to another software version, you can use the 5620 SAM to perform an on-demand or scheduled NE software upgrade using a software upgrade policy. You can create and configure multiple software upgrade policies and assign them to multiple NEs. You cannot delete a software upgrade policy that is assigned to an NE. The information in a software upgrade policy includes the following:

- whether to activate the software after the software is transferred to the NE
- whether to reinitialize the NE after the upgrade

During a software upgrade, the 5620 SAM performs checks to ensure that the new software is compatible with the device type and that the required files are present. The 5620 SAM initiates a device software upgrade only when the required conditions exist. You can use the 5620 SAM to roll back a software upgrade to the previous version if an upgrade fails.

For more information about software upgrades, see the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 (PSS-36/PSS-32/PSS-16) User Provisioning Guide* and the *5620 SAM System Administrator Guide*.

8.6 Procedures to manage NE software upgrades

Use the following procedures to perform 1830 PSS software upgrades.

Procedure 8-6 To import device software image files to the 5620 SAM database

1 Copy or move the device software to a directory that is accessible to the 5620 SAM. The directory can be on the local server or an accessible remote server.



Note — The directory must contain a valid and complete set of device software files. Refer to the 1830 PSS Release Notes for a complete file listing.

2 Choose Administration→NE Maintenance→Software Upgrade from the 5620 SAM main menu. The Software Upgrade form opens with the Software Upgrade Policy tab displayed.

3 Click on the Software Images tab.

4 Click on the PSS Software Images tab.

5 Perform one of the following:

a To import image files from the 5620 SAM directory on the local server:

i Click on the Import button. The Select import PSS Software window appears.

ii Navigate to the directory that contains the software image file and select the image directory.



Note — Ensure that the image directory name is in the following format:

`<1830PSSxx-software version/>`

where xx can be: 4, 16, or 32, depending on the device variant that you are upgrading. For example: 1830PSS4-6.0-37/. In this example, the device is a 1830 PSS-4 and the software version is 6.0-37.

iii Click on the Open button. The Import Image dialog box appears.

iv Click on the Yes button. When the import is complete, an entry for the image file appears in the list.

b To import 1830 PSS software from a remote location with FTP support:



Note 1 — The remote system address is the server IP address that is configured in the policy of the associated NE. Refer to Procedure 8-7 for information to create a software upgrade policy.

Note 2 — When using FTP, the default user login directory is typically "/var/ftp".

i Click on the Remote Path button. A Remote Path notification box appears.

ii Click on the Yes button to continue. The Software Directory Path dialog box appears.

iii Enter the Remote Software Path. The software upgrade files must have the last directory specified in the path, as follows:

- For the 1830 PSS-4 and a default login directory of "/var/ftp":
  </EC/1830PSS4-software version>
- For the 1830 PSS-16 or 1830 PSS-32 and a default login directory of "/var/ftp":
  </EC/1830PSSxx-software version>
  where xx is 16 or 32, depending on the device variant that you are upgrading.

For example: /EC/1830PSS16-6.0-42. Here the default login directory is "/var/ftp", the device is a 1830 PSS-16, and the software version is 6.0-42.

When the remote path import is complete, an entry for the image file appears in the list.

6 Close the Software Upgrade form.

Procedure 8-7 To create a software upgrade policy

The 5620 SAM uses an 1830 PSS-specific software upgrade policy to download 1830 PSS software. A default 1830 PSS software upgrade policy is created when the 5620 SAM initializes.

Use the following procedure to create a policy that can be used to perform an on-demand or scheduled device software image upgrade. Contact your Alcatel-Lucent technical support representative for information about downgrades.

1 Perform Procedure 8-6 to import the required device software image file.

2 Ensure that:

- you validate the default user directory at login to determine the appropriate path. When using FTP, you can run pwd to display the default login directory. A typical return example would be "/var/ftp"
- appropriate FTP accounts are configured and available on the devices to which you intend to apply the policy
- device configuration files are backed up

3 Choose Administration→NE Maintenance→Software Upgrade from the 5620 SAM main menu. The Software Upgrade form opens.

4 Click on the Create button. The Software Upgrade Policy (Create) form opens.

5 Choose the 1830 PSS Node option from the Policy Type drop-down menu.

6 Configure the parameters:

- Policy ID
- Name
- Policy Type

7 Configure the parameters in the PSS Based Setting panel:

- Transfer Protocol
- SFTP/FTP User ID
- SFTP/FTP Password
- Use Active Server
- Auto-Activate After Successful File Transfer
- Auto-Commit After Successful Software Activation

8 Configure the options in the PSS Audit Setting panel:

- Force Upgrade
- Node Backup



Note — If you want to use the Revert function, ensure that you select the Node Backup check box.

9 Click on the Apply button. The Software Upgrade Policy (Create) form refreshes with additional tabs and the form name changes to Software Upgrade Policy (Edit).

10 Close the Software Upgrade Policy (Edit) form. The new policy appears on the Software Upgrade form.

Procedure 8-8 To assign a software upgrade policy to an 1830 PSS

1 Choose Administration→NE Maintenance→Software Upgrade from the 5620 SAM main menu. The Software Upgrade form opens.

2 Choose a software upgrade policy from the list and click on the Properties button. The Software Upgrade Policy (Edit) form opens.

3 Click on the Software Upgrade Policy Assignment tab.

4 Configure the filter parameters, if required. Click on the OK button.

5 Choose one or more NEs in the Unassigned Sites list and click on the right arrow to move the NEs to the Assigned Sites list.

6 Click on the OK button. A dialog box appears.

7 Click on the Yes button. The policy is assigned to the NEs.

8 Close the Software Upgrade Policy (Edit) form.

9 Close the Software Upgrade form.

Procedure 8-9 To perform an immediate software upgrade

Before you perform the procedure, you should:

- Ensure that the required software image files are imported to the 5620 SAM database. Refer to Procedure 8-6.
- The node is assigned to the appropriate software upgrade policy. Refer to Procedure 8-8.

1 Choose Administration→NE Maintenance→Software Upgrade from the 5620 SAM main menu. The Software Upgrade form opens.

2 Choose the appropriate 1830 PSS software upgrade policy.

3 Click on the Software Images tab.

4 Click on the PSS Software Images tab.

5 Perform one of the following:

a To perform the node level upgrade as separate audit, load and activate tasks, go to step 6.

b To perform the node level upgrade as a single task, go to step 7.

c To perform the node level upgrade as a scheduled task, go to Procedure 8-10.

6 Perform the audit, load, and activate as separate tasks. Refer to the 1830 PSS User Provisioning Guide for additional information on these tasks.

i Audit the 1830 PSS software image file. The audit is performed to verify the software load on the 5620 SAM local server or remote server.

- Choose the appropriate 1830 PSS software image file from list and click on the Audit button. The Confirm Audit settings dialog box appears.
- Choose an option from the Audit Settings drop-down menu and click on the OK button. The Audit - Select Sites form opens.



Note — If you choose the Default Audit Settings option, the policy level settings are used.

- Select the node that you need to audit and click on the OK button. The Audit - Select Sites form closes.
- Click on the Software Upgrade Status tab to view the progress of the audit. Verify that the software is successfully audited before you go to step ii.

ii Load audited software on the device.

- Click on the Load button. The Load - Select Sites form opens displaying a list of nodes with successfully audited software.
- Select the node where you need to load the software and click on the OK button. The Load dialog box appears.
- Click on the Yes button.



Note — The load operation may take considerable time to complete.

- Click on the Software Upgrade Status tab to view the status of the load as it progresses. Verify that the audited software is successfully loaded before you go to step iii.

iii Activate software loaded on the node.

- Click on Activate button. The Activate - Select Sites form opens with a list of nodes that are ready to be activated displayed.
- Select the node where you need to activate the software and click on the OK button. The Activate dialog box appears, informing you that activation results in a warm reboot of the NE.
- Click on the Yes button.



Note — The activate operation may take considerable time to complete.

iv Go to step 8.

7 Perform the audit, load, and activate as a single task.

i Choose the appropriate 1830 PSS software image file from list and click on the Auto Upgrade button. The Confirm Audit settings dialog box appears.

ii Choose an option from the Audit Settings drop-down menu and click on the OK button. The AutoUpgrade - Select Sites form opens.



Note — If you choose the Default Audit Settings option, the policy level settings are used.

iii Select the node that you need to upgrade and click on the OK button. The Audit - Select Sites form closes.

iv Click on the Software Upgrade Status tab to view the progress.

8 Perform one of the following:

a Commit the activated software release to the node.

i Click on Commit button. The Commit - Select Sites form opens with a list of nodes that are supported for the selected software image file.



Note — You can commit the active release at any time after the software release has been activated.

ii Select the node where you need to commit the activated software release and click on the OK button. The Commit dialog box appears.

iii Click on the Yes button.

b Revert the node to the previously committed software release.

i Click on Revert button. The Revert - Select Sites form opens with a list of nodes that are supported for the selected software image file.



Note — You can revert to a previously committed software release at any time.

ii Select the node where you need to revert the software release and click on the OK button. The Revert dialog box appears.

iii Click on the Yes button.

9 Close the Software Upgrade form.

Procedure 8-10 To schedule an automatic software upgrade

See "5620 SAM-based schedule procedures" in the *5620 SAM User Guide* for information about creating schedules. Before you perform the procedure, ensure that the required software image files are imported to the 5620 SAM database (see Procedure 8-6), and that the node is assigned to the appropriate software upgrade policy (see Procedure 8-8).

1 Choose Administration→NE Maintenance→Software Upgrade from the 5620 SAM main menu. The Software Upgrade form opens with the Software Upgrade Policy tab displayed.

2 Choose the appropriate software upgrade policy.



Note — The 5620 SAM performs the upgrade according to the configuration in the software upgrade policy that is assigned to the NE.

3 Click on the Software Images tab.

4 Choose a software image in the list and click on the Schedule button. The Confirm Audit Settings dialog box appears.

5 Choose an option from the Audit Settings drop-down menu and click on the OK button. The AutoUpgrade - Select Sites form opens.



Note — If you choose the Default Audit Settings option, the policy level settings are used.

6 Select the node that you need to upgrade and click on the OK button. The Select Schedule - Select Schedule form opens.

7 Choose a schedule in the list and click on the OK button. The Schedule Upgrades dialog box appears. See the *5620 SAM User Guide* for information about creating schedules.

8 Click on the Yes button. The 5620 SAM schedules the upgrade.

9 Perform one of the following:

a Commit the activated software release to the node.

i Click on Commit button. The Commit - Select Sites form opens with a list of nodes that have activated software displayed.

ii Select the node where you need to commit the activated software release and click on the OK button. The Commit dialog box appears.

iii Click on the Yes button.

b Revert the node to the previously committed software release.

i Click on Revert button. The Revert - Select Sites form opens with a list of nodes that have activated software displayed.

ii Select the node where you need to revert the software release and click on the OK button. The Revert dialog box appears.

iii Click on the Yes button.

10 Close the Software Upgrade form.

Procedure 8-11 To view the status of a software upgrade

1 Choose Administration→NE Maintenance→Software Upgrade from the 5620 SAM main menu. The Software Upgrade form opens with the Software Upgrade Policy tab displayed.

2 Click on the Software Upgrade Status tab.

3 Choose the node from the list and click on the Properties button. The Software Upgrade Status (View) forms opens displaying 1830 PSS software upgrade script information and the current upgrade status.

8.7 Managing an NTP server

The 5620 SAM provides a list of NTP servers configured on the 1830 PSS. The NTP servers are used for time of day synchronization when the NTP is enabled. The 5620 SAM supports the creation and deletion of an NTP server. Up to three NTP servers are supported on the 1830 PSS.

Procedures to manage an NTP server

Procedure 8-12 To configure an NTP server

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the view to locate an 1830 PSS.

3 Right-click on an 1830 PSS and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

4 Click on the NTP tab. The NTP parameters appear on the General sub-tab.

5 Click on the Server tab and click on the Create button. The Network Time Protocol Server (Create) form appears.

6 Configure the parameters:

- Index
  The options for the Index parameter are 1, 2, and 3. The value represents the number of NTP servers that can be added.
- IP Address

7 Click on the OK button. The Network Time Protocol Server (Create) form closes. The configured IP address is listed on the Server tab.

8 Click on the General tab and select the NTP Enabled check box.



Note — There must be at least one NTP server added to select the NTP Enabled check box.

9 Click on the OK button.

Procedure 8-13 To delete an NTP server

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the view to locate an 1830 PSS.

3 Right-click on an 1830 PSS and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

4 Click on the NTP tab. The NTP parameters appear on the General tab.

5 Click on the Server tab. The configured NTP servers are listed.

6 Choose the NTP server to be deleted and click on the Delete button.



Note — If all of the NTP servers are deleted, the NTP Enabled check box in the General tab is automatically deselected, which means the NTP is automatically disabled.

7 Close the Network Element (Edit) form.

8.8 Precision time protocol

PTP is used to distribute time of day and a common epoch or frequency. PTP maintains synchronization between master and slave clocks, distributes the time to slaves using multicast.

The 5620 SAM supports IEEE 1588 PTP clocks for packet-based timing synchronization from a master clock to one or more slave clocks in a network. You can configure IEEE 1588 PTP clocks on the 1830 PSS device with an ordinary master, an ordinary slave, or a boundary clock.

The following cards support PTP on the 1830 PSS:

- PTPCTL, which implements the physical layer clock (syncE) to distribute frequency and the PTP clock to distribute time or phase across the network
- PTPIO, which provides adaptation for transport of PTP over WDM links
- IEEE 1588 PTP-capable OTs (currently only 11DPE12A)

Procedures to manage PTP

Procedure 8-14 To configure TOD and BITS ports attributes on the PTPCTL and 11DPE12A cards

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the NE→Shelf→PTPCTL or 11DPE12A card→TOD port.

3 Right-click on the TOD port and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the Port Specifics tab.

5 Configure the parameters in the TOD Attributes panel:

- Interface Enabled
- Direction
- Cable Delay Correction (ns)

6 Click on the OK button. The Physical Port (Edit) form closes.

7 Expand the NE→Shelf→PTPCTL→ BITS port.



Note — The BITS port is only on the PTPCTL card.

8 Right-click on the BITS port and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

9 Click on the Port Specifics tab.

10 Configure the parameters in the BITS Attributes panel:

- Signal Type
- Line Impedance
- SA Bit
- Transmitted SSM
- AIS Mode



Note 1 — If the SONET/SDH Mode is set to SONET on the 1830 PSS device, the Signal Type is set to 2 MHz and the Signal Type field is dimmed.

Note 2 — Transmitted SSM and AIS Mode are configurable on the BITS 1 port.

Note 3 — SA Bit, Transmitted SSM, and AIS Mode parameters are configurable when the Signal Type parameter is set to Framed E1 with SSM.

11 Click on the OK button. The Physical Port (Edit) form closes.

Procedure 8-15 To configure an IEEE 1588 PTP clock

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the 1830 PSS on which you need to configure the IEEE 1588 PTP clock.

3 Expand the shelf icon on which the 11DPE12A card or the PTPCTL card is located.

4 Right-click on the card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

5 Click on the PTP tab. The General tab appears.

6 Configure the parameters:

- Clock Mode
- Time Reference

The parameter can be configured only when the Clock Mode is set to Ordinary Clock - Master and Boundary Clock.

7 Click on the Clock tab.

Note — A PTP clock is automatically created when the Clock Mode is changed from PTP Disabled to any other mode.

8 Choose an entry. The IEEE 1588 PTP Clock (Edit) form opens with the General tab displayed.

9 Configure the parameters:

- Clock Enabled
- Domain
- Priority 1
- Priority 2

10 Click on the Port tab. The list of PTP ports configured on the PTP clock appears.

11 Click on the Create button. The IEEE 1588 PTP Port (Create) form opens.

12 Click on the Select button in the Associated Physical Port panel. The Select Associated Physical Port - IEEE 1588 PTP Port form opens with a list of ports.

13 Choose the ports for which PTP needs to be configured and click on the OK button. The Select Associated Physical Port - IEEE 1588 PTP Port form closes and the IEEE 1588 PTP Port (Create) form reappears with the list of the PTP configured ports.

Note 1 — For an 11DPE12A card, if the Clock Mode is Ordinary Clock – Master or Ordinary Clock – Slave, only one PTP port can be configured. If the Clock Mode is Boundary Clock, up to 14 PTP ports can be configured.

Note 2 — For a PTPCTL card, if the Clock Mode is Boundary Clock, up to 6 PTP ports can be created.

14 Click on the Select button in the PTP IO Timing Port panel. The Select PTP IO Timing Port - IEEE 1588 PTP Port form opens with a list of ports.

15 Choose the ports and click on the OK button. The Select PTP IO Timing Port - IEEE 1588 PTP Port form closes and the IEEE 1588 PTP Port (Create) form reappears with the list of the configured PTP IO timing ports.

16 Configure the Associated VLAN ID parameter.

17 Click on the OK button to save the configurations.

9 — 1830 PSS equipment management

9.1 Equipment management overview *9-2*

9.2 Workflow to manage the 1830 PSS equipment *9-2*

9.3 Working with objects *9-3*

9.4 11DPM12 card and port objects *9-4*

9.5 Managing ROADM OADM and mesh connections (degree 2+) *9-6*

9.6 Managing One-device Anydirection and Two-device Anydirection configuration connections *9-8*

9.7 Managing shelves *9-11*

9.8 Procedures to manage card slots *9-15*

9.9 Managing ports *9-19*

9.10 Procedures to configure LAGs *9-23*

9.11 Procedures to configure cards for OPS protection *9-27*

9.1 Equipment management overview

The 5620 SAM equipment management interface consists of:

- a main menu
- contextual menus
- a navigation tree
- managed objects
- property forms to configure object parameters

The 5620 SAM is used to create, configure, and manage a device with the child objects that must be part of a network. Equipment, for example, the routers, which are at the top of the hierarchy, have properties that are configured using the CLI and are discovered when the 5620 SAM discovery process is run.

After the device is discovered, you use properties forms to configure specific parameters for the child objects of the discovered device. See the *5620 SAM User Guide* for more information about equipment management.

9.2 Workflow to manage the 1830 PSS equipment

The workflow is used to manage the 1830 PSS. See the *5620 SAM User Guide* for more information about managing devices.

1 Perform the following to manage the 1830 PSS equipment using the navigation tree:

i Use the 5620 SAM to discover the 1830 PSS.

ii Right-click on the Discovered NEs topology group in the Equipment view of the navigation tree and choose List from the contextual menu. You can also double-click on the Discovered NEs icon on the topology map to open the Discovered NEs form.

iii Drag the 1830 PSS to the network icon in the Equipment view of the navigation tree or to the topology map.

iv Right-click on the 1830 PSS device in the navigation tree and choose an option from the contextual menu. See the *5620 SAM User Guide* for a list of contextual menu options.

v Use the Properties option from the contextual menu in the Equipment view to perform any of the following, as required:

- Modify the device parameters
- Create card objects in the shelf. See section 9.8 for more information.
- View the parameters of the port objects that were created automatically with the daughter card object. See section 9.9 for more information.
- Modify the parameters of the created objects.

2 Verify that the 1830 PSS devices are configured before they are discovered by the 5620 SAM.

3 Access the 1830 PSS device and start the configuration and management.

From the 5620 SAM, choose Manage→Equipment→Equipment. The Manage Equipment form opens. The network administrators and operators can:

- filter views and information for the managed devices
- view and use a graphical representation of the shelf to configure equipment
- view objects and get statistical information about the NEs in their administrative domain
- view the services that traverse or terminate on equipment
- provision and pre-provision equipment to prepare the equipment for the creation of subscriber services
- view, configure, monitor the state of, and manage the following physical elements of the hardware:
  - a managed device
  - each device that has at least one physical shelf
  - internal and external storage devices (flash memory)
  - physical links
  - current OLC state
- configure network and access policies for network objects; for example, ingress buffer policies for a port
- view and manage APS groups
- manage hardware fault conditions

9.3 Working with objects

Objects in the 5620 SAM have parent/child relationships that are contained within a hierarchy. For example, a card in a card slot is the parent object of a daughter card. The parameters for each object are configured for a specific function. The parameters can be managed to meet the needs of the service. Objects are created and managed using the properties forms from the contextual menus of the Equipment view.

The network is the top object in the navigation tree. The device object is the discovered device at the top of the hierarchy in the navigation tree, directly below the network icon. The child objects are created automatically in the navigation tree after the device is discovered.

Resynchronization of objects

The Resync option of the contextual menu specifies that SNMP MIB and CLI information bases are reread to synchronize them with the 5620 SAM, which also synchronizes the network management settings with the device. The changes in the values for some of the read-only parameters from the 1830 PSS are not updated automatically. The parameters are identified by the resync icon that is beside each parameter. Click on the resync icon to display the updated parameter values.



Note — The port operational state is updated automatically.

9.4 11DPM12 card and port objects

The 11DPM12 card and port objects of 1830 PSS devices Release 5.5 and later appear differently than the other 1830 PSS cards on the navigation tree of the 5620 SAM. When you expand the 11DPM12 card object, the following objects appear on the navigation tree:

- eight ODU1PTFs
- two line ports
- 12 client ports
- two VA ports

Line port objects

The 5620 SAM supports the creation of two 11DPM12 line ports with OTU2 as the Assigned Rate parameter option on the General tab under the Port Specifics tab of the Physical Port (Edit) form. Each OTU2 line port contains an ODU2 object below the OTU2 line port on the navigation tree. The ODU2 object allows you to configure multiple low-order ODU objects below the ODU2 objects by clicking on the Configure Timeslots button on the General tab under the Port Specifics tab of the Physical Port (Edit) form. The timeslots are numbered from 1 to 8. The number of low-order ODU objects that can be created depends on the container type.

ODU1PTF objects

The 5620 SAM displays the ODU1PTF objects on the navigation tree after the 11DPM12 card is configured. The eight ODU1PTF objects are mapped to 12 client ports. An 11DPM12 card is divided into four client port groups with three client ports per group. Each port group can use two ODU1PTFs to map to the OPTSG client ports. Table 9-1 lists the client ports and the assigned ODU1PTFs.

Table 9-1 ODU1PTF mapping

Port groups	Client ports	ODU1PTF
1	C1, C2, and C3	ODU1PTF1 and ODU1PTF2
2	C4, C5, and C6	ODU1PTF3 and ODU1PTF4

(1 of 2)

Port groups	Client ports	ODU1PTF
3	C7, C8, and C9	ODU1PTF5 and ODU1PTF6
4	C10, C11, and C12	ODU1PTF7 and ODU1PTF8

(2 of 2)

The OPTSG objects are either configured manually or created automatically by the 5620 SAM.

To manually configure the OPTSG objects, configure the timeslots for ODU1 container type as described in Procedure 20-14. Associate the line-side LO-ODUk facility as described in Procedure 20-15. Right-click on the ODU1PTF object and choose the Configure ODU1PTF Timeslots option from the contextual menu to configure ODU1PTF timeslots which appear as OPTSG objects under the ODU1PTF object.

During optical transport service creation, the 5620 SAM automatically creates ODU1 container on the line-side, configures the appropriate ODU1PTF objects, associates with the line-side, creates OPTSG objects, and creates the cross connect between the client port and the OPTSG object. The cascading cross connects between ODU1PTF objects across port groups are also created as required. The OPTSG objects are created when you choose OC3 or OC12 for the Rate parameter on the General tab of the Optical Transport Service (Create) form. The Assigned Rate parameter option of the client port must be set to OC3 or OC12 on the General tab under the Port Specifics tab of the Physical Port (Edit) form which automatically configures the container type as OPTSG.

The timeslots are numbered from 1 to 16. The OC3 requires one timeslot and OC12 requires four timeslots. The number of OPTSG objects created depends on the Rate parameter value.

Client port objects

The twelve client ports support the following signal rates:

- 1GbE
- 3GSDI
- FC100
- FC200
- FC400
- FE
- HDSDI
- OC3
- OC12
- OC48
- OTU1
- SDSDI

The ODU0, ODU1, ODUflex, and OPTSG containers are mapped to the signal rate as follows:

- ODU0—1GbE, FE, FC100, SDSDI, OC3 or OC12
- ODU1—FC200, HDSDI, OC48, or OTU1
- ODUflex—3GSDI, or FC400
- OPTSG—OC3, or OC12

Depending on the Assigned Rate parameter option that is specified on the General tab under the Port Specifics tab of the Physical Port (Edit) form, the corresponding client port objects appear on the navigation tree with the container type displayed.

VA port objects

The 11DPM12 cards contain two eVOA ports that are used for wavelength tracking and power adjustment. The eVOA ports appear as VA objects on the navigation tree.

9.5 Managing ROADM OADM and mesh connections (degree 2+)

The ROADM OADM (degree 2) faces the east and west directions. Some traffic from the optical lines may be added or dropped and at least one single wavelength passes through transparently. The configuration can be used as an optical add or drop multiplexer in linear networks.

The WR8-88A supports up to degree 5 mesh connections without the need for additional mesh cards. For the connectivity, the mesh output port (MESHOUT{1-3}) of a WR8-88A card is connected directly to the add input port (ADDIN{1-8}) of another WR8-88A. Three mesh outputs are required for degree 5 connectivity. See Table 9-2 for more information.

The ROADM OADM mesh (degree 3 to 8) faces more than two line directions. Individual channels enter from one line and may be added or dropped or transit transparently to any one of the other lines.



Note — If the 1830 PSS-32 network contains WR8-88A and CWR cards, use the Exclusion option in the Path Constraints tab to accelerate the path search and transport service creation. See Procedure 20-1 for more information.

See the *Alcatel-Lucent 1830 Photonic Service Switch Product Information and Planning Guide* for more information.

Table 9-2 ROADM-2 Degree 8 ROADM connectivity

From port	To port	From	To
WR1 DROPOUT	–	–	ITLU+SFD
WR1 THRU Out	–	–	WR2 THRU In
WR1 MESHOUT1	–	–	WR3 ADDIN3
WR1 MESHOUT2	–	–	WR4 ADDIN3
WR1 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR5 ADDIN3
WR1 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR6 ADDIN3
WR1 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR7 ADDIN3
WR1 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR8 ADDIN3
WR2 DROPOUT	–	–	ITLU+SFD
WR2 THRU Out	–	–	WR1 THRU In

(1 of 3)

From port	To port	From	To
WR2 MESHOUT1	–	–	WR3 ADDIN4
WR2 MESHOUT2	–	–	WR4 ADDIN4
WR2 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR5 ADDIN4
WR2 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR6 ADDIN4
WR2 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR7 ADDIN4
WR2 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR8 ADDIN4
WR3 DROPOUT	–	–	ITLU+SFD
WR3 THRU Out	–	–	WR4 THRU In
WR3 MESHOUT1	–	–	WR1 ADDIN3
WR3 MESHOUT2	–	–	WR2 ADDIN3
WR3 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR5 ADDIN5
WR3 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR6 ADDIN5
WR3 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR7 ADDIN5
WR3 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR8 ADDIN5
WR4 DROPOUT	–	–	ITLU+SFD
WR4 THRU Out	–	–	WR3 THRU In
WR4 MESHOUT1	–	–	WR1 ADDIN4
WR4 MESHOUT2	–	–	WR2 ADDIN4
WR4 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR5 ADDIN6
WR4 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR6 ADDIN6
WR4 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR7 ADDIN6
WR4 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR8 ADDIN6
WR5 DROPOUT	–	–	ITLU+SFD
WR5 THRU Out	–	–	WR6 THRU In
WR5 MESHOUT1	–	–	WR1 ADDIN5
WR5 MESHOUT2	–	–	WR2 ADDIN5
WR5 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR3 ADDIN5
WR5 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR4 ADDIN5
WR5 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR7 ADDIN7
WR5 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR8 ADDIN7
WR6 DROPOUT	–	–	ITLU+SFD
WR6 THRU Out	–	–	WR5 THRU In
WR6 MESHOUT1	–	–	WR1 ADDIN6
WR6 MESHOUT2	–	–	WR2 ADDIN6
WR6 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR3 ADDIN6
WR6 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR4 ADDIN6
WR6 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR7 ADDIN8

(2 of 3)

From port	To port	From	To
WR6 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR8 ADDIN8
WR7 DROPOUT	–	–	ITLU+SFD
WR7 THRU Out	–	–	WR8 THRU In
WR7 MESHOUT1	–	–	WR1 ADDIN7
WR7 MESHOUT2	–	–	WR2 ADDIN7
WR7 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR3 ADDIN7
WR7 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR4 ADDIN7
WR7 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR5 ADDIN7
WR7 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR6 ADDIN7
WR8 DROPOUT	–	–	ITLU+SFD
WR8 THRU Out	–	–	WR7 THRU In
WR8 MESHOUT1	–	–	WR1 ADDIN8
WR8 MESHOUT2	–	–	WR2 ADDIN8
WR8 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT1	WR3 ADDIN8
WR8 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT2	WR4 ADDIN8
WR8 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT3	WR5 ADDIN8
WR8 MESHOUT3	MESH4 SIGIN	MESH4 SIGOUT4	WR6 ADDIN8

(3 of 3)

9.6 Managing One-device Anydirection and Two-device Anydirection configuration connections

You can manage the following configuration connections:

- One-device Anydirection
- Two device Anydirection



Note — Service provisioning, discovery and topological views are supported for protected and unprotected services for One-device Anydirection and Two-device Anydirection configurations. See Procedure 20-1 for more information.

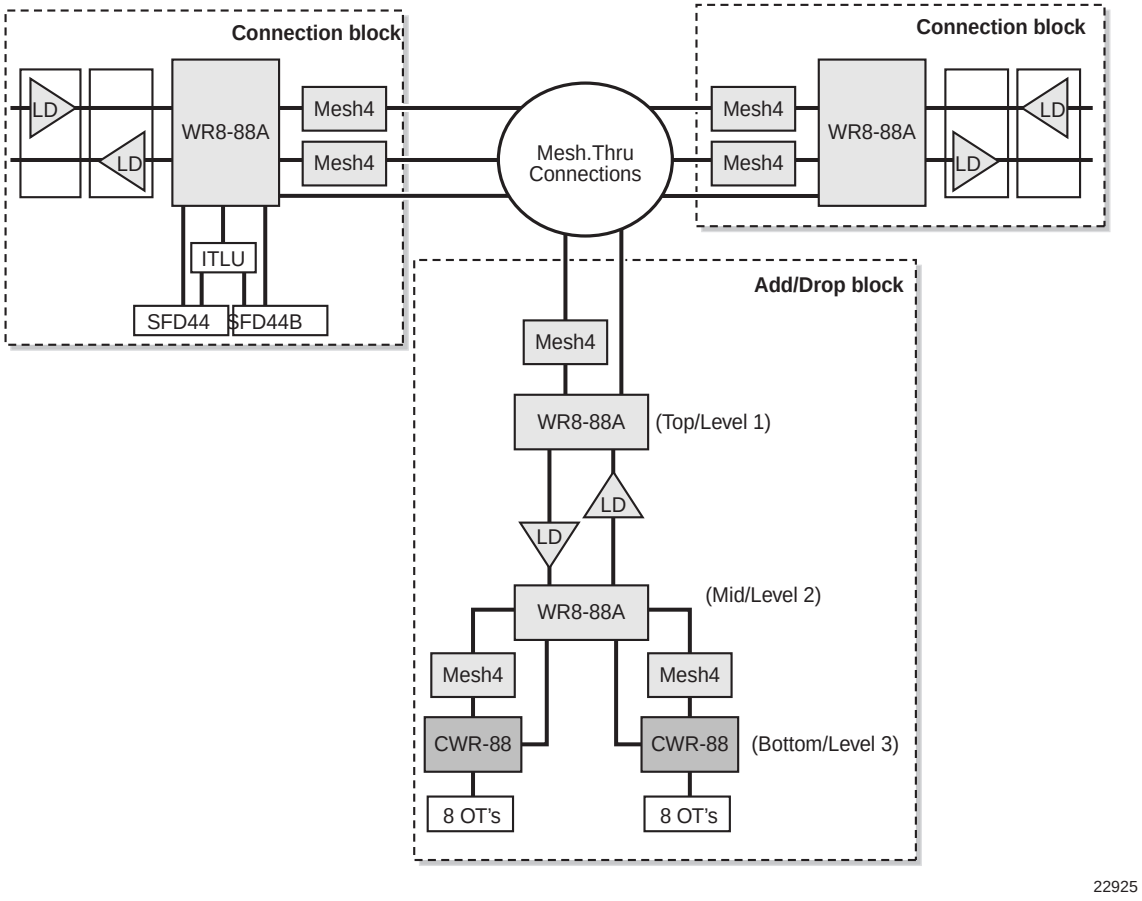
One-device Anydirection configuration

For one-device anydirection configuration, the Add drop block and the connection block are on the same device. The configuration that can be used is the Mesh card (optional) with WR8, WR8-88A and CWR8-88 cards.

Two-device Anydirection configuration

Two-device Anydirection configuration is supported on two devices for Add and Drop blocks at the terminal on one device and connection blocks on the other device. The following configurations are supported in the Add and Drop blocks and the connection blocks. Figure 9-1 shows the Two-device Anydirection configuration.

Figure 9-1 Two-device Anydirection connectivity



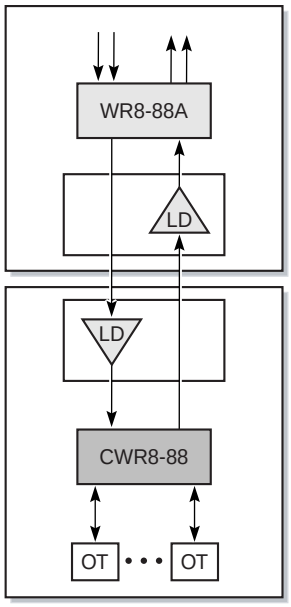
Note — Regeneration is possible inside the Add and Drop blocks.

Two devices with no MESH4 card in Add path

Figure 9-2 shows two devices with no MESH4 card in Add path. With this configuration, the limitations in degrees are:

- N<=5 with configuration not allowing in–service upgrade to higher degrees
- N<=4 with configuration allowing in–service upgrade to higher degrees

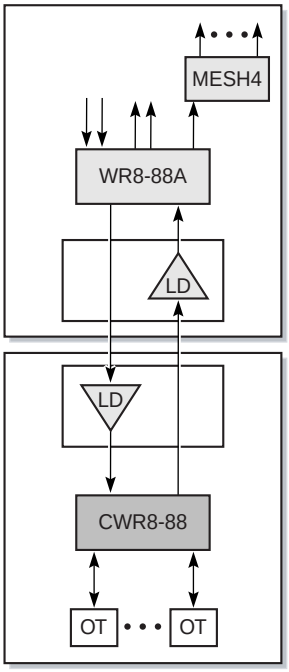
Figure 9-2 Two devices with no MESH4 card support



Two devices with one MESH4 card in Add path

The Add and Drop block allows a configuration up to degree 8+2 as shown in Figure 9-3.

Figure 9-3 Two devices with one MESH4 card support



9.7 Managing shelves

The 1830 PSS-32 and 1830 PSS-16 shelves provide the framework for the configuration of the 1830 PSS-32 / 1830 PSS-16 NEs. A universal shelf provides card slots, fiber management trays, backplane, power distribution, and cooling for the NE. The NEs can be deployed in a shelf or expanded to multiple interconnected universal shelves.

The first universal shelf of an NE becomes the master shelf, which provides the management and control connections to the operations systems for the cluster of shelves in a multi-shelf NE. Expansion shelves connect to the master shelf using a protected internal LAN communication link. The shelves provide extended slot capacity managed by the database that resides in the master shelf.

The universal shelf is the basic building block for the 1830 PSS-32 NE. The shelf provides a framework for the active modules in a system, for example, the controller and interface cards.

Each universal shelf has a shelf ID that can be configured using a physical mechanism (for example, a rotary dial) on the backplane. Up to eight bits of information can be set. The shelf ID determines the identity of each universal shelf in the cluster. The most significant bit of the rotary dial determines whether the shelf is the main shelf or an extension shelf.

Each shelf is equipped with mandatory modules. Some of the shelves are equipped with optional modules.

The mandatory equipment must be automatically provisioned regardless of whether the equipment is present. Each shelf includes the following mandatory equipment:

- one shelf controller (EC) in slot 1 or 18
- two power modules (PF)
- a fan module (FAN)

The user interface panel (USRPNL) is mandatory and can only reside on the main shelf. Mandatory equipment is provisioned without an AINS state. The AINS allows newly provisioned entities to be inserted later without generating alarms. Therefore, if a mandatory equipment (without AINS) is inserted later, alarms are generated.

A DCM enclosure can hold up to 16 DCMs. The system manages each DCM as a separate shelf.

See the Alcatel-Lucent *1830 Photonic Service Switch Product Information and Planning Guide* and the Alcatel-Lucent *1830 Photonic Service Switch User Provisioning Guide* for more information. See the *5620 SAM Optical Parameter Reference* for more information about parameters.

1830 PSS-32 shelves

The 1830 PSS-32 system supports the following types of shelves: Universal, DCM, ITLB, and ITLU. The 1830 PSS-32 universal shelf contains 32 replaceable slots.

The SFD44 (44-channel DWDM static filter) is modelled as an OMD shelf with an SFD44 card. Other shelves that can be configured from the 5620 SAM are: SFD40, SFD40B, SFD44B, and ITLB.

The DCM and OMD shelves are passive module shelves that can contain DCMs and SFD44 modules. The modules provide dispersion compensation and the optical mux/demux function that is associated with core optics modules that is, line drivers and CWR8, respectively that are installed in the universal shelf. Each 1830 PSS-32 includes up to 8 universal shelves, and up to 24 DCM and OMD shelves.

Each 1830 PSS-32 universal shelf contains 32 slots for function cards. Two additional slots are reserved for controller cards that are configured for redundant control. Two more slots are reserved for the power filter cards. The top of the shelf contains a fan tray for cooling, a customer interface panel, and two timing interface cards that provide a redundant connection to synchronization references. See the Alcatel-Lucent *1830 Photonic Service Switch Product Information and Planning Guide* and the Alcatel-Lucent *1830 Photonic Service Switch User Provisioning Guide* for more information.

1830 PSS-16 shelves

In addition to the slots for the two power filters and two controller cards, the 1830 PSS-16 shelf contains 16 function card slots. The 1830 PSS-16 supports the following types of shelves: PSS 16, DCM, ITLB, and ITLU. The slots at the top of the shelf can hold two function cards or the user interface panel on units that are used as main shelves. A fan tray for cooling is located at the bottom of the shelf. The 5620 SAM supports up to eight extension shelves. See the Alcatel-Lucent *1830 Photonic Service Switch Product Information and Planning Guide* and the Alcatel-Lucent *1830 Photonic Service Switch User Provisioning Guide* for more information.

1830 PSS-4 shelves

The 1830 PSS-4 provides a modular platform with four universal slots that can be used for cards that support ILAs, and various FOADM and terminal configurations. The 1830 PSS-4 supports DCM shelves. The 1830 PSS-4 shelf is two RU high and can be mounted in EIA, ETSI, or WECO racks. See the *Alcatel-Lucent 1830 Photonic Service Switch 4 (PSS-4) User Guide* for more information.

1830 PSS-1 AHP shelves

The 1830 PSS-1 AHP system supports the following types of shelves: Universal and DCM.

Working with shelves on the 1830 PSS

Shelf objects represent the hardware that is configured on a shelf. When you choose the shelf object in the navigation tree and click on Properties in the contextual menu, you can view the following information about the shelf:

- general information
- fan tray state and speed
- power supply tray statuses
- LED statuses
- card slots
- hardware environment
- timing
- statistics
- dry contacts
- faults
- port segregation
- software control module
- software bank
- cross-connects

Procedure 9-1 To configure a shelf

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS.

3 Right-click on an 1830 PSS and choose Configure Shelf. The Shelf, Configure Shelf, (Create) form opens with the General tab displayed.

4 Configure the parameters in the Shelf Details panel:

- Name
- Shelf Description
- Shelf Type



Note — During the creation of an ITLB shelf, one ITLB card slot is automatically provisioned.

- AINS Enabled
- Expected PF Amps
- Shelf ID

5 Click on the Shelf Specifics tab.

6 Configure the Wavelength Tracker Enabled parameter in the Shelf Specifics panel.

7 Configure the parameters in the Inventory panel:

- Expected Volts (Volts)
- High Voltage Threshold (Volts)
- Low Voltage Threshold (Volts)
- Voltage Threshold Tolerance (Volts)

8 Click on the OK button. The Shelf, Configure Shelf, (Create) form closes.

Procedure 9-2 To view and configure shelf properties

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf.

3 Right-click on the shelf and choose Properties. The Shelf (Edit) form opens with the General tab displayed.

4 Configure the parameters in the Shelf Details panel, if required:

- Name
- Shelf Description

5 Click on the Shelf Specifics tab and configure the parameters in the Inventory panel, if required:

- Expected Volts (Volts)
- High Voltage Threshold (Volts)
- Low Voltage Threshold (Volts)
- Voltage Threshold Tolerance (Volts)



Note — Alarms are generated if the values are greater than the specified limit.

6 Click on the appropriate tab to view other information, as required.

7 Click on the OK button. The Shelf (Edit) form closes.

Procedure 9-3 To remove a shelf

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE.

3 Right-click on the shelf and choose Remove Shelf. A dialog box appears.

4 Click on View Dependencies. An Information form displays the dependencies that affect the removal of the shelf.

5 Select "I understand the implications of this action" check box and click on the Yes button. The shelf is removed from the network object.

9.8 Procedures to manage card slots

This section describes the procedures for slot and card level provisioning. The 5620 SAM GUI supports view, modify, create, and delete card level functions, and the pre-provisioning of a card in an empty slot. See Table 15-1 for transmission cards supported on the universal shelf. See Table 15-2 for dedicated cards required to boot the 1830 PSS. See the *5620 SAM Optical Parameter Reference* for more information about parameters.

Note 1 — You must use filler blanks in slots that are not used for the required airflow and cooling.

Note 2 — To provision two-slot height cards and two-slot width cards, the adjacent slots must be empty.

Procedure 9-4 To configure a card

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf and expand the shelf object.

3 Right-click on an empty Card Slot object choose Configure Card from the contextual menu. The Card Slot (Create) form opens with the General tab displayed.

Note — Due to mechanical limitation of E1 cable, the 1DPP24M card can be provisioned or inserted only in slots 7 and 8 of the PSS-4 shelf.

4 Configure the parameters on the General tab:

- Assigned Card Type
- Assigned Card Sub Type
- Current OLC State
- Revert OLC State

5 Configure the parameters on the Card Specifics tab. See the *5620 SAM Optical Parameter Reference* Guide for more information.

- Card Details panel



Note 1 — Only 11DPE12 cards support the following Card Rate Mode parameter options:

- FullRate
- SubRate
- QinQ (only for 11DPE12E card)

Note 2 — The Card Mode parameter can be configured for 4DPA4, 112SCA1, and 112SNA1 cards.

- Ethernet Loopback (only for 11DPE12A cards)
- Temperature panel
- Optical Intrusion Detection (only for AM2318A and AM2125B cards)

  To configure the parameters, an external topological link must be configured on a line port.
  - Monitoring Enabled
  - Baseline Span Loss (dB)
  - Loss Threshold (dB)
  - Polling Period (seconds)
  - Clear Optical Intrusion Detected Alarm

The 1DPP24M card supports the following card modes: Master and Slave. The master mode provides 21 E1 access points and one line port (STM-1). The master mode can support 42 E1 access points (21 E1 from master mode and 21 E1 from slave mode 1DPP24M). The slave mode provides 21 E1 access points. The Line port of the slave mode is always set to the unassigned state and is connected to the master mode through the backplane.

6 Configure SyncE. The following cards installed on the 1830 PSS-4, 1830 PSS-16, or 1830 PSS-32 NE support SyncE:

- 11DPE12A
- 11DPE12E
- 11QPE24

i Click on the Line Timing tab.

ii Choose a Line Reference from the list and click on the Properties button. The LineReference (Edit) form opens.

iii Configure the parameters. Table 9-3 lists the ports and line references for the 11DPE12A and the 11DPE12E cards.

Table 9-3 Line references and ports

Cards	Ports	Line reference
11DPE12A	C{1-12}	Line Ref 0
	C{1-12}	Line Ref 1
	L1	Line Ref 2
	L2	Line Ref 3
11DPE12E	C{1-4, 9-12}	Line Ref 0
	C{5-8}	Line Ref 1
	L1	Line Ref 2
	L2	Line Ref 3

iv Click on the OK button to save the changes. The LineReference (Edit) form closes.

v Click on the General tab.

vi Configure the parameters in the System Timing panel.

7 Click on the OK button to save the changes. The Card Slot (Create) form closes.

Procedure 9-5 To view or configure card properties

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on the card to be modified and choose Properties. The Card Slot (Edit) opens.

3 Configure the parameters, as required. Click on the OK button to save the changes and close the Card Slot (Edit) form.

Procedure 9-6 To remove a card

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on the card to be removed and choose Remove Card. A dialog box appears.

3 Select the "I understand the implications of this action" check box and click on the Yes button. The card is removed from the navigation tree.

Procedure 9-7 To configure card firmware

1 Choose Manage→Equipment→Equipment from the 5620 SAM main menu. The Manage Equipment form opens.

2 Choose Card Firmware (Physical Equipment) from the Select Object Type drop-down menu and click on the Search button. A list of cards managed appears.

3 Double-click on the required card. The Card firmware form opens.

4 Click on the Select button beside the Provisioned Release parameter. The Select Provisioned Release form opens listing the supported firmware profiles for the specific card.

5 Choose the required firmware profile and click on the OK button. The Select Provisioned Release form closes and the Card firmware form reappears.

6 Click on the Properties button beside the Slot parameter. The Card Slot (Edit) form opens.

7 Click on the IO Card tab and set the Administrative State parameter to Down.

8 Click on the OK button. The Card Slot (Edit) form closes and the Card firmware form reappears.

9 Click on the OK button. The Card firmware form closes and the list of cards managed reappears.

10 Choose the specific card from the list and click on the Reboot button. After the card is rebooted successfully, the Provisioned Release parameter is updated with the firmware profile.

Dry contacts

A dry contact is a contact of a relay that does not make or break a current. Usually another relay or device starts or stops the current. For example, a reed relay matrix switch is usually switched with all contacts dry. After the contacts are connected, a wire spring relay connects a supervisory scan point through which the current flows.

Procedure 9-8 To configure 1830 PSS dry contact sensors

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card Slot (USRPNL - User Interface Panel)

3 Right-click on the card slot and choose Properties. The Card Slot (User Interface Panel) (Edit) form opens.

4 Click on the External Control tab. Choose a dry contact ID from the list. Double-click on the dry contact ID. The DryContact (Edit) form opens for the specific ID.

5 Configure the parameters:

- Control Status (Choose one of the following options.)
  - Operate
  - Raman APR
  - Release
- Control Type
- Slot ID (only if Raman APR is selected)

6 Click on the OK button. The DryContact (Edit) form closes.

7 Click on the OK button. The Card Slot User Interface Panel (Edit) form closes.

9.9 Managing ports

The 5620 SAM supports a physical topology view that allows you to create a fiber connection by selecting two ports on the displayed shelves. The connection can be between two ports on the same shelf or different shelves.



Note — You can create a fiber connection only with ports that are not already part of a fiber connection.

For an interface (that is, a shelf, slot, or port), you can specify that the interface is:

- connected to another interface on the network element
- connected to an external interface within or outside of the 1830 PSS network
- unconnected

To define the network topology, you first configure the fiber topology on each network element in the network. You can then connect the external interfaces on each of the network elements to create the network.

Procedure 9-9 To configure an optical link between ports

1 Perform one of the following to create an optical link between two ports on the same shelf:

a Choose Create→OTN→Optical Link (OTS/OS) and go to step 2.

b Choose Network→NE→Shelf→Card.

i Choose a port and press CTRL key to choose the second port.

ii Right-click on the selected ports and choose Create Optical Link. The Optical Link (Create) form opens.



Note — When you choose two ports from the Equipment view, the port properties are automatically populated for endpoint A and B.

2 Configure the parameters:

- Name
- Endpoint A Type
- Endpoint B Type
- Direction
- Notes

3 Perform the following steps if the value of Endpoint A Type and Endpoint B Type parameters is configured to Port:

i Click on the Select button beside the Name parameter in the Endpoint A - Port panel. The Select Endpoint A - Port - Optical Link form opens.

ii Click on the Search button. A list of ports is diaplayed.

iii Choose a port and click on the OK button. The Select Endpoint A - Port - Optical Link form closes and the attributes of the Endpoint A - Port panel are configured depending on the selected port.

iv If a rate is not assigned to the endpoint A port, choose an option from the Assigned Rate drop-down menu in the Endpoint A - Port panel.

v Perform steps i to iv for Endpoint B - Port panel.

4 Perform one of the following if either Endpoint A Type or Endpoint B Type parameter is configured to Unmanaged NE:

   a Configure Unmanaged NE Identifier in the Endpoint A - UnManaged NE panel.

   b Configure Unmanaged NE Identifier in the Endpoint B - UnManaged NE panel.

5 Click on the OK button to create the link and close the Optical Link (Create) form.



Note — You can set the transmit frequency on the ports, even after you create an optical link, if the administrative state of the port is down. See Procedure 9-11 for more information.

Procedure 9-10 To delete an optical link

1 Perform one of the actions to list the optical links:

   a Perform the following steps to list the optical links to be deleted from the 5620 SAM main menu:

      i Choose Manage→Equipment→Equipment. The Manage Equipment form opens.

      ii Choose Optical Link (Optical Management) from the object type drop-down menu.

      iii Click on the Search button. A list of optical port appears.

      iv Go to Step 2.

   b Double-click on an optical link in the Physical Topology - Network view. The Physical Link Group List form opens

2 Choose the optical link to be deleted and click on the Delete button. The optical link is deleted.

3 Close the Manage Equipment or the Physical Link Group List form.

Port properties

To configure a port on an 1830 PSS device perform the following procedure:

Procedure 9-11 To configure a port

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on the device where you must configure a port and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

3 Expand the Shelf icon on the navigation tree.

4 Expand to the port level and choose a port object. The Physical Port (Edit) form opens with the General tab displayed.

5 Configure the parameters.

6 Click on the Port Specifics tab and configure the parameters as required. Configure the Transmit Frequency parameter as required in the OT panel. Ensure that the administrative state of the port is down before configuring the transmit frequency.



Note — When the transmit frequencies are already configured on the ports, the Receive Frequency parameter is updated automatically, when a bidirectional service is created between two nodes.

7 Click on the States tab and configure the Administrative State parameter.

8 Click on the other tabs in the properties form to view and modify additional port information.

9 Click on the OK button. The Physical Port (Edit) form closes.

Procedure 9-12 To auto-disable a CIT port on an EC card

The CIT port can be set to auto-disabled after the 1830 PSS is installed. See the *Alcatel-Lucent 1830 Photonic Service Switch User Provisioning Guide* for more information.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card Slot (EC: Equipment Controller Card)→Port CIT (Local Ethernet Port).

3 Right-click on the Card and choose Properties. The Physical Port (Edit) form opens.

4 Click on the Port Specifics tab.

5 Configure the 5620 SAM server IP in the Source IP field and click on the Apply button in the Auto Disable port Status panel. The Disable Port Automatically check box is enabled.

6 Select the check box and click on Apply. The CIT port is disabled for local access.



Note — As long as the 1830 PSS can reach the 5620 SAM server the CIT port remains in the disabled state. The 1830 PSS checks the communication link between the 5620 SAM server every 30 seconds. If the server is unreachable, the NE waits for 300 seconds before the CIT port is enabled for local access.

9.10 Procedures to configure LAGs

The LAG configuration guidelines include:

- During service configuration, both the source and the destination paths should be configured as either LAGs or ports and not a mix of both.
- During service configuration, LAGs of the source and the destination paths should be configured with the same bandwidth, that is, either 1GbE or 10GbE and not a mix of both.
- You must not configure LAG in a MC-LAG group.
- You must not configured LAG in an ERP sub-ring.
- When sub-group is supported on LAG, only one sub-group can be configured.

Use the following procedures to manage LAGs.

Procedure 9-13 To create a LAG on an 11DPE12A card

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→*NE*→Shelf→Card Slot→LAGs.

3 Right-click on the LAGs object and choose Create LAG from the contextual menu. The Create LAG step form with the Define General Properties step appears.

4 Configure the parameters:

- LAG ID
- Auto Assign ID
- Description
- Administrative State
- MTU (bytes)

5 Click on the Next button. The Configure LAG Parameters step appears.

6 Configure the parameters:

- Size
- SVLAN Tag Protocol ID
- LOS Propagation
- LPT Consequent Action

7 Click on the Next button. The Configure LACP step appears.

8 Configure the parameters:

- Actor Administration Key
- Actor System Priority

9 Click on the Next button. The Configure LAG Members step appears.

10 Click on the Create button to add client ports to the LAG. The Create LAG Member step form with Select Ports step appears.

11 Choose the ports from the list and click on the Next button. The Specify the Member Properties step appears.

12 Configure the parameters:

- Priority
- Admin State

13 Click on the Finish button. A list of the selected ports appears in the Configure LAG members panel of the Create LAG step form.

The Specify Member Properties form closes and the Configure LAG Members form reappears. A dialog box appears.

14 Click on the OK button.

15 Click on the Finish button. The Configure LAG Members form closes and the Create LAG form reappears.

16 Click on the Close button.

17 Choose Network→*NE*→Shelf→Card Slot→LAGs→LAG. Right-click on the newly created LAG and choose Properties from the contextual menu to view information about the created LAG or to modify LAG parameters.

- The General tab displays the LAG ID, description, and the configured MAC address.
- The Link Aggregation Group tab displays the parameters selected during LAG creation, including Number of selected ports, Number of attached ports, size, SVLAN Protocol ID, LOS propagation, LPT Consequent action and Bandwidth Attributes.
- The States tab displays the administrative state, which is the LAG enabled or disabled state on the node.
- The LACP tab displays the LACP parameters such as LACP mode, Actor Administration Key, Actor Operational Key, Partner Operational Key, Actor System ID, Partner System ID, Actor System Priority and Partner System Priority.
- The LAG Members tab allows you to add the LAG member ports.
- The VTS map tab displays the VTS map parameters such as VTS Map Number, VTS Direction, Classification Mode, CE-VLAN ID, and SVLAN ID.
- Statistics, terminations, and fault information is available from the appropriate tabs.

18 Expand the LAG object in the navigation tree to display the created LAG.

19 Expand the LAG object to display LAG members.

Procedure 9-14 To create a LAG on an 11QPE24 card

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→*NE*→Shelf→Card Slot→LAGs.

3 Right-click on the LAGs object and choose Create LAG from the contextual menu. The Create LAG step form with the Define General Properties step appears.

4 Configure the parameters:

- LAG ID
- Auto Assign ID
- Description
- Configured Address
- L2Uplink
- Mode
- Encap Type
- Administrative State

5 Configure the split horizon group, if required:

a Click on the Select button beside the Name parameter. The Select Split Horizon Group form appears with a list of split horizon groups. See Procedure 21-1 for more information about configuring a split horizon group.

b Choose and entry and click on the OK button. The Select Split Horizon Group form closes and the Define General Properties step reappears.

6 Click on the Next button. The Configure LAG Parameters step appears.

7 Configure the Port Threshold parameter.

8 Click on the Next button. The Configure LACP step appears.

9 Configure the parameters:

- LACP Enabled
- LACP Transmit Interval
- LACP Transmit Standby
- Hold Time Down (100s of milliseconds)

10 Click on the Next button. The Configure LAG Members step appears.

11 Click on the Create button to add client ports to the LAG. The Create LAG Member step form with the Only show compatible ports step appears.

12 Configure the parameters:

- Show only Compatible Ports
- Class

13 Click on the Next button. The Select Ports step appears with the list of ports.



Note — If you configure the Show only Compatible Ports and Class parameters in Step 12, only the ports that are compatible with the selected class appear in the Select Ports form. Only those LAGs with compatible ports can be used during service configuration.

14 Choose the compatible ports from the list and click on the Next button. The Specify the Member Properties step appears.

15 Configure the parameters:

- Priority
- Sub-Group ID

16 Click on the Finish button. A list of the selected ports appears in the Configure LAG members step of the Create LAG step form.

The Specify Member Properties form closes and the Configure LAG Members form reappears. A dialog box appears.

17 Click on the OK button.

18 Click on the Finish button. The Configure LAG Members form closes and the Create LAG form reappears.

19 Click on the Close button.

20 Choose Network→*NE*→Shelf→Card Slot→LAGs→LAG. Right-click on the created LAG and choose Properties from the contextual menu to view information about the created LAG or to modify LAG parameters.

- The General tab displays the LAG ID, description, and the configured MAC address.
- The Link Aggregation Group tab displays the parameters selected during LAG creation, Number of selected ports, Number of attached ports, and size.
- The States tab displays the administrative state, which is the LAG enabled or disabled state on the node.
- The LACP tab displays the LACP parameters, such as LACP mode, Actor Administration Key, Actor Operational Key, Partner Operational Key, Actor System ID, Partner System ID, Actor System Priority and Partner System Priority.
- LAG Members tab allows you to add the LAG member ports.
- Statistics, terminations, and fault information is available from the appropriate tabs.

21 Expand the LAG object in the navigation tree to view the created LAG.

22 Expand the LAG object to view LAG members.

9.11 Procedures to configure cards for OPS protection

Procedure 9-15 To configure an OPSA card

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card Slot (OPSA: Enhanced Optical Protection Switch Card).

3 Right-click on the card slot and choose Properties. The Card Slot OPSA: Enhanced Optical Protection Switch Card (Edit) form opens with the General tab displayed.

4 Click on the Card Specifics tab and choose OMSP or OLP from the Protection Mode drop-down list, as applicable. Click on the Apply button.



Note — The default value for the Protection Mode parameter is OCHP.

Procedure 9-16 To configure an OPSB card

1 Configure the OPSB card. See Procedure 9-4 for information about configuring a card.



Note — The A, B, and SIG ports are automatically created when the OPSB card is configured.

2 Configure an optical link from either the OPSB A port or OPSB B port to the OT. See Procedure 9-9 for information about creating an optical link.



Note — The following configuration rules apply for the client ports when creating an optical link.

- Set the Assigned Rate, Transmit Frequency, Pluggable Module Type, and OPR mode to be same at the client ports of the working and protection OTs.
- Set the LOS Propagation to LASER OFF.
- Encapsulation Mode can be the same or different at the client ports of the working and protection OTs.
- Set the Transmit Frequency to either 1310 or 1550.

3 Create an APS group. See Procedure 20-24 for information about creating an APS group.

10 — 1830 PSS equipment view

10.1 5620 SAM Equipment View overview ***10-2***

10.2 Equipment tree ***10-3***

10.3 Shelf view ***10-4***

10.4 Configuration form ***10-6***

10.5 Optical link view ***10-7***

10.6 Light path trace ***10-9***

10.7 5620 SAM Equipment View procedures ***10-10***

10.1 5620 SAM Equipment View overview

The Equipment View is a web application that provides a graphical representation of the 1830 PSS shelves, cards, ports and the interconnections.

You can also use the Equipment View to:

- view shelf and port alarm status
- configure cards
- configure port parameters
- configure, view, and trace optical links between ports on cards that are on the current shelf or those on other shelves
- view internal, external, unidirectional, bidirectional, and loopback links
- view and trace the light path of an optical channel by highlighting the ports, optical links, and implicit connections that the path traverses

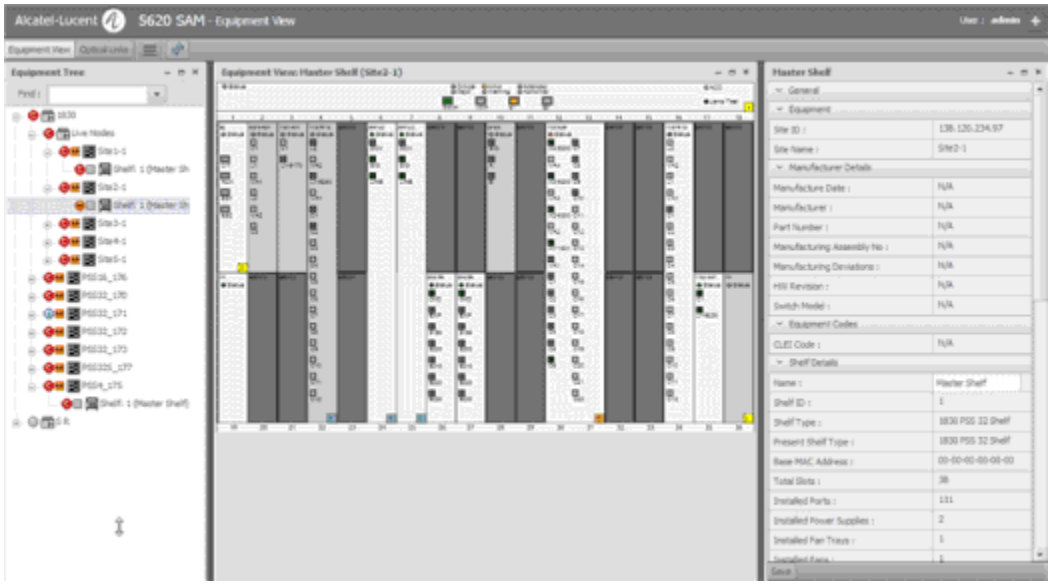
You can launch the 5620 SAM Equipment View from the 5620 SAM GUI. See Procedure 10-1 for information about launching the 5620 SAM Equipment View from the 5620 SAM GUI.

The 5620 SAM Equipment View displays the following panels:

- Equipment tree; See section 10.2.
- Shelf view/optical link view; See sections 10.3 and 10.5
- Configuration form; See section 10.4

Figure 10-1 shows the elements of the 5620 SAM Equipment View.

Figure 10-1 5620 SAM Equipment View



10.2 Equipment tree

The equipment tree lists the topology groups, NEs, and shelves that are configured on the NEs. The toolbar displays the following buttons:

- Equipment View
- Optical Link View

Equipment View displays the shelf view of an 1830 PSS device selected from the equipment tree. The configuration form appears in the right panel beside the shelf view.

Optical Link View displays the optical links configured on the ports. You can configure optical links on the specified ports. The Create Optical Link form appears in the right panel. See Procedure 10-4 for more information about configuring optical links on specific ports.

You can use the Find field in the equipment tree to search for specific NEs in the equipment tree. See Procedure 10-2 for information about searching for objects using the equipment tree.

The equipment tree lists only the 1830 PSS NEs. The equipment tree displays the following shelves:

- 1830 PSS-4
- 1830 PSS-16
- 1830 PSS-32

Table 10-1 describes the objects in the equipment tree of the 5620 SAM Equipment View.

Table 10-1 Equipment tree objects

Object	Description
Topology group	Contains NEs and shelves
NE	The second level in the hierarchy
Shelf	The third level in the hierarchy

The equipment tree uses color highlights to display object status information such as the current alarm level and the aggregated alarm status. The circle and square icons to the left of the NE and shelf object represent the following:

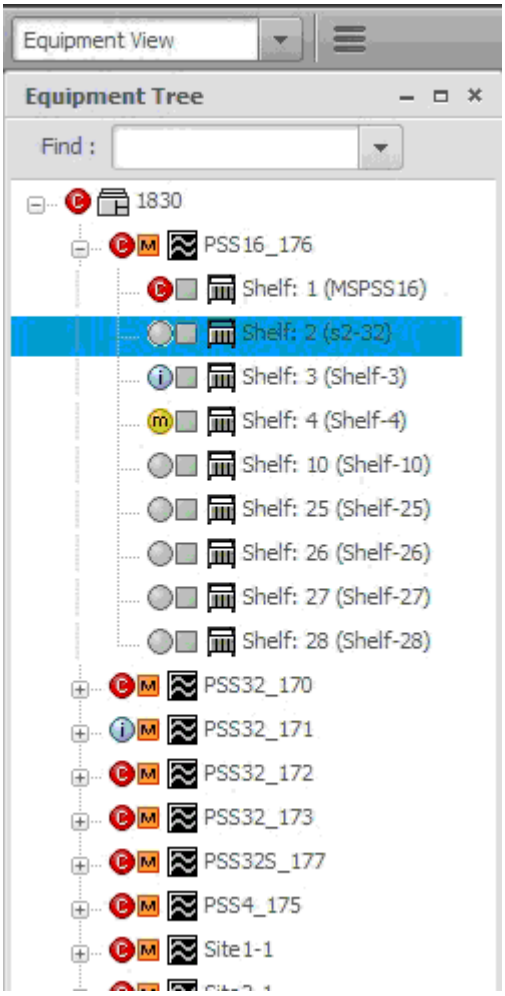
- Circle—aggregated alarm
- Square—object alarm

The following colors indicate the NE status:

- Green—synchronized
- Yellow—synchronizing
- Red—failed to synchronize
- Purple—suspended

Figure 10-2 shows the equipment tree objects that you can manage using the 5620 SAM Equipment View.

Figure 10-2 Equipment tree



10.3 Shelf view

The shelf view displays the cards and ports for the specified 1830 PSS device. You can view the alarm status and equipment status on the cards and ports in the shelf view. The 5620 SAM Equipment View uses color to indicate alarm severity. The alarms are aggregated based on the highest severity count. The count is incremented up to 9, after which 9+ is displayed for more than nine alarms of highest severity.

Table 10-2 lists the alarm colors.

Table 10-2 Alarm colors

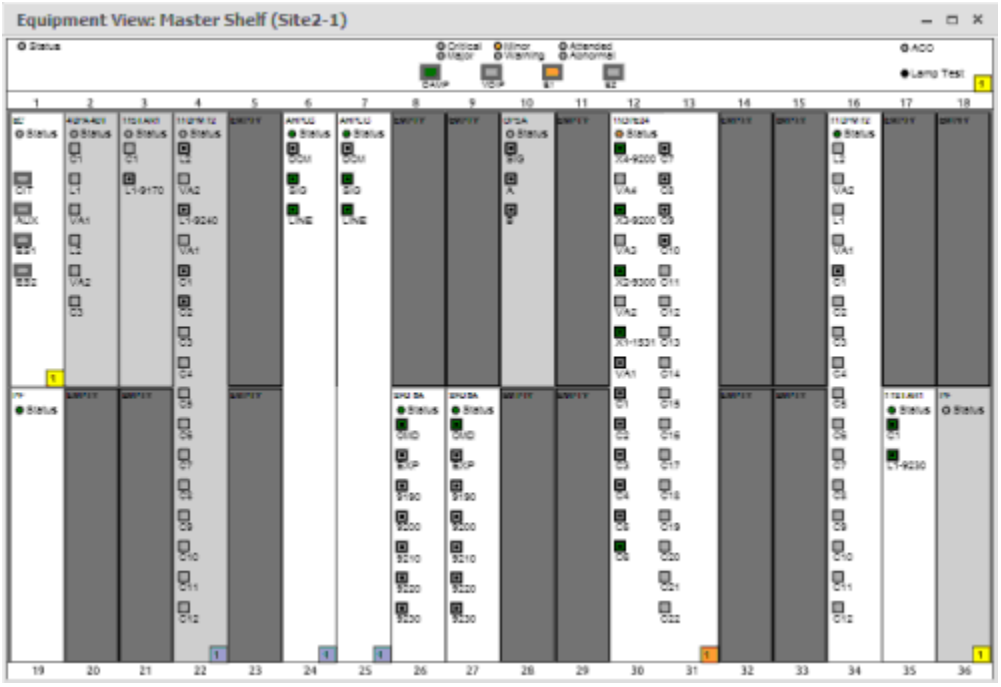
Alarm severity	Color
Critical	Red
Major	Orange
Minor	Yellow
Warning	Cyan
Condition	Mocha
Cleared/Normal	Green
Indeterminate	White
Information	Light blue

Figure 10-3 shows the shelf view of a specified 1830 PSS device. The cards and the ports are displayed as follows:

- equipped and provisioned cards—white
- unequipped and provisioned cards—light gray
- empty card slot—dark gray
- assigned ports—box with a dot
- unassigned ports—empty box.

The color of the status icon on the card indicates the LED status of the card. The color on the port indicates the LED status of the port. See the Alcatel-Lucent 1830 Photonic Service Switch Product Information and Planning Guide for more information about 1830 PSS LED indicators.

Figure 10-3 Shelf view



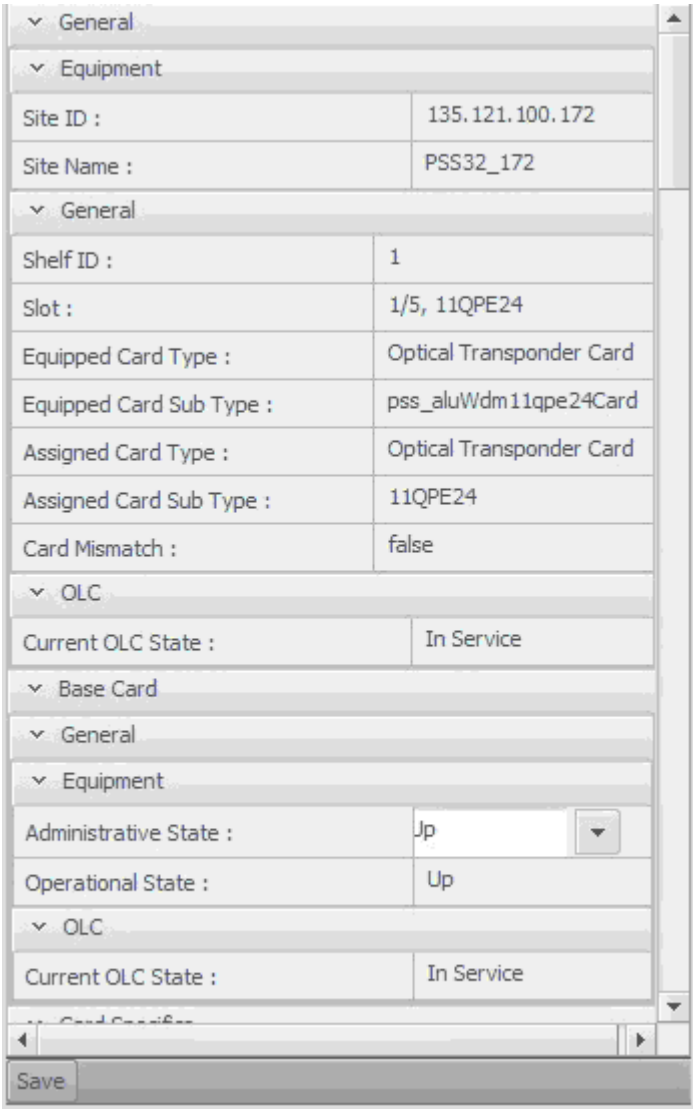
10.4 Configuration form

Figure 10-4 shows the configuration form for the object specified in the equipment tree or in the shelf view. To access the configuration form for individual objects, perform the following:

- topology group configuration form—click on a topology group object on the equipment tree
- NE configuration form—click on an NE object on the equipment tree
- shelf configuration form—click on a shelf object on the equipment tree
- card configuration form—click on a specific card in the shelf view panel
- port configuration form—click on a specific port in the shelf view panel

You can click on an empty card slot in the shelf view and assign a card using the card configuration form. See Procedure 10-3 for more information about assigning a card. The assigned card appears in the shelf view. The changes made in configuration forms can be viewed after the Equipment View refreshes. The Equipment View refreshes every 30 seconds or you can click on the refresh button on the toolbar to manually refresh all three panels.

Figure 10-4 Configuration form in the 5620 SAM Equipment View



10.5 Optical link view

Figure 10-5 shows the optical link view. The optical link view displays unidirectional and bidirectional links between ports using the one of following types of arrows beside a port.

- double-ended green arrow—bidirectional link
- single-ended green arrow—unidirectional link, where the arrow head points to the other endpoint of the optical link
- curved arrow—loopback is enabled on the port

The following letters beside the green arrows indicate different types of optical links.

- I—internal link
- E—external link
- L—loopback is enabled on the port

Note — An internal link is a link within the current 1830 PSS device and an external link is a link where the other endpoint is a port of another device.

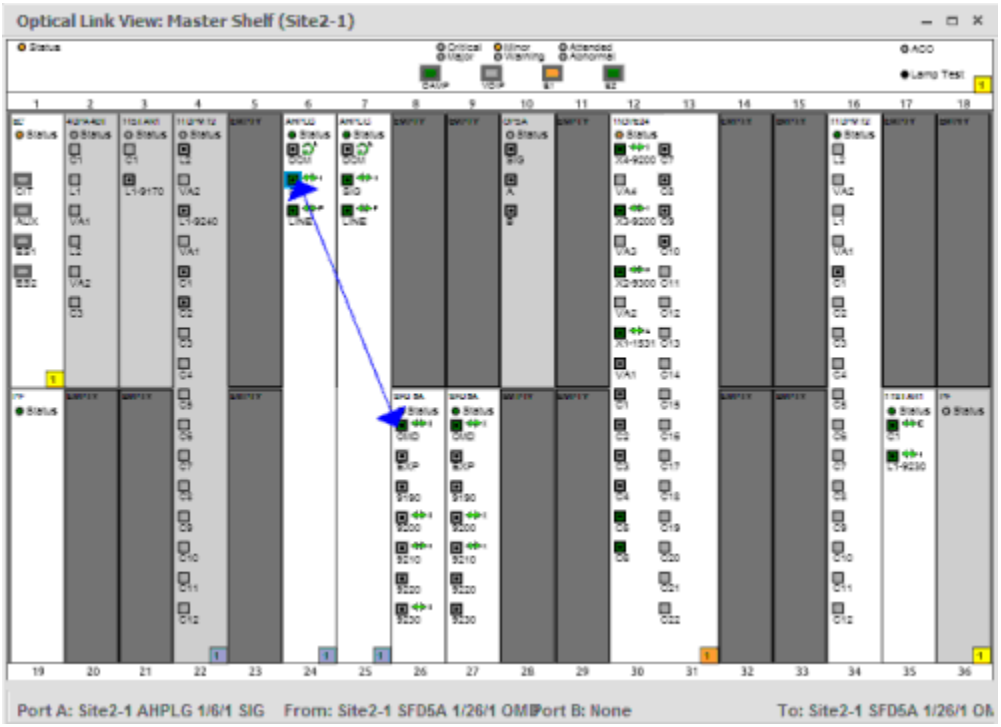
Click on the port that has a green arrow beside it, and you can view the path of the link indicated by a blue arrow. The path is indicated by one of the following types of arrows.

- single-ended blue arrow— unidirectional link, where the arrow head points to the other endpoint of the optical link
- double-headed blue arrow—bidirectional link

The port information of the endpoints is also displayed at the bottom of the window beside the From and To buttons. The external links have the arrow head of the blue arrow pointing to the From or To buttons. You can click on the buttons to navigate to the shelf that contains the port with the other endpoint of the optical link.

You can configure optical links on the 5620 SAM Equipment View. See Procedure 10-4 for more information about configuring optical links.

Figure 10-5 Optical link view



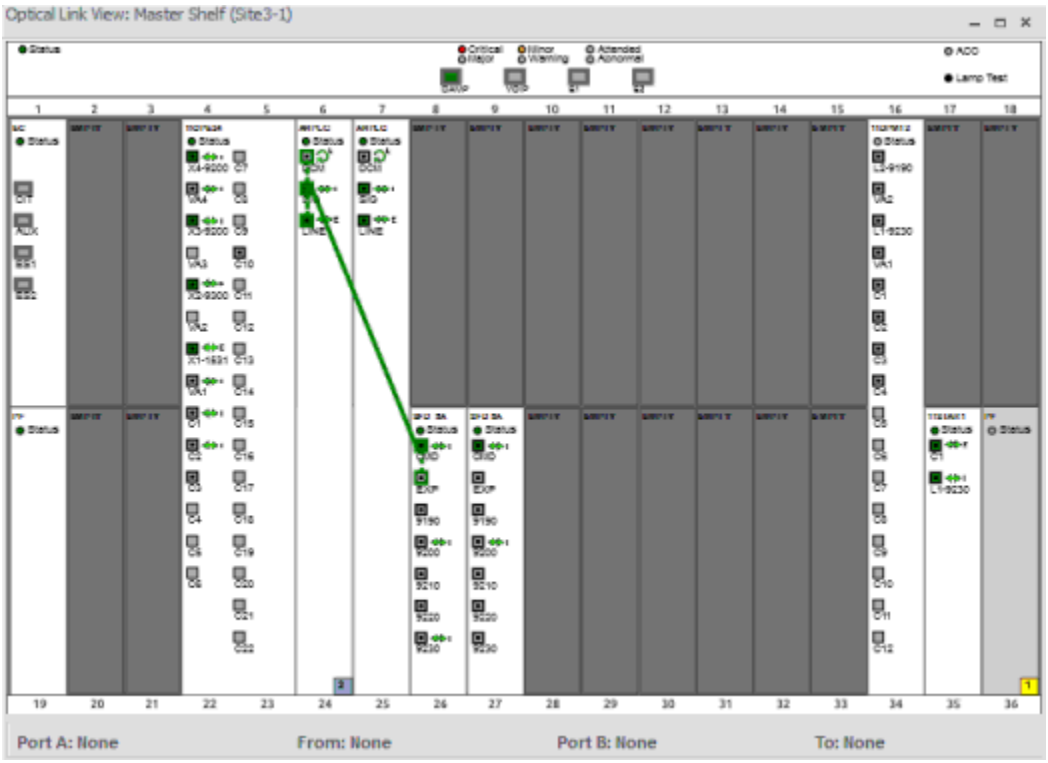
10.6 Light path trace

The path of an optical channel is represented graphically in the 5620 SAM Equipment View by highlighting the ports, optical links, and implicit connections that the path traverses. The channel to trace is derived from a port if the port has an associated channel. If the port has multiple channels, you can choose which channel you want to trace.

The trace uses optical links and implicit port connections to find the path. Implicit connections exists between the ports of the same card. If an OCH cross-connect for a target frequency is not provisioned on an NE, the path of the channel may not be traced completely across the NE. If an OCH cross-connect for a target frequency is provisioned on an NE, the path of the channel is traced completely across the NE.

See Procedure 10-5 for more information about configuring the light path trace. Figure 10-6 shows an example of light path trace.

Figure 10-6 Light path trace



The following lines indicate the light path trace:

- green solid line—optical link in the light path
- orange solid line—protection path in the light path
- green or orange dotted lines—implicit connections between ports of the same card

10.7 5620 SAM Equipment View procedures

Procedure 10-1 To start the 5620 SAM Equipment View on a specific web browser

1 Perform the following to specify the web browser for equipment view:

- **i** Choose Application→User Preferences. The User Preferences form opens.
- **ii** Click on the Browse button beside the Browser Path parameter. The Browser Path form opens.
- **iii** Choose the **.exe** file from the appropriate folder and click on the Open button. The Browser Path form closes and User Preferences form reappears.
- **iv** Close the User Preferences form.



Note 1 — Perform step 1 to set the web browser path when the client is used for the first time.

Note 2 — The recommended web browsers are Internet Explorer, Release 9.0 and later, and Google Chrome.

2 Perform one of the following.

- **a** Choose Equipment from the 5620 SAM navigation tree view selector. The navigation tree displays the navigation tree objects.
- **b** Choose an 1830 PSS object in the Physical topology map.

3 Right-click on the 1830 PSS object and choose Equipment View from the contextual menu. The 5620 SAM Equipment View appears in the specified web browser.

Procedure 10-2 To search for objects in the equipment tree

You can use the Find field of the equipment tree to find specific NEs in the equipment tree.

1 Start the 5620 SAM Equipment View. See Procedure 10-1.

2 Click in the Find field in the equipment tree.

3 Enter the site name. The matching object is selected and expanded in the equipment tree.

Procedure 10-3 To assign a card in the 5620 SAM Equipment View window

You can assign a card in an empty card slot using the configuration form of the 5620 SAM Equipment View.

1 Start the 5620 SAM Equipment View. See Procedure 10-1.

2 Choose 1830 PSS→Shelf. The shelf view appears with the shelf properties displayed in the configuration form.

3 Click on the empty card slot. The card configuration form appears.

4 Configure the parameters:

- Assigned Card Type
- Assigned Card Sub Type

5 Click on the Apply button. The specified card is assigned and displayed in the shelf view.

Procedure 10-4 To configure optical links in the 5620 SAM Equipment View window

1 Start the 5620 SAM Equipment View. See Procedure 10-1.

2 Click on the Optical Links button on the toolbar. The Optical Link View appears for the specified shelf. The Create Optical Link configuration form appears in the right panel.

3 Click on the port in the Optical Link View to configure Endpoint A. The Endpoint A-Port parameter information is automatically updated in the Create Optical Link form.



Note 1 — Clicking on the previously selected port again will undo the port selection.

Note 2 — Clicking anywhere on the Optical Link View will deselect all the ports.

4 Perform one of the following to configure Endpoint B.

a Click on the port in the Optical Link View to configure Endpoint B. The Endpoint B-Port parameter information is automatically updated in the Create Optical Link form.

b Perform the following to configure Endpoint B in a different shelf.



Note — When you configure Endpoint B on a different shelf, the 5620 SAM remembers the previously selected Endpoint A.

i Choose the shelf on the equipment tree. The Optical Link View of the specified shelf appears.

ii Click on the port in the Optical Link View to configure Endpoint B. The Endpoint B Port parameter information is automatically updated in the Create Optical Link form.

5 Perform the following if you need to assign signal rates to the ports.

i Configure the Assigned Rate parameter on the Endpoint A - Port panel in the Create Optical Link form.

ii Configure the Assigned Rate parameter on the Endpoint B- Port panel in the Create Optical Link form.

6 Click on the Apply button. The optical link is created. The green arrow icon indicating the direction of the link and the blue arrow indicating the path of the link appear in the Optical Link View.

Procedure 10-5 To view a light path trace

1 Start the 5620 SAM Equipment View. See Procedure 10-1.

2 Choose a shelf from the equipment tree. The shelf view opens.

3 Click on the Optical Links button in the toolbar.

4 Perform one of the following:

a Right-click on a single-channel port in the Optical Link View and choose Light Path Trace from the contextual menu. The light path trace indicated by green, orange or blue, solid or dotted lines appear in the Optical Link View.

b Perform the following for a multiple-channel port:

i Right-click on the multiple channel port in the Optical Link View and choose Light Path Trace from the contextual menu. The Select Frequency form opens.

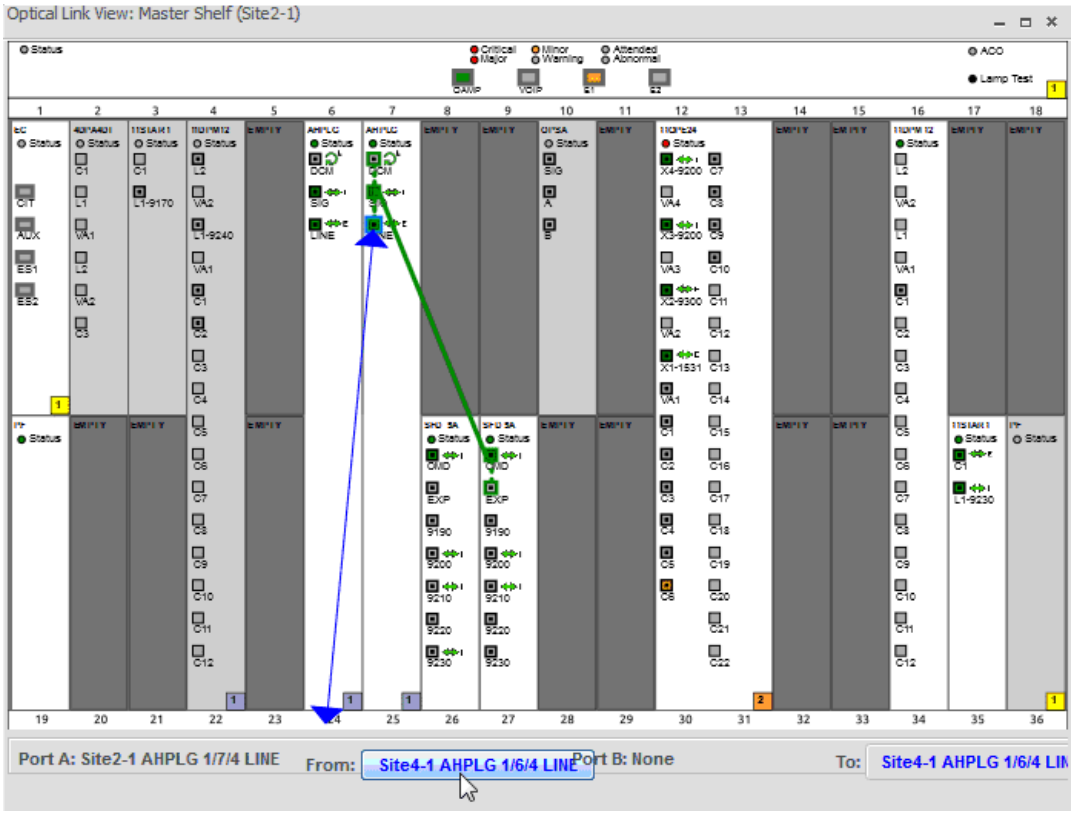
ii Choose a frequency from the drop-down list and click on the Apply button. The light path trace indicated by green, orange or blue, solid or dotted lines appear in the Optical Link View.

5 Perform the following steps to check whether the path ends in the same shelf view:

i Click on the port on which the trace ends. If the light path continues to another shelf, the optical link indicated by the blue arrow, points to the From button that indicates next hop.

ii Click on the From button at the bottom of the Optical Link View. The light path trace of the next site is displayed. Figure 10-7 shows an example of a light path trace continuing to another site.

Figure 10-7 Light path trace link to another site



6 Right-click on any port and select Clear Light Path Trace from the contextual menu. The light path is cleared.

11 — 1830 PSS power management

11.1 Power management overview *11-2*

11.2 Power management settings *11-2*

11.3 Power chart *11-3*

11.4 Wavelength tracker and wave key *11-5*

11.5 Technology types *11-11*

11.6 Power management procedures *11-11*

11.1 Power management overview

Power management is configured using the 5620 SAM to improve transmission performance. The 1830 PSS supports automatic and manual power management of the technology types. Auto-power managed networks have restricted topologies, but can be commissioned and the NE automatically adjusts power levels. Manual-power managed networks support more flexible topologies, but the power levels and commissioning can be configured. For protection configurations, the working and protection lines can be auto-power managed, or manual-power managed, or one can be auto-power managed and the other can be manual-power managed. See Procedure 11-1 for more information about display of optical power levels.

The TOADM and ROADM configurations support auto-power management. The FOADM configurations support manual-power management. There are FOADM configurations that support auto-power management. See Procedure 11-4 for information about configuring auto-power adjustment using the 5620 SAM.

Power adjustments are supported for the following configurations:

- SR–PSS services (also supports SR DWDM tunable OTs)
- PSS–PSS services when there is a drop shelf OT at the endpoints of the service
- PSS–PSS services when there is an internal PSS OT that has a manual power adjustment

11.2 Power management settings

The 5620 SAM supports viewing and modifying the power management parameters for the following LD ports:

- A2325A, AHPHG, AHPLG, ALPHG, ALPFGT, AM2017B, AM2318A, AM2325B, and OSCT LINE ports
- A2P2125, AM2125A, AM2125B, and AM2318A LINEOUT ports

Table 11-1 lists the configurable power management parameters for LD ports. The parameters are configured on the Port Specifics→General tab on the Network→1830 PSS→Shelf→Card→Port→Physical Port form.

Table 11-1 Power management parameters for LD ports

Parameter	Card restrictions
Power Management Type	Read-only for ALPFGT and OSCT
Service Launch Attenuation Offset (dB)	Not applicable for ALPFGT and OSCT
Span Loss Tilt (dB)	Not applicable for ALPFGT and OSCT
Auto Gain Adjustment Enabled	Read-only for ALPFGT and OSCT
Auto Tilt Adjustment Enabled	Read-only for ALPFGT and OSCT
Auto Tilt Maintenance Mode Enabled	Read-only for ALPFGT and OSCT
Commissioning Completed	—

The 5620 SAM supports viewing and modifying the power settings for the following WR ports:

- WR8-88A SIG port
- WR8-88AF SIG port

Table 11-2 lists the configurable power management parameters for WR ports. The parameters are configured on the Port Specifics→General tab on the Network→1830 PSS→Shelf→Card→Port→Physical Port form.

Table 11-2 Power management parameters for WR ports

Parameter	Values
Power Management Type	Auto Manual
Commissioning Completed	—

The power management parameters are configurable under the following conditions:

- If you configure the Ap Opp Direction Port Addr parameter on the Port Specifics→General tab on the Network→1830 PSS→Shelf→Card→Port→Physical Port form, the power management parameters can be configured.
- If you configure the Power Management Type parameter as Auto, the Service Launch Attenuation Offset (dB) parameter is available for configuration.
- If you configure the Level in Optical Node parameter of the WR8-88A and WR8-88AF to 1 on the Card Specifics tab on the Network→1830 PSS→Shelf→Card→Card Slot form, the power management parameters can be configured.

11.3 Power chart

The 5620 SAM displays the optical power levels on the ports, along the OCH trail, and along the service path.

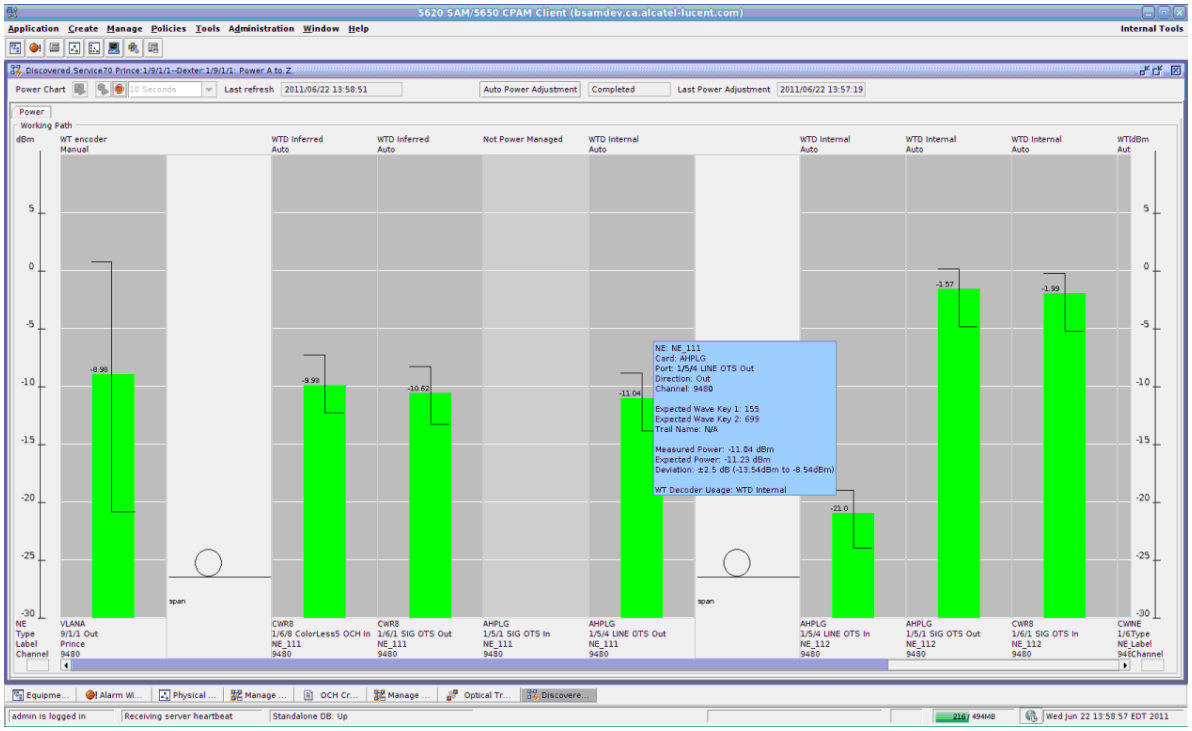
Service power chart

The service power chart displays all of the points along the service path, on a single channel for the A to Z direction and Z to A direction. See Procedure 11-1 for more information about displaying optical power levels along a service path.

The color legend for the service power chart (as shown in 11-1) is as follows:

- Green—within range
- Orange—out of range (OoR but within the interval which ranges from -30 to +10
- White—the power levels are -99 and less than -30
- Black—the power levels are -99

Figure 11-1 Service power chart



Port power chart

The port power chart displays the following power values for each wavelength (direction (IN or OUT) and a port):

- measured power—a measurement that provides the current power level
- expected power—a provisioned value that indicates to the 1830 PSS device the power level that must be achieved
- expected power deviation—a provisioned value that represents the deviation from the expected power level that is considered healthy

In automatically powered equipment, the expected power and deviation values are determined by SCOT. In manually powered equipment, the user can change the values.

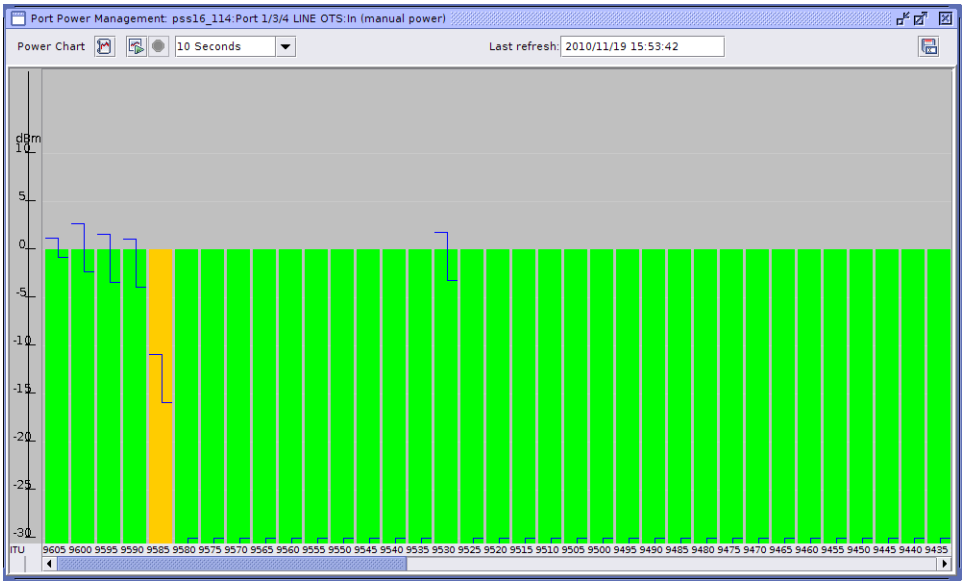
See Procedure 11-5 to manage the expected power levels and deviation at a wavelength tracker detection point.

Optical power levels are represented by bars, and the high and low watermarks are represented by a Z bar. Figure 11-2 shows a port optical power chart.

The color legends used on the port power chart are as follows:

- Green—within range
- Orange—out of range (OoR, but within the chart interval which ranges from –30 to +10)

Figure 11-2 Port power chart



OCH trail power chart

The power chart can also be displayed from the OCH trail. The power chart generated from the OCH Trail (Edit) form (Manage→OTN→OTN Trails→OCH Trail (Edit) form→OCH Trail Path→Power A to Z or Power Z to A button) consists of all the points along the OCH trail of a keyed service, on a single channel for the A to Z direction and Z to A direction, except the client ports.

11.4 Wavelength tracker and wave key

The Wavelength Tracker allows the 1830 PSS device to manage wavelengths at different stages of an optical path. Each wavelength can be traced as it passes through the network, which allows you to ensure that the network connections are correct. A unique identifier, known as a wave key pair, is encoded on each wavelength that enters the network through an 1830 PSS device. By detecting and identifying the encoded wave keys, the wavelength can be traced through the network.
Tables 11-3, 11-4, and 11-5 list the ITU channel numbers and corresponding ALU wave keys for the L-band, C-band, and S-band channels. See Procedure 11-10 for more information about managing wave keys using the 5620 SAM GUI.

The 5620 SAM assigns the wave keys on the SR DWDM ports and on the PSS cross-connects to ensure that the encoded wave keys on the SR DWDM ports are the same as on the 1830 PSS. If the user changes the wave keys using the WebUI or CLI, the user needs to ensure that the same wave keys are assigned to respective SR source ports in order to view accurate power levels on the 1830 PSS encoder and decoder points. AutoKeying (NMS) is the only wave key assign mode supported for services originating on the SR and traversing through a network of 1830 PSS.

Note — The 5620 SAM does not support manual modification of wave keys. You can use the WebUI or CLI for modifications.

Table 11-3 L-band channel wave keys

ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
186.00	1611.79	8600	186.05	1611.35	8605
186.10	1610.92	8610	186.15	1610.49	8615
186.20	1610.06	8620	186.25	1609.62	8625
186.30	1609.19	8630	186.35	1608.76	8635
186.40	1608.33	8640	186.45	1607.90	8645
186.50	1607.47	8650	186.55	1607.04	8655
186.60	1606.60	8660	186.65	1606.17	8665
186.70	1605.74	8670	186.75	1605.31	8675
186.80	1604.88	8680	186.85	1604.46	8685
186.90	1604.03	8690	186.95	1603.60	8695
187.00	1603.17	8700	187.05	1602.74	8705
187.10	1602.31	8710	187.15	1601.88	8715
187.20	1601.46	8720	187.25	1601.03	8725
187.30	1600.60	8730	187.35	1600.17	8735
187.40	1599.75	8740	187.45	1599.32	8745
187.50	1598.89	8750	187.55	1598.47	8755
187.60	1598.04	8760	187.65	1597.62	8765
187.70	1597.19	8770	187.75	1596.76	8775
187.80	1596.34	8780	187.85	1595.91	8785
187.90	1595.49	8790	187.95	1595.06	8795
188.00	1594.64	8800	188.05	1594.22	8805
188.10	1593.79	8810	188.15	1593.37	8815
188.20	1592.95	8820	188.25	1592.52	8825
188.30	1592.10	8830	188.35	1591.68	8835
188.40	1591.26	8840	188.45	1590.83	8845
188.50	1590.41	8850	188.55	1589.99	8855
188.60	1589.57	8860	188.65	1589.15	8865
188.70	1588.73	8870	188.75	1588.30	8875
188.80	1587.88	8880	188.85	1587.46	8885
188.90	1587.04	8890	188.95	1586.62	8895
189.00	1586.20	8900	189.05	1585.78	8905
189.10	1585.36	8910	189.15	1584.95	8915
189.20	1584.53	8920	189.25	1584.11	8925

(1 of 2)

ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
189.30	1583.69	8930	189.35	1583.27	8935
189.40	1582.85	8940	189.45	1582.44	8945
189.50	1582.02	8950	189.55	1581.60	8955
189.60	1581.18	8960	189.65	1580.77	8965
189.70	1580.35	8970	189.75	1579.93	8975
189.80	1579.52	8980	189.85	1579.10	8985
189.90	1578.69	8990	189.95	1578.27	8995
190.00	1577.86	9000	190.05	1577.44	9005
190.10	1577.03	9010	190.15	1576.61	9015
190.20	1576.20	9020	190.25	1575.78	9025
190.30	1575.37	9030	190.35	1574.95	9035
190.40	1574.54	9040	190.45	1574.13	9045
190.50	1573.71	9050	190.55	1573.30	9055
190.60	1572.89	9060	190.65	1572.48	9065
190.70	1572.06	9070	190.75	1571.65	9075
190.80	1571.24	9080	190.85	1570.83	9085
190.90	1570.42	9090	190.95	1570.01	9095

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Table 11-4 C-band channel wave keys

ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
191.00	1569.59	9100	191.05	1569.18	9105
191.10	1568.77	9110	191.15	1568.36	9115
191.20	1567.95	9120	191.25	1567.54	9125
191.30	1567.13	9130	191.35	1566.72	9135
191.40	1566.31	9140	191.45	1565.90	9145
191.50	1565.50	9150	191.55	1565.09	9155
191.60	1564.68	9160	191.65	1564.27	9165
191.70	1563.86	9170	191.75	1563.45	9175
191.80	1563.05	9180	191.85	1562.64	9185
191.90	1562.23	9190	191.95	1561.83	9195
192.00	1561.42	9200	192.05	1561.01	9205

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ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
192.10	1560.61	9210	192.15	1560.20	9215
192.20	1559.79	9220	192.25	1559.39	9225
192.30	1558.98	9230	192.35	1558.58	9235
192.40	1558.17	9240	192.45	1557.77	9245
192.50	1557.36	9250	192.55	1556.96	9255
192.60	1556.55	9260	192.65	1556.15	9265
192.70	1555.75	9270	192.75	1555.34	9275
192.80	1554.94	9280	192.85	1554.54	9285
192.90	1554.13	9290	192.95	1553.73	9295
193.00	1553.33	9300	193.05	1552.93	9305
193.10	1552.52	9310	193.15	1552.12	9315
193.20	1551.72	9320	193.25	1551.32	9325
193.30	1550.92	9330	193.35	1550.52	9335
193.40	1550.12	9340	193.45	1549.72	9345
193.50	1549.32	9350	193.55	1548.91	9355
193.60	1548.51	9360	193.65	1548.11	9365
193.70	1547.72	9370	193.75	1547.32	9375
193.80	1546.92	9380	193.85	1546.52	9385
193.90	1546.12	9390	193.95	1545.72	9395
194.00	1545.32	9400	194.05	1544.92	9405
194.10	1544.53	9410	194.15	1544.13	9415
194.20	1543.73	9420	194.25	1543.33	9425
194.30	1542.94	9430	194.35	1542.54	9435
194.40	1542.14	9440	194.45	1541.75	9445
194.50	1541.35	9450	194.55	1540.95	9455
194.60	1540.56	9460	194.65	1540.16	9465
194.70	1539.77	9470	194.75	1539.37	9475
194.80	1538.98	9480	194.85	1538.58	9485
194.90	1538.19	9490	194.95	1537.79	9495
195.00	1537.40	9500	195.05	1537.00	9505
195.10	1536.61	9510	195.15	1536.22	9515
195.20	1535.82	9520	195.25	1535.43	9525
195.30	1535.04	9530	195.35	1534.64	9535
195.40	1534.25	9540	195.45	1533.86	9545

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ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
195.50	1533.47	9550	195.55	1533.07	9555
195.60	1532.68	9560	195.65	1532.29	9565
195.70	1531.90	9570	195.75	1531.51	9575
195.80	1531.12	9580	195.85	1530.72	9585
195.90	1530.33	9590	195.95	1529.94	9595

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Table 11-5 S-band channel wave keys

ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
196.00	1529.55	9600	196.05	1529.16	9605
196.10	1528.77	9610	196.15	1528.38	9615
196.20	1527.99	9620	196.25	1527.60	9625
196.30	1527.22	9630	196.35	1526.83	9635
196.40	1526.44	9640	196.45	1526.05	9645
196.50	1525.66	9650	196.55	1525.27	9655
196.60	1524.89	9660	196.65	1524.50	9665
196.70	1524.11	9670	196.75	1523.72	9675
196.80	1523.34	9680	196.85	1522.95	9685
196.90	1522.56	9690	196.95	1522.18	9695
197.00	1521.79	9700	197.05	1521.40	9705
197.10	1521.02	9710	197.15	1520.63	9715
197.20	1520.25	9720	197.25	1519.86	9725
197.30	1519.48	9730	197.35	1519.09	9735
197.40	1518.71	9740	197.45	1518.32	9745
197.50	1517.94	9750	197.55	1517.55	9755
197.60	1517.17	9760	197.65	1516.78	9765
197.70	1516.40	9770	197.75	1516.02	9775
197.80	1515.63	9780	197.85	1515.25	9785
197.90	1514.87	9790	197.95	1514.49	9795
198.00	1514.10	9800	198.05	1513.72	9805
198.10	1513.34	9810	198.15	1512.96	9815
198.20	1512.58	9820	198.25	1512.19	9825

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ITU channel number (THz)	nm	ALU channel number	ITU channel number (THz)	nm	ALU channel number
100 GHz grid			**50 GHz offset**		
198.30	1511.81	9830	198.35	1511.43	9835
198.40	1511.05	9840	198.45	1510.67	9845
198.50	1510.29	9850	198.55	1509.91	9855
198.60	1509.53	9860	198.65	1509.15	9865
198.70	1508.77	9870	198.75	1508.39	9875
198.80	1508.01	9880	198.85	1507.63	9885
198.90	1507.25	9890	198.95	1506.87	9895
199.00	1506.49	9900	199.05	1506.12	9905
199.10	1505.74	9910	199.15	1505.36	9915
199.20	1504.98	9920	199.25	1504.60	9925
199.30	1504.23	9930	199.35	1503.85	9935
199.40	1503.47	9940	199.45	1503.10	9945
199.50	1502.72	9950	199.55	1502.34	9955
199.60	1501.97	9960	199.65	1501.59	9965
199.70	1501.21	9970	199.75	1500.84	9975
199.80	1500.46	9980	199.85	1500.09	9985
199.90	1499.71	9990	199.95	1499.34	9995
200.00	1498.96	2000	200.05	1498.59	2000
200.10	1498.21	2001	200.15	1497.84	2001
200.20	1497.46	2002	200.25	1497.09	2002
200.30	1496.72	2003	200.35	1496.34	2003
200.40	1495.97	2004	200.45	1495.60	2004
200.50	1495.22	2005	200.55	1494.85	2005
200.60	1494.48	2006	200.65	1494.11	2006
200.70	1493.73	2007	200.75	1493.36	2007
200.80	1492.99	2008	200.85	1492.62	2008
200.90	1492.25	2009	200.95	1491.88	2009

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In addition, the Wavelength Tracker can measure the optical power level at each detection point for each encoded channel that passes through a port on an 1830 PSS device. The 5620 SAM power management function uses the Wavelength Tracker feature and other equipment readings to provide a graphical representation of power levels and a mechanism to track changes in the network.

For more information about the Wavelength Tracker tool, see the Alcatel-Lucent *1830 Photonic Service Switch User Provisioning Guide* and the Alcatel-Lucent *1830 Photonic Service Switch Product Information and Planning Guide.*

Rekeying service

The 5620 SAM allows you to rekey wave keys that are associated with an optical transport service. You can rekey a wave key to resolve duplicate wave key values that are assigned to a service. See Procedure 11-11 for more information about rekeying wave key values of a service.

11.5 Technology types

The technology types are:

- reserved types that are discovered on the node
- unreserved types that are discovered on the 5620 SAM

The 5620 SAM allows you to view the reserved technology types. You can create, view, and modify the unreserved technology types. See Procedure 11-12 for more information about configuring unreserved technology type.



Note 1 — You cannot create a technology type on the 5620 SAM if a specific Bit Rate Key and the Encoding Key parameter value is already present.

Note 2 — You cannot modify the Bit Rate Description and the Encoding Description parameters for the unreserved technology types with Bit Rate Key and Encoding Key parameter values that are for the reserved technology types. The values range from 1 to 1000 and 9001 to 10000.

Note 3 — You cannot modify the WTOCM/WTOCMA Calibration and the OSNR Calibration parameters for the unreserved technology types with Bit Rate Key and Encoding Key parameter values that are for the reserved technology types. The values range from 9001 to 10 000.

You can delete a technology type under the following conditions:

- technology type is not a reserved
- technology type is not associated with a cross-connect. The AZ and ZA configured and received Bit Rate Key and Encoding Key parameter values do not match on a cross-connect.

You can set the technology type on OCH cross-connects on the 1830 PSS. See Procedure 11-13 for more information about setting the technology type.

11.6 Power management procedures

The following procedures describe how to manage optical power levels using the 5620 SAM.

Procedure 11-1 To display optical power levels along a service path

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the object type drop-down menu and click on the Search button. A list of managed optical transport services appears.

3 Choose a service and click on the Properties button. The Optical Transport Service (Edit) form opens with the General tab displayed.

4 Choose Service Paths→Service Path on the navigation tree. The Service Path properties form opens.

5 Click on one of the following buttons:

- Power A to Z
- Power Z to A

If the buttons are not visible, click on the More Actions button and choose the corresponding option from the drop-down menu.

The optical power level graph opens, displaying all of the points along the service path for the selected direction.



Note — The power levels that are displayed have the following characteristics:

- When the SR DWDM card has the Port Type parameter set to Fixed on the Wavelength Tracker tab under the Optical tab of the Physical Port (Edit) form, the transmitted power from the wavelength tracker is displayed.
- When the SR DWDM card has the SFP VOA Present parameter selected on the Wavelength Tracker tab under the Optical tab of the Physical Port (Edit) form, the transmitted power from the wavelength tracker is displayed.
- When the SR DWDM card has the SFP VOA Present parameter deselected on the Wavelength Tracker tab under the Optical tab of the Physical Port (Edit) form, the coherent transmitted and received power are displayed for the coherent cards.
- When the SR DWDM card has the SFP VOA Present parameter deselected on the Wavelength Tracker tab under the Optical tab of the Physical Port (Edit) form and the Rx Amplifier parameter is set to True on the Optical Amplifier tab under the Optical tab of the Physical Port (Edit) form, the received power is displayed from the amplifier.
- For all other configurations of the SR DWDM card, the power from the Lane DDM or DDM is displayed, depending on the card type.
- The received power of the SR non-DWDM ports in the power graph is from the Lane DDM or DDM, depending on the card type.

6 Click on the Loss tab. The power chart displays a bar graph representing the power loss and gain for the power monitored ports along the service path in the specified direction. The 5620 SAM calculates the power loss or gain of a power monitored port from the difference in its measured power value and the measured power value of the previous power monitored port.

The Loss tab also displays a Z bar that indicates the minimum and maximum power loss or gain values for the following ports:

- Bidirectional Amplifier SIG OUT
- Unidirectional Amplifier LINEOUT
- CWR THRU OUT
- WR SIG OUT

Procedure 11-2 To refresh the optical power chart display

1 Open an optical power chart. See Procedure 11-1 for more information.

2 Choose the number of seconds between refreshes from the Power Chart drop-down menu.

3 Perform one of the following:

a To configure an automatic refresh, choose the number of seconds between refreshes from the Power Chart drop-down menu and click on the Auto-refresh power chart icon. The optical power chart updates at the configured time interval.

b To manually refresh the optical power chart, click on the Refresh power chart button. The latest power readings for all of the points are displayed. The optical power chart is refreshed and the last refresh time is displayed.

Procedure 11-3 To configure auto-power adjustment rules on a 5620 SAM service

The auto-power adjustment rules allow users to configure parameters to adjust power levels for optical transport services between the source port and the target port. The power converge parameters for source and destination ports can be configured using the auto-power adjustment rules. The auto-power adjustment rules can be applied to, for example, the 7750 SR source port, which is the SR DWDM tunable power control enabled transponder port that can encode wave keys, and the 1830 PSS target port, which is the cross-connected egress amplifier port that can decode wave keys for a channel in A→Z or Z→A directions.

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the object type drop-down menu and click on the Search button. A list of managed optical transport services is displayed.

3 Choose a service and click on the Properties button. The Optical Transport Service (Edit) form opens.

4 Choose Service Paths→Service Path. The Service Path properties form opens.

5 Click on the Search button in the Auto Power Adjustment Rules panel. A list of rules is displayed.

6 Choose a rule and click on the Properties button. The Power Adjustment Rule (Edit) form opens.

7 Configure the parameters:

- Source Port
- Target Port

In the Source Port panel, configure:

- Initial Target Power (dB)
- Power Converge Wait Time (seconds)
- Power Converge Retries
- Power Converge Deviation (dB)

In the Target Port panel, configure:

- Power Converge Deviation (dB)

8 Click on the OK button to apply the changes and close the Power Adjustment Rule (Edit) form.

9 Click on the Power A to Z or Power Z to A button. If the buttons are not visible, click on the More Actions button and choose the corresponding option from the drop-down menu. The Discovered Service Power A to Z or Z to A form opens.

10 Click on the Auto Power Adjustment button to implement automatic power adjustment. A dialog box appears.

11 Click on the Yes button. The automatic power adjustment process starts and the status button beside the Auto Power Adjustment button changes from Not Executed to In Progress.

12 If you need to terminate the automatic power adjustment process:

i Click on the Auto Power Adjustment button. A dialog box appears.

ii Click on the Yes button. The automatic power adjustment process stops. The status button beside the Auto Power Adjustment button changes to Abort Power Adjustment. The status button changes from In Progress to Aborted.

Procedure 11-4 To perform auto-power adjustment on an 1830 PSS

The 5620 SAM supports egress and ingress power adjustments for the following cards:

- A2325A
- A2P2125
- AHPHG
- AHPLG
- ALPHG
- AM2017B
- AM2125A
- AM2125B
- AM2318A
- AM2325B
- RA2P

The 5620 SAM supports add/drop power adjustments for the following cards:

- WR8-88A
- WR8-88AF

Power adjustment support on a card depends on its current topology. If the Power Management Type parameter of the amplifier card is set to Manual, the card does not support ingress or egress power adjustment.

The following types of power adjustment are supported:

- Linear—for linear topologies and requires forced cross-connects
- Ring—for ring topologies and is also called ASE adjustment
- Dynamic Tilt—based on the tilt adjustment parameters on the node

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the object type drop-down menu and click on the Search button. A list of managed optical transport services is displayed.

3 Choose a service and click on the Properties button. The Optical Transport Service (Edit) form opens.

4 Choose Service Paths→Service Path. The Service Path properties form opens.

5 Click on the Power A to Z or Power Z to A button. If the buttons are not visible, click on the More Actions button and choose the corresponding option from the drop-down menu. The Service Path Power A to Z or Z to A form opens.

6 Drag the horizontal split bar to view the Power Control form that lists the power adjustment configurations of the termination points for the service.

7 Choose a power adjustment point and click on the Properties button. The Power Adjustment (Edit) form opens.

8 Configure the parameters in the Power Attributes panel:

- WSS Overhead (dB)
- Gain Adjustment Calculation Offset (dB)

9 Click on the OK button. The Power Adjustment (Edit) form closes and the Service Path Power A to Z or Z to A form reappears.

10 Click on the Start Power Adjust button. The Status and Result columns are updated after the power adjustment is completed.



Note 1 — You can stop or abort a power adjustment by clicking on the Stop Power Adjust or Abort Power Adjust buttons, respectively.

Note 2 — Only linear egress adjustment supports Abort operation and only ring egress adjustment supports Stop operation. The buttons are enabled based on the selected adjustment type and operation being performed.

Procedure 11-5 To manage the expected power level and deviation at a Wavelength Tracker detection point

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on a port object and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed. Table 11-6 lists the ports that support the Wavelength Tracker.

Table 11-6 Wavelength Tracker-enabled ports

Card	Port	Direction
Decoder Ports		
A2325A AHPHG AHPLG ALPHG AM2017B AM2325B	LINE	IN, OUT
	SIG	OUT
	DCM	OUT
AM2125A	LINEIN	IN
	LINEOUT	OUT
CWR8 CWR8-88	SIG	IN, OUT
	THRU	OUT
	OMD	IN
	CLS (1 to 8)	IN, OUT
OPSA, Protection Mode = OCHP or OMSP only	SIG	IN
	A	IN
	B	IN
Encoder Ports		
112SCA1	L1	OUT
112SCX10	L1	OUT
11DPE12 11DPE12E	VA (1 to 2)	OUT
11QPA4	VA (1 to 4)	OUT
11STAR1	L1	OUT
11STAR1A	L1	OUT
11STGE12	L1	OUT
11STMM10	L1	OUT
43SCX4 43SCX4E	L1	OUT
43STA1P	L1	OUT

(1 of 2)

Card	Port	Direction
43STX4 43STX4P	L1	OUT
4DPA4	VA (1 to 2)	OUT
MVAC	G (1 to 8)	OUT
SVAC	L1	OUT
Other Ports		
WTOCM	IN (1 to 4)	IN

(2 of 2)

3 Perform one of the following:

a Click on the Power Management In button to view the detection point power levels for the inbound optical light path. The Port Power Management power chart for the inbound optical light path opens.

b Click on the Power Management Out button to view the detection point power levels for the outbound optical light path. The Port Power Management power chart for the outbound optical light path opens.

If the buttons are not visible, click on the More Actions button and choose the corresponding option from the drop-down menu.

4 To set the expected power level for a channel:

i Right-click on the power chart and choose properties. A warning dialog box with a message to resync all the wave keys appears.

ii Click on the OK button. The dialog box closes.

iii Click on the Port Specifics tab of the Physical Port (Edit) form and click on the Wave Keys tab.

iv Click on the Resync All Wave Keys button.

v Right-click on the power chart and choose properties. A dialog box appears.

vi Click on the OK button. The Wave Keys (Edit) form opens with the General tab displayed.

vii Configure the parameters:

- Expected Power (dBm)
- Expected Power Deviation (dB)
- Expected Power Tolerance (dB)

viii Click on the OK button.

5 Right-click on the power chart and choose Set Power Deviation from the contextual menu. The Set Power Deviation for channel form opens.

6 To set the power deviation, perform one of the following:

   a Enter a deviation value between 0 and 5 and click the Apply button.

   b Drag the slide bar left or right to choose a deviation value and click the Apply button.

The Set Power Deviation for channel form closes and the size of the Z bar increases or decreases based on the configured deviation value.

Procedure 11-6 To export optical power chart data to a CSV file

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on a port object in the Equipment view and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

3 Perform one of the following:

   a Click on the Power Management In button to view the detection point power levels for the inbound optical light path. The Port Power Management power chart for the inbound optical light path opens.

   b Click on the Power Management Out button to view the detection point power levels for the outbound optical light path. The Port Power Management power chart for the outbound optical light path opens.

   If the buttons are not visible, click on the More Actions button and choose the corresponding option from the drop-down menu.

4 Click on the Export power values to CSV file icon. The Save As window opens.

5 Choose the appropriate location for the file and click the Save button. The Save As window closes and the CSV file that contains the optical power level data is saved.

Procedure 11-7 To view and configure target power offset per direction



Note 1 — The following ports support target power offset:

- A2325A, AHPHG, AHPLG, ALPHG, AM2017B and AM2325B LINE ports
- AM2125A, AM2125B, AM2318A and RA2P LINEIN ports (ingress only)
- AM2125A, AM2125B and AM2318A LINEOUT ports (egress only)

Note 2 — The target power offset depends on the ingress and egress direction of the port.

See the *Alcatel-Lucent 1830 Photonic Service Switch 36/32/16 (PSS-36/PSS-32/PSS-16) User Provisioning Guide for more information.*

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card→Port.

3 Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the Port Specifics tab and click on the Target Power Offset tab.

5 Click on the Properties button. The Power Offset (Edit) form appears.

6 Configure the Target Power Offset (dB) parameter.

7 Click on the OK button. The Power Offset (Edit) form closes and the Target Power Offset tab is reappears.

8 Click on the Apply button to save the changes. A dialog box appears.

9 Click on the Yes button.

10 Close the Physical Port (Edit) form.

Procedure 11-8 To view and configure target power offset per channel

The 5620 SAM allows you to view and configure the ingress and egress target power attributes per optical channel.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose one of the following amplifier cards from the Equipment view:

- A2325A
- A2P2125
- AHPHG
- AHPLG
- ALPHG
- AM2017B
- AM2125A
- AM2125B
- AM2318A
- AM2017B
- AM2325B
- RA2P

3 Right-click on the Card Slot and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

4 Click on the Card Specifics tab. The Card properties appear on the General tab.

5 Click on the Channel Target Power Offset tab. A list of ingress and egress target power attributes per optical channel appears.



Note — The Channel Target Power Offset tab appears on the form under the following conditions:

- The card is equipped and not pre-provisioned.
- Service is created between the line ports of the two amplifier cards.
- The Power Management Type parameter for the line port of the amplifier card, which is displayed in the Port Specifics→General form, is set to Auto.

6 Choose an entry for which the Applicable? parameter is set to Yes. Click on the Properties tab. The Target Power Offset (Edit) form opens.

7 Configure the User Offset (db) parameter.

8 Click on the OK button. The Target Power Offset (Edit) form closes and the Channel Target Power Offset tab reappears.

9 Click on the Apply button to configure the changes.

Procedure 11-9 To configure baseline types OPT and OPR on ports

The 5620 SAM allows you to create and configure the baseline types OPR (Optical Power Received on OT and OSC points) and OPT (Optical Power Transmitted on OT and OSC points).

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card→Port.

3 Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the Port Specifics tab.

5 Click on the Performance tab.

6 Click on the Baseline tab.

7 Click on the Create button. The Baseline (Create) form opens.

8 Configure the parameters:

- Baseline Type
- Reason

9 Click on the OK button. The Baseline (Create) form closes. The Physical Port (Edit) form reappears.

10 Click on the OK button. The Physical Port (Edit) form closes.



Note — The reason is modified on the 1830 PSS device also.

Procedure 11-10 To manage wave keys using the 5620 SAM

The 5620 SAM allows you to locate and manage optical transport services and channels using the wave key information.

1 Choose Manage→Equipment→Equipment from the 5620 SAM main menu. The Manage Equipment form opens.

2 Click on the Object Type button and choose Wave key Encoder (Optical Management).

3 Click on the Search button. The list of wave keys in the 5620 SAM appears with the following parameters for each entry.

- Wave key 1
- Wave key 2
- Transmit State
- Site ID
- Site Name
- Physical Port
- Alarm
- Aggregated Alarm Status

4 Click on the filter icon to specify the filter criteria. The Manage Equipment - Filter form opens. Configure the filters, as required.

5 Click on the Close button. The Manage Equipment - Filter form closes and the Wave key Encoder (Optical Management) form reappears with the list of wave keys for the specified filter criteria.

6 Choose an entry and click on the Properties button. The Physical Port (Edit) form opens with the General tab displayed. The parameters of the port on which the wave keys are located appear, which can be used to locate the optical transport service configured for the port.

Procedure 11-11 To rekey wave key values of a service

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the object type drop-down menu and click on the Search button. A list of managed optical transport services is displayed.

3 Choose a service and click on the Properties button. The Optical Transport Service (Edit) form opens.

4 Click on the Rekey Service button. If the button is not visible, click on the More Actions button and choose the Rekey Service option from the drop-down menu.



Note — Check the deployment status in the Wave Key panel in the OCH Cross Connects tab of the service.

Procedure 11-12 To create an unreserved technology type

1 Perform one of the following to open the Technology Type (Create) form:

   a From the Equipment view of the navigation tree:

      i Choose Network→1830 PSS.

      ii Right-click on an 1830 PSS and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

      iii Click on the NE Specifics tab.

      iv Click on the Technology Types tab.

      v Click on the Create button. The Technology Type (Create) form opens.

   b In the physical topology map, right-click on an 1830 PSS and choose Add Technology Type from the contextual menu. The Technology Type (Create) form opens.

2 Configure the parameters:

- Bit Rate Key
- Bit Rate Description
- Encoding Key
- Encoding Description
- WTOCM Calibration (dB)
- WTOCMA Calibration (dB)
- OSNR Calibration (dB)

3 Click on the OK button. The Technology Type (Create) form closes and a dialog box appears.

4 Click on the OK button. The dialog box closes and the The Network Element (Edit) form reappears.

5 Click on the Apply button.

Procedure 11-13 To set the technology type on OCH cross-connects on the 1830 PSS

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS.

3 Right-click on the 1830 PSS and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

4 Click on the OCH CrossConnects tab. A list of OCH cross-connects appears.

5 Choose a cross-connect and click on the Properties tab. The OCH Cross Connect (Edit) form opens with the CrossConnects tab displayed.

6 Click on the Select button in the User Technology AZ panel or the User Technology ZA panel. The Select Bit Rate / Encoding AZ or ZA OCH Cross Connect form opens.

7 Choose the technology type that you need to associate with the cross-connect and click on the OK button. The Technology Type (Create) form closes and the OCH Cross Connect (Edit) form reappears.

8 Click on the OK button. The OCH Cross Connect (Edit) form closes.



Note — The Reserved Technology type is automatically received by the cross-connect only when the technology type is CWDM or DWDM.

1830 PSS policy management

12 — 1830 PSS QoS policy

13 — 1830 PSS ACL IP filter

12 — 1830 PSS QoS policy

12.1 QoS policy management on the 1830 PSS *12-2*

12.2 Procedures to create local 1830 PSS QoS policies *12-3*

12.1 QoS policy management on the 1830 PSS

You can create, modify, or delete local policies. You can create and distribute global policies to the 1830 PSS using the 5620 SAM policy distribution framework. The global policy is distributed to all 11QPE24 cards on the 1830 PSS node. You cannot distribute to a specific 11QPE24 card. See "NE routing and forwarding" and "QoS policies" *5620 SAM User Guide* for distribution information and QoS policy procedures.

QoS policies

The 5620 SAM supports the following types of 1830 PSS QoS policies:

- Access Ingress
- Port Access Egress
- Network
- Network Queue
- Port Scheduler
- Slope

For QoS policy procedures, see "QoS policies procedures" in the *5620 SAM User Guide*.

Table 12-1 Policies references

Topics	Chapter	Document
Policies overview	Policies overview	*5620 SAM User Guide*
Policies procedures	Policies overview	*5620 SAM User Guide*
QoS policies overview	QoS policies	*5620 SAM User Guide*

Table 12-2 describes the types of 1830 PSS 11QPE24 QoS policies.

Table 12-2 1830 PSS QoS policies

Policy type	Applied to	Description	Menu option
7210 and 1830 Access Ingress	Access SAP	Defines up to 18 forwarding class meters and meter parameters for traffic classification. Defines match criteria to map flows to the meters based on any one of the criteria (IP or MAC).	Policies→QoS→SROS QoS→Access Ingress→7210 and 1830 Access Ingress. See Procedure "To configure a 7210 SAS or 1830 PSS access ingress policy" in the *5620 SAM User Guide* for information about how to configure the global policy.
7210 and 1830 Network	Uplink port	Defines ingress dot1p to forwarding class mapping and profile state. Defines the egress queuing parameters associated with each forwarding class.	Policies→QoS→SROS QoS→Network→7210 and 1830 Network. See Procedure "To configure a 7210 SAS or 1830 PSS network policy" in the *5620 SAM User Guide* for information about how to configure the global policy.

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Policy type	Applied to	Description	Menu option
7210 and 1830 Network	Network port	Defines ingress dot1p or DSCP value mapping to forwarding classes. Defines unicast meters. Only unicast meters with range of 1 to 8 are allowed. Defines the egress forwarding class to dot1p or DSCP value markings. Remarking of QoS bits.	Policies→QoS→SROS QoS→Network→7210 and 1830 Network. See Procedure "To configure a 7210 SAS or 1830 PSS network policy" in the *5620 SAM User Guide* for information about how to configure the global policy.
7210 and 1830 Network Queue	Uplink port	Defines forwarding class mappings to network queues and queue characteristics for the queues	Policies→QoS→SROS QoS→Network Queue→7210 and 1830 Network Queue. See Procedure "To configure a 7210 SAS or 1830 PSS network queue policy" in the *5620 SAM User Guide* for information about how to configure the global policy.
7210 and 1830 Port Scheduler	Access and uplink ports	Defines the parameters for the port scheduler	Policies→QoS→SROS QoS→Scheduler→7210 and 1830 Port Scheduler. See Procedure "To configure a 7210 SAS or 1830 PSS port scheduler policy" in the *5620 SAM User Guide* for information about how to configure the global policy.
7210 and 1830 Slope	Access and uplink ports	Enables or disables the high-slope, low-slope, and non-TCP parameters within the egress pool.	Policies→QoS→SROS QoS→Slope→7210 and 1830 Slope. See Procedure "To configure a WRED slope policy" in the *5620 SAM User Guide* for information about how to configure the global policy.

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12.2 Procedures to create local 1830 PSS QoS policies

The following procedures describe how to create local 1830 PSS Qos policies on the 11QPE24 card.

Procedure 12-1 To create a local 1830 PSS access ingress policy

1. Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.
2. Expand the 1830 PSS on which you need to create the access ingress policy.
3. Expand the shelf icon on which the 11QPE24 card is located.
4. Right-click on the 11QPE24 card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.
5. Click on the Policies tab. The Access Ingress tab is displayed.
6. Click on the Create button. The SAP Access Ingress, Local Policy (Create) form opens with the General tab displayed.

7 Configure the parameters:

- ID
- Auto-Assign ID
- Displayed Name
- Description
- Scope
- Number of QoS Classifiers
- Default FC

8 Click on the Meter tab.

i Click on the Create button. The Meter, SAP Access Ingress (Create) form opens with the General tab displayed.

ii Configure the parameters:

- ID
- Rate Mode
- MultiPoint

iii Click on the CIR/PIR tab and configure the parameters:

- CIR Adaptation
- PIR Adaptation
- CIR (kbps)
- PIR (kbps)

iv Click on the OK button to save the changes. A dialog box appears.

v Click on the OK button. The Meter, SAP Access Ingress (Create) form closes.

9 Click on the Forwarding Classes tab.

i Click on the Create button. The Forwarding Class, SAP Access Ingress (Create) form opens.

ii Configure the parameters:

- Forwarding Class
- Meter ID
- Multicast Meter ID
- Broadcast Meter ID
- Unknown Meter ID

iii Click on the OK button to save the changes. A dialog box appears.

iv Click on the OK button. The Forwarding Class, SAP Access Ingress (Create) form closes.

10 Perform one of the following:

a Click on the IP Match Criteria tab.

i Click on the Create button. The IP Match, SAP Access Ingress (Create) form opens.

ii Configure the parameters:

- ID
- Displayed Name
- Description
- Forwarding Class
- DSCP

iii Click on the OK button to save the changes. A dialog box appears.

iv Click on the OK button. The IP Match, SAP Access Ingress (Create) form closes.

b Click on the MAC Match Criteria tab.

i Click on the Create button. The MAC Match, SAP Access Ingress (Create) form opens.

ii Configure the parameters:

- ID
- Displayed Name
- Description
- Forwarding Class
- Source MAC
- Destination MAC
- Dot1p
- Ether Type

iii Click on the OK button to save the changes. A dialog box appears.

iv Click on the OK button. The MAC Match, SAP Access Ingress (Create) form closes.

11 Click on the OK button to save the policy. The SAP Access Ingress, Local Policy (Create) form closes.

12 Close the Card Slot (Edit) form.

Procedure 12-2 To create a local 1830 PSS network policy

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the 1830 PSS on which you need to create the network policy.

3 Expand the shelf icon on which the 11QPE24 card is located.

4 Right-click on the 11QPE24 card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

5 Click on the Policies tab. The Access Ingress tab is displayed.

6 Click on the Network tab.

7 Click on the Create button. The Network Policy, Local Policy (Create) form opens with the General tab displayed.

8 Configure the parameters:

- Nw Mgr ID
- Auto-Assign ID
- ID
- Auto-Assign ID
- Displayed Name
- Description
- Scope
- Default FC
- Default FC Profile
- Remarking

9 Click on the Egress Forwarding Classes tab.

10 Choose a forwarding class and click on the Properties button. The Egress Forwarding Class, Network Policy (Create) form opens.

11 Configure the parameters:

- Dot1p In Profile
- Dot1p Out Profile

12 Click on the OK button. The Egress Forwarding Class, Network Policy (Create) form closes and a dialog box appears.

13 Click on the OK button.

14 Map the dot1p tag of the ingress traffic to the ingress queue ID, if required.

i Click on the Ingress Dot1p tab.

ii Click on the Create button. The Network Ingress Dot1p, Network Policy (Create) form opens.

iii Configure the parameters:

- Dot1p
- Forwarding Class
- Profile

iv Click on the OK button to close the form. The policy form reappears with the newly created object displayed.

v Repeat step 14 for each new rule that you need to add. You can configure up to eight rules.

15 Create network ingress meters.

i Click on the Ingress Meter tab.

ii Click on the Create button. The Network Ingress Meter (Create) form opens with the General tab displayed.

iii Configure the parameters:

- ID



Note — You cannot enter the values 1 and 9 for the ID parameter because they are created by default and cannot be deleted. Enter any value up to 12 other than 1 and 9.

- MultiPoint

  Set the parameter to true for multicast meters or false for unicast meters.

iv Click on the CIR/PIR tab.

v Configure the parameters:

- CIR Adaptation
- PIR Adaptation
- CIR (kbps)
- PIR (kbps)

vi Click on the Burst Size tab.

vii Configure the parameters:

- Committed Burst Size (kbps)
- Maximum Burst Size (kbps)

viii Click on the Apply button. A dialog box appears.

ix Click on the OK button. The Network Ingress Meter (Create) form closes and the Ingress Meter tab appears.

x Repeat steps ii to ix to create additional network ingress meters. You can create up to nine network ingress meters.

16 Assign the forwarding classes to specific network ingress meters.

i Click on the Ingress FCMeter tab.

ii Click on the Create button. The Network Ingress Forwarding Class (Create) form opens.

iii Configure the parameters:

- Forwarding class
- Meter (for unicast meters)
- MultiCast-Meter (for multicast meters)

iv Click on the OK button. A dialog box appears.

v Click on the OK button. The Network Ingress Forwarding Class (Create) form closes and the Ingress FCMeter tab appears.

vi Repeat steps ii to v to assign additional forwarding classes to the network ingress meters.

17 Click on the OK button.

18 Click on the OK button to save the policy. The Network Policy, Local Policy (Create) form closes.

19 Close the Card Slot (Edit) form.

Procedure 12-3 To create a local 1830 PSS port access egress policy

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the 1830 PSS on which you need to create the port access egress policy.

3 Expand the shelf icon on which the 11QPE24 card is located.

4 Right-click on the 11QPE24 card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

5 Click on the Policies tab. The Access Ingress tab is displayed.

6 Click on the Port Access Egress tab.

7 Click on the Create button. The Port Access Egress Policy, Local Policy (Create) form opens with the General tab displayed.

8 Configure the parameters:

- ID
- Auto-Assign ID
- Displayed Name
- Description
- Scope

9 Click on the Queues tab.

10 Choose a queue and click on the Properties button. The PortAccessEgressQueue (Edit) form opens with the General tab displayed.

11 Configure the parameters:

- ID
- Displayed Name
- Description

12 Click on the CIR/PIR tab and configure the parameters:

- CIR Adaptation
- PIR Adaptation
- CIR (kbps)
- PIR (kbps)

13 Click on the OK button. A dialog box appears.

14 Click on the OK button. The PortAccessEgressQueue (Edit) form closes.

15 Repeat steps 10 to 14 to configure additional queues.

16 Click on the Forwarding Classes tab.

17 Click on the Create button. The Network Egress Forwarding Class (Create) form opens.

18 Configure the parameters:

- Forwarding Class
- In Profile
- Out Profile

19 Click on the OK button. A dialog box appears.

20 Click on the OK button. The Network Egress Forwarding Class (Edit) form closes.

21 Click on the OK button. The Port Access Egress Policy, Local Policy (Create) form closes and a dialog box appears.

22 Click on the OK button.

23 Close the Card Slot (Edit) form.

Procedure 12-4 To create a local 1830 PSS port scheduler policy

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the 1830 PSS on which you need to create the port scheduler policy.

3 Expand the shelf icon on which the 11QPE24 card is located.

4 Right-click on the 11QPE24 card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

5 Click on the Policies tab. The Access Ingress tab is displayed.

6 Click on the Port Scheduler tab.

7 Click on the Create button. The Port Scheduler, Local Policy (Create) form opens with the General tab displayed.

8 Configure the parameters:

- Displayed Name
- Description
- Mode

9 Click on the OK button. The Port Scheduler, Local Policy (Create) form closes and a dialog box appears.

10 Click on the OK button.

11 Close the Card Slot (Edit) form.

Procedure 12-5 To create a local 1830 PSS network queue policy

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the 1830 PSS on which you need to create the network queue policy.

3 Expand the shelf icon on which the 11QPE24 card is located.

4 Right-click on the 11QPE24 card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

5 Click on the Policies tab. The Access Ingress tab is displayed.

6 Click on the Network Queue tab.

7 Click on the Create button. The Network Queue, Local Policy (Create) form opens with the General tab displayed.

8 Configure the parameters:

- Displayed Name
- Description

9 Click on the Queues tab.

10 Choose a queue and click on the Properties button. The NQueueEntry (Edit) form opens with the General tab displayed.

11 Configure the parameters:

- ID
- Displayed Name
- Description

12 Click on the Select button in the Queue Management Policy panel. The Select Queue Management Policy form opens.

13 Choose a queue management policy and click on the OK button. The Select Queue Management Policy form closes and the queue policy information is displayed.

14 Configure the parameters in the Port Parent panel:

- Port Parent
- Weight
- CIR Level

15 Click on the CIR/PIR tab and configure the parameters:

- CIR Adaptation
- PIR Adaptation
- CIR (kbps)
- PIR (kbps)

16 Click on the OK button. A dialog box appears.

17 Click on the OK button. The NQueueEntry (Edit) form closes.

18 Repeat steps 10 to 17 to configure additional queues.

19 Click on the OK button. A dialog box appears.

20 Click on the OK button. The Network Queue, Local Policy (Create) form closes and a dialog box appears.

21 Click on the OK button.

22 Close the Card Slot (Edit) form.

Procedure 12-6 To create a local 1830 PSS WRED slope policy

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand the 1830 PSS on which you need to create the slope policy.

3 Expand the shelf icon on which the 11QPE24 card is located.

4 Right-click on the 11QPE24 card icon and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

5 Click on the Policies tab. The Access Ingress tab is displayed.

6 Click on the Slope tab.

7 Click on the Create button. The Slope Policy, Local Policy (Create) form opens with the General tab displayed.

8 Configure the parameters:

- Displayed Name
- Description

9 Click on the Queue Slope tab. Eight default queues appear on the form.

When a slope policy is created, the policy uses the parameters of the default policy. You can modify the parameters on the new policy.

10 Choose a queue and click on the Properties button. The QueueSlope, Slope Policy (Create) form opens.

11 Configure the Time Average Factor parameter.

12 Configure the parameters in the High Slope panel:

- Administrative State
- Start Average
- Max Average
- Max Probability

13 Configure the parameters in the Low Slope panel:

- Administrative State
- Start Average
- Max Average
- Max Probability

14 Configure the parameters in the Non Tcp Slope panel:

- Administrative State
- Start Average
- Max Average
- Max Probability

15 Click on the OK button. A dialog box appears.

16 Click on the OK button. The QueueSlope, Slope Policy (Create) form closes and a Queue Slope tab appears.

17 Click on the OK button. The Slope, Local Policy (Create) form closes and the Slope tab on the Card Slot (Edit) form appears.

18 Close the Card Slot (Edit) form.

Procedure 12-7 To associate a slope policy with a port

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card Slot (11QPE24)→Port.

3 Right-click on the Port icon and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the QoS Pool tab. The QoS buffer pools appear on the form.

5 Choose an entry and click on the Properties tab. The QoS Pool (Edit) form opens with the General tab displayed.

6 Click on the Select button in the Slope Policy panel. The Select Slope Policy form opens with a list of slope policies.

7 Choose a slope policy and click on the OK button. The Select Slope Policy form closes and the QoS Pool (Edit) form appears.

8 Click on the OK button. The QoS Pool (Edit) form closes and the Physical Port (Edit) form appears.

9 Click on the OK button. A dialog box appears.

10 Click on the Yes button to apply the changes.

13 — 1830 PSS ACL IP filter

13.1 1830 PSS ACL IP filter overview *13-2*

13.2 Workflow to configure 1830 PSS ACL IP filtering *13-2*

13.3 1830 PSS ACL IP filter procedures *13-2*

13.1 1830 PSS ACL IP filter overview

ACL filters are used by routers and switches to allow or deny data into or out of a network interface. When an ACL is configured on an interface, the network device analyzes the data that passes through the interface, compares it to the configuration set in the ACL pattern, and allows or denies the data into or out of the interface.

The 5620 SAM supports the creation and management of the ACL IP filters. The main elements of the 1830 PSS ACL IP filtering process are patterns, filters, and port-to-ACL-filter associations. Patterns contain the criteria for traffic filtering, such as source IP, source port, destination IP, destination port, protocol, and so on. ACL filters are the ordered lists of ACL patterns. You can assign a maximum of two filters to each ACL-applicable port, one in the receive direction and one in the transmit direction.

Table 13-1 lists the cards and ports that support ACL IP filtering.

Table 13-1 Cards and ports that support ACL IP filtering

Cards	Ports (1)
OT ports with GCC enabled	Ports supporting GCC
A2325A, AHPHG, AHPLG, ALPHG, AM2017B, AM2325B	OSC
EC (PSS-4)	OAMP
MTC1T9, MXEC320H	E1, E2, OAMP
USRPNL	E1, E2, OAMP, VOIP

Note

(1) If a port is unassigned, the ACL IP Filters tab does not appear in the Physical Port (Edit) form.

13.2 Workflow to configure 1830 PSS ACL IP filtering

1. Enable ACL configuration on an 1830 PSS device. See Procedure 13-1.
2. Create an ACL IP pattern. See Procedure 13-2.
3. Create an ACL IP filter. See Procedure 13-3.
4. Assign an ACL IP filter to a port. See Procedure 13-4.

13.3 1830 PSS ACL IP filter procedures

The following procedures describe how to create and assign an ACL IP filter to a port that supports filtering.

Procedure 13-1 To enable ACL configuration on an 1830 PSS

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on the 1830 PSS on which you need to enable ACL configuration and choose Properties from the contextual menu. The Network Element (Edit) form opens.

3 Click on the ACL tab.

4 Configure the parameters:

- Receive Action
- Transmit Action

5 Select the ACL Configuration via SNMP Enabled check box.

6 Click on the Apply button. A dialog box appears.

7 Click on the Yes button.

8 Close the Network Element (Edit) form.

Procedure 13-2 To create an 1830 PSS ACL IP pattern

1 Choose Policies→Filter→PSS ACL IP Filter from the 5620 SAM main menu. The PSS ACL Filter Policies form opens.

2 Click on the Create button and choose Create ACL IP Pattern from the contextual menu. The ACL Pattern, Global Policy (Create) form opens with the General tab displayed.

3 Configure the parameters:

- Pattern ID
- Action
- ICMP Error Reporting Enabled
- Source IP Address
- Source IP Mask Prefix
- Destination IP Address
- Destination IP Mask Prefix
- Internet Protocol
- IP Fragmentation

4 Configure the parameters based on the value configured for the Internet Protocol parameter in step 3:

- TCP/UDP Source Port
- TCP/UDP Destination Port
- ICMP Type
- ICMP Code
- TCP Established

5 Click on the Apply button. The ACL Pattern, Global Policy (Edit) form appears with the General tab displayed.

6 Click on the Switch Mode button beside the Configuration Mode parameter. A dialog box appears.

7 Click on the Yes button. The Release - 1830 PSS ACL IP Pattern form appears.

8 Choose the sites from the Available Objects list and click on the right-arrow button. The sites are listed in the Selected Objects list.

9 Click on the Distribute button. The Status field in the Selected Objects list provides the status of the distribution.

10 Close the Release - 1830 PSS ACL IP Pattern form. The ACL Pattern, Global Policy (Edit) form reappears with the Configuration Mode parameter set as Released.

11 Close the ACL Pattern, Global Policy (Edit) form. The PSS ACL Filter Policies form reappears.

12 Choose ACL Pattern (Optical Access Control Lists) from the object drop-down menu and click on the Search button. The list of ACL patterns appears.

13 Close the PSS ACL Filter Policies form.

Procedure 13-3 To create an 1830 PSS ACL IP filter

1 Choose Policies→Filter→PSS ACL IP Filter from the 5620 SAM main menu. The PSS ACL Filter Policies form opens.

2 Click on the Create button and choose Create ACL IP Filter from the contextual menu. The ACL Filter, Global Policy (Create) form opens with the General tab displayed.

3 Configure the Filter Name parameter and click on the Apply button. The ACL Filter, Global Policy (Edit) form appears with the General tab displayed.

4 Click on the ACL Pattern Binding tab.

5 Click on the Add Pattern button. The ACL Pattern Binding (Create) form opens.

6 Click on the Select button beside the Pattern ID parameter. The Select Pattern - ACL Pattern Binding form opens with a list of ACL patterns.

7 Choose an ACL pattern from the list and click on the OK button. The Select Pattern - ACL Pattern Binding form closes and the ACL Pattern Binding (Create) form reappears.

8 Configure the Pattern Index parameter.

9 Click on the OK button. The ACL Pattern Binding (Create) form closes and the filter is listed under the ACL Pattern Binding tab in the ACL Filter (Edit) form.

10 Click on the General tab.

11 Click on the Switch Mode button beside the Configuration Mode parameter. A dialog box appears.

12 Click on the Yes button. The Release - 1830 PSS ACL IP Filter form opens.

13 Choose sites from the Available Objects list and click on the right-arrow button. The sites are listed in the Selected Objects list.

14 Click on the Distribute button. The Status field in the Selected Objects list provides the status of the distribution.

15 Close the Release - 1830 PSS ACL IP Filter form. The ACL Filter, Global Policy (Edit) form reappears with the Configuration Mode parameter set as Released.

16 Close the ACL Filter, Global Policy (Edit) form. The PSS ACL Filter Policies form reappears.

17 Choose ACL Filter (Optical Access Control Lists) from the object drop-down menu and click on the Search button. The list of ACL filters appears.

18 Close the PSS ACL Filter Policies form.

Procedure 13-4 To assign an ACL IP filter to a port

Ensure that the Administrative State of the port to which an ACL IP filter is assigned is configured either as Up or Maintenance. Table 13-1 lists the cards and ports that support ACL IP filtering.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Expand an 1830 PSS device icon to the port level.

3 Right-click on the port for which you want to assign an ACL IP filter, and choose Properties from the contextual menu. The Physical Port (Edit) form opens.

4 Click on the ACL IP Filters tab.



Note 1 — Unassigned ports do not display the ACL IP Filters tab.

Note 2 — The ACL IP Filters tab is hidden by default. To view the tab, click on the Show All Tabs icon on the right side of the form.

5 Click on the Create button. The IP Filter Cfg (Create) form opens.

6 Configure the Direction parameter.

7 Click on the Select button beside the Filter Name parameter. The Select Filter ID - IP Filter Cfg form opens with a list of available IP filters.

8 Choose a filter from the list and click on the OK button. The Select Filter ID - IP Filter Cfg form closes and the IP Filter Cfg (Create) form reappears.

9 Select the Filter Enabled check box.

10 Click on the OK button. A dialog box appears and the IP Filter Cfg (Create) form closes.

11 Click on the OK button. The assigned filter is listed under the ACL IP Filters tab.

12 Click on the OK button. A dialog box appears.

13 Click on the Yes button. The Physical Port (Edit) form closes.

1830 PSS OTN layer management

14 — 1830 PSS optical trail configuration

14 — 1830 PSS optical trail configuration

14.1 OTN *14-2*

14.2 Forward error correction *14-2*

14.3 OTN layers *14-2*

14.4 OTN layer management using the 5620 SAM *14-3*

14.5 Optical trail configuration procedures *14-7*

14.1 OTN

OTN is an ITU-T standard (G.709) that describes a method for wrapping signals of different protocols for transport across an optical network. OTN provides transport, multiplexing, routing, management, supervision, and survivability functions for optical channels that carry client signals.

OTN has the following advantages over SDH and SONET:

- stronger forward error correction mechanisms
- more levels of tandem connection monitoring
- transparent transport of client signals
- switching scalability

14.2 Forward error correction

Forward error correction is a method to lower the BER of an optical line signal by adding redundant information, which can be used to correct bit errors that occur when the signal is transmitted over long distances.

The 5620 SAM allows the following forward error correction options for 1830 PSS devices:

- SDFEC
- AFEC
- UFEC
- RSFEC
- EFEC
- EFEC2

SDFEC provides higher error correction when compared to AFEC. The 130SCX10 OT card supports configuration of SDFEC on the line port.

14.3 OTN layers

The following layers are defined in OTN.

- OPU—information structure that is used to encapsulate client information for transport over an optical channel.
- ODU—consists of the OPU information payload and the ODU-specific overhead.
- OTU—information structure that is required to transport an ODU over an optical channel.
- OCH—an optical channel that transports a digital client signal between re-amplification, re-shaping, and re-timing (3R) regeneration points.
- OMS—provides multiplexing of several wavelengths.
- OTS—provides transmission of optical signals across various types of optical media.

14.4 OTN layer management using the 5620 SAM

In the context of the 5620 SAM, the optical layers such as OTU, ODU, OCH or OTS are called trails. The 5620 SAM supports configuration of the following optical trails:

- OTU—see Procedure 14-3
- ODU—see Procedure 14-4
- OCH—see Procedure 14-5

The 5620 SAM allows you to view the OTS trails. See Procedure 14-6.

Navigating optical trail configuration forms

The optical trail configuration forms allow you to create optical trails in the 5620 SAM. You can access the optical trail configuration forms from the Create menu or the Manage menu. Figures 14-1 and 14-2 show both methods of accessing optical trail configuration forms.

Figure 14-1 Optical trail configuration form navigation from Create menu

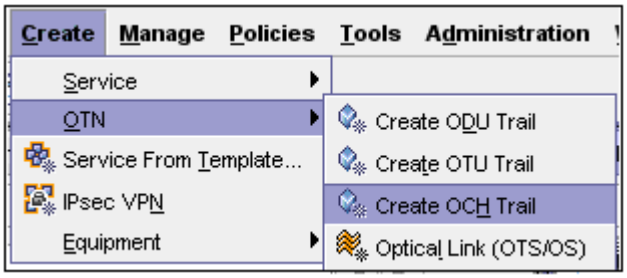
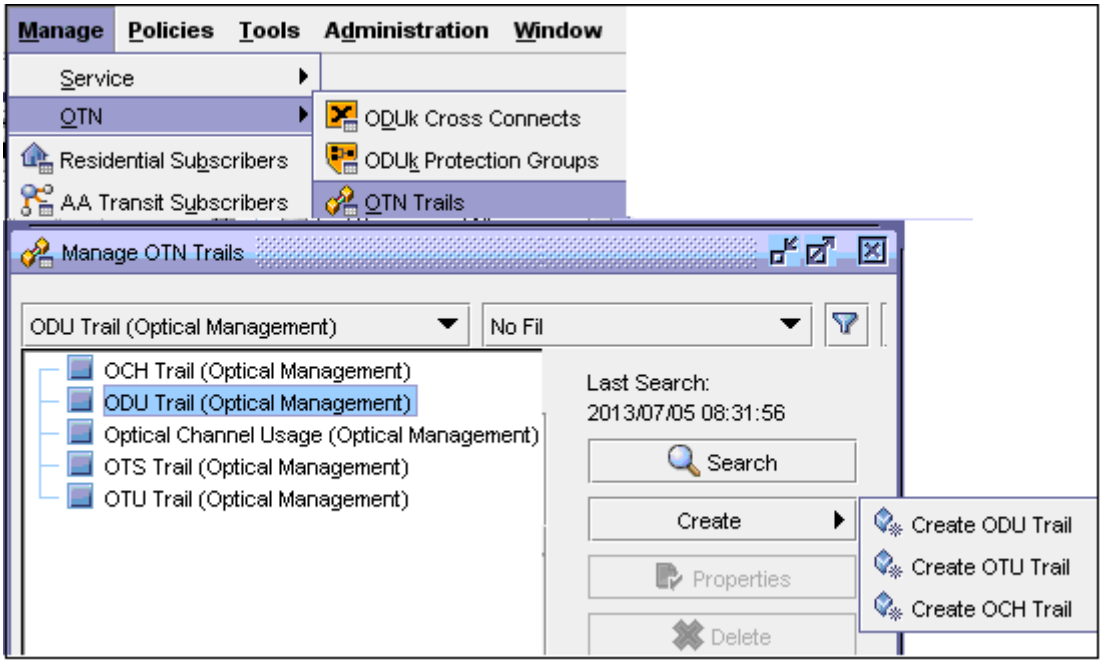


Figure 14-2 Optical trail configuration form navigation from Manage menu



Optical trail configuration form - navigation tree objects

The navigation tree of an optical trail configuration form lists the sites, termination points, and trail paths that are configured for the optical trail.

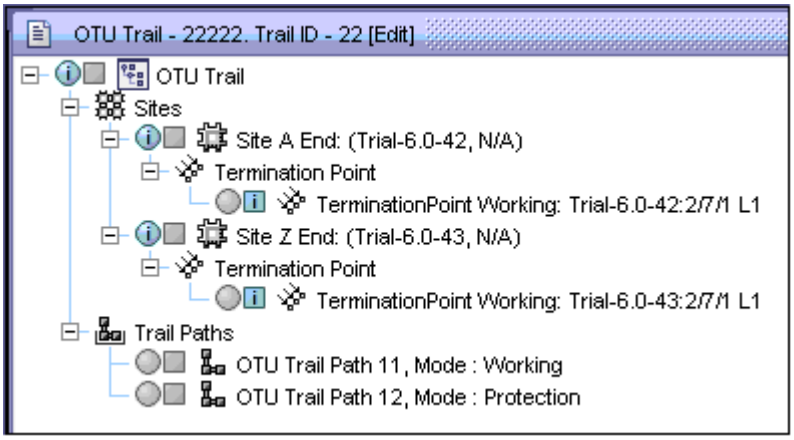
Table 14-1 describes the objects on the navigation tree of the optical trail configuration form, which the 5620 SAM allows you to create and manage.

Table 14-1 Navigation tree objects

Object	Description
Sites	Contains the Site A and Site Z attribute information
Site A End Site Z End	Child objects of the Sites object
Termination Point	Located under the Site A End and Site Z End objects. Contains the termination point attribute information.
Termination Point Working	Child objects of the Termination Point object.
Trail Paths	Contains the optical trail path attribute information.
<ODU/OTU/OCH> Trail Path, Mode: Working <ODU/OTU/OCH> Trail Path, Mode: Protection	Child object of the Trail Paths object.

Figure 14-3 shows the navigation tree objects that you can manage in the optical trail configuration forms.

Figure 14-3 Optical trail navigation tree objects

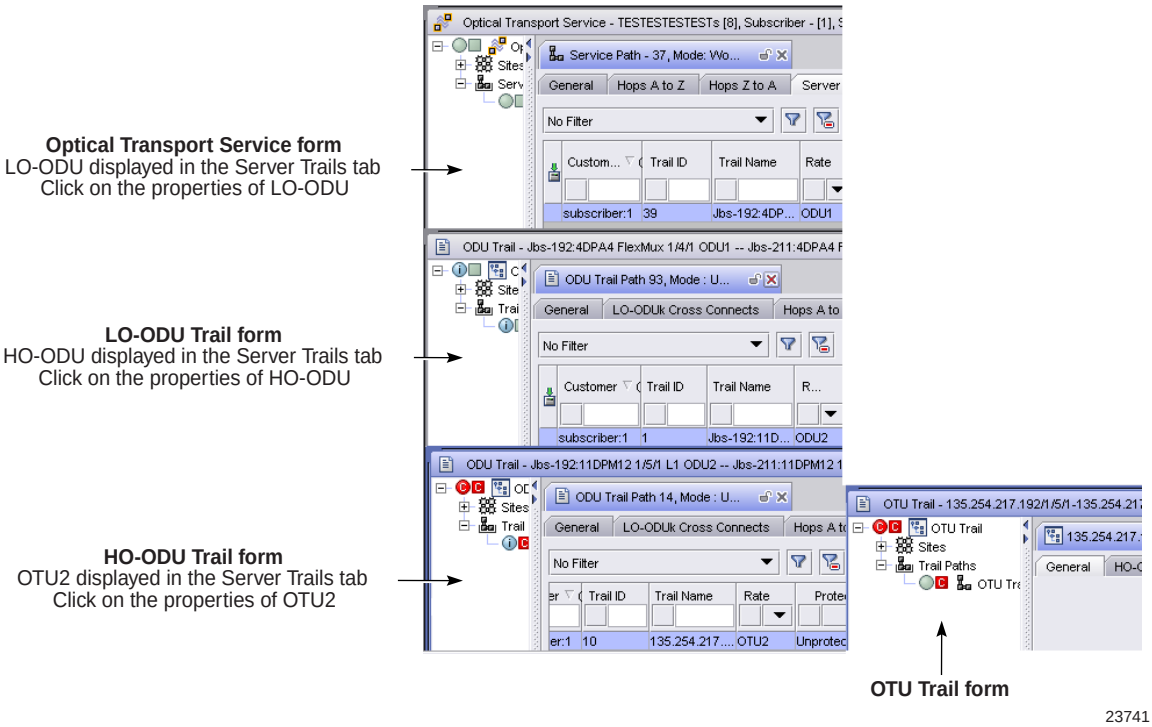


Display optical trails

The 5620 SAM allows you to view and manage the OTN layers from the Optical Transport Service, Multipoint Transport Service, ODU Trail, OTU Trail, and OCH Trail forms. See Procedures 14-1 and 14-2 for information about viewing the optical trails.

Figure 14-4 shows the relationship of the optical trails and how they are associated through service configuration.

Figure 14-4 OTN layers - Navigation from service form having LO-ODU



Procedure 14-1 To view the optical trails from a service having LO-ODUs

1 Click on the Service Paths→Service Path object on the navigation tree of the Optical Transport Service (Edit) form or Multipoint Transport Service (Edit) form and click on the Server Trails tab to view the LO-ODUs. Choose an LO-ODU and click on the Properties button. The ODU Trail (Edit) form opens.

2 Click on the Trail Paths→ODU Trail Path object on the navigation tree of the ODU Trail (Edit) form and click on the Server Trails tab to view the HO-ODUs. Choose an HO-ODU and click on the Properties button. The ODU Trail (Edit) form opens.

3 Click on the Trail Paths→ODU Trail Path object on the navigation tree of the ODU Trail (Edit) form and click on the Server Trails tab to view the OTUs. Choose a OTU and click on the Properties button. The OTU Trail (Edit) form opens.

4 Click on the Trail Paths→OTU Trail Path object on the navigation tree of the OTU Trail (Edit) form and click on the OCH CrossConnects tab to view the OCH cross-connects.

Procedure 14-2 To view the optical trails from a service having HO-ODUs

1 Click on the Service Paths→Service Path object on the navigation tree of the Optical Transport Service (Edit) form or Multipoint Transport Service (Edit) form and click on the Server Trails tab to view the HO-ODUs. Choose an HO-ODU and click on the Properties button. The ODU Trail (Edit) form opens.

2 Click on the Trail Paths→ODU Trail Path object on the navigation tree of the ODU Trail (Edit) form and click on the Server Trails tab to view the OTUs. Choose a OTU and click on the Properties button. The OTU Trail (Edit) form opens.

3 Click on the Trail Paths→OTU Trail Path object on the navigation tree of the OTU trail (Edit) form and click on the OCH CrossConnects tab to view the OCH cross-connects.

Force XC creation

The 5620 SAM allows you to create OCH XCs even while the power commissioning is in progress. This option is available during the configuration of:

- OTU trails
- ODU trails
- OCH trails
- optical transport service
- multipoint transport service

During a service or trail configuration, you can enable the Force Create OCH XC check box on the configuration forms and bypass the check to ensure that the OCH XCs are successfully power commissioned.

Note — The 5620 SAM displays a deployment error if you attempt to configure a service or an optical trail when the power commissioning is in progress. The deployment error will not halt service or trail creation.

After a service or trail configuration, you can enable the Force Create OCH XC check box on the configuration forms and click on the Complete service or trail button to complete the service or trail configuration.

14.5 Optical trail configuration procedures

Procedure 14-3 To create an OTU trail

1 Choose Create→OTN→OTU Trail from the 5620 SAM main menu. The OTU Trail (Create) form opens with the General tab displayed.

2 The Customer panel displays the default customer information. Click on the Select button in the Customer panel to choose a customer to associate with the OTU trail. The Select Customer - OTU Trail form opens.

3 Choose a customer for the OTU trail and click on the OK button. The Select Customer - OTU Trail form closes, and the OTU Trail (Create) form reappears with the customer information displayed in the Customer panel.

4 Configure the parameters:

- Trail ID
- Auto-Assign ID
- Trail Name
- Rate
- Protection Type
- Bidirectional
- Force Create OCH XC

Note — The Trail ID parameter is configurable when the Auto-Assign ID parameter is disabled.

5 Configure the parameters in the OCH panel:

- Channel
- Wave Key Assign Mode

6 Configure the parameters in the TTI Attributes panel:

- FEC Mode
- OTU TTI Comparison
- OTU TTI Mismatch Response
- A-Z OTU Transmitted TTI
- Z-A OTU Transmitted TTI (if Bidirectional check box is selected)
- Regen Response

7 Configure the Administrative State parameter in the States panel.

8 Right-click on the Sites object on the navigation tree and choose Create Trail Site. The Select Network Elements - OTU Trail form opens with a list of 1830 PSS devices.

9 Choose two sites from the list and click on the OK button. The Select Network Elements - OTU Trail form closes and the sites are added to the navigation tree.

10 Expand the Site A End object on the navigation tree.

11 Right-click on the Termination Point object and choose Create Trail Termination Point. The Trail Termination Point (Create) form opens.

12 Click on the Select button beside the Name parameter. The Select Termination Point form opens.

13 Choose the termination point and click on the OK button. The Select Termination Point form closes and Trail Termination Point (Create) form reappears.

14 Click on the OK button. The Trail Termination Point (Create) form closes and a dialog box appears.

15 Click on the OK button. The termination point is added to the navigation tree.

16 Repeat steps 10 to 15 to configure the Site Z End.

17 Click on the Apply button.

18 Expand the Trail Paths object on the navigation tree and click on the OTU Trail Path to view the properties of the configured OTU trail.

Procedure 14-4 To configure an ODU trail

1 Choose Create→OTN→ODU Trail from the 5620 SAM main menu. The ODU Trail (Create) form opens with the General tab displayed.

2 The Customer panel displays the default customer information. Click on the Select button in the Customer panel to choose a customer to associate with the ODU trail. The Select Customer - ODU Trail form opens.

3 Choose a customer for the ODU trail and click on the OK button. The Select Customer - ODU Trail form closes, and the ODU Trail (Create) form reappears with the customer information displayed in the Customer panel.

4 Configure the parameters:

- Trail ID
- Auto-Assign ID
- Trail Name
- Rate
- Protection Type
- Bidirectional
- Force Create OCH XC
- Path Search Option



Note 1 — The Trail ID parameter is configurable when the Auto-Assign ID parameter is disabled.

Note 2 — The Protection Type parameter has the values:

- Unprotected
- ESNCP Protected

You can configure the HO-ODU trail first, then configure the ESNCP protected LO-ODU trail. Alternatively, you can configure the ESNCP protected LO-ODU trail and the HO-ODU trail is created automatically.

Note 3 — You must leave the Path Search Option parameter at the default value.

5 Configure the Wave Key Assign Mode parameter in the OTU/OCH Details panel.

6 Configure the parameters in the ODUk Attributes panel:

- Payload Type Mismatch Response
- Payload Type

7 Configure the parameters in the TTI Attributes panel:

- TTI Comparison
- (A-Z) Transmitted TTI
- (A-Z) Expected TTI

  The (A-Z) Expected TTI parameter is automatically configured when you configure the (A-Z) Transmitted TTI parameter unless the (A-Z) Transmitted TTI parameter is not applicable.
- TTI Mismatch Response
- (Z-A) Transmitted TTI
- (Z-A) Expected TTI

  The (Z-A) Expected TTI parameter is automatically configured when you configure the (Z-A) Transmitted TTI parameter unless the (Z-A) Transmitted TTI parameter is not applicable.



Note — You can enter the (A-Z) Transmitted TTI and (Z-A) Transmitted TTI values up to 15 characters for 1830 PSS devices and up to 64 characters for other devices. Alternatively, you can leave the (A-Z) Transmitted TTI and (Z-A) Transmitted TTI parameters blank.

8 Configure the Administrative State parameter in the States panel.

9 Right-click on the Sites object on the navigation tree and choose Create Trail Site. The Select Network Elements - ODU Trail form opens with a list of 1830 PSS devices.

10 Choose 1830 PSS devices for site A and site Z and click on the OK button. The Select Network Elements - ODU Trail form closes and the Site A End and Site Z End objects appear on the navigation tree.

11 Expand the Sites object and expand the Site A End object on the navigation tree.

12 Right-click on the Termination Point object and choose Create Trail Termination Point. The Trail Termination Point (Create) form opens.

13 Click on the Select button beside the Name parameter. The Select Termination Point form opens.

14 Perform one of the following:

a Choose an HO-ODUCTP as the termination point and click on the OK button. The Select Termination Point form closes and Trail Termination Point (Create) form reappears.

b Choose an LO-ODUCTP as the termination point and click on the OK button. The Select Termination Point form closes and Trail Termination Point (Create) form reappears.

c Choose an ODUPTF as the termination point and click on the OK button. The Select Termination Point form closes and Trail Termination Point (Create) form reappears.



Note — The ODUPTFs are listed in the Select Termination Point form only when:

- 11DPM12 card is configured
- Rate parameter is configured as ODU1 in Step 4
- Wave Key Assign Mode parameter is configured as Auto Keying (NMS) in Step 5

15 Click on the OK button. The Trail Termination Point (Create) form closes and a dialog box appears.

16 Click on the OK button. The Termination Point Working object appears on the navigation tree below the Termination Point object.

17 Repeat steps 12 to 16 to configure Site Z.

18 Click on the Apply button.

19 Expand the Trail Paths object on the navigation tree and click on the ODU Trail Path object to view the properties of the ODU trail.

Procedure 14-5 To configure an OCH trail

1 Choose Create→OTN→OCH Trail from the 5620 SAM main menu. The OCH Trail (Create) form opens with the General tab displayed.

2 The Customer panel displays the default customer information. Click on the Select button in the Customer panel to choose a customer to associate with the OCH trail. The Select Customer - OCH Trail form opens.

3 Choose a customer for the OCH trail and click on the OK button. The Select Customer - OCH Trail form closes, and the OCH Trail (Create) form reappears with the customer information displayed in the Customer panel.

4 Configure the parameters:

- Trail ID
- Auto-Assign ID
- Trail Name
- Protection Type
- Bidirectional
- Force Create OCH XC



Note — The Trail ID parameter is configurable when the Auto-Assign ID parameter is disabled.

5 Configure the parameters in the OCH panel:

- Channel
- Wave Key Assign Mode

6 Configure the Administrative State parameter in the States panel.

7 Right-click on the Sites object on the navigation tree and choose Create Trail Site. The Select Network Elements - OCH Trail form opens.

8 Choose two sites from the list and click on the OK button. The Select Network Elements - OCH Trail form closes and the sites are added on the navigation tree.

9 Expand the Sites object and expand the Site A End object on the navigation tree.

10 Right-click on the Termination Point object and choose Create Trail Termination Point. The Trail Termination Point (Create) form opens.

11 Click on the Select button beside the Name parameter. The Select Termination Point form opens.

12 Choose the termination point and click on the OK button. The Select Termination Point form closes and Trail Termination Point (Create) form reappears.

13 Click on the OK button. The Trail Termination Point (Create) form closes and a dialog box appears.

14 Click on the OK button. The termination point is added on the navigation tree.

15 Repeat steps 10 to 14 to configure the Site Z End.

16 Click on the Apply button.

17 Expand the Trail Paths object on the navigation tree and click on the OCH Trail Path object to view the properties of the OCH trail.

Procedure 14-6 To view an OTS trail

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose OTS Trail (Optical Management) from the object drop-down menu, and click on the Search button. A list of OTS trails appears.

3 Choose an OTS trail and click on the Properties button. The OTS Trail (Edit) form opens with the General tab displayed.

Procedure 14-7 To view and modify an ODU trail

1 Perform one of the following to open an ODU Trail (Edit) form:

a To view the ODU trail from the 5620 SAM main menu:

i Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

ii Choose ODU Trail (Optical Management) from the object drop-down menu.

iii Click on the Search button to list the ODU trails.

iv Choose an ODU trail and click on the Properties tab. The ODU Trail (Edit) form opens.

b To view the ODU trail from the ODU trails of a service:

i Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

ii Choose Optical Transport Service from the drop-down menu and click on the Search button. A list of optical transport services appears.

iii Choose the service and click on the Properties button. The Optical Transport Service (Edit) form opens.

iv Choose Service Paths→Service Path from the navigation path. The Service Path properties form opens.

v Click on the Server Trails tab.

vi Choose the ODU trail and click on the Properties button. The ODU Trail (Edit) form opens.

c To view the ODU trail from the optical links:

i Choose Manage→Equipment→Equipment from the 5620 SAM main menu. The Manage Equipment form opens.

ii Choose Optical Link from the object type drop-down menu and click on the Search button. A list of optical links appears.

iii Choose the optical link and click on the Properties button. The Optical Link (Edit) form opens.

iv Click on the ODU Trails tab.

v Choose the ODU trail and click on the Properties button. The ODU Trail (Edit) form opens.

2 Configure the parameters as required.

3 Click on the Apply button to save the changes.

4 Click on the OK button to close the ODU Trail (Edit) form.

Procedure 14-8 To view and modify an OTU trail

1 Perform one of the following to open an OTU Trail (Edit) form:

a To view the OTU trail from the 5620 SAM main menu:

i Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

ii Choose OTU Trail (Optical Management) from the object drop-down menu.

iii Click on the Search button to list the OTU trails.

iv Choose an OTU trail and click on the Properties tab. The OTU Trail (Edit) form opens.

b To view the OTU trail from the ODU trails of a service:

i Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

ii Choose Optical Transport Service from the drop-down menu and click on the Search button. A list of optical transport services appears.

iii Choose the service and click on the Properties button. The Optical Transport Service (Edit) form opens.

iv Choose Service Paths→Service Path from the navigation path. The Service Path properties form opens.

v Click on the Server Trails tab.

vi Choose the ODU trail and click on the Properties button. The ODU Trail (Edit) form opens.

vii Choose Trail Paths→ODU Trail Path. The ODU Trail Path properties form opens.

viii Click on the Server Trails tab.

ix Choose the OTU trail and click on the Properties button. The OTU Trail (Edit) form opens.

c To view the OTU trail from the optical links:

i Choose Manage→Equipment→Equipment from the 5620 SAM main menu. The Manage Equipment form opens.

ii Choose Optical Link from the object type drop-down menu and click on the Search button. A list of optical links appears.

iii Choose the optical link and click on the Properties button. The Optical Link (Edit) form opens.

iv Click on the ODU Trails tab.

v Choose the ODU trail and click on the Properties button. The ODU Trail (Edit) form opens.

vi Choose Service Paths→Service Path. The Service Path properties form opens.

vii Click on the Server Trails tab.

viii Choose the OTU trail and click on the Properties button. The OTU Trail (Edit) form opens.

2 Configure the parameters as required.

3 Click on the Apply button to save the changes.

4 Click on the OK button to close the OTU Trail (Edit) form.

Procedure 14-9 To view and modify an OCH trail

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose OCH Trail (Optical Management) from the object drop-down menu. A list of OCH trails appears.

3 Choose an OCH trail and click on the Properties button. The OCH Trail (Edit) form opens.

4 Configure the parameters as required.

5 Click on the Apply button to save the changes.

6 Click on the OK button to close the OCH Trail (Edit) form.

Procedure 14-10 To view and modify an ODUCTP

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf→Card.

3 Expand the line port object.

4 Right-click on the ODU object and choose Properties from the contextual menu. The Odu Ctp (Edit) form appears with the General tab displayed.

5 Configure the parameters in the ODUk Attributes panel:

- Payload Type
- Payload Type Mismatch Response

6 Configure the parameters in the TTI Attributes panel:

- TTI Comparison
- Transmitted TTI
- Expected TTI
- TTI Mismatch Response Enabled



Note — You can enter the Transmitted TTI and Expected TTI values up to 15 characters for 1830 PSS devices and up to 64 characters for other devices.

7 Click on the Apply button. A dialog box appears.

8 Click on the Yes button to save the configuration.

Procedure 14-11 To view the optical channel usage

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose Optical Channel Usage (Optical Management) from the object drop-down menu, and click on the Search button. The optical channel usage list appears.

3 Choose a channel and click on the Properties button. The Optical Channel Usage (View) form opens with the General tab displayed.

Procedure 14-12 To discover optical trails

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Click on the Discover Optical Trails button. The Discover Optical Trails form opens and a list of topology groups appears.

3 Choose a topology group and click on the OK button. The Discover Optical Trails form closes and all the optical trails of the group are added to the list in the Manage OTN Trails form.

4 Close the Manage OTN Trails form.

Procedure 14-13 To discover services associated with ODU trails

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose ODU Trail (Optical Management) from the object drop-down menu and click on the Search button. A list of ODU trails appears.

3 Choose an ODU trail and click on the Properties button. The ODU Trail (Edit) form opens.

4 Click on the Transported Services tab.

5 Click on the Discover Services button. The service is listed in the ODU Trail (Edit) form and the Used By a Service check box of the Manage OTN Trails Form is enabled.

6 Close the Manage OTN Trails form.

Procedure 14-14 To configure path constraints for an optical trail

1 Perform one of the following:

a To configure path constraints during an optical trail configuration:

i Configure an optical trail. See Procedures 14-3, 14-4, or 14-5.

ii Click on the Path Constraints tab on the OTU/ODU/OCH Trail (Create) form.

b To configure path constraints for a configured optical trail:

i Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

ii Choose OTU Trail (Optical Management) from the object drop-down menu and click on the Search button. The OTU trails are listed.



Note — You can choose OCH Trail (Optical Management) or ODU Trail (Optical Management) from the object drop-down menu and proceed with the similar steps for modifying the path constraints of an OCH or ODU trail.

iii Choose an optical trail from the list and click on the Properties button. The OTU/ODU/OCH Trail (Edit) form opens with the General tab displayed.

iv Click on the Path Constraints tab.

2 Click on the Create button. The Optical Path Constraint (Create) form opens.

3 Configure the parameters:

- Constraint Type
  Choose Exclusion to exclude the constraint element from the trail path and choose Inclusion to include the constraint element in the trail path.
- Constraint Element
- Service Path Type

4 Perform one of the following:

a The constraint element is a port:

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the Site information.

iii Click on the Select button beside the Name parameter in the Port panel. The Select Port form opens with a list of ports.

iv Choose a port and click on the OK button. The Select Port form closes and the Optical Path Constraint (Create) form reappears with the Port information.

b The constraint element is a site:

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the Site information.

c The constraint element is a trail:

i Click on the Select button beside the Trail ID parameter in the Trail panel. The Select Trail form opens with a list of 1830 PSS devices.

ii Choose an optical trail and click on the OK button. The Select Trail form closes and the Optical Path Constraint (Create) form reappears with the trail information.

d The constraint element is an ODUk timeslot:



Note 1 — Ensure that you have configured the ODUk timeslots. See Procedure 20-14.

Note 2 — Configuration of ODUk timeslots is only applicable for an ODU trail and for 1830 PSS Release, 5.5 and later.

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the site information.

iii Click on the Select button beside the Site Name parameter in the ODUk Timeslot panel. The Select ODUk Timeslot form opens with a list of configured ODUk timeslots.

iv Choose a timeslot and click on the OK button. The Select ODUk Timeslot form closes and the Optical Path Constraint (Create) form reappears with the ODUk timeslot information.

5 Click on the OK button. The Optical Path Constraint (Create) form closes and the OTU/ODU/OCH Trail (Edit) form reappears.

6 Click on the Apply button.

7 Expand the Trail Paths object on the navigation tree and expand the OTU/ODU/OCH Trail Path object.

8 Click on the Hops A to Z tab to verify the inclusion or exclusion of the path constraint.

9 Close the OTU/ODU/OCH Trail (Edit) form.

Procedure 14-15 To delete an ODU trail

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose ODU Trail (Optical Management) from the object drop-down menu.

3 Click on the Search button. The ODU trails are listed.

4 Choose the trail that you need to delete and click on the Delete button. A dialog box appears if the services are routed through the ODU trails.

5 Click on the Yes button. The ODU trail is deleted.

Note 1 — When an ODU trail is deleted, OCH trails and OCH cross-connects are deleted. Services are not deleted.

Note 2 — If services are routed through the ODU trails, the ODU trails are not deleted. An error message is displayed.

Procedure 14-16 To convert a protected ODU trail to an unprotected ODU trail

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose ODU Trail (Optical Management) from the object drop-down menu.

3 Click on the Search button. The ODU trails are listed.

4 Choose the protected trail that you need to convert and click on the Properties button. The ODU Trail (Edit) form opens with the General tab displayed.

5 Configure the Protection Type parameter to Unprotected.

6 Configure the Path Preference parameter to indicate whether the working path or the protected path needs to be retained as the unprotected path.

Note — The conversion results in the deletion of the APS groups.

7 Click on the Apply button. A dialog box appears.

8 Click on the Yes button to apply the changes.

9 Expand the Trail Paths object on the navigation tree. Only the unprotected path object appears instead of the working and the protection path objects.

Procedure 14-17 To convert an unprotected ODU trail to a protected ODU trail

1 Choose Manage→OTN→OTN Trails from the 5620 SAM main menu. The Manage OTN Trails form opens.

2 Choose ODU Trail (Optical Management) from the object drop-down menu.

3 Click on the Search button. The ODU trails are listed.

4 Choose the unprotected trail that you need to convert and click on the Properties button. The ODU Trail (Edit) form opens with the General tab displayed.

5 Configure the Protection Type parameter to ESNCP Protected.

6 Click on the Apply button. A dialog box appears.

7 Click on the Yes button to apply the changes.

8 Expand the Trail Paths object on the navigation tree. The working and the protection path objects appear. The unprotected path is converted into the working path. The protection path appears only if a path already exits for protection.

Note — If no protection path is available, the conversion is unsuccessful and an error message appears.

9 Click on the working path object on the navigation tree, to view the properties of the working path.

10 Click on the protection path object on the navigation tree, to view the properties of the protection path.

11 Click on the ODU Trail object on the navigation tree and click on the APS Groups tab, to view the APS groups created.

1830 PSS performance management

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15.1 Performance monitoring overview

PM is the in-service, non-intrusive monitoring of transmission quality and equipment health. The 1830 PSS tracks the signal quality and equipment health through the continuous collection and analysis of performance data. The user can retrieve current and past values for an overview of the health of the system. The PM function applies to optical lines, channels, ports, and equipment. The user can provision threshold parameters to the required level of performance degradation.

Proactive maintenance refers to following up on a performance degradation before a failure and alarms are generated. Reactive maintenance refers to following up on a system alarm. Crossing a performance parameter threshold indicates a potential network quality or performance degradation when the transported services are not impacted. If performance degradation continues, alarms are generated to resolve or repair the problem.

PM thresholds

PM statistics are collected for all service cards and interface ports that perform OEO conversions or protection switching. The statistics are grouped by functional category. Each category has several monitored parameters for which you can configure TCAs. A threshold is the mechanism for generating a notification in response to changes in PM parameter values. The 1830 PSS allows you to provision performance parameter thresholds, which can be set by the user to indicate degraded performance. You can configure how much data is collected and stored, and how and when you are notified if thresholds levels are crossed. For information about performance management requirements see the *Alcatel-Lucent 1830 Photonic Service Switch User Provisioning Guide* and the *Alcatel-Lucent 1830 Photonic Service Switch Product Information and Planning Guide*.

PM process

The 1830 PSS provides the following PM processing functions:

- monitor and accumulate digital and analog parameters for a physical or logical access point
- store and manage historical accumulated data; up to thirty two 15-minute and seven 24-hour accumulation registers can be stored
- validate threshold crossing processing
- assign threshold values to profile port entities
- use free-running counters for monitored points

PM functions are performed on physical and logical points within the 1830 PSS devices that represent the boundary with other devices or an external system. A user can define and monitor QoS at individual points in which a local NE interacts with other network entities.

15.2 Performance statistics

The 5620 SAM can be configured to collect statistics counters from 1830 PSS devices and 5620 SAM servers.

The 5620 SAM supports the following for 1830 PSS devices:

- assign the default 1830 PSS Performance Management Policy to the 1830 PSS device.
- enable the policy by setting the Administrative State to Up.
- configure the protocol for the statistics collection.
- specify a retention period in the Statistics Policy which indicates the period after which the statistics records are removed from the database.
- collect scheduled statistics using TFTP or SFTP to view historical statistics by selecting the required PM group and clicking on the Search button.
- collect on-demand statistics using SNMP polling to view historical and real-time statistics by clicking on the Collect or Collect All button.

Bins and intervals

The performance parameters groups obtained during the parameter processing are collected in registers over 15-min and 24-h measurement periods. A bin is the collection of registers associated with a PM group and collection period. The bins can be cleared by configuring the number of bins to be cleared for each interval. See Procedure 15-3 for information about clearing the 1830 PSS bins.

1830 PSS device

The 15-min bins collect data at quarterly time intervals (that is, 00, 15, 30, or 45) of the 1830 PSS clock. The 24-h bins collect data from midnight to midnight based on the UTC (not the local time). At the end of each 15-min time interval, the contents of the 15-min bin are transferred to the previous 15-min bin. The 15-min bins are then initialized to zero and a new record is initiated. Each PM group consists of thirty-two 15-min bins and seven 24-h bins. When the storage capacity of thirty-two 15-min bins is reached, the oldest bin is dropped. The 24-h bins are managed in the same way. 1830 PSS also supports raw bins for the parameters that can be monitored through raw bins for the supported PM profiles. The raw bins are 32-bit or 64-bit registers that count the monitored events until it rolls over, or are reset or cleared by the user.

1830 PSS statistics storage on the 5620 SAM server

The 1830 PSS statistics are stored in the following directory on the 5620 SAM server:

/opt/5620sam/server/nms/tftp_home/stats

The files are retained for 24 h by default.

Statistics collection

The file-based statistics are collected from the files on the 1830 PSS devices using TFTP or SFTP. The statistics are available for scheduled collection and enable viewing of the historical statistics.

The MIB-based statistics are collected from the 1830 PSS MIBs using SNMP polling. The statistics are available for on-demand collection and enable viewing of the real-time and historical statistics.

Scheduled and on-demand statistics are stored in the 5620 SAM database for a configurable retention period, as specified in Procedure 15-2, and are available to the 5620 SAM operators. When the retention period elapses, the statistics are removed from the database.

Statistics that are collected for real-time display are available only for the duration of the session and for the operator who initiates the session. Real-time statistics are not stored in the 5620 SAM database.

The 5620 SAM allows you to back up statistics data to another location. See "To back up the 5620 SAM database using the client GUI" in the *5620 SAM System Administrator Guide* for information about how to back up the 5620 SAM database.

15.3 Workflow for performance statistics collection

1. Modify 1830 PSS Performance Management Policy to assign 1830 PSS devices to the policy and enable the policy by setting the Administrative State to Up. See Procedure 15-1.
2. Specify the retention time for a statistics record. See Procedure 15-2.
3. Collect and display the statistics values in a current statistics record. See "To view on-demand statistics" in the *5620 SAM Statistics Management Guide* for information about viewing on-demand statistics.
4. Configure real-time and historical statistics graph. See "Graphical statistics view" in the *5620 SAM Statistics Management Guide* for information about creating a real-time and historical statistics graph.
5. Use the 5620 SAM-O interface to retrieve the performance statistics records from the 5620 SAM for processing by a third-party application. See the *5620 SAM XML OSS Interface Developer Guide* for information about using the 5620 SAM-O to transfer statistics records from the 5620 SAM database to an OSS client application.

15.4 1830 PSS statistics procedures

Perform the procedures in this section to configure the 5620 SAM for 1830 PSS statistics collection.

Procedure 15-1 To configure an 1830 PSS Performance Management Policy

1. Choose Tools→Statistics→Optical Performance Management Policies from the 5620 SAM main menu. The Optical Performance Management Policies form opens.
2. Choose the default 1830 PSS performance management policy and click on the Properties button. The 1830 PSS Performance Management Policy (Edit) form opens with the 1830 PSS Performance Management Policy tab displayed.

3 Configure the Administrative State parameter.



Note — The default value for the Administrative State parameter is Down for an 1830 PSS Performance Management Policy.

4 Perform one of the following to configure the Protocol parameter:

a Choose SFTP from the drop-down menu and configure the User ID and Password parameters.

b Choose TFTP from the drop-down menu.

5 Click on the Apply button. A dialog box appears.

6 Click on the Yes button.

7 Click on the 1830 PSS Elements tab.

8 Configure the filter criteria, if required, and click on the Search button to generate a list of 1830 PSS elements that are already assigned to the 1830 PSS performance management policy.

9 Click on the Assign 1830 PSSs button. The Assign and Assign Filter forms open.

10 Configure the filter criteria, if required, and click on the OK button to close the Assign Filter form and return to the Assign form.

11 Use the right and left arrows to move the 1830 PSS devices between the Unassigned PSSs panel and the Assigned PSSs panel, as required.

12 Click on the Apply button to deploy the 1830 PSS performance management policy to the assigned PSS.



Note — Alternatively, when an 1830 PSS device is discovered, the 5620 SAM assigns the default 1830 PSS performance management policy to it automatically.

13 Click on the Cancel button to close the Assign form.

14 Click on the OK button to close the 1830 PSS Performance Management Policy (Edit) form.

15 Close the Optical Performance Management Policies form.

Procedure 15-2 To configure retention time for file-based statistics

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf→Card Slot→Port.



Note — Choose the PM-supported ports.

3 Right-click on the Port and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the Statistics tab. The Administrative State and Retention Time columns are displayed.

5 Choose an object type from the Select Object Type drop-down menu.

6 Click on the Statistics Policies button and choose the Statistics Policy from the drop-down menu. The Statistics Policy form appears with the name of the selected Object Type.

7 Configure the parameters:

- Retention Time (hours)
- Administrative State

8 Click on the Purge Statistics Records to purge all statistics records. If the buttons are not visible, click on the More Actions button and choose the corresponding option from the drop-down menu.

9 Click on the OK button. A dialog box appears. Click on the Yes button. The Statistics Policy form closes.

10 Click on the OK button. The Physical Port (Edit) form closes.

Procedure 15-3 To clear the 1830 PSS bins on an EC card

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf→EC Card from the navigation tree.

3 Right-click on the EC card and choose Properties from the contextual menu. The Card Slot (Edit) form opens.

4 Click on the Card Specifics tab.

5 Click on the Performance tab.

6 Choose either 15-min or 24-h bin, and click on the Properties button. The TCA Profile Assignment form opens with the General tab displayed.

7 Configure the Number of Bins parameter.

8 Click on the Clear Count button and perform one of the following actions:

- **a** Choose Bins to clear the 15-h or 24-h bin
- **b** Choose Raw Bins to clear the raw bin counters

9 Close the TCA Profile Assignment form. The Card Slot (Edit) form reappears.

10 Click on the Show All Tabs tab. Click on the Statistics tab.

11 Choose the profile type for which the bins are cleared and click on the Collect button. The new counts are displayed.

12 Close the Card Slot (Edit) form.

Procedure 15-4 To clear the 1830 PSS bins on a port

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf→Card→Port.

3 Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens.

4 Click on the Port Specifics tab.

5 Click on the Performance tab.



Note — For 11QPE24 ports, click on the Port TCA Profile Assignment tab under the Performance tab.

6 Choose either 15-min or 24-h bin, and click on the Properties button. The TCA Profile Assignment form opens with the General tab displayed.

7 Configure the Number of Bins parameter, if required.

8 Click on the Clear Count button and perform one of the following actions:

- **a** Choose Bins to clear the 15-min or 24-h bin
- **b** Choose Raw Bins to clear the raw counts

9 Close the TCA Profile Assignment form. The Physical Port (Edit) form reappears.

10 Click on the Show All Tabs tab. Click on the Statistics tab.

11 Choose the profile type for which the bins are cleared and click on the Collect button. The new counts are displayed.

12 Close the Physical Port (Edit) form.

15.5 PM profile types supported for line ports on amplifier cards

Inter-device management and control information is communicated over the amplifier cards. The amplifier card line ports support their statistics profiles. The amplifier is a separate optical channel that operates at the STM-1/OC-3 rate of 155 Mb/s. The amplifier card transfers management and control information between the ECs of two adjacent NEs, regardless of whether any of the DWDM payload channels are terminated between the two NEs. The channel transports IP and OSI PDUs. See the *Alcatel-Lucent 1830 Photonic Service Switch Product Information and Planning Guide* for more information.

15.6 Managing TCA profiles

The 5620 SAM supports all of the TCAs that are provided by the NE. The support includes configuring thresholds, distributing TCA profiles, and reporting, for example, generating and clearing appropriate alarms. See the *Alcatel-Lucent 1830 Photonic Service Switch User Provisioning Guide* for more information about TCA support on the 1830 PSS.

TCA profiles

You can configure and assign a profile to an interval to monitor the value of each parameter in the active bin and generate a log event if a threshold level is reached. If a specified threshold is crossed, an alarm is generated.

You can configure each PM group with up to eight profiles. Each profile can have different threshold levels. The 5620 SAM allows you to modify the TCA profiles. The threshold levels that you configure depend on the following factors:

- interval length—for example, to gather statistics for an interface over 15-min and 24-h intervals you must define two profiles: one for each interval
- service level of the traffic using the interface

Procedure 15-5 To configure 11QPE24 card TCA profile

1 Perform one of the following:

a Open the 1830 PSS Card TCA Profile, Global Policy (Create) form from the 5620 SAM main menu.

i Choose Tools→1830 PSS TCA Profiles from the 5620 SAM main menu. The 1830 PSS TCA Profiles form opens.

ii Choose Card TCA Profiles (NE Threshold Crossing Alerts) from the object drop-down menu.

iii Click on the Create button and choose Card TCA Profile. The 1830 PSS Card TCA Profile, Global Policy (Create) form opens.

b Open the 1830 PSS Card TCA Profile, Local Policy (Create) form from the card properties form.

i Choose Network→NE→Shelf→Card (11QPE24 card).

ii Right-click on the card and choose Properties from the contextual menu. The Card Slot (Edit) form opens.

iii Click on the Card Specifics tab and click on the Performance tab.

iv Click on the Create button. The 1830 PSS Card TCA Profile, Local Policy (Create) form opens.

2 Configure the parameters:

- TCA Profile Type
- TCA Profile ID
- Description
- Number of 15-min Bins
- Number of 1-day Bins

3 Click on the OK button. The 1830 PSS Card TCA Profile (Create) form closes and the 1830 PSS TCA Profiles form reappears with the policy listed.

4 Perform the following steps to distribute a global policy created using step 1 option a.

i Choose the global policy from the list of policies in the 1830 PSS TCA Profiles form and click on the Properties button. The 1830 PSS Card TCA Profile, Global Policy (Edit) form opens.

ii Click on the Switch Mode button. A dialog box appears.

iii Click on the Yes button. The value of the Configuration Mode parameter changes to Released and the Release - Card TCA Profile form opens.

iv Choose the nodes from the Available Nodes list and click on the right-arrow button. The selected nodes move to the Selected Nodes list.

v Click on the Distribute button.

vi Close the Release - Card TCA Profile form and the 1830 PSS Card TCA Profile, Global Policy (Edit) form.

5 Close the 1830 PSS TCA Profiles form.



Note — See Procedure 15-8 to configure TCA threshold values.

Procedure 15-6 To assign an Ethernet TCA profile to an 11QPE24 port or SAP

1 Perform the following to assign an Ethernet TCA profile to an 11QPE24 port or SAP.

a Perform the following to assign an Ethernet TCA profile to an 11QPE24 port.

i Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

ii Choose Network→NE→Shelf→Card (11QPE24 card)→ Port.

iii Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens.

iv Click on the Port Specifics tab and click on the Performance tab.

v Click on the Select button beside the TCA Profile ID parameter in the Port TCA Profile panel. The Select Port TCA Profile form opens displaying a list of port TCA profiles.

b Perform the following to assign an Ethernet TCA profile to an 11QPE24 SAP.

i Choose Manage→Service Tunnels from the 5620 SAM main menu. The Manage Service Tunnels form opens.

ii Choose Service Management→ VPLS in the object drop-down box and click on the Search button.

iii Choose the required VPLS service from the list and click on the Properties button. The VPLS Service (Edit) form opens.

iv Choose VPLS Service→Sites→Site→L2 Access Interfaces→L2 Access Interface Port.

v Click on the Select button beside the TCA Profile ID parameter in the SAP TCA Profile panel. The Select SAP TCA Profile form opens displaying a list of SAP TCA profiles.

2 Choose a TCA profile and click on the OK button. The TCA Profile selection form closes.



Note — See Procedure 15-9 to generate TCA alerts after the TCA profile is assigned.

Procedure 15-7 To assign TCA profiles to an EC card slot and other card ports

You can assign unique profiles for 15-min intervals and 24-h intervals for each EC card and port.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Perform one of the following actions:

a Perform the following to assign the TCA profile to EC card slot.

i Choose Network→NE→Shelf→Card (EC: Equipment Controller Card).

ii Right-click on the card and select Properties from the contextual menu. The Card Slot (Edit) form opens.

iii Click on the Card Specifics tab and then click on the Performance tab. Go to step 3.

b Perform the following to assign the TCA profile to a port.

i Choose Network→NE→Shelf→Card→Port.

ii Right-click on the port and select Properties from the contextual menu. The Physical Port (Edit) form opens.

iii Click on the Port Specifics tab and then click on the Performance tab. Go to step 3.

3 Choose a profile and click on the Properties button. The TCA Profile Assignment (Edit) form opens.

4 Configure the Number of Bins parameter.

5 Click on the Select button beside the TCA Profile ID parameter. The Select TCA Profile form opens displaying a list of TCA profiles.

6 Choose a TCA profile and click on the OK button. The Select TCA Profile form closes and the TCA Profile Assignment form reappears.

7 Click on the OK button. The TCA Profile Assignment (Edit) form closes.

8 Click on the OK button. The Card Slot (Edit) form closes.

Procedure 15-8 To configure thresholds for NE and Card TCA profiles

All NE and Card TCA profiles contain a set of counters and parameters for which threshold values can be configured. The NE TCA profiles are always on the 1830 PSS and cannot be deleted. However, the Card TCA profiles can be deleted.

1 Choose Tools→1830 PSS TCA Profiles from the 5620 SAM main menu. The 1830 PSS TCA Profiles form opens.

Note — See step 4 of Procedure 15-5 to release and distribute a global policy the specific 1830 PSS. To modify only a specific 1830 PSS, modify only local definitions.

2 Choose a profile type from the list and click on the Properties button. The NE TCA Profiles (Edit) form or the 1830 PSS Card TCA Profile (Edit) form opens.

3 Click on the TCA Thresholds tab or Card TCA Thresholds tab to display a list of TCA variable names with their threshold values.

4 Choose a TCA variable name and click on the Properties button. The NE or Card TCA Thresholds (Edit) form opens.

5 Configure the Threshold Value parameter and click on the OK button. The NE or Card TCA Thresholds (Edit) form closes.

Note — By default, profile ID 7 specifies threshold values that can be applied to the 15-minute interval, and profile ID 8 contains threshold values that can be applied to the 24-hour interval in case of a NE TCA profile.

6 Click the OK button. The NE TCA Profiles (Edit) form or the 1830 PSS Card TCA Profile (Edit) form closes.

15.7 Managing performance monitoring

You can configure PM and view PM data.

Configuring PM

The prerequisites to configure PM are:

- Determine the interfaces and cards that you must configure to collect PM data.
- Configure the profiles to specify the threshold levels at which log events are generated for the PM groups to be monitored on the NE.
- Configure each of the interfaces and cards on the NE for which you must collect PM statistics.
- Configure the PM statistics to collect, the interval period over which they are collected, and the profile used for each interval period.

Viewing PM data

PM data is recorded in logs or bins. Logs record all of the TCAs that occur on the NE. The bins store data collected for a specific card or interface over a specific interval. A raw bin for each PM group collects data until the data is cleared.

Note — When PM data is not available, PM parameter names are displayed with blank values.

Displaying PM data for an EC card

You can display PM data only for an EC card.

Note — Card-level PM is not supported for other card types.

Procedure 15-9 To enable PM TCA alerts

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE

3 Right-click on NE and choose Properties from the menu.

4 The Network Element (Edit) form opens. Click on the NE Specifics tab. The General tab is displayed.

5 Select the Enable PM TCA Alerts check box from the Performance Management panel to enable the 5620 SAM to generate all TCA alerts.

Note 1 — If the check box is disabled the 5620 SAM does not generate the TCA alerts.

Note 2 — Select the default PM policy in the File based PM Policy panel to enable collection of scheduled statistics.

6 Click the OK button. A dialog box appears.

7 Click on the Yes button to save the changes.

Procedure 15-10 To clear PM counters of a TCA profile bin associated with a port or SAP on 11QPE24 card

Ensure that the port or SAP, where the PM counters needs to be cleared, have a TCA profile assigned to it. See Procedure 15-7 to assign a TCA profile to a card or SAP.

1 Perform one of the following:

a Perform the following to clear PM counters from port properties of 11QPE24 card:

i Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

ii Choose Network→NE→Shelf→Card (11QPE24 card)→ Port.

iii Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens.

iv Click on the Port Specifics tab and then click on the Performance tab.

v Go to step 2.

b Perform the following to clear PM counters from 5620 SAM main menu.

i Choose Tools→1830 PSS TCA Profiles from the 5620 SAM main menu. The 1830 PSS TCA Profiles form opens.

ii Choose Card TCA Profiles (NE Threshold Crossing Alerts) from the object drop-down box and click on the Search button.

iii Choose the required TCA Profile from the list and click on the Properties button. The 1830 PSS Card TCA Profile (Edit) form opens.

iv Click on the Associations tab and then click on the Search button.



Note — By default,

- for SAP TCA profile type, L2 Access Interfaces tab opens under the Associations tab.
- for Port TCA profile type, Ports tab opens under the Associations tab.

v Choose the required ports ot SAPs. Go to step 2.

2 Click on the Clear PM Counters button.

3 Close the Physical Port (Edit) form or the 1830 PSS Card TCA Profile (Edit) form.

15.8 Cards and ports that support PM data

Table 15-1 lists the transmission cards and ports that support PM data.



Note — The 11STMM10 hardware does not support GBE PM statistics in the egress direction. The transmit side of the PM data is not displayed for the 4DPA2 client or line ports.

Table 15-1 Transmission cards and ports

Cards	Ports
112SA1L 112SCA1	L1, C1
112SCX10 112SX10L	L1, C {1 to 10}
112SNA1	L1, C1
112SNX10	L1, C {1 to 10}
130SCX10	L1, C {1 to 10}
11DPE12 11DPE12A 11DPE12E	L {1, 2}, VA {1, 2}, C {1 to 12}
11DPM12	L {1, 2}, VA {1, 2}, C {1 to 12}
11QPA4	L {1 to 4}, VA {1 to 4}, C {1 to 4}
11QPE24	X {1 to 4}, C {1 to 11, 24}, VA {1 to 4}
11QPEN4	L {1 to 4}, C {1 to 4}, VA {1 to 4}
11STAR1	L1, C1
11STAR1A	L1, C1
11STGE12	L1, C {1 to 10}
11STMM10	L1, C {1 to 10}
1DPP24M Master	L1, C {1 to 21}
1DPP24M Slave	C {1 to 21}
43STA1P	L1, C1
43STX4 43STX4P	L1, C {1 to 4}
43SCA1	L1, C1

(1 of 3)

Cards	Ports
43SCX4 43SCX4E 43SCX4L	L1, C {1 to 4}
4DPA2	L {1, 2}, C {1, 2}
4DPA4 (Card Mode = FlexMux)	L {1, 2}, C {1 to 4}, VA {1, 2}
4DPA4 (Card Mode = DualTran)	L {1, 2}, C {1, 3}, VA {1, 2}
4QPA8	L {1-4}, C {1-4}, VA {1-4}
PSS1GBE	L {1, 2}, C {1 to 12}
PSS1MD4 (Card Mode = FlexMux)	L {1, 2}, C {1 to 4}
PSS1MD4 (Card Mode = DualTran)	L {1, 2}, C {1, 3}
PSS1P21	L1, C {1 to 21}
A2325A ALPHG AHPHG AHPLG AM2017B AM2325B	OSC, LINE, LINE- {9170~9605}
ALPFGT	OSCSFP, LINE, SIG, LINE- {9170~9605}
AM2318A and AM2125A	OSCSFP, LINEIN, LINEIN- {9170~9605}, LINEOUT, LINEOUT- {9170~9605}
AM2125B	OSCSFP, LINEIN, LINEOUT
A2P2125	LINEIN, LINEOUT, OSC, OSCSFP
EC	No port, PM data collected on the EC card and not on the port level
OSCT	OSCSFP, LINE, LINE- {9170~9605}
MVAC	G {1 to 8}
MVAC8B	L {1 to 8} C {1 to 9}
RA2P	LINEIN
SVAC	L1, C1
CWR8 CWR8-88	CLS {1 to 8}
43SCGE1	L1, C1
WR2-88	SIG, THRU, DROPOUT, ADDIN
WR8-88A WR8-88AF	MESHOUT{1 to 3}, ADDIN{1 to 8}, SIG, THRU, DROPOUT

(2 of 3)

Cards	Ports
WTOCM WTOCMA	IN {1-4}

(3 of 3)

Table 15-2 lists the dedicated cards that are required to boot the 1830 PSS.

Table 15-2 Dedicated cards and ports

Cards	Ports
FAN	—
USRPNL	OAMP, VOIP, E1, E2
EC	CIT (Local Ethernet Port), AUX, ES1, ES2
PFDC50 50A	No ports
PFDC60 60A	No ports

1830 PSS network management

16 — 1830 PSS Ethernet OAM

17 — 1830 PSS Protocol configuration

18 — 1830 PSS service tunnels

19 — 1830 PSS MC LAG group

16 — 1830 PSS Ethernet OAM

16.1 Ethernet OAM overview *16-2*

16.2 Ethernet CFM procedures *16-4*

16.3 OAM diagnostic tests overview *16-7*

16.4 OAM diagnostic test procedures *16-8*

16.5 Smart SFP-RMD *16-18*

16.1 Ethernet OAM overview

The 5620 SAM supports Ethernet OAM on the 11QPE24, 11DPE12A and 11DPE12E cards on the Ethernet optical transport services, such as 802.1ag, Y.1731, and 802.3ah. Ethernet OAM defines the OAM sublayer, which is used for monitoring link operations such as remote fault indication and remote loopback control. The network operators can monitor the health of the network and determine the location of failing links or fault conditions. The EFM OAM provides data link layer mechanisms to complement applications that may reside in higher layers.

The OAM information is transported in slow protocol frames which are called OAMPDUs. The OAMPDUs contain the appropriate control and status information to monitor, test and troubleshoot EFM OAM-enabled links. The OAMPDUs traverse a single link that is passed between peer OAM entities, and are not forwarded by MAC clients (such as bridges or switches), unless they are configured.

The following EFM OAM functions are supported on the 11QPE24, 11DPE12A and 11DPE12E cards:

- EFM OAM capability discovery
- active and passive modes
- remote failure indication
- local and remote loopbacks
- EFM OAMPDU tunneling
- high-resolution EFM OAM timers (500 ms interval)

See “OAM diagnostic tests” in the *5620 SAM User Guide* for more information.

Table 16-1 Ethernet OAM references

Topics	Chapter	Document
OAM diagnostic tests overview	OAM diagnostic tests	*5620 SAM User Guide*
Ethernet CFM	OAM diagnostic tests	*5620 SAM User Guide*

Ethernet CFM

Ethernet CFM supports end-to-end service management in an L2 network. The CFM tools provide path discovery and fault detection, isolation and notification. See “Ethernet CFM” in the *5620 SAM User Guide* for more information about how to configure an IEEE 802.1ag-enabled network for Ethernet CFM.

Table 16-2 lists the supported Ethernet CFM test types, the objects for which the tests can be performed, and the network layer being tested.

Table 16-2 Ethernet CFM test types and test objects in the Ethernet network level

Test type	Network object or service component for test
CFM Loopback - Procedure 16-2	SAP or Ethernet Ring Path End Point
CFM Link trace - Procedure 16-3	
CFM One Way Delay - Procedure 16-4	
CFM Two Way Delay - Procedure 16-5	
CFM Two Way Synthetic Loss Measurement (SLM) - Procedure 16-6	
CFM Loss Measurement (LM) - Procedure 16-7	

The following CFM diagnostic tests detect connectivity failure.

CFM loopback

The CFM loopback messages are sent to a unicast destination MAC address. The MEP at the destination responds to the loopback message with a loopback reply. A MEP or MIP can reply to a loopback message if the destination MAC address matches the MAC address of the MEP or MIP. The CFM loopback tests verify connectivity to a specific MEP or MIP.

CFM link trace

The CFM link trace messages that contain a target unicast MAC address are sent to multicast destination MAC addresses. Each MIP at the same MD level replies with a link trace response. Messages are forwarded to the next hop until they reach the destination MAC address. The originating MEP collects the replies to determine the path.

CFM one-way delay

The CFM one-way delay test applies only to Y.1731 MEPs. The test originates on one MEP and terminates on a target MEP. The results are read from the target MEP. In the test, frame delay is defined as the time elapsed since the start of transmission of the first bit of the frame by a source site until the frame is received by the destination site. The frame delay represents the one-way trip time between the source and destination sites.

CFM two-way delay

The CFM two-way delay test applies only to Y.1731 MEPs. The frame delay is the time elapsed since the start of transmission of the first bit of the frame by the source site until the frame is received by the same site after passing through the destination site. The frame delay represents the round-trip time between the source and destination sites.

CFM two-way SLM

The CFM two-way SLM test measures the synthetic loss which is used to check for packet loss.

CFM LM

The CFM LM test measures the counter values applicable for ingress and egress service frames where the counters maintain a count of transmitted and received data frames between a pair of MEPs.

16.2 Ethernet CFM procedures

Perform the following procedure to configure and manage Ethernet CFM.

Procedure 16-1 To configure Ethernet CFM for 11DPE12A and 11DPE12E cards

1 Choose Tools→Ethernet CFM→Maintenance Domain Policies from the 5620 SAM main menu. The Maintenance Domain Policies form opens.

2 Perform one of the following:

- **a** Modify an existing MD.
  - **i** Configure a filter if required and click on the Search button. A list of MDs appears.
  - **ii** Choose an MD and click on the Properties button. The Maintenance Domain Global Policy (Edit) form opens.
- **b** Create an MD.
  - **i** Click on the Create button. The Maintenance Domain - Global Policy (Create) form opens.
  - **ii** Configure the parameters:
    - MD Mgr Object ID
    - Maintenance Domain ID
    - Name Type
    - Name
    - Description
    - Level
  - **iii** Click on the Apply button. The form displays additional tabs, and the form name changes to Maintenance Domain Global Policy (Edit).

3 Click on the Switch Mode button in the Policy Configuration panel. A dialog box appears.

4 Click on the Yes button. The Maintenance Domain - Global Policy (Edit) form closes and the Release Maintenance Domain Policies form opens with the list of 1830 PSS devices available for distribution in the Available Nodes list.

5 Choose one or more devices and click on the right arrow button. The device or devices move to the Selected Nodes list on the right side of the form.

6 Click on the Distribute button. The 1830 PSS policy is distributed to the 1830 PSS device or devices.

7 Add a global MEG to an MD.

i Navigate to Tools→Ethernet CFM→Maintenance Domain Policies and choose an MD in the list.

ii Click on the Properties button. The Maintenance Domain - Global Policy (Edit) form opens.

iii Click on the Global Maintenance Entity Group tab.

iv Click on the Create button. The Global Maintenance Entity Group (Create) form opens with the General tab displayed.

v Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State

vi Configure the Name Format and Name parameters in the Maintenance Entity Group panel. If you set the Name Format parameter to icc-based, the associated name must be 8 to 13 characters.

vii Configure the parameters in the Initial MEG Configuration panel:

- Initial CCM Interval
- Initial MHF-Creation
- Initial MIP LTR Priority

viii Click on the OK button. The Global Maintenance Entity Group (Create) form closes, and the Maintenance Domain - Global Policy (Edit) form reappears with the Global Maintenance Entity Group tab displayed. The global MEG is listed on the form and a default MEG subgroup is added to the global MEG.

8 Associate an 1830 PSS device with the MEG.

i Navigate to Tools→Ethernet CFM→Maintenance Domain Policies and choose an MD in the list.

ii Click on the Properties button. The Maintenance Domain Global Policy (Edit) form opens.

iii Click on the Global Maintenance Entity Group tab and click on the Search button. A list of global MEGs appears.

iv Choose a global MEG and click on the Properties button. The Global Maintenance Entity Group (Edit) form opens.

v Click on the NE Maintenance Entity Group tab.

vi Click on the Create button. The NE Maintenance Entity Group (Create) form opens with the General tab displayed.

vii Click on the Select button in the Site panel. The Select Site form opens.

viii Click on the Search button. A list of sites is displayed.

ix Choose a site and click on the OK button. The Select Site form closes, and the site information is displayed on the NE Maintenance Entity Group (Create) form.

x Click on the Select button in the Card panel. The Select Card - NE Maintenance Entity Group form opens.

xi Click on the Search button. A list of supported OT cards is displayed.

xii Choose an OT card and click on the OK button. The Select Card - NE Maintenance Entity Group form closes, and the card information is displayed on the NE Maintenance Entity Group (Create) form.

xiii Click on the OK button. The NE Maintenance Entity Group (Create) form closes.

9 Associate a VLAN service with the MEG.

i Navigate to Tools→Ethernet CFM→Maintenance Domain Policies and choose an MD in the list.

ii Click on the Properties button. The Maintenance Domain Global Policy (Edit) form opens.

iii Click on the Global Maintenance Entity Group tab and click on the Search button. A list of Global MEGs appears.

iv Choose a global MEG and click on the Properties button. The Global Maintenance Entity Group (Edit) form opens.

v Click on the NE Maintenance Entity Group tab. A list of associated 1830 PSS devices appears.

vi Choose an entry. The NE Maintenance Entity Group (Edit) form opens with the General tab displayed.

vii Click on the Service tab.

viii Click on the Create button. The MEG Service (Create) form opens.

ix Configure the VLAN ID parameter.

x Click on the OK button. The MEG Service (Create) form closes and returns to the NE Maintenance Entity Group (Edit) form.

10 Add a managed MEP to the MEG.

i Click on the Managed MEP tab in the NE Maintenance Entity Group (Edit) form.

ii Click on the Create button. The MEP (Create) form opens with the General tab displayed.

iii Click on the Select button on the Port panel. The Select MEP form opens with the list of line ports displayed.

iv Choose an entry and click on the OK button. The Select MEP form closes and the MEP (Create) form reappears.

v Click on the OK button. The MEP (Create) form closes and the NE Maintenance Entity Group (Edit) form reappears.

11 Add a remote MEP to the MEG.

i Click on the Remote MEP tab in the NE Maintenance Entity Group (Edit) form. and click on the Create button. The Remote MEP (Create) form opens.

ii Configure the MEP ID parameter. The Remote MEP (Create) form closes and the NE Maintenance Entity Group (Edit) form reappears.

iii Click on the OK button to save the configuration.

16.3 OAM diagnostic tests overview

The proper delivery of services requires that a number of operations must occur correctly at different levels in the service. For example, operations such as the association of packets to a service, VC labels to a service, and each service to a service tunnel, must be performed successfully for the service to pass traffic to subscribers according to SLAs. To verify that a service is operational and that configuration information is correct, a set of configurable in-band or out-of-band, packet-based OAM tools is available.

You can create and schedule the execution of OAM tests using the 5620 SAM Service Test Manager, or STM. The prerequisites for running the CFM tests are:

- Choose CCM option for the Flow Continuity Monitoring parameter on the Card Specifics→General tab of the Card Slot (Edit) form.
- Configure an Ethernet CFM MD and subordinate objects associated with the MD such as a Global MEG, MEG, and MEP. See Procedure 16-1.

Proactive OAM tests are carried out for proactive reporting of fault or performance results. On-demand OAM tests are initiated by manual intervention for a limited time to carry out diagnostics. On-demand OAM can result in single or periodic OAM actions during the diagnostics time interval. The Proactive OAM tests are configured in the 5620 SAM by enabling the NE Schedulable parameter on the CFM test (Create) forms.

Table 16-3 Proactive OAM tests and supported cards

CFM tests	Supported cards
CFM two-way delay	11QPE24
CFM two-way SLM	11QPE24

Table 16-4 On-demand OAM tests and supported cards

CFM tests	Supported cards
CFM loopback	11QPE24 11DPE12A
CFM link trace	11QPE24
CFM one way delay	11QPE24 11DPE12A
CFM two way delay	11QPE24 11DPE12A
CFM two way SLM	11QPE24 11DPE12A
CFM LM	11DPE12A

16.4 OAM diagnostic test procedures

Use the following procedures to create and run OAM diagnostic tests.

Procedure 16-2 To create and run an on-demand CFM loopback test

Perform this procedure to manually create and run a CFM loopback test. You can create multiple CFM loopback tests for an originating MEP.

Note — The maximum number of continuous CFM loopback tests that can be run is 300, provided that the SAA packet per second rate of 200 pps is not exceeded. The total number of continuous tests must share this maximum rate of 200 pps.

1 Choose Tools→Service Test Manager (STM) from the 5620 SAM main menu. The Service Test Manager form opens.

2 Click on the Create button.

3 Choose Ethernet CFM→CFM Loopback from the contextual menu. The CFM Loopback Test (Create) form opens.

4 Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State

5 Deselect the NE Schedulable check box.

6 Click on the Select button beside the Global ID field to choose a global MEG. The Select Global MEG - CFM Loopback form opens.

7 Specify a search filter, if required, and click on the Search button. A list of global MEGs is displayed.

8 Select an entry and click on the OK button. The Select Global MEG - CFM Loopback form closes, and the CFM Loopback (Create) form displays the global MEG.

9 Click on the Select button beside the ID field to choose an originating MEP. The Select Originating MEP - CFM Loopback form opens.

10 Specify a search filter, if required, and click on the Search button. A list of MEPs is displayed.

11 Select a MEP in the list and click on the OK button. The Select Originating MEP - CFM Loopback form closes, and the CFM Loopback (Create) form displays the MEP information.

12 Perform one of the following:

a Select a MEP as the test destination. Perform the following steps.

i Click on the Select MEP button beside the Target MAC Address parameter to select the destination MEP. The Select MEP - CFM Loopback form opens.

ii Choose a MEP and click on the OK button. The Select MEP - CFM Loopback form closes, and the CFM Loopback (Create) form refreshes.

b Select a MIP as the test destination. Perform the following steps.

i Click on the Select MIP button beside the Target MAC Address parameter to select the destination MIP. The Select MIP - CFM Loopback form opens.

ii Choose a MIP and click on the OK button. The Select MIP - CFM Loopback form closes, and the CFM Loopback (Create) form refreshes.

c Select an unmanaged MEP as the test destination. Perform the following steps.

i Click on the Select Unmanaged MEP button beside the Target MAC Address parameter to select the destination MEP. The Select Unmanaged MEP - CFM Loopback form opens.

ii Choose an unmanaged MEP and click on the OK button. The Select Unmanaged MEP - CFM Loopback form closes, and the CFM Loopback (Create) form refreshes.

13 Configure the parameters in the MEP Transmit LBM Information panel:

- Data Size
- VLAN Priority
- Number of Loopback Sent
- VLAN Drop Enable

14 Click on the Apply button to save the changes.

15 To run the test, click on the Execute button.

16 Click on the Results tab to view the test results.

Procedure 16-3 To create and run an on-demand CFM link trace test



Note — The maximum number of continuous CFM link trace tests that can be run is 300, provided that the SAA packet per second rate of 200 pps is not exceeded. The total number of continuous tests must share this maximum rate of 200 pps.

However, it is recommended that number of continuous CFM link trace tests run should be kept well below the maximum allowed limit.

1 Choose Tools→Service Test Manager (STM) from the 5620 SAM main menu. The Service Test Manager form opens.

2 Click on the Create button.

3 Choose Ethernet CFM→CFM Link Trace from the Create contextual menu. The CFM Link Trace (Create) form opens.

4 Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State

5 Deselect the NE Schedulable check box.

6 Click on the Select button beside the Global ID field to choose a global MEG. The Select Global MEG - CFM Link Trace form opens.

7 Specify a search filter, if required, and click on the Search button. A list of global MEGs is displayed.

8 Select an entry and click on the OK button. The Select Global MEG - CFM Link Trace form closes, and the CFM Link Trace (Create) form displays the global MEG.

9 Click on the Select button beside the ID field to choose an originating MEP. The Select Originating MEP - CFM Link Trace form opens.

10 Specify a search filter, if required, and click on the Search button. A list of MEPs is displayed.

11 Select a MEP in the list and click on the OK button. The Select Originating MEP - CFM Link Trace form closes, and the CFM Link Trace (Create) form displays the MEP information.

12 Perform one of the following:

a Select a MEP as the test destination. Perform the following steps.

i Click on the Select MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select MEP - CFM Link Trace form opens.

ii Choose a MIP and click on the OK button. The Select MEP - CFM Link Trace form closes, and the CFM Link Trace (Create) form refreshes.

b Select a MIP as the test destination. Perform the following steps.

i Click on the Select MIP button beside the Target MAC Address parameter to choose the destination MIP. The Select MIP - CFM Link Trace form opens.

ii Choose a MIP and click on the OK button. The Select MIP - CFM Link Trace form closes, and the CFM Link Trace (Create) form refreshes.

c Select an unmanaged MEP as the test destination. Perform the following steps.

i Click on the Select Unmanaged MEP button beside the Target MAC Address parameter to select the destination MEP. The Select Unmanaged MEP - CFM Link Trace form opens.

ii Choose an unmanaged MEP and click on the OK button. The Select Unmanaged MEP - CFM Link Trace form closes, and the CFM Link Trace (Create) form refreshes.

13 Configure the TTL parameter in the MEP Transmit LTM Information panel.

14 Click on the Apply button to save the changes.

15 To run the test, click on the Execute button.

16 Click on the Results tab to view the test results.

Procedure 16-4 To create and run an on-demand CFM one-way delay test

1 Choose Tools→Service Test Manager (STM) from the 5620 SAM main menu. The Service Test Manager form opens.

2 Click on the Create button.

3 Choose Ethernet CFM→CFM One Way Delay Test from the contextual menu. The CFM One Way Delay Test (Create) form opens.

4 Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State

5 Click on the Select button beside the Global ID parameter to choose a global MEG. The Select Global MEG form opens.

6 Specify a search filter, if required, and click on the Search button. A list of global MEGs is displayed.

7 Choose an entry and click on the OK button. The Select Global MEG form closes, and the CFM One Way Delay (Create) form displays the global MEG.

8 Click on the Select button beside the ID parameter to choose an originating MEP. The Select Originating MEP - CFM One Way Delay Test form opens.

9 Specify a search filter, if required, and click on the Search button. A list of MEPs is displayed.

10 Choose a MEP and click on the OK button. The Select Originating MEP - CFM One Way Delay Test form closes, and the CFM One Way Delay Test (Create) form displays the MEP information.

11 Perform one of the following in the MEP Transmit Information panel:

a Choose a MEP as the test destination.

i Click on the Select MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select MEP - CFM One Way Delay form opens.

ii Choose a MEP and click on the OK button. The Select MEP - CFM One Way Delay form closes, and the CFM One Way Delay Test (Create) form refreshes.

b Choose a MIP as the test destination.

i Click on the Select MIP button beside the Target MAC Address parameter to choose the destination MIP. The Select MIP - CFM One Way Delay form opens.

ii Choose a MIP and click on the OK button. The Select MIP - CFM One Way Delay form closes, and the CFM One Way Delay Test (Create) form refreshes.

c Choose an unmanaged MEP as the test destination.

i Click on the Select Unmanaged MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select Unmanaged MEP - CFM One Way Delay form opens.

ii Choose an unmanaged MEP and click on the OK button. The Select Unmanaged MEP - CFM One Way Delay form closes, and the CFM One Way Delay (Create) form refreshes.

12 Configure the Priority parameter in the MEP Transmit DMM Information panel.

13 Click on the Apply button. The form displays additional buttons and tabs.

14 Click on the Execute button to run the test.

15 Click on the Results tab to view the test results.

Procedure 16-5 To create and run an on-demand and proactive CFM two-way delay test

Note — You can run up to 300 continuous CFM two-way delay tests when you do not exceed the SAA packet per second rate of 200 pps. The total number of continuous tests must share this maximum rate of 200 pps.

1 Choose Tools→Service Test Manager (STM) from the 5620 SAM main menu. The Service Test Manager form opens.

2 Click on the Create button.

3 Choose Ethernet CFM→CFM Two Way Delay Test from the contextual menu. The CFM Two Way Delay Test (Create) form opens.

4 Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State
- NE Schedulable

Note 1 — The NE Schedulable parameter is enabled for the proactive CFM two-way delay test.

Note 2 — When the NE Schedulable parameter is enabled, two additional tabs Test Parameters and Results Configuration appear in the form.

5 Click on the Select button beside the Global ID parameter to choose a global MEG. The Select Global MEG form opens.

6 Specify a search filter, if required, and click on the Search button. A list of global MEGs is displayed.

7 Choose an entry and click on the OK button. The Select Global MEG form closes, and the CFM Two Way Delay (Create) form displays the global MEG.

8 Click on the Select button beside the ID parameter to choose an originating MEP. The Select Originating MEP - CFM Two Way Delay Test form opens.

9 Specify a search filter, if required, and click on the Search button. A list of MEPs is displayed.

10 Choose a MEP and click on the OK button. The Select Originating MEP - CFM Two Way Delay Test form closes, and the CFM Two Way Delay Test (Create) form displays the MEP information.

11 Perform one of the following in the MEP Transmit Information panel:

a Choose a MEP as the test destination.

i Click on the Select MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select MEP - CFM Two Way Delay form opens.

ii Choose an entry and click on the OK button. The Select MEP - CFM Two Way Delay form closes, and the CFM Two Way Delay Test (Create) form refreshes.

b Choose a MIP as the test destination.

i Click on the Select MIP button beside the Target MAC Address parameter to choose the destination MIP. The Select MIP - CFM Two Way Delay form opens.

ii Choose an entry and click on the OK button. The Select MIP - CFM Two Way Delay form closes, and the CFM Two Way Delay Test (Create) form refreshes.

c Choose an unmanaged MEP as the test destination.

i Click on the Select Unmanaged MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select Unmanaged MEP - Two Way Delay form opens.

ii Choose an entry and click on the OK button. The Select Unmanaged MEP - CFM Two Way Delay form closes, and the CFM Two Way Delay (Create) form refreshes.

12 When the NE Schedulable parameter is enabled in step 4, go to step 15. Otherwise, go to step 13.

13 Configure the VLAN Priority parameter in the MEP Transmit DMM Information panel.

14 Go to step 18.

15 Click on the Test Parameters tab and configure the parameters in the Execution Details panel:

- Packet Interval (milliseconds)
- Packet Timeout (milliseconds)
- Forwarding Class

16 Click on the Results Configuration tab and click on the Select button in the Card TCA Profile panel. The Select Card TCA Profile - CFM Two Way Delay Test form opens.

17 Choose an entry and click on the OK button. The Select Card TCA Profile - CFM Two Way Delay Test form closes and the CFM Two Way Delay (Create) form appears.

18 Click on the Apply button to save the changes.

19 Click on the Results tab to view the test results.

Procedure 16-6 To create and run an on-demand and proactive CFM two-way SLM test



Note — You can run up to 300 continuous CFM two-way SLM tests when you do not exceed the SAA packet per second rate of 200 pps. The total number of continuous tests must share this maximum rate of 200 pps.

1 Choose Tools→Service Test Manager (STM) from the 5620 SAM main menu. The Service Test Manager form opens.

2 Click on the Create button.

3 Choose Ethernet CFM→CFM Two Way SLM from the contextual menu. The CFM Two Way SLM Test (Create) form opens.

4 Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State
- NE Schedulable



Note 1 — The NE Schedulable parameter is enabled for the proactive CFM two-way SLM test.

Note 2 — When the NE Schedulable parameter is enabled, two additional tabs Test Parameters and Results Configuration appear in the form.

5 Click on the Select button beside the Global ID parameter to choose a global MEG. The Select Global MEG form opens.

6 Specify a search filter, if required, and click on the Search button. A list of global MEGs appears.

7 Choose an entry and click on the OK button. The Select Global MEG form closes, and the CFM Two Way SLM Test (Create) form displays the global MEG.

8 Click on the Select button beside the ID parameter to choose an originating MEP. The Select Originating MEP - CFM Two Way SLM Test form opens.

9 Specify a search filter, if required, and click on the Search button. A list of MEPs appears.

10 Choose a MEP and click on the OK button. The Select Originating MEP - CFM Two Way SLM Test form closes, and the CFM Two Way SLM Test (Create) form displays the MEP information.

11 Perform one of the following:

a Choose a MEP as the test destination.

i Click on the Select MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select MEP - CFM Two Way SLM form opens.

ii Choose an entry and click on the OK button. The Select MEP - CFM Two Way SLM form closes, and the CFM Two Way SLM Test (Create) form refreshes.

b Choose a MIP as the test destination.

i Click on the Select MIP button beside the Target MAC Address parameter to choose the destination MIP. The Select MIP - CFM Two Way SLM form opens.

ii Choose an entry and click on the OK button. The Select MIP - CFM Two Way SLM form closes, and the CFM Two Way SLM Test (Create) form refreshes.

c Choose an unmanaged MEP as the test destination.

i Click on the Select Unmanaged MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select Unmanaged MEP - Two Way SLM form opens.

ii Choose an entry and click on the OK button. The Select Unmanaged MEP - CFM Two Way SLM form closes, and the CFM Two Way SLM (Create) form refreshes.

12 When the NE Schedulable parameter is enabled in step 4, go to step 15. Otherwise, go to step 13.

13 Configure the parameters in the MEP Transmit SLM Information panel:

- Priority
- Interval (seconds)
- Timeout (seconds)
- Data Size (octets)
- Number of Test Packets

14 Go to step 17.

15 Click on the Test Parameters tab and configure the parameters in the Execution Details panel:

- Packet Interval (milliseconds)
- Packet Timeout (milliseconds)
- Forwarding Class
- Size (octets)

16 Click on the Results Configuration tab and click on the Select button in the Card TCA Profile panel. The Select Card TCA Profile - CFM Two Way SLM Test form opens.

17 Specify a search filter, if required, and click on the Search button. A list of card TCA profiles appear.

18 Choose an entry and click on the OK button. The Select Card TCA Profile - CFM Two Way SLM Test form closes and the CFM Two Way SLM (Create) form appears.

19 Click on the Apply button to save the changes.

20 Click on the Results tab to view the test results.

Procedure 16-7 To create and run an on-demand CFM LM test

1 Choose Tools→Service Test Manager (STM) from the 5620 SAM main menu. The Service Test Manager form opens.

2 Click on the Create button.

3 Choose Ethernet CFM→CFM LM Test from the contextual menu. The CFM LM Test (Create) form opens.

4 Configure the parameters:

- Auto-Assign ID
- Name
- Description
- Administrative State

5 Deselect the NE Schedulable check box.

6 Click on the Select button beside the Global ID parameter to choose a global MEG. The Select Global MEG form opens.

7 Specify a search filter, if required, and click on the Search button. A list of global MEGs is displayed.

8 Choose an entry and click on the OK button. The Select Global MEG form closes, and the CFM LM Test (Create) form displays the global MEG.

9 Click on the Select button beside the ID parameter to choose an originating MEP. The Select Originating MEP - CFM LM Test form opens.

10 Specify a search filter, if required, and click on the Search button. A list of MEPs appear.

11 Choose a MEP and click on the OK button. The Select Originating MEP - LM Test form closes, and the CFM LM Test (Create) form displays the MEP information.

12 Perform one of the following in the MEP Transmit Information panel:

a Choose a MEP as the test destination.

i Click on the Select MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select MEP - CFM LM Test form opens.

ii Choose a MEP and click on the OK button. The Select MEP - CFM LM Test form closes, and the CFM LM Test (Create) form refreshes.

b Choose a MIP as the test destination.

i Click on the Select MIP button beside the Target MAC Address parameter to choose the destination MIP. The Select MIP - CFM LM Test form opens.

ii Choose a MIP and click on the OK button. The Select MIP - CFM LM Test form closes, and the CFM LM Test (Create) form appears.

c Choose an unmanaged MEP as the test destination.

i Click on the Select Unmanaged MEP button beside the Target MAC Address parameter to choose the destination MEP. The Select Unmanaged MEP - CFM LM Test form opens.

ii Choose an unmanaged MEP and click on the OK button. The Select Unmanaged MEP - CFM LM Test form closes, and the CFM LM Test (Create) form appears.

13 Configure the parameters in the MEP Transmit LM Information panel:

- Priority
- Interval
- Number of Test Packets

14 Click on the Apply button to save the changes.

15 Click on the Execute button to run the test.

16 Click on the Results tab to view the test results.

16.5 Smart SFP-RMD

An Ethernet demarcation point is required at the edge of a network to separate the operator domain from the end user. The demarcation point implemented as an Ethernet switch which is known as an NID, supports a network interface and one or more customer facing ports. The NID provides Ethernet OAM functions to help the operator monitor, troubleshoot, and localize faults.

A remote managed device is an NID that is installed in the customer equipment and managed by the 11QPE24 OT card. The 5620 SAM supports the configuration of the Smart SFP-RMD on the 11QPE24 card. You can create an RMD access interface from the C and X ports of the 11QPE24 card. Only one access interface can be created per port. The accessible RMD device with a specific OUI is discovered and a management instance is created for the discovered device by specifying the device type and MAC address. The supported device types are:

- CFM-capable 1000Base-X SFP
- EFM-capable 1000Base-X SFP
- cEDD NID

The 5620 SAM also supports the configuration of Ethernet CFM on the RMD. The supported device types are CFM and cEDD.

Procedure 16-8 To manually configure an RMD on an 11QPE24 card



Note — Before you perform the following procedure, ensure that the Assigned Rate parameter on the Port Specifics→General tab of the Physical Port (Edit) form is configured for the C or X port of the 11QPE24 card.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card Slot (11QPE24).

3 Right-click on the Card Slot and choose Properties from the contextual menu. The Card Slot 11G Quad Port Pluggable GBE Mux (24 Clients) (Edit) form opens with the General tab displayed.

4 Click on the RMD tab. The Discovery tab appears.

5 To configure the RMD access interface, click on the Access Interface tab and click on the Create button. The RMD Access Interface (Create) form opens with the General tab displayed.

6 Configure the Interface ID parameter. Alternatively, you can select the Auto-Assign ID check box.

7 Click on the Select button to select the port to be used to manage the RMD. The Select Port form opens with the list of ports.

8 Choose a port. You can choose a port which is a member of a LAG for the EFM and cEDD device types. Click on the OK button. The Select Port form closes and the RMD Access Interface (Create) form appears.

9 Click on the OK button. A dialog box appears.

10 Click on the OK button. The Card Slot 11G Quad Port Pluggable GBE Mux (24 Clients) (Edit) form appears.

11 Click on the Discovery tab.

12 Configure the OUI parameter.



Note — The OUI parameter is set to 00-19-3A by default. The OUI parameter configuration is required only if the RMD has an OUI that differs from the default value.

13 To assign the RMD access interface to the RMD, click on the Select button. The Select RMD Interface form appears with a list of access interface.

14 Choose an access interface and click on the OK button. The Select RMD Interface form closes and the Discovery tab appears. The access interface is assigned to the RMD.

15 Click on the Initiate button beside the Auto Discovery parameter to send a request to the 1830 PSS to discover the RMD attached to the RMD access interface.

16 Click on the OK button.

17 After 10 s, click on the Discovered Devices tab. The RMD discovered by the 1830 PSS RMD discovery mechanism appears with the properties displayed.

18 To manually configure the RMD, click on the Devices tab and click on the Create button. The Remote Managed Device (Create) form appears with the General tab displayed.

19 Click on the Select button. The Select RMD Access Interface form opens with a list of RMD interface.

20 Choose an RMD interface and click on the OK button. The Select RMD Interface form closes and the Remote Managed Device (Create) form appears.

21 Configure the parameters:

- Device ID
- Device Type
- Description
- MAC Address
- Forwarding Mode



Note — You can use the device type and MAC address information from the Discovered Devices tab that displays the RMD properties of the RMD discovered in step 17.

22 Click on the OK button. The Remote Managed Device (Create) form closes and the Devices tab appears displaying the configured RMD.

Procedure 16-9 To automatically configure an RMD on an 11QPE24 card

Note — Before you perform the following procedure, ensure that:

- the Assigned Rate parameter on the Port Specifics→General tab of the Physical Port (Edit) form is configured for the C or X port of the 11QPE24 card.
- the port is turned up and the operational state is up.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card Slot (11QPE24).

3 Right-click on the Card Slot and choose Properties from the contextual menu. The Card Slot 11G Quad Port Pluggable GBE Mux (24 Clients) (Edit) form opens with the general tab displayed.

4 Click on the Ports tab. The 11QPE24 ports are listed.

5 Choose any of the C and X ports to configure an RMD access interface.

6 Click on the Discover RMD Device button to create an RMD access interface and to discover the RMD. A dialog box appears.

7 Click on the OK button. The RMD access interface is created and the RMD is discovered.

8 Click on the RMD tab and click on the Access Interface tab to view the access interface and Discovered Devices tab to view the discovered RMD.

Note 1 — If the Auto Create Devices check box on the RMD→Discover tab of the Card Slot (Edit) form is enabled, the RMD devices are automatically created for the newly discovered devices.

Note 2 — If the Auto Create Devices check box on the RMD→Discover tab of the Card Slot (Edit) form is not enabled, the RMD device is not created. The automatic configuration of RMD is possible only for newly discovered devices and not for pre-existing discovered devices.

Procedure 16-10 To reset the RMD

1 Choose Network→NE→Shelf→Card Slot (11QPE24).

2 Right-click on the Card Slot and choose Properties from the contextual menu. The Card Slot 11G Quad Port Pluggable GBE Mux (24 Clients) (Edit) form opens with the General tab displayed.

3 Click on the RMD tab. The Discovery tab appears.

4 Click on the Devices tab. The configured RMDs are listed.

5 Choose a device.

6 Click on the Reset Device button and choose one of the following options:

- Warm1
- Warm 2
- Warm 3
- Cold

A dialog box appears.

7 Click on the OK button.

Procedure 16-11 To configure the RMD ports

1 Choose Network→NE→Shelf→Card Slot (11QPE24).

2 Right-click on the Card Slot and choose Properties from the contextual menu. The Card Slot 11G Quad Port Pluggable GBE Mux (24 Clients) (Edit) form opens with the general tab displayed.

3 Click on the RMD tab. The Discovery tab appears.

4 Click on the Devices tab. The configured RMD is listed.

5 Choose the RMD and click on the Properties button. The Remote Managed Device (Edit) form opens with the General tab displayed.

6 Click on the Ports tab. The RMD ports are listed.

7 Choose and entry and click on the Properties button. The RMD Port (Edit) form opens with the General tab displayed.

8 Perform one of the following:

a Configure the network port (port facing the service provider) parameters for EFM, CFM, and cEDD device types:

- Traffic Enabled
- Auto-Negotiation
  - Enabled
  - Fallback Enabled

b Configure the customer port (port facing the customer equipment) parameters for cEDD device type:

- Traffic Enabled
- Duplex
- Speed (Mbps)
- Auto-Negotiation
  - Enabled
  - Fallback Enabled



Note 1 — When the device type is CFM or EFM, the Auto-Negotiation Fallback Enabled parameter cannot be modified.

Note 2 — When the device type is cEDD, the Traffic Enabled parameter cannot be modified on network port and the Auto-Negotiation Fallback Enabled parameter cannot be modified on customer port.

9 Click on the OK button to save the configuration.

Procedure 16-12 To configure Ethernet CFM for an RMD

1 Perform steps 1 to 7 of Procedure 16-1.

2 Associate an RMD with the MEG.

i Choose Tools→Ethernet CFM→Maintenance Domain Policies and choose an MD in the list.

ii Click on the Properties button. The Maintenance Domain Global Policy (Edit) form opens.

iii Click on the Global Maintenance Entity Group tab and click on the Search button. A list of global MEGs appears.

iv Choose a global MEG and click on the Properties button. The Global Maintenance Entity Group (Edit) form opens.

v Click on the NE Maintenance Entity Group tab.

vi Click on the Create button. The NE Maintenance Entity Group (Create) form opens with the General tab displayed.

vii Click on the Select button in the Site panel. The Select Site form opens.

viii Click on the Search button. A list of sites is displayed.

ix Choose the 1830 PSS device where RMD is configured and click on the OK button. The Select Site form closes, and the site information is displayed on the NE Maintenance Entity Group (Create) form.

x Click on the Select button in the Card/RMD panel. The Select Card/RMD form opens.

xi Choose Remote Managed Device (Remote Managed Device) from the Card Slot (Physical Equipment) drop-down menu.

xii Click on the Search button. A list of supported RMDs is displayed.

xiii Choose an RMD and click on the OK button. The Select Card - NE Maintenance Entity Group form closes, and the card information is displayed on the NE Maintenance Entity Group (Create) form.

xiv Configure the parameters:

- When the device type is CFM, configure the CCM Interval parameter.
- When the device type is cEDD, configure:
  - CCM Interval (set to 1s)
  - MA Format (set to String)
  - MD Level (set to 0)
  - MD Format (set to String or DNS)

xv Click on the OK button. The NE Maintenance Entity Group (Create) form closes and the The Global Maintenance Entity Group (Edit) form appears.

3 Perform one of the following to add a managed MEP to the MEG.

a From Tools→Ethernet CFM→Maintenance Domain Policies:

i Choose Tools→Ethernet CFM→Maintenance Domain Policies and choose an MD in the list.

ii Click on the Properties button. The Maintenance Domain - Global Policy (Edit) form opens with the General tab displayed.

iii Click on the Global Maintenance Entity Group tab.

iv Choose the MEG and click on the Properties button. The Global Maintenance Entity Group (Edit) form opens with the General tab displayed.

v Click on the Managed MEP tab.

vi Click on the Create button. The MEP (Create) form opens with the General tab displayed.

vii Click on the Select button on the Remote Managed Device panel. The Select MEP form opens with the list of line ports displayed.

viii Choose an entry and click on the OK button. The Select MEP form closes and the MEP (Create) form appears.

ix Click on the OK button. The MEP (Create) form closes and the NE Maintenance Entity Group (Edit) form appears.

b From Network→NE→Shelf→Card Slot (11QPE24):

i Choose Network→NE→Shelf→Card Slot (11QPE24).

ii Right-click on the Card Slot and choose Properties from the contextual menu. The Card Slot 11G Quad Port Pluggable GBE Mux (24 Clients) (Edit) form opens with the general tab displayed.

iii Click on the RMD tab. The Discovery tab appears.

iv Click on the Devices tab.

v Choose a device and click on the Properties button. The Remote Managed Device (Edit) form appears with the General tab displayed.

vi Click on the Maintenance Domains tab and click on the Create button. The Maintenance Domain - Local Policy (Create) form opens.

vii Configure the parameters:

- MD Mgr Object ID
- Maintenance Domain ID
- Name Type
- Name
- Description
- Level

viii Click on the Apply button.

17 — 1830 PSS Protocol configuration

17.1 Protocol configuration *17-2*

17.2 Protocol configuration procedures *17-3*

17.1 Protocol configuration

You can view, create, modify, and delete the routing and forwarding parameters on the 1830 PSS device. You can use the Routing view in the 5620 SAM GUI navigation tree to manage the functions. See “Protocol configuration” in the *5620 SAM User Guide* for more information.

The following protocols are supported on the 1830 PSS devices:

- OSPFv2
- IGMP

OSPFv2

OSPFv2 is a hierarchical link-state interior gateway protocol that operates within ASs and is used in IP networks. OSPF packets are routed based on the destination IP address of the IP packets. The 1830 PSS-32 and 1830 PSS-16 support multi-area OSPFv2 to improve the DCN setup and scalability. You can create, modify, or delete a multi-area OSPFv2. The 1830 PSS devices support creating and deleting system-level OSPF areas. See “OSPF configuration procedures” in the *5620 SAM User Guide* for information about how to configure OSPF.

IGMPv2

IGMP is a multicast protocol that service providers can use to establish multicast group memberships on a LAN. Within the LAN, end users use IGMP to communicate with a local multicast router, which then uses PIM to distribute the IGMP messages to other local and remote multicast routers. Multicast routers send regular membership queries to IGMP hosts which respond with membership reports. Multicast routers can use the reports to determine which hosts are interested in receiving specific multicast messages. The IGMP operates above the network layer on IPv4 networks. See the section, “IGMP configuration procedures” in the *5620 SAM User Guide* for more information about how to configure IGMP.

Table 17-1 Protocol configuration references

Topics	Chapter	Document
Protocol configuration overview	Protocol configuration	*5620 SAM User Guide*
OSPF configuration procedures	Protocol configuration	*5620 SAM User Guide*
IGMP configuration procedures	Protocol configuration	*5620 SAM User Guide*

17.2 Protocol configuration procedures

The following procedures describe how to create, modify and delete a multi-area OSPF. See the *5620 SAM Optical Parameter Reference* for more information.

Note 1 — Multi-area OSPF is supported only on the 1830 PSS-32, and 1830 PSS-16, Release 3.6.5 or later.

Note 2 — You need the 32-bit unique router ID before you can configure OSPF.

Procedure 17-1 To create a multi-area OSPFv2

1 Choose Routing from the navigation tree view selector.

2 Choose Network→1830 PSS→Routing Instance→OSPFv2.

3 Right-click on OSPFv2 and choose Create Area. The Area Site (Create) form opens. The NE has a default area.

4 Configure the parameters in the Routing Instance panel:

- Area ID
- Type
  - Normal
    Configure Virtual Link IP
  - NSSA
    Configure NSSA Router Translation
    Configure ABR Default Route Cost
  - NSSA Totally Stub
    Configure NSSA Router Translation
    Configure ABR Default Route Cost
  - Stub
    Configure ABR Default Route Cost
  - Totally Stub
    Configure ABR Default Route Cost
- Area Index
- DNS Opaque LSAs Distributed
- Wavekey Opaque LSAs Distributed
- Virtual Link IP

Note 1 — You can enable the DNS Opaque LSAs Distributed and Wave key Opaque LSAs Distributed parameters for only one of the OSPF areas on the 1830 PSS.

Note 2 — You cannot configure the Type parameter for a backbone area routing instance.

Note 3 — You can create up to three OSPF areas, in addition to the default backbone area (0.0.0.0).

5 Click on the Apply button. The area site is created.

6 Click on the OK button. The Area Site (Create) form closes, and a dialog box appears.

7 Click on the Yes button.

Procedure 17-2 To create an OSPFv2 area range

1 Choose Routing from the navigation tree view selector.

2 Choose Network→1830 PSS NE→Routing Instance→OSPFv2→Area.

3 Right-click on an Area icon and choose Properties. The Area Site (Edit) form opens with the General tab displayed.

4 Click on the Area Range tab.

5 Click on the Create button to add an area range. The Area Range (Create) form opens.

6 Configure the parameters:

- Network
- Prefix Length
- Effect

7 Click on the OK button. The Area Range (Create) form closes, and an icon for the new range appears in the navigation tree under the OSPFv2 area.

Procedure 17-3 To modify a multi-area OSPFv2

1 Choose Routing from the navigation tree view selector.

2 Choose Network→1830 PSS→Routing Instance→OSPFv2.

3 Select the area to be modified on the 1830 PSS. Right-click on Area and choose Properties. The Area Site (Edit) form opens.

4 Modify the parameters in the Routing Instance panel:

- Type
- DNS Opaque LSAs Distributed
- Wavekey Opaque LSAs Distributed



Note — You cannot modify the Type parameter for a backbone area routing instance.

5 Click on the Apply button. The area site is modified.

6 Click on the OK button. The Area Site (Edit) form closes, and a dialog box appears.

7 Click on the Yes button.

Procedure 17-4 To delete a multi-area OSPFv2

1 Choose Routing from the navigation tree view selector.

2 Choose Network→1830 PSS NE→Routing Instance→OSPFv2→Area.

3 Right-click on the selected area and choose Delete. A dialog box appears.

4 Click on the Yes button. The selected area is deleted.

18 — 1830 PSS service tunnels

18.1 Service tunnels overview *18-2*

18.2 Ethernet (G.8032) ring protection *18-2*

18.3 Ethernet ring procedures *18-4*

18.1 Service tunnels overview

A service tunnel is an entity that is used to unidirectionally direct traffic from one device to another device. The service tunnel is provisioned to use a specific encapsulation method, such as GRE or MPLS, and the services are then mapped to the service tunnel.

On the Optical Transport Service (Edit) form, the Service Tunnels tab lists service tunnel objects (for example, SDPs, Ethernet rings, Ethernet tunnels, and other services) that are currently used by the service you are querying. When you click on the associated Discover Service Tunnels button, any previously discovered service tunnels on the service are removed and a manual rediscovery of the service tunnel is initiated, based on direct usage and current service configurations.



Note — The 11QPE24 cards support ERP. The ODU trails are added as tunnels for ERP. To create ODU trails between the cards, see Procedure 14-4.

The Flow-through Services tab lists all other services that are currently using the object you are querying as a service tunnel. When you click on the associated Discover Flow-through Services button, any previously discovered flow-through services are removed and a manual rediscovery of the flow-through service is initiated, based on direct usage and current service configurations.

You can manage service tunnels on the 1830 PSS device. See “Configuring service tunnel procedures” in the *5620 SAM User Guide* for more information about how to configure and manage service tunnels.

Table 18-1 Service tunnel references

Topics	Chapter	Document
Service tunnel overview	Service tunnel	*5620 SAM User Guide*
Ethernet (G.8032) rings	Service tunnel	*5620 SAM User Guide*
Automatic Ethernet ring creation	Service tunnel	*5620 SAM User Guide*
To perform an Ethernet (G.8032) ring audit	Service tunnel	*5620 SAM User Guide*

18.2 Ethernet (G.8032) ring protection

The 5620 SAM supports Ethernet ring protection on the Ethernet optical transport services on the 11QPE24 card for the 1830 PSS-32, 1830 PSS-16, and 1830 PSS-4 devices. ERP is used for the network protection of Ethernet services. See the section, “Ethernet (G.8032) rings” in the *5620 SAM User Guide* for more information.

ERP

ERP switching offers ITU-T G.8032 specification compliance to achieve resiliency for carrier Ethernet networks. ERP keeps one link in the ring blocked to user traffic. You can run multiple ring sessions on the same physical ring with different blocked links in session. ERP enables load balancing on the ring when traffic patterns allow.

Standalone rings are supported only on uplink (NNI) ports. Multiple non-interworking ring instances are also supported.

VPLS can use ERP. Epipes behave as two-node ERPs. All VPLSs may be protected by one Ethernet ring instance, or divided among several rings.

ERP is represented on uplink (NNI) ports. ERP switching is initiated by NNI port failures, and Ethernet OAM CCM link faults. The faults are detected by Down MEPs on the ring ports, for a ring topology in which links are not directly connected. Although ring switching can be held off to allow underlying protection to operate first, the advantage of ERP is the (~50 ms) protection switching.

Ethernet rings use the G.8032 standard protocol for control, and participating nodes exchange protocol messages using Y.1731 defined OAM frames called R-APS. The R-APS frames are sent by MEPs that belong to an MA not associated with a service, and positioned on ring paths. The frames are tagged and must be configured with a unique VID (that is, not shared with a service or other rings) when the ring port has dot1q encapsulation, and with a unique outer VID when the ring port has QinQ encapsulation. Ethernet rings are only on individual NNI ports which use QinQ encapsulation.

Automatic Ethernet ring creation

The 5620 SAM automatically unites Ethernet ring elements in the network into Ethernet rings, and creates path objects to link endpoints within the ring. In order for the 5620 SAM to create an Ethernet ring, the following must exist:

- at least two Ethernet ring elements with path endpoints. See Procedure 18-1 for more information about configuring Ethernet ring elements.
- optical links between the participating X ports of the 11QPE24 card. See Procedure 9-9 for more information about configuring optical links between ports.
- ODU trails between the participating X ports of the 11QPE24 cards. See Procedure 14-4 for more information about configuring ODU trails.

See the *5620 SAM User Guide* for more information about automatic Ethernet ring creation.

Service provisioning on Ethernet (G.8032) rings

The 5620 SAM accelerates the provisioning of VPLS instances on Ethernet (G.8032) rings by automatically creating the control and data services on the rings. Services are configured on Ethernet (G.8032) rings in the same way as service tunnels. You can create Ethernet (G.8032) rings using the 5620 SAM GUI. See the *5620 SAM User Guide* for more information about Ethernet rings and associated control and data services.

18.3 Ethernet ring procedures

This section describes how to configure Ethernet ring elements and interconnections for Ethernet sub-rings on the 11QPE24 card.

Procedure 18-1 To configure an Ethernet ring element

1 Choose Manage→Service Tunnels from the 5620 SAM main menu. The Manage Service Tunnels search form opens.

2 Click on the Create button.

3 Choose Ethernet Ring Element from the contextual menu. The Select Network Elements form opens.

4 Choose the participating 1830 PSS devices from the list.

5 Click on the OK button. The Select ELAN elements form opens.

6 Choose the participating 11QPE24 cards from the list.

7 Click on the OK button. The Ethernet Ring Element (Create) form opens with the General tab displayed.

8 Configure the parameters:

- Description
- Administrative State
- Compatible Version
- Guard Time (deciseconds)
- Revert Time (seconds)
- Ring Protection Link Type
- Ring Node ID

9 Configure the sub-ring:

i Set the Type parameter to Non Virtual Link in the Sub-Ring panel.

ii Click on the Select button beside the Ethernet Ring ID parameter in the Sub-Ring panel. The Select Ethernet Ring Element form opens.

iii Choose the ring element from the list and click on the OK button.

10 Click on the OK button. The Ethernet Ring Element (Create) form closes.

Procedure 18-2 To create an Ethernet (G.8032) ring

This procedure describes how to create an Ethernet (G.8032) ring and its associate control service using the 11QPE24 cards.

The following are the prerequisites for configuring Ethernet rings using 11QPE24 cards:

- Set the Mode parameter to Access and select the L2Uplink checkbox on the Physical Port (Edit) form of the participating X ports of the 11QPE24 cards.
- Configure optical links between the participating X ports of the 11QPE24 cards.
- Configure ODU trails between the participating X ports of the 11QPE24 cards.

1 Choose Manage→Service Tunnels from the 5620 SAM main menu. The Manage Service Tunnels search form opens.

2 Click on the Create button.

3 Click on Ethernet Ring from the contextual menu. The Ethernet Ring (Create) form opens.

4 Configure the following parameters:

- Mgr ID
- Auto-Assign ID
- Element ID
- Name
- Description
- Hold Time Down
- Hold Time Up (deciseconds)
- Revert Time (seconds)
- Guard Time (deciseconds)
- Compatible Version
- Auto Create Global MEG
- Maintenance Domain ID
- CCM Interval
- Run CCM On Create



Note 1 — If you enable the Auto Create Global MEG parameter, the ETH-CFM tab will display all associated Global MEGs created for this Ethernet Ring.

Note 2 — If path discovery generates Ethernet Ring paths, then the Auto Create Global MEG, Maintenance Domain ID, CCM Interval, and Run CCM on Create parameters are not propagated to the per-path CFM Continuity Check tab configuration. Auto-generation of a MEG and/or MEPs can be configured on a per-path basis.

Alternatively, if path discovery is not operational (that is, no Ethernet Ring paths are populated into the Ethernet Ring), then the General tab Path CFM Defaults parameters are propagated and a MEG and/or MEPs are generated upon manual creation of the Ethernet Ring paths.

5 Click on the Apply button. The Ethernet Ring (Edit) form opens with the General tab displayed.

6 Click on the Components tab.

7 Right click on Ring Elements and choose one of the following items from the contextual menu.

a Create Ethernet Ring Element.

i Perform steps 4 to 10 in Procedure 18-1 to create an Ethernet Ring Element. When you are done, the element will be displayed on the Components tab in Ethernet Ring form.



Note 1 — You must create a ring element for each site that will be part of the Ethernet ring.

Note 2 — The Ethernet ring can only have one element configured as an RPL owner and one element configured as an RPL neighbor. This is configured using the element's Ring Protection Link Type parameter.

Note 3 — The parameter values specified in step 4 are initially populated in the Ethernet Ring Element form when creating a ring element from the Components tab. However, you can change these as required.

ii Repeat step i to create the other required ring elements.

iii Go to step 8.

b Add an existing Ethernet Ring Element.

i The Select Element form opens.

ii Click on the Search button and select an element.

iii Click OK.

The element will be displayed on the Components tab in Ethernet Ring form.



Note 1 — You must select a ring element for each site that will be part of the Ethernet ring.

Note 2 — The Ethernet ring can only have one element configured as an RPL owner and one element configured as an RPL neighbor. This is configured using the element's Ring Protection Link Type parameter.

Note 3 — When you add an existing Ethernet endpoint, the parameter values specified in step 4 are not populated into the properties of that endpoint.

8 Create an Ethernet Path:

i Right click on the Paths object on the navigation tree and choose Create Ethernet Ring Path from the contextual menu to create a path. The Ethernet Path (Create) form opens with the General tab displayed.



Note — You must create a path for each element in the ring. Each element (site) in the ring will therefore have two endpoints (from two different paths) associated with it.

ii Configure the parameters:

- Auto-Assign ID
- ID
- Description

iii Click on the Endpoints tab to configure the following parameters for endpoints A and B.

- Path ID
- Ring Protection Link Type
- Administrative State
- R-APS Tag (Outer Encapsulation Value)
- R-APS Tag (Inner Encapsulation Value)



Note 1 — Path endpoints cannot be administratively enabled if:

- the R-APS Tag or Member Port parameters are not configured
- a MEP is not configured on the path endpoint

Note 2 — Only one endpoint within the entire Ethernet ring must have its Ring Protection Link Type parameter configured as Ring Protection Link End. All other endpoints in the Ethernet ring must have this parameter set to a value of Normal.

iv Perform the following steps to configure the endpoints A and B.

- Click on the Select button in the Member Port section. The Select Member Port form opens.
- Choose the participating X port of the 11QPE24 card as an endpoint.
- Click OK. The endpoint parameters are automatically populated.

v Click on the OK button. The Ethernet Ring (Edit) form reappears.

9 Click on the Apply button. A dialog box appears.

10 Click on the Yes button. The dialog box closes and the new Path object appears on the navigation tree.

11 Repeat steps 8 to 10 to create other required paths.

12 Configure CFM continuity test:

i Right click on the Path object on the navigation tree and choose Properties from the contextual menu to create a path. The Ethernet Ring Path (Edit) form opens with the General tab displayed.

ii Click on the CFM Continuity Check tab.

iii Reconfigure the following parameters in the Global MEG Auto Creation panel, if required. The values that are initially displayed when you open this tab are the same ones you configured in step 4.

- Auto Create Global MEG
- Maintenance Domain ID
- CCM Interval
- Run CCM On Create

iv Click on the Select button. The Select CFM Test form opens.

v Perform the following steps only if you want choose the CFM test from the list.

- Choose the required CFM test.
- Click on the OK button. The Select CFM Test form closes and the Global ID and ID parameters for the selected test appear on the CFM Continuity Check tab.

vi Perform this step only if you want to create the required CFM test.

- Click on the Create button to create the required CFM test. The Global Maintenance Entity Group (Create) form opens, with the General tab displayed.
- Configure the parameters:
  - Auto-Assign ID
  - Name
  - Description
  - Administrative State
- Configure the Name Format and Name parameters in the Maintenance Entity Group panel. If you set the Name Format parameter to icc-based, the associated name must be 8 to 13 characters.
- Configure the parameters in the Initial MEG Configuration panel:
  - Initial CCM Interval
  - Initial MHF-Creation
  - Initial MIP LTR Priority
- Click on the OK button. The Global Maintenance Entity Group (Create) form closes, and the Select CFM Test form reappears with the new CFM test appearing in the list.
- Choose the new CFM test.
- Click on the OK button. The Select CFM Test form closes and the Global ID and ID parameters for the selected test appear on the CFM Continuity Check tab.

vii Configure the Run Continuity Check Protocol parameter and click on the OK button. The Ethernet Ring Path (Edit) form closes and the Ethernet Ring (Edit) form reappears.

viii Click on the Apply button.

ix Repeat steps i to viii for all the configures paths.

13 Turn up the ring elements and paths:

i Right click on the Site object on the navigation tree and choose Turn Up from the contextual menu. A dialog box appears.

ii Click on the Yes button. The dialog box closes.

iii Repeat steps i to ii for all the configured ring elements and paths.

14 Create a Control service for the Ethernet (G.8032) Ring:

i Click on the Create Control Service button. The Create Control Service form opens.

ii Click on the Select button beside the Customer field and select a customer from the Select Customer form.

iii Configure the following parameters if your Ethernet Ring is an Ethernet Virtual link sub-rings.

- Upper Ring Outer Encap
- Upper Ring Inner Encap

iv Click on the Select button beside the Control Service Template field if required and select a template from the Select Control Service Template form.



Note 1 — Only use the Control Service Template if you need to customize the parameter fields associated with the sites or SAPs such as the description or name.

Note 2 — If you need to create a Control Service Template, choose, Manage→Templates from the 5620 SAM main menu. Click on the Browse Example button and select the Ethernet Ring example. For more information about creating service tunnel templates, see "Managing templates" in the *5620 SAM Scripts and Templates Developer Guide*.

Note 3 — If a template is not specified, all created objects will use their default property values.

v Click on the OK button. A dialog box opens.

vi Click on the Yes button. The dialog box closes and the VPLS service (Edit) form opens.

vii Configure the Service Name parameter and click on the Apply button. The VPLS service is configured

viii Click on the Topology view to view the topology of the Ethernet ring.

Procedure 18-3 To configure interconnect for Ethernet sub-rings

1 Choose Manage→Service Tunnels from the 5620 SAM main menu. The Manage Service Tunnels search form opens.

2 Choose Ethernet Ring from the object drop-down menu and click on the Search button.

3 Double-click on the required ring in the list. The Ethernet Ring (Edit) form opens.

4 Click on the Components tab.

5 Right-click on Interconnects and choose Create Ethernet Ring Interconnect from the contextual menu. The Ethernet Ring Interconnect (Create) form opens.

6 Set the Type parameter to Non Virtual Link in the Element A and Element B panels.

7 Click on the Select button beside the ID parameter in the Element A panel. The Select Element - Ethernet Ring Interconnect form opens.

8 Choose the required element from the list and click on the OK button. The Select Element - Ethernet Ring Interconnect form closes and the Ethernet Ring Interconnect (Create) form reappears.

9 Click on the Select button beside the Interconnected Ethernet Ring Element parameter in the Element A panel. The Select Ethernet Ring Element - Ethernet Ring Interconnect form opens.

10 Choose the required Ethernet ring element and click on the OK button. The Select Ethernet Ring Element - Ethernet Ring Interconnect form closes and the Ethernet Ring Interconnect (Create) form reappears.

11 Click on the Select button beside the ID parameter in the Element B panel. The Select Element - Ethernet Ring Interconnect form opens.

12 Choose the required element from the list and click on the OK button. The Select Element - Ethernet Ring Interconnect form closes and the Ethernet Ring Interconnect (Create) form reappears.

13 Click on the Select button beside the Interconnected Ethernet Ring Element parameter in the Element B panel. The Select Ethernet Ring Element - Ethernet Ring Interconnect form opens.

14 Choose the required Ethernet ring element and click on the OK button. The Select Ethernet Ring Element - Ethernet Ring Interconnect form closes and the Ethernet Ring Interconnect (Create) form reappears.

15 Click on the OK button. The Ethernet Ring Interconnect (Create) form closes. The interconnection is displayed in the navigation tree of the Ethernet Ring (Edit) form.

19 — 1830 PSS MC LAG group

19.1 MC LAG overview *19-2*

19.2 MC LAG procedures *19-2*

19.1 MC LAG overview

A LAG is a group of physical ports that form one logical link between two NEs to increase bandwidth, allow load balancing, and provide seamless redundancy. LAG support over multiple devices provides node-level redundancy in addition to link-layer redundancy using a switchover function. An MC LAG configuration provides redundant L2 access connectivity that extends beyond link-layer protection by allowing two devices to share a common LAG endpoint.

An MC LAG configuration includes one active member NE and one standby member NE. The active and standby NEs synchronize the link state information to facilitate link-layer messaging between an access node and each NE. The active and standby NE coupling provides a synchronized forwarding plane to and from the access node. LACP is used to manage the active and standby states of the available LAG links; only the links of one member NE are active at a time. See "MC LAG groups" in the *5620 SAM User Guide* for more information about the MC LAG.

Table 19-1 MC LAG references

Topics	Chapter	Document
MC LAG groups overview	MC LAG groups	*5620 SAM User Guide*

19.2 MC LAG procedures

This section describes how to configure MC LAGs.

Procedure 19-1 To configure an MC LAG group

1 Choose Manage→Redundancy→Node Redundancy from the 5620 SAM main menu. The Manage Node Redundancy form opens.

2 Choose MC PSS Peer Group (Multi-Chassis) from the object drop-down menu.

3 Click on the Create button. The MC PSS Peer Group (Create) form opens.

4 Click on the Select button beside the Name parameter in the First Element panel to choose the first service site for the peer group. The Select Service Site - MC PSS Peer Group form opens.

5 Choose an NE in the list and click on the OK button. The Select Site - MC Peer Group form closes, and the card slot and service site information are displayed on the MC PSS Peer Group (Create) form.

6 Configure the parameters:

- Source ID
- Peer Name
- Description

7 Click on the Select button beside the Name parameter in the Second Element panel to choose the second service site for the peer group. The Select Service Site Info - MC PSS Peer Group form opens.

8 Repeat steps 5 and 6 for the Second Element panel.

9 Click on the Apply button. The MC PSS Peer Group (Create) form refreshes with additional tabs.

10 Click on the Associated Groups tab.

11 Right-click on the MC LAG Group object in the navigation tree and choose Create MC PSS LAG Group. The MC PSS LAG Group (Create) form opens.

12 Configure the parameters:

- LACP Key
- System ID
- System Priority
- Description

13 Specify the LAG for the first MC LAG site.

i Click on the Select button beside the LAG Name parameter in the First Site panel. The Select LAG - MC PSS LAG Group form opens.

ii Choose a LAG in the list and click on the OK button. The Select LAG - MC PSS LAG Group form closes and the MC PSS LAG Group (Create) form displays the LAG information.

14 Specify the LAG for the second MC LAG site.

i Click on the Select button beside the LAG Name parameter in the Second Site panel. The Select LAG - MC PSS LAG Group form opens.

ii Choose a LAG in the list and click on the OK button. The Select LAG - MC PSS LAG Group form closes and the MC PSS LAG Group (Create) form displays the LAG information.

15 Click on the OK button. The MC PSS LAG Group (Create) form closes. The new MC LAG object is displayed below the MC LAG Group object in the navigation tree on the MC PSS Peer Group (Edit) form.

16 Close the MC PSS Peer Group (Edit) form.

17 Close the Manage Node Redundancy form.

1830 PSS service management

20 — 1830 PSS optical transport service management

21 — 1830 PSS VPLS management

22 — 1830 PSS mirror service management

20 — 1830 PSS optical transport service management

20.1 Optical transport services overview *20-3*

20.2 Optical protection *20-3*

20.3 ESNCP *20-4*

20.4 OPS protection *20-4*

20.5 Y-cable protection *20-7*

20.6 Dual-stage multiplexing *20-8*

20.7 Regeneration services on the 1830 PSS *20-8*

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20.9 Administrative state transitions for service and trail *20-11*

20.10 Administrative and operational states *20-13*

20.11 Procedures to configure optical transport services *20-17*

20.12 Procedures to configure service using 11DPM12 card *20-33*

20.13 Procedures to configure OPS protection services *20-37*

20.14 Procedures to configure dual-stage muxing services *20-39*

20.15 Procedures to configure APS groups ***20-41***

20.16 Procedures to configure services using LAGs ***20-44***

20.17 Procedures to configure timeslots ***20-46***

20.18 Procedures to configure VTS maps and XCs ***20-46***

20.1 Optical transport services overview

An optical transport service is a wavelength that traverses the network between two endpoints, which can be tandem wavelengths in some cases. The path that the service takes through the network is defined by the 5620 SAM using shortest path algorithm and the NE adjacencies.

An XC is the path that the service takes through an NE. A cross-connect is defined by the ingress and egress points for the service on the NE. The NE physical topology defines the internal path that the service takes through the NE.

The 5620 SAM supports the following:

- identification of adjoining XCs and management of linked XCs as an optical transport service
- creation, deletion, and discovery of optical transport services, when there are no XCs
- discovery of optical transport service between OTs of the vendor network

Each service is assigned a trail identifier and a pair of Wavelength Tracker wave keys. The trail identifier, ITU channel number (wavelength) and wave key pair are unique in the network. See Tables 11-3, 11-4, and 11-5 for wave key information.

Because optical transport services create transport connectivity between router ports, they must be created before IP services. Services are created by selecting the endpoints. See Procedures 20-1 and 20-2 to create services. The 5620 SAM supports optical transport services between:

- two 1830 PSS devices
- two non-1830 PSS devices, that is, 7750 SR; 7450 ESS; 7705 SAR; 7210 SAS, and 7950 XRS
- an 1830 PSS device and a non-1830 PSS device, that is, 7750 SR; 7450 ESS; 7705 SAR; 7210 SAS, and 7950 XRS

20.2 Optical protection

The 5620 SAM supports the following protection types:

- Diverse route
- ESNCP protected
- OPS protected
- Y-Cable protected

Protection level

Services or trails display the protection level as Unprotected, Protected or Segment Protected on the service and trail configuration forms.

The protection level is displayed as Protected if the service or trail is protected by ESNCP, Y-Cable or OPS, or if all server connections of the service or trail are protected. If only a few or none of the server connections are protected, the protection level of the service or trail is displayed as Unprotected and Segment Protected respectively.

20.3 ESNCP

ESNCP is a line side (network side) protection mechanism which protects against loss of the line signal due to an OTM failure, fiber interruption, or a malfunction of an intermediate NE node. The 5620 SAM supports ESNCP protection on the following OTs:

- 4DPA2
- 4DPA4
- 11DPE12
- 11DPE12A
- 11DPE12E
- 11DPM12
- 11QPA4
- 11QPEN4

ESNCP protection is implemented by permanent head-end bridging and dynamic tail-end selection.

The 5620 SAM supports ESNCP across mate 11DPE12A cards. LAG is available on a single card and cannot be used in conjunction with ESNCP across cards.

20.4 OPS protection

The OPS cards provide photonic protection switching in DWDM configurations for channels supported in the C-band, allowing users to provide 1+1 APS protection. There are two types of OPS cards:

- OPSA
- OPSB

The following are the protection modes for the OPSA card:

- OLP
- OCHP
- OMSP

For OPS protected service provisioning, you can only specify the following ports as termination points:

- 11STAR1 client port
- 11STAR1A client port
- 11STGE12 client port
- 11STMM10 client port
- 11QPA4 client port
- 11QPEN4 client port
- OPSA SIG
- 112SNX10 client port
- 112SNA1 client port
- 112SCA1 client port
- 112SCX10 client port

OCHP

The Protection Mode parameter on the Card Specifics form of the OPSA card is OCHP by default. The Assigned Rate parameter for the SIG, A, and B ports is OCH. See Procedure 20-20 to configure an OCHP protected service.

OLP

The Protection Mode parameter on the Card Specifics form of the OPSA card is set to OLP. The Assigned Rate parameter for the SIG, A, and B ports is OTS. The OLP is a 1+1 protection type that provides two separate fiber connections between adjacent network elements. The OLP provides optical bridging at the source end and switch selection of one of the two signals at the receiving end. The 5620 SAM supports OLP as the protection type for 1830 PSS-32 and 1830 PSS-16 in the ROADM configuration using WR2-88, WR8-88A, and WR8-88AF. The OLP is supported with manual power management. The following OT cards support OLP protection:

- 112SNA1
- 112SNX10
- 11STAR1A
- 11DPM12
- 11DPE12E
- 11DPE12A
- 11QPA4

See Procedure 20-21 to configure an OLP protected service.

OMSP

The Protection Mode parameter on the Card Specifics form of the OPSA card is set to OMSP. The Assigned Rate parameter for the SIG, A, and B ports is OTS. When the OPSA card is used in OMSP protection mode, in the transmit direction, the SFD and ITLB total output channels are separated into two optical multiplex sections routed to different DWDM lines. In the receive direction, the OPSA selector selects one of the two lines as the active path based on power monitoring or manual selection.

The 5620 SAM support for OMSP protection includes:

- configuration of OMSP protection on the OPSA cards. See Procedure 9-15 for information about configuring OMSP protection on the OPSA card.
- creation of OMSP protected service for FOADM configuration. See Procedure 20-19 for information about creating an optical transport service.

The following SFDs and ITLB cards are supported with OMSP protection:

- SFD-5
- SFD-8
- SFD-40
- SFD-40B
- SFD 44
- ITLB

The following OT cards support OMSP protection:

- 112SCX10
- 11QPA4
- 11STAR1
- 11STMM10
- 11DPM12
- 11QPEN4

OPSB

OPSB is an optical protection switch card supporting client-side OPS protection. The OPSB card uses non-latching switch, which means that upon power failure, the OPSB automatically switches back to the default path. The protection mode for the OPSB card is OTUP.

Client-side OPS protection has the following characteristics.

- Signal rate, frequency, pluggable module type, and OPR mode are the same at the client ports of the working and protection OTs.
- LOS propagation mode is set to LASER OFF.
- Encapsulation mode can be the same or different at the client ports of the working and protection OTs.
- Frequencies supported at the client port that connects to OPSB A and B ports are 1310 nm and 1550 nm.

The 5620 SAM support for client-side OPS protection includes:

- configuration of client-side OPS protection on the OPSB cards. See Procedure 9-16 for information about configuring client-side OPS protection on the OPSB cards.
- creation of client-side OPS protection service using the OPSB cards. See Procedure 20-18 for information about creating the client-side OPS protected optical transport service.
- creation of client-side OPS protection service using the OPSB card linked to an OT of an 1830 PSS device and another OT of a third-party device. The OT of the 1830 PSS device is linked to the A port of the OPSB card and the OT of the third-party device is linked to the B port of the OPSB card.



Note — The third-party device is transparent to 5620 SAM. Hence, an optical link needs to be created from the B port of OPSB card of an 1830 PSS device to the B port of the OPSB card of another 1830 PSS device.

The following OT cards support client-side OPS protection:

- 11QPA4
- 11STAR1
- 11STAR1A
- 11STMM10

The following combinations of OTs as working and protection are supported in the client-side OPS protection:

- 11QPA4 with 11QPA4
- 11QPA4 with 11STAR1
- 11QPA4 with 11STAR1A
- 11STAR1 with 11STAR1
- 11STAR1A with 11STAR1
- 11STAR1A with 11STAR1A
- 11STMM10 with 11STMM10

20.5 Y-cable protection

The Y-cable protection is a network side protection mechanism that protects the line card, client side laser, network side laser, and network side fibers. The protection is based on a pair of OT cards at the near end and far end of the network. The protection can be used with any supported type of OT, but the near-end working OT must be connected to the far-end working OT and the near-end protection OT must be connected to the far-end protection OT. The working and protection ports must be provisioned for the same signal rate, and format and must be configured with the same threshold values at both ends of the network.



Note 1 — The working and protection OTs must be the same type. The 5620 SAM does not allow service creation when card types are different.

Note 2 — The near-end and far-end OTs must be the same type. The 5620 SAM allows service creation when card types are different.

Y-cable support on working and protection OTs

43SCX4E card

The Y-cable protection is supported on the 43SCX4E OT card. The 43SCX4E is a double width variant, full height card that is supported on the 1830 PSS-32. The card is similar in functionality to the 43SCX4 card.

11QPEN4 card

The Y-cable protection is supported on the 11QPEN4 OT card. The working and protection OTs must be the same type at the near and far end. For example, there must be an 11QPEN4 card at each end, and near-end port C1 must be connected to the far-end port C1. The same applies to port C2. Unidirectional Y-cable is supported with CBR client mapping, but is not supported with GFP-F client mapping. Up to two protection groups can be created on the 11QPEN4 card. A protection group consists of two line ports and one client port. Each protection group operates independently of the other group, with its protection state.

The 11QPEN4 and the 11QPA4 cards are channels in the Y-cable protection group and are independent channels on working and protection boards. The channel numbering at one end may not be the same as the channel numbering at the other end. For example, channel C1 and L1 in the near-end working and protection pairs can connect to channel L2 and C2 at the far-end working. The protection pairs form an end-to-end protected service.

An 11QPEN4 OTU2 client port (OT A) can be connected to 11DPE12 and 11DPE12E line ports (OT B). Up to four 11DPE12 and 11DPE12E OTs can be connected to one 11QPEN4 card. The configuration is encrypted for GbE services.

An 11QPEN4 OTU2 client port (OT A) can be connected to an 11DPM12 line port (OT B). Up to four 11DPM12 OTs can be connected to one 11QPEN4 card. The configuration is encrypted for GbE, FC100, FC200, and FC400 services.



Note 1 — The operational mode on the 11QPEN4 line port is Add/Drop only.

Note 2 — The client ports on the 11QPEN4 card cannot be assigned to the OC192/STM64 rate.

Note 3 — The E-SNCP and Y-cable must not coexist on the 11QPEN4 card. For example, if at least one E-SNCP protection group is created on a board, the Y-cable protection must not be on the board and vice versa.

11DPE12A

The 5620 SAM supports Y-cable (for 1 GigE client ports) on mate 11DPE12A cards.

20.6 Dual-stage multiplexing

Dual-stage multiplexing is supported on the 1830 PSS-16 and 1830 PSS-32 shelves. A signal is added to an OT client port and multiplexed on a line port with a larger bandwidth. The signal is added a second time at a higher rate OT and multiplexed to the line port. The reverse path occurs if the signal is dropped. See Procedure 20-22 and the *Alcatel-Lucent 1830 Photonic Service Switch User Provisioning Guide* for more information.

20.7 Regeneration services on the 1830 PSS

The 1830 PSS supports provisioning, discovery, and a topological view of the following regeneration services.

- DWDM–DWDM
- DWDM–CWDM
- CWDM–B&W
- DWDM–B&W

To provision the services, see Procedure 20-1. To discover the services, see Procedure 20-3. To view the services in the topological view, see the *5620 SAM User Guide*. The Regen check box is automatically selected when a regen service is created. You can view the Regen parameter on the General tab of the Service Path form.

DWDM–DWDM

DWDM–DWDM single channel OEO regeneration is supported with back-to-back OTs connected through the client ports. Keyed and unkeyed services are supported on the configuration. The following OTs are supported:

- 11STAR1
- 11STAR1A
- 43STA1P



Note — For regeneration on the 43STA1P, the client port rate must be OC768 or STM256. Do not use OTU3.

- 43STX4P
- 43STX4

The regeneration is supported with two single port OTs that have line port operational modes configured for regeneration. Client ports are not used in the configuration. The following OTs are supported:

- 112SA1L (drop shelf only)
- 112SCA1
- 112SNA1
- 112SCX10
- 112SNX10
- 43SCGE1
- 112SX10L (drop shelf only)
- 43SCA1
- 43SCX4
- 43SCX4E
- 43SCX4L (drop shelf only)



Note — For this configuration, the channels can be different on each SFD or CWR port.

DWDM–CWDM

The 1830 PSS-32 supports single channel regeneration for CWDM and DWDM connections and configurations for CWDM bidirectional transmission with DWDM-CWDM (dual-fiber) regeneration, when regeneration OTs are supported. The rate supported for the service is FC200. Keyed and unkeyed services are supported on the configuration. The following OTs are supported:

- 11STAR1 and 11STAR1A OT—line port is connected to the DWDM signal and the client port is connected to the CWDM signal
- 4DPA4 OT (FlexMux only)—one line and an eVOA port are connected to the DWDM signal; the other line and eVOA port are connected to the CWDM signal. The line ports are configured for CrossRegen mode.
- 11QPA4 OT—a line and an eVOA port are connected to the DWDM signal and the associated client port is connected to the CWDM signal



Note — 11QPEN4 supports regeneration services with the 11QPA4 as the A end and Z end of the service.

CWDM-B&W

The CWDM-B&W single channel OEO regeneration is supported when the 1830 PSS-32 and 1830 PSS-1 GBEH devices are operational. The rate supported for the service is 1Gbe. Unkeyed service is supported on the configuration and no cross-connects are created. The following OTs are supported:

- 4DPA4 OT (FlexMux only)—one line and an eVOA port are connected to the CWDM signal and the other line port is connected to the B&W signal. The line ports are configured for CrossRegen mode.
- 11QPA4 OT—a line port is connected to the CWDM signal and the associated client port is connected to the B&W signal.



Note — The 11QPEN4 card supports regeneration services with the 11QPA4 as the A end and Z end of the service.

CWDM-FOADM

Degree-2 CWDM-FOADM is supported on the 1830 PSS. Any symmetrical combination of OMD-based end terminal configuration is supported. The following configurations are supported:

- SFC-2—SFC-2
- SFC-4—SFC-4
- SFC-8—SFC-8

The following OTs are supported:

- 4DPA4
- 11DPE12

DWDM-B&W

The DWDM-B&W single channel OEO regeneration is supported when the 1830 PSS-32, and 1830 PSS-1 GBEH devices are operational. The rate supported for the service is 1Gbe. The following OTs are supported:

- 11STAR1 and 11STAR1A OT—the line port is connected to the DWDM signal and the client port is connected to the B&W signal. Regeneration occurs from client to line.
- 4DPA4 OT (FlexMux only)—one line and an eVOA port is connected to the DWDM signal and the other line port is connected to the B&W signal. The line ports are configured for CrossRegen mode
- 11QPA4 OT—a line and an eVOA port are connected to the DWDM signal and the associated client port is connected to the B&W signal



Note — The 11QPEN4 card supports regeneration services with the 11QPA4 as the A end and Z end of the service.

20.8 Viewing optical services on the 5620 SAM GUI

The 5620 SAM client GUI provides multiple ways of viewing optical transport services. See Table 20-1.

Table 20-1 Multiple ways of viewing optical transport services

Method	Steps
From NEs on the physical topology map	Right-click on one or more NEs and choose Show Services→Optical Transport Services or Optical Multipoint Transport Services
From NEs on the navigation tree	Right-click on one or more NEs and choose Show Services→Optical Transport Services or Optical Multipoint Transport Services
From the NE properties form	• Right-click on an NE on the navigation tree or the physical topology map and choose Properties • Click on the Services tab on the Card Slot (Edit) form • Click on the Optical Transport Services tab or the Optical Multipoint Transport Services tab
From the card properties form	• Expand the equipment navigation tree to the card level • Right-click on a card and choose Properties • Click on the Services tab on the Card Slot (Edit) form • Click on the Optical Transport Services tab or the Optical Multipoint Transport Services tab
From the 5620 SAM main menu	• Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens. • Choose the Optical Transport Service (Optical Management) option from the drop-down menu and click on the Search button. A list of optical transport services appears.

20.9 Administrative state transitions for service and trail

This section describes the administrative state transitions for services and trails.

Table 20-2 Administrative state transitions for service and trail

Transitions	Termination points	Intermediate 1830 PSS OT ports (client, line, VA, and MVAC G)	OCH XC	VTS XC[8]
Service state changed to Maintenance	Maintenance[1]	Maintenance	Down	Down
ODU trail state changed to Maintenance	Maintenance[1]	Maintenance	Down	-

(1 of 2)

Transitions	Termination points	Intermediate 1830 PSS OT ports (client, line, VA, and MVAC G)	OCH XC	VTS XC[8]
Service state changed from Maintenance to Up[2]	Up	Up	Up	Up
ODU trail state changed from Maintenance to Up[2]	Up	Up	Up	-
Service state changed to AINS	Up with Port AINS enabled[3]	Up with Port AINS enabled[4]	Up	Up
ODU trail state changed to AINS	Up with Port AINS enabled[3]	Up with Port AINS enabled[4]	Up	-
Service state changed from AINS to Up	Up[5]	Up[5]	-	Up
ODU trail state changed from AINS to Up	Up[5]	Up[5]	-	-
Service state changed from AINS to Down	Down[6]	Up[5]	-	Down
ODU trail state changed from AINS to Down	Down	Up[5]	-	-
Service state changed from Down to Up	Up	-	-	Up
ODU trail state changed from Down to Up[7]	Up	Up	-	-
Service state changed from Up to Down	Down	-	-	Down
ODU trail state changed from Up to Down	Down	-	-	-

(2 of 2)

Notes

(1) When the termination point is an 1830 PSS port.

(2) When a service or ODU trail administrative state is changed from maintenance state to Up or AINS state, the 5620 SAM checks if a loopback is configured on any of the OT or MVAC G ports involved in the service or ODU trail. If a loopback is detected on any of the ports, the administrative state change is unsuccessful.

(3) Port AINS can be enabled only when the termination ports are 1830 PSS ports and the Administrative State parameter is not set to Up.

(4) Port AINS can be enabled only when the Administrative State parameter is not set to Up.

(5) Port AINS is disabled.

(6) The administrative state of the termination points of a SubGigE service is unchanged.

(7) When the ODU trail state is changed from Down to Up, then the states of intermediate 1830 PSS non-OT ports change to Up.

(8) The administrative state of a VTS XC cannot be changed when the VTS XC is a part of a protection group. Hence, the administrative state of the ESNCP SubGigE service does not affect the administrative state of the VTS XC.



Note 1 — The 5620 SAM does not support service administrative state transition from Maintenance state to Down state.

Note 2 — The Port AINS state of a physical port is indicated on the hop objects.

20.10 Administrative and operational states

This section explains how the 5620 SAM determines the administrative state and operational state of a service or ODU trail during the service discovery.

Administrative states for service and ODU trails

Table 20-3 Administrative states for service and ODU trails

Service or ODU trail	Termination point A	Termination point Z
Up	Up	Up
Down	Down	Down
Down	Down	Up
Down	Up	Down



Note 1 — If the administrative state of the OT or MVAC G ports that are part of a service path, is changed to maintenance, the service administrative state is changed to maintenance with an inconsistency message in the Optical Transport Service (Edit) form.

Note 2 — If the administrative state of the OT or MVAC G ports that are part of an ODU trail, is changed to maintenance, the administrative state of the ODU trail and all associated services is changed to maintenance with an inconsistency message in the Optical Transport Service (Edit) form of all the associated services.

Note 3 — If none of the OT or MVAC G ports that are part of a service path, is in maintenance state and Port AINS is enabled on one of the ports, the service administrative state is changed to AINS with an inconsistency message in the Optical Transport Service (Edit) form.

Note 4 — If none of the OT or MVAC G ports that are part of an ODU trail, is in maintenance state and Port AINS is enabled one of the ports, the administrative state of the ODU trail and all associated services is changed to AINS with an inconsistency message in the Optical Transport Service (Edit) form of all the associated services.

Administrative states for multipoint service

Table 20-4 Administrative states for multipoint service

Service	Add site	Drop site A	Drop site B
Up	Up	Up	Down
Up	Up	Down	Up
Down	Up	Down	Down
Down	Down	Down	Down

Administrative states for unprotected SubGigE services

Table 20-5 Administrative states for unprotected SubGigE services

Service[(1)]	Source termination point	Destination termination point	Source VTS XC	Destination VTS XC
Up	Up	Up	Up	Up
Down	Up	Up	Up	Down
Down	Up	Up	Down	Up
Down	Up	Up	Down	Down
Down	Up	Down	Up	Up
Down	Up	Down	Up	Down
Down	Up	Down	Down	Up
Down	Up	Down	Up	Up
Down	Up	Down	Down	Down
Down	Down	Up	Up	Up
Down	Down	Up	Up	Down
Down	Down	Up	Down	Up
Down	Down	Up	Down	Down
Down	Down	Down	Up	Up
Down	Down	Down	Up	Down
Down	Down	Down	Down	Up
Down	Down	Down	Down	Down

Note

(1) The administrative state of a VTS XC cannot be changed when the VTS XC is a part of a protection group. The administrative state of the ESNCP SubGigE service does not affect the administrative state of the VTS XC.

Administrative states for Y-cable and OPSB protected services

Table 20-6 Administrative states for Y-cable and OPSB protected services

Service	Working path source	Protection path source	Working path destination	Protection path destination
Up	Up	Up	Up	Up
Up	Up	Up	Up	Down
Up	Up	Up	Down	Up
Up	Up	Down	Up	Up
Up	Down	Up	Up	Up
Up	Up	Down	Up	Down
Up	Down	Up	Down	Up
Down	Up	Up	Down	Down
Down	Up	Down	Down	Up
Down	Down	Up	Up	Down
Down	Down	Down	Down	Up
Down	Down	Down	Up	Down
Down	Down	Up	Down	Down
Down	Up	Down	Down	Down
Down	Down	Down	Down	Down

Operational states

Table 20-7 Operational states for service and ODU trail

Service	Termination point A	Termination point Z
Up	Up	Up
Up	Maintenance	Maintenance
Up	Up	Maintenance
Up	Maintenance	Up
Down	Down	Down
Down	Down	Maintenance
Down	Maintenance	Down
Down	Down	Up
Down	Up	Down

Table 20-8 Operational states for protected multipoint service

Service	Working path	Protection path
Up	Up	Up
Down	Down	Down
Up	Down	Up
Up	Up	Down

Table 20-9 Operational states for Y-cable and OPSB protected services

Service	Working path source	Protection path source	Working path destination	Protection path destination
Up	Up (maintenance)	Up (maintenance)	Up (maintenance)	Up (maintenance)
Up	Up (maintenance)	Up (maintenance)	Up (maintenance)	Down
Up	Up (maintenance)	Up (maintenance)	Down	Up (maintenance)
Up	Up (maintenance)	Down	Up (maintenance)	Up (maintenance)
Up	Down	Up (maintenance)	Up (maintenance)	Up (maintenance)
Up	Up (maintenance)	Down	Up (maintenance)	Down
Up	Down	Up (maintenance)	Down	Up (maintenance)
Down	Up (maintenance)	Up (maintenance)	Down	Down
Down	Up (maintenance)	Down	Down	Up (maintenance)
Down	Down	Up (maintenance)	Up (maintenance)	Down
Down	Down	Down	Down	Up (maintenance)
Down	Down	Down	Up (maintenance)	Down
Down	Down	Up (maintenance)	Down	Down
Down	Up (maintenance)	Down	Down	Down
Down	Down	Down	Down	Down

The transport service operational state and additional information are assigned separately for working paths and for protection paths. The operational state of a path can be Down as a result of many reasons such as:

- Cross Connect Down—at least one of the cross-connections on the path has an operational state set to Down
- Missing Cross Connect—there is a missing cross-connect on the path
- Wavekey Mode Mismatch—there is a wavekey mismatch on the path
- Port (that is not part of CrossConnect) Down—a port that is not part of the cross-connect is operationally Down
- VTS Connection is Down
- Missing VTS Connection
- Missing ODUk Connection

You can click on the Complete Transport Service button to re-create the cross-connections and APS groups if entries are missing and to complete the creation of the service.



Note 1 — You can view the administrative state and operational state information on the hops tab in the protection or working paths in the service.

Note 2 — When you set the administrative state to Down, the 5620 SAM does not generate transport service down or ODU trail down alarms.

Note 3 — If the administrative state of the ODU trail is set to Up from SAM, then the administrative states of all the hops are set to Up.

Note 4 — If the administrative states of the termination points of an OPSB service is set to Up or Down, then the administrative states of the client and SIG ports of the OPSB card is also set to Up or Down respectively.

20.11 Procedures to configure optical transport services

Procedure 20-1 To configure an optical transport service

The following points should be considered before creating the service:

- Configure the rate, transmit frequency, and receive frequency of the terminating sites.
- Create optical links between the terminating sites.

1 Choose Create→Service→Optical→Transport Service from the 5620 SAM main menu. The Optical Transport Service (Create) form opens.

2 Click on the Select button to choose a customer to associate with the optical transport service. The Select Customer - Optical Transport Service form opens.

3 Choose a customer for the optical transport service and click on the OK button. The Select Customer - Optical Transport Service form closes and the Optical Transport Service (Create) form reappears with the customer information displayed on the General tab.



Note — You can create a template for the service at every stage by using the Apply or OK button before you specify the optical sites and termination points. You can use the service template to create a service by adding optical sites and termination points. See steps 7 to 14 to create an optical site.

4 Configure the parameters:

- Service ID
- Auto-Assign ID
- Service Name
- Description
- Direction
- Service Priority
- Force Create OCH XC
- Wavekey Assign Mode
- Administrative State



Note 1 — You can configure the Service ID parameter when the Auto-Assign ID parameter is disabled.

Note 2 — Bidirectional—creates bidirectional cross-connects and displays hops from A to Z and Z to A after service creation

Unidirectional—creates unidirectional cross-connects and displays hops from A to Z after service creation

5 Configure the Rate parameter.

Use the SubGigE option of the Rate parameter to configure a sub rate, QinQ or full rate service. See Table 20-10 for the parameters of the SubGigE services.

Table 20-10 VLAN configuration parameters for SubGigE services

Service	Parameters	
SubRate Service	• CE-VLANID • Committed Info Rate - AZ (Mbps) • Peak Info Rate - AZ (Mbps) • Committed Info Rate - ZA (Mbps) • Peak Info Rate - ZA (Mbps)	• Committed Burst Size - AZ (Kbytes) • Peak Burst Size - AZ (Kbytes) • Committed Burst Size - ZA (Kbytes) • Peak Burst Size - ZA (Kbytes)

(1 of 2)

Service	Parameters	
QinQ Service	QinQ Push-Pop parameters	
	• Is Untagged Traffic Supported • CE-VLANID - AZ (1) • CE-VLANID - ZA (2) • Stack-VLANID - AZ (2) • Stack-VLANID - ZA (2) • Committed Info Rate - AZ (Mbps) • Peak Info Rate - AZ (Mbps) • Committed Info Rate - ZA (Mbps)	• Peak Info Rate - ZA (Mbps) • Committed Burst Size - AZ (Kbytes) • Peak Burst Size - AZ (Kbytes) • Committed Burst Size - ZA (Kbytes) • Peak Burst Size - ZA (Kbytes)
	QinQ Keep parameters	
	• Stack-VLANID - AZ (2) • Stack-VLANID - ZA (2) • Committed Info Rate - AZ (Mbps) • Peak Info Rate - AZ (Mbps) • Committed Info Rate - ZA (Mbps) • Peak Info Rate - ZA (Mbps)	• Committed Burst Size - AZ (Kbytes) • Peak Burst Size - AZ (Kbytes) • Committed Burst Size - ZA (Kbytes) • Peak Burst Size - ZA (Kbytes)
Full Rate Service	• Stack-VLANID - AZ (2) • Stack-VLANID - ZA (2) • Committed Info Rate - AZ (Mbps) • Peak Info Rate - AZ (Mbps) • Committed Info Rate - ZA (Mbps) • Peak Info Rate - ZA (Mbps)	• Committed Burst Size - AZ (Kbytes) • Peak Burst Size - AZ (Kbytes) • Committed Burst Size - ZA (Kbytes) • Peak Burst Size - ZA (Kbytes)

(2 of 2)

Notes

(1) For a line SVID configuration with a QinQ Service Stack-VLAN Tagging Configuration of Push-Pop, the value of CE-VLANID - AZ and CE-VLANID - ZA must be the same.

(2) For a line SVID configuration, the value of Stack-VLANID - AZ and Stack-VLANID - ZA must be the same.

You cannot choose OTU rates for service creation. OTU rates can be configured for OTU trail creation. See Procedure 14-3 for information on creation of an OTU trail.

See the *5620 SAM Optical Parameter Reference* guide for rates applicable that apply to specific cards.

6 Configure the Protection Type parameter. Table 20-11 lists the parameters:

Table 20-11 Protection Type parameter options

Option	Description
Unprotected	No protection

(1 of 2)

Option	Description	
Diverse Route	Diverse Route Details panel: (1) (2) (3) • Select the Use Existing Unprotected Services check box and choose up to two existing unprotected services. • Enter a Service Name for the Working Path Service. • Enter a Service Name for the Protection Path Service. When a diverse route service is created, the existing unprotected services are deleted.	
ESNCP Protected	ESNCP service supports the following cards and configurations:	
	• 4DPA2 • 4DPA4 • 11QPA4 • 11QPEN4 • 11DPE12	• 11DPE12A • 11DPE12E • 1830 PSS-1 GBE • 1830 PSS-1 MD4H
OPS Protected	OPS protected service is created using one of the following cards along with an OPSB card:	
	• 11STAR1 • 11STAR1A • 11STGE12 • 11STMM10 • 11QPA4 • 11QPEN4	• 112SNX10 • 112SNA1 • 112SCA1 • 112SCX10 • 130SCX10
Y-Cable Protected	Configure the parameters in the APS Group panel: • Revert Mode • APS Direction • Wait to Restore (minutes)	
	Y-Cable service supports the following cards:	
	• 11DPM12 • 11QPEN4 • 112SCX10 • 130SCX10 • 11QPA4	

(2 of 2)

Notes

(1) You can also create a diverse route service by choosing two termination points on the A end site, and two termination points on the Z end site.

(2) Diverse route services can only be created by using the 5620 SAM and the services are not part of the service discovery operation.

(3) If you unmanage a diverse route and run the discover transport services operation, the 5620 SAM discovers two unprotected services instead of a diverse route service.

7 Right-click on the Sites object in the navigation tree and choose Create Optical Site. The Select Network Elements - Optical Transport Service form opens with a list of sites.

8 Choose two sites and click on the OK button. The Select Network Elements - Optical Transport Service form closes and the Site A End and Site Z End objects appear on the navigation tree below the Sites object.



Note — You can also create an optical transport service by selecting one or more sites from the physical topology map or the equipment navigation tree. With this method, you do not configure the end site for the chosen site. However, you must configure the termination point for the chosen site. See step 9 to step 12 for information on configuring the termination point for the chosen site.

9 Expand the Site A End object.

10 Right-click on the Termination Point object and choose Create Termination Point. The Termination Point (Create) form opens.

11 Click on the Select button. The Select Port - Termination Point form opens.

12 Choose a port and click on the OK button. The Select Port - Termination Point form closes and the Termination Point (Create) form reappears with the port information.



Note 1 — In this form, only the termination points that can be configured with the specified service rates are displayed.

Note 2 — If a termination point is used in another service, the termination point is not displayed (except for SubGigE services).

Note 3 — If a termination point is configured with another valid rate, the termination point is not displayed.

13 Click on the OK button. The Termination Point (Create) form closes and a dialog box appears.

14 Click on the OK button. The Termination Point Working object appears below the Termination point object.

15 Repeat steps 9 to 14 to configure the Site Z End.

16 See Procedure 20-6 to create a path constraint for the service.

17 Click on the OK button to create the service.



Note — Up to two sites can be specified to create an optical transport service. The sites are named Site A End and Site Z End by the 5620 SAM.

Procedure 20-2 To configure a multipoint transport service

Multipoint transport service is primarily used to transmit video signals to multiple destinations. The client signals to be transmitted are added at the Add site. The multipoint transport service is categorized in one of the following types:

- Drop and Continue
- Multicast

In drop and continue multipoint transport service, some signals are dropped at the intermediate drop and continue sites. The remaining signals are dropped at the drop site. In the multicast multipoint transport service, intermediate drop and continue sites do not exist.

The following are the prerequisites for 11QPA4 multipoint drop and continue service creation:

- For unprotected multipoint drop and continue service, the termination points must have their administrative state set to down.
- Create the APS group on the 1830 PSS. See Procedure 20-24.
- The APS group must be created manually on the drop and continue and drop sites for configuring 11QPA4 ESNCP protected service. The working port must be assigned a rate and the protection port must be unassigned.
- Set the Operational Mode parameter to Drop Continue on the line port when you create a drop and continue multipoint service.
- Set the Operational Mode parameter to Add Only on the line ports of the Add site and to Drop And Continue on the Drop and Continue sites.

1 Choose Create→Service→Optical→Multipoint Transport Service from the 5620 SAM main menu. The Multipoint Transport Service (Create) form opens.

2 Click on the Select button to choose a customer to associate with the multipoint transport service. The Select Customer - Multipoint Transport Service form opens.

3 Choose a customer for the multipoint transport service and click on the OK button. The Select Customer - Optical Transport Service form closes and the Multipoint Transport Service (Create) form reappears. The customer information appears in the Customer panel of the General tab.



Note — You can create a template for the service at operational state by using the Apply or OK button before you specify the optical sites and termination points. You can use the service template to create a service by adding optical sites and termination points. See "Managing templates" in the *5620 SAM Scripts and Templates Developer Guide* for the procedure to create a service from a template.

4 Configure the parameters:

- Service ID
- Auto-Assign ID
- Service Name
- Description
- Service Priority
- Protection Type
- Wavekey Assign Mode
- Force Create OCH XC
- Service Type
- States

Note — You cannot configure the Administrative State parameter for a protected service.

5 Configure the Rate parameter. Table 20-12 lists the rates supported on 11PDM12 and 11QPA4 cards.

Table 20-12 Rate supported on OT cards

Cards	Service type	Rate supported
11DPM12	Drop and Continue	1 GbE
		HDSDI
		SDSDI
11QPA4	Drop and Continue	10GbE LAN
	Multicast	10GbE LAN

6 Right-click on the Sites object in the navigation tree and choose Create Add Site. The Select Network Elements - Multipoint Transport Service form opens with a list of sites.

7 Choose a site and click on the OK button. The Select Network Elements - Multipoint Transport Service form closes and the Site Add object appears on the navigation tree below the Sites object.

8 Expand the Site Add object.

9 Right-click on the Termination Point object and choose Create Termination Point. The Termination Point (Create) form opens.

10 Click on the Select button. The Select Port - Termination Point form opens.

11 Choose a port and click on the OK button. The Select Port - Termination Point form closes and the Termination Point (Create) form reappears with the port information.

Note — The Select Port - Termination Point form lists only the termination points that can be configured for the Rate parameter value configured in Step 5.

12 Click on the OK button. The Termination Point (Create) form closes and a dialog box appears.

13 Click on the OK button. The Termination Point Working object appears below the Termination point object.

14 Repeat steps 6 to 13 to configure drop and continue and drop sites.



Note — Configure two drop sites for an ESNCP service.

15 Go to step 16 for ESNCP service and step 18 for unprotected service.

16 Configure the one of the drop sites as working and the other as protection. Click on the Site Drop object on the navigation tree. The properties of the drop site appears in the right panel.

17 Configure the parameters for the drop sites:

- Name
- Description
- Administrative State
- Site Name
- Path Type

18 To create path constraints, click on the Multipoint Transport Service object on the navigation tree.

19 Click on the Path Constraints tab and click on the Create button. The Optical Path Constraint (Create) form opens.

20 Click on the Select button in the Site panel. The Select Site - Optical Path Constraint form opens.

21 Choose the drop and continue sites as path constraints.

22 Click on the OK button. The Select Site - Optical Path Constraint form closes and the Optical Path Constraint (Create) form reappears.

23 Click on the Select button in the Port panel. The Select Port - Optical Path Constraint form opens.

24 Choose the port as path constraints.

25 Click on the OK button. The Select Port - Optical Path Constraint form closes and the Optical Path Constraint (Create) form reappears.

26 Click on the OK button. The Optical Path Constraint (Create) form closes.



Note 1 — If the termination points are not added for any of the drop and continue sites during service creation, repeat steps 8 to 11 to add the termination points after the service is created. The path constraints are updated automatically.

Note 2 — If you need to delete any of the termination points in a drop and continue site, right-click on the termination point and choose Delete. The path constraints are updated automatically.

27 Click on the Apply button to complete service creation.

Procedure 20-3 To discover optical transport services

The optical transport services are not discovered automatically during NE discovery. Perform this procedure after all of the 1830 PSS devices are synchronized in the 5620 SAM.

1 Perform one of the following:

a From the Manage menu:

i Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

ii Click on the Optical Transport Service→Discover Transport Services button. The Discover Transport Services form opens with a list of topology groups displayed.

iii Choose a physical topology group and click on the OK button. The Discover Transport Services form closes and the Manage Services form reappears with a list of discovered optical transport services within the specified group.

b From the physical topology map:

i If the physical topology map is not open, choose Application→Physical Topology from the 5620 SAM main menu. The physical topology map opens.

ii Right-click on an NE or on the empty space in the map and choose Discover Transport Services in Group from the contextual menu. The Manage Services form opens with a list of discovered optical transport services within the group to which the NE belongs.

c From the equipment navigation tree:

i Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

ii Right-click on the topology group object, NE object, or multiple NE objects, and choose Discover Transport Services in Group from the contextual menu. The Manage Services form opens with a list of discovered optical transport services within the group to which the NE belongs.

2 Click on the Close button to close the Manage Services form.



Note — You can perform the same procedure to discover services created in 1354 PhM.

Procedure 20-4 To unmanage an optical transport service

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form appears.

2 Choose Optical Transport Service (Optical Management) option from the drop-down menu and click on the Search button. A list optical transport services on the 1830 PSS appears.

3 Choose the optical transport service that you need to unmanage and click on the Optical Transport Service button.

4 Choose Unmanage Service from the contextual menu. A dialog box appears.

5 Click on the Yes button. The optical transport service is unmanaged. The optical transport service appears on the Manage Services form with the Managed check box deselected.



Note — The deselected Managed check box indicates the following:

- The APS groups and VTS XCs are disassociated from the service.
- The service paths are removed.
- The sites with the termination points are retained.
- The information on the General tab of the Optical Transport Service (Edit) form is retained.

Procedure 20-5 To remanage an unmanaged optical transport service

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form appears.

2 Choose Optical Transport Service (Optical Management) option from the drop-down menu and click on the Search button. A list optical transport services on the 1830 PSS appears on the Manage Services form.

3 Perform one of the following:

a From the Manage Services form:

i Choose the unmanaged service and click on the Optical Transport Service button.

ii Choose Complete Transport Service from the contextual menu. A dialog box appears.

iii Click on the Yes button. Close the Manage Services form.

b From the Optical Transport Service (Edit) form:

i Choose the unmanaged optical transport service from the Manage Services form and click on the Properties button. The Optical Transport Service (Edit) form opens with the General tab displayed.

ii Click on the Complete Transport Service button. If the Complete Transport Service button is not visible, click on the More Actions button, and choose Complete Transport Service. A dialog box appears.

iii Click on the Yes button. Close the Manage Services form.

Procedure 20-6 To configure path constraints for a service

1 Perform one of the following:

a To configure path constraints during service configuration:

i Configure an optical transport service or a multipoint transport service. See Procedure 20-1 and 20-2.

ii Click on the Path Constraints tab on the Optical or Multipoint transport Service (Create) form.

b To configure path constraints for a configured service:

i Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

ii Choose Optical Transport Service from the drop-down menu and click on the Search button.

iii Choose an optical or multipoint transport service and click on the Properties button. The Optical or Multipoint Transport Service (Edit) form opens.

iv Click on the Path Constraints tab.

2 Click on the Create button. The Optical Path Constraint (Create) form opens.

3 Configure the parameters:

- Constraint Type
  Choose Exclusion to exclude the constraint element from the service path and choose Inclusion to include the constraint element in the service path.
- Constraint Element
- Service Path Type

4 Perform one of the following:

a The constraint element is a port:

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the Site information.

iii Click on the Select button beside the Name parameter in the Port panel. The Select Port form opens with a list of ports.

iv Choose a port and click on the OK button. The Select Port form closes and the Optical Path Constraint (Create) form reappears with the Port information.

b The constraint element is a site:

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the Site information.

c The constraint element is a trail:

i Click on the Select button beside the Trail ID parameter in the Trail panel. The Select Trail form opens with a list of optical trails.

ii Choose an optical trail and click on the OK button. The Select Trail form closes and the Optical Path Constraint (Create) form reappears with the trail information.

d The constraint element is an ODUk timeslot:



Note 1 — Ensure that you have configured the ODUk timeslots. See Procedure 20-14.

Note 2 — The constraint element, ODUk timeslot, is available for configuration only on the 1830 PSS, Release 5.5 and later.

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the Site information.

iii Click on the Select button beside the Site Name parameter in the ODUk Timeslot panel. The Select ODUk Timeslot form opens with a list of configured ODUk timeslots.

iv Choose a timeslot and click on the OK button. The Select ODUk Timeslot form closes and the Optical Path Constraint (Create) form reappears with the ODUk timeslot information.

e The constraint element is an OPTSG timeslot:



Note 1 — Ensure that you have configured the OPTSG timeslots. See Procedure 20-16.

Note 2 — This option is applicable only for an optical transport service.

Note 3 — The constraint element, OPTSG timeslot, is available for configuration only on the 1830 PSS Release 5.5 and later.

i Click on the Select button beside the Name parameter in the Site panel. The Select Site form opens with a list of 1830 PSS devices.

ii Choose a site and click on the OK button. The Select Site form closes and the Optical Path Constraint (Create) form reappears with the Site information.

iii Click on the Select button beside the Site Name parameter in the OPTSG Timeslot panel. The Select OPTSG Timeslot form opens with a list of configured OPTSG timeslots.

iv Choose a timeslot and click on the OK button. The Select OPTSG Timeslot form closes and the Optical Path Constraint (Create) form reappears with the OPTSG timeslot information.

5 Click on the OK button. The Optical Path Constraint (Create) form closes and the Optical Transport Service (Edit) form reappears. Go to step 7.

6 Perform the following for 4DPA4 card:

i Choose Sites→Site A End→Termination Point→TerminationPoint Working on the navigation tree of the service. The TP form opens with the General tab displayed.

ii Click on the Properties button. The Physical Port (Edit) form opens.

iii Click on the Configure Time Slots button. The Configure Time Slots for: 4DPA4 form opens.

iv Configure the Select Line Port parameter and choose the L1 or L2 timeslots based on the configured line port.

v Click on the OK button. The Configure Time Slots for: 4DPA4 form closes and the Physical Port (Edit) form reappears.

vi Click on the OK button. The Physical Port (Edit) form closes and the TP form reappears.

vii Click on the Apply button. A dialog box appears. Click on the Yes button.

7 Choose Service Paths→Service Path on the navigation tree of the service and click on the Hops A to Z tab to view the changes in the path hops due to the path constraints modifications.

Procedure 20-7 To convert an unprotected service to an ESNCP service on a 4DPA4 FlexMux card

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the drop-down menu and click on the Search button.

3 Choose an unprotected optical transport service and click on the Properties button. The Optical Transport Service (Edit) form opens with the General tab displayed.

4 Configure the Protection Type parameter to ESNCP Protected.

5 Click on the Apply button. A dialog box appears.

6 Click on the Yes button. A dialog box appears.

7 Click on the Yes button.

8 Expand Service Paths on the navigation tree of the service. The protection path is added as a service path.



Note — If no protection path is available, the conversion is unsuccessful and an error message appears.

9 Close the Optical Transport Service (Edit) and the Manage Services form.

Procedure 20-8 To convert an ESNCP service to an unprotected service on a 4DPA4 FlexMux card

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the drop-down menu and click on the Search button.

3 Choose an ESNCP Protected optical transport service and click on the Properties button. The Optical Transport Service (Edit) form opens with the General tab displayed.

4 Perform one of the following to convert an ESNCP service to an unprotected service.

- **a** Convert an ESNCP Protected service to an Unprotected service and retain the working path:
  - **i** Configure the Protection Type parameter to Unprotected.
  - **ii** Configure the Path Preference parameter to Retain Working Path.
  - **iii** Click on the Apply button.
- **b** Convert an ESNCP Protected service to an Unprotected service and retain the protection path:
  - **i** Configure the Protection Type parameter to Unprotected.
  - **ii** Configure the Path Preference parameter to Retain Protection Path.
  - **iii** Click on the Apply button. A dialog box appears. Click on the Yes button.
  - **iv** Perform step 6 of Procedure 20-6 to configure the timeslots manually.

5 Close the Optical Transport Service (Edit) form and the Manage Services form.

Procedure 20-9 To display services riding on external or internal optical links

1 From the Physical Topology - Network view, double-click on an external or internal optical link. The Physical Link Group List form opens.

2 Choose an external or internal optical link from the list and click on Properties. The Optical Link (Edit) form opens.

3 Choose the Optical Transport Services tab and click on Search. A list of optical services riding on the selected link, are displayed.

4 Choose a service and click on Properties. The Optical Transport Service (Edit) form opens and displays the properties of the service.



Note 1 — You can view optical services on an OCH cross-connect. Choose NE→Properties→OCH CrossConnects→Choose a cross connect→Properties. The OCH Cross Connect (Edit) form opens. Click on the Optical Transport Services tab to view the optical services on the selected cross-connect.

Note 2 — You can also view optical services on ports from the Physical Port (Edit) form by clicking on the Optical Transport Services tab.

Note 3 — The services must be discovered in the 5620 SAM in order to view services on the external and internal optical links, the OCH cross-connect, and the ports.

Procedure 20-10 To view the service hops

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the drop-down menu and click on the Search button.

3 Choose an optical transport service and click on the Properties button. The Optical Transport Service (Edit) form opens.

4 Choose Service Paths→Service Path on the navigation tree of the service. The Service Path form opens with the General tab displayed.

5 Click on the Hops A to Z, Hops Z to A, ODU Hops A to Z, and ODU Hops Z to A tabs, as required, to view the hops in a service along the service path and ODU trail.

20.12 Procedures to configure service using 11DPM12 card

Procedure 20-11 To configure an unprotected service routing through an ESNCP protected ODU trail on 11DPM12 card

1 Perform Procedure 14-4 to configure an ESNCP protected LO-ODU trail. Choose ESNCP Protected as the option for the Protection Type parameter.



Note — You can configure an unprotected OPTSG service through the ESNCP protected ODU1PTF LO-ODU trails by choosing the ODU1 as the value for the Assigned Rate parameter and ODU1PTFs as termination points.

2 Perform Procedure 20-1 and configure an unprotected optical transport service routing through the LO-ODU trail configured in Step 1.



Note 1 — You can route the service through the LO-ODU trail by choosing the client ports used in the ODU trail configuration as the termination points.

Note 2 — You can configure an unprotected OPTSG service through the ESNCP protected ODU1PTF LO-ODU trails by choosing the OC3 or OC12 as the value for the Assigned rate parameter and client ports used in the ODU trail configuration as the termination points.

Procedure 20-12 To extend a drop site on an unprotected multipoint service in an 11DPM12 card

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the drop-down menu and click on the Search button.

3 Choose an unprotected multipoint service from the list and click on the Properties button. The Multipoint Transport Service (Edit) form opens.

4 On the navigation tree, right-click on the Site Drop object and choose Extend Drop Site. The Extend Drop Site form opens.

5 Click on the Select button beside the New Drop Site parameter. The Select Network Elements form opens with a list of unused sites with 11DPM12 card.

6 Choose the site to add as a drop site and click on the OK button. The Select Network Elements form closes and the Extend Drop Site form reappears with the site information updated in the New Drop Site form.

7 Click on the OK button. The Extend Drop Site form closes and Multipoint Transport Service (Edit) form reappears. The new drop site object is added on the navigation tree.

8 Right-click on the Termination point of the new site and choose Create Termination Point. The Termination Point (Create) form opens.

9 Repeat steps 9 to 13 of Procedure 20-2 to add the termination point. Click on the Apply button on the Multipoint Transport Service (Edit) form. The extended drop site changes into a drop and continue site and the new drop site is configured.

Procedure 20-13 To delete a drop site on an unprotected multipoint service in an 11DPM12 card

1 Choose Manage→Service→Services from the 5620 SAM main menu. The Manage Services form opens.

2 Choose Optical Transport Service from the drop-down menu and click on the Search button.

3 Choose an unprotected multipoint service from the list and click on the Properties button. The Multipoint Transport Service (Edit) form opens.

4 On the navigation tree, right-click on the Site Drop object and choose Delete. A dialog box appears.

5 Click on the OK button. The drop site is deleted and removed from the navigation tree.

Procedure 20-14 To configure an ODU timeslot assignment for 11DPM12 cards

1 Choose Network→NE→Shelf→Card→Port to navigate to the line port.

2 Right-click on the line port and choose Properties. The Physical Port (Edit) form opens with the General tab displayed.

3 Click on the Configure Timeslots button. The Timeslot Assignments form opens.

4 Specify the required timeslot configuration. Table 20-13 lists the timeslot mapping.

Table 20-13 12xANY timeslot mapping

Client signal type	ODU0 XC (default)	ODU1 XC (TS)	ODUFlex XC (TS)	OPTSG XC (TS)
FC100	1	—	—	—
OC3/STM1	1	—	—	1
OC12/STM4	1	—	—	4
GbE	1	—	—	—

(1 of 2)

Client signal type	ODU0 XC (default)	ODU1 XC (TS)	ODUFlex XC (TS)	OPTSG XC (TS)
SDSDI	1	—	—	—
FE	1	—	—	—
OTU1	—	2	—	—
OC48/STM64	—	2	—	—
HDSDI	—	2	—	—
FC200	—	2	—	—
FC400	—	—	4	—
3GSDI	—	—	3	—

(2 of 2)

5 Click on the OK button. The Timeslot Assignments form closes.

6 Click on the OK button. The Physical Port (Edit) form closes.

Procedure 20-15 To associate line-side LO-ODUk on the 11DPM12 card

1 Configure the ODU1 timeslots as described in Procedure 20-14.

2 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

3 Perform one of the following:

a Perform the following steps for the 1830 PSS Release 5.5 and later.

i Choose Network→1830 PSS→Shelf→Card Slot

ii Right-click on the ODU1PTF Object and choose Associate Line Side LO-ODUk Facility from the contextual menu. The ODU1Ptf Association with Line side LO-ODUk (Create) form opens.

b Perform the following steps for earlier releases of the 1830 PSS.

i Right-click on the 1830 PSS where you need to create the ODUk cross-connects and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

ii On the Network Element (Edit) form navigation tree, expand the Shelf icon.

iii Right-click on the card and select Properties from the contextual menu. The Card Slot (Edit) form opens.

iv Click on the ODU1PTF Objects tab. A list of ODU1PTF cross connects appear.

v Select an ODU1PTF cross connect and click on Properties. The ODU1PTF (Edit) form opens.

vi Click on the Associate Line Side LO-ODUk Facility tab. The ODU1Ptf Association with Line side LO-ODUk (Create) form opens.

4 Click on the Select button in the Line Side LO-ODUk Facility panel. The Select Line Side LO-ODUk Facility form opens with a list of available Line Side LO-ODUks.



Note — You can sub-structure the ODU1PTF object to create OPTSG objects only when ODU1PTF is associated with Line side LO-ODUk.

5 Choose a Line Side LO-ODUk Facility and click the OK button. A dialog box appears.

6 Select the check box and click on the Yes button. The ODU1Ptf Association with Line side LO-ODUk ([Create) form closes. The action associates ODU1PTF object with Line side LO-ODUk facility object.

Procedure 20-16 To configure OPTSG

1 Configure the ODU1 timeslots as described in Procedure 20-14.

2 Associate an ODU1PTF object with the line port ODUk facility object to create the cross-connect as described in Procedure 20-15. The ODU1PTF can be associated only with the ODU1 container (with two timeslots) on a line port.

3 Right-click on the ODU1PTF object and choose the Configure ODU1PTF Timeslots option from the contextual menu. The Timeslot Assignments form opens.

4 Configure the timeslots and click on the OK button. The OPTSG object is created.



Note — OPTSG configuration applicable to keyed and unkeyed services.

Procedure 20-17 To delete an ODUk XC on the 11DPM12 card

Note — You cannot delete an ODUk XC when it is associated with a service or an APS Group.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Right-click on the 1830 PSS where you need to delete the ODUk XC and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

3 Click on the ODUk Cross Connects tab. A list of ODUk XCs are displayed.

4 Choose the cross-connect to be deleted and click on the Delete button. A Warning dialog box appears.

5 Select the check box on the Warning dialog box and click on the Yes button. The ODUk XC is deleted which disassociates the client port from the line port.

20.13 Procedures to configure OPS protection services

Procedure 20-18 To configure client-side OPS protection service

1 Configure an OPSB card. See Procedure 9-16.

2 Configure a protected optical transport service. See Procedure 20-1 for more information about configuring an optical transport service.

3 Choose OPS Protected as the Protection Type parameter option on the Optical Transport Service (Create) form in step 6 of Procedure 20-1.

4 Upon completion of service creation, you can view the Service Protection Config parameters on the Optical Transport Service form where the Optical Translator Unit Protection check box is automatically enabled, indicating that the service is client-side OPS protected.

Note — If the 5620 SAM detects a port configuration mismatch during optical transport service creation, an error message appears and the service creation is unsuccessful.

When the mismatch is corrected, the service creation is successful.

If the mismatch is detected during service discovery, the mismatch is indicated on the General tab of the Optical Transport Service form and cleared when the mismatch is corrected.

Procedure 20-19 To configure OMSP protection service

1 Configure the OPSA cards as described in Procedure 9-15.

2 Configure the optical links for the following as described in Procedure 9-9:

OT→SFD→OMD→OPSA(SIG port)→OPSA(A port)→AMP→AMP→OPSA(A port)→OPSA(SIG port)→SFD→OT

OT→SFD→OMD→OPSA(SIG port)→OPSA(B port)→AMP→AMP→OPSA(B port)→OPSA(SIG port)→SFD→OT

3 Configure the protected OTU trails as described in Procedure 14-3. Choose OPS Protection as the value for the Protection Type parameter and the line ports of the OTs used for configuring the optical links in Step 2 as termination points.

4 Configure an unprotected optical transport service as described in Procedure 20-1, routing through the OTU trails created in Step 3.

Note — You can route the service through the OTU trail by choosing the client ports of the OTs used for configuring the optical links in Step 2 as termination points.

Procedure 20-20 To configure an OCHP protection service

1 Configure the OPSA cards as described in Procedure 9-15.

2 Configure the optical links for the following as described in Procedure 9-9:

OT→OPSA(SIG port)→OPSA(A port)→SFD→AMP→AMP→OPSA(A port)→OPSA(SIG port)→OT

OT→OPSA(SIG port)→OPSA(B port)→SFD→AMP→AMP→OPSA(B port)→OPSA(SIG port)→OT

3 Configure the protected OTU trails as described in Procedure 14-3. Choose OPS Protection as the value for the Protection Type parameter and the line ports of the OTs used for configuring the optical links in Step 2 as termination points.

4 Configure an unprotected optical transport service as described in Procedure 20-1, routing through the OTU trails created in Step 3.

Note — You can route the service through the OTU trail by choosing the client ports of the OTs used for configuring the optical links in Step 2 as termination points.

Procedure 20-21 To configure an OLP service

1 Configure the OPSA cards as described in Procedure 9-15.

2 Configure optical links for the following as described in Procedure 9-9:

OT→SFD→AMP(line port)→OPSA(A port)→OPSA(A port)→AMP(line port)→SFD→OT

OT→SFD→AMP(line port)→OPSA(B port)→OPSA(B port)→AMP(line port)→SFD→OT



Note — The OTS trail is automatically created when the optical link is configured from OPSA (A port) to OPSA (A port) and OPSA (B port) to OPSA (B port). The OTS trail cannot be deleted.

3 Configure an unprotected optical transport service as described in Procedure 20-1, routing through the OTU trails automatically created in Step 2.



Note — You can route the service through the OTU trails by choosing the client port of the OTs used for creating optical links in Step 2 as termination points.

20.14 Procedures to configure dual-stage muxing services

Procedure 20-22 To configure dual-stage multiplexing services on an 1830 PSS for keyed and unkeyed services

Dual-stage multiplexing service support is provided on the 1830 PSS 16/32 shelves for the following cards:

- 11STMM10 OTU1 client port (OT A) connected to a 4DPA4 line port (OT B). Up to four 4DPA4 OTs can be connected to one 11STMM10.
- 112SCX10 OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to ten 11DPM12 OTs can be connected to one 112SCX10.
- 112SNX10 OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to ten 11DPM12 OTs can be connected to one 112SNX10.
- 11DPM12 OTU1 client port (OT A) connected to a 4DPA4 line port (OT B). Up to four 4DPA4 OTs can be connected to one 11DPM12.
- 43SCX4 and 43SCX4E OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to four 11DPM12 OTs can be connected to one 43SCX4 or 43SCX4E.
- 43STX4P OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to four 11DPM12 OTs can be connected to one 43STX4P.
- 112SCX10 OTU2 client port (OT A) connected to an 11QPEN4 line port (OT B). Up to ten 11QPEN4 OTs can be connected to one 112SCX10.

- 112SNX10 OTU2 client port (OT A) connected to an 11QPEN4 line port (OT B). Up to ten 11QPEN4 OTs can be connected to one 112SNX10.
- 130SCX10 OTU2 client port (OT A) connected to an 11QPEN4 line port (OT B). Up to ten 11QPEN4 OTs can be connected to one 130SCX10.
- 130SCX10 OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to ten 11DPM12 OTs can be connected to one 130SCX10.
- 112SCX10 OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to ten 11DPM12 OTs can be connected to one 112SCX10.
- 112SNX10 OTU2 client port (OT A) connected to an 11DPM12 line port (OT B). Up to ten 11DPM12 OTs can be connected to one 112SNX10.

Prerequisites:

- An internal topological link is provisioned between the OT A client port and the OT B line port.
- The cross-connect terminates on the OT A line port. The OT B is not included in the cross-connect.
- Because there is no wave key encoding on OT B, the eVOA port is not used.
- There is no alarm correlation between OT A and OT B.

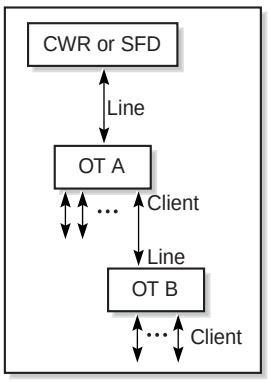
Note 1 — Dual Trans mode and Flex Mux mode are supported on the 4DPA4 card.

Note 2 — Keyed and unkeyed services are supported in the Wave key Assign mode.

See Procedure 20-1 to create an optical service.

Figure 20-1 shows the dual-stage multiplexing.

Figure 20-1 Dual-stage multiplexing



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Procedure 20-23 To configure single fiber bidirectional support on the 1830 PSS-4/16/32 for unkeyed services

The CWDM single fiber bidirectional service support is provided for the following fiber and OT cards:

- SFC-2
- SFC-4
- SFC-8
- 4DPA4
- 11STAR1
- 11STAR1A
- 11STMM10
- 11DPE12(E)

Prerequisites:

- The SFC must be connected in a OneFiber MuX mode. The default is TwoFiberMux. You must set the mode before you create an optical link. The mode can be configured on the Card Specifics tab of the Card (Edit) form. See Procedure 9-4 for more information.
- You can only create unidirectional internal optical links between the OT and filter channels.
- External optical links are always bidirectional. After the service is created, you can view the channel, frequency used, and direction in the topology view.

Perform Procedure 20-1 to create an optical service.

20.15 Procedures to configure APS groups

Procedure 20-24 To configure an APS group

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS.

3 Right-click on the 1830 PSS object on the navigation tree and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

4 Click on the APS Groups tab. The APS Groups tab appears with a list of APS Groups that are configured for the 1830 PSS device.

5 Click on the Create button. The APS Group (Create) form opens.

6 Configure the parameters, as applicable in the Protection Attributes panel:

- Description
- APS Protection Mode
- Card Sub Type
- Switch Direction
- Connection Direction
- Type
- ODUk Protected Interface Type
- Wait To Restore (min)

7 Configure the port, if applicable.

i Click on the Select button beside the Name parameter in the Port panel. The Select Port form opens with a list of ports.

ii Choose a port and click on the OK button. The Select Port form closes and the APS Group (Create) form reappears with the port information in the Port panel.

8 Configure the working LO-ODUk facility, if applicable.

i Click on the Select button beside the Name parameter in the Working LO-ODUk facility panel. The Select Working LO-ODUk facility form opens with a list of LO-ODUks.

ii Choose an LO-ODUk and click on the OK button. The Select Working LO-ODUk facility form closes and the APS Group (Create) form reappears with the LO-ODUk information in the Working LO-ODUk facility panel.

9 Configure the protection LO-ODUk facility, if applicable.

i Click on the Select button beside the Name parameter in the Protection LO-ODUk facility panel. The Protection LO-ODUk facility form opens with a list of LO-ODUks.

ii Choose an LO-ODUk and click on the OK button. The Select Protection LO-ODUk facility form closes and the APS Group (Create) form reappears with the LO-ODUk information in the Protection LO-ODUk facility panel.

10 Configure the working port, if applicable.

i Click on the Select button beside the Name parameter in the Working Port panel. The Select Working Port form opens with a list of ports.

ii Choose a port and click on the OK button. The Select Working Port form closes and the APS Group (Create) form reappears with the port information in the Working Port panel.

11 Configure the protection port, if applicable.

i Click on the Select button beside the Name parameter in the Protection Port panel. The Select Protection Port form opens with a list of ports.

ii Choose a port and click on the OK button. The Select Protection Port form closes and the APS Group (Create) form reappears with the port information in the Protection Port panel.

12 Configure the parameters as applicable:

- Channel
- Working VTS
- Protection VTS

13 Click on the OK button. The APS Group (Create) form closes.

Procedure 20-25 To modify the protection switch for an APS group

You can modify the protection switch from the Network Element (Edit) form or from the Optical Transport Service (Edit) form.

1 Perform one of the following to open the APS Group (Edit) form.

a From the Network Element (Edit) form:

i Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

ii Choose Network→1830 PSS.

iii Right-click on the 1830 PSS device object and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

iv Click on the APS Groups tab. A list of APS groups appears.

v Choose an entry and click on the Properties button. The APS Group (Edit) form opens with the APS Group tab displayed

b From the Optical Transport Service (Edit) form.

i Choose Manage→Service→Services from the 5620 SAM main menu.

ii Choose Optical Transport Service from the drop-down menu.

iii Click on the Search button and choose the protected optical transport service for which the protection switch needs to be modified.

iv The Optical Transport Service (Edit) form opens with the General tab displayed.

v Click on the APS Groups tab. A list of APS groups appears.

vi Choose an entry and click on the Properties button. The APS Group (Edit) form opens with the APS Group tab displayed

2 Choose the protection switch type based on the working or protection path in the Protection Switch drop-down menu of the Protection Management panel. The options for Protection Switch parameter are:

- Protection Lockout
- Forced Switch to Protection
- Forced Switch to Working
- Manual Switch to Protection
- Manual Switch to Working
- No Cmd



Note — The Protection Switch drop-down menu is active only when the card on which the protection port is present is equipped on the 1830 PSS device.

3 Click on the OK button. The APS Group (Edit) form closes.

20.16 Procedures to configure services using LAGs

Procedure 20-26 To configure 11DPE12A service using LAGs

1 Create LAGs on SR. See Procedure "To create a LAG" in the *5620 SAM User Guide* for information about creating LAGs on an SR.

2 Create LAGs on an 11DPE12A card. See Procedure 9-13.

3 Create optical links between the SR and 11DPE12A LAG ports. See Procedure 9-9.

4 Choose Create→Service→Optical→Create Transport Service from the 5620 SAM main menu. The Optical Transport Service (Create) form opens with the General tab displayed.

5 Click on the Select button in the Customer panel to choose a customer to associate with the optical transport service. The Select Customer - Optical Transport Service form opens.

6 Choose a customer for the optical transport service and click on the OK button. The Select Customer - Optical Transport Service form closes and the Optical Transport Service (Create) form reappears with the customer information displayed on the General tab.

7 Configure the parameters:

- Service Name
- Description
- Service ID

8 Set the Rate parameter to SubGigE.

9 Configure the parameters in the VLAN Configuration Details panel:

- Is SubGigE Service QinQ
- CE-VLANID-AZ
- CE-VLANID-ZA
- Stack-VLANID-AZ
- Stack-VLANID-ZA

10 Click on the Service Sites tab and click on the Create button. The Select Network Elements - Optical Transport Service form opens with a list of sites.

11 Choose the SR sites and click on the OK button. The A and Z sites are displayed in the navigation tree.

12 Choose A End in the Service Sites tab and click on the Properties button. The Optical Site (Create) form opens with the General tab displayed.

13 Click on the Termination Point tab and click on the Create button on the right panel. The Termination Point (Create) form opens

14 Click on the Select button. The Select Termination Point form opens.

15 Choose the one of the LAG ports and click on the OK button. The Select Termination Point form closes and the Termination Point (Create) form reappears.

16 Configure the parameters in the Optical Access Port Virtual Time Slot panel:

- Ingress VTS Number
- Egress VTS Number

17 Configure the parameters in the Optical Working Network Port Virtual Time Slot panel:

- Line Port

  Click on the Select button. The Select Line Port - Termination Point form opens with a list of line ports. Choose the line port.
- Ingress VTS Number
- Egress VTS Number

18 Click on the Apply button. The Termination Point (Create) form closes and the Optical Transport Service (Create) form reappears.

19 Perform steps 12 to 18 to add the termination point for Site B.

20 Click on the OK button to complete the service configuration.

20.17 Procedures to configure timeslots

Procedure 20-27 To configure a port-timeslot assignment on channelized cards

1 Right-click on a channelized port and choose Properties. The Physical Port (Edit) form opens with the General tab displayed.

2 Click on the Port Specifics tab.

3 Configure the Assigned Rate parameter.

4 Click on the Configure Timeslots button. The Timeslot Assignments form opens.

5 Choose the required timeslot configuration and click on the OK button. The Timeslot Assignments form closes.

6 Click on the OK button. The Physical Port (Edit) form closes.

20.18 Procedures to configure VTS maps and XCs

Procedure 20-28 To configure VTS maps on 11DPE12/E/A cards

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE→Shelf→Card→Port.

3 Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the Port Specifics tab and click on the VTS Map tab.



Note — You can see the VTS Map tab on the Physical Port (Edit) form of a port on the 11DPE12 card, only when the Card Rate Mode parameter is set as QinQ in the Card Slot (Edit) form of the 11DPE12 card.

5 Click on the Create button. The Port Specifics (Create) form opens.

6 Configure the parameters:

- VTS Map Number
- VTS Direction
- Classification Mode



Note — If the Classification Mode is configured to Port in case of a client port VTS map configuration, go to step 8.

7 Configure the VTS map information based on the values configured for the VTS Direction and Classification Mode parameters:

   a VTS Egress CE-VLANID—If the VTS Direction is configured to Egress and Classification Mode is configured to CE-VLAN Tagged or Untagged

   b VTS Egress S-VLAN ID—If the VTS Direction is configured to Egress and Classification Mode is configured to S-VLAN Tagged

   c VTS Ingress CE-VLAN ID—If the VTS Direction is configured to Ingress and Classification Mode is configured to CE-VLAN Tagged or Untagged

   d VTS Ingress S-VLAN ID—If the VTS Direction is configured to Ingress and Classification Mode is configured to S-VLAN Tagged

   e CE-VLAN ID—If the VTS Direction is configured to Ingress and Egress and Classification Mode is configured to CE-VLAN Tagged or Untagged

   f Stack-VLAN ID—If the VTS Direction is configured to Ingress and Egress and Classification Mode is configured to S-VLAN Tagged

8 Click on the OK button. The Port Specifics (Create) form closes and the VTS map is added to the list of maps under the VTS Map tab.

9 Click on the OK button. The Physical Port (Edit) form closes.

Procedure 20-29 To configure VTS XCs on 11DPE12/E/A cards

Perform Procedure 20-28 before configuring a VTS cross-connect.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→NE.

3 Right-click on the NE and choose Properties from the contextual menu. The Network Element (Edit) form opens with the General tab displayed.

4 Click on the VTS Connections tab.

5 Click on the Create button. The VTS Connection (Create) form opens.

6 Configure the VTS Connection Name parameter.

7 Click on the Select button in the VTS Connection Source panel. The Select VTS Connection Source Port form opens.

8 Choose a port from the list and click on the OK button. The Select VTS Connection Source Port form closes.

9 Configure the Source VTS Number parameter in the VTS Connection Source panel.

10 Click on the Select button in the VTS Connection Destination panel. The Select VTS Connection Destination Port form opens.

11 Choose a port from the list and click on the OK button. The Select VTS Connection Destination Port form closes.

12 Configure the Destination VTS Number parameter in the VTS Connection Destination panel.

13 Configure the parameters on the VTS Connection Details panel:

- Committed Information Rate(Mb/s)
- Peak Information Rate(Mb/s)
- Committed Burst Size(kb/s)
- Peak Burst Size(kb/s)

14 Click on the OK button. The VTS Connection (Create) form closes.

21 — 1830 PSS VPLS management

21.1 VPLS management ***21-2***

21.2 Split horizon group ***21-2***

21.1 VPLS management

VPLS is a class of virtual private network multipoint L2 service that allows multiple customer sites to be connected in a single bridged domain contained within the service provider-managed IP/MPLS network. Customer sites in the VPLS appear to be on the same LAN, even when the sites are geographically dispersed. You can create and delete a VPLS on the 11QPE24 card. You can modify a service from the topology view. See the *5620 SAM User Guide* and the *5620 SAM Parameter Guide* for more information.



Note 1 — On the 11QPE24 card, VPLSs are configured at the card level (and not at the NE level).

Note 2 — A VLAN ID is only applicable when the SAP type is dot1q-preserve.

Note 3 — A VPLS cannot be deleted if SAPs are defined for the service.

Note 4 — To delete a VPLS from the service, the Admin State parameter must be set to Down.

Table 21-1 VPLS management references

Topics	Chapter	Document
VPLS management overview	VPLS management	*5620 SAM User Guide*
Sample VPLS configuration	VPLS management	*5620 SAM User Guide*
VPLS management procedures	VPLS management	*5620 SAM User Guide*

21.2 Split horizon group

An SHG prevents loops in the network by not allowing traffic in one SAP to be forwarded to other members of the group in the same service. The 5620 SAM supports the configuration of the SHGs on 11QPE24 cards. You can add individual ports and LAGs to an SHG. A LAG member cannot be added to the group and the ports in a group cannot become a LAG member. A port and a LAG can only be in one SHG.

Procedure 21-1 To configure an SHG

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf→Card Slot (11QPE24).

3 Right-click on the Card Slot object and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

4 Click on the Split Horizon Groups tab.

5 Click on the Create button. The Split Horizon Group (Create) form opens.

6 Configure the parameters:

- Name (Mandatory)
- Description (Optional)

7 Click on the OK button. The Split Horizon Group (Create) form closes and a dialog box appears.

8 Click on the OK button. The Card Slot (Edit) form appears.

9 Click on the OK button. The SHG is configured.

Procedure 21-2 To add ports to an SHG

The following conditions must be met before you add the port to the SHG:

- The Rate parameter must be configured on the port.
- The port must not be used in a service.
- The port must be in the Shut Down state.

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Choose Network→1830 PSS→Shelf→Card Slot (11QPE24).

3 Right-click on a port of the 11QPE24 card where the SHG is configured and choose Properties from the contextual menu. The Physical Port (Edit) form opens with the General tab displayed.

4 Click on the Select button on the Split Horizon Group panel. The Select Split Horizon Group form opens with a list of the configured SHGs.

5 Choose an SHG and click on the OK button. The Select Split Horizon Group form closes and the Physical Port (Edit) form appears.

6 Repeat steps 4 and 5 for each additional port that you need to assign to the SHG.

7 Click on the OK button. The Physical Port (Edit) form closes.

22 — 1830 PSS mirror service management

22.1 Mirror service management *22-2*

22.1 Mirror service management

In a mirror service, packets from one or more sources are forwarded to their configured destinations. A copy of the entire packet, or a specified portion of the packet, is sent to the mirror destination. The mirrored packet can be viewed using a packet-decoding device, typically called a sniffer, that is attached to the destination port. The 5620 SAM does not limit the number of destination and source sites that can be added under a mirror service. The mirrored packets are transported unidirectionally through the core network using IP or MPLS tunneling. For more information about mirror services, see *5620 SAM User Guide*.

Table 22-1 Mirror service management references

Topics	Chapter	Document
Mirror service overview	Mirror service management	*5620 SAM User Guide*
Sample mirror service configuration	Mirror service management	*5620 SAM User Guide*
Mirror service procedures	Mirror service management	*5620 SAM User Guide*

1830 PSS fault management

23 — 1830 PSS fault management

23 — 1830 PSS fault management

23.1 Overview ***23-2***

23.2 RCA audit ***23-2***

23.3 Alarm management ***23-4***

23.1 Overview

The fault management function detects, isolates, and corrects faults in a telecommunication network. Alarm reporting is the notification sent to external management systems for internally detected faults. The fault processing and alarm reporting functions are part of the supervision function of the NE that monitors and manages the NE transmission resources (for example, logical or physical facilities and the associated equipment modules).

Fault management

The 1830 PSS-32 / 1830 PSS-16 is provisioned on a per-port basis to detect faults and report faults, failures, and performance information. Equipment faults can be diagnosed down to an FRU or interface.

A system default alarm profile contains all of the alarms or conditions supported in the system and their severity, that is, Critical, Major, or Minor. The user can change the severity of alarms on each port or facility independently or point to the system profile. The system profile can be modified or reset to the original defaults.

The 5620 SAM correlates the events and alarms against the managed equipment and configured services and policies. The 5620 SAM applies the alarms to the appropriate equipment and services. A correlated alarm is an alarm that causes fault conditions for many objects. For example, if an alarm occurs because a port goes down, all services that use the port receive a notification of the alarm.

You can view the alarm from the service configuration form or from the subscriber information form that lists the affected service. The object information forms contain a faults tab, which lists the alarms that affect the object. The alarms appear in the alarm list. See the *1830 Photonic Service Switch 36/32/16 Product Information and Planning Guide*, the *5620 SAM User Guide*, and the *5620 SAM Troubleshooting Guide* for more information about fault and alarm management. See the *5620 SAM Alarm Reference* for a list of the alarms that the 5620 SAM can generate against the 1830 PSS.

User activity logging

The 5620 SAM logs each GUI and OSS user action, such as 1830 PSS object configuration, in the 5620 SAM database. The User Activity form lists the recent actions; older actions are purged according to the configured retention limits. For more information about the user activity log and configuring the log retention, see the *5620 SAM System Administrator Guide*.

23.2 RCA audit

The 5620 SAM allows you to perform RCA audits on optical links for which the MTU of each endpoint can be determined.

Procedure 23-1 To perform an RCA audit of an optical link

1 Choose Manage→Equipment→Equipment from the 5620 SAM main menu. The Manage Equipment form opens.

2 Click on the Select Object Type drop-down list and choose Optical Link (Optical Management).

3 Click on the Search button. A list of optical links appears.

4 Choose an entry and click on the Properties button. The Optical Link (Edit) form opens with the General tab displayed.



Note — Choose an optical link for which MTU is supported on both endpoints.

5 Click on the RCA Audit button. The Select RCA Policy to run the audit form appears with a list of configured policies.

6 Choose a policy and click on the OK button. The Select RCA Policy to run the audit form closes and a dialog box appears.

7 Click on the OK button.

8 Click on the RCA Result tab. The RCA audit information is displayed on the Related Problem tab.



Note — The RCA Result tab appears only if the RCA audit detects one or more problems.

9 If required, expand the Optical Link object in the problems tree to view the problems, the associated severity, and the cause.

10 Double-click on a problem icon to display information about the problem. The Problem (Edit) form opens with the General tab displayed. The following information is displayed:

- Last Time Changed
- Probable Cause
- Severity
- Description
- Solution

11 Click on the Related Problem tab to view related problems.



Note — The 5620 SAM does not provide a solution for optical link configuration errors.

12 Click on the Caused By Objects tab to view a list of objects that are causing the problem.

13 Choose an object and click on the Properties button. The properties form for the object opens.

14 Click on the tabs to view information about the configuration.

15 Configure the parameters, as required.

16 Click on the OK button to save the configuration and close the properties form. A dialog box appears.

17 Click on the Yes button.

18 Close the Problem (Edit) form.

19 Close the Optical Link (Edit) form.

20 Close the Manage Equipment form.

23.3 Alarm management

The alarm-based fault management system provides the following:

- correlation of alarms with equipment- and service-affecting faults
- updates to the managed-object operational status of equipment, services, and interfaces in near-real-time
- alarm policy control that allows a network administrator to specify how to process alarms, and how to create and store the alarm logs
- point-and-click alarm management using the 5620 SAM GUI dynamic alarm list and object properties forms
- ability to log the actions performed to correct the associated fault by adding notes to the alarm
- alarm history for performing trend analysis

See the *5620 SAM User Guide*, the *5620 SAM Alarm Reference*, and *1830 Photonic Service Switch 36/32/16 User Provisioning Guide* for more information.

Alarm status, severity, and aggregation

Alarm status for the network is indicated in the navigation tree, the dynamic alarm list, and on the topology maps. You can use the navigation tree to view the status of an alarm generated for a specific object and to view the aggregated alarm status. The status is also available on the Faults tab of an object property form. Alarm severity profiles can be configured at the NE, shelf, card slot, and interface level. See “Alarm status, severity, and aggregation” in the *5620 SAM User Guide* for more information.

The 5620 SAM displays the severity of an alarm based on the severity on the 1830 PSS device. The default severity of an alarm is Indeterminate on the 5620 SAM. When the severity of an alarm changes on the 1830 PSS device, the alarm with the previous severity is cleared and an alarm is generated on the 1830 PSS device with a new severity. Similarly, the 5620 SAM also clears the alarm and generates an alarm with the severity that matches the severity of the alarm displayed on the 1830 PSS device. The alarm severity update occurs because the Initial Severity Assignment parameter in the Policies tab of the Alarm Settings form is set to Indeterminate.

The system-wide alarm profile configurations are modeled as global policies on the 5620 SAM. You can change the alarm severity on an 1830 PSS device in two ways:

- system level and distribute it to the required local devices
- object level (shelf, slot, port, LAG, synchronization, line reference, PTP, and VTS)

Overriding an alarm severity allows you to have different alarm severities at the system and/or the object level. For example, an alarm profile with Category of EQPT and Condition of mismatch, can have a severity of Critical at the system level. At the same time, it can have alarm severity of Major on a shelf instance. See procedure 23-3 for information about overriding the severity of an alarm at a system level and distributing it to the required local 1830 PSS device. See procedure 23-4 for information about overriding alarm severity at an object level.

Alarm suppression

The 5620 SAM does not generate alarms if several SNMP traps are sent in quick succession for the same type of event. The alarms are not generated to prevent alarm storms during intermittent outages in the network caused by bouncing NEs; for example, when links go up and down rapidly. The 5620 SAM continues to resynchronize the network and, if the 1830 PSS continues to send down state SNMP traps, the 5620 SAM eventually receives the trap and generates the appropriate alarm.

To indicate how often an alarm is generated, the number of occurrences of each instance of the alarm is tracked within the alarm record of the initial alarm. Click on the Statistics tab of an individual Alarm Info form to display how often the alarm was generated. See the *5620 SAM User Guide* for more information.

Additional text

The 5620 SAM displays the alarm description and entity type in the additional text field for the 1830 PSS alarms.

View alarmed object

Alarms generated for network objects allow you to view faults on the 1830 PSS devices in the network down to the service, path, or port level. The 5620 SAM analyzes incoming alarms to ensure that the alarms are listed for the appropriate equipment or service. You can troubleshoot an equipment or service problem using the information. Click on the View Alarmed Object button in the Alarm Info form to navigate to the properties form of the alarmed object. See “Alarm management procedures” in the *5620 SAM User Guide* for more information.

Timestamp

The First Time Detected and Last Time Detected parameters on the Alarm Info form displays the timestamp of the first and last detections of the alarm on the 1830 PSS device.

Resynchronization of alarms

The 5620 SAM allows you to resynchronize the active alarms by choosing Resync All Active Alarms from the Resync contextual menu option at the NE level.

Environmental alarms

The 5620 SAM supports the configuration of the environmental alarm parameters on the User Interface Panel card for the 1830 PSS-32 or 1830 PSS-16 devices and on the PF card for 1830 PSS-4 devices.

Procedure 23-2 To configure environmental alarms

1 Choose Equipment from the navigation tree view selector. The navigation tree displays the Equipment view.

2 Perform one of the following depending on the 1830 PSS device:

- **a** Network→1830 PSS→Shelf→Card Slot (PF)
- **b** Network→1830 PSS→Shelf→Card Slot (User Interface Panel)



Note 1 — Choose the PF card for the 1830 PSS-4 devices.

Note 2 — Choose the USRPNL card for the 1830 PSS-32 and 1830 PSS-16 devices.

3 Right-click on an Card Slot and choose Properties from the contextual menu. The Card Slot (Edit) form opens with the General tab displayed.

4 Click on the Environmental Alarms tab. The Environmental Alarms Configuration tab appears with the ports displayed.



Note — The number of ports displayed depends on the device type:

- 1830 PSS-32—eight ports
- 1830 PSS-16—six ports
- 1830 PSS-4—three ports

5 Choose a port and click on the Properties button. The ControlPointInput (Edit) form opens with the General tab displayed.

6 Configure the parameters:

- Alarm message
- Alarm Polarity



Note — The change in the alarm message immediately changes the alarm description text of the generated alarms.

7 Click on the OK button. The Control Point Input (Edit) form closes and the Environmental Alarms Configuration tab appears.

8 Click on the OK button to save the configuration.

Procedure 23-3 To override an alarm severity at the system level

This procedure describes how to override an alarm severity at a system level and distribute it to the required local devices.

1 Choose Tools→1830 PSS Alarm Profiles from the 5620 SAM main menu. The 1830 PSS Alarm Profiles form opens.

2 Click on the Search button. A list of alarm profiles appears.

3 Choose an alarm profile for which you want to override the severity and click on the Properties button. The Alarm Profile (Edit) form opens.

4 Configure the Override Severity parameter and click on the Apply button. A dialog box appears.

5 Click on the Yes button.

6 Click on the Switch Mode button beside the Configuration Mode parameter. A dialog box appears.

7 Click on the Yes button. The Release - 1830 PSS Alarm Profile form opens.

8 Choose the sites from the Available Objects list and click on the right-arrow button. The sites are listed in the Selected Objects list.

9 Click on the Distribute button. The Status field in the Selected Objects list provides the status of the distribution.

10 Close the Release - 1830 PSS Alarm Profile form. The Alarm Profile (Edit) form reappears with the Configuration Mode parameter updated as Released.

11 Close the Alarm Profile (Edit) form. The 1830 PSS Alarm Profiles form reappears with the updated Override Severity column.

12 Close the 1830 PSS Alarm Profiles form.

Procedure 23-4 To override an alarm severity at the object level

You can override the severity of an alarm profile on the following objects:

- Equipment (shelf, slot, or port)
- LAG
- Synchronization
- Line reference
- PTP
- VTS

This procedure describes how to override an alarm severity at the object level.

1 Choose Equipment from the navigation tree view selector and perform one of the following actions:

a Expand to the required shelf level, right-click on the shelf object, and choose Properties from the contextual menu. The Shelf (Edit) form opens.

b Expand to the required card level, right-click on the card object, and choose Properties from the contextual menu. The Card Slot (Edit) form opens.

c Expand to the required port level, right-click on the port object, and choose Properties from the contextual menu. The Physical Port (Edit) form opens.

d Expand to the required 11DPE12A or 11QPE24 card on which a LAG is configured and perform the following:

i Choose LAGs→LAG from the navigation tree.

ii Right-click on the LAG object and choose Properties from the contextual menu. The LAG (Edit) form opens.

iii Go to step 2.

e Expand to the 11DPE12A, 11DPE12E, 11QPE24, or PTPCTL card on which SyncE is enabled and perform the following:

i Right-click on the card object and choose Properties from the contextual menu. The Card Slot (Edit) form opens.

ii Click on the Card Specifics tab.

iii Click on the Sync Alarm profile tab. A list of alarm profiles appears.

iv Go to step 4.

f Expand to the 11DPE12A, 11DPE12E, 11QPE24, or PTPCTL card on which SyncE is enabled and perform the following:

i Right-click on the card and choose Properties from the contextual menu. The Card Slot (Edit) form opens.

ii Click on the Card Specifics tab.

iii Click on the Line Timing tab. A list of line references appears.

iv Choose a line reference from the list and click on the Properties button. The LineReference (Edit) form opens.

v Go to step 3.

g Expand to the 11DPE12A or PTPCTL card on which PTP clock is enabled and perform the following:

i Right-click on the card and choose Properties from the contextual menu. The Card Slot (Edit) form opens.

ii Click on the PTP tab.

iii Click on the Clock tab. A list of clocks appears.

iv Choose a clock from the list and click on the Properties button. The IEEE 1588 PTP Clock (Edit) form opens.

v Go to step 3.

h Expand to the 11DPE12, 11DPE12A, or 11DPE12E card on which VTS map is configured and perform the following:

i Right-click on the port and choose Properties from the contextual menu. The Physical Port (Edit) form opens.

ii Click on the Alarm Profile tab.

iii Click on the VTS tab. A list of VTS alarm profiles appears.

iv Go to step 4.

2 Click on the Show All Tabs button on the right side of the form. The available tabs are displayed.

3 Click on the Alarm Profile tab. A list of alarm profiles appears.

4 Choose an alarm profile for which you want to override the severity and click on the Properties button. The Alarm Profile (Edit) form opens.

5 Configure the Override Severity parameter and click on the OK button. The Alarm Profile (Edit) form closes and the Override Severity column is updated with the configured value in the object properties form.

6 Click on the OK button. A dialog box appears.

7 Click on the Yes button. The object properties form closes.

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