Part No. 217328-A
February 2005

4655 Great America Parkway
Santa Clara, CA 95054

Web Management for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3

NORTEL

Copyright © 2005 Nortel Networks

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document a re believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Nortel Networks Inc.

The software described in this document is furnished under a license agreement and may be used only in accordance with the terms of that license. The software license agreement is included in this document.

Trademarks

Nortel, the Nortel logo, the Globemark, Unified Networks, BayStack, Autotopology, Optivity and Passport are trademarks of Nortel Networks.
Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation.
Adobe and Acrobat Reader are trademarks of Adobe Systems Incorporated.
Java is a trademark of Sun Microsystems, Inc.

Cisco is a trademark of Cisco Systems, Inc.
The asterisk after a name denotes a trademarked item.

Restricted rights legend

Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013.

Notwithstanding any other license agreement that may pertain to, or accompany the delivery of, this computer software, the rights of the United States Government regarding its use, reproduction, and disclosure are as set forth in the Commercial Computer Software-Restricted Rights clause at FAR 52.227-19.

Statement of conditions

In the interest of improving internal design, operational function, and/or reliability, Nortel Networks Inc. reserves the right to make changes to the products described in this document without notice.

Nortel Networks Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

International regulatory statements of conformity

This is to certify that the Nortel Ethernet Routing Switch 3510-24T was evaluated to the international regulatory standards for electromagnetic compliance (EMC) and safety and were found to have met the requirements for the following international standards:

- EMC - Electromagnetic Emissions – CISPR 22, Class A
- EMC - Electromagnetic Immunity – CISPR 24
- Electrical Safety – IEC 60950, with CB member national deviations

Further, the equipment has been certified as compliant with the national standards as detailed below.

National electromagnetic compliance (EMC) statements of compliance

FCC statement (USA only)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

ICES statement (Canada only)

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Nortel Ethernet Routing Switch 3510-24T) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Nortel Ethernet Routing Switch 3510-24T) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

CE marking statement (Europe only)

EN 55 022 statements

This is to certify that the Nortel Ethernet Routing Switch 3510-24T is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Caution: This device is a Class A product. In a domestic environment, this device can cause radio interference, in which case the user may be required to take appropriate measures.

EN 55 024 statement

This is to certify that the Nortel Ethernet Routing Switch 3510-24T switches is shielded against the susceptibility to radio interference in accordance with the application of Council Directive 89/336/EEC. Conformity is declared by the application of
EN 55 024 (CISPR 24).

EC Declaration of Conformity

This product conforms to the provisions of the R&TTE Directive 1999/5/EC.

VCCI statement (Japan/Nippon only)

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

BSMI statement for Nortel Ethernet Routing Switch 3510-24T (Taiwan only)

This is a Class A product based on the standard of the Bureau of Standards, Metrology and Inspection (BSMI) CNS 13438, Class A.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

MIC notice for Nortel Ethernet Routing Switch 3510-24T (Republic of Korea only)

This device has been approved for use in Business applications only per the Class A requirements of the Republic of Korea Ministry of Information and Communications (MIC). This device may not be sold for use in a non-business application.

Observe the Regulatory Marking label on the bottom surface of the chassis for specific certification information pertaining to this model. Each model in the Nortel Ethernet Routing Switch which is approved for shipment to/usage in Korea is labeled as such, with all appropriate text and the appropriate MIC reference number.

National safety statements of compliance

CE marking statement (Europe only)

EN 60 950 statement

This is to certify that the Nortel Ethernet Routing Switch 3510-24T is in compliance with the requirements of EN 60 950 in accordance with the Low Voltage Directive. Additional national differences for all European Union countries have been evaluated for compliance.

NOM statement Nortel Ethernet Routing Switch 3510-24T (Mexico only)

The following information is provided on the devices described in this document in compliance with the safety requirements of the Norma Oficial Méxicana (NOM):

Exporter:	Nortel Networks, Inc. 4655 Great America Parkway Santa Clara CA 95054 USA
Importer:	Nortel Networks de México, S.A. de C.V. Avenida Insurgentes Sur #1605 Piso 30, Oficina Col. San Jose Insurgentes Deleg-Benito Juarez México D.F. 03900
Tel:	52 5 480 2100
Fax:	52 5 480 2199
Input:	Nortel Ethernet Routing Switch 3510-24T
	100 - 240 VAC 50/60 Hz 1.3A max

Información NOM (unicamente para México)

La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Méxicana (NOM):

Exportador:	Nortel Networks, Inc. 4655 Great America Parkway Santa Clara, CA 95054 USA
Importador:	Nortel Networks de México, S.A. de C.V. Avenida Insurgentes Sur #1605 Piso 30, Oficina Col. San Jose Insurgentes Deleg-Benito Juarez México D.F. 03900
Tel:	52 5 480 2100
Fax:	52 5 480 2199
Embarcar a:	Nortel Ethernet Routing Switch 3510-24T
	100 - 240 VAC 50/60 Hz 1.3A max

Nortel Networks Inc. software license agreement

This Software License Agreement (“License Agreement”) is between you, the end-user (“Customer”) and Nortel Networks Corporation and its subsidiaries and affiliates (“Nortel Networks”). PLEASE READ THE FOLLOWING CAREFULLY. YOU MUST ACCEPT THESE LICENSE TERMS IN ORDER TO DOWNLOAD AND/OR USE THE SOFTWARE. USE OF THE SOFTWARE CONSTITUTES YOUR ACCEPTANCE OF THIS LICENSE AGREEMENT. If you do not accept these terms and conditions, return the Software, unused and in the original shipping container, within 30 days of purchase to obtain a credit for the full purchase price.

“Software” is owned or licensed by Nortel Networks, its parent or one of its subsidiaries or affiliates, and is copyrighted and licensed, not sold. Software consists of machine-readable instructions, its components, data, audio-visual content (such as images, text, recordings or pictures) and related licensed materials including all whole or partial copies. Nortel Networks grants you a license to use the Software only in the country where you acquired the Software. You obtain no rights other than those granted to you under this License Agreement. You are responsible for the selection of the Software and for the installation of, use of, and results obtained from the Software.

1.Licensed Use of Software. Nortel Networks grants Customer a nonexclusive license to use a copy of the Software on only one machine at any one time or to the extent of the activation or authorized usage level, whichever is applicable. To the extent Software is furnished for use with designated hardware or Customer furnished equipment (“CFE”), Customer is granted a nonexclusive license to use Software only on such hardware or CFE, as applicable. Software contains trade secrets and Customer agrees to treat Software as confidential information using the same care and discretion Customer uses with its own similar information that it does not wish to disclose, publish or disseminate. Customer will ensure that anyone who uses the Software does so only in compliance with the terms of this Agreement. Customer shall not a) use, copy, modify, transfer or distribute the Software except as expressly authorized; b) reverse assemble, reverse compile, reverse engineer or otherwise translate the Software; c) create derivative works or modifications unless expressly authorized; or d) sublicense, rent or lease the Software. Licensors of intellectual property to Nortel Networks are beneficiaries of this provision. Upon termination or breach of the license by Customer or in the event designated hardware or CFE is no longer in use, Customer will promptly return the Software to Nortel Networks or certify its destruction. Nortel Networks may audit by remote polling or other reasonable means to determine Customer’s Software activation or usage levels. If suppliers of third party software included in Software require Nortel Networks to include additional or different terms, Customer agrees to abide by such terms provided by Nortel Networks with respect to such third party software.

2.Warranty. Except as may be otherwise expressly agreed to in writing between Nortel Networks and Customer, Software is provided “AS IS” without any warranties (conditions) of any kind. NORTEL NETWORKS DISCLAIMS ALL WARRANTIES (CONDITIONS) FOR THE SOFTWARE, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABLITITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OF NON-INFRINGEMENT. Nortel Networks is not obligated to provide support of any kind for the Software. Some jurisdictions do not allow exclusion of implied warranties, and, in such event, the above exclusions may not apply.

3.Limitation of Remedies. IN NO EVENT SHALL NORTEL NETWORKS OR ITS AGENTS OR SUPPLIERS BE LIABLE FOR ANY OF THE FOLLOWING: a) DAMAGES BASED ON ANY THIRD PARTY CLAIM; b) LOSS OF, OR DAMAGE TO, CUSTOMER’S RECORDS, FILES OR DATA; OR c) DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), WHETHER IN CONTRACT, TORT OR OTHERWISE (INCLUDING NEGLIGENCE) ARISING OUT OF YOUR USE OF THE SOFTWARE, EVEN IF NORTEL NETWORKS, ITS AGENTS OR SUPPLIERS HAVE BEEN ADVISED OF THEIR POSSIBILITY. The forgoing limitations of remedies also apply to any developer and/or supplier of the Software. Such developer and/or supplier is an intended beneficiary of this Section. Some jurisdictions do not allow these limitations or exclusions and, in such event, they may not apply.

4.General

a)If Customer is the United States Government, the following paragraph shall apply: All Nortel Networks Software available under this License Agreement is commercial computer software and commercial computer software documentation and, in the event Software is licensed for or on behalf of the United States Government, the respective

rights to the software and software documentation are governed by Nortel Networks standard commercial license in accordance with U.S. Federal Regulations at 48 C.F.R. Sections 12.212 (for non-DoD entities) and 48 C.F.R. 227.7202 (for DoD entities).

b)Customer may terminate the license at any time. Nortel Networks may terminate the license if Customer fails to comply with the terms and conditions of this license. In either event, upon termination, Customer must either return the Software to Nortel Networks or certify its destruction.

c)Customer is responsible for payment of any taxes, including personal property taxes, resulting from Customer's use of the Software. Customer agrees to comply with all applicable laws including all applicable export and import laws and regulations.

d)Neither party may bring an action, regardless of form, more than two years after the cause of the action arose.

e)The terms and conditions of this License Agreement form the complete and exclusive agreement between Customer and Nortel Networks.

f)This License Agreement is governed by the laws of the country in which Customer acquires the Software. If the Software is acquired in the United States, then this License Agreement is governed by the laws of the state of New York.

Revision History

Date Revised	Version	Reason for revision
February 2005	1.0	Nortel Ethernet Routing Switch 3510-24T.

Contents

Figures

Tables

Preface

Welcome to the Web Management for the Nortel* Ethernet Routing Switch 3510-24T, Software Release 4.0.3. This document provides instructions on configuring and managing the Nortel Ethernet Routing Switch 3510-24T through the Web browser.

The Web-based management interface is one of the many tools specifically designed to assist the network manager in creating complex standalone or network configurations.

In addition to the Web-based management system discussed in this book, you can manage the Ethernet Routing Switch by using Simple Network Management Protocol (SNMP), the Nortel Command Line Interface (NCLI), Device Manager (DM), or the Console Interface (CI) menus.

Refer to the documents listed in the "Related Publications" on page 24 for information on using and managing the Ethernet Routing Switch.

This guide describes how to use the Web-based management user interface to configure and maintain the Ethernet Routing Switch and the devices connected within its framework.

Before you Begin

This guide is intended for network managers who are responsible for configuring the Ethernet Routing Switch. Consequently, this guide assumes prior knowledge and understanding of the terminology, theories, practices, and specific knowledge about networking devices, protocols, and interfaces that comprise your network.

You should have working knowledge of the Windows* operating system, Graphical User Interfaces (GUIs), and Web browsers.

Text conventions

This guide uses the following text conventions:

italic text	Indicates new terms and book titles.
separator (>)	Shows menu paths. Example: Configuration > Port Management identifies the Port Management option on the Configuration menu.

Related Publications

For more information on using the Web-based management user interface and the Ethernet Routing Switch, refer to the following publications:

- *Release Notes for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* (part number 217331-A)

  Documents important changes about the software and hardware that are not covered in other related publications.

- *Installing the Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* (part number 217326-A)

  Describes how to install the Ethernet Routing Switch.

- *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* (part number 217327-A)

  Describes how to use the Ethernet Routing Switch.

- *NCLI Configuration Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* (part number 217330-A)

  Describes how to use Nortel Command Line Interface (NCLI) commands to configure and manage the Ethernet Routing Switch.

- *Switch Management for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* (part number 217329-A)

  Describes how to use the Java-based device-level software management application.

You can print selected technical manuals and release notes free, directly from the Internet. Go to www.nortel.com/support. Find the product for which you need documentation. Then locate the specific category and model or version for your hardware or software product. Use Adobe* Acrobat Reader* to open the manuals and release notes, search for the sections you need, and print them on most standard printers. Go to Adobe Systems at www.adobe.com to download a free copy of the Adobe Acrobat Reader.

How to Get Help

If you have purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you have purchased a Nortel service program, contact Nortel Technical Support. To obtain contact information online, go to www.nortel.com/support, and then click on Technical Support.

From the Technical Support page, you can open a Customer Service Request online or find the telephone number for the nearest Technical Solutions Center. If you are not connected to the Internet, you can call 1-800-4NORTEL (1-800-466-7835) to learn the telephone number for the nearest Technical Solutions Center.

An Express Routing Code (ERC) is available for many Nortel products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to www.nortel.com/support and click Express Routing Codes located on the right side bottom of the page.

Chapter 1
Using the Web-based Management Interface

This chapter describes the requirements for using the Web-based management interface and how to use it as a tool to configure the Ethernet Routing Switch. This chapter discusses the following topics:

Requirements

To use the Web-based management interface, you will need the following items:

- A computer connected to any of the network ports.
- One of the following Web browsers installed on the computer (check the memory requirements):
  - Microsoft Internet Explorer*, version 4.0 or later (Windows
  - 95/98/NT/XP/2000)
  - Netscape Navigator*, version 4.51 or later (Windows 95/98/NT/XP/2000 and Unix)
- The IP address of the Ethernet Routing Switch
- A web browser optimized for 800 by 600 pixel screen size

Note: The Web-based management interface Web pages may load at different speeds depending on the Web browser you use.

Logging in to the Web-based Management Interface

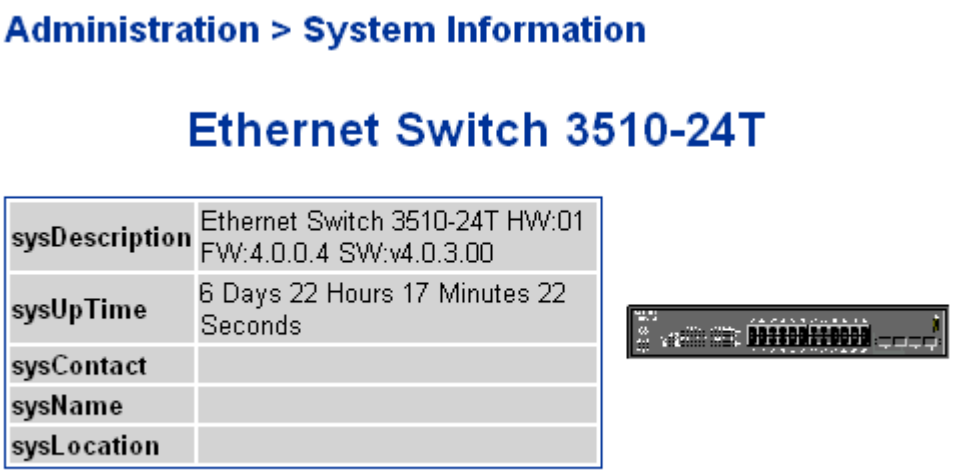
Before you log in to the Web-based management interface, use the console interface to verify the VLAN port assignments and to ensure that your switch CPU and your computer are assigned to the same VLAN. If the devices are not connected to the same VLAN, you cannot access the Web-based management system.

To log in to the Web-based management interface, follow these steps:

1. Start your Web browser.
2. In the Web address field, enter the IP address for your host switch. For example, http://10.30.31.105, and press [Enter].

   The home page opens (Figure 1).

Figure 1 Web-based management interface home page



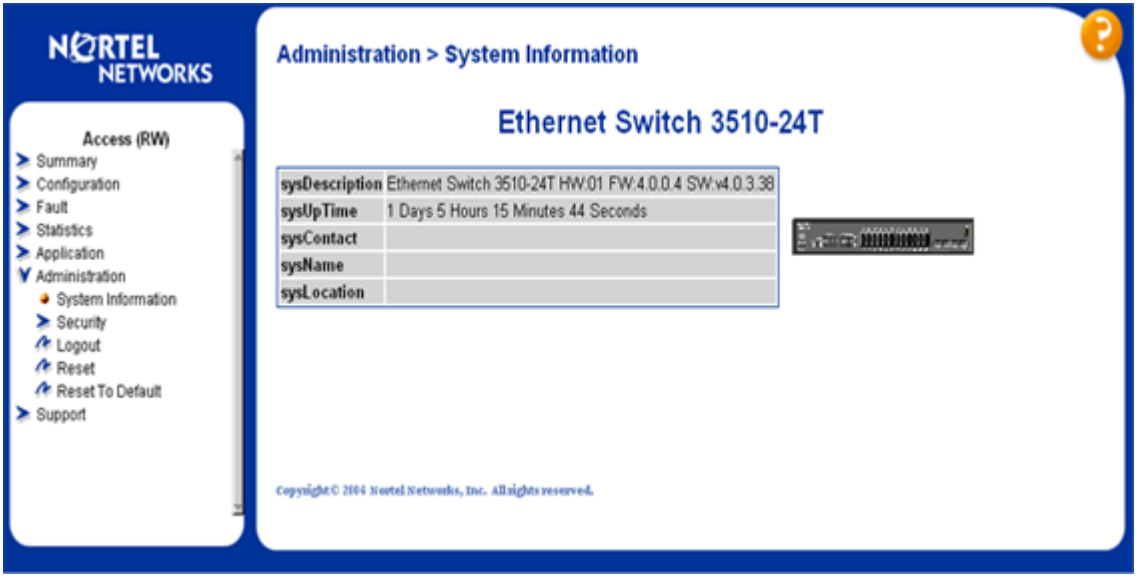
Network security does not yet exist the first time you access the Web-based management user interface. As the system administrator, you must create access parameters and passwords to protect the integrity of your network configuration(s).

For more information on setting access parameters and system passwords, refer to Configuring the Switch.

Web Page Layout

The Home page (Figure 2) and all successive pages have a common layout. Each page is divided into two sections – the menu, and the management page. All Web pages are optimized for a 800 x 600 pixel screen size.

Figure 2 Web page layout



Menu

The menu, as shown in Figure 2, contains a list of seven main titles and their corresponding options.

To navigate the Web-based management interface menu, click a menu title and then click one of its options. When you click an option, the corresponding page opens.

Table 1 Main headings in the Web-based management user interface and their associated options.

Table 1 Main headings and options

Main menu titles	Options
Summary	Switch Information
Configuration	IP System Remote Access SNMPv1 SNMPv3* SNMP Trap MAC Address Table Find MAC Address Port Management High Speed Flow Control Software Download Configuration File Console/Comm Port
Fault	RMON threshold RMON Event Log System Log
Statistics	Port Port Error Summary Interface Ethernet Errors Transparent Bridging RMON Ethernet RMON History
Application	Port Mirroring Rate Limiting EAPOL Security MAC Address Security* IGMP* VLAN* Spanning Tree* Multilink Trunk* QoS*
Administration	System Information Security* Logout Reset Reset to Default

Table 1 Main headings and options

Main menu titles	Options
Support	Help Release Notes Manuals Upgrade
*Has additional menu options.	

Tools are provided in the menu to assist you in navigating the Web-based management interface.

Caution: Web browser capabilities such as page bookmarking, refresh, and page forward and page back, function as they would in any other Web site. However, these capabilities do not enhance the functionality of the Web-based management interface. Nortel recommends you to use only the navigation tools provided in the management interface.

Table 2 describes the icons that appear on the menu.

Table 2 Menu icons

Button or icon	Description
	This icon identifies a menu title. Click this icon to display its options.
	This icon identifies a menu title option. Click this icon to display the corresponding page.
	This icon identifies a menu title option with a hyperlink to related pages.
	This icon is linked to an action, for example logout, reset, or reset to system defaults.
	Clicking on the Nortel Networks logo opens the corporate home page in a new Web browser.

Management Page

When you click a menu option, the corresponding management page opens. Figure 3 shows the page which is displayed for the Administration > Security > Console option.

Figure 3 Console page

A page is composed of one or more of the following elements:

- Tables and input forms

  The gray cells in a page are display only, and white cells are input fields.

- Check boxes

  You can enable or disable a selection by clicking a check box. When a check mark is displayed in the box, that selection is enabled. You can disable a clearing the check box.

- Icons and buttons

  Icons and buttons perform an action concerning the displayed page or the switch. Some pages include a button that opens another page or updates the values shown on the current page. Other pages include icons that initiate an action, such as reformatting the current displayed data as a bar or pie chart.

Table 3 describes the icons that may appear on a page to assist you in navigation.

Table 3 Page buttons and icons

Icon	Name	Description
	Modify	Accesses a modification page for the selected row.
	View	Accesses a view only statistics page for the selected row.
	Delete	Deletes a row.
	Help	Accesses the Help menu in a new Web browser.
	Item-Specific Help	Accesses the item-specific Help menu in a new Web browser.
		Note: Text within a table that is highlighted blue and underlined is a hyperlink to a related management page.

Chapter 2
Administering the switch

The administrative options available are:

For more information on the features discussed in this chapter, refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3*. This book also has instructions on using the Console Interface (CI) menus to configure and manage the switch. Refer to the *NCLI Configuration Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* for instructions on managing the Ethernet Routing Switch by CLI. *Switch Management for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* contains instructions on managing the switch by using the Device Manager.

Viewing General Information

You can view an image of the Ethernet Routing Switch in the following way:

Viewing System Information

You can view an image of the Ethernet Routing Switch configuration, information about the host device and, if provided, the contact person or manager for the switch. The System Information page is also the Web-based management interface home page.

To view system information:

1 From the main menu, choose Administration > System Information.

The System Information page opens (Figure 4).

Note: You create or modify existing system information parameters on the System page.

Figure 4 System Information home page

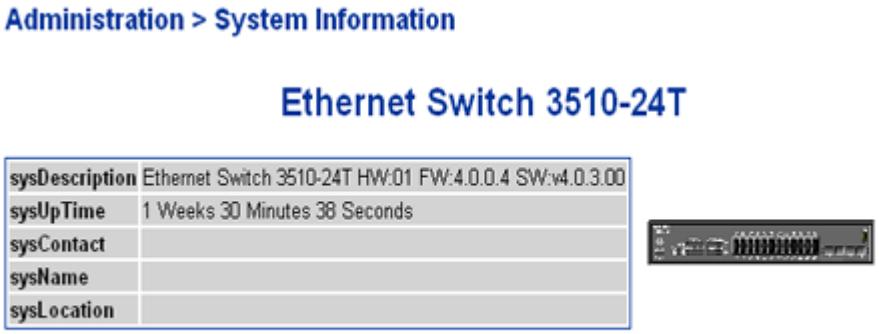


Table 4 describes the items on the System Information page.

Table 4 System Information page items

Item	Description
sysDescription	The default description of the Ethernet Routing Switch, including the hardware, firmware, and software.
sysUpTime	The elapsed time since the last network management portion of the system was last re-initialized.
sysContact	The name and email contact information of the administratively assigned person to contact regarding switch operation.
sysName	The name created by the network administrator to identify the switch, for example Finance Group.
sysLocation	The location name created by the network administrator to identify the switch location, for example, first floor.

Configuring System Security

This section describes the steps you use to build and manage security using the Web-based management interface.

For more information on setting security systems, refer to setting EAPOL, MAC security, and IP manager list in Configuring the Switch.

Setting Console, Telnet, and Web Passwords

To set console, Telnet, and Web passwords:

1 From the main menu, choose Administration > Security and Console, Telnet, or Web.

The selected password page opens (Figure 5).

Note: The title of the page corresponds to the menu selection you choose. In Figure 5, the network administrator selected Administration > Security > Console.

Note: The Console has its own switch password type; whereas Telnet and Web access methods share the same switch password type. The Console, Telnet, and Web all share the same passwords when they are set to the same password type.

Figure 5 Console Password setting page

Table 5 describes the items on the Console page.

Table 5 Console page items

Section	Item	Setting	Description
Console Switch Password Setting	Console Switch Password Setting Type	(1) None (2) Local Password (3) RADIUS Authentication	Displays the switch password types. Note: The default is None.
	Read-Only Switch Password	1to 15 string (printable characters)	Type the read-only password setting for the read-only access user. Re-enter the read-only switch password for verification.
	Read-Write Switch Password	1to 15 string (printable characters)	Type the read-write password setting for the read-write access user. Re-enter the read-write switch password for verification.

2 Type the information, or make a selection from the list.

3 Click Submit.

Configuring RADIUS Security

To configure RADIUS security parameters:

1 From the main menu, choose Administration > Security > RADIUS.

The RADIUS page opens.

2 Type the information.

3 Click Submit.

Figure 6 RADIUS page

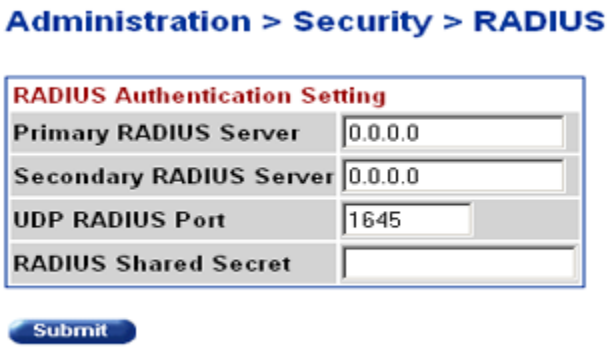


Table 6 describes the items on the RADIUS page.

Table 6 RADIUS page items

Item	Setting	Description
Primary RADIUS Server	XXX.XXX.XXX.XXX	Type a Primary RADIUS server IP address in the appropriate format.
Secondary RADIUS Server	XXX.XXX.XXX.XXX	Type a Secondary RADIUS server IP address in the appropriate format.

Table 6 RADIUS page items

Item	Setting	Description
UDP RADIUS Port	Integer	Type the UDP RADIUS port number.
RADIUS Shared Secret	1to 16	Type a unique character string to create a secret password. Re-enter the secret password for verification.

Note: If you enter an incorrect password while using RADIUS authentication to restrict management access to the device, the following error message appears:

```
no response from RADIUS servers
```

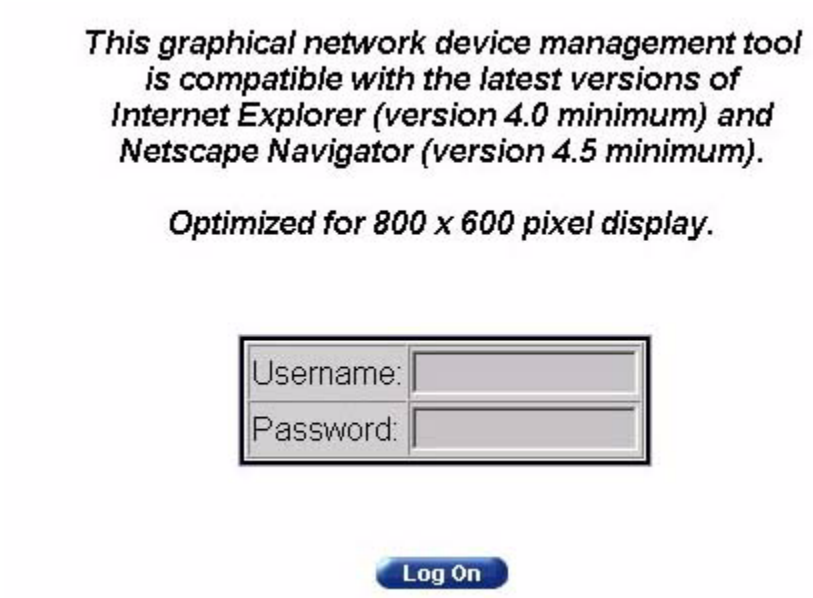
Note: Authentication using a secondary RADIUS server does not work when the primary RADIUS server is the CiscoSecure ACS v3.0 For Windows. The following error message appears:

```
Access Denied
from RADIUS.
```

Logging on to the Web Management Interface

After you enable the switch password authentication (the password type is either “Local Password” or “RADIUS Authentication”) and you set the switch passwords, any user attempting to use the application will be presented with the login page (Figure 7).

Figure 7 Web-based management interface log on page

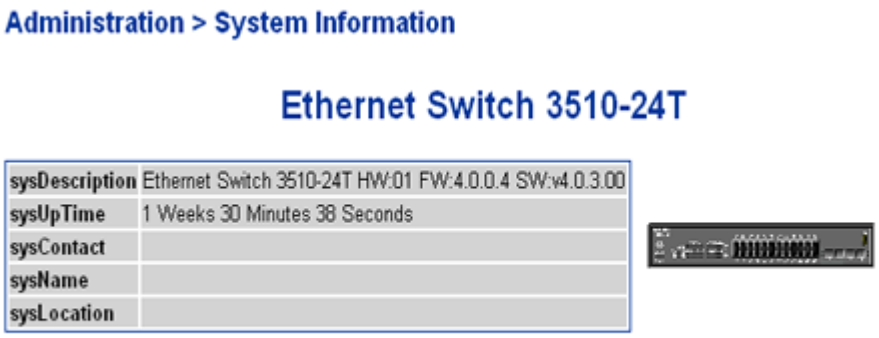


To log on to the Web-based management interface:

1. In the Username text box, type **RO** for read-only access or **RW** in uppercase for read-write access.
2. In the Password text box, type your password.
3. Click Log On.

   The System Information home page opens (Figure 8).

Figure 8 System Information home page



With Web access enabled, the switch can support upto four concurrent Web sessions, where each session is defined by a unique IP address from where the session is originating. Two predefined user levels are available, and each user level has a corresponding username and password.

Table 7 shows an example of the two predefined user levels available and their access level within the Web-based management user interface.

Table 7 User levels and access levels

User level	User name for each level in upper case	Password for each user level	Access Level
Read-only	RO	XXXXXXXX	Read only
Read-write	RW	XXXXXXXX	Full read/write access

Resetting the Ethernet Routing Switch

You can reset a switch without erasing any configured switch parameters. While resetting, the switch initiates a self-test that comprises various diagnostic routines and subtests. (Resetting means rebooting in this context.)

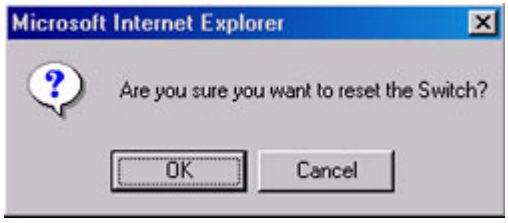
To reset the Ethernet Routing Switch without making changes (since your last Submit request):

1 From the main menu, choose Administration > Reset.

The Reset page opens (Figure 9).

Note: When you are working on the switch, the system returns the message:
`Are you sure your want to reset the switch?`
When you press OK, the switch resets.

Figure 9 Reset page



2 Click Submit.

Note: If you have not configured system password security, a reset returns you to the home page, as shown in Figure 1 on page 28. If you have configured system password security, a reset returns you to a log on page, as shown in Figure 7 on page 41.

Resetting the Ethernet Routing Switch to system defaults

You can reset the Ethernet Routing Switch, thereby replacing all configured switch parameters with the factory default values.

Caution: If you choose reset to default settings, all configured settings are replaced with factory default settings when you click Submit (IP is reset to 0.0.0.0.). For more information on factory default settings, refer to *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3.*

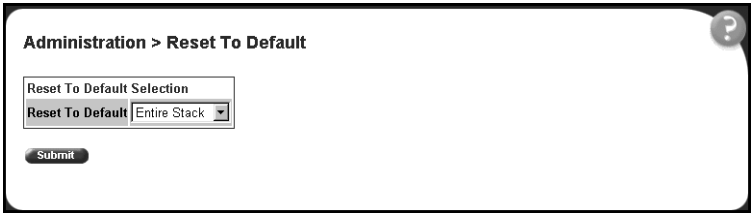
During the reset process, the switch initiates a self-test that comprises various diagnostic routines and subtests.

To reset the Ethernet Routing Switch to system defaults:

1 From the main menu, choose Administration > Reset to Default.

Note: When you are working on the switch, the system returns the message:
`Are you sure your want to reset the switch?`
When you press OK, the switch resets.

Figure 10 Reset to Default page



2 Click Submit.

Logging out of the Management Interface

To log out of the Web-based management interface:

1. From the main menu, choose Administration > Logout.

   A message opens prompting you to confirm your request

2. Do one of the following:
   - Click OK to logout of the Web-based management interface.
   - Click Cancel to return to the Web-based management interface home page.

Note: After ten minutes of idle time you will automatically be logged out. This means that if Web authentication is enabled, you will have to login again to the Switch Web access.

Chapter 3
Viewing Summary Information

The summary information options of the Ethernet Routing Switch 3510-24T are:

- "Viewing Summary Switch Information", next

Viewing Summary Switch Information

You can view the summary information of the switch, for example, the physical description and serial number of the switch.

To view summary switch information:

➨ From the main menu, choose Summary > Switch Information.

The Switch Information page opens (Figure 11).

Figure 11 Switch Information page

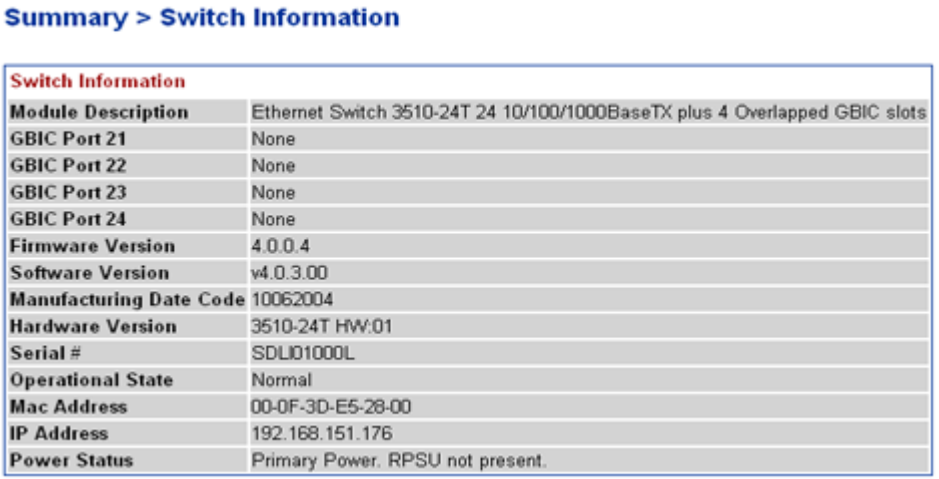


Table 8 describes the fields on the Switch Information page.

Table 8 Switch Information page fields

Item	Description
Module Description	The factory set description of the policy switch.
GBIC Port 21	Description of the type of GBIC. The default value is None. It can be SX, LX, CWDM.
GBIC Port 22	Description of the type of GBIC. The default value is None. It can be SX, LX, CWDM.
GBIC Port 23	Description of the type of GBIC. The default value is None. It can be SX, LX, CWDM.
GBIC Port 24	Description of the type of GBIC. The default value is None. It can be SX, LX, CWDM.
Firmware Version	The version of the running firmware.
Software Version	The version of the running software.
Manufacturing Date Code	The date of manufacture of the board in ASCII format.
Hardware Version	The hardware version of the switch.
Serial Number	The serial number of the policy switch.
Operational State	The current operational state of the device. The operational states are: Other, Not Available, Removed, Disabled, Normal, Reset in Progress, Testing, Warning, Non Fatal Errors, Fatal Error, and Not Configured.
Mac Address	The MAC address of the device.

Table 8 Switch Information page fields

Item	Description
IP Address	The IP address of the device.
Power Status	The current power status of the device. Primary Power. RPSU not present.

Chapter 4
Configuring the Switch

The switch configuration options available to you are:

Configuring BootP, IP, and Gateway Settings

You can configure your BootP mode settings, create and modify your in-band switch IP addresses and in-band subnet mask parameters, and configure the IP address of your default gateway.

Note: Settings take effect immediately when you click Submit.

To configure BootP, IP, and gateway settings:

1 From the main menu, choose Configuration > IP

The IP page opens (Figure 12).

Figure 12 IP page for a Ethernet Routing Switch

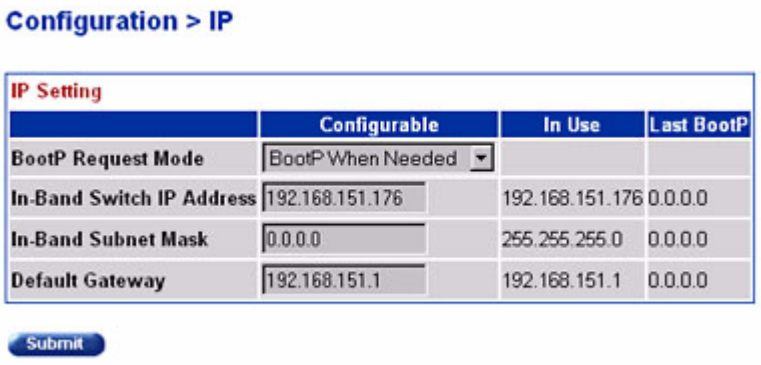


Table 9 describes the items on the IP page.

Table 9 IP page items

Section	Item	Range	Description
Boot Mode Setting	BootP Request Mode	BootP When Needed	Choose this mode to inform the switch to send a BootP request when the switch IP address stored in nonvolatile memory is the factory default value. If the stored IP address differs from the factory default value, the switch uses the stored network parameters. If the switch cannot find a BootP server, it tries five more times to find one and then defaults to the factory settings. Note: This is the default.
		BootP Always	Choose this mode to inform the switch, each time the switch boots, to ignore any stored network parameters and send a BootP request. If the BootP request fails, the switch boots with the factory default IP configuration. This setting disables remote management if no BootP server is set up for the switch, but it allows the switch to boot normally.
		BootP Disabled	Choose this mode to inform the switch, each time the switch boots, to use the IP configuration parameters stored in non-volatile memory. If a BootP configuration is in progress when you issue this command, the BootP configuration stops.
		BootP or Last Address	Choose this mode to inform the switch, at each startup, to obtain its IP configuration using BootP. If the BootP request fails, the switch uses the network parameters stored in its non-volatile memory. Note: Valid parameters obtained in using BootP always replace current information stored in the non-volatile memory. Note: Whenever the switch is broadcasting BootP requests, the BootP process times out if a reply is not received within (approximately) 7 minutes. When the process times out, the BootP request mode automatically changes to BootP Disabled mode. To restart the BootP process, change the BootP request mode to any of the three following modes: BootP When Needed, BootP Always, or to BootP or Last Address.

Table 9 IP page items (continued)

Section	Item	Range	Description
IP Setting	In-Band Switch IP Address	XXX.XXX.XXX.XXX	Type a new switch IP address in the appropriate format. Note: When the IP address is entered in the In-Band IP Address field, and the In-Band Subnet Mask field value is not present, the software provides an *in-use* default value for the In-Band Subnet Mask field that is based on the class of the IP address entered in the In-Band IP Address field.
	In-Band Subnet Mast	XXX.XXX.XXX.XXX	Type a new subnet mask in the appropriate format.
	In-Use		The column header for the read-only fields in this screen. The data displayed in this column represents data that is currently in use.
	Last BootP		The column header for the read-only fields in this screen. The read-only data displayed in this column represents data obtained from the last BootP reply received.
Gateway Setting	Default Gateway	XXX.XXX.XXX.XXX	Type an IP address for the default gateway in the appropriate format.

Note: If an IP address is assigned to the device and the BootP process times out, the BootP mode remains the default mode of BootP when needed.
However, if the device does not have an assigned IP address and the BootP process times out, the BootP mode automatically changes to BootP disabled. This change to BootP disabled is not stored, and the BootP reverts to the default value of BootP when needed after rebooting the device.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

Modifying System Settings

You can create or modify the system name, system location, and network manager contact information.

Note: The configurable parameters on the System page are displayed in a read only-format on the Web-based management user interface System Information home page (see Figure 1 on page 28).

To configure system settings:

1 From the main menu, choose Configuration > System.

The System page opens (Figure 13).

Figure 13 System page

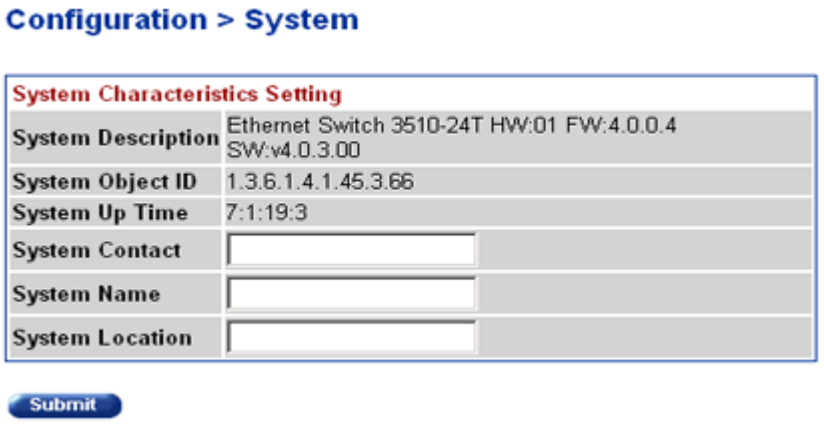


Table 10 describes the items on the System page.

Table 10 System page items

Item	Range	Description
System Description		The factory set description of the hardware and software versions.
System Object ID		The character string that the vendor created to uniquely identify this device.

Table 10 System page items

Item	Range	Description
System Up Time		The elapsed time since the last network management portion of the system was last re-initialized. Note: This field is updated only when the screen is redisplayed.
System Contact	0 to 255	Type a character string to create the contact information for the network manager or the selected person to contact regarding switch operation, for example, mcarlson@company.com Note: To operate correctly with the Web interface, the system contact should be an e-mail address.
System Name	0 to 255	Type a character string to create a name to identify the switch, for example Finance Group.
System Location	0 to 255	Type a character string to create a name for the switch location, for example, First Floor.

2 Type information in the text boxes.

3 Click Submit.

Managing Remote Access by IP Address

You can configure the remote access you want to allow. You can specify up to 10 IP addresses to allow Web access, SNMP access, or Telnet access to the Ethernet Routing Switch.

To configure remote access using the Web-based management system:

1 From the main menu of the Ethernet Routing Switch Web-based Manager, choose Configuration > Remote Access.

The Remote Access page opens (Figure 14).

Figure 14 Remote Access page

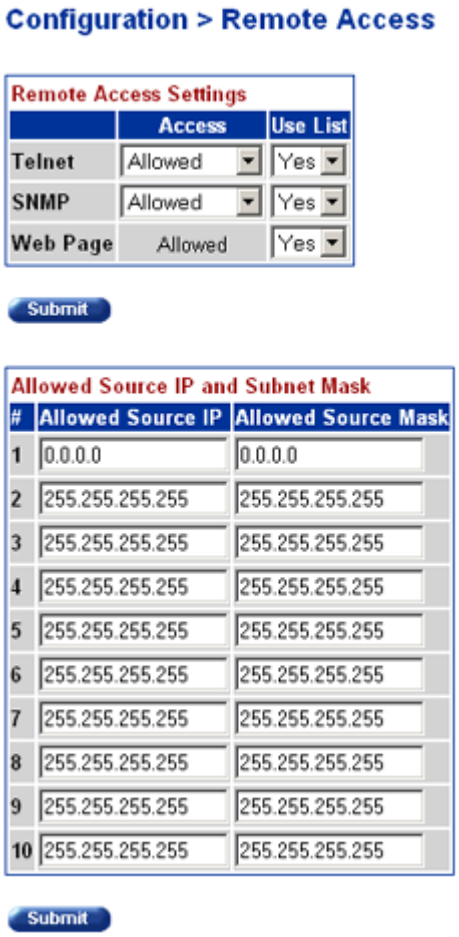


Table 11 describes the fields on the Remote Access page.

Table 11 Remote Access page fields

Section	Item	Range	Description
Remote Access Settings	Telnet/Access	(1)Allowed (2) Disallowed	Allows Telnet access.
	Telnet/Use List	(1) Yes (2) No	Restricts Telnet access to the specified 10 source IP addresses.

Table 11 Remote Access page fields (continued)

Section	Item	Range	Description
	SNMP/Access	(1)Allowed (2) Disallowed	Allows SNMP access.
	SNMP/Use List	(1) Yes (2) No	Restricts SNMP access to the specified 10 source IP addresses.
	Web Page/Access		Displays allowed Web access.
	Web/Use List	(1) Yes (2) No	Restricts Web access to the specified 10 source IP addresses.
Allowed Source IP and Subnet Mask	Allowed Source IP	XXX.XXX.XXX.XXX	Enter the source IP address you want to allow switch access.
	Allowed Source Mask	XXX.XXX.XXX.XXX	Enter the source IP mask you want to allow switch access.

2 Complete fields as described in the table.

3 Click Submit.

Simple Network Management Protocol

Simple Network Management Protocol (SNMP) is the standard for network management that uses a common software agent to manage local and wide area network equipment from different vendors; part of the Transmission Control Protocol/Internet Protocol (TCP/IP) suite and defined in RFC1157. SNMPv1 is version one, or the original standard protocol. SNMPv3 is a combination of proposal updates to SNMP, most of which deal with security.

Configuring SNMPv1

You can configure SNMPv1 read-write and read-only community strings, enable or disable trap mode settings, and/or enable or disable the Autotopology feature. The Autotopology feature, when enabled, performs a process that recognizes any device on the managed network and defines and maps its relation to other network devices in real time.

To configure the community string, trap mode, and Autotopology settings and features:

1 From the main menu, choose Configuration > SNMPv1.

The SNMPv1 page opens (Figure 15).

Figure 15 SNMPv1 page

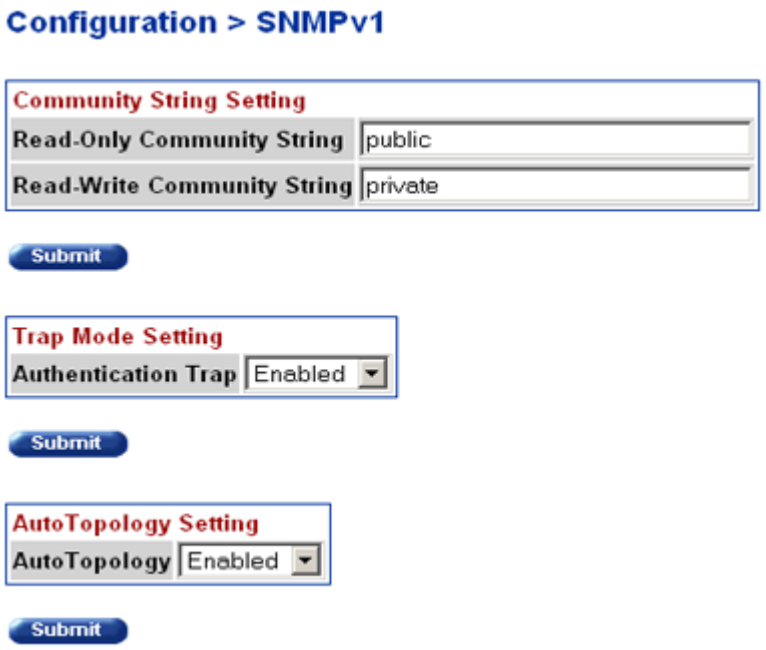


Table 12 describes the items on the SNMPv1 page.

Table 12 SNMPv1 page items

Section	Item	Range	Description
Community String Setting	Read-Only Community String	1to 32	Type a character string to identify the community string for the SNMPv1 read-only community, for example, public or private. The default value is public.
	Read-Write Community String	1to 32	Type a character string to identify the community string for the SNMPv1 read-write community, for example, public or private. The default value is private.
Trap Mode Setting	Authentication Trap	(1) Enabled (2) Disabled	Choose to enable or disable the authentication trap.
AutoTopology Setting	AutoTopology	(1) Enabled (2) Disabled	Choose to enable or disable the autotopology feature.

2 Type information in the text boxes, or select from a list.

3 Click Submit in any section to save your changes.

Configuring SNMPv3

This section describes the steps to build and manage SNMPv3 in the Web-based management user interface.

SNMPv3 Table Entries Stored in NVRAM

The number of nonvolatile entries (entries stored in NVRAM) allowed in the SNMPv3 tables is shown in the following list. The system does not allow you to create more entries marked nonvolatile once your reach these limits:

- snmpCommunityTable: 20
- vacmViewTreeFamilyTable: 60
- vacmSecurityToGroupTable: 40

- vacmAccessTable: 40
- usmUserTable: 20
- snmpNotifyTable: 20
- snmpTargetAddrTabel:20
- snmpTargetParamsTable: 20

Viewing SNMPv3 System Information

You can view information about the SNMPv3 engine that exists and the private protocols that are supported in your network configuration. You can also view information about packets received by the system having particular errors, such as unavailable contexts, unknown contexts, decrypting errors, or unknown user names.

To view SNMPv3 system information:

1. From the main menu, choose Configuration > SNMPv3 > System Information.

   The System Information page opens (Figure 16).

Figure 16 System Information page

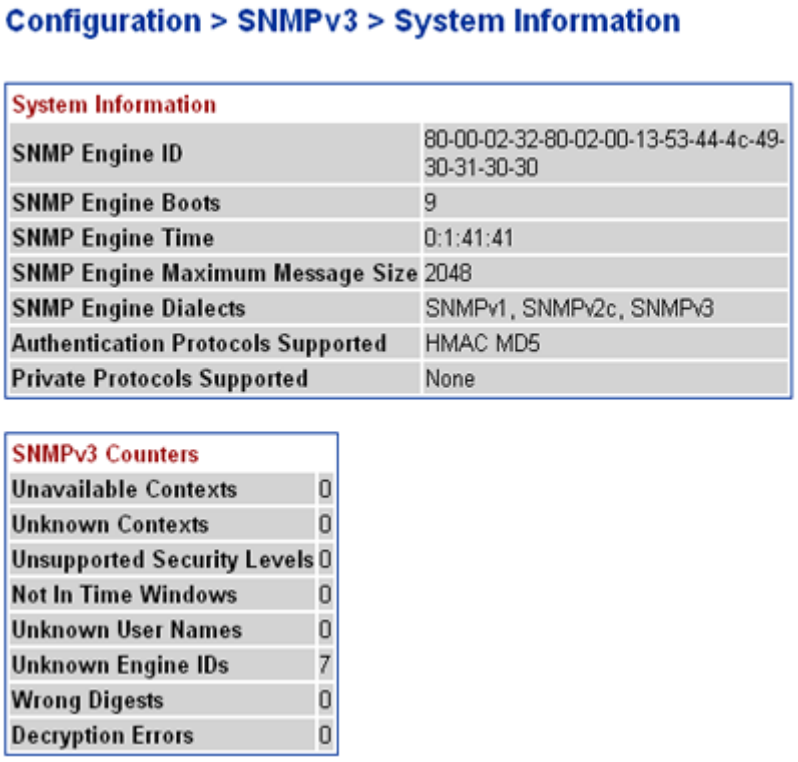


Table 13 describes the fields on the System Information section of the SNMPv3 System Information page.

Table 13 System Information section fields

Item	Description
SNMP Engine ID	The SNMP engine's identification number.
SNMP Engine Boots	The number of times that the SNMP engine has re-initialized itself since its initial configuration.
SNMP Engine Time	The number of seconds since the SNMP engine last incremented the snmpEngineBoots object.
SNMP Engine Maximum Message Size	The maximum length, in octets, of an SNMP message which this SNMP engine can send or receive and process determined as the minimum of the maximum message size values supported among all transports available to and supported by the engine.

Table 13 System Information section fields

Item	Description
SNMP Engine Dialects	The SNMP dialect the engine recognizes. The dialects are:SNMP1v1, SNMPv2C, and SNMPv3.
Authentication Protocols Supported	The registration point for standards-track authentication protocols used in SNMP Management Frameworks. The registration points is: None, HMAC MD5.
Private Protocols Supported	The registration point for standards-track privacy protocols used in SNMP Management Frameworks. The registration points is: None.

Table 14 describes the fields on the SNMPv3 Counters section of the SNMPv3 System Information page.

Table 14 SNMPv3 Counters section fields

Item	Description
Unavailable Contexts	The total number of packets dropped by the SNMP engine because the context contained in the message was unavailable.
Unknown Contexts	The total number of packets dropped by the SNMP engine because the context contained in the message was unknown.
Unsupported Security Levels	The total number of packets dropped by the SNMP engine because they requested a security level that was unknown to the SNMP engine or otherwise unavailable.
Not in Time Windows	The total number of packets dropped by the SNMP engine because they appeared outside of the authoritative SNMP engine's window.
Unknown User Names	The total number of packets dropped by the SNMP engine because they referenced an unknown user.
Unknown Engine IDs	The total number of packets dropped by the SNMP engine because they referenced an snmpEngineID that was not known to the SNMP engine.
Wrong Digests	The total number of packets dropped by the SNMP engine because they did not contain the expected digest value.
Decryption Errors	The total number of packets dropped by the SNMP engine because they could not be decrypted.

Configuring User Access to SNMPv3

You can view a table of all current SNMPv3 user security information such as authentication/privacy protocols in use, and create or delete SNMPv3 system user configurations.

Creating an SNMPv3 system user configuration

To create an SNMPv3 system user configuration:

1 From the main menu choose Configuration > SNMPv3 > User Specification.

The User Specification page opens (Figure 17).

Figure 17 User Specification page

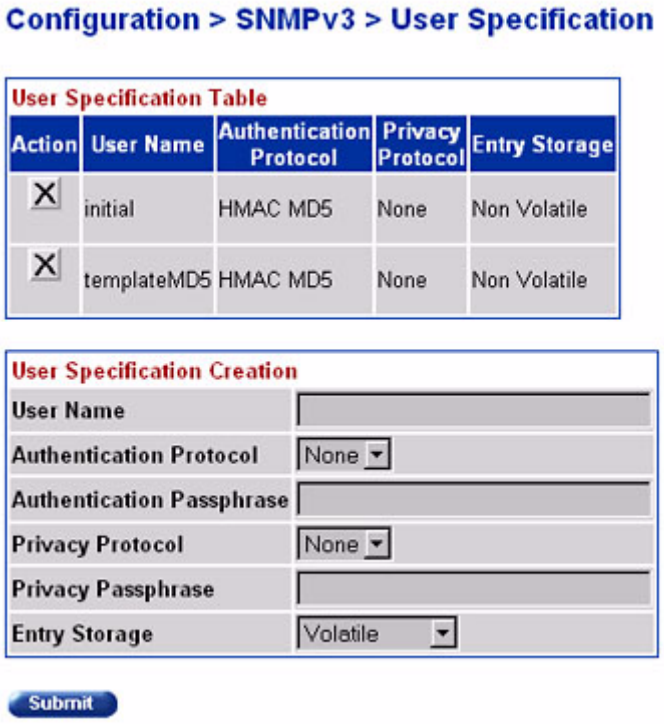


Table 15 describes the items on the User Specification Table section of the User Specification page.

Table 15 User Specification Table section items

Item and MIB association	Description
	Deletes the row.
User Name (usmUserSecurityName)	The name of an existing SNMPv3 user.
Authentication Protocol (usmUserAuthProtocol)	Indicates whether the message sent on behalf of this user to/from the SNMP engine identified UserEngineID can be authenticated by the MD5 authentication protocol.
Private Protocol (usmUserPrivProtocol)	Displays whether or not messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID can be protected from disclosure, and if so, the type of privacy protocol which is used.
Entry Storage	The current storage type for this row. If “Volatile” is displayed, information is dropped (lost) when you turn the power off. If non-volatile is displayed, information is saved in NVRAM when you turn the power off

Table 16 describes the items on the User Specification Creation section of the User Specification page.

Table 16 User Specification Creation section items

Item and MIB association	Range	Description
User Name	1to 32	Type a string of characters to create an identity for the user.
Authentication Protocol (usmUserAuthProtocol)	None MD5	Choose whether or not the message sent on behalf of this user to/from the SNMP engine identified UserEngineID can be authenticated with the MD5 protocol.
Authentication Passphrase (usmUserAuthPassword)	1to 32	Type a string of character to create a password to use in conjunction with the authorization protocol.
Privacy Protocol	None	The privacy protocol you want to use.
Privacy Passphrase	Must be at least 8 characters long	Enter a string of at least 8 characters to create the passphrase. This passphrase is used to generate an encryption key for the user.
Entry Storage (usmUserStorageType)	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the User Specification Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new configuration is displayed in the User Specification Table (Figure 17).

Deleting an SNMPv3 System User Configuration

To delete an existing SNMPv3 user configuration:

1 From the main menu, choose Configuration > SNMPv3 > User Specification.

The User Specification page opens (Figure 17).

2 In the User Specification Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the SNMPv3 user configuration.
- Click Cancel to return to the User Specification page without making changes.

Configuring an SNMPv3 System User Group Membership

You can view a table of existing SNMPv3 group membership configurations and map or delete an SNMPv3 user to group configuration.

Mapping an SNMPv3 System User to a Group

To map an SNMPv3 system user to a group:

1 From the main menu, choose Configuration > SNMPv3 > Group Membership.

The Group Membership page opens (Figure 18).

Figure 18 Group Membership page

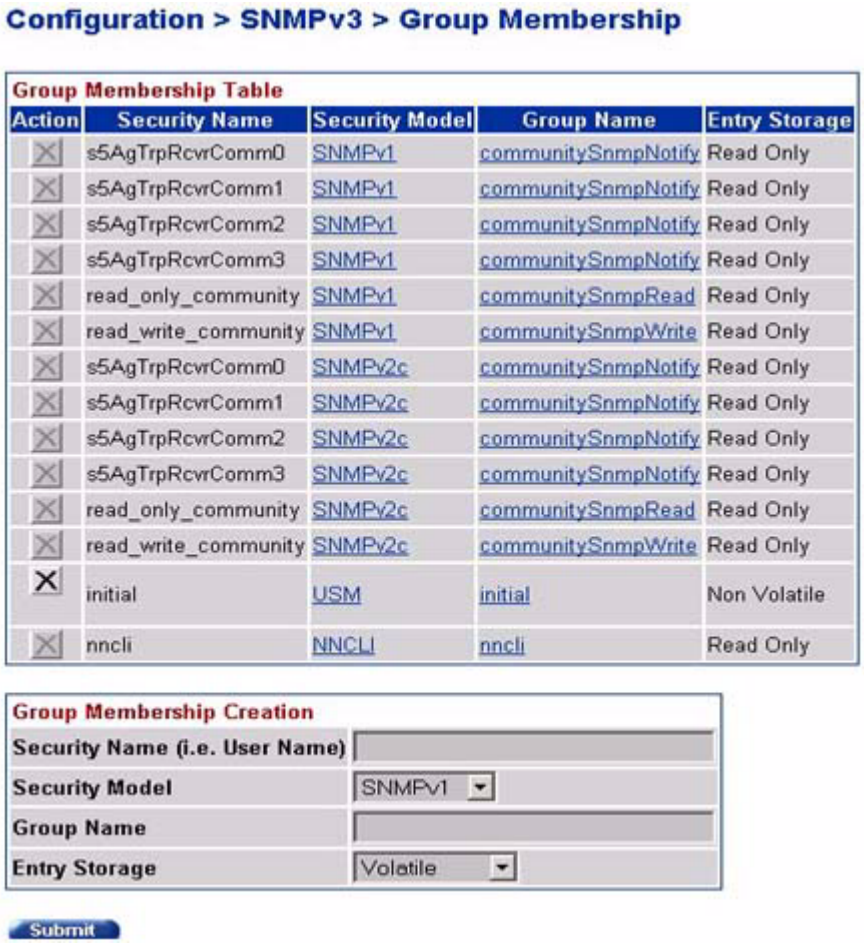


Table 17 describes the items on the Group Membership page.

Table 17 Group Membership page items

Item and MIB association	Range	Description
		Deletes the row.
Security Name (vacmSecurityToGroupStatus)	1to 32	Type a string of character to create a security name for the principal which is mapped by this entry to a group name.

Table 17 Group Membership page items

Item and MIB association	Range	Description
Security Model (vacmSecurityToGroupStatus)	(1) SNMPv1 (2) SNMPv2c (3) USM	Choose the security model within which the security name to group name mapping is valid.
Group Name (vacmGroupName)	1to 32	Type a string of character to specify the group name.
Entry Storage (vacmSecurityToGroupStorageType)	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the Group Membership Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Group Membership Table.

Deleting an SNMPv3 group membership configuration

To delete an SNMPv3 group membership configuration:

1 From the main menu, choose Configuration > SNMPv3 > Group Membership.

The Group Membership page opens (Figure 18).

2 In the Group Membership Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the group membership configuration.

- Click Cancel to return to the Group Membership page without making changes.

Note: This Group Membership Table section of the Group Membership page contains hyperlinks to the SNMPv3 User Specification and Group Access Rights pages. For more information on these pages, see "Configuring User Access to SNMPv3" on page 63 and "Configuring SNMPv3 Group Access Rights" on page 69.

Configuring SNMPv3 Group Access Rights

You can view a table of existing SNMPv3 group access rights configurations, and you can create or delete a group's SNMPv3 system-level access rights.

Creating an SNMPv3 Group Access Rights Configuration

To create a group's SNMPv3 system-level access right configuration:

1 From the main menu, choose Configuration > SNMPv3 > Group Access Rights.

The Group Access Rights page opens (Figure 19).

Figure 19 Group Access Rights page

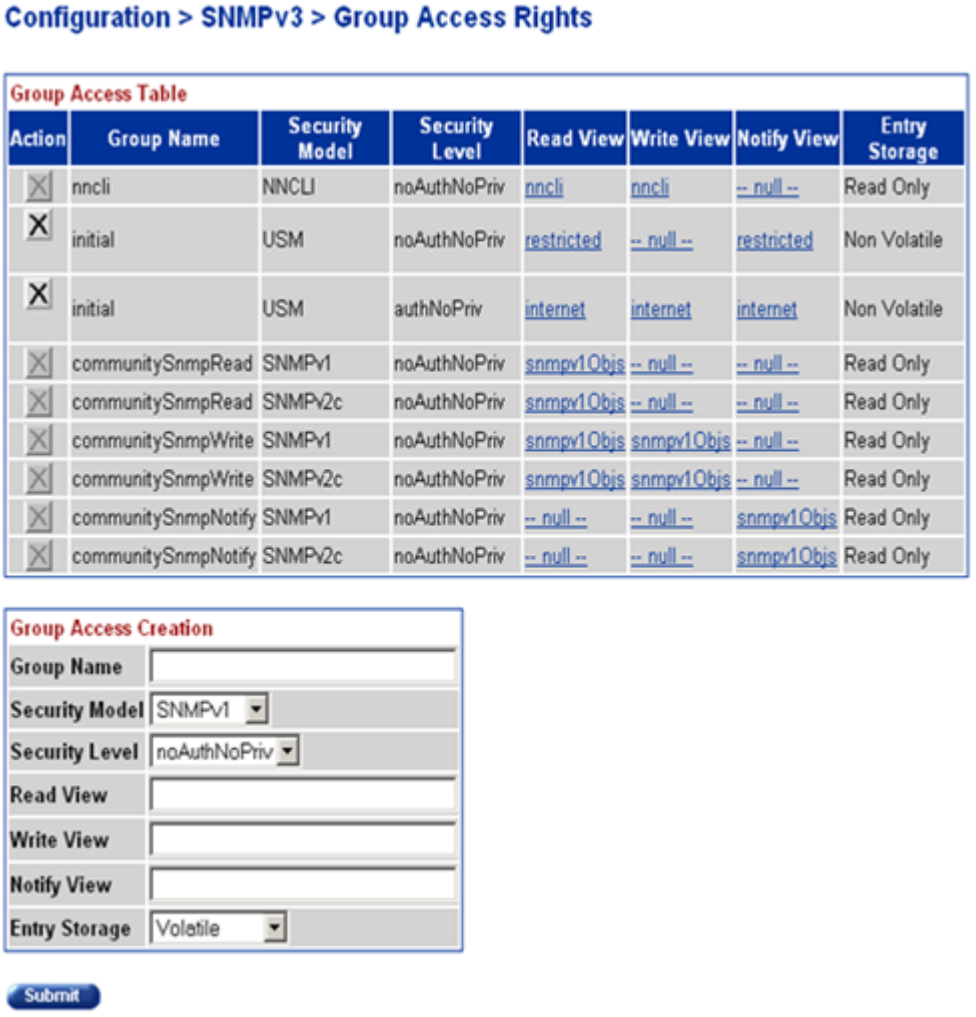


Table 18 describes the items on the Group Access Rights page.

Table 18 Group Access Rights page items

Item and MIB association	Range	Description
		Deletes the row.
Group Name (vacmAccessToGroupStatus)	1to 32	Type a character string to specify the group name to which access is granted.
Security Model (vacmAccessSecurityModel)l	(1) SNMPv1 (2) SNMPv2c (3) USM	Choose the security model to which access is granted.
Security Level (vacmAccessSecurityLevel)	(1) noAuthNoPriv (2) authNoPriv	Choose the minimum level of security required in order to gain the access rights allowed to the group.
Read View (vacmAccessReadViewName)	1to 32	Type a character string to identify the MIB view of the SNMP context to which this entry authorizes read access.
Write View (vacmAccessWriteViewName)	1to 32	Type a character string to identify the MIB view of the SNMP context to which this entry authorizes write access.
Notify View (vacmAccessNotifyViewName)	1to 32	Type a character string to identify the MIB view to which this entry authorizes access to notifications.
Entry Storage (vacmSecurityToGroupStorageType)	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the Group Access Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Group Access Table.

Deleting an SNMPv3 Group Access Rights Configuration

To delete a n SNMPv3 group access configuration:

1 From the main menu, choose Configuration > SNMPv3 > Group Access Rights.

The Group Access Rights page opens (Figure 19).

2 In the Group Access Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the group access configuration.
- Click Cancel to return to the Group Access Rights page without making changes.

Note: This Group Access Table section of the Group Access Rights page contains hyperlinks to the Management Information View page. For more information, see "Configuring an SNMPv3 Management Information View" on page 72.

Configuring an SNMPv3 Management Information View

You can view a table of existing SNMPv3 management information view configurations, and you can create or delete SNMPv3 management information view configurations.

Note: A view may consist of multiple entries in the table, each with the same view name, but a different view subtree.

Creating an SNMPv3 Management Information View Configuration

To create an SNMPv3 management information view configuration:

1 From the main menu, choose Configuration > SNMPv3 > Management Info View.

The Management Information page opens (Figure 20).

Figure 20 Management Information View page

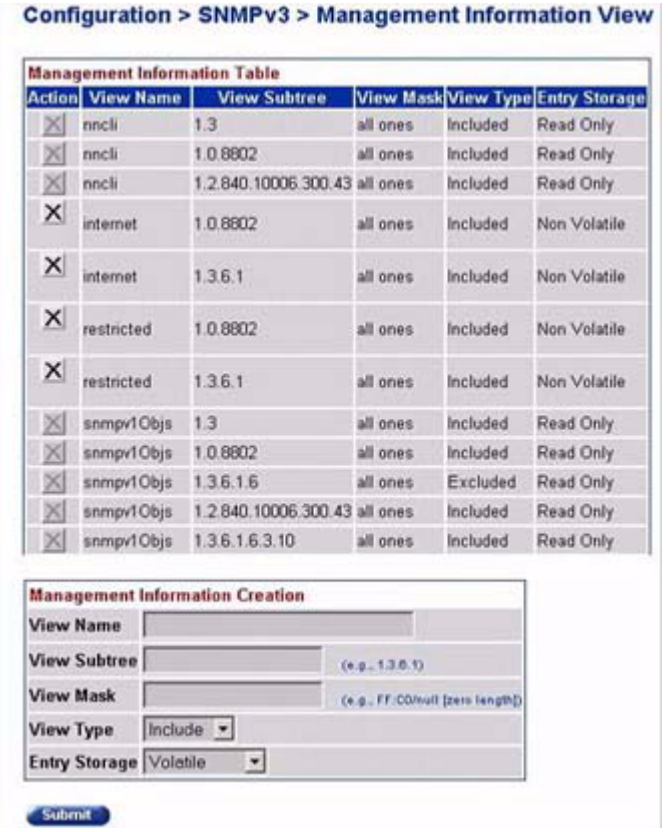


Table 19 describes the items on the Management Information View page.

Table 19 Management Information View page items

Item and MIB association	Range	Description
		Deletes the row.
View Name (vacmViewTreeFamilyViewName)	1to 32	Type a character string to create a name for a family of view subtrees.

Table 19 Management Information View page items

Item and MIB association	Range	Description
View Subtree (vacmViewTreeFamilySubtree)	X.X.X.X.X...	Type an object identifier (OID) to specify the MIB subtree which, when combined with the corresponding instance of vacmViewTreeFamilyMask, defines a family of view subtrees. Note: If no OID is entered and the field is blank, a default mask value consisting of “1s” is recognized.
View Mask (vacmViewTreeFamilyMask)	Octet String (0..16)	Type the bit mask which, in combination with the corresponding instance of vacmViewFamilySubtree, defines a family of view subtrees.
View Type (vacmViewTreeFamilyType)	(1) Include (2) Exclude	Choose to include or exclude a family of view subtrees.
Entry Storage (vacmSecurityToGroupStorageType)	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the Management Information Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Management Information Table (Figure 20).

Deleting an SNMPv3 Management Information View Configuration

To delete an existing SNMPv3 management information view configuration:

1 From the main menu, choose Configuration > SNMPv3 > Management Info View.

The Management Information page opens (Figure 20).

2 In the Management Information Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the management information view configuration.
- Click Cancel to return to the table without making changes.

Configuring an SNMPv3 System Notification Entry

You can view a table of existing SNMPv3 system notification configurations, and you can configure specific SNMPv3 system notification types with particular message recipients and delete SNMPv3 notification configurations.

Creating an SNMPv3 System Notification Configuration

To create an SNMPv3 system notification configuration:

1 From the main menu, choose Configuration > SNMPv3 > Notification.

The Notification page opens (Figure 21).

Figure 21 Notification page

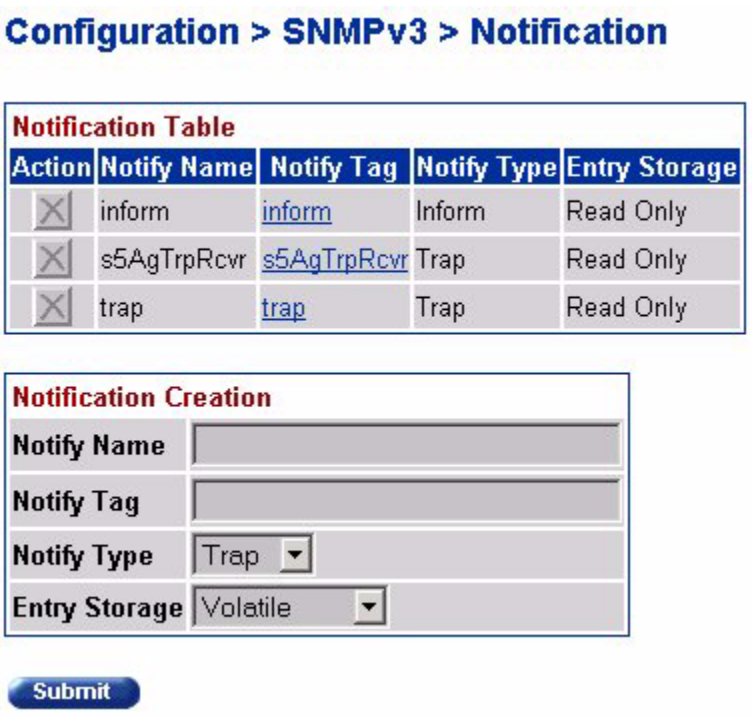


Table 20 describes the items on the Notification page.

Table 20 Notification page items

Item and MIB association	Range	Description
		Deletes the row.
Notify Name (snmpNotifyRowStatus)	1to 32	Type a character string to identify the entry.
Notify Tag (snmpNotifyTag)	1to 32	Type a value which to use to select entries in the snmpTargetAddrTable. Any entry in the snmpTargetAddrTable which contains a tag value which is equal to the value of an instance of this object is selected. If this object carries a zero length, no entries are selected.

Table 20 Notification page items

Item and MIB association	Range	Description
Notify Type (snmpNotifyType)	(1) Trap (2) Inform	Choose the type of notification to generate.
Entry Storage (snmpNotifyStorageType)	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the Notification Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Notification Table (Figure 21).

Note: This Notification Table section of the Notification page contains hyperlinks to the Target Parameter page. For more information, see "Configuring an SNMPv3 Management Target Parameter" on page 80.

Deleting an SNMPv3 System Notification Configuration

To delete an SNMPv3 notification configuration:

1 From the main menu, choose Configuration > SNMPv3 > Notification.

The Notification page opens (Figure 21).

2 In the Notification Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the notification configuration.
- Click Cancel to return to the table without making changes.

Configuring an SNMPv3 Management Target Address

You can view a table of existing SNMPv3 management target configurations, create SNMPv3 management target address configurations that associate notifications with particular recipients and delete SNMPv3 target address configurations.

Creating an SNMPv3 Target Address Configuration

To create an SNMPv3 target address configuration:

1 From the main menu, choose Configuration > SNMPv3 > Target Address.

The Target Address page opens (Figure 22).

Figure 22 Target Address page

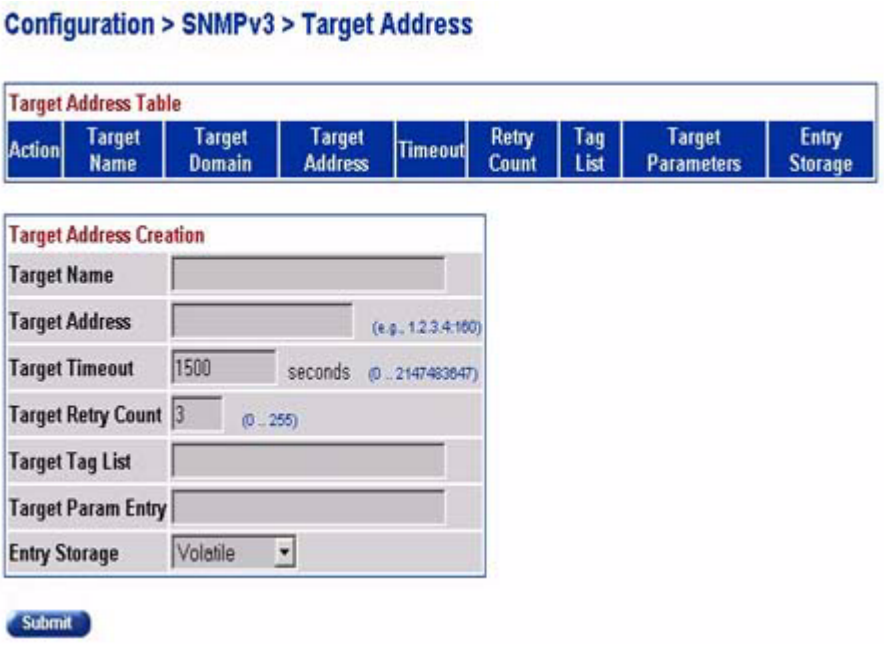


Table 21 describes the items on the Target Address page.

Table 21 Target Address page items

Item and MIB association	Range	Description
		Deletes the row.
Target Name (snmpTargetAddrName)	1to 32	Type a character string to create a target name.
Target Domain (snmpTargetAddrTDomain)	1to 32	The transport type of the address contained in the snmpTargetAddrTAddress object.
Target Address (snmpTargetAddrTAddress)	XXX.XXX.XXX.XXX:XXX	Type a transport address in the format of an IP address, colon, and UDP port number. For example: 10.30.31.99:162 (see Figure 22 on page 78).
Target Timeout (snmpTargetAddrTimeout)	Integer	Type the number, in seconds, to designate as the maximum time to wait for a response to an inform notification before re-sending the “Inform” notification.
Target Retry Count (snmpTargetAddrRetryCount)	0 to 255	Type the default number of retires to be attempted when a response is not received for a generated message. An application may provide its own retry count, in which case the value of this object is ignored.
Target Tag List (snmpTargetAddrTagList)	1to 20	Type the space-separated list of tag values to be used to select target addresses for a particular operation.
Target Parameter Entry (snmpTargetAddr)	1to 32	Type a numeric string to identify an entry in the snmpTargetParamsTable. The identified entry contains SNMP parameters to be used when generated messages to be sent to this transport address
Entry Storage	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the Target Address Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Target Address Table (Figure 22).

Note: This Target Address Table section of the Target Address page contains hyperlinks to the Target Parameter page. For more information, see "Configuring an SNMPv3 Management Target Parameter" on page 80.

Deleting an SNMPv3 Target Address Configuration

To delete an SNMPv3 target address configuration:

1 From the main menu, choose Configuration > SNMPv3 > Target Address.

The Target Address page opens (Figure 22).

2 In the Target Address Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the target address configuration.
- Click Cancel to return to the table without making changes.

Configuring an SNMPv3 Management Target Parameter

SNMPv3 management target parameters are used during notification generation to specify the communication parameters used for exchanges with notification recipients.

You can view a table of existing SNMPv3 target parameter configurations, create SNMPv3 target parameters that associate notifications with particular recipients, and delete existing SNMPv3 target parameter configurations.

Creating an SNMPv3 Target Parameter Configuration

To create an SNMPv3 target parameter configuration:

1 From the main menu, choose Configuration > SNMPv3 > Target Parameter.

The Target Parameter page opens (Figure 23).

Figure 23 Target Parameter page

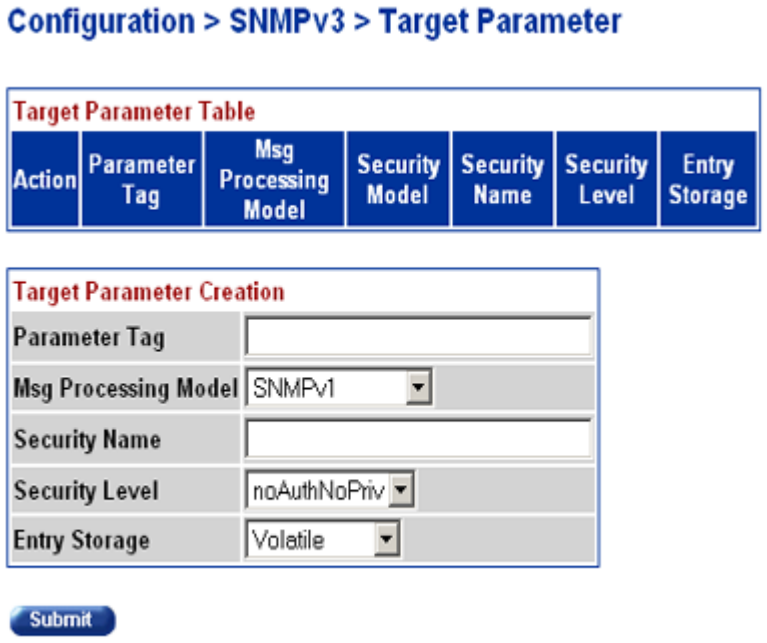


Table 22 describes the items on the Target Parameter page.

Table 22 Target Parameter page items

Item	Range	Description
		Deletes the row.
Parameter Tag (snmpTargetParamsRowStatus)	1to 32	Type a unique character string to identify the parameter tag.
Msg Processing Model (snmpTargetParamsMPModel)	SNMPv1 SNMPv2c SNMPv3 /USM	Choose the message processing model to be used when generating SNMP messages using this entry.
Security Name (snmpTargetParamsSecuirtyName)	1to 32	Type the principal on whose behalf SNMP messages are generated using this entry

Table 22 Target Parameter page items

Item	Range	Description
Security Level (snmpTargetParamsSecuirtyLevel)	(1) noAuthNoPriv (2) authNoPriv	Choose the level of security to be used when generating SNMP messages using this entry.
Entry Storage (snmpTargetParamsStorageType)	(1) Volatile (2) Non-Volatile	Choose your storage preference. Selecting Volatile requests information to be dropped (lost) when you turn the power off. Selecting Non-Volatile requests information to be saved in NVRAM when you turn the power off.

2 In the Target Parameter Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Target Parameter Table (Figure 23).

Deleting an SNMPv3 Target Parameter Configuration

To delete an SNMPv3 target parameter configuration:

1 From the main menu, choose Configuration > SNMPv3 > Target Address.

The Target Address page opens (Figure 22).

2 In the Target Parameter Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the target parameter configuration.
- Click Cancel to return to the table without making changes.

Configuring SNMP Traps

You can configure the IP address and community string for a new SNMP trap receiver, view a table of existing SNMP trap receiver configurations, or delete an existing SNMP trap receiver configuration(s).

Note: The SNMP Trap Receiver Table is an alternative to using the SNMPv3 Target Table and SNMPv3 Parameter Table. However, only SNMPv1 traps are configurable using this table.

Creating an SNMP Trap Receiver Configuration

To create an SNMP trap receiver configuration:

1 From the main menu, choose Configuration > SNMP Trap.

The SNMP Trap Receiver page opens (Figure 24).

Figure 24 SNMP Trap Receiver page

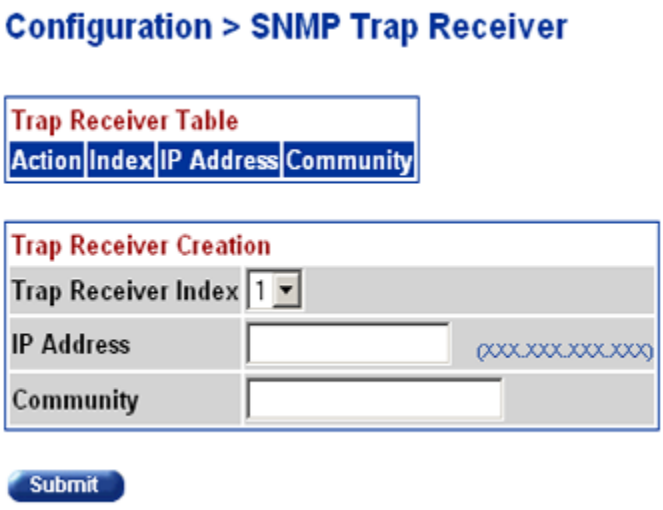


Table 23 describes the items on the Trap Receiver Table and Trap Receiver Creation sections of the SNMP Trap Receiver page.

Table 23 SNMP Trap Receiver page items

Items	Range	Description
		Deletes the row.
Trap Receiver Index	1to 4	Choose the number of the trap receiver to create or modify.
IP Address	XXX.XXX.XXX.XXX	Type the network address for the SNMP manager that is to receive the specified trap.
Community	0 to 32	Type the community string for the specified trap receiver.

2 In the Trap Receiver Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new entry appears in the Trap Receiver Table (Figure 24).

Deleting an SNMP Trap Receiver Configuration

To delete SNMP trap receiver configurations:

1 From the main menu, choose Configuration > SNMP Trap.

The SNMP Trap Receiver page opens (Figure 24).

2 In the Trap Receiver Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the SNMP trap receiver configuration.
- Click Cancel to return to the table without making changes.

Configuring EAPOL-based Security

You can configure security based on the Extensible Authentication Protocol over LAN (EAPOL) protocol. Refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* for more information on EAPOL-based security.

To configure EAPOL:

1 From the main menu, choose Application > EAPOL Security.

The EAPOL Security Configuration page opens (Figure 25). Use the scroll bar on the right to move down the page and the scroll bar on the bottom to move across the page.

Figure 25 EAPOL Security Configuration page

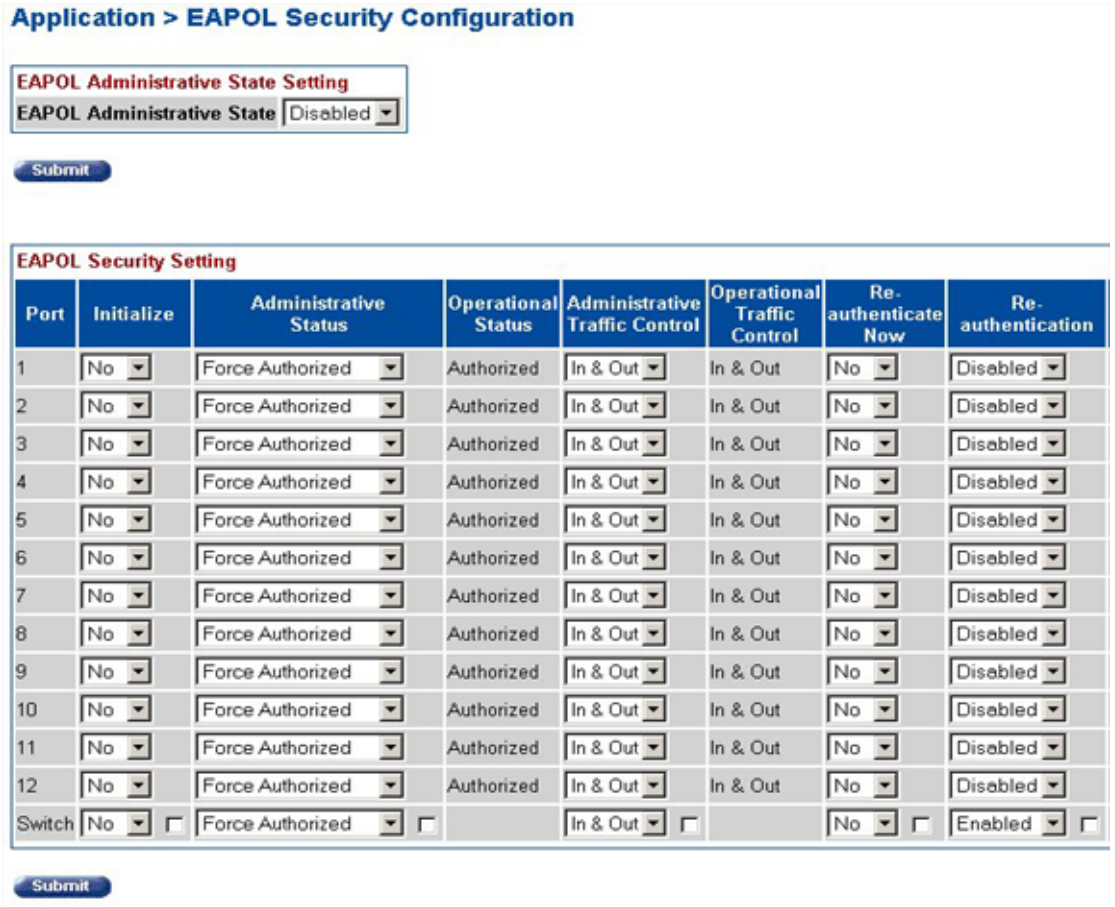


Table 24 describes the fields on the EAPOL Security Configuration page.

Table 24 EAPOL Security Configuration page fields

Section	Item	Range	Description
EAPOL Administration State Setting		Enabled Disabled	Allows you to enable or disable the EAPOL security configuration.
EAPOL Security Setting	Port	1 to 24	Displays the port number.

Table 24 EAPOL Security Configuration page fields (continued)

Section	Item	Range	Description
	Initialize	(1) Yes (2) No	Activates EAPOL state on this port.
	Administrative Status	(1) Force Unauthorized (2) Auto (3) Force Authorized	Allows you to set the EAPOL authorization status: Force Unauthorized—Always unauthorized Auto—Status depends on EAP authentication results Force Authorized—Always authorized
	Operational Status	(1) Authorized (2) Unauthorized	Displays the current authorization status.
	Administrative Traffic Control	(1) In & Out (2) In Only	Allows you to set EAPOL authentication either for incoming and outgoing traffic or for incoming traffic only.
	Operational Traffic Control	(1) In & Out (2) In Only	Displays the current administrative traffic control setting.
	Re-authenticate Now	(1) No (2) Yes	Allows you to activate EAPOL authentication immediately, without waiting for the re-authentication period to expire.
	Re-authentication	(1) Disabled (2) Enabled	Allows you to repeat EAPOL authentication according to the time value specified in Re-authentication Period field.
	Re-authentication Period	1to 604800	With Re-authentication enabled, allows you to specify the time period between successive EAPOL authentications.
	Quiet Period	0 to 65535	Allows you to specify the time interval between an authentication failure and the start of a new authentication attempt.
	Transmit Period	1to 65535	Allows you to specify how long the switch waits for the supplicant to respond to EAP Request/Identity packets.
	Supplicant Timeout	1to 65535	Allows you to specify how long the switch waits for the supplicant to respond to all EAP packets, except EAP Request/Identity packets.
	Server Timeout	1to 65535	Allows you to specify how long the switch waits for the RADIUS server to respond to all EAP packets.
	Maximum Requests	1to 10	Allows you to specify the number of times the switch attempts to resend EAP packets to a supplicant.

2 Complete fields as described in the table.

3 Click Submit.

Configuring MAC Address-based Security

The MAC address-based security system allows you to specify a range of system responses to unauthorized network access to your switch with the Web-based management system.

The system response can range from sending a trap to disabling the port. The network access control is based on the MAC source addresses (SAs) of the authorized stations. You can specify a list of up to 448 MAC SAs that are authorized to access the switch. You can also specify the ports that each MAC SA is allowed to access. The options for allowed MAC SA port access include: NONE, ALL, and single or multiple ports that are specified in a list, for example, 1-4, 6, 9, and so forth. You must also include the MAC SA of any router connected to any secure ports.

When the switch software detects an SA security violation, the response can be to send a trap, turn on destination address (DA) filtering for all SAs, disable the specific port, or any combination of these three options.

You can configure the Ethernet Routing Switch to drop all packets having a specified MAC destination address (DA). You can create a list of up to 10 MAC DAs you want to filter.The packet with the specified MAC DA will be dropped regardless of the ingress port, source address (SA) intrusion, or VLAN membership.

Note: Ensure that you do not enter the MAC address of the switch you are working on.

Note: You must ensure that the ports are enabled after configuring the MAC address-based security.

Configuring MAC Address-based Security

To configure MAC address-based security using the Web-based management system:

1 From the main menu, choose Application > MAC Address Security > Security Configuration.

The Security Configuration page opens (Figure 26).

Figure 26 Security Configuration page

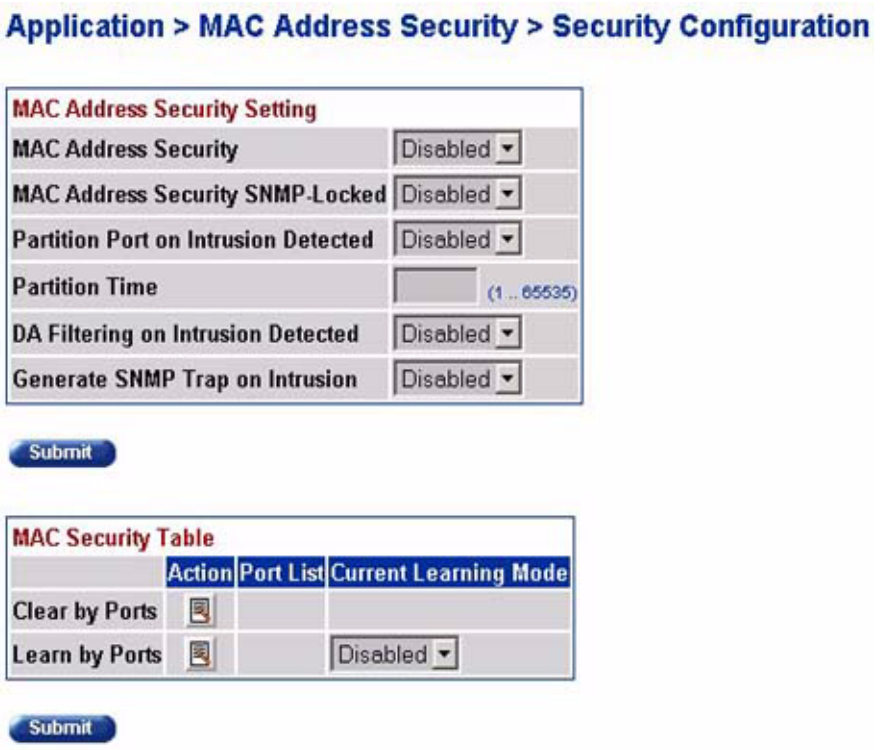


Table 25 describes the items on the Security Configuration page.

Table 25 Security Configuration page items

Section	Item	Range	Description
MAC Address Security Setting	MAC Address Security	(1) Enabled (2) Disabled	Enables the MAC address security features.
	MAC Address Security SNMP-Locked	(1) Enabled (2) Disabled	Enables locking SNMP, so that you cannot use SNMP to modify the MAC address security features.
	Partition Port on Intrusion Detected	(1) Forever (2) Enabled (3) Disabled	Configures how the switch reacts to an intrusion event: Forever—The port is disabled and remains disabled (partitioned) until reset. The port does not reset after the Partition Time elapses. Enabled—The port is disabled, then automatically reset to enabled after the time specified in the Partition Time field elapses. Disabled—The port remains enabled, even if an intrusion event is detected.
	Partition Time	1 to 65535	Sets the time to partition a port on intrusion. Note: Use this field only if the Partition Port on Intrusion Detected field is set to Enabled.
	DA Filtering on Intrusion Detected	(1) Enabled (2) Disabled	Enables you to isolate the intruding node (discard) the packets.
	Generate SNMP Trap on Intrusion	(1) Enabled (2) Disabled	Enables generation of an SNMP when an intrusion is detected.
MAC Security Table/Clear by Ports	Action		Allows you to clear specific ports from participation in the MAC address security features.
	Port List		Will be blank.
	Current Learning Mode		Will be blank.
MAC Security Table/Learn by Ports	Action		Allows you to identify ports that will learn incoming MAC addresses. All source MAC addresses of any packets received on a specified port(s) are added to the MAC Security Table (maximum of 448 MAC addresses allowed).

Table 25 Security Configuration page items (continued)

Section	Item	Range	Description
	Port List		Displays all the ports that will learn incoming MAC address to detect intrusions (unallowed MAC addresses).
	Current Learning Mode	(1) Enabled (2) Disabled	Enables learning.

2 On the Security Configuration page, type information in the text boxes, or select from a list.

3 Click Submit.

Enabling Security on Ports

To enable or disable MAC address-based security on the port:

1 From the main menu, choose Application > MAC Address Security > Port Configuration.

The Port Configuration page opens (Figure 27).

Figure 27 Port Configuration page

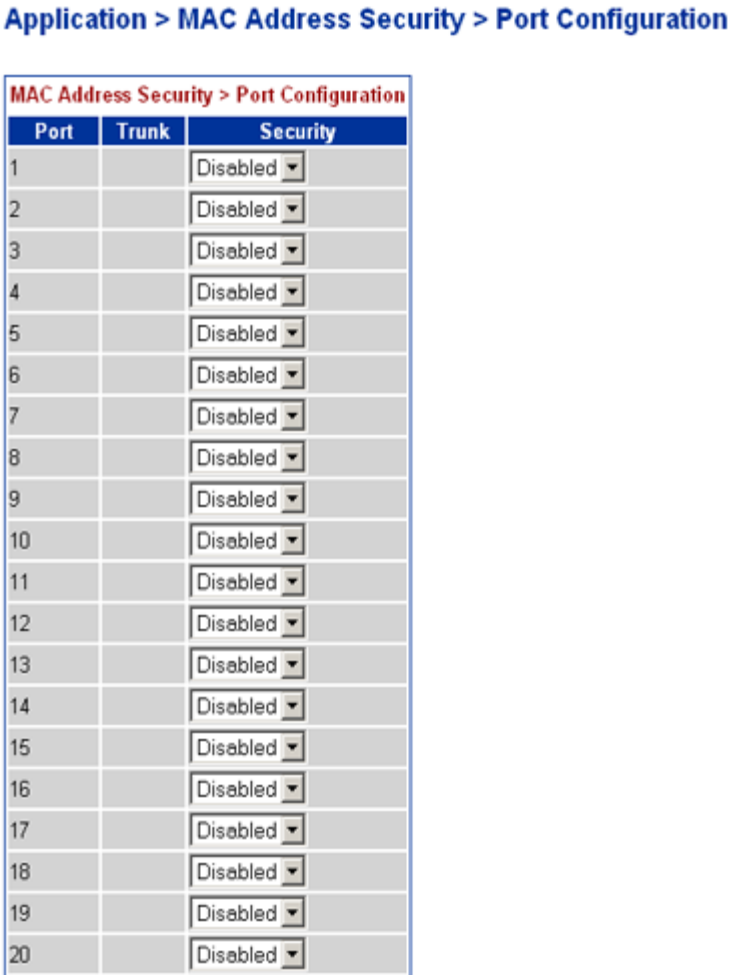


Table 26 describes the items on the Port Configuration page.

Table 26 Port Configuration page items

Item	Range	Description
Port	1 to 24	Lists each port on the unit.

Table 26 Port Configuration page items

Item	Range	Description
Trunk	Blank, 1 to 6	Displays the MultiLink Trunk that the port belongs to.
Security	(1) Enabled (2) Disabled	Enables MAC address-based security on that port. Note: You must configure the port for MAC address-based security before enabling the security.

Deleting Ports

You can delete ports from the security system in a variety of ways:

- In the Ports List View, Port List page (Figure 29), click on the checkmark of a selected port to delete that port from the specified port list.
- In the Ports List View, Learn by Ports page (Figure 30), click on the checkmark of a selected port to remove that port from those that learn MAC addresses.
- In the Port Configuration page (Figure 27), click Disabled to remove that port from the MAC address-based security system; it will disable all MAC address-based security on that port.

Port Lists

In this section, you create a list of ports, and you can add ports to or delete ports from each list.

To activate an entry or add or delete ports to a list:

1 From the main menu, choose Application > MAC Address Security > Port Lists.

The Port Lists page opens (Figure 28).

Figure 28 Port Lists page

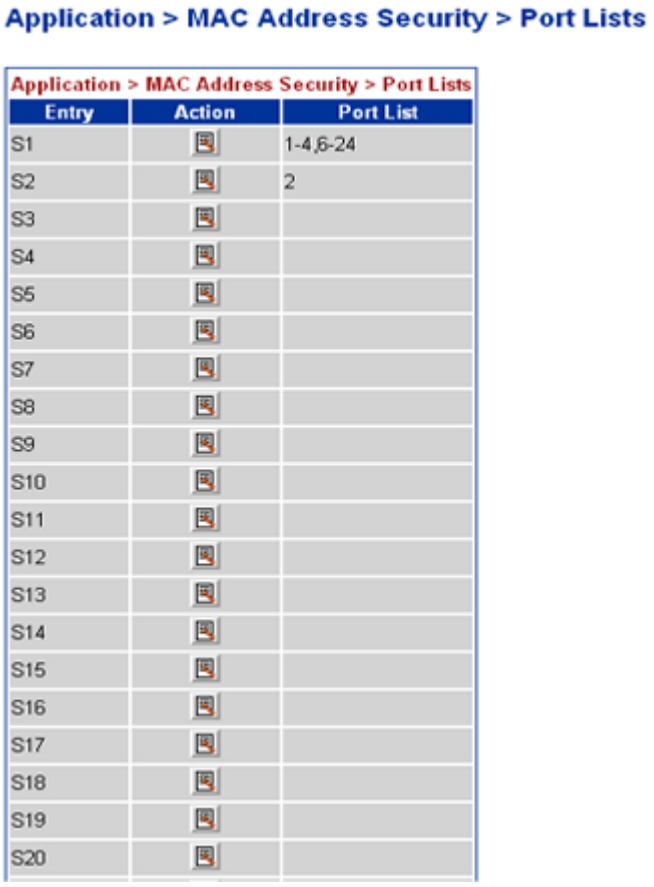


Table 27 describes the items on the Ports Lists page.

Table 27 Ports Lists page items

Item	Description
Entry	These are the lists of ports.
Action	Allows you to add or delete ports to the lists. The range is 1 to 24.
Port List	Displays which ports are associated with each list.

2 To add or delete ports to a list, click the icon in the Action column in the list row you want.

The Port List View, Port List page opens (Figure 29).

Figure 29 Port List View, Port List page

a Click the ports you want to add to the selected list or click All.

b To delete a port from a list, uncheck the box by clicking it.

c Click Submit.

3 From the main menu, choose Application > MAC Address Security > Security Configuration.

The Security Configuration page opens (Figure 26).

4 In the MAC Security Table section of the Security Configuration page, click the icon in the Action column of the Learn By Ports row.

The Port List View, Learn by Ports page opens (Figure 30).

Figure 30 Port List View, Learn by Ports page

a Click the ports through which you want the switch to learn MAC addresses or click All.

b If you want that port to no longer learn MAC addresses, click the checked box to uncheck it.

c Click Submit.

5 In the MAC Security Table section of the Security Configuration page, choose Enabled in the Current Learning Mode column of the Learn By Ports row.

6 Click Submit.

Note: You cannot include any of the port values you have chosen for the secure ports field.

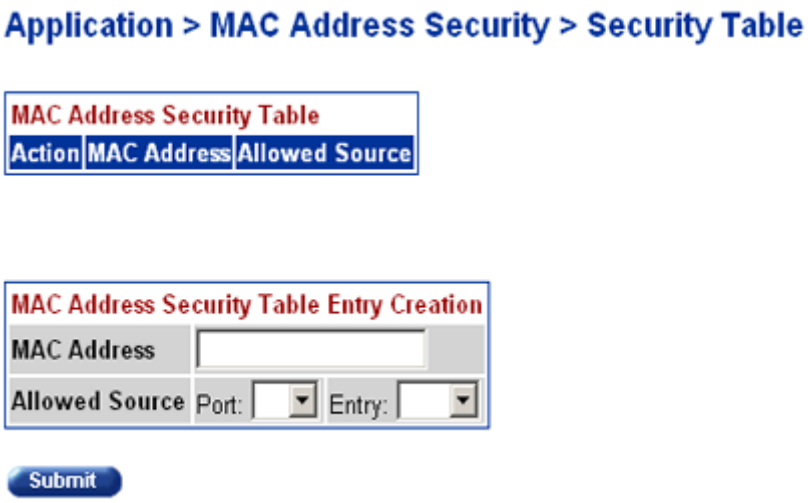
Adding MAC Addresses

To add MAC address to the MAC address-based security system:

1 In the main menu, choose Applications > MAC Address Security > Security Table.

It may take awhile for the required addresses to be learned. Then, the Security Table page opens (Figure 31).

Figure 31 Security Table page



Note: Using this page, you can instruct the switch to allow the specified MAC address access *only* through the specified port or port list.

Table 28 describes the items on the Security Table page.

Table 28 Security Table page items

Section	Item	Range	Description
MAC Address Security Table	Action		Allows you to delete a MAC address.
	MAC Address		Displays the MAC address.
	Allowed Source	(1) Port (2) Entry	Displays the entry through which the MAC address is allowed.
MAC Address Security Table Entry Creation	MAC Address		Enter the MAC address you want to allow to access the switch.
	Allowed Source		Select the port through which the MAC address is allowed.
	Entry		Select the port list through which the MAC address is allowed.

2 Complete fields as described in the table.

Note: If you choose an Entry as the Allowed Source, you must have configured that specific entry on the Port View List, Port List page.

3 On the Security Table page, type information in the text boxes, or select from a list.

4 Click Submit.

Note: Be certain to include the MAC address for the default LAN router as an allowed source MAC address.

Clearing Ports

You can clear all information from the specified port(s) for the list of ports that learn MAC addresses. If Learn by Ports is enabled, the specified ports will begin again to learn the MAC addresses.

To clear information from selected ports:

1 From the main menu, choose Application > MAC Address Security > Security Configuration.

The Security Configuration page opens (Figure 26).

2 In the MAC Security Table section of the Security Configuration page, click the icon in the Action column of the Clear By Ports row.

The Port List View, Clear by Ports page opens (Figure 32).

Figure 32 Port List View, Clear by Ports page

3 Select the ports you want to clear or click All.

4 Click Submit.

Note: When you specify a port (or ports) to be cleared using this field, the specific port (or ports) will be cleared for each of the entries listed in the MAC Address Security Table. If you totally clear the allowed Source Port(s) field (leaving a blank field) for an entry, the associated MAC address for that entry is also cleared.

Filtering MAC Destination Addresses

To drop all packets from a specified MAC destination address (DA):

1 From the main menu, choose Application > MAC Address Security > DA MAC Filtering.

The DA MAC Filtering page opens (Figure 33).

Figure 33 DA MAC Filtering page

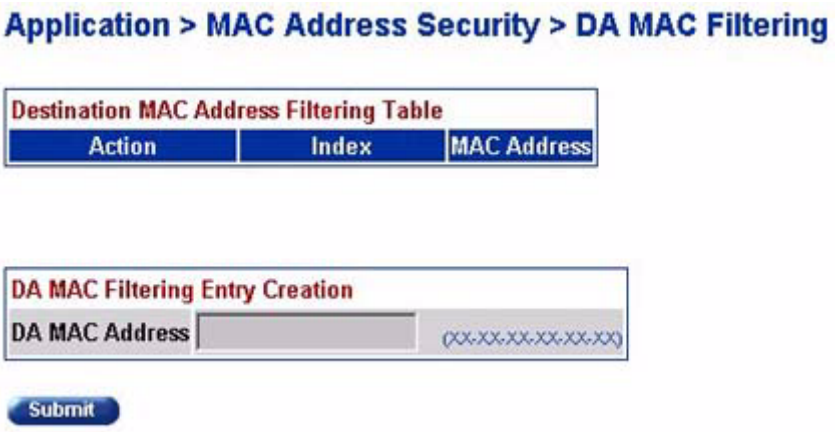


Table 29 describes the items on the DA MAC Filtering page.

Table 29 DA MAC Filtering page items

Section	Item	Range	Description
Destination MAC Address Filtering Table	Action		Allows you to delete a MAC DA you are filtering.
	Index		Displays index number of the MAC DA you want filtered.
	MAC Address	1 -10	Displays list of MAC DAs you want filtered.
DA MAC Filtering Entry Creation	DA MAC Address	XX-XX-XX-XX-XX-XX	Enter the MAC DA you want to filter.

Note: Ensure that you do not enter the MAC address of the management station.

2 In the DA MAC Filtering Entry Creation area, enter the MAC DA you want to filter.

You can list up to 10 MAC DAs to filter.

3 Click Submit.

The system returns you to the DA MAC FIltering page (Table 33) with the new DA listed in the table.

Deleting MAC DAs

To delete a MAC DA:

1 From the main menu, choose Application > MAC Address Security > DA MAC Filtering.

The DA MAC Filtering page opens (Figure 33).

2 In the Destination MAC Address Filtering Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the target parameter configuration.
- Click Cancel to return to the table without making changes.

Viewing Learned MAC Addresses by VLAN

You can view MAC addresses and their associated port or trunk that the switch configuration has learned, based on the VLAN you select.

To view learned MAC addresses and their associated port or trunk:

1 From the main menu, choose Configuration > MAC Address Table.

The MAC Address Table page opens (Figure 34).

Figure 34 MAC Address Table page

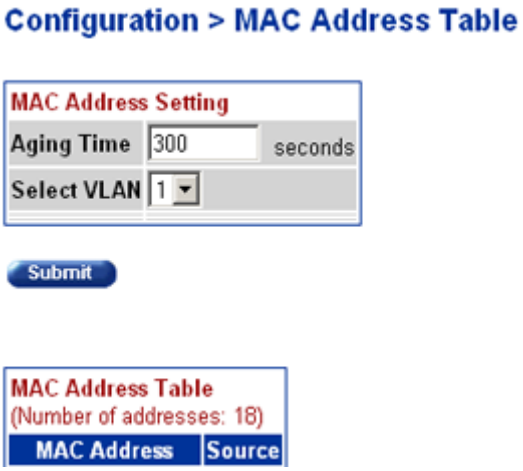


Table 30 describes the items on the MAC Address Table page.

Table 30 MAC Address Table page items

Section	Item	Range	Description
MAC Address Setting	Aging Time	10 to 1000000	Type the timeout period, in seconds, for aging out dynamically learned forwarding information. If the entry is inactive for a period of time that exceeds the specified aging time, the address is removed. Note: Nortel recommends using the default value of 300 seconds.
	Select VLAN	1to 256	Choose the VLAN on which to view learned MAC addresses.
MAC Address Table	MAC Address		The unicast MAC address for which the bridge has forwarding and/or filtering information.
	Source		The source of the discovered MAC address.

2 In the MAC Address Setting section, choose the aging time and VLAN you want to view learned MAC addresses on.

3 Click Submit.

Your request is displayed in the MAC Address Table (Figure 34).

Locating a Specific MAC Address

You can search for a specific MAC address among all the MAC addresses learned from all the VLANs. This is a useful tool for finding whether or not a switch has learned a particular address.

To locate a specific MAC addresses:

1 From the main menu, choose Configuration > Find MAC Address.

The Find MAC Address page opens (Figure 35).

Figure 35 Find MAC Address Table page

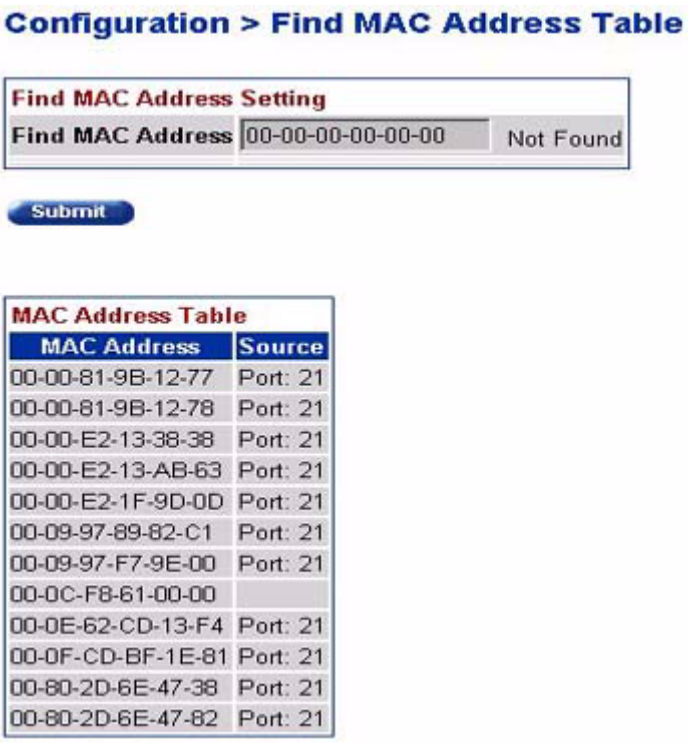


Table 31 describes the items on the Find MAC Address Table page.

Table 31 Find MAC Address Table page items

Section	Item	Description
Find MAC Address Settings	Find MAC Address	Determine if the bridge has forwarding and (or) filtering information for the specified MAC address
Mac Address Table	MAC Address	The unicast MAC address for which the bridge has forwarding and (or) filtering information.
	Source	The source of the discovered MAC address.

2 In the MAC Address Setting section, type the MAC address you want to search for.

3 Click Submit to enter the request.

If the address is located, it is shown in the first row in the MAC Address Table section. If the address is not located, the system response "Not Found" is shown to the right of the Find MAC Address input field.

Configuring Port's Autonegotiation, Speed, Duplex, Status, and Alias

You can configure a specific switch port or all switch ports to autonegotiate for the highest available speed of the connected station or you can set the speed for selected switch ports.

You can name each port, or assign an alias to it, using 27 alphanumeric characters.

To configure a switch port's alias, status, autonegotiation and speed/duplex:

1 From the main menu, choose Configuration > Port Management.

The Port Management page opens (Figure 36).

Figure 36 Port Management page

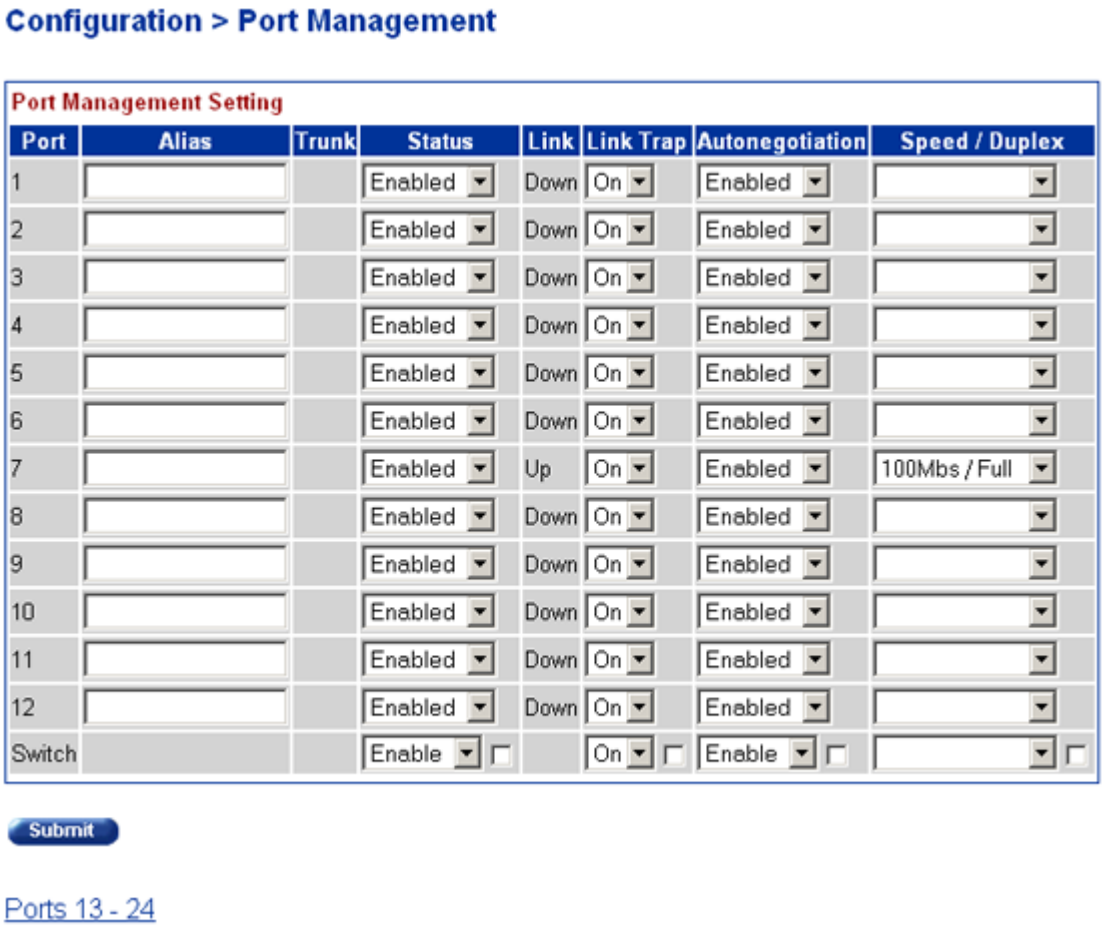


Table 32 describes the items on the Port Management page.

Table 32 Port Management page items

Item	Range	Description
Port		The switch port number of the corresponding row. To select the switch row, click the check box to the right. The values that you set in each switch row affect all switch ports. For information on setting high speed flow control for SFP GBICs, see "Configuring High Speed Flow Control" on page 107.
Alias	27 alphanumeric characters	Displays the name, or alias, you assigned the port. To assign a name or to change the name, enter up to 26 alphanumeric characters.
Trunk		The trunk group that the switch port belongs to as specified in the Trunk Member fields on the MultiLink Trunk page. For more information, see "Configuring MultiLink Trunk Members" on page 184.
Status	(1) Enabled (2) Disabled	Choose to enable or disable the port. You can also use this field to control access to any switch port. The default setting is Enabled.
Link		The current link state of the corresponding port as follows: Up: The port is connected and operational Down: The port is not connected or is not operational.
Link/Trap	(1) On (2) Off	Choose to control whether link up/down traps are sent to the configured trap sink from the switch. The default setting is On.
Autonegotiation	(1) Enabled (2) Disabled	Choose to enable or disable the autonegotiation feature. Choosing to enable autonegotiation sets the corresponding port speed to match the best service provided by the connected station, up to 100Mb/s in full-duplex mode. **Note** Autonegotiation also enables autopolarity and auto mdi/mdi-x. The default setting is Enabled.
Speed / Duplex	(1) 10Mbs / Half (2) 10Mbs / Full (3) 100Mbs / Half (4) 100Mbs / Full (5) 1000Mbs / Full	Choose the Ethernet speed you want the port to support. The default setting is 100Mbs/Half when autonegotiation is disabled and 1000 Mb/s full-duplex for gigabit ports only.

2 In the port row of your choice, select from the lists.

3 Click Submit.

Configuring High Speed Flow Control

Use this screen to set autonegotiation for all gigabit ports.

To configure high speed flow control:

1 From the main menu, choose Configuration > High Speed Flow Control.

The High Speed Flow Control page opens (Figure 37).

Figure 37 High Speed Flow Control page

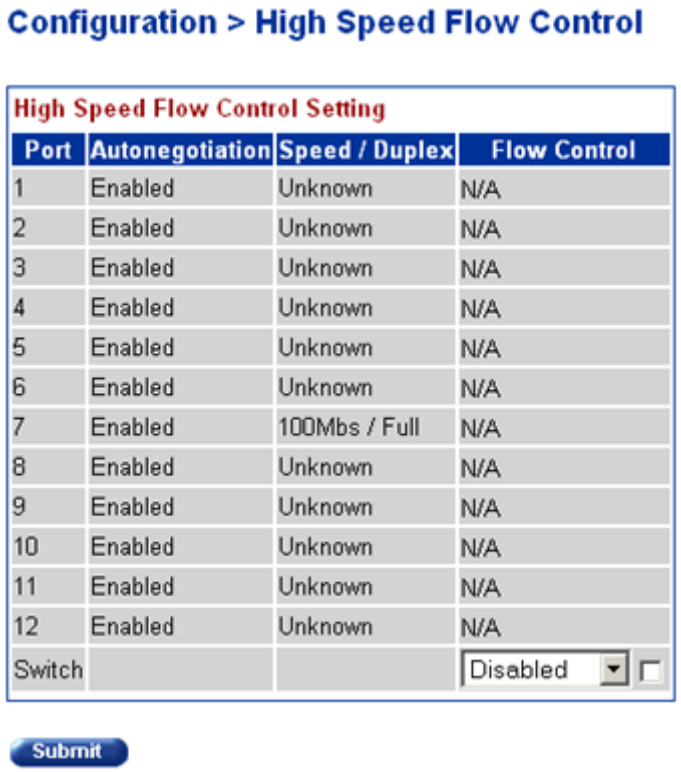


Table 33 describes the items on the High Speed Flow Control page.

Table 33 High Speed Flow Control page items

Item	Range	Description
Port	1 to 24	Displays the port number.
Autonegotiation	(1) Enabled (2) Disabled	Displays whether autonegotiation is enabled or disabled. **NOTE**: You enable or disable autonegotiation on the Port Management page. When enabled, the port advertises support for flow control autonegotiation.
Speed/Duplex	(1) 10Mbs / Half (2) 10Mbs / Full (3) 100Mbs / Half (4) 100Mbs / Full (5) 1000Mbs / Full (6) Unknown	Displays the speed and duplex values for each port.
Flow Control	(1) Disabled (2) Symmetric (3) Asymmetric	Displays flow control settings for each port.
Switch	(1) Disabled (2) Symmetric (3) Asymmetric	Choose the flow control preference to control traffic and avoid congestion.

2 Select from the lists.

3 Click Submit.

Downloading Switch Images

You can download the Ethernet Routing Switch software image that is located in non-volatile flash memory. To download the Ethernet Routing Switch software image, a properly configured Trivial File Transfer Protocol (TFTP) server must be present in your network, and the policy switch must have an IP address. To learn how to configure the switch IP address, refer to "Configuring BootP, IP, and Gateway Settings" on page 52.

Caution: Do not interrupt power to the device during the software download process. A power interruption can corrupt the firmware image.

To download a switch image:

1 From the main menu, choose Configuration > Software Download.

The Software Download page opens (Figure 38).

Figure 38 Software Download page

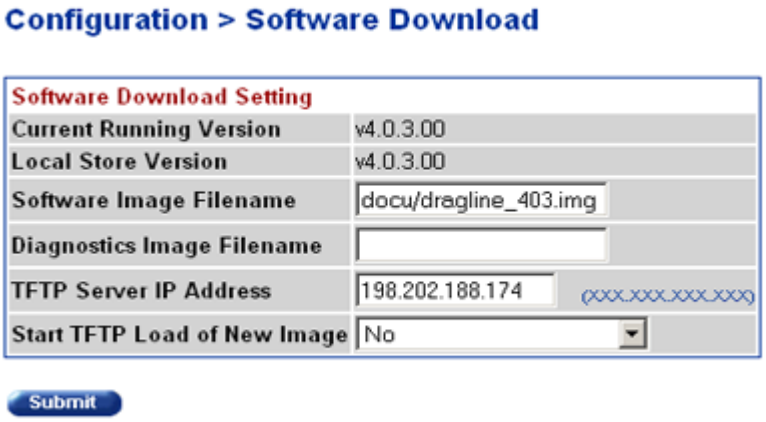


Table 34 describes the items on the Software Download page.

Table 34 Software Download page items

Item	Range	Description
Current Running Version		The version of the current running software.
Local Store Version		The local version of the software in the flash memory.
Software Image Filename	1to 30	Type the software image load filename.
Diagnostics Image Filename	1to 30	Type the diagnostics filename.
TFTP Server IP Address	XXX.XXX.XXX.XXX	Type the IP address of your TFTP load host.
Start TFTP Load of New Image	(1) No (2) Software Image (3) Diagnostics Image (4) Software Image If Newer	Choose the software image to load.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

The software download process automatically completes without user intervention. The process erases the contents of flash memory and replaces it with a new software image. Take care not to interrupt the download process until after it runs to completion (the process can take up to 10 minutes, depending on network conditions).

When the download process is complete, the switch automatically resets and the new software image initiates a self-test.

During the download process, the Ethernet Routing Switch is not operational.

Storing and Retrieving Switch Configuration File from TFTP Server

You can store the switch configuration parameters on a Trivial File Transfer Protocol (TFTP) server. You can retrieve the configuration parameters of the switch and use the retrieved parameters to automatically configure a replacement switch..

To store a switch configuration, you must set up the file on your TFTP server and set the filename read/write permission to enabled.

To download the Ethernet Routing Switch configuration file, a properly configured TFTP server must be present in your network, and the policy switch must have an IP address. To learn how to configure the switch IP address, refer to "Configuring BootP, IP, and Gateway Settings" on page 52.

To store or retrieve a switch configuration file:

1 From the main menu, choose Configuration > Configuration File.

The Configuration File Download/Upload page opens (Figure 39).

Figure 39 Configuration File Download/Upload page

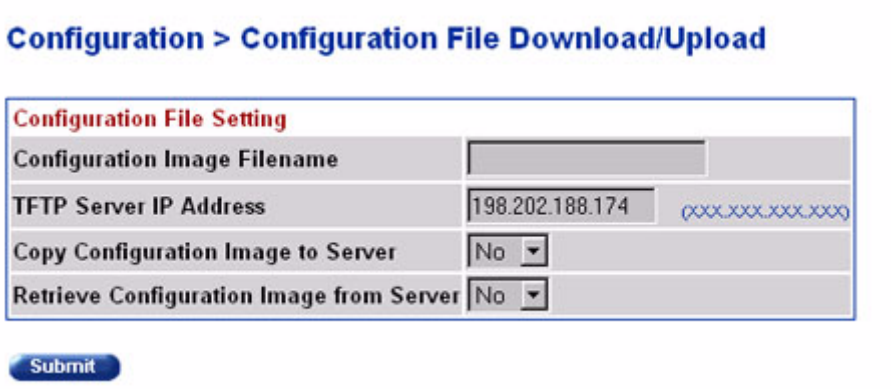


Table 35 describes the items on the Configuration File page.

Table 35 Configuration File page items

Item	Range	Description
Configuration Image Filename	1to 32	Type the configuration file name.
TFTP Server IP Address	XXX.XXX.XXX.XXX	Type the IP address of the TFTP load host.
Copy Configuration Image to Server	(1) Yes (2) No	Choose whether or not to copy the configuration image to the server.
Retrieve Configuration Image from Server	(1) Yes (2) No	Choose whether or not to retrieve the configuration image from a server. If you choose Yes, the download process begins immediately and, when completed, causes the switch to reset with the new configuration parameters.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

Table 36 describes the requirements for storing or retrieving configuration parameters on a TFTP server./

Table 36 Requirements for retrieving configuration parameters on TFTP server

Requirements
• The Configuration File feature can only be used to copy *switch configuration parameters to other switches.*
• A configuration file obtained from the switch can only be used to configure other switches that have the same firmware revision and model type as the donor switch.
• The configuration file also duplicates any settings that exist for any SFP GBIC that is installed in the donor switch.
• If you use the configuration file to configure another switch that has the same SFP GBIC model installed, the configuration file settings will also apply to and override the existing SFP GBIC settings.

Table 37 describes the parameters that are not saved to the configuration file.

Table 37 Parameters not saved to the configuration file

These parameters are not saved	Used in this screen	See page:
In-Band Switch IP Address	IP Configuration	
In-Band Subnet Mask	IP Configuration	
Default Gateway	IP Configuration	
Configuration Image Filename	Configuration File Download/Upload	111
TFTP Server IP Address	Configuration File Download/Upload	
Console Read-Only Switch Password	Console/Comm Port Configuration	113
Console Read-Write Switch Password	Console/Comm Port Configuration	

Note: The console Read-Only and Read-Write switch passwords are for the Telnet, Web and CLI interface.

Configuring Port Communication Speed

You can view the current console/communication port settings and configure the console port baud rate to match the baud rate of the console terminal.

To view current console/communication port settings and configure console port speed:

1 From the main menu, choose Configuration > Console/Comm Port.

The Console/Communication Port page opens (Figure 40).

Figure 40 Console/Communication Port page

Table 38 describes the items on the Console/Communication Port page.

Table 38 Console/Communication Port Setting page items

Item	Range	Description
Comm Port Data Bits		Displays the current console communication port data bit setting.
Comm Port Parity		Displays the current console communication port parity setting.
Comm Port Stop Bits		Displays the current console communication port stop bit setting.
Console Port Speed	2400 4800 9600 19200 38400	Choose the console port speed baud rate. Note: The default setting is 9600.
		Caution: If you choose a baud rate that does not match your console terminal baud rate, you will lose communication with the configuration interface when you click Submit.

2 Select from the list.

3 Click Submit.

Chapter 5
Configuring Remote Network Monitoring

The Configuring Remote Network Monitoring (RMON) Management Information Base (MIB) is an interface between the RMON agent on a Ethernet Routing Switch and RMON management applications such as the Web-based management user interface. It defines objects that are suitable for the management of any type of network. Some groups are specifically targeted for Ethernet networks.

The RMON agent continuously collects statistics and proactively monitors the switch.

The RMON options available are:

Configuring RMON Fault Threshold Parameters

Alarms are useful when you need to know when the value of some variable goes out of range. RMON alarms can be defined on any MIB variable that resolves to an integer value. String variables (such as system description) cannot be used as alarm variables.

Creating an RMON Fault Threshold

You can create the RMON threshold parameters for fault notification (alarms).

To create an RMON threshold:

1 From the main menu, choose Fault > RMON Threshold.

The RMON Threshold page opens (Figure 41).

Figure 41 RMON Threshold page

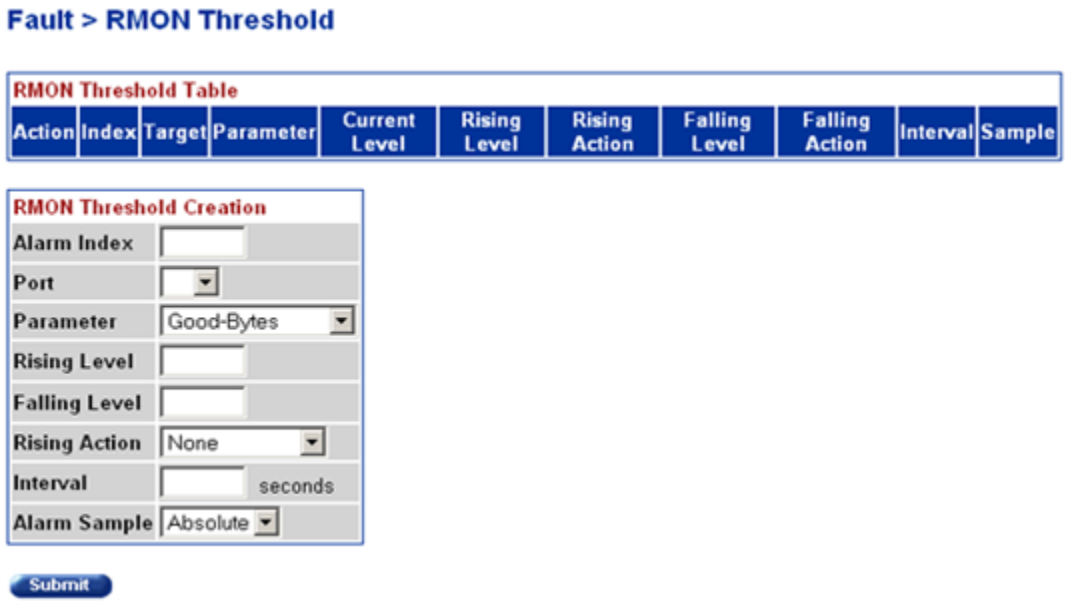


Table 39 describes the items on the RMON Threshold page.

Table 39 RMON Threshold page items

Item	Range	Description
		Deletes the row.
Alarm Index		Type the unique number to identify the alarm entry.
Port	1to 24	Choose the port on which to set an alarm.

Table 39 RMON Threshold page items (continued)

Item	Range	Description
Parameter	(1) Good-Bytes (2) Good-Packets (3) Multicast (4) Broadcast (5) CRC-Errors (6) Runts (7) Fragments (8) Frame-Too-Long (9) Collisions	Choose the sampled statistic.
Rising Level	Integer	Type the event entry to be used when a rising threshold is crossed. Note: When the current sampled value is greater than or equal to this threshold, and the value at the last sampling interval was less than this threshold, a single event will be generated. After a rising event is generated, another such event is not generated until the sampled value falls below this threshold and reaches the Falling Threshold.
Falling Level	Integer	Type the event entry to be used when a falling threshold is crossed. Note: When the current sampled value is lower than or equal to this threshold, and the value at the last sampling interval was greater than this threshold, a single event will be generated. After a falling event is generated, another such event is not generated until the sampled value rises over this threshold and reaches the Rising Threshold.
Rising Action	(1) None (2) Log (3) SNMP-Trap (4) Log-and-Trap	Choose the type of notification for the event. Selecting Log generates an entry in the RMON Event Log table for each event. Selecting SNMP Trap sends an SNMP trap to one or more management stations.
Interval		Type the time period (in seconds) to sample data and compare the data to the rising and falling thresholds.

Table 39 RMON Threshold page items (continued)

Item	Range	Description
Alarm Sample	(1) Absolute (2) Delta	Choose the sampling method: Absolute: *Absolute* alarms are defined on the current value of the alarm variable. An example of an alarm defined with absolute value is card operating status. Because this value is not cumulative, but instead represents states, such as card up (value 1) and card down (value 2), you set it for absolute value. Therefore, an alarm could be created with a rising value of 2 and a falling value of 1 to alert a user to whether the card is up or down. Delta: Most alarm variables related to Ethernet traffic are set to *delta* value. Delta alarms are defined based on the difference in the value of the alarm variable between the start of the polling period and the end of the polling period. Delta alarms are sampled twice per polling period. For each sample, the last two values are added together and compared to the threshold values. This process increases precision and allows for the detection of threshold crossings that span the sampling boundary. Therefore, if you keep track of the current values of a given delta-valued alarm and add them together, the result is twice the actual value. (This result is not an error in the software.)

2 In the RMON Threshold Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new configuration is displayed in the RMON Threshold Table (Figure 41).

Note: RMON threshold configurations are not modifiable. They must be deleted and the information recreated.

Deleting an RMON Threshold Configuration

To delete an existing RMON threshold configuration:

1 From the main menu, choose Fault > RMON Threshold.

The RMON Threshold page opens (Figure 41).

2 In the RMON Threshold Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the RMON threshold configuration.
- Click Cancel to return to the RMON Threshold page without making changes.

Viewing the RMON Fault Event Log

RMON events and alarms work together to notify you when values in your network go out of a specified range. When values pass the specified ranges, the alarm is triggered and "fires." The event specifies how the activity is recorded.

An event specifies whether a trap, a log, or a trap and a log are generated to view alarm activity. When RMON is globally enabled, two default events are generated:

- Rising Event
- Falling Event

Default events specify that when an alarm goes out of range, the firing of the alarm is tracked in both a trap and a log. For example, when an alarm fires at the rising threshold, the rising event specifies that this information be sent to both a trap and a log. The RMON Event Log page works in conjunction with the RMON Threshold page to enable you to view a history of RMON fault events.

To view a history of RMON fault events:

➡ From the main menu, choose Fault > RMON Event Log.

The RMON Event Log page opens (Figure 42).

Figure 42 RMON Event Log page

Table 40 describes the fields on the RMON Event Log page.

Table 40 RMON Event Log page fields

Item	Description
Time Stamp	The time the event occurred since the system was last rebooted.
Description	An implementation dependent description of the event that activated this log entry.
Triggered By	A comment describing the source of the event.
ID	The event that generated this log entry.

Viewing the System Log

You can view a display of messages contained in non-volatile random access memory (NVRAM) or dynamic random access memory (DRAM) and NVRAM.

To open the System Log page:

1 From the main menu, choose Fault > System Log.

The System Log page opens (Figure 43).

Figure 43 System Log page

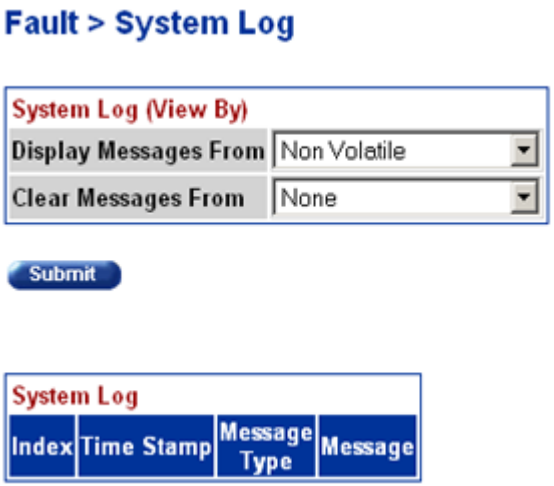


Table 41 describes the fields on the System Log page.

Table 41 System Log page fields

Section	Item	Range	Description
System Log (View By)	Display Messages From	(1) Non Volatile (2) Volatile + Non Volatile	Choose to display messages from Non Volatile memory (NVRAM) or Volatile (DRAM) and Non Volatile memory. The default settings is Non Volatile.
	Clear Messages From	(1) Volatile (2) Volatile + Non Volatile (3) None	Choose to clear messages from Volatile memory or Volatile and Non Volatile memory. The default settings is None (do not clear messages)
System Log	Index		The number of the event.
	Time Stamp		The time, in hundreths of a second, between system initialization and the time the log messages entered the system.

Table 41 System Log page fields

Section	Item	Range	Description
	Message Type		The type of message. The options are (1) Critical, (2) Serious, and (3) Informational.
	Message		A character string that identifies the origin of the message and the reason why the message was generated.

2 In the System Log (View By) section do one or more of the following:

- Choose where to display messages from.
- Choose to clear messages from Volatile or Non Volatile memory.

3 Click Submit.

The results of your request are displayed in the System Log section (Figure 43).

Viewing RMON Ethernet Statistics

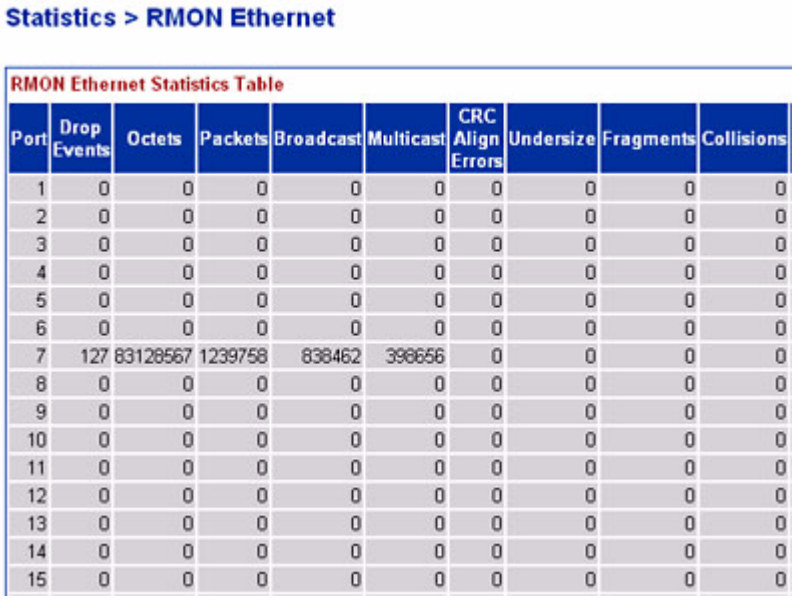
You can gather and graph RMON Ethernet statistics in a variety of formats.

To gather and graph RMON Ethernet statistics:

1 From the main menu, choose Statistics > RMON Ethernet.

The RMON Ethernet page opens (Figure 44).

Figure 44 RMON Ethernet page (1 of 2)

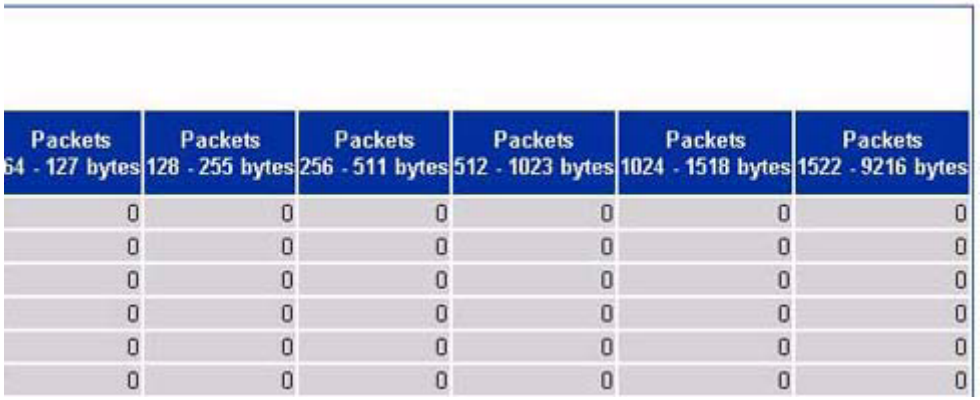


Statistics > RMON Ethernet

RMON Ethernet Statistics Table

Port	Drop Events	Octets	Packets	Broadcast	Multicast	CRC Align Errors	Undersize	Fragments	Collisions
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	127	83128567	1239758	838462	398656	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0

Figure 45 RMON Ethernet page (2 of 2)



Packets 64 - 127 bytes	Packets 128 - 255 bytes	Packets 256 - 511 bytes	Packets 512 - 1023 bytes	Packets 1024 - 1518 bytes	Packets 1522 - 9216 bytes
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

Table 42 describes the items on the RMON Ethernet page.

Table 42 RMON Ethernet page items

Item	Description
Port	The port number that corresponds to the selected switch.
Drop Events	The number of events in which packets were dropped by the interface due to a lack of resources.
Octets	The number of octets of data (including those in bad packets) received on the network (excluding framing bits, but including Frame Check Sequence (FCS) octets).
Packets	The number of good packets received that were directed to the broadcast address. This *does not* include multicast packets.
Broadcast	The number of good packets received that were directed to the broadcast address. This *does not* include multicast packets.
Multicast	The number of good packets received that were directed to the multicast address. This *does not* include packets sent to the broadcast address.
CRC Align Errors	The number of packets received that had a length (excluding and 1518 octets, inclusive, but had a bad Frame FCS with an integral number of octets (FCS errors).
Undersize	The number of packets received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well-formed.
Fragments	The number of packets received that were less than 64 octets in length (excluding framing bits, but including FCS octets) and had either FCS or frame error.
Collisions	The “best estimate” number of collisions on this Ethernet segment.

Table 42 RMON Ethernet page items (continued)

Item	Description
Jabbers	The number of packets received that were longer than 1518 octets in length (excluding framing bits, but including FCS octets), and had either FCS or frame error.
Packets < = 64 bytes 65-127 bytes 128-255 bytes 256-511 bytes 512-1023 bytes 1024-1518 bytes 1522-9216 bytes	The number of octets received (including bad packets) in length (excluding framing bits, but including FCS octets).

2 Click Submit.

The RMON Ethernet Statistics Table is updated with information about the selected device (Figure 44).

Viewing RMON History

You can view a periodic statistical sampling of data from various types of networks.

To view periodic statistical data:

1 From the main menu, choose Statistics > RMON History.

The RMON History page opens (Figure 46).

Figure 46 RMON History page

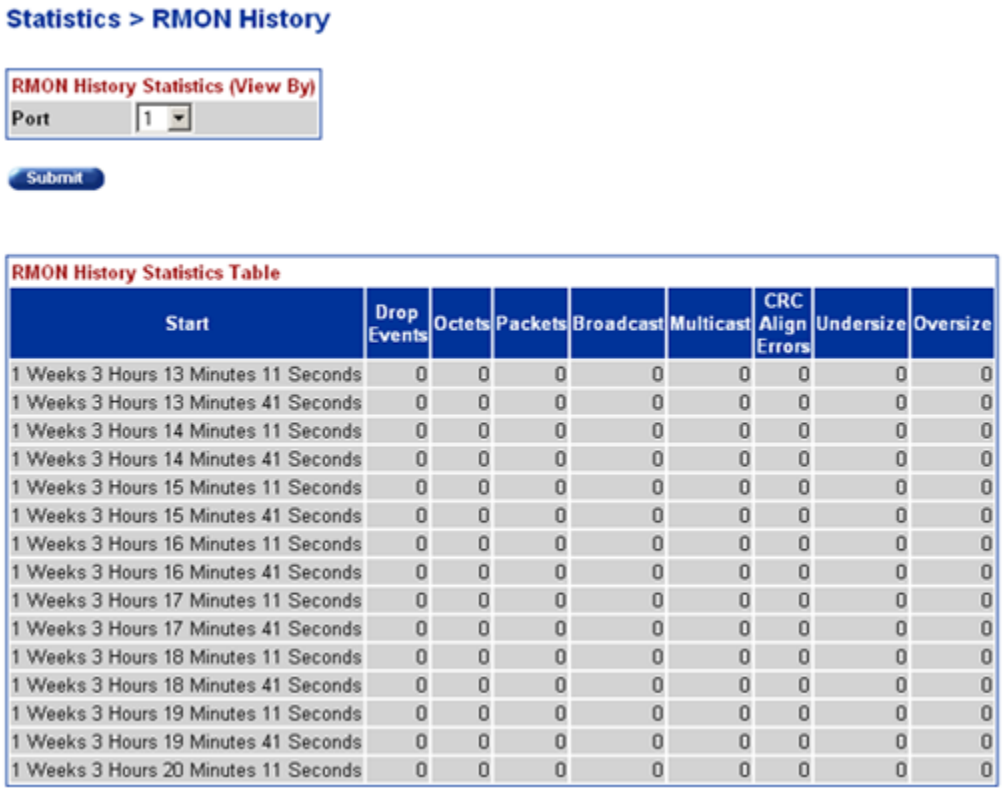


Table 43 describes the items on the RMON History page.

Table 43 RMON History page items

Section	Item	Description
RMON History Statistics (View By)	Port	Choose the port number to be monitored.
RMON History Statistics Table	Start	The value of the sysUPTime at the start of the interval over which this sample was measured.
	Drop Events	The number of events in which packets were dropped by the interface due to a lack of resources.

Table 43 RMON History page items

Section	Item	Description
	Octets	The number of octets of data (including those in bad packets) received on the network (excluding framing bits, but including Frame Check Sequence (FCS) octets).
	Packets	The number of good packets received that were directed to the broadcast address. This *does not* include multicast packets.
	Broadcast	The number of good packets received that were directed to the broadcast address. This *does not* include multicast packets.
	Multicast	The number of good packets received that were directed to the multicast address. This *does not* include packets sent to the broadcast address.
	CRC Align Errors	The number of packets received that had a length (excluding and 1518 octets, inclusive, but had a bad Frame FCS with an integral number of octets (FCS errors).
	Undersize	The number of packets received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well-formed.
	Oversize	The number of packets received that were longer than 1518 octets long (excluding framing bits, but including FCS octets) and were otherwise well-formed.

2 In the RMON History Statistics section, choose the unit and port number to be monitored.

3 Click Submit.

The RMON History Statistics Table is updated with information about the selected device and port (Figure 46).

Chapter 6
Viewing System Statistics

The options available to monitor system statistical data are:

Viewing Port Statistics

You can view detailed statistics about a selected switch port. Both received and transmitted statistics are displayed so that you can compare throughput or other port parameters.

To view statistical data about a selected switch port:

1 From the main menu, choose Statistics > Port.

The Port page opens (Figure 47).

Figure 47 Port page

Table 44 describes the items on the Port page.

Table 44 Port page items

Section	Item	Description
Port Statistics (View By)	Port	Choose the switch's port number to monitor.

Table 44 Port page items (continued)

Section	Item	Description
Port Statistics Table	Packets	The number of packets received/transmitted on this port, including bad packets, broadcast packets, and multicast packets.
	Multicast	The number of good multicast packets received/transmitted on this port, excluding broadcast packets.
	Broadcasts	The number of good broadcast packets received/transmitted on this port.
	Total Octets	The number of octets of data received/transmitted on this port, including data in bad packets and FCS octets, and framing bits.
	Pause Frames	The number of pause frames received/transmitted on this port.
	FCS/Frame Errors	The number of valid-size packets received on this port with proper framing but discarded because of FCS or frame errors.
	Undersized Packets	The number of packets received on this port with fewer than 64 bytes and with proper CRC and framing (also known as short frames or runts).
	Oversized Packets	The number of packets that were received on this port with proper CRC and framing that meet the following requirements: 1518 bytes if no VLAN tag exists 1522 bytes if a VLAN tag exists
	Filtered Packets	The number of packets that were received on this port and discarded because of the specific configuration. This counter does not count the FCS/Frames error packets; they are counted in that counter. This counter counts packets discarded because STP is not set to forwarding, the frame setting in VLAN directs discarding, or a mismatch in ingress/egress port speeds.
	Collisions	The number of collisions detected on this port.
	Single Collisions	The number of packets that were transmitted successfully on this port after a single collision.
	Multiple Collisions	The number of packets that were transmitted successfully on this port after more than one collision.
	Excessive Collisions	The number of packets lost on this port due to excessive collisions.

Table 44 Port page items (continued)

Section	Item	Description
	Late Collisions	The number of packets collisions that occurred after a total length of time that exceeded 512 bit-times of packet transmission.
	Deferred Packets	The number of packets that were received on this port that were delayed on the first transmission attempt, but never incurred a collision.
Packets Received and Transmitted	Packets 64 bytes 65-127 bytes 128-255 bytes 256-511 bytes 512-1023 bytes 1024-1518 bytes 1522-9216 bytes	The number of packets received/transmitted on the port.

2 Click Submit.

The Port Statistics Table is updated with information about the selected device and port (Figure 47).

3 To update the statistical information, click Update.

Zeroing Ports

To clear the statistical information for the currently displayed port:

➨ Click Zero Port.

To clear the statistical information for all ports in a switch:

➨ Click Zero All Ports.

Viewing all Port Errors

You can view all ports that have errors. If a particular port has no errors, it will not be displayed.

To view a summary of the port errors for the Ethernet Routing Switch:

1 From the main menu, choose Statistics > Port Error Summary.

The Port Error Summary page opens (Figure 48).

Figure 48 Port Error Summary page

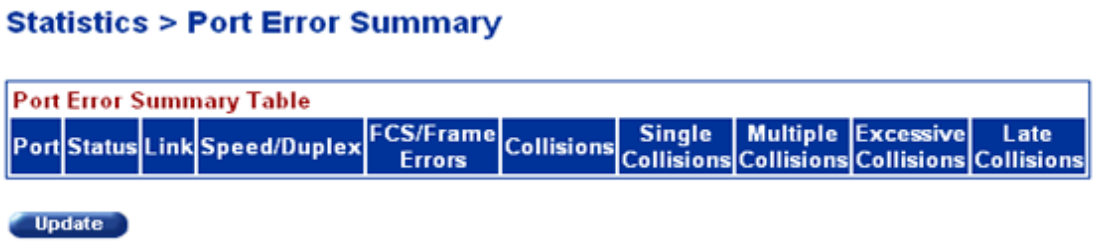


Table 45 describes the read-only information displayed in the Port Error Summary Table.

Table 45 Port Error Summary Table fields

Item	Description
Port	Displays the port number.
Status	Displays the status of the port (Enabled/Disabled).
Link	Displays the link status of the port (Up/Down).
Speed/Duplex	Displays the speed at which the port is operating, as well as whether it is in half- or full-duplex mode.
FCS/Frame Errors	Displays the number of frame check sequence (FCS) and frame errors received on this port.
Collisions	Displays the number of collision errors received on this port.
Single Collisions	Displays the number of single collision errors received on this port.
Multiple Collisions	Displays the number of multiple collision errors received on this port.

Table 45 Port Error Summary Table fields (continued)

Item	Description
Excessive Collisions	Displays the number of excessive collision errors received on this port.
Late Collisions	Displays the number of late collision errors received on this port.

2 To view the latest port statistics, click the Update button at the bottom of the page.

Viewing Interface Statistics

You can view selected switch interface statistics.

To view the interface statistical information of an interface:

1 From the main menu, choose Statistics > Interface.

The Interface page opens (Figure 49).

Figure 49 Interface page

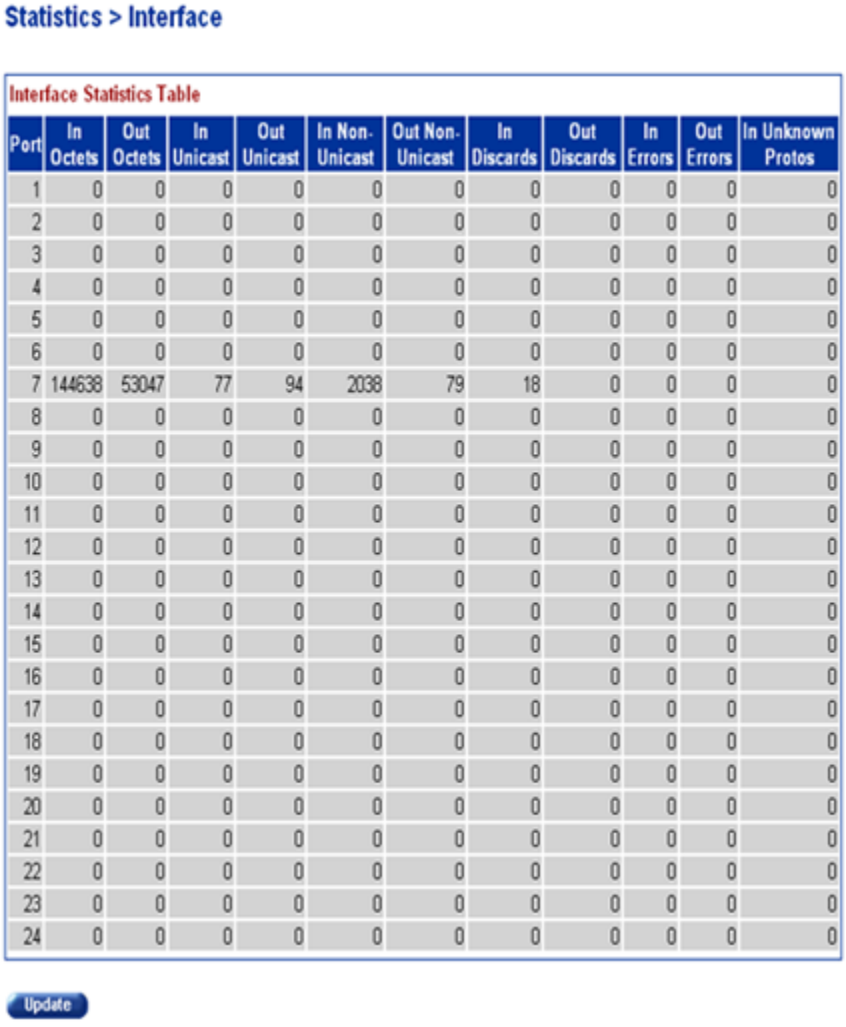


Table 46 describes the items on the Interface page.

Table 46 Interface page items

Item	Description
Port	The port number corresponding to the selected switch.
In Octets	The number of octets received on the interface, including framing characters.

Table 46 Interface page items (continued)

Item	Description
Out Octets	The number of octets transmitted out of the interface, including framing characters.
In Unicast	The number of subnetwork-unicast packets delivered to a higher-layer protocol.
Out Unicast	The number of packets that higher-layer protocols requested be transmitted to a subnetwork-unicast address, including those that were discarded or not sent.
In Non-Unicast	The number of non-unicast packets, for example, subnetwork-broadcast or subnetwork-multicast packets, delivered to a higher protocol.
Out Non-Unicast	The number of packets that higher-level protocols requested be transmitted to a non-unicast address. For example, a subnetwork-broadcast or a subnetwork multicast address, including those that were discarded or not sent.
In Discards	The number of inbound packets which were selected to be discarded even though no errors were detected to prevent their being delivered to a higher-layer protocol. Packet discarding is not arbitrary. One reason for discarding packets is to free buffer space.
Out Discards	The number of outbound packets which were selected to be discarded even though no errors were detected to prevent their being transmitted. Packet discarding is not arbitrary. One reason for discarding packets is to free buffer space.
In Errors	The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.
Out Errors	The number of outbound packets that could not be transmitted because of errors.
In Unknown Protos	The number of packets received through the interface that were discarded because of an unknown or unsupported protocol.

2 To update the statistical information, click Update.

Viewing Ethernet Error Statistics

You can view Ethernet error statistics for each monitored interface linked to the Ethernet Routing Switch.

To view Ethernet error statistics:

1 From the main menu, choose Statistics > Ethernet Errors.

The Ethernet Errors page opens (Figure 50).

Figure 50 Ethernet Errors page

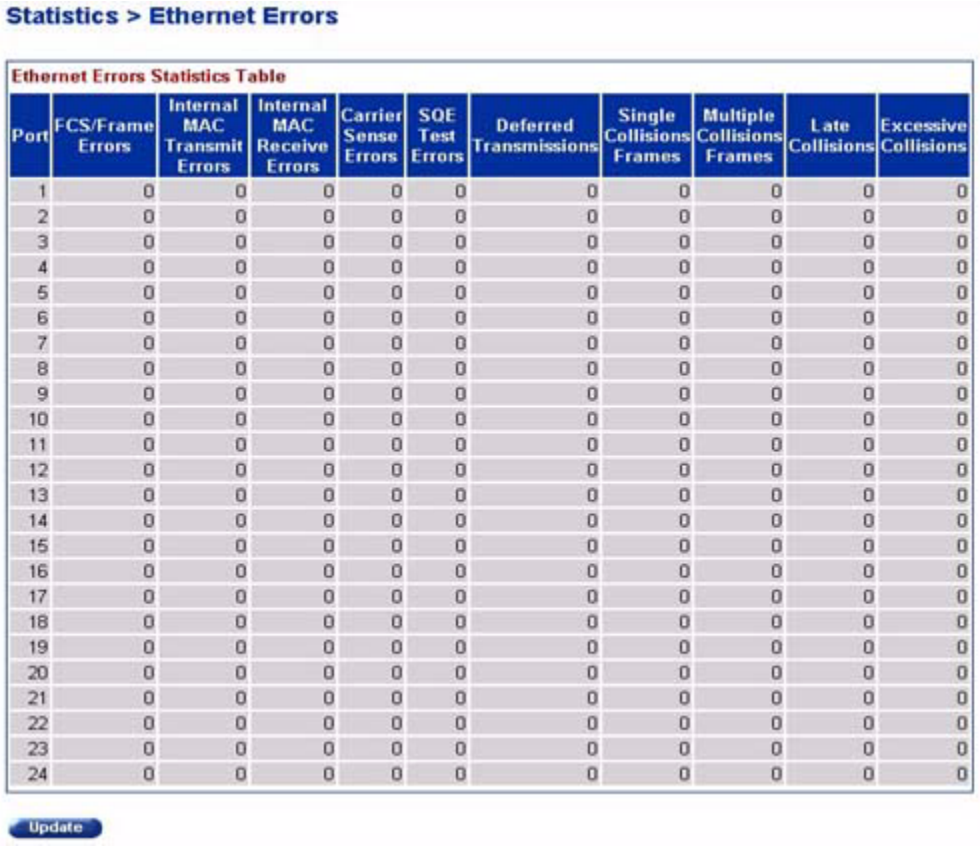


Table 47 describes the items on the Ethernet Errors page.

Table 47 Ethernet Errors page items

Item	Description
Port	The port number corresponding to the selected switch.
FCS/Frame Errors	The number of frames received on a particular interface that are an integral number of octets in length, but do not pass the FCS check or have frame errors.
Internal MAC Transmit Errors	The number of frames for which transmission on a particular interface fails because of an internal MAC sublayer transmit error. A frame only is counted by an instance of this object if it is not counted by the corresponding instance of either the dot3StatsLateCollisions object, the dot3StatsExcessiveCollisions object, or the dot3StatsCarrierSenseErrors object.

Table 47 Ethernet Errors page items (continued)

Item	Description
Internal MAC Receive Errors	The number of frames for which reception on a particular interface fails because of an internal MAC sublayer transmit error. A frame only is counted by an instance of this object if it is not counted by the corresponding instance of either the dot3StatsLateCollisions object, the dot3StatsExcessiveCollisions object, or the dot3StatsCarrierSenseErrors object.
Carrier Sense Errors	The number of times that the carrier sense conditions were lost or never asserted when attempting to transmit a frame on a particular interface.
SQE Test Errors	The number of times that the SQE TEST ERROR message is generated by the PLS sublayer for a particular interface. The SQE TEST ERROR is defined in section 7.2.2.2.4 of ANSI/IEEE 802.3-1985, and its generation is described in section 7.2.4.6 of the same document.
Deferred Transmissions	The number of frames for which the first transmission attempt on a particular interface is delayed because the medium is busy.
Single Collision Frames	The number of successfully transmitted frames on a particular interface for which transmission is inhibited by more than one collision.
Multiple Collision Frames	The number of successfully transmitted frames on a particular interface for which transmission is inhibited by a single collision.
Late Collisions	The number of times a collision is detected on a particular interface later than 512 bit-times into the transmission of a packet.
Excessive Collisions	The number of frames for which transmission on a particular interface fails due to excessive collisions.

2 To refresh the statistical information, click Update.

Viewing Transparent Bridging Statistics

You can view the transparent bridging statistics measured for each monitored interface on the device.

To view transparent bridging statistics:

1 From the main menu, choose Statistics > Transparent Bridging.

The Transparent Bridging page opens (Figure 51).

Figure 51 Transparent Bridging page

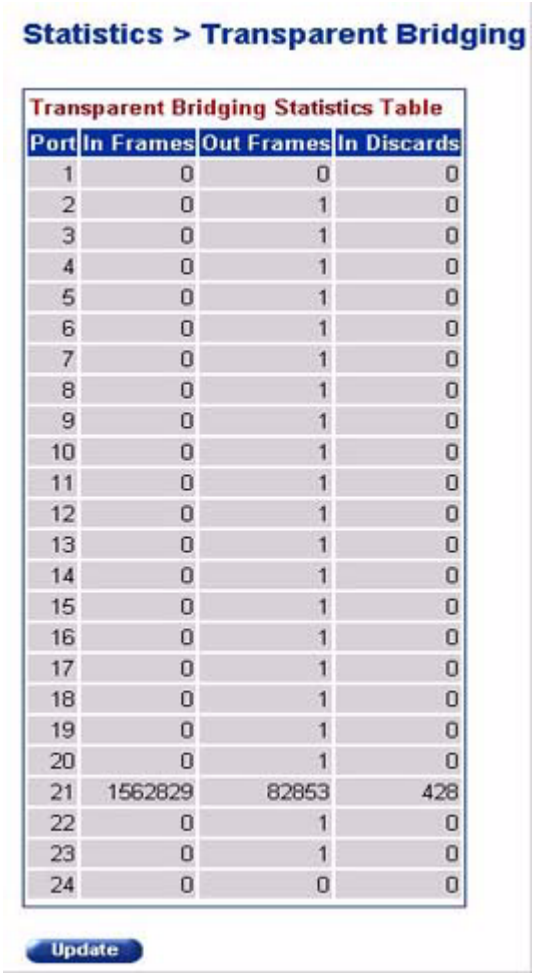


Table 48 describes the items on the Transparent Bridging page.

Table 48 Transparent Bridging page items

Item	Description
Port	The port number that corresponds to the selected switch.
In Frames (dot1dTpPortInFrames)	The number of frames that have been received by this port from its segment. A frame received on the interface corresponding to this port is counted only if it is for a protocol being processed by the local bridging function, including bridge management errors.

Table 48 Transparent Bridging page items

Item	Description
Out Frames (dot1dTpPortOutFrames)	The number of frames that have been transmitted by this port from its segment. A frame received on the interface corresponding to this port is counted only if it is for a protocol being processed by the local bridging function, including bridge management errors.
In Discards (dot1dTpPortInDiscards)	The number of valid frames received which were discarded by the forwarding process.

2 To refresh the statistical information, click Update.

Chapter 7
Configuring Application Settings

The options available to configure application settings are:

Configuring Port Mirroring

The Ethernet Routing Switch supports port mirroring to analyze traffic. You can view existing port mirroring activity and you can configure a specific switch port to mirror up to two specified ports or two MAC addresses. When you configure port mirroring, you have the option to specify either port-based monitoring or address-based monitoring.

Refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* for configuration guidelines for port-mirroring.

To configure port mirroring:

1 From the main menu, choose Application > Port Mirroring.

The Port Mirroring page opens (Figure 52).

Figure 52 Port Mirroring page

Note: The Port Mirroring Active section of this only displays those port mirroring configurations you set. If you set no port mirroring configurations, the area will not show rows.

Note: If the port which is monitored is in full duplex, only unicast packets which are addressed to the device that is connected to the port are monitored. If the port which is monitored is half duplex, all the packets which are addressed to the device that is connected to the port are monitored.

Table 49 describes the items on the Port Mirroring page.

Table 49 Port Mirroring page items

Item	Range	Description
Monitoring Mode	(1) Disabled (2) --> Port X (3) Port X --> (4)<-- --> Port X (5) -->Port X or Port Y --> (6) -->Port X and Port Y --> (7) <-- --> Port X and <-- --> Port Y (8) Address A --> any Address (9) any Address --> Address A (10) <-- --> Address A (11) Address A --> Address B (12) Address A <-- --> Address B	Choose any one of the six port-based monitoring modes or any one of the five address-based monitoring modes. For more information on selecting one of the six port-based modes that activates the port X and port Y screen fields, where you can choose up to two ports to monitor, see Table 50 on page 146. For more information on selecting one of the five address-based modes that activates the Address A and Address B screen fields, where you can specify MAC addresses to monitor, see Table 51 on page 147. The default setting is Disabled.
Monitor Port		Choose the switch port to designate as the monitor port.
Port X		Choose the first switch port to be monitored by the designated monitor port. This port is monitored according to the value “X” in the Monitoring Mode field.
Port Y		Choose the second switch port to be monitored by the designated monitor port. This port is monitored according to the value “Y” in the Monitoring Mode field.
Address A	XX-XX-XX-XX-XX-XX	Type the MAC address to monitor by the designated monitor port. This address is monitored according to the value “Address A” in the Monitoring Mode field.
Address B	XX-XX-XX-XX-XX-XX	Type the MAC address to monitor by the designated monitor port. This address is monitored according to the value “Address B” in the Monitoring Mode field.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

Selecting one of the port-based monitoring modes activates the port X and/or the port Y screen fields, where you can choose up to two ports to monitor.

Table 50 describes the port-based monitoring modes.

Table 50 Port-based monitoring modes

Item	Description
Disabled	Choose this option to disable port-based monitoring. The default setting is Disabled.
--> Port X	Choose this option to monitor all traffic received by port X.
Port X -->	Choose this option to monitor all traffic transmitted by port X.
<-- --> Port X	Choose this option to monitor all traffic received and transmitted by port X.
--> Port X or Port Y -->	Choose this option to monitor all traffic received by port X or transmitted by port Y. Note: Do not use this mode for multicast and broadcast traffic.
--> Port X and Port Y -->	Choose this option to monitor all traffic received by port X (destined to port Y) and then transmitted by port Y (one way conversation steering). Note: Do not use this mode for multicast and broadcast traffic
<-- --> Port X and Port Y <-- -->	Choose this option to monitor all traffic received by port X and then transmitted by port Y or transmitted by port X and received by port Y (two way conversation steering). Note: Do not use this mode for multicast and broadcast traffic

Selecting any one of the address-based monitoring modes activates the Address A and Address B screen fields, where you can specify MAC addresses to monitor.

Table 51 describes the address-based monitoring modes.

Table 51 Address-based monitoring modes

Item	Description
Disabled	Choose this option to disable port-based monitoring. The default setting is Disabled.
Address A --> any Address	Choose this option to monitor all traffic transmitted from Address A to any address.
any Address --> Address A	Choose this option to monitor all traffic received by Address A from any address.
<-- --> Address A	Choose this option to monitor all traffic received by or transmitted by Address A.
Address A --> Address B	Choose this option to monitor all traffic transmitted by Address A that goes to Address (one way conversation steering).
Address A <-- --> Address B	Choose this option to monitor all traffic received by Address A and then transmitted by Address B or transmitted by Address A and received by Address B (two way conversation steering).

Configuring Rate Limiting

You can view the current forwarding rate of broadcast and/or multicast packets, and configure the Ethernet Routing Switch to limit the forwarding rate of broadcast and multicast packets on each interface. When you configure rate limiting, you are setting the percentage of port bandwidth allowed for a packet type. When the threshold is exceeded, additional packets are discarded.

Note: If a port is configured for rate limiting, and it is a MultiLink trunk member, all trunk member ports implement rate limiting. If the port becomes disabled, all trunk members become disabled.

To configure rate limiting:

1 From the main menu, choose Application > Rate Limiting.

The Rate Limiting page opens (Figure 53).

Figure 53 Rate Limiting page

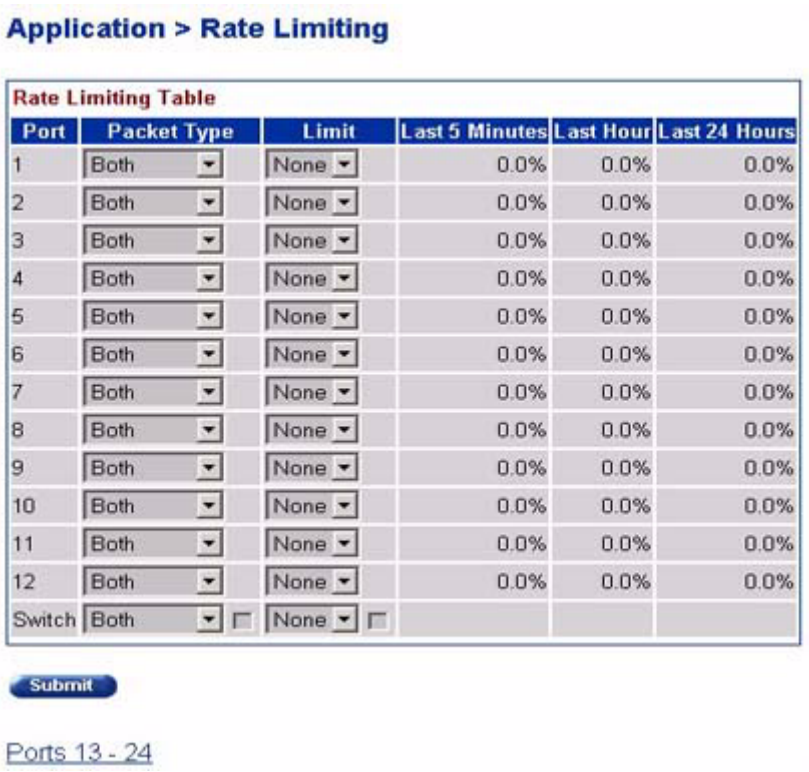


Table 52 describes the items on the Rate Limiting page.

Table 52 Rate Limiting page items

Item	Range	Description
Port	1to 24	The selected port number.
Packet Type	(1) Multicast (2) Broadcast (3) Both	Choose the packet type to view on the table. The default setting is Both.

Table 52 Rate Limiting page items (continued)

Item	Range	Description
Limit	None, 1-10%	Choose the percentage, if any, of bandwidth allowed for forwarding the packet type specified in the Packet Type field. When the threshold is exceeded, any additional packets are discarded. Note: Rate limiting is disabled if this field is set to none. This allows you to select and view the percentage of specific packet types present in the network, without inadvertently limiting the forwarding rate. The default setting is None.
Last 5 Minutes	0..100%	The percentage of packets received by the port in the last five minutes. This field provides a running average of network activity and is updated every 15 seconds.
Last Hour	0..100%	The percentage of packets received by the port in the last hour. This field provides a running average of network activity and is updated every five minutes.
Last 24 Hours	0..100%	The percentage of packets received by the port in the last 24 hours. This field provides a running average of network activity and is updated every hour.
		Note: The Last 5 Minutes, Last Hour, and Last 24 Hours fields indicate the receiving port's view of network activity regardless of the rate limiting setting.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

Note: To avoid broadcast storms (when the volume of a particular packet type is extreme, placing severe strain on the network), set the forwarding rate of the packet type to not exceed a lower percentage of the total available bandwidth.

Configuring IGMP

You can configure a VLAN's switch ports to optimize IP multicast packets in a bridged Ethernet environment, and you can view a table of existing IGMP configurations. For more information about IGMP configuration, see the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3*.

Note: The Ethernet Routing Switch supports 256 IGMP groups.

To configure IGMP:

1 From the main menu, choose Application > IGMP > IGMP Configuration.

The IGMP Configuration page opens (Figure 54).

Figure 54 IGMP Configuration page

Table 53 describes the items on the IGMP Configuration page.

Table 53 IGMP Configuration page items

Item	Description
	Displays a modification page for the selected VLAN.
VLAN	The number assigned to the VLAN when the VLAN was created. For more information on creating VLANs, see "Creating and Managing Virtual LANs" on page 154.
Snooping	The operational status for the IGMP snooping feature.

Table 53 IGMP Configuration page items

Item	Description
Proxy	If enabled, this feature allows the switch to consolidate IGMP Host Membership Reports received on its downstream ports and to generate a consolidated proxy report for forwarding to its upstream neighbor. Note: This field affects *all* VLANs.
Robust Value	The predetermined value set by the administrator to offset expected packet loss on a subnet. If packet losses on a subnet are unacceptably high, the Robust Value field can be increased to a higher value. Note: This field affects *only* the VLAN specified in the page's VLAN field.
Query Time	The query interval (the interval between general queries sent by the multicast router).

2 In the VLAN row of your choice, click the Modify icon.

The IGMP: VLAN Configuration page opens (Figure 55).

Figure 55 IGMP: VLAN Configuration page

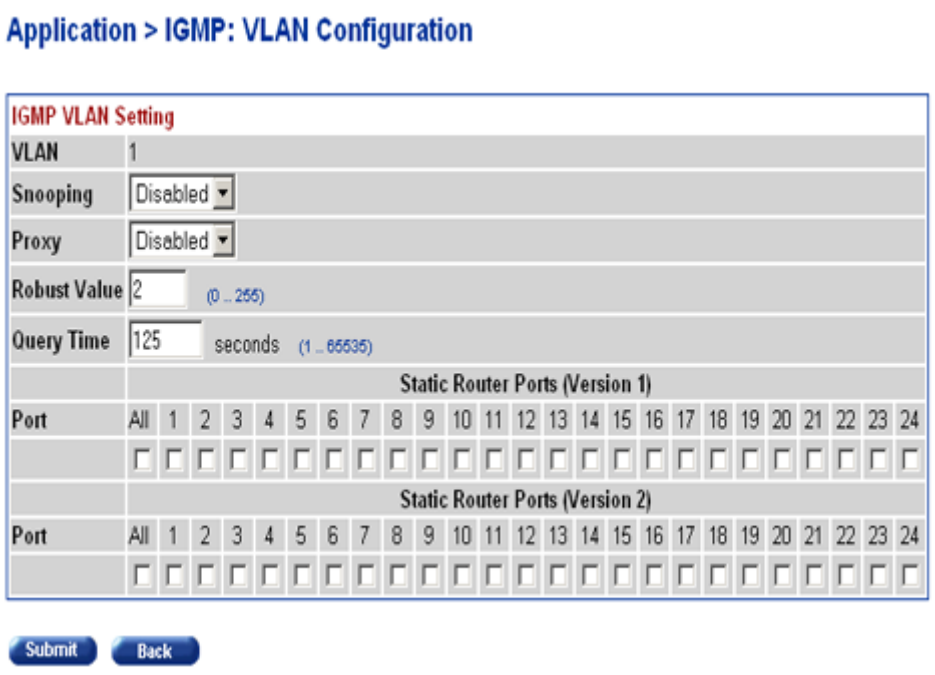


Table 54 describes the items on the IGMP: VLAN Configuration page.

Table 54 IGMP: VLAN Configuration page items

Item	Range	Description
VLAN	1to 4094	The number assigned to the VLAN when the VLAN was created. For more information on creating VLANs, see "Creating and Managing Virtual LANs" on page 154.
Snooping	(1) Enabled (2) Disabled	Choose to enable or disable the IGMP snooping feature. Note: This field affects only the VLAN specified in the VLAN field listed in the page. The default setting is Disabled.
Proxy	(1) Enabled (2) Disabled	Choose to enable or disable the proxy feature. This feature allows the switch to consolidate IGMP Host Membership Reports received on its downstream ports and to generate a consolidated proxy report for forwarding to its upstream neighbor. Note: This field affects only the VLAN specified in the VLAN field listed in the page. The default setting is Disabled.
Robust Value	0..255	Type the robust value in the appropriate format. This feature allows you to set the switch to offset expected packet loss on a subnet. If packet losses on a subnet are unacceptably high, the Robust Value field can be increased to a higher value. Note: This field affects *only* the VLAN specified in the page's VLAN field. The default settings is 2.
Query Time	1to 65535	Type the query time (in seconds) in the appropriate format. This feature allows you to control the number of IGMP messages allowed on the subnet by varying the Query Interval (the interval between general queries sent by the multicast router). Note: This field affects *only* the VLAN specified in the page's VLAN field. The default settings is 125 seconds.
Static Router Ports (Version 1 and Version 2)		Click the check boxes of the router ports to associate with the VLAN (alternatively, click the check box to deselect a selected router port). Note: This field affects *all* VLANs.

3 Type information in the text boxes, or select from a list.

4 In the Static Router Ports section(s), click the check boxes of the router ports to associate with the VLAN.

5 Do one of the following:

- Click Submit.
- Click Back to return to the IGMP page without making changes.

The new configuration is displayed in the IGMP Table (Figure 54).

Viewing Multicast Group Membership Configurations

You can view a table configured IP multicast group addresses for a selected VLAN.

Note: The Ethernet Routing Switch supports 256 IGMP groups.

To view multicast group membership configurations for a selected VLAN:

1 From the main menu, choose Application > IGMP > IGMP Multicast Group.

The IGMP Multicast Group Membership page opens (Figure 56).

Figure 56 IGMP Multicast Group Membership page

Table 55 describes the items on the IGMP Multicast Group Membership page.

Table 55 IGMP Multicast Group Membership page items

Section	Item	Description
Multicast Group Membership Selection (View By)	VLAN	Choose the VLAN on which to view configured IP addresses.
Multicast Group Membership Table	Multicast Group Address	The IP multicast group addresses that are currently active on the associated port.
	Port	The port numbers associated with the IP multicast group addresses displayed in the IP Multicast Group Address field.

2 In the Multicast Group Membership Selection section, choose the number of VLAN on which to view configured IP addresses.

3 Click Submit.

The results are displayed in the Multicast Group Membership Table (Figure 56).

Creating and Managing Virtual LANs

A Virtual LAN (VLANs) is a collection of switch ports that make up a single broadcast domain. You can configure a VLAN for a single switch, or for multiple switches. When you create a VLAN, you can control traffic flow and ease the administration of moves, adds, and changes on the network, by eliminating the need to change physical cabling.

You can configure two types of VLAN in the Web-based management interface:

- Port-based
- Protocol-based

You have 256 port- and protocol-based VLANs.

Port-based VLANs

A port-based VLAN is a VLAN in which the ports are explicitly configured to be in the VLAN. When you create a port-based VLAN on a switch, you assign a VLAN identification number (VLAN ID) and specify which ports belong to the VLAN. The VLAN ID is used to coordinate VLANs across multiple switches.

The automatic PVID feature automatically sets the PVID when you configure a port-based VLAN. The PVID value will be the same value as VLAN. The user can also manually change the PVID value. The default setting for AutoPVID is enable.

Protocol-based VLANs

You can configure as many as 255 protocol-based VLANs, with up to 7 different protocols.

A protocol-based VLAN is a VLAN in which the switch ports are configured as members of a broadcast domain, based on the protocol information within a packet. A protocol-based VLAN can localize broadcast traffic and assure that only the protocol-based VLAN ports are flooded with the specified protocol-type packets.

For protocol-based VLANS, the VLAN classification of the frame is dependent on the protocol of the incoming untagged frame. The frame is forwarded only if that VLAN is registered at the egress port.

Configuring VLANs

You can create VLANs by assigning switch ports and protocols as VLAN members, and you can designate an existing VLAN to act as the management VLAN.

Note: For guidelines on configuring VLANs—as well as interoperability guidelines between VLANs, MultiLink Trunking, and multiple Spanning Tree Protocol Groups—refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3.*

To open the VLAN Configuration page:

➡ From the main menu, choose Application > VLAN > VLAN Configuration.

The VLAN Configuration page opens (Figure 57).

Figure 57 VLAN Configuration page

Table 56 describes the items on the VLAN Configuration page.

Table 56 VLAN Configuration page items

Section	Item	Description
VLAN Table		Displays a modification page.
		Deletes the row.
	VLAN	The number assigned to the VLAN when the VLAN was created.
	VLAN Name	The name assigned to the VLAN when the VLAN was created.
	VLAN Type	The base-type assigned when the VLAN was created. The base types are: Port-based and Protocol-based.
	Protocol	The protocol assigned when the VLAN was created. The protocol types are: IP, IPX 802.2, 1PX 802.3, IPX Snap, IPX Ethernet II, DEC Lat, SNA Ethernet II, Net Bios, XNS, Vines, Ipv6, User Defined, and RARP. For more information, see Table 60 on page 162.
	User Defined Protocol	The user-defined protocol assigned when the VLAN was created.
	Learning Constraint	All VLANs on the Ethernet Routing Switch have IVL as the learning constraint. With IVL, the VLAN uses an independent filtering database from all other VLANs.
	State	The current operational state of the VLAN.
VLAN Creation	VLAN Type	Choose the type of VLAN to create and click Create VLAN. Your options are: port-based (page 157) and protocol-based (page 160).
VLAN Setting	Management VLAN	Choose the VLAN to designate as the management VLAN.
AutoPVID Setting	AutoPVID	Choose Enabled to activate the Automatic PVID feature and click Submit. Note: Use this *only* with port-based VLANs.

Creating a Port-based VLAN

To create a port-based VLAN:

1 From the main menu choose Application > VLAN > VLAN Configuration.

The VLAN Configuration page opens (Figure 57).

2 In the VLAN Creation section, choose Port.

3 Click Create VLAN.

The VLAN Configuration: Port Based setting page opens (Figure 58).

Figure 58 VLAN Configuration: Port Based setting page

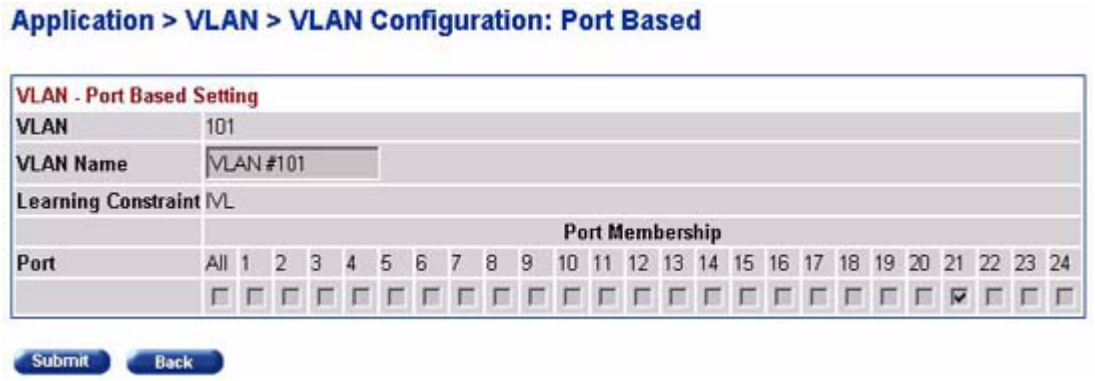


Table 57 describes the items on the VLAN Configuration: Port Based setting page.

Table 57 VLAN Configuration: Port Based setting page items

Section	Item	Description
VLAN	1to 4094	The number assigned to the VLAN when the VLAN was created.
VLAN Name	1to 16	Type a character string to create a unique name to identify the VLAN, for example, VLAN1.

4 Type information in the text boxes, or select from a list.

5 Do one of the following:

- Click Submit.
- Click Back to return to the VLAN Configuration page without making changes.

The new port-based VLAN configuration appears in the VLAN Table on the VLAN Configuration page (Figure 57).

Modifying a Port-based VLAN

To modify an existing port-based VLAN:

1. From the main menu, choose Application > VLAN > VLAN Configuration.

   The VLAN Configuration page opens (Figure 57).

2. In the VLAN Table section, in the port-based VLAN row of your choice, click the Modify icon.

   The VLAN Configuration: Port Based modification page opens (Figure 59).

Figure 59 VLAN Configuration: Port Based modification page

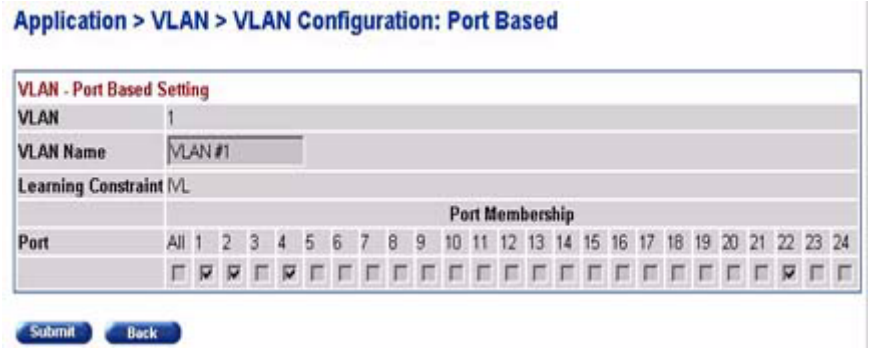


Table 58 describes the items on the VLAN Configuration: Port Based modification page.

Table 58 VLAN Configuration: Port Based modification page items

Item	Description
VLAN	The number assigned to the VLAN when the VLAN was created.
VLAN Name	(Re)name the VLAN.

Table 58 VLAN Configuration: Port Based modification page items

Item	Description
Learning Constraint	All Ethernet Routing Switches use IVL, which means that the VLAN uses an independent filtering database from all other VLANs.
Port Membership	Click the check boxes for the switch ports to associate them with the VLAN or, if the port is already a member, click the check box to deselect the it as a member of the VLAN. A port can be configured in one or more VLANs. This field is dependent on the Tagging field value in the VLAN Port Configuration screen. For example: When the Tagging field is set to *Untagged Access*, you can set the Port Membership field as an untagged port member or as a non-VLAN port member. When the Tagging field is set to *Tagged Trunk*, you can set the Port Membership field as a tagged port member or as a non-VLAN port member.

3 Type information in the text boxes, or click the check box of a port to associate it with the VLAN or, if the port is already a member, click the check box to deselect it as a member of the VLAN.

4 Do one of the following:

- Click Submit.
- Click Back to return to the VLAN Configuration page without making changes.

The modified VLAN configuration is displayed in the VLAN Table (Figure 57).

Creating a Protocol-based VLAN

To create a protocol-based VLAN:

1 From the main menu, choose Application > VLAN > VLAN Configuration.

The VLAN Configuration page opens (Figure 57).

2 In the VLAN Creation section, choose Protocol.

3 Click Create VLAN.

The VLAN Configuration: Protocol Based setting page opens (Figure 60).

Figure 60 VLAN Configuration: Protocol Based setting page

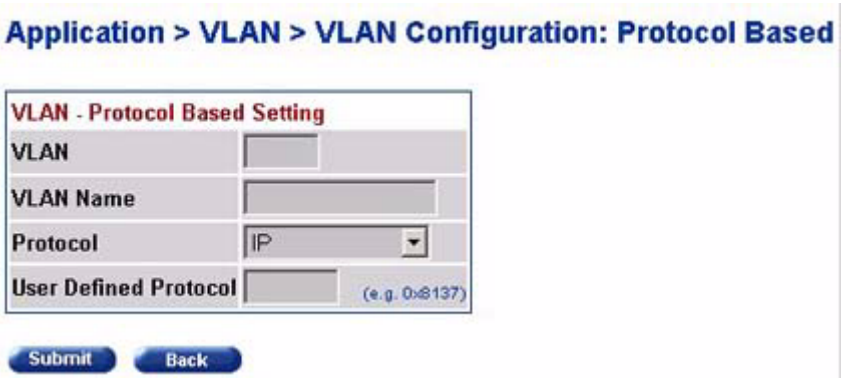


Table 59 describes the items on the VLAN Configuration: Protocol Based setting page.

Table 59 VLAN Configuration: Protocol Based setting page items

Item	Range	Description
VLAN	1to 4094	Type a unique number to identify the VLAN.
VLAN Name	1to16	Type a unique name to identify the VLAN.

Table 59 VLAN Configuration: Protocol Based setting page items

Item	Range	Description
Protocol	IP, IPX 802.2, 1PX 802.3, IPX Snap, IPX Ethernet II, DEC Lat, SNA Ethernet II, Net Bios, XNS, Vines, Ipv6, User Defined, and RARP.	Choose the supported protocol for the VLAN. For more information, see Table 60 on page 162.
User Defined Protocol		If you selected “User Defined” from the Protocol pulldown list, specify the protocol identifier for the VLAN. Note: Any frames that match the specified PID, in any of the following ways are assigned to that user defined VLAN: The ethertype for Ethernet type 2 frames The PID in Ethernet SNAP frames The DSAP or SSAP value in Ethernet 802.2 frames. For a list of rereserved PIDs that are unavailable for user-defined PIDs, see Table 61 on page 164.

4 Type information in the text boxes, or select from a list.

5 Do one of the following:

- Click Submit.
- Click Back to return to the VLAN Configuration page without making changes.

The new protocol-based VLAN configuration appears in the VLAN Table on the VLAN Configuration page (Figure 57).

Table 60 defines the standard protocol-based VLANs and PID types that are supported by the Ethernet Routing Switch.

Table 60 Standard protocol-based VLANs and PID types

PID Name	Encapsulation	PID Value (hex)	VLAN Type
IP Ether2	Ethernet type 2	0800, 0806	Standard IP on Ethernet Type 2 frames
IPX 802.3	Ethernet 802.3	FFFF	Novell IPX on Ethernet 802.3 frames
IPX 802.2	Ethernet 802.2	E0 E0	Novell IPX on Ethernet 802.2 frames
IPX Snap	Ethernet Snap	8137, 8138	Novell IPX on Ethernet SNAP frames

Table 60 Standard protocol-based VLANs and PID types (continued)

PID Name	Encapsulation	PID Value (hex)	VLAN Type
IPX Ethernet II	Ethernet type 2	8137, 8138	Novell IPX on Ethernet Type 2 frames
DEC Lat	Ethernet type 2	6004	DEC LAT protocol
Sna Ethernet II	Ethernet type 2	80D5	IBM SNA on Ethernet Type 2 frames
NetBios	Ethernet type 2	F0**, **F0	NetBIOS protocol
XNS	Ethernet type 2	0600, 0807	Xerox XNS
Vines	Ethernet type 2	0BAD	Banyan VINES
IPv6	Ethernet type 2	86DD	IP version 6
RARP	Ethernet type 2	8035	Reverse Address Resolution Protocol (RARP): RARP is a protocol used by some old diskless devices to obtain IP addresses by providing the MAC layer address. When you create a VLAN based on RARP, you can limit the RARP broadcasts to the ports that lead to the RARP server.
User-Defined	Ethernet type 2, Ethernet 802.2, or Ethernet Snap	User-defined 16 bit value	If you select “User Defined” from the Protocol pulldown list, specify the protocol identifier for the VLAN. Note: Any frames that match the specified PID, in any of the following ways are assigned to that user defined VLAN: The ethertype for Ethernet type 2 frames The PID in Ethernet SNAP frames The DSAP or SSAP value in Ethernet 802.2 frames. For a list of rereserved PIDs that are unavailable for user-defined PIDs, see Table 60 on page 162

Table 61 describes the PIDS that are reserved and not available for user-defined PIDs.

Table 61 Predefined Protocol Identifier (PID)

PID Name	Encapsulation	PID Value (hex)	VLAN Type
IPX 802.3	Ethernet 802.3	FF FF	Novell IPX on Ethernet 802.3 frames
IPX 802.2	Ethernet 802.2	E0 E0	Novell IPX on Ethernet 802.2 frames
IPX Snap	Ethernet Snap	8137, 8138	Novell IPX on Ethernet SNAP frames
IP Ether2	Ethernet type 2	0800, 0806	Standard IP on Ethernet Type 2 frames
IPX Ethernet II	Ethernet type 2	8137, 8138	Novell IPX on Ethernet Type 2 frames
AplTk Ether2 Snap	Ethernet type 2 or Ethernet Snap	809B, 80F3	AppleTalk on Ethernet Type 2 and Ethernet Snap frames
Declat Ether2	Ethernet type 2	6004	DEC LAT protocol
Sna Ether2	Ethernet type 2	80D5	IBM SNA on Ethernet Type 2 frames
NetBios 802.2	Ethernet type 2	F0**, **F0	NetBIOS protocol
Xns Ether2	Ethernet type 2	0600, 0807	Xerox XNS
Vines Ether2	Ethernet type 2	0BAD	Banyan VINES
Ipv6 Ether2	Ethernet type 2	86DD	IP version 6
User-Defined	Ethernet type 2, Ethernet 802.2, or Ethernet Snap	User-defined 16 bit value	User-defined protocol-based VLAN. For a list of rereserved PIDs that are unavailable for user-defined PIDs, see Table 61 on page 164.

Modifying a Protocol-based VLAN

To modify an existing protocol-based VLAN:

1 From the main menu, choose Application > VLAN > VLAN Configuration.

The VLAN Configuration page opens (Figure 57).

2 In the VLAN Table section, in the protocol-based VLAN row of your choice, click the Modify icon.

The VLAN Configuration: Protocol Based modification page opens (Figure 61).

Figure 61 VLAN Configuration: Protocol Based modification page

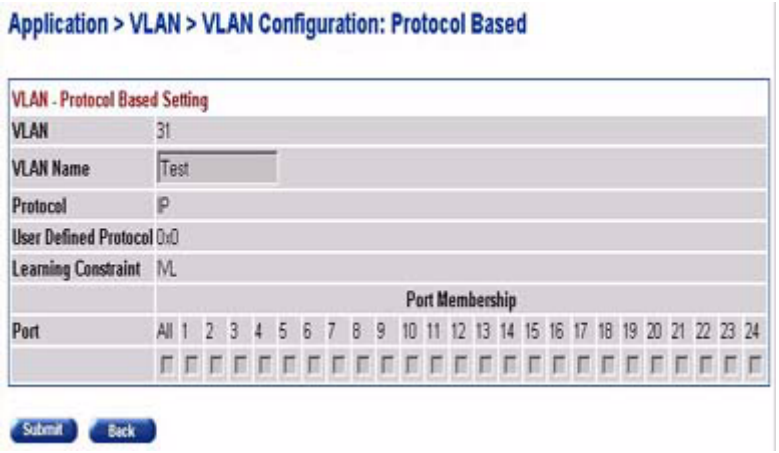


Table 62 describes the items on the VLAN Configuration: Protocol Based modification page.

Table 62 VLAN Configuration: Protocol Based modification page items

Item	Description
VLAN	The number assigned to the VLAN when the VLAN was created.
VLAN Name	(Re)name the VLAN.
Learning Constraint	All Ethernet Routing Switches use IVL, which means that the VLAN uses an independent filtering database from all other VLANs.
Port Membership	Click the check boxes beneath a port to associate the port with the VLAN or, if the port is already selected click the check box to deselect the port as a member of the VLAN.

3 Type information in the text boxes, or click the check box of a port to associate it with the VLAN or, if the port is already a member, click the check box to deselect it as a member of the VLAN.

4 Do one of the following:

- Click Submit.
- Click Back to return to the VLAN Configuration page without making changes.

The modified VLAN configuration is displayed in the VLAN Table (Figure 57).

Selecting a Management VLAN

You can select any VLAN to perform as the management VLAN. VLAN 1 is the default management VLAN for the switch. To set this field, the VLAN State field value must be active.

To select a VLAN as the management VLAN:

1 From the main menu, choose Application > VLAN > VLAN Configuration.

The VLAN Configuration page opens (Figure 57).

2 In the VLAN Setting section, choose the VLAN to assign as your management VLAN.

3 Click Submit.

Deleting a VLAN Configuration

To delete a VLAN configuration:

1 From the main menu, choose Application > VLAN > VLAN Configuration.

The VLAN Configuration page opens (Figure 57).

2 In the VLAN Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the VLAN configuration.
- Click Cancel to return to the VLAN Configuration page without making changes.

Note: You cannot delete VLAN 1.

Configuring Broadcast Domains

You can configure specified VLAN switch ports with the appropriate PVID/ VLAN association that enables the creation of broadcast domains. If you have enabled automatic PVID, you can change the PVID number on this screen. You can configure specified switch ports to filter (discard) all received tagged frames, untagged frames, or unregistered frames. You can also prioritize the order in which the switch forwards untagged packets, on a per-port basis.

To configure broadcast domains:

1 From the main menu, choose Application > VLAN > Port Configuration.

The Port Configuration page opens (Figure 62).

Figure 62 Port Configuration page

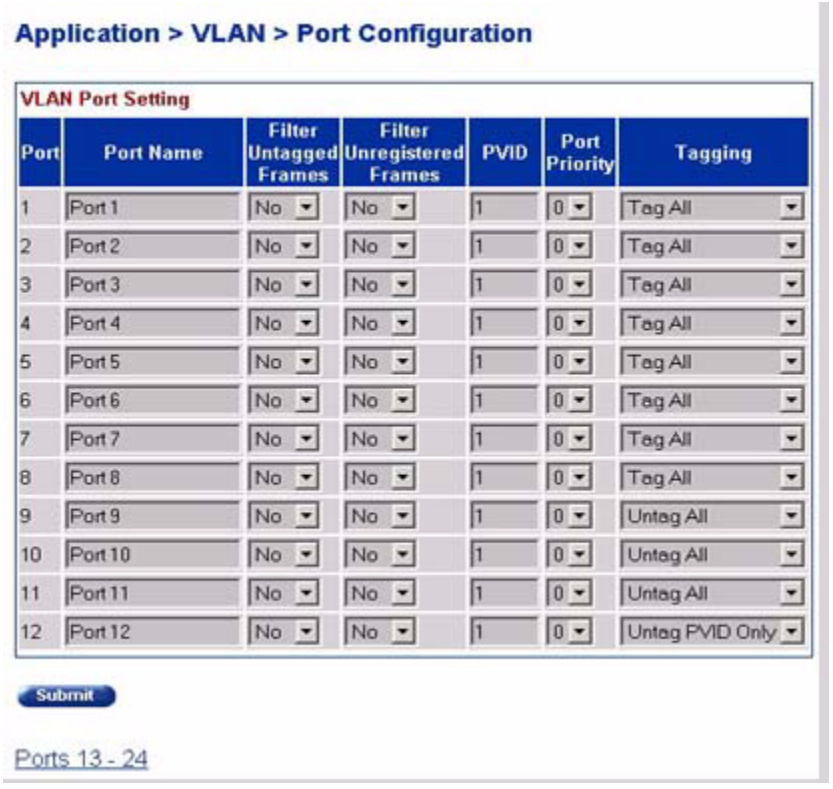


Table 63 describes the items on the Port Configuration page.

Table 63 Port Configuration page items

Item	Range	Description
Port	1to 24	The port number.
Port Name	1to 16	Type character string to create a unique port name, for example, Unit 1, Port 1.
Filter Untagged Frames	(1) Yes (2) No	Choose how to process filter untagged frames. When a flag is set, the frames are discarded by the forwarding process. The default setting is No (no frames discarded).
Filter Unregistered Frames	(1) Yes (2) No	Displays yes/no if a flag is set. If yes, unregistered frames are discarded by the forwarding process, which is to say that frames with a VID that this port does not belong to are discarded. When the flag is reset, unregistered frames are processed normally. The default settings is No.
PVID	1to 4094	Type the number of the VLAN ID to assign to untagged frames received on this trunk port. For example, a port with a PVID of 3 assigns all untagged frames received on this port to VLAN 3. The default setting is 1. Note: If AutoPVID is enabled and you want another PVID, enter the desired PVID here.
Port Priority	0-7	Choose the level of priority for each port.
Tagging	(1) Untag All (2) Tag All (3) Untag PVID Only (4) Tag PVID Only	Choose the egress tagging for each port.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

Viewing VLAN Port Information

You can view VLAN information about a selected switch port.

To view VLAN port information:

1 From the main menu, choose Application > VLAN > Port Information.

The Port Information page opens (Figure 63).

Figure 63 Port Information page

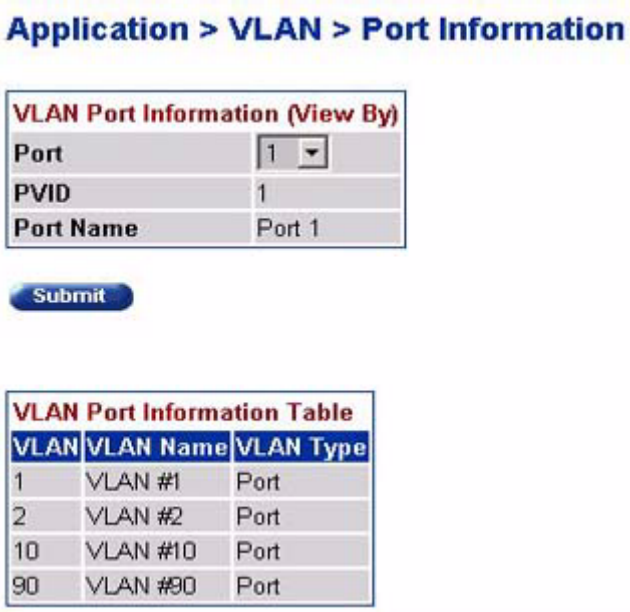


Table 64 describes the items on the Port Information page.

Table 64 Port Information page items

Section	Item	Range	Description
VLAN Port Information	Port	1to 24	Choose the number of the switch's port to view.
	PVID		The PVID assigned when the VLAN port was created.
	Port Name		The port name assigned when the VLAN port was created.
VLAN Port Information Table	VLAN		The number assigned to the VLAN when it was created.

Table 64 Port Information page items

Section	Item	Range	Description
	VLAN Name		The name assigned to the VLAN when it was created.
	VLAN Type		The VLAN type assigned to the VLAN when it was created.

2 In the VLAN Port Information (View By) section, enter the port number of the VLAN you want to view.

3 Click Submit.

The results of your request are displayed in the VLAN Port Information Table (Figure 63).

Managing Spanning Tree Groups

You can configure system parameters for Spanning Tree Protocol, the industry standard for avoiding loops in switched networks. You can configure individual switch ports or all switch ports for participation in the spanning tree algorithm (STA).

Note: STP resolves duplicate paths in networks and is not necessary for ports that have workstations directly attached to the switch. When STP is enabled on these ports (the default), workstations are unable to attach to servers for a few seconds while STP stabilizes.

The Ethernet Routing Switch supports multiple instances (8) of spanning tree groups (STGs) running simultaneously in a switch. Each STG sends its own Bridge Protocol Data Units (BPDUs), and each STG must be independently configured.

You can choose which VLAN in the STG will send the tagged BPDU.

In the default configuration of the Ethernet Routing Switch, a single STG with the ID of 1 includes all ports on the switch. It is called the Default STG and sends only untagged BPDUs in order to operate with all devices that support only one instance of STP. Although ports can be added to or deleted from the Default STG, the Default STG itself cannot be deleted from the system. All other STGs, except the Default STG, must be created by the user.

Note: To become active, each STG must be enabled by the user after creation. For guidelines on configuring STGs—as well as interoperability guidelines between VLANs, MultiLink Trunking, and multiple Spanning Tree Protocol Groups—refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3*.

You can set the spanning tree priority and path cost for each individual port, and you can set the STG Multicast MAC address.

Creating Spanning Tree Groups

To configure spanning tree groups:

1 From the main menu, choose Application > Spanning Tree > Group Configuration.

The Group Configuration page opens (Figure 64).

Figure 64 Spanning Tree Group Configuration page

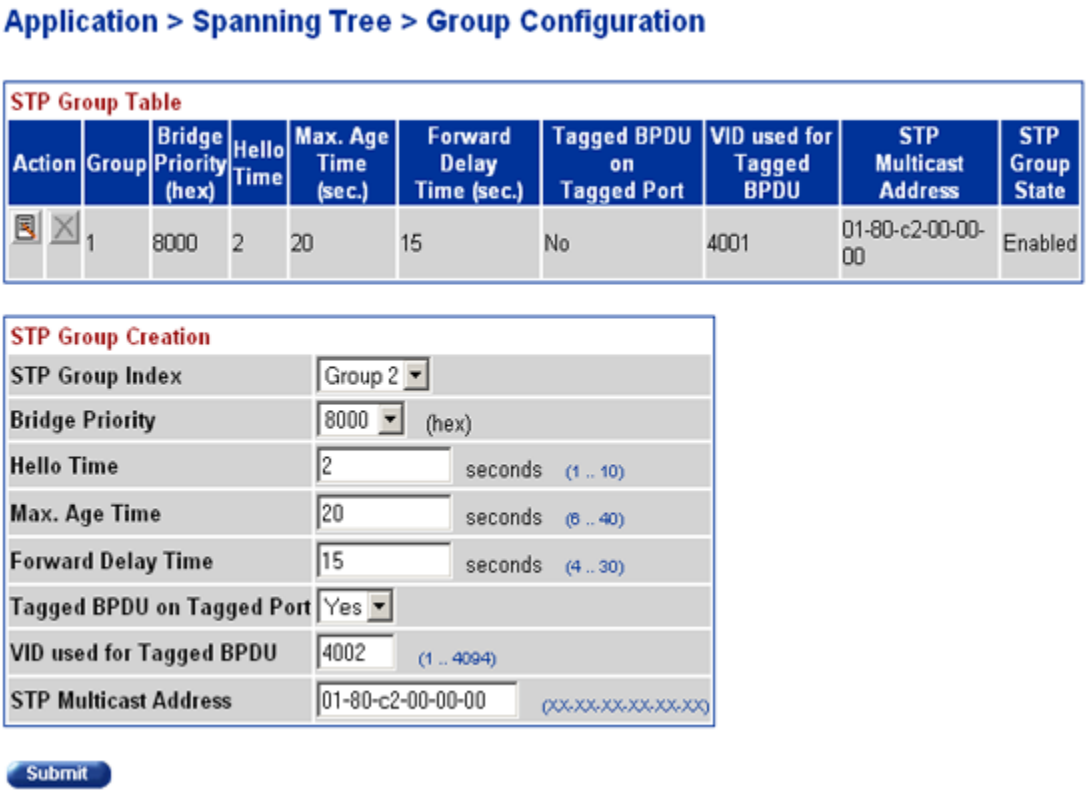


Table 65 describes the items on the Spanning Tree Group Configuration page.

Table 65 Spanning Tree Group Configuration page items

Section	Item	Description
STP Group Table	 	Modifies or deletes the group.
	Group	The number assigned to the spanning tree group when the group was created.
	Bridge Priority	For the STP Group, indicates the management-assigned priority value of the bridge ID in hexadecimal notation, which is the most significant byte of the bridge ID. The spanning tree algorithm uses this parameter to determine the root bridge (or designated bridge). For example, the bridge with the lowest bridge ID becomes the root bridge, with Bridge Priority values.
	Hello Time	For the STP Group, indicates the Hello Interval (the amount of time between transmissions of BPDUs) specified by management for this bridge. This parameter takes effect only when this bridge becomes the root bridge. Note that, although you can set the Hello Interval for a bridge using bridge management software, once the spanning tree computation process is complete, all bridges participating in the spanning tree network use the root bridge's Hello Interval parameter value. If any bridge becomes the root bridge, its Hello Interval parameter value becomes the Actual Hello Interval parameter value for all bridges participating in the spanning tree network.
	Max. Age time (sec.)	For the STP Group, specifies the maximum age (in seconds) that a Hello message can attain before it is discarded. This parameter, specified by management for this bridge, takes effect only when the bridge becomes the root bridge. Note that, if this bridge becomes the root bridge, its Maximum Age Time parameter value becomes the Actual Maximum Age Time parameter value for all bridges participating in the spanning tree network.
	Forward Delay Time (sec.)	For the STP Group indicates the Forward Delay parameter value specified by management for this bridge. This parameter takes effect only when this bridge becomes the root bridge. The Forward Delay parameter value specifies the amount of time that the bridge ports remain in the Listening and Learning states before entering the Forwarding state. Note that all bridges participating in the spanning tree network use the root bridge's Forward Delay parameter value.

Table 65 Spanning Tree Group Configuration page items (continued)

Section	Item	Description
	Tagged BPDU on Tagged Port	Displays whether you are sending either tagged or untagged BPDUs from a tagged port.
	VID used for Tagged BPDU	Displays the VLAN ID you are sending the tagged BPDUs for the specified STG to.
	STP Multicast Address	Enter the STP Multicast MAC address.
	STPG Group State	The current operational state of the spanning tree group: Enabled or Disabled.
STP Group Creation	STP Group Index	Choose the group number you want to create.
	Bridge Priority	Select the priority you want.
	Hello Time	Enter the hello time you want for this STG in seconds; range is 1 to 10.
	Max. Age time (sec.)l	Enter the maximum age time you want for this STG in seconds; range is 6 to 40.
	Forward Delay Time (sec.)	Enter the forward delay time you want for this STG in seconds; range is 4 to 30.
	Tagged BPDU on Tagged Port	Set the frames as tagged (Yes) or untagged (No) on tagged ports.
	VID used for Tagged BPDU	Enter the VLAN ID you want to send the tagged BPDUs for the specified STG. Note: The default VIDs are 4001 through 4008 for STG 1 through 8, respectively.
	STP Multicast Address	Enter the STP Multicast MAC address.

2 Complete the fields as shown.

3 Click Submit.

Modifying Spanning Tree Groups

To modify an STG:

1 From the main menu, choose Application > Spanning Tree > Group Configuration.

The Group Configuration page opens (Figure 64).

2 In the STP Group Table section, in the row of your choice, click the Modify icon.

The Group Configuration modification page opens (Figure 65).

Figure 65 Group Configuration modification page

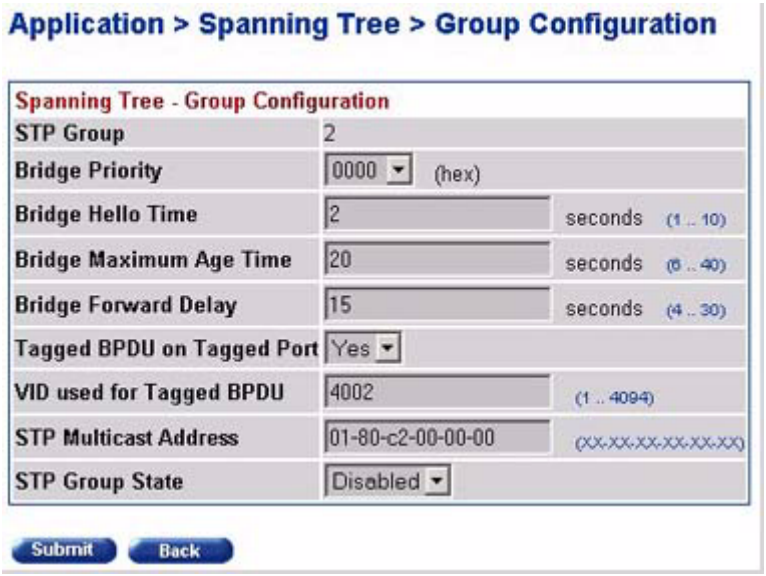


Table 66 describes the items on the Group Configuration modification page.

Table 66 Spanning Tree Group Configuration modification page items

Section	Item	Range	Description
STP Group Creation	STP Group Index		Choose the group number you want to create.
	Bridge Priority		Select the priority you want.
	Bridge Hello Time	1 to 10	Enter the hello time you want for this STG in seconds.
	Bridge Max. Age time (sec.)l	6 to 40	Enter the maximum age time you want for this STG in seconds.
	Bridge Forward Delay Time (sec.)	4 to 30	Enter the forward delay time you want for this STG in seconds.
	Tagged BPDU on Tagged Port		Set the frames as tagged (Yes) or untagged (No) on tagged ports.

Table 66 Spanning Tree Group Configuration modification page items

Section	Item	Range	Description
	VID used for Tagged BPDU		Enter the VLAN ID you want to send the tagged BPDUs for the specified STG. Note: The default VIDs are 4001 through 4008 for STG 1 through 8, respectively.
	STP Multicast Address		Enter the STP Multicast MAC address.
	STP group state		Indicates the STP group status.

3 Type information in the text boxes, or select from the pull-down menu.

4 Do one of the following:

- Click Submit.
- Click Back to return to the Group Configuration page without making changes.

The modified Group configuration is displayed in the STG Group Table (Figure 64).

Deleting a Spanning Tree Group

To delete an STG configuration:

1 From the main menu, choose Application > Spanning Tree > Group Configuration.

The Group Configuration page opens (Figure 64).

2 In the STG Group Table, click the Delete icon for the entry you want to delete.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the STG configuration.

- Click Cancel to return to the Group Configuration page without making changes.

Note: You cannot delete STG 1.

Associating STG with VLAN Membership

To add a VLAN to an STG:

1 From the main menu, choose Application > Spanning Tree > VLAN Membership.

The Spanning Tree VLAN Membership page opens (Figure 66).

Figure 66 Spanning Tree VLAN Membership page

The table displays the spanning tree group and the current VLAN membership.

You can add or remove one or more VLANs to or from an STG.

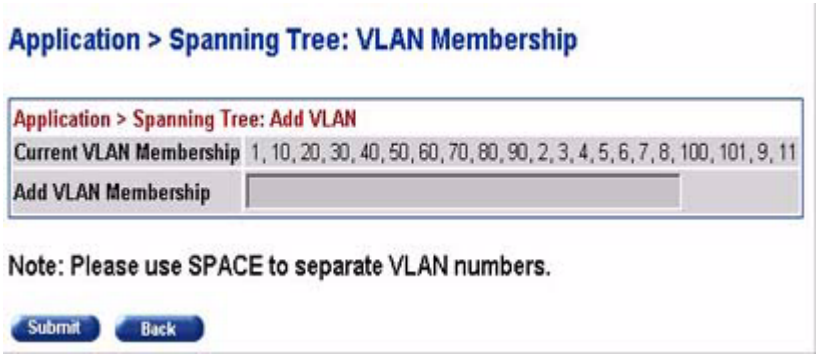
Note: You can move a VLAN from one STG to another by simply adding the VLAN to the specified STG.

2 To add a VLAN:

a Click the modification icon in the Add VLAN column.

The Spanning Tree VLAN Membership Add VLAN page opens (Figure 67).

Figure 67 Spanning Tree Add VLAN page



b Enter the number of the VLAN(s) you want to add to the STG.

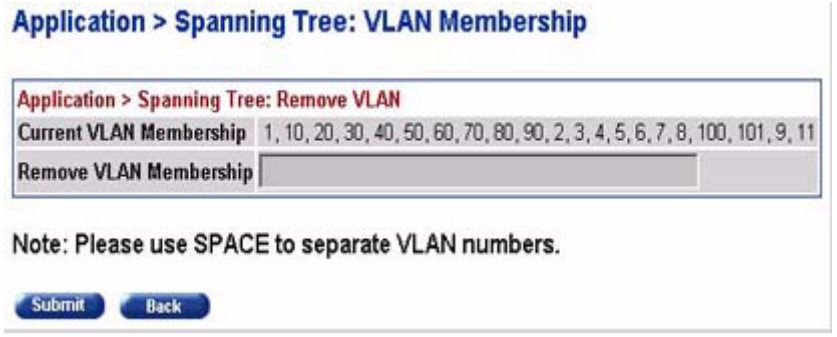
c Click Submit.

3 To remove a VLAN:

a Click the modification icon in the Remove VLAN column.

The Spanning Tree VLAN Membership Remove VLAN page opens (Figure 68).

Figure 68 Spanning Tree Remove VLAN page



b Enter the number of the VLAN(s) you want to remove to the STG.

c Click Submit.

Note: You cannot delete VLAN 1 from STG 1.

Configuring Ports for Spanning Tree

To configure switch ports for Spanning Tree participation:

1 From the main menu, choose Application > Spanning Tree > Port Configuration.

The Spanning Tree Port Configuration page opens (Figure 69).

Figure 69 Spanning Tree Port Configuration page

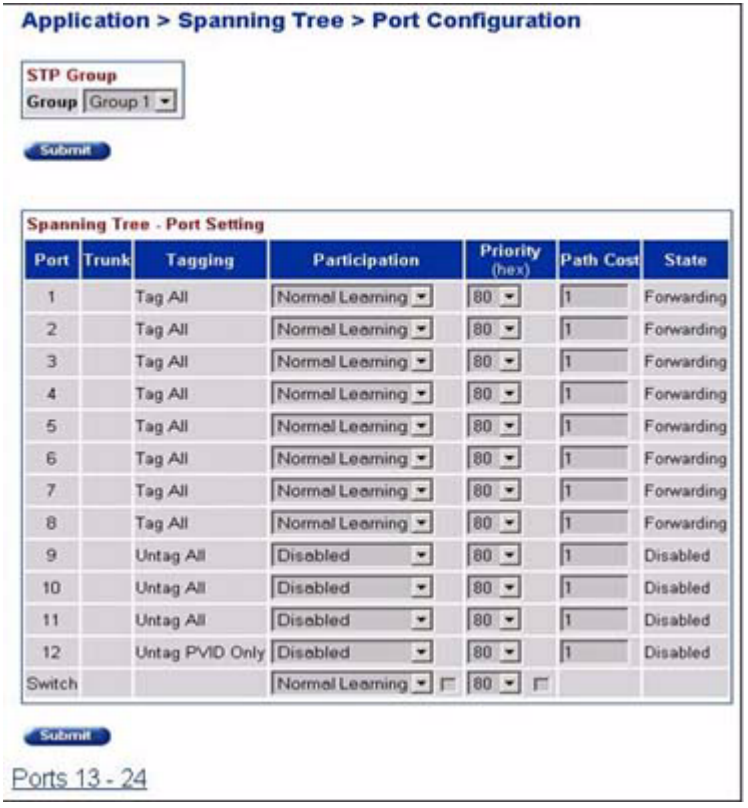


Table 67 describes the items on the Spanning Tree Port Configuration page.

Table 67 Spanning Tree Port Configuration page items

Section	Item	Description
STP Group	Group	Choose the STG Group you want to view.
Spanning Tree - Port Setting	Port	The port number of the currently displayed unit.
	Trunk	Displays the trunk that corresponds to the switch ports specified as MLT members.
	Tagging	Displays the egress tagging settings for the port.
	Participation	Choose any (or all) of the switch ports for Spanning Tree participation.Your options are: (1) Normal Learning (2) Fast Learning (3) Disabled Note: When an individual port is a trunk member, changing this setting for one of the trunk members changes the setting for all members of that trunk. Consider the effect changing this value has in your network topology before making changes. The default settings is Normal Learning.
	Priority	The bridge spanning tree parameter that prioritizes the port's lowest path cost to the root. When one or more ports have the same path cost, the STA selects the path with the highest priority (lowest numerical value).
	Path Cost	The bridge spanning tree parameter that determines the lowest path cost to the root.
	State	The current state of the port as defined by application of the Spanning Tree Protocol. This state controls what action a port takes on reception of a frame. Note: If the bridge has detected a port that is malfunctioning, it will place that port into the broken (6) state. For ports which are disabled, this object will have a value of disabled (1).

2 Using the Spanning Tree - Port Settings fields, in the port row(s) of your choice, choose to enable STP (normal learning or fast learning) or disable STP.

3 Enter the spanning tree priority value for the specified port.

You do not have to enter a value if you want to use the default priority of 128.

4 Enter the spanning tree path cost value for the specified port.

You do not have to enter a value if you want to use the default path cost of 1.

5 Click Submit.

Changing Spanning Tree Bridge Switch Settings

You can view and configure existing Spanning Tree switch settings.

To configure Spanning Tree switch settings:

1 From the main menu, choose Application > Spanning Tree > Bridge Information.

The Spanning Tree Bridge Information page opens (Figure 70).

Figure 70 Spanning Tree Bridge Information page

Table 68 describes the items on the Spanning Tree Bridge Information page.

Table 68 Spanning Tree Bridge Information page items

Section	Item	Range	Description
STP Group	Group		Choose the STP Group you want to work with.
Spanning Tree - Bridge Information	Bridge Priority	0..0xFFFF	Select the priority value of the bridge ID in hexadecimal notation, which is the most significant byte of the bridge ID. The Spanning Tree Algorithm uses this parameter to determine the root bridge (or designated bridge). For example, the bridge with the lowest bridge ID becomes the root bridge, with Bridge Priority values compared first, followed by the hardware addresses. The default setting is 8000.
	Designated Root	XXXXXXX XXXXXXX	The bridge ID of the root bridge, as determined by the Spanning Tree Algorithm.

Table 68 Spanning Tree Bridge Information page items

Section	Item	Range	Description
	Root Port		The port number of the port which offers the lowest cost past from this bridge to the root bridge.
	Root Path Cost	Integer	The cost of the path to the root as seen from this bridge.
	Hello Time	1to 10 seconds	The actual Hello Interval, the amount of time between transmissions of configuration Bridge Protocol Data Units (BPDUs) that the root bridge is currently using. Note: Bridges participating in the spanning tree network use the root bridge's Hello Interval parameter value. See also Bridge Hello Time.
	Maximum Age Time	6 to 40 seconds	The Maximum Age Time parameter value that the root bridge is currently using. This value specifies the maximum age that a Hello message can attain before it is discarded. Note: The root bridge's Maximum Age Time parameter value becomes the actual Maximum Age Time parameter value for all bridges participating in the spanning tree network. See also Bridge Maximum Age Time.
	Forward Delay	4 to 30 seconds	The Forward Delay parameter value that the root bridge is currently using. This value specifies the amount of time that the bridge ports remain in the Listening and Learning states before entering the Forwarding state. Note: The root bridge's Forward Delay parameter value becomes the actual Forward Delay parameter value for all bridges participating in the spanning tree network. See also Bridge Forward Delay.
	Bridge Hello Time	1to 10 seconds	The Hello Interval (the amount of time between transmissions of BPDUs) specified by management for this bridge. This parameter takes effect only when this bridge becomes the root bridge. Note: Although you can set the Hello Interval for a bridge using bridge management software, once the spanning tree computation process is complete, all bridges participating in the spanning tree network use the root bridge's Hello Interval parameter value. If any bridge becomes the root bridge, its Hello Interval parameter value becomes the Actual Hello Interval parameter value for all bridges participating in the spanning tree network. See also Hello Time. The default setting is 2 seconds.

Table 68 Spanning Tree Bridge Information page items

Section	Item	Range	Description
	Bridge Forward Delay	4 to 30 seconds	The amount of time that the bridge ports remains in the Listening and Learning states before entering the Forwarding state. Note: All bridges participating in the spanning tree network use the root bridge's Forward Delay parameter value. See also Forward Delay. The default setting is 15 seconds.
	Bridge Maximum Age Time	6 to 40 seconds	The maximum age (in seconds) that a Hello message can attain before it is discarded. This parameter, specified by management for this bridge, takes effect only when the bridge becomes the root bridge. Note: If this bridge becomes the root bridge, its Maximum Age Time parameter value becomes the Actual Maximum Age Time parameter value for all bridges participating in the spanning tree network. See also Maximum Age Time. The default setting is 20 seconds.
	Tagged BPDU on Tagged Port	(1) Yes (2) No	Displays whether you are sending either tagged or untagged BPDUs from a tagged port.
	VID used for Tagged BPDU	1-4094	Displays the VLAN ID you are sending the tagged BPDUs for the specified STG to.
	STP Multicast Address		Enter the STP Multicast Address.

2 Type information in the text boxes, or select from a list.

3 Click Submit.

Configuring MultiLink Trunk Members

You can configure groups of links between the Ethernet Routing Switch and another switch or a server to provide higher bandwidth with active redundant links.

You can configure two to four switch ports together as members of a trunk to a maximum of six trunks.

To configure MultiLink Trunk members:

1 From the main menu, choose Application > MultiLink Trunk > Group.

The Group page opens (Figure 71).

Figure 71 Group page

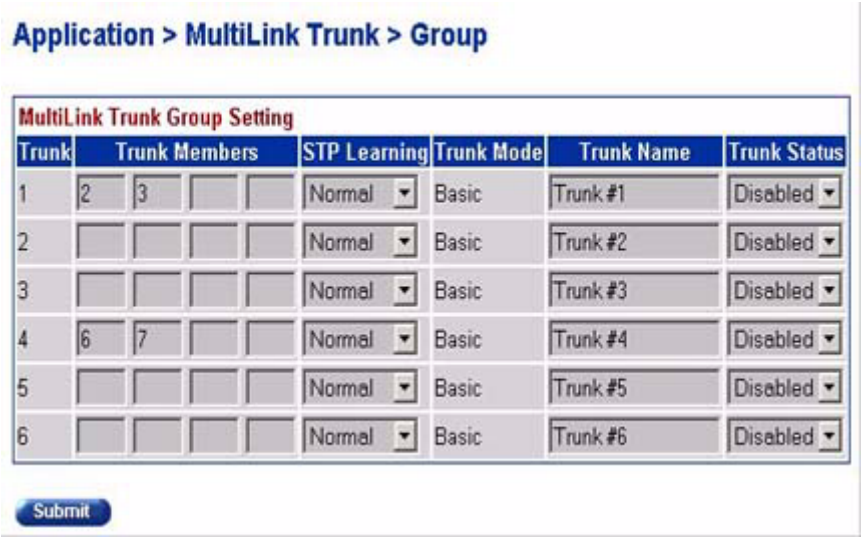


Table 69 describes the items on the Group page.

Table 69 Group page items

Section	Item	Range	Description
MultiLink Trunk Group Setting	Trunk	1to 6	This column contains fields in each row that can be configured to create the corresponding trunk. Each port can only be a member of a single trunk. The appropriate trunk number for each trunk member configured within this field is shown adjacent to the corresponding switch port on the following management pages: Port Configuration (see Figure 7 on page 41) and Spanning Tree Configuration (see Figure 62 on page 167). There are no default settings.
	Trunk Members		Type the switch and port numbers to associate with the corresponding trunk. Note: You can configure two to four switch ports together as members of a trunk to a maximum of six trunks. Switch ports can only be assigned a member of a single trunk. There are no default settings.
	STP Learning	(1) Normal (2) Fast (3) Disabled	Choose the parameter that allows the specified trunk to participate in the spanning tree. This setting overrides those of the individual trunk members. Selecting Fast shortens the state transition timer by two seconds. The default setting is Normal.
	Trunk Mode	Basic	The default operating mode of the switch. When in Basic mode, source MAC addresses are dynamically assigned to specific trunk members for flooding and forwarding. This allows the switch to stabilize and distribute the data streams of source addresses across the trunk members.
	Trunk Name	1to 16	Type a character string to create a unique name to identify the trunk, for example, Trunk1. The name, if chosen carefully, can provide meaningful information to you. For example, S1:T1 to FS2 indicates that Trunk1, in Switch1 connects to File Server 2.
	Trunk Status	(1) Enabled (2) Disabled	Choose to enable or disable any of the existing MultiLink Trunks. Note: When a trunk is not active (Trunk Status field set to Disabled), configuration changes do not take effect until you set the Trunk Status field to enabled.

2 Type information in the text boxes, or select from a list.

3 Click Submit in any section to save your changes.

Monitoring MLT Traffic

You can monitor the bandwidth usage for the MultiLink Trunk (MLT)member ports within each trunk in your configuration by selecting the traffic type to monitor.

To monitor MultiLink Trunk traffic:

1 From the main menu, choose Application > MultiLink Trunk > Utilization.

The Utilization page opens (Figure 72).

Figure 72 Utilization page

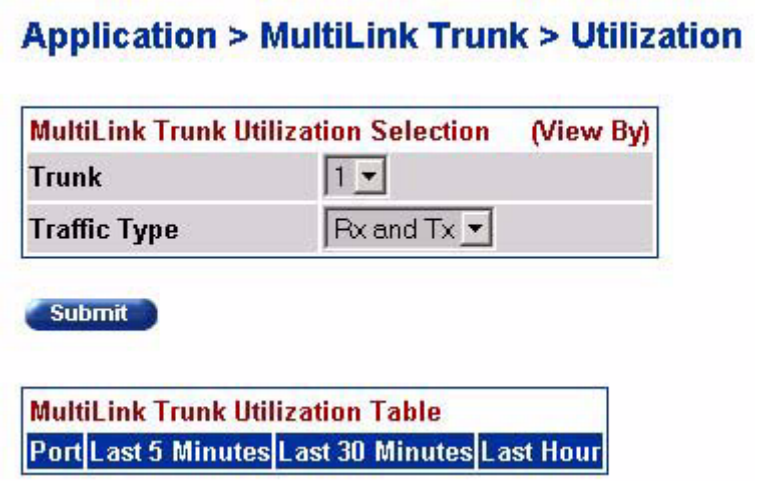


Table 70 describes the items on the Utilization page.

Table 70 Utilization page items

Section	Item	Range	Description
MultiLink Trunk Utilization Selection (View By)	Trunk	1to 16	Choose the trunk to be monitored.
	Traffic Type	(1) RX and TX (2) RX (3) TX	Choose the traffic type to be monitored for percentage of bandwidth utilization.
MultiLink Trunk Utilization Table	Port		A list of the trunk member switch ports that correspond to the trunk specified in the Trunk column.
	Last 5 Minutes		The percentage of packets (of the type specified in the Traffic Type field) used by the port in the last five minutes. This field provides a running average of network activity, and is updated every 15 seconds.
	Last 30 Minutes		The percentage of packets (of the type specified in the Traffic Type field) used by the port in the last 30 minutes. This field provides a running average of network activity, and is updated every 15 seconds.
	Last Hour		The percentage of packets (of the type specified in the Traffic Type field) used by the port in the last 60 minutes. This field provides a running average of network activity, and is updated every 15 seconds.

2 In the MultiLink Trunk Utilization Selection section, type the Trunk number and traffic type to be monitored.

3 Click Submit.

The results of your request are displayed in the MultiLink Trunk Utilization Table (Figure 72).

Chapter 8
Implementing QoS

The QoS application delivers a set of tools that, when optimally configured, combats escalating bandwidth costs and optimizes application performance in your network.

QoS tools allow you to prioritize your critical applications and sensitive traffic. You can tailor appropriate services to support this traffic over the wide area, thus maintaining the necessary performance levels on an end-to-end basis.

You can configure Quality of Service (QoS) features in your network by using the the QoS configuration pages available in the Web-based management user interface.

Refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* for a sample QoS configuration using the QoS Web pages.

This chapter explains configuring QoS using the QoS pages. The chapter covers the following topics:

- "Configuring QoS Policies" on page 235
- "Configuring QoS Policy Agent Characteristics" on page 241
- "Using QoS Diagnostics" on page 243

Configuring an Interface Group

You view existing interface group configurations, or create or modify an interface group if you want a port (or ports) to assign the same QoS policy to all interfaces in the group.

Note: One default role combination covers all ports of the device.

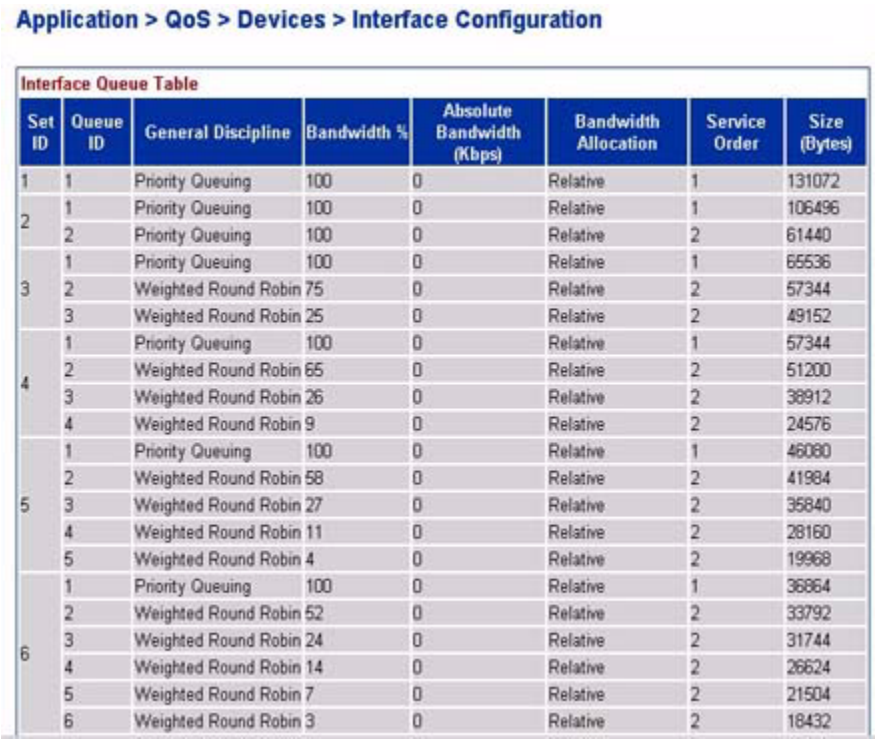
Creating an Interface Group Configuration

To create an interface group configuration:

1 From the main menu, choose Application > QoS > Devices > Interface Configuration.

The Interface Configuration page opens (Figure 73).

Figure 73 QoS Interface Configuration page



Set ID	Queue ID	General Discipline	Bandwidth %	Absolute Bandwidth (Kbps)	Bandwidth Allocation	Service Order	Size (Bytes)
1	1	Priority Queuing	100	0	Relative	1	131072
2	1	Priority Queuing	100	0	Relative	1	106496
	2	Priority Queuing	100	0	Relative	2	61440
3	1	Priority Queuing	100	0	Relative	1	65536
	2	Weighted Round Robin	75	0	Relative	2	57344
	3	Weighted Round Robin	25	0	Relative	2	49152
4	1	Priority Queuing	100	0	Relative	1	57344
	2	Weighted Round Robin	65	0	Relative	2	51200
	3	Weighted Round Robin	26	0	Relative	2	38912
	4	Weighted Round Robin	9	0	Relative	2	24576
5	1	Priority Queuing	100	0	Relative	1	46080
	2	Weighted Round Robin	58	0	Relative	2	41984
	3	Weighted Round Robin	27	0	Relative	2	35840
	4	Weighted Round Robin	11	0	Relative	2	28160
	5	Weighted Round Robin	4	0	Relative	2	19968
6	1	Priority Queuing	100	0	Relative	1	36864
	2	Weighted Round Robin	52	0	Relative	2	33792
	3	Weighted Round Robin	24	0	Relative	2	31744
	4	Weighted Round Robin	14	0	Relative	2	26624
	5	Weighted Round Robin	7	0	Relative	2	21504
	6	Weighted Round Robin	3	0	Relative	2	18432

Note: For more information on QoS interface groups, or role combinations, refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3*.

Table 71 describes the items on the Interface Queue Table section of the QoS Interface Configuration page.

Table 71 QoS Interface Queue Table section items

Item	Description
Set ID	The number that identifies a specific queue set.
Queue ID	The number that identifies the queue in the given set.
General Discipline	The queueing discipline that is associated with the specified queue. The options are: (1) Priority Queuing and (2) Weighted Round Robin.

Table 71 QoS Interface Queue Table section items

Item	Description
Bandwidth	The percentage of available bandwidth consumable to service the queue in one cycle.
Absolute Bandwidth	The absolute bandwidth consumable to service the queue in one cycle.
Bandwidth Allocation	Displays whether absolute or relative bandwidth is specified.
Service Order	The order in which a queue is serviced based on the defined discipline.
Size	The maximum size of the queue in bytes.

Table 72 describes the items on the Interface Group Table section of the QoS Interface Group page.

Table 72 Interface Group Table section items

Item	Description
	Opens a modification page.
	Deletes the row.
Role Combination	The tag used to identify interfaces with the characteristics specified by the attributes of this class instance (string 1to 32). These identifiers are used within a number of classes to logically identify a physical set of interfaces to which policy rules and actions are applied.
Capabilities	A list of the interface capabilities used by the PDP or network manager to select which policies and configurations may be pushed to the Policy Enforcement Point (PEP). The options are: (1) Input Ip Classification, (2) Output Ip Classification, (3) Input 802 Classification, and (4) Output 802 Classification.
Interface Class	The type of traffic received on interfaces associated with the specified role combination. The options are Trusted, Untrusted, and Unrestricted. The default is Unrestricted.
Entry Storage	Specifies whether or not the interface group can be deleted.

Note: For more information on QoS interface classes—or trusted, untrusted, and unrestricted ports—refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3.*

Table 73 describes the items on the Interface Group Creation section of the QoS Interface Group page.

Table 73 Interface Group Creation section page items

Item	Range	Description
Role Combination	1 to 31	Type a character string to identify the role combination.
Interface Class	Trusted Untrusted Unrestricted	Choose an interface class: trusted untrusted unrestricted Refer to *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* for more information on interface classes. The default setting is Unrestricted.

2 In the Interface Group Creation section, type a role combination name in the text boxes, and select the interface class from the list.

3 Click Submit.

The new interface group configuration appears in the Interface Group Table (Figure 73).

Displaying Interface ID Table

To display the Interface ID Table:

1 From the main menu, choose Application > QoS > Devices > Interface Configuration.

The QoS Interface Configuration page opens (Figure 73).

2 Click Display Interface ID Table.

The Interface ID page opens (Figure 74). The table displays all interfaces and the interface group (role combination) to which it belongs. If an interface does not belong to an interface group (role combination), it does not display in the table.

The table displays a mapping of each interface to its interface group.

Figure 74 Interface ID page

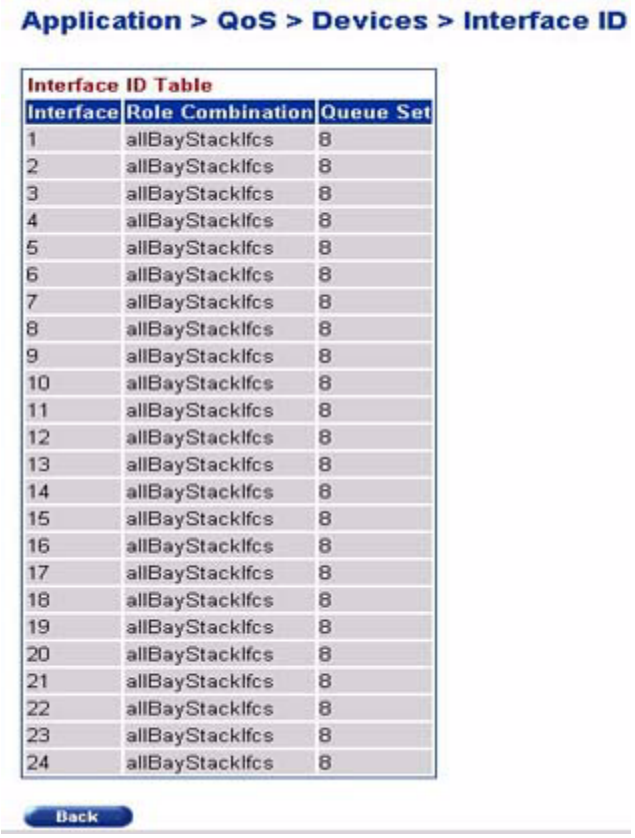


Table 74 describes the items on the Interface ID page.

Table 74 Interface ID page items

Item	Description
Interface	Displays the unit and port number.
Role Combination	Displays the role combination associated with the interface.
Queue Sets	Displays the queue set associated with this interface.

Adding or Removing Interface Group Members

To select or deselect ports as members of an existing interface group:

1 From the main menu, choose Application > QoS > Devices > Interface Configuration.

The QoS Interface Configuration page opens (Figure 73).

2 In the Interface Group Table section, in the row of your choice, click the Modify icon.

The Interface Group Assignment page opens (Figure 75).

Figure 75 Interface Group Assignment page

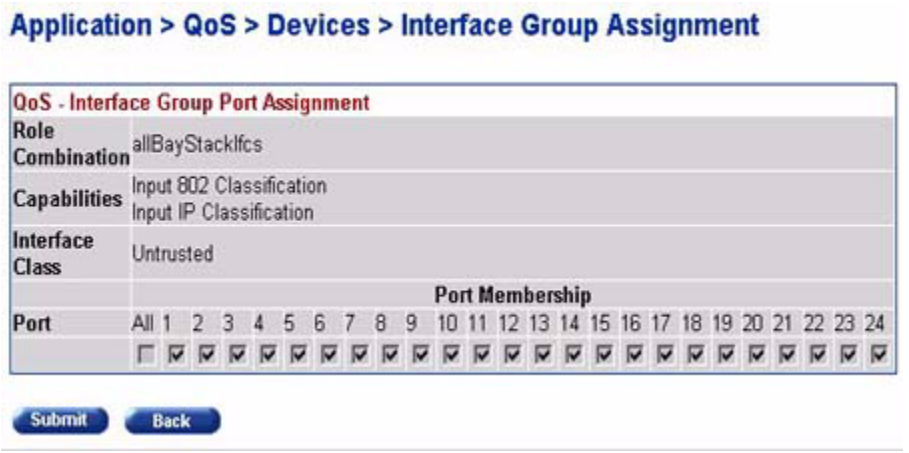


Table 75 describes the items on the Interface Group Assignment page.

Table 75 Interface Group Assignment page items

Item	Description
Role Combination	The tag used to identify interfaces with the characteristics specified by the attributes of this class instance (string 1 to 32). These identifiers are used within a number of classes to logically identify a physical set of interfaces to which policy rules and actions are applied. This is the group of interfaces (interface group) to which policy rules and actions are applied.
Capabilities	A list of the interface capabilities used by the PDP or network manager to select which policies and configurations may be pushed to the Policy Enforcement Point (PEP). The options are: (1) Input Ip Classification, (2) Output Ip Classification, (3) Input 802 Classification, and (4) Output 802 Classification.
Interface Class	The type of traffic received on interfaces associated with the specified role combination. The options are Trusted, Untrusted, and Unrestricted.
Port Membership	Select the external ports to associate with the interface group, or select ALL to associate all ports on that unit.

3 In the Port Membership section, click the check boxes of the ports (or ALL to select all ports on the unit) to associate with the interface group.

4 Do one of the following:

- Click Submit.
- Click Back to return to the Interface Configuration page without making changes.

Deleting Ports or an Entire Interface Group Configuration

To delete an Interface group configuration:

1 From the main menu, choose Application > QoS > Devices > Interface Configuration.

The QoS Interface Configuration page opens (Figure 73).

2 In the Interface Group Table section, in the interface group configuration row of your choice, click the Modify icon.

The Interface Group Assignment page opens (Figure 75).

3 In the Port Membership section, click the check boxes to deselect all ports associated with the interface group.

Note: You can delete all ports of one unit simultaneously, by clicking All.

4 Click Submit.

The Interface Configuration page is displayed (Figure 73).

5 In the Interface Group Table section, in the configuration row of your choice, click the Delete icon.

A message opens prompting you to confirm your request.

6 Do one of the following:

- Click Yes to delete the interface group configuration.
- Click Cancel to return to the Interface Configuration page without making changes.

Configuring 802.1p Priority Queue Assignment

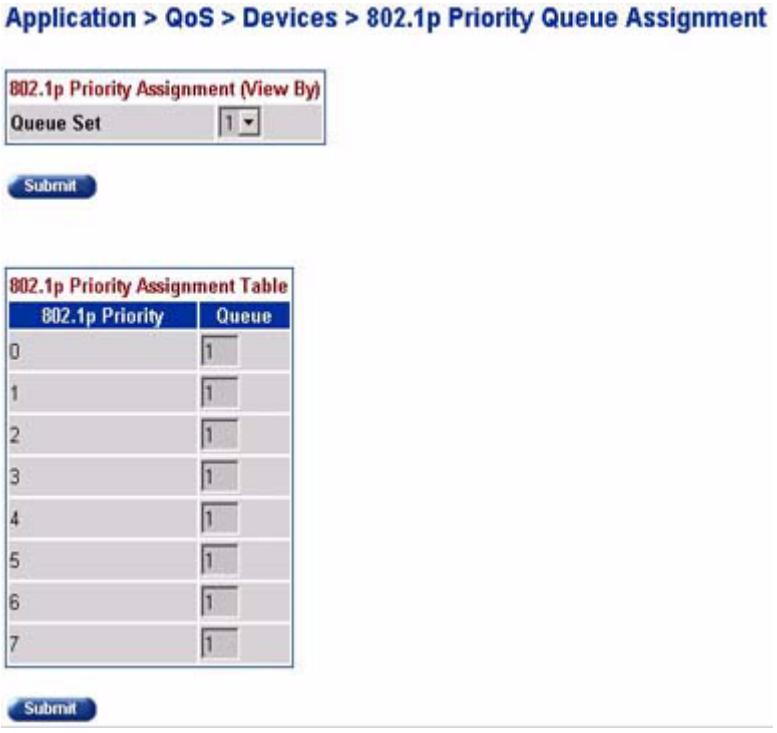
You can assign 802.1p user priority values to a queue for each interface with a specific queue set. This information is used for assigning egress traffic to outbound queues.

To configure 802.1p user priority:

1 From the main menu, choose Application > QoS > Devices > Priority Q Assign.

The 802.1p Priority Queue Assignment page opens (Figure 76).

Figure 76 802.1p Priority Queue Assignment page



Note: Nortel recommends using the default 802.1p assignments to ensure end-to-end QoS connectivity.

Table 76 describes the items on the 802.1p Priority Queue Assignment page.

Table 76 802.1p Priority Assignment Table section page items

Item	Description
802.1p Priority	The 802.1p user priority mapped to a queue.
Queue	Type a number that signifies the desired queue in the specified queue set with which this priority is associated.

2 In the 802.1p Priority Assignment Table section, type the information in the text boxes.

3 Click Submit.

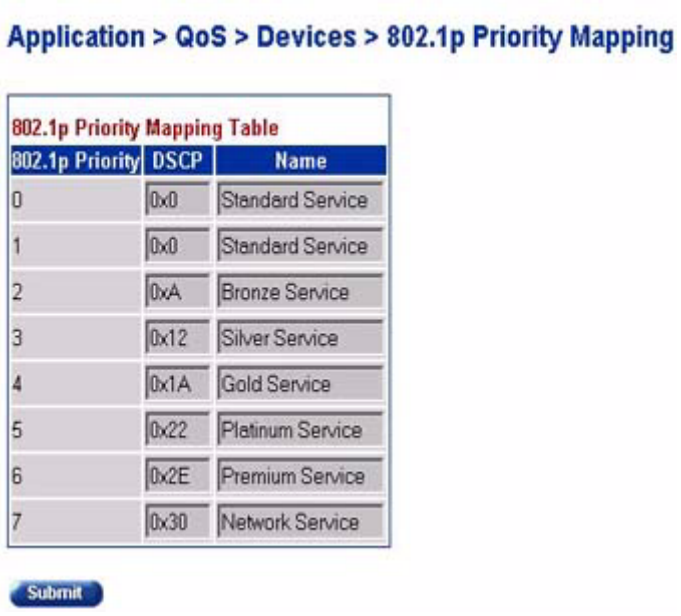
Configuring 802.1p Priority Mapping

To configure 802.1p priority to DSCP mapping:

1 From the main menu, choose Application > QoS > Devices > Priority Mapping.

The 802.1p Priority Mapping page opens (Figure 77).

Figure 77 802.1p Priority Mapping page



Note: The 802.1 p Priority Mapping displays several default values and their corresponding service names.

Note: Nortel recommends using the default 802.1p priority to DSCP mappings to ensure end-to-end QoS connectivity.

Table 77 describes the items on the 802.1p Priority Mapping page.

Table 77 802.1p Priority Mapping page items

Item	Description
802.1p Priority	The 802.1p user priority to map to a DSCP value at ingress.
DSCP	Type the DSCP value to associate with the specified 802.1p user priority value at ingress.
Name	Enter a name that describes the mapping, using 16 alphanumeric characters.

2 Type the information in the text boxes.

3 Click Submit.

Configuring DSCP Mapping

To configure DSCP to 802.1p user priority/drop precedence mapping:

1 From the main menu, choose Application > QoS > Devices > DSCP Mapping.

The DSCP Mapping page opens (Figure 78).

Figure 78 DSCP Mapping page

Note: Nortel recommends using the default DSCP mappings to ensure end-to-end QoS connectivity.

Table 78 describes the items on the DSCP Mapping page.

Table 78 DSCP Mapping page items

Item	Format
	Opens a modification page.
DSCP	The attribute used internally to determine the appropriate Layer 2 cost of service (CoS) mappings.
802.1p Priority	The IEEE802 CoS value used when mapping the DSCP value.

Table 78 DSCP Mapping page items (continued)

Item	Format
Drop Precedence	The drop value precedence used for traffic with the associated 802.1p user priority value with the identified queue. Note: Generally, low packet drop precedence receives preferential treatment.
Service Class	Displays a name that describes the mapping.

2 In the row of your choice, click the Modification icon.

The DSCP Mapping Modification page opens (Figure 79).

Figure 79 DSCP Mapping Modification page

Table 79 describes the items on the DSCP Mapping Modification page.

Table 79 DSCP Mapping Modification page items

Item	Range	Format
DSCP	0..63	Type the attribute to use internally to determine the appropriate Layer 2 cost of service (CoS) mappings.
802.1p Priority	0..7	Choose the IEEE802 CoS value to use when mapping the DSCP value.

Table 79 DSCP Mapping Modification page items (continued)

Item	Range	Format
Drop Precedence	High Drop Low Drop	Choose the drop value precedence to use for traffic with the associated 802.1p user priority value with the identified queue: High Drop Low Drop Note: Generally, low packet drop precedence receives preferential treatment.
Service Class	16 alphanumeric characters	Enter the service class. Note: This field corresponds to the adjacent user priority levels.
	Note: Mappings created on the DSCP mapping modification page are used at egress for marking traffic. Refer to *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3* for more information on trusted, untrusted, and unrestricted interface classes and the relationship to traffic re-marking.	

3 Select from a list or enter your service class name.

4 Click Submit.

The modified configuration appears in the DSCP Mapping Table (Figure 78).

Note: For more information on QoS interface classes—or trusted, untrusted, and unrestricted ports—refer to the *Application Guide for Nortel Ethernet Routing Switch 3510-24T, Software Release 4.0.3.*

Configuring IP Classifier Elements

You can create an IP classifier element, which enables the switch to classify traffic. In turn, IP classifier elements are then referenced by classifiers and classifier blocks, which determine access to and denial of network services.

Creating an IP Classifier Element

To create an IP classifier element:

1 From the main menu, choose Application > QoS > Rules > IP Classifier Element.

The IP Classifier Element page opens (Figure 80 and Figure 81).

Figure 80 IP Classifier Element page (1 of 2)

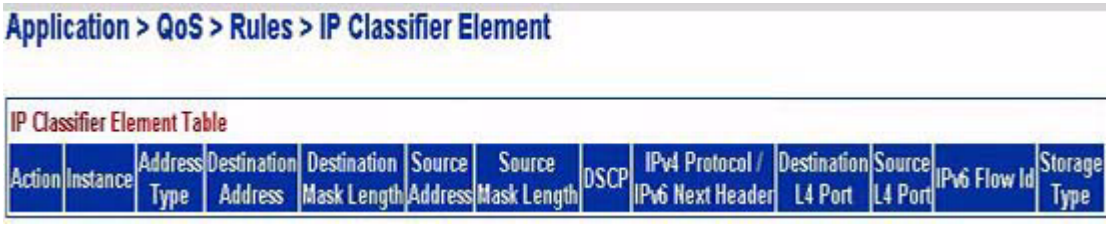
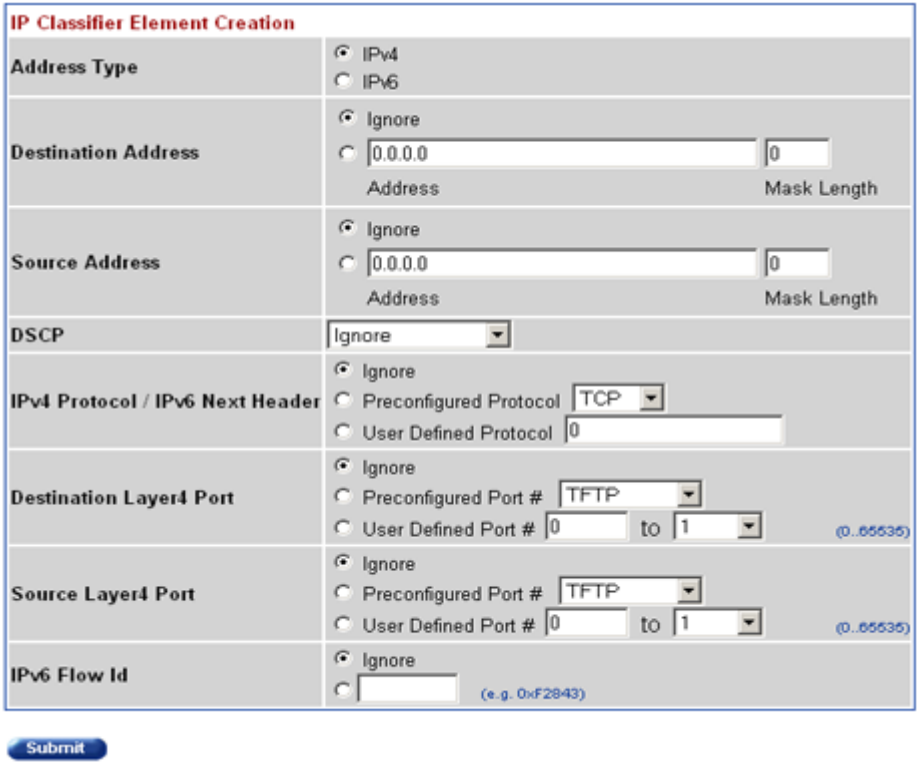


Figure 81 IP Classifier Element page (2 of 2)



Note: When you choose the Ignore value, the filter matches all criteria for that parameter.

Table 80 describes the items on the IP Classifier Element Table and IP Classifier Element Creation sections.

Table 80 IP Classifier Element Table and Classifier Element Creation

Section	Item	Range	Description
IP Classifier Element Table	Action		Deletes the row. Note: You cannot delete a classifier element if it is referenced in a classifier or classifier block.
	Instance		Displays unique identifier.
	Address Type	IPv4 IPv6	Displays theIPv4 protocol/IPv6 next header to match against the packet's destination and/or source IP addresses.
	Destination Address		Displays the IP address to match against the packet's destination IP address.
	Destination Mask Length	0 to 32 (IPv4) 0 to 128 (IPv6)	Displays the mask length for the matching of the destination IP address.
	Source Address		Displays the IP address to match against the packet's source IP address.
	Source Mask Length	0 to 32 (IPv4) 0 to 128 (IPv6)	Displays the mask length for the matching of the source IP address.
	DSCP	Ignore, Integer (0.63)	Displays the value that the DSCP in the packet must have and match this classifier element. This displays the DSCP value that this classifier element attempts to match.
	IPv4 Protocol/IPv6 Next Header	TCP UDP ICMP IGMP RSVP Ignore	Displays the IPv4 protocol/IPv6 next header to match against the packet's IP protocol field.
	Destination L4 Port	Integer (0.65535)	Displays the value that the packet's layer 4 destination port number must have and match this classifier element.
	Source L4 Port	Integer (0.65535)	Displays the value that the packet's layer 4 source port number must have and match this classifier element.
	IPv6 Flow ID	0..0xfffff	Displays the flow identifier in an IPv6 header
	Storage Type	volatile nonvolatile other	Displays whether the IP classifier element is stored across reboots: volatile—lost after a reset nonvolatile—stored across reset other—system created; cannot be deleted or referenced

Table 80 IP Classifier Element Table and Classifier Element Creation (continued)

Section	Item	Range	Description
IP Classifier Element Creation/ Address Type		IPv4 IPv6	Click the IP address type you want.
IP Classifier Element Creation/ Destination Address	Ignore		Click if you want the classifier element to ignore the packet's destination IP address.
	Address		Click if you want the classifier element to match the packet's destination network address. Enter the IP address to match against the packet's destination IP address.
	Mask Length	0 to 32 (IPv4) 0 to 128 (IPv6)	Enter the length of the mask for the matching of the destination IP address.
IP Classifier Element Creation/Source Address	Ignore		Click if you want the classifier element to ignore the packet's source IP address.
	Address		Click if you want the classifier element to match the packet's source network address. Enter the IP address to match against the packet's source IP address.
	Mask Length	0 to 32 (IP v4) 0 to 128 (IPv6)	Enter the length of the mask for the matching of the source IP address.
IP Classifier Element Creation/DSCP	DSCP	Ignore, Integer (0.63)	Choose the value that the DSCP in the packet must have and match this classifier element.
IP Classifier Element Creation/IPv4 Protocol/IPv6 Next Header	Ignore		Click if you want the classifier element to ignore the packet's IPv4 protocol or IPv6 next header.
	Preconfigured Protocol	TCP UDP ICMP IGMP RSVP	Choose the IPv4 protocol or IPv6 next header you want the classifier element to match.
	User Defined Protocol		Enter the IPv4 protocol or IPv6 next header that the packet must have and match this classifier element.

Table 80 IP Classifier Element Table and Classifier Element Creation (continued)

Section	Item	Range	Description
IP Classifier Element Creation/ Destination Layer4 Port	Ignore		Click if you want the classifier element to ignore the packet's layer 4 destination port.
	Preconfigured Port #	TFTP FTP Control FTP Data TELNET SMTP HTTP HTTPS	Choose the value that the packet's layer 4 destination port number must have and match this classifier element.
	User Defined Port #	Integer	Enter the range that the packet's layer 4 destination port number must have and match this classifier element by entering the starting number and choosing the final number from the pull-down menu.
IP Classifier Element Creation/ Source Layer 4 Port	Ignore		Click if you want the classifier element to ignore the packet's layer 4 source port.
	Preconfigured Port #	TFTP FTP Control FTP Data TELNET SMTP HTTP HTTPS	Choose the value that the packet's layer 4 source port number must have and match this classifier element.
	User Defined Port #	Integer	Enter the range that the packet's layer 4 source port number must have and match this classifier element by entering the starting number and choosing the final number from the pull-down menu.
IP Classifier Element Creation/IPv6 Flow ID	Ignore		Specifies that the system ignore the packet's IPv6 flow identifier field.
		0.. 0xfffff	Enter the hexidecimal value of the flow identifier you want to match.

2 In the IP Classifier Element Creation section, type information in the text boxes, or select from a list.

3 Click Submit.

The new IP classifier element configuration appears in the IP Classifier Table (Figure 80). This table displays all IP classifier elements you created.

Note: An IP classifier element configuration is not modifiable. The classifier element must be deleted and then re-created.

Deleting an IP Classifier Element Configuration

To delete a IP classifier element configuration:

1 From the main menu, choose Application > QoS Rules > IP Classifier Element.

The IP Classifier Element page opens (Figure 80 and Figure 81).

2 In the IP Classifier Element Table, in the IP classifier element configuration row of your choice, click the Delete icon.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the IP classifier element configuration.
- Click Cancel to return to the IP Classifier Element page without making changes.

Note: You cannot delete a classifier element if it is referenced in a classifier or classifier block.

Configuring Layer 2 Classifier Elements

You can configure layer 2 classifier elements by defining IEEE 802-based parameters. Layer 2 classifiers are defined by specifying the layer 2 classifier element to be included in the given classifier/classifier blocks.

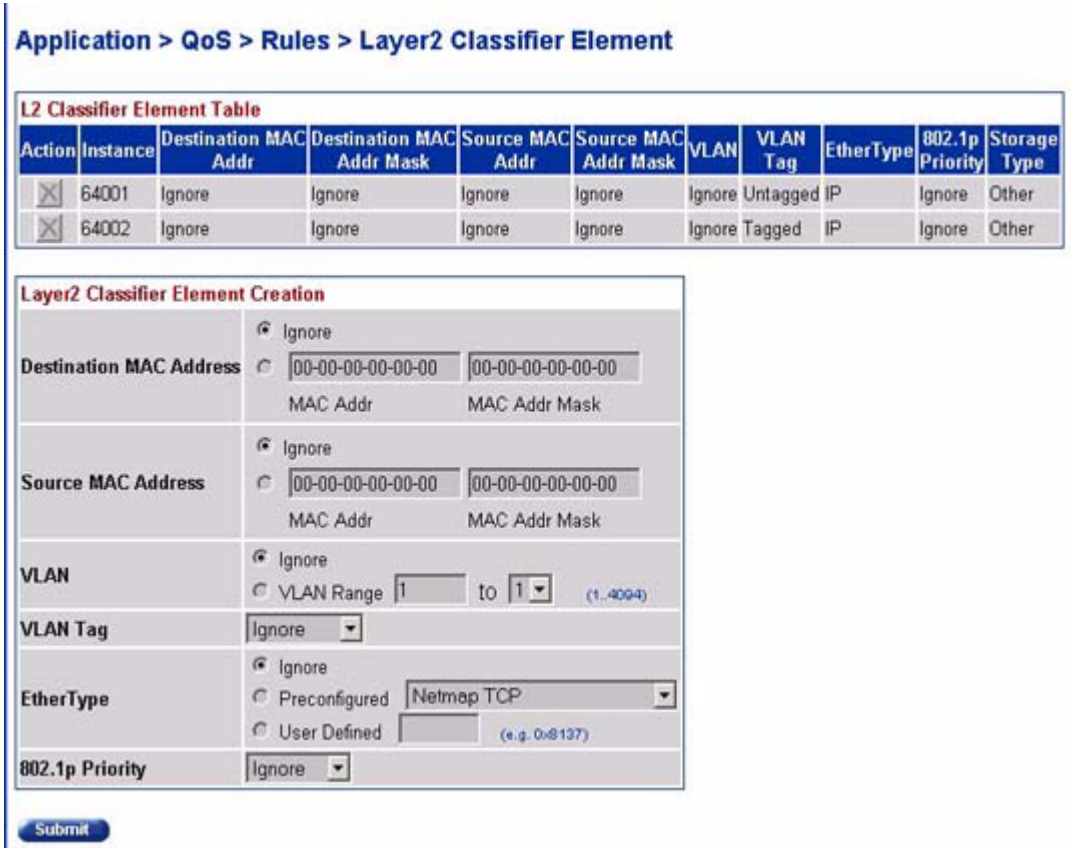
Creating a Layer 2 Classifier Element Configuration

To create a layer2 classifier element configuration:

1 From the main menu, choose Application > QoS > Rules > Layer2 Classifier Element.

The Layer2 Classifier Element page opens (Figure 82).

Figure 82 Layer2 Classifier Element page



Note: When you choose the Ignore value, the filter matches all criteria for that parameter.

Table 81 describes the items on the Layer2 Classifier Element Table and Layer2 Classifier Element Creation sections of the Layer2 Classifier Element page.

Table 81 Layer2 Classifier Element Table and Layer2 Classifier Element Creation

Section	Item	Range	Description
Layer 2 Classifier Element Table	Action		Deletes the row.
	Instance		Displays unique identifier**.**
	Destination MAC Addr	XX-XX-XX-XX-XX-XX	Displays the MAC address to match against the packet's destination MAC address.
	Destination MAC Addr Mask	XX-XX-XX-XX-XX-XX	Specifies the bits in the destination MAC address to be considered to match against the packet's destination MAC address.
	Source MAC Addr	XX-XX-XX-XX-XX-XX	Displays the MAC address to match against the packet's source MAC address.
	Source MAC Addr Mask	XX-XX-XX-XX-XX-XX	Specifies the bits in the source MAC address to be considered to match against the packet's source MAC address.
	VLAN	Ignore, 1-4094	Displays the VLAN range you want.
	VLAN Tag	Untagged Tagged Ignore	Displays the VLAN tag type you want to check.

Table 81 Layer2 Classifier Element Table and Layer2 Classifier Element Creation (continued)

Section	Item	Range	Description
	EtherType	Ignore Netmap TCP Netmap XNS XTP LOOP Vines Vines IP Banyan Vines Echo Vines Banyan Echo ARP RARP IP IPv6 3Com NBP 3Com NBP Ack 3Com NBP ConnReq 3Com NBP ConnRsp 3Com NBP ConnComplt 3Com NBP CloseReq 3Com NBP CloseRsp 3Com NBP Datagram 3Com NBP Broadcast 3Com NBP NameClaim 3Com NBP DelName LAP Atalk ARP Atalk IBM Net Mon IBMRT XNS Compatibility XNS IPX Netware SNMP User-defined	Displays the Ethernet type you are filtering on.
	802.1p Priority	Ignore, 0...7.	Displays the 802.1p priority level.
	Storage Type	volatile nonvolatile other	Displays whether the L2 classifier element is stored across reboots: • volatile—lost after a reset • nonvolatile—stored across reset • other—system created; cannot be deleted or referenced

Table 81 Layer2 Classifier Element Table and Layer2 Classifier Element Creation (continued)

Section	Item	Range	Description
Layer2 Classifier Element Creation	Destination MAC Address	Ignore	Click Ignore is you want to ignore the packet's destination MAC address.
		MAC Addr: XX-XX-XX-XX-XX-XX	Enter the MAC address to match against the packet's destination MAC address.
		MAC Addr Mask: XX-XX-XX-XX-XX-XX	Enter the bits in the destination MAC address to be considered to match against the packet's destination MAC address.
	Source MAC Address	Ignore	Click Ignore is you want to ignore the packet's source MAC address.
		MAC Addr: XX-XX-XX-XX-XX-XX	Enter the MAC address to match against the packet's source MAC address.
		MAC Addr Mask: XX-XX-XX-XX-XX-XX	Enter the bits in the source MAC address to be considered to match against the packet's source MAC address.
	VLAN	Ignore, 1-4094	Enter the starting VLAN of the range you want and select the end of the range from the pull-down menu.
	VLAN Tag	Untagged Tagged Ignore	Choose the VLAN tag type you want to check.
	EtherType	Ignore	Click if you want the classifier element to ignore the packet's Ethernet type.

Table 81 Layer2 Classifier Element Table and Layer2 Classifier Element Creation (continued)

Section	Item	Range	Description
		Preconfigured: Netmap TCP Netmap XNS XTP LOOP Vines Vines IP Banyan Vines Echo Vines Banyan Echo ARP RARP IP IPv6 3Com NBP 3Com NBP Ack 3Com NBP ConnReq 3Com NBP ConnRsp 3Com NBP ConnComplt 3Com NBP CloseReq 3Com NBP CloseRsp 3Com NBP Datagram 3Com NBP Broadcast 3Com NBP NameClaim 3Com NBP DelName LAP Atalk ARP Atalk IBM Net Mon IBMRT XNS Compatibility XNS IPX Netware SNMP	Choose the Ethernet type you want the classifier element to match. Note: To create a non-IP classifier element, choose any Ethernet type *except* IP or IPv6.
		User Defined	Enter the Ethernet type that the packet must have and match this classifier element.
	802.1p Priority	Ignore Priority 0 Priority 1 Priority 2 Priority 3 Priority 4 Priority 5 Priority 6 Priority 7	Choose either Ignore or the 802.1p priority level.

2 Type the information in the text boxes, or select from a list.

3 Click Submit.

The new Layer2 classifier element configuration appears in the Layer2 Classifier Element Table (Figure 82).

Note: You cannot delete a classifier element if it is referenced in a classifier/classifier block.

Deleting a Layer 2 Classifier Element Configuration

To delete a layer 2 classifier element configuration:

1 From the main menu, choose Application > QoS > Rules > Layer2 Classifier Element.

The Layer2 Classifier Element page opens (Figure 82). This table displays all layer 2 classifier elements you created.

2 In the Layer2 Classifier Element Table, in the layer 2 classifier element configuration row of your choice, click the Delete icon.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the classifier element configuration.
- Click Cancel to return to the Layer2 Classifier Element page without making changes.

Note: A Layer 2 classifier element configuration cannot be modified. The configuration must be deleted and then recreated.

You cannot delete a Layer 2 classifier element that is referenced by a classifier/classifier block.

Classifier Configurations

You can display existing classifiers using the Web-based management system.

To display classifiers:

1 From the main menu, choose Application > QoS > Rules > Classifier.

The Classifier page opens (Figure 83).

Figure 83 Classifier page

Note: Refer to *Application Guide for Nortel Ethernet Routing Switch, Software Release 4.0.3* for more information on classifiers.

Table 82 describes the items on the Classifier page.

Table 82 Classifier Page items

Section	Item	Range	Description
Classifier Table	Action		Allows you to view or delete the entry. Note: The modify button displays a read-only page. You cannot modify a classifier. You must delete the classifier and re-create one as you want it.

Table 82 Classifier Page items (continued)

Section	Item	Range	Description
	Classifier Name		Displays name of the classifier (either the name you assigned the classifier or the default name the system assigned).
	Classifier Set ID		Displays the set ID of the classifier that the system assigns.

Creating Classifiers

To create a Classifier:

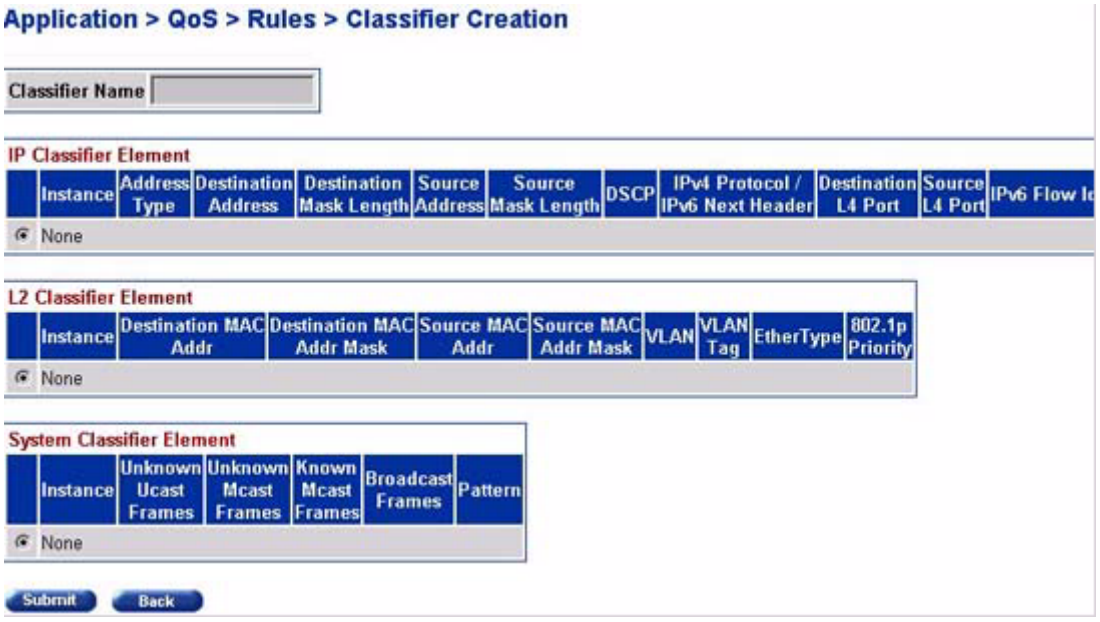
1. From the main menu, choose Application > QoS > Rules > Classifier.

   The Classifier page opens (Figure 83).

2. Click Create Classifier.

   The Classifier Creation page opens (Figure 84).

Figure 84 Classifier Creation page



3 You can enter a name for the classifier using up to 16 alphanumeric characters.

If you do not enter a name, the system assigns a name to each new classifier.

Note: Each classifier can have only a *single* IP classifier element *plus* a *single* L2 classifier element. You can, however, create a classifier using only one IP classifier element or only one L2 classifier element.

4 Click only one IP classifier element from those displayed on the IP Classifier Element table.

5 Click only one L2 classifier element from those displayed on the L2 Classifier Element table.

6 Click Submit.

The system returns you to the Classifier page and displays the new Classifier on the Classifier Table.

Note: You cannot delete a classifier that is referenced by a classifier or by a policy. You must first delete the classifier block or the policy.

Viewing Classifier Details

To view classifier details:

1 From the main menu, choose Application > QoS > Rules > Classifier.

The Classifier page opens (Figure 83).

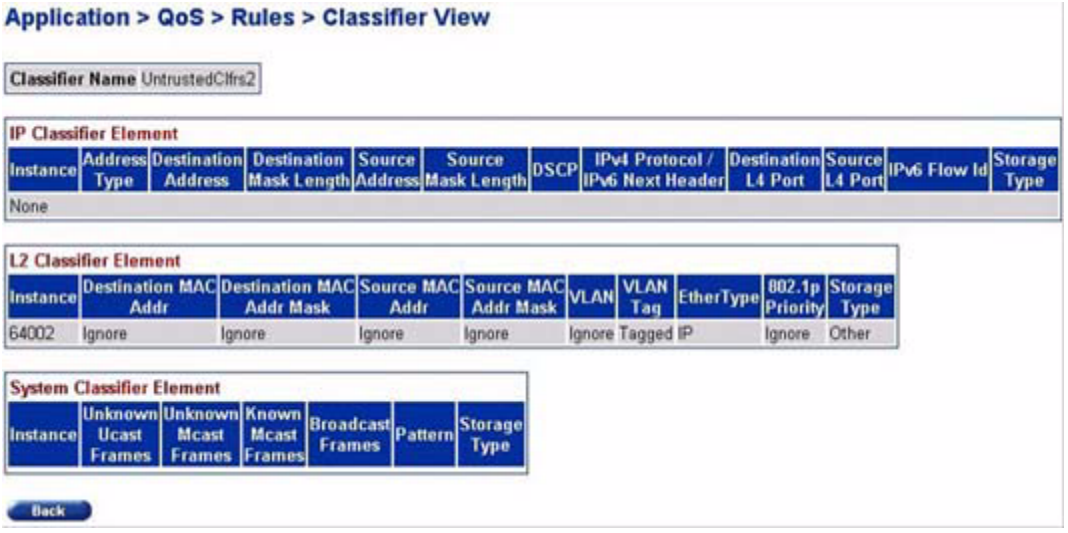
2 Choose the classifier you want to view, and click the modify button.

The Classifier View page opens (Figure 85).

Note: The modify button displays a read-only page. You cannot modify a classifier; you must delete the classifier and re-create one as you want it.

Note: Each classifier in a classifier block must match the same parameters and the same mask, range, and VLAN tag type. Additionally, all members of a classifier block must be configured consistently regarding meters and actions—that is, they must all specify meters or they must all not specify meters, and they must all specify actions or they must all not specify actions. Refer to "Using QoS Diagnostics"," for information on comparing classifiers.

Figure 85 Classifier View page



3 Click Back.

The system returns you to the Classifier page.

Deleting a Classifier

To delete a classifier:

1 From the main menu, choose Application > QoS > Rules > Classifier.

The Classifier page opens (Figure 83).

2 Click the delete icon next to the row with the classifier you want to delete.

Note: You cannot delete a classifier or classifier block that is referenced by a policy. You must first delete the policy.

Classifier Block Configurations

You can view existing classifier blocks using the Web-based management system.

To view classifier blocks:

1 From the main menu, choose Application > QoS > Rules > Classifier Block.

The Classifier Block page opens (Figure 86).

Figure 86 Classifier Block page

Note: Refer to the *Application Guide for Nortel Ethernet Routing Switch*, *Software Release 4.0.3* for more information on classifier blocks.

Table 83 describes the items on the Classifier Block page.

Table 83 Classifier Block Page items

Section	Item	Range	Description
Classifier Block Table	Action		Allows you to modify or delete the entry.
	Block Name		Displays name of the classifier block (either the name you assigned the block or the default name the system assigned).
	Block Number		Displays the number of the classifier block that the system assigns.

Creating Classifier Blocks

To create a classifier block:

1 From the main menu, choose Application > QoS > Rules > Classifier Block.

The Classifier Block page opens (Figure 86).

2 Click Create Classifier Block.

The Classifier Block Creation/Modification page opens (Figure 87).

Figure 87 Classifier Block Creation/Modification page

3 You can enter a name for the classifier block using up to 16 alphanumeric characters.

If you do not enter a name, the system assigns a name to each new classifier block.

4 Click the classifiers you want to include in the block from those listed on the Classifier Block Members table.

The table displays those meters that you created using the Meters page.

The table displays default actions and those you defined using the Actions page.

Note: Each classifier in a classifier block must match the same parameters and the same mask, range, and VLAN tag type. Additionally, all members of a classifier block must be configured consistently regarding meters and actions—that is, they must all specify meters or they must all not specify meters, and they must all specify actions or they must all not specify actions.

5 Click Submit.

The system returns you to the Classifier Block page and displays the new classifier block on the Classifier Block Table.

Modifying a Classifier Block

To modify a classifier block:

1 From the main menu, choose Application > QoS > Rules > Classifier Block.

The Classifier Block page opens (Figure 86).

2 Click the row with the classifier block you want to modify.

3 Click the modify icon.

The Classifier Block Creation/Modification page opens (Figure 88) and displays the parameters of the classifier block you want to modify.

Figure 88 Classifier Creation/Block Modification page

4 To add another classifier to the existing classifier block, click on that classifier.

5 To delete a classifier from the existing classifier block, click on that classifier.

6 Choose the new meters and actions you want.

7 Click Submit.

Deleting a Classifier Block

To delete a classifier block:

1 From the main menu, choose Application > QoS > Rules > Classifier Block.

The Classifier Block page opens (Figure 86).

2 Click the delete icon next to the classifier block you want to delete.

Note: You cannot delete a classifier or classifier block that is referenced by a policy. You must first delete the policy.

Note: Deleting the last classifier from a classifier block automatically deletes that classifier block.

Configuring QoS Actions

When you create an action, you specify the actions to be associated with specific classifiers and classifier blocks. An action specifies the type of behavior you want a policy to apply to a flow of packets. When the filters match the incoming packets, the created actions are performed on those packets.

Note: There are default actions for each service class.

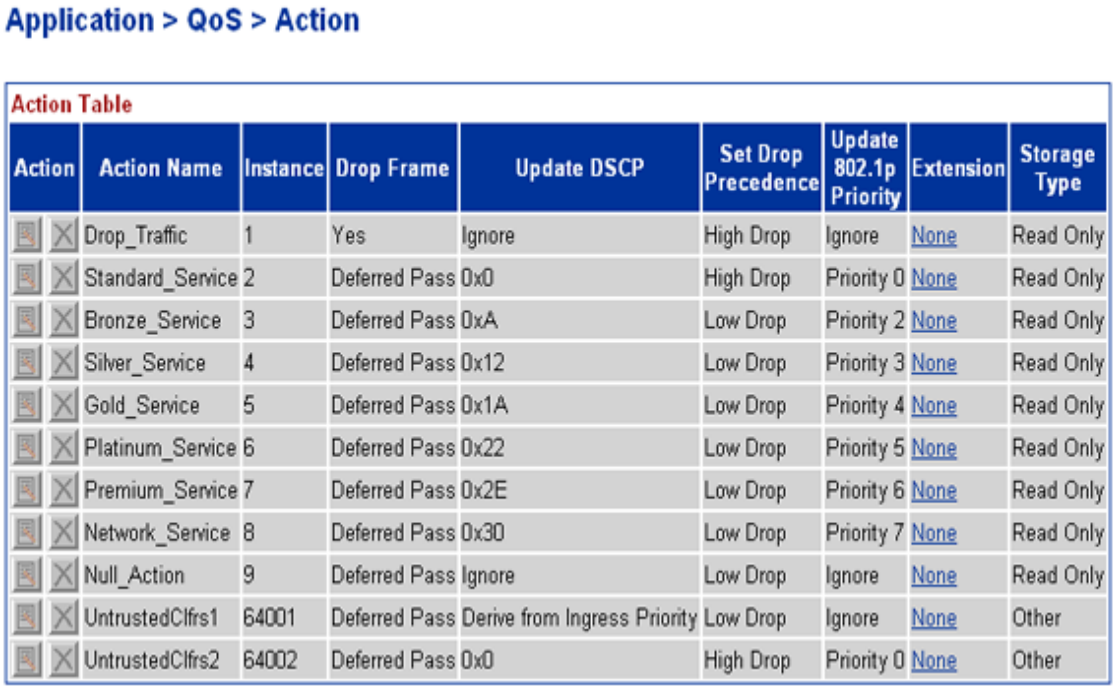
Creating an Action Configuration

To create an action configuration:

1 From the main menu, choose Application > QoS >Actions.

The Action page opens (Figure 89).

Figure 89 Action page



Application > QoS > Action

Action Table

Action	Action Name	Instance	Drop Frame	Update DSCP	Set Drop Precedence	Update 802.1p Priority	Extension	Storage Type
	Drop_Traffic	1	Yes	Ignore	High Drop	Ignore	None	Read Only
	Standard_Service	2	Deferred Pass	0x0	High Drop	Priority 0	None	Read Only
	Bronze_Service	3	Deferred Pass	0xA	Low Drop	Priority 2	None	Read Only
	Silver_Service	4	Deferred Pass	0x12	Low Drop	Priority 3	None	Read Only
	Gold_Service	5	Deferred Pass	0x1A	Low Drop	Priority 4	None	Read Only
	Platinum_Service	6	Deferred Pass	0x22	Low Drop	Priority 5	None	Read Only
	Premium_Service	7	Deferred Pass	0x2E	Low Drop	Priority 6	None	Read Only
	Network_Service	8	Deferred Pass	0x30	Low Drop	Priority 7	None	Read Only
	Null_Action	9	Deferred Pass	Ignore	Low Drop	Ignore	None	Read Only
	UntrustedClfrs1	64001	Deferred Pass	Derive from Ingress Priority	Low Drop	Ignore	None	Other
	UntrustedClfrs2	64002	Deferred Pass	0x0	High Drop	Priority 0	None	Other

Table 84 describes the items on the Action page.

Table 84 Action page items

Item	Range	Description
 		Modifies or deletes the row.
Action Name	1 to 16 alphanumeric characters	Type a character string to uniquely identify the action configuration.

Table 84 Action page items (continued)

Item	Range	Description
Instance		Displays the unique identifier.
Drop Frame	Deferred Pass No Yes	Choose whether the frame being evaluated should be dropped or transmitted by this attribute: Deferred Pass—traffic flow decision deferred to other installed policies No—do not drop the traffic flow Yes—drop the traffic flow The default setting is Deferred Pass.
Update DSCP	Ignore or integer	Choose a value. When this field is defined, it causes the value contained in the Differentiated Services (DS) field of an associated IP datagram to be updated with the value of this object. The default setting is Ignore.
Set Drop Precedence	Low Drop High Drop	Choose a packet drop precedence value. Note: Generally, low packet drop precedence receives preferential treatment The default setting is Low Drop.
Update 802.1p Priority	Ignore Priority 0 Priority 1 Priority 2 Priority 3 Priority 4 Priority 5 Priority 6 Priority 7 Use TOS Precedence Use Egress DSCP	Choose the action attribute that causes the value contained in the 802.1p priority field to be updated based on the value of this object. The update priority range values are 0 (lowest priority) to 7 (highest priority). The default setting is Ignore.

Table 84 Action page items (continued)

Item	Range	Description
Extension	None Available extensions from the Interface Action Extension Page	Choose either No Extension or one of the extensions you created on the Interface Action Extension page. The default setting is None.
Storage Type	other read-only volatile non-volatile	This display-only field in the table shows the type of storage across reboots for each action: other—system created; cannot be deleted or referenced by the user read-only—system defaults; cannot be deleted volatile—lost after a reset nonvolatile—stored across reset

2 In the Action Creation section, type information in the text boxes, or select from a list

3 Click Submit.

The new action configuration appears in the Action Table (Figure 89).

Modifying an Action Configuration

To modify an action configuration:

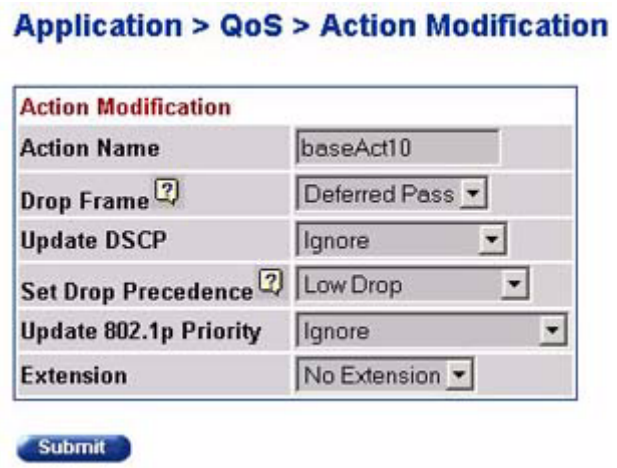
1 From the main menu, choose Application > QoS > Actions.

The Action page opens (Figure 89).

2 In the Action Table section, in the action configuration row of your choice, click the modify icon.

The Action Modification page appears (Figure 90).

Figure 90 Action Modification page



3 Refer to Table 84 for information on completing fields.

4 Click Submit.

The system returns you to the Action page (Figure 89) and displays the modified action.

Deleting an Action Configuration

To delete an action configuration:

1 From the main menu, choose Application > QoS > Actions.

The Action page opens (Figure 89).

2 In the Action Table section, in the action configuration row of your choice, click the Delete icon.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the action configuration.

- Click Cancel to return to the Action page without making changes.

Note: You cannot delete an action that is referenced by a meter, classifier block, or policy. You must first delete the meter, classifier block, or policy.

You cannot delete a system default or system created action; the delete icon is grayed out for those actions.

Using the Interface Action Extension

You create extensions to actions by using the Interface Action Extension page. These extensions allow you to filter on:

- Set an egress unicast
- Set an egress non-unicast

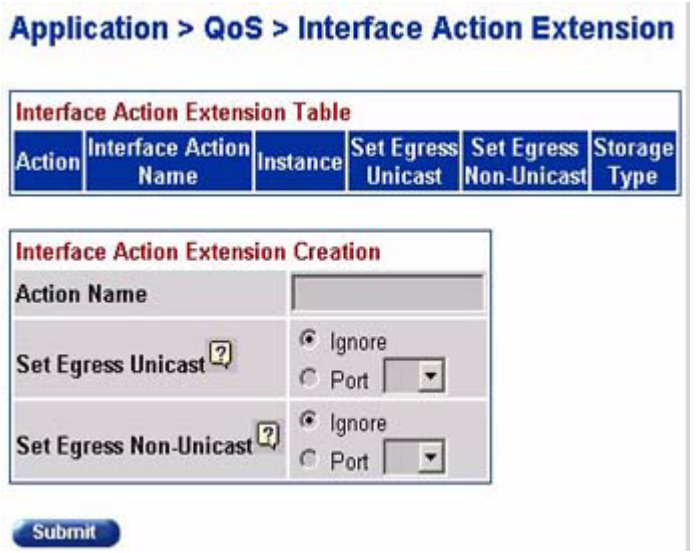
Creating an Interface Action Extension Configuration

To create an interface action extension configuration:

1 From the main menu, choose Application > QoS >Interface Action Ext.

The Interface Action Extension page opens (Figure 91).

Figure 91 Interface Action Extension page



Note: An interface action extension can be referenced *only* by an action.

Table 85 describes the items on the Interface Action Extension page.

Table 85 Interface Action Extension page items

Item	Range	Description
		Deletes the row.
Interface Action Name	1to 16 alphanumeric characters	Type a character string to uniquely identify the interface action extension configuration.
Instance		Displays the unique identifier.
Set Egress Unicast	Ignore or port	Choose either: Ignore—the system does not set an egress unicast port Choose the port you want for the egress unicasts. The default setting is Ignore.

Table 85 Interface Action Extension page items (continued)

Item	Range	Description
Set Egress Non-Unicast	Ignore or port	Choose either: Ignore—the system does not set an egress non-unicast port Choose the port you want for the egress non-unicasts. The default setting is Ignore.
Storage Type	other read-only volatile non-volatile	This display-only field in the table shows the type of storage across reboots for each action: other—system created; cannot be deleted or referenced by the user read-only—system defaults; cannot be deleted volatile—lost after a reset nonvolatile—stored across reset

2 In the Interface Action Extension Creation section, type information in the text boxes, or select from a list

3 Click Submit.

The new interface action extension configuration appears in the Interface Action Extension Table (Figure 91).

You cannot modify an interface action extension entry. You must delete that entry and create another one with the configuration you want.

Deleting an Interface Action Extension Configuration

To delete an interface action extension configuration:

1 From the main menu, choose Application > QoS > Interface Actions Ext.

The Interface Action Extension page opens (Figure 91).

2 In the Interface Action Extension Table section, in the interface action extension configuration row of your choice, click the Delete icon.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the interface action extension configuration.
- Click Cancel to return to the Interface Action Extension page without making changes.

Note: You cannot delete an interface action extension that is referenced by an action. You must first delete the action.

Configuring QoS Meters

Using the QoS pages, you can create, view, or delete meters. If you do not want to meter the data in your flow, go to "Configuring QoS Policies" on page 235.

Creating a Meter

To create a meter:

1 From the main menu, choose Application > QoS > Meters.

The Meter page opens (Figure 92). This table displays all meters you created.

Figure 92 Meter page

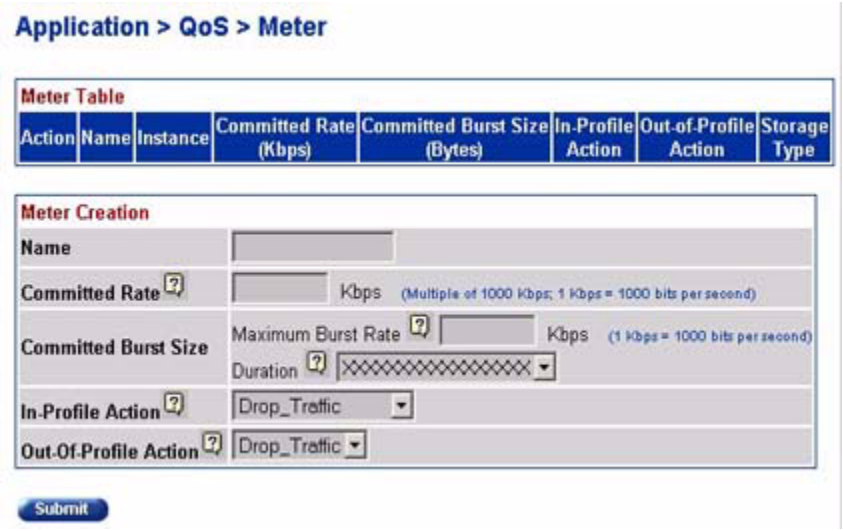


Table 86 describes the fields in the Meter Creation area, which you use to set new meters.

Table 86 Meter Creation fields

Item	Range	Description
Name	1 to 16 alphanumeric characters with no spaces	Enter the name for the meter you are creating.
Committed Rate	1000 - 1023000 Kbps	Enter the Committed Rate in Kbps here. Note: You must enter the committed rate in multiples of 1000 Kbps.
Committed Burst Size	4, 8, 16, 32, 64, 128, 256, 512 Kbytes Up to 8 durations	Maximum Burst Rate—Enter the Maximum Burst Rate in Kbps. Duration—From the pull-down menu, choose 1 of up to 8 durations for the period that the Maximum Burst Rate is allowed.

Table 86 Meter Creation fields (continued)

Item	Range	Description
In-Profile Action	Default actions plus all you created.	Choose from the pull-down menu of: Default actions All actions you created using the Action page The default setting is Drop Traffic.
Out-Of-Profile Action	Default actions plus all you created.	Choose from the pull-down menu of: Default actions All actions you created using the Action page The default setting is Drop Traffic.

2 In the Meter Creation area, create the meter.

3 Click Submit.

Note: Meter configurations are not modifiable. They must be deleted and the information re-entered.

Viewing Meters

To view a meter:

1 From the main menu, choose Application > QoS > Meters.

The Meters page opens (Figure 92).

2 View created meters in the Meter Table.

Table 87 describes the fields in the Meter Table area.

Table 87 Meter Table fields

Item	Range	Description
Action		Deletes the meter.
Name		Displays the name of the meter.

Table 87 Meter Table fields (continued)

Item	Range	Description
Instance		Displays the unique identifier.
Committed Rate	1000 - 1023000 Kbps	Displays the Committed Rate in kbps.
Committed Burst Size	4, 8, 16, 32, 64, 128, 256, 512 Kbytes Up to 8 durations	Displays the Committed Burst Size in bytes.
In-Profile Action	Configured, user-defined action	Displays the In-Profile Action for this meter.
Out-Of-Profile Action	Configured, user-defined action	Displays the Out-Of-Profile Action for this meter.
Storage Type	volatile non-volatile	This display-only field in the table shows the type of storage across reboots for each action: volatile—lost after a reset nonvolatile—stored across reset

Deleting a Meter

To delete a meter:

1. From the main menu, choose Application > QoS > Meters.

   The Meter page opens (Figure 92).

2. In the Meter Table section, click the Delete icon to delete the meter.

   A message opens prompting you to confirm your request.

3. Do one of the following:
   - Click Yes to delete the meter configuration.
   - Click Cancel to return to the Meter page without making changes.

Configuring QoS Policies

You can configure QoS policies by creating filters in the hardware that apply a set of packet filtering criteria and actions to individual interfaces.

If you want to meter your data, the In-Profile action and the Out-Profile action are referenced from the meter entry. The In-Profile action directs the switch how to handle the data flow that is within the meter you set, and the Out-Profile directs the switch how to handle all other data.

Installing Defined Filters

To create a hardware policy filter configuration:

1 From the main menu, choose Application > QoS > Policy.

The Policy page opens (Figure 93).

Figure 93 Policy page

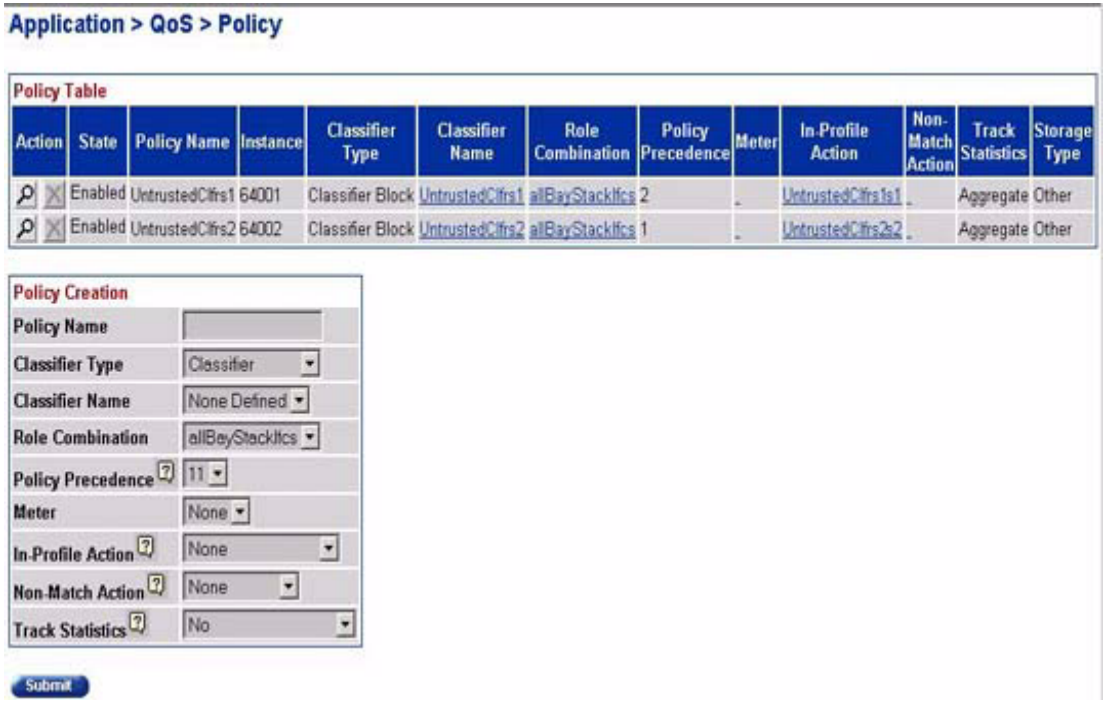


Table 88 describes the items on the Policy page.

Table 88 Policy page items

Section	Item	Range	Description
Policy Table	Action		Opens a view only statistics table. The table displays current filter statistics in packets.
			Deletes the row.
	State	(1) Enabled (2) Disabled	Enables or disables the policy. The default setting is Enabled.
	Policy Name	1to 16 alphanumeric characters	A list of the names of existing target configurations.
	Instance		Displays the unique identifier.
	Classifier Type	classifier classifier block	The type of classifier that is referenced by this instance of the policy. The options are: Classifier and Classifier Block.
	Classifier Name		The classifier or classifier block that is associated with this policy.
	Role Combination		The interfaces to which this policy specification applies, specified in terms of a role combination tag.
	Policy Precedence	1to 11	The number used to determine the order of precedence for this policy specification.
	Meter		The meter associated with this entry, if there is one.
	In-Profile Action		Displays the name of the In-Profile action for this policy. Note: Metered policies have In-Profile Actions specified in the Meter entry.
	Non-Match Action		Displays the non-match action for this policy.
	Track Statistics	No Individual Classifier Aggregate Classifier	Displays whether the system is tracking statistics for this policy and the granularity of the statistics tracking.
	Storage Type	other read-only volatile non-volatile	This display-only field in the table shows the type of storage across reboots for each action: other—system created; cannot be deleted read-only—system defaults; cannot be deleted volatile—lost after a reset nonvolatile—stored across reset

Table 88 Policy page items (continued)

Section	Item	Range	Description
Policy Creation	Policy Name	1to16 alphanumeric characters	Type a character string to create a unique name to identify this policy.
	Classifier Type	Classifier Classifier Block	Choose the type of filter to associate with this policy.
	Classifier Name		Choose the name of the classifier or classifier block to associate with this policy.
	Role Combination		Choose the type of interface to which this policy applies, specified in terms of a role combination, from a list of all Role Combinations created so far.
	Policy Precedence	1 to 11	Enter a number from 1 to 11 to use as a determinate of the order of precedence for this filter. Note: The highest value for precedence is evaluated first.
	Meter		Choose either: None—no meter is associated with this policy one of the meters you configured
	In-Profile Action		Choose the action you want to take for the data associated with this policy. Note: If this policy is metered, you will not choose an In-Profile Action here; the policy is referenced from the Meter entry.
	Non-Match Action		Choose the action you want to take associated with this policy for data that is not within the configured profile.
	Track Statistics	No Individual Classifier Aggregate Classifier	Choose whether to track statistics for this policy and the granularity of the statistics you want. The default setting is No.

2 Complete the fields as described.

3 Click Submit.

Viewing Hardware Policy Statistics

To view statistics for a selected hardware policy configuration:

1 From the main menu, choose Application > QoS Policy.

The Policy page opens (Figure 93).

2 In the Policy Table section under the Action column, in the policy of your choice, click the View icon.

The Policy Statistics page opens (Figure 94).

Figure 94 Policy Statistics page

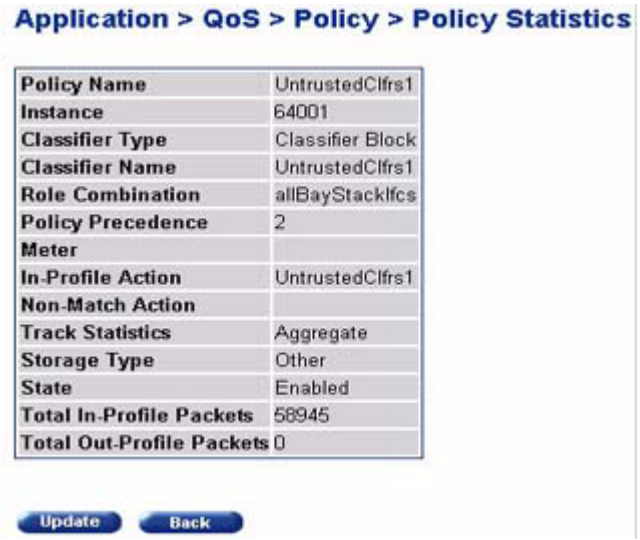


Table 89 describes the items on the Policy Statistics page.

Table 89 Policy Statistics page items

Item	Description
Policy Name	The name of the selected policy.
Instance	The number the system applies to the policy.
Classifier Type	The type of classifier that is referenced by this instance of the filter policy class. The options are: classifier or classifier block.
Classifier Name	The name of the classifier or classifier block you are associating with the policy.
Role Combination	The interfaces to which this policy applies, specified in terms of a role combination.
Policy Precedence	The precedence of this policy.
Meter	The meter associated with this policy.

Table 89 Policy Statistics page items (continued)

Item	Description
In-Profile Action	The in-profile action associated with the policy.
Non-Match Action	The non-match action associated with this policy.
Track Statistics	The granularity of statistics tracking for this policy.
Storage Type	The type of storage across reboots for this policy.
State	The enabled or disabled state of the policy.
Total In-Profile Packets	The total number of in-profile packets for this policy. Note: These are the total number since the policy was installed/enabled. Once you disable the policy, the counters reset to zero.
Total Out-Of-Profile Packets	The total number of out-of-profile packets for this policy. Note: These are the total number since the policy was installed/enabled. Once you disable the policy, the counters reset to zero.

Table 90 describes the items on the Filter Statistics table, which provides a breakdown of In-Profile and Out-Of-Profile packets for each classifier and each port within each policy.

Table 90 Filter Statistics table items

Item	Description
Classifier Name	The name of the classifier you are associating with the policy.
Port	The number of the port.
In-Profile Packets	The number of in-profile packets for this filter and this port.
Out-Of-Profile Packets	The number of out-of-profile packets for this filter and this port.

Note: This table appears only if you configure the system to track statistics at the level of an individual classifier.

Deleting a Hardware Policy Configuration

To delete a hardware policy configuration:

1 From the main menu, choose Application > QoS > Policy.

The Policy page opens (Figure 93).

2 In the Policy Table section, in the hardware policy configuration row of your choice, click the Delete icon.

A message opens prompting you to confirm your request.

3 Do one of the following:

- Click Yes to delete the hardware policy configuration.
- Click Cancel to return to the Policy page without making changes.

Configuring QoS Policy Agent Characteristics

You can Configure QPA Policy Agent (QPA) operational parameters.

To open the Agent page:

1 From the main menu, choose Application > QoS > Agent > Configuration.

The Agent page opens (Figure 95 and Figure 96).

Figure 95 Agent page (1 of 2)

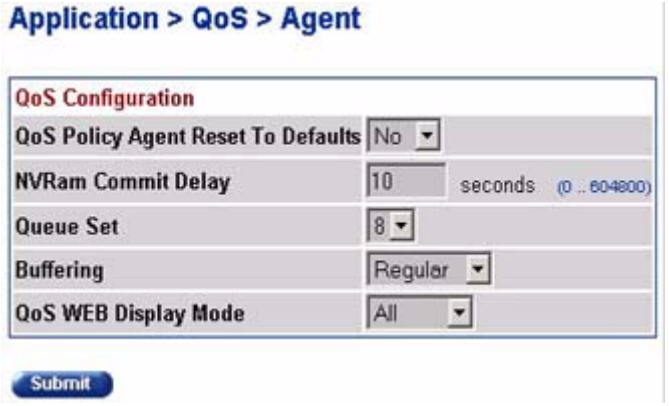
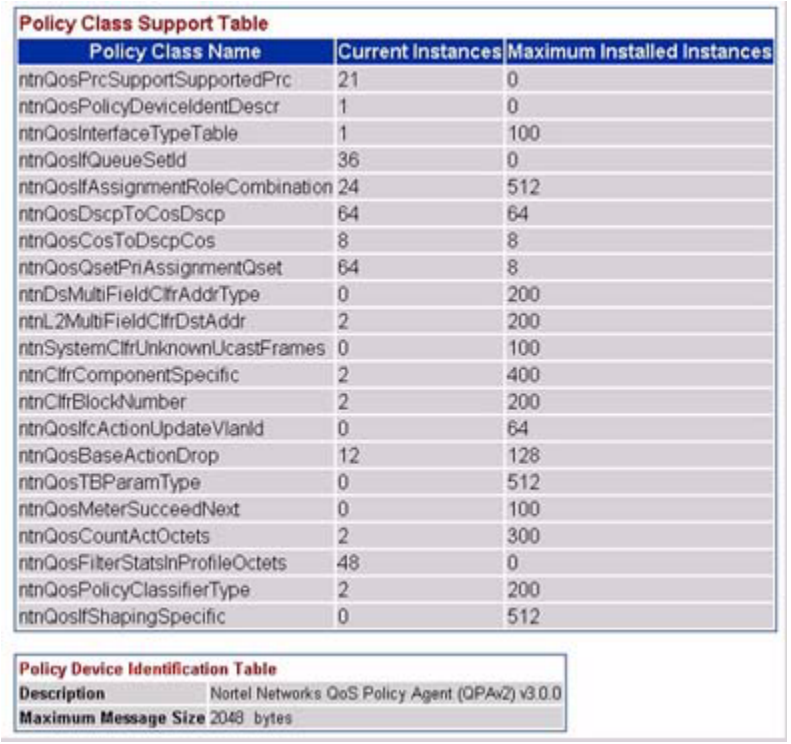


Figure 96 Agent page (2 of 2)



Policy Class Support Table

Policy Class Name	Current Instances	Maximum Installed Instances
ntnQosPrcSupportSupportedPrc	21	0
ntnQosPolicyDeviceIdentDescr	1	0
ntnQosInterfaceTypeTable	1	100
ntnQosIfQueueSetId	36	0
ntnQosIfAssignmentRoleCombination	24	512
ntnQosDscpToCosDscp	64	64
ntnQosCosToDscpCos	8	8
ntnQosQsetPriAssignmentQset	64	8
ntnDsMultiFieldClfrAddrType	0	200
ntnL2MultiFieldClfrDstAddr	2	200
ntnSystemClfrUnknownUcastFrames	0	100
ntnClfrComponentSpecific	2	400
ntnClfrBlockNumber	2	200
ntnQosIfcActionUpdateVlanId	0	64
ntnQosBaseActionDrop	12	128
ntnQosTBParamType	0	512
ntnQosMeterSucceedNext	0	100
ntnQosCountActOctets	2	300
ntnQosFilterStatsInProfileOctets	48	0
ntnQosPolicyClassifierType	2	200
ntnQosIfShapingSpecific	0	512

Policy Device Identification Table

Description	Nortel Networks QoS Policy Agent (QPAv2) v3.0.0
Maximum Message Size	2048 bytes

Table 91 describes the items on the Agent page.

Table 91 Agent page items

Section	Item	Range	Description
QoS Configuration	QoS Policy Agent Reset to Defaults	No Yes	Choose whether or not to reset the policy agent to the default settings.
	NVRAM Commit Delay	0 to 604800	Type the time, in seconds, before the configuration is saved to NVRAM.
	Queue Set	4 to ;	Choose the default QoS CoS queue set.
	Buffering	Regular, Large, Maximum	Choose the QoS resource buffer allocation scheme.
	QoS WEB Display Mode	User System All	Choose to display either only user-created parameters, only system-created parameters, or all parameters for QoS.
Policy Class Support Table	Policy Class Names		The name of the policy.

Table 91 Agent page items (continued)

Section	Item	Range	Description
	Current Instances		The current class entries.
	Maximum Installed Instances		The maximum number of allowed class entries.
Policy Device Identification Table	Description		The system description.
	Maximum Message Size		The maximum target message size supported by the device.

2 In the QoS Configuration section, type information in the text boxes, or select from a list.

3 Click Submit.

Using QoS Diagnostics

You use the Diagnostics page:

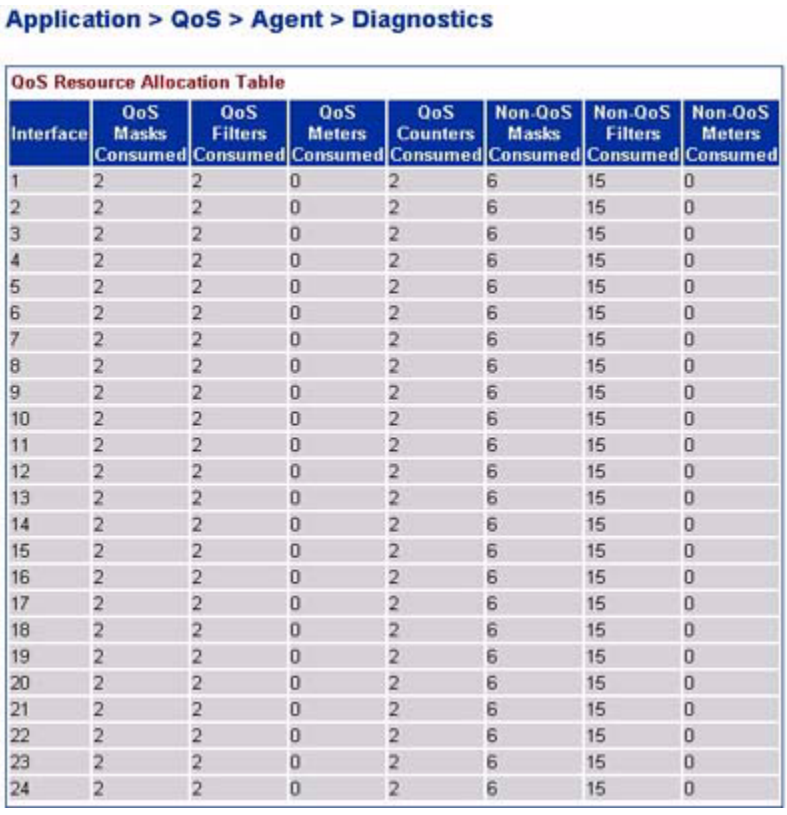
- to view how many filters, masks, meters, and counters are used.
- to validate configuration ranges.
- to examine the raw bit form of the classifiers you are putting into a classifier block in order to compare the masks.

Note: You must have *already* configured the classifiers to display the rules and masks; you can display the value and mask for a range *before* you configure that range.

To open the Diagnostics page:

1 From the main menu, choose Application > QoS > Agent > Diagnostics.

Figure 97 Diagnostics page (1 of 3)



Application > QoS > Agent > Diagnostics

QoS Resource Allocation Table

Interface	QoS Masks Consumed	QoS Filters Consumed	QoS Meters Consumed	QoS Counters Consumed	Non-QoS Masks Consumed	Non-QoS Filters Consumed	Non-QoS Meters Consumed
1	2	2	0	2	6	15	0
2	2	2	0	2	6	15	0
3	2	2	0	2	6	15	0
4	2	2	0	2	6	15	0
5	2	2	0	2	6	15	0
6	2	2	0	2	6	15	0
7	2	2	0	2	6	15	0
8	2	2	0	2	6	15	0
9	2	2	0	2	6	15	0
10	2	2	0	2	6	15	0
11	2	2	0	2	6	15	0
12	2	2	0	2	6	15	0
13	2	2	0	2	6	15	0
14	2	2	0	2	6	15	0
15	2	2	0	2	6	15	0
16	2	2	0	2	6	15	0
17	2	2	0	2	6	15	0
18	2	2	0	2	6	15	0
19	2	2	0	2	6	15	0
20	2	2	0	2	6	15	0
21	2	2	0	2	6	15	0
22	2	2	0	2	6	15	0
23	2	2	0	2	6	15	0
24	2	2	0	2	6	15	0

Figure 98 Diagnostics page (2 of 3)

Figure 99 Diagnostics page (3 of 3)

Table 92 describes the items on the Diagnostics page.

Table 92 Diagnostics page items

Section	Item	Description
QoS Resource Allocation Table	Interface	Displays the port or interface number.
	QoS Masks Consumed	Displays total number of masks consumed from QoS application.
	QoS Filters Consumed	Displays total number of filters consumed from QoS application.
	QoS Meters Consumed	Displays total number of meters consumed from QoS application.
	QoS Counters Consumed	Displays total number of counters consumed from QoS application.
	Non-QoS Masks Consumed	Displays total number of masks consumed by non-QoS applications.
	Non-QoS Filters Consumed	Displays total number of filters consumed by non-QoS applications.

Table 92 Diagnostics page items (continued)

Section	Item	Description
	Non-QoS Meters Consumed	Displays total number of meters consumed by non-QoS applications.
QoS Valid Range	Range	Enter beginning variable for any QoS range (such as VLANs, L4 Source Port, L4 Destination Port) and choose the end variable from among the system-provided values on the pull-down menu.
	Value	Displays the corresponding rule value in the IRULE entry in hardware.
	Mask	Displays the corresponding mask value in the IMASK entry in hardware.
QoS Classifier Rules/Mask Comparison	Classifier	Select the classifier(s) that you want to display the rule and mask for.
	Dst MAC Address	Displays the rule and mask for the destination MAC addresses configured.
	Src MAC Address	Displays the rule and mask for the source MAC addresses configured.
	User Priority	Displays the rule and mask for the user priority configured.
	VLAN	Displays the rule and mask for the VLANs configured.
	EtherType	Displays the rule and mask for the Ether types configured.
	IP Version	Displays the rule and mask for the IP versions configured.
	IP Header Length	Displays the rule and mask for the IP header lengths configured.
	DSCP	Displays the rule and mask for the DSCPs configured.
	IPv4 Protocol	Displays the rule and mask for the IPv4 protocols configured.
	IPv6 Flow ID	Displays the rule and mask for the IPv6 flow IDs configured.
	IPv6 Next Header	Displays the rule and mask for the IPv6 next headers configured.
	Src IP Address	Displays the rule and mask for the source IP addresses configured.
	Dst IP Address	Displays the rule and mask for the destination IP addresses configured.
	Src L4 Port	Displays the rule and mask for the source L4 ports configured.
	Dst L4 Port	Displays the rule and mask for the destination L4 ports configured.

Table 92 Diagnostics page items (continued)

Section	Item	Description
	VLAN Tag	Displays the VLAN tag configured.
	Header	Displays the rule and mask for the first 80 bytes of the header configured.

2 To display a valid range:

a Enter the beginning number of the range you want in the box.

b From the pull-down menu, choose the end of the range from the system-provided choices.

c Click Submit.

d The system returns the value and mask for that range (Figure 100).

Figure 100 Diagnostics value and mask display for selected range

3 To display the rule and mask in order to compare them for selected classifier(s):

a Choose the classifier(s) you want to display from the pull-down menu.

b Click Submit.

The system returns the rule and mask for the classifier(s) for those parameters configured (Figure 101).

Figure 101 Diagnostics rule and mask display for selected classifier

Note: To combine classifiers into the same classifier block, the classifiers must use the same mask.

Chapter 9
Support Menu

The customer support options available to you are:

- Help
- Release Notes
- Manuals
- Upgrade

Using the Online Help Option

You can read information about management page functions in the online help menu embedded in the Web-based management interface.

To open online help:

1 From the main menu, choose Support > Help or click the Help icon located in the upper right corner of any management page.

The Online Help menu opens in a separate Web browser (Figure 102).

Figure 102 Online help window

2 Click on any content item to read information about the topic (if you clicked the Help icon on a management page, information about that page is immediately displayed).

3 Click Return to Top to return to the Content index.

4 Close the Web browser

Downloading Technical Publications

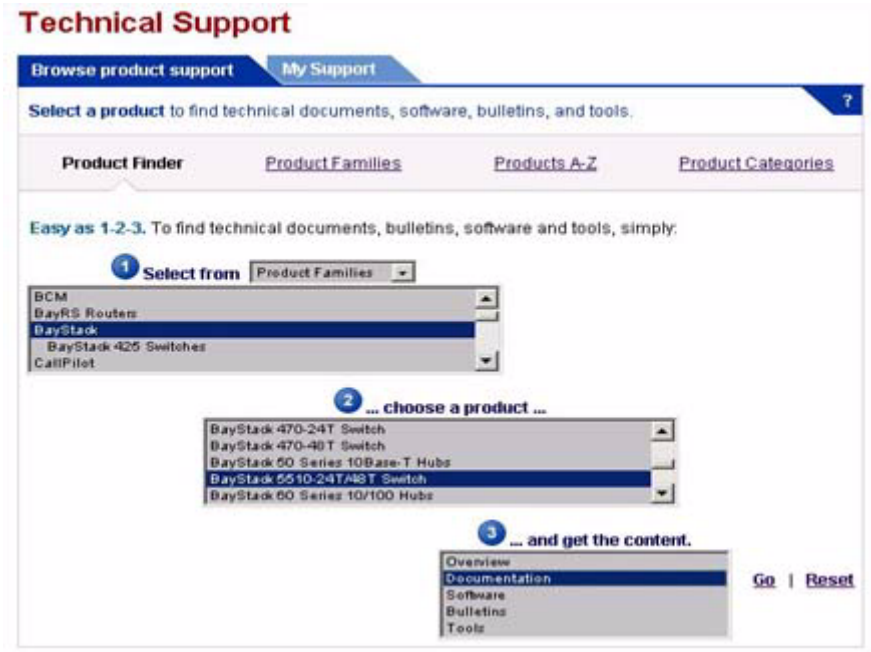
You can download current documentation about the Web-based management user interface from Nortel Technical Documentation Web site.

To download current documentation:

1 From the main menu, choose Support > Release Notes.

Nortel Technical Documentation Web site opens in a separate Web browser (Figure 103).

Figure 103 Nortel Technical Documentation Web site



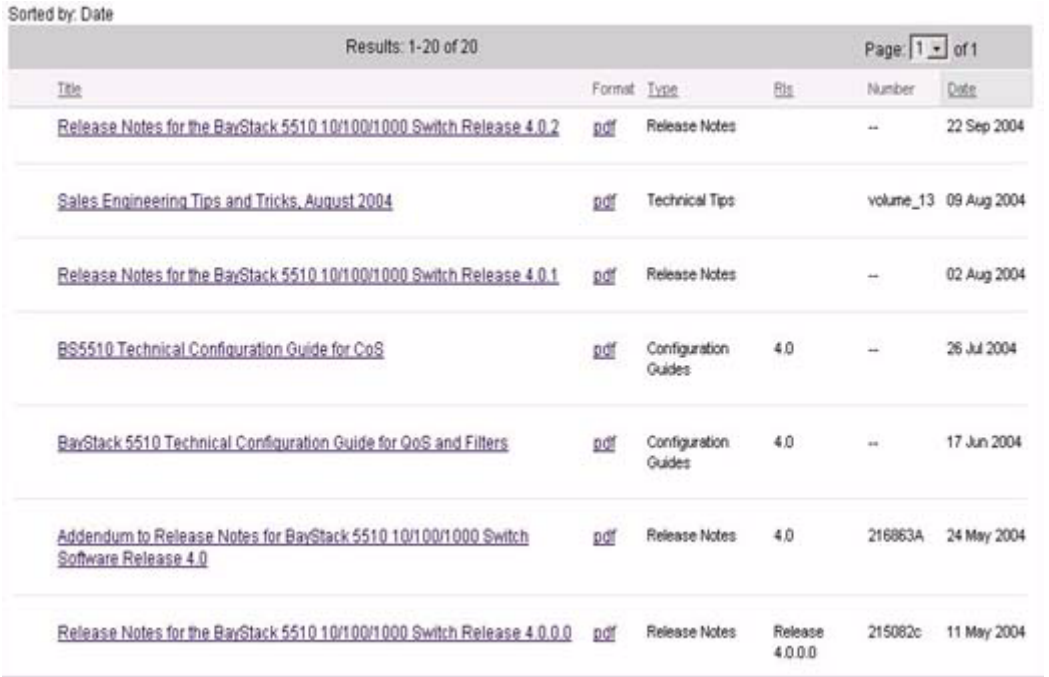
2 Select the Product Family from the list box labeled ‘Select from’.

3 In the ‘Choose a Product’ list box, select the specific product. (For example, Figure 103 displays the BayStack Family Product)

4 In the list box labeled “...and get the content.’, select documentation.

5 Click Go. The page displaying the documentation for the product selected earlier is displayed.

Figure 104 Nortel technical Documentation Web site



6 To download the required document, do one of the following:

— Click on the link representing the title of the document.

— Click on the PDF hyperlink to start the download process (you need Adobe Acrobat 3.0 or later to view or print documents from this site).

7 Follow the prompts to download the documentation.

8 Close the Web browser.

Manuals Option

This option allows you to search and download the latest technical documents. The Nortel Technical Support site is displayed when you click on this option. For more information on searching for technical documents on the Technical Support site, see "Downloading Technical Publications" on page 252.

Upgrade Option

You can upgrade your Web-based management user interface to the most recent software release.

To upgrade to the most recent software release:

1 From the main menu, choose Support > Upgrade.

Nortel Customer Support opens in a separate Web browser (Figure 105).

Figure 105 Nortel Customer Support Web site

2 Select the Product Family from the list box labeled ‘Select from’.

3 In the ‘Chose a Product’ list box, select the specific product.

4 In the list box labeled “...and get the content.’, select Software.

5 Click Go. The page displaying the software releases for the product selected earlier is displayed.

6 Follow the prompts to download the software.

Index

Numbers

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

Q

R

S

T

U

V

W