Nortel Ethernet Routing Switch 5000 Series

Documentation Roadmap

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NN47200-103

Nortel Ethernet Routing Switch 5000 Series
Release: 6.2
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Contents

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New in this release

The following section details what's new in *Nortel Ethernet Routing Switch 5000 Series Documentation Roadmap* (NN47200-103) for Release 6.2:

- "Features" (page 11)

Features

See the following sections for information about feature changes.

- "802.1AB (LLDP) MED Network Policy" (page 12)
- "802.1X authentication and Wake on LAN" (page 13)
- "802.1X or Non-EAP with Fail_Open VLAN" (page 13)
- "802.1X or Non-EAP and Guest VLAN on same port " (page 13)
- "802.1X or Non-EAP Last Assigned RADIUS VLAN" (page 13)
- "802.1X or Non-EAP with VLAN name" (page 13)
- "Autodetection and Autoconfiguration (ADAC) Uplink Enhancements" (page 13)
- "Automatic QoS and ADAC Interoperability" (page 14)
- "Automatic QoS 802.1AB MED Interoperability" (page 14)
- "Cisco CLI commands" (page 14)
- "Content-based forward to next hop (formerly source address-based route selection)" (page 15)
- "DHCP option 82 support" (page 15)
- "DHCP enhancements" (page 15)
- "Dual Syslog Server Support" (page 15)
- "EAP/ NEAP separation" (page 16)
- "Enhanced QoS engine" (page 16)
- "Enterprise Device Manager" (page 16)

802.1AB (LLDP) MED Network Policy

You can configure 802.1AB MED network policies to dynamically configure voice VLAN, DSCP, priority, and VLAN tagging on the switch for voice traffic received from an IP phone. When you enable LLDP and configure the MED network policies on the switch, the switch sends the network

policies to the IP Phone. The IP phone processes the data in the LLDP PDU and transmits the voice traffic with the appropriate VLAN ID, VLAN tagging, DSCP and priority information.

You can configure MED network policies on a switch port that has ADAC enabled. The network policies have priority over the ADAC configuration on the port.

802.1X authentication and Wake on LAN

The Wake on LAN (WoL) networking standard allows you to remotely turn on a computer from a sleeping state. Wake on LAN comprises components on the end device, network, and control system. You can use this tool while performing maintenance activities on systems during off hours

802.1X or Non-EAP with Fail_Open VLAN

This feature provides network connectivity for EAP-enabled or non-EAP-enabled ports to reach specific network resources when the switch is not able to reach the RADIUS server. When connectivity to the RADIUS server is lost, the system moves all authenticated devices into the configured Fail Open VLAN. When connectivity to the RADIUS server is restored, the system moves devices back to their previously-authenticated networks.

802.1X or Non-EAP and Guest VLAN on same port

This feature removes previous limitations by providing the ability to simultaneously configure 802.1X, Non-EAP and Guest VLAN on the same port for a more universal port configuration. In this release you do not have to configure a port to support Guest VLANs or Non-EAP or 802.1X; one port can support all 3 functions.

802.1X or Non-EAP Last Assigned RADIUS VLAN

You can use the 802.1X or Non-EAP last assigned RADIUS VLAN function to configure the switch to always honor the last received RADIUS-VLAN assignment on a port.

802.1X or Non-EAP with VLAN name

With this feature, you can enable the Ethernet Routing Switch 5000 Series to match RADIUS assigned VLANs based on either the VLAN number or a VLAN name. Previously, a match was based on the VLAN number of the Tunnel-Private-Group-Id attribute returned by the RADIUS server.

Autodetection and Autoconfiguration (ADAC) Uplink Enhancements

Autodetection and Autoconfiguration (ADAC) Enhancements provide increased flexibility in deployments that use Auto-Detect Auto-Configuration (ADAC) as follows:

For greater flexibility in ADAC call server configuration, ADAC is able to support up to 8 call-server links per switch or stack. More than one call server port is required because system deployments may have multiple devices (signaling server, media gateway) connected to a switch. These call server could be individual ports or any combination of MLT/DMLT or LAG connection. Currently when ADAC is operational, a user can not change the non-ADAC VLANs on the port (without disabling ADAC, changing the VLAN and then re-enabling ADAC), which leads to usability issues that limit the deployment of ADAC. The ADAC enhancements provide the ability to change the non-ADAC VLANs on a port irrespective of the ADAC status of the port. Any such changes in the underlying port VLAN assignment are saved as normal to NVRAM and ASCIII configurations.

- expanded support for up to 8 ADAC uplinks and 8 call-server links - individual ports or any combination of MLT, DMLT or LAG - per switch or stack
- non-ADAC VLANs retained in NVRAM through resets

Automatic QoS and ADAC Interoperability

Automatic QoS and ADAC Interoperability enhances automatic QoS implementation on the switch so you can use Automatic QoS and ADAC simultaneously. In this release you can enable ADAC and configure Nortel Automatic QoS on the port so that ADAC can use the Automatic QoS DSCP markings.

Automatic QoS 802.1AB MED Interoperability

Automatic QoS 802.1AB MED Interoperability enhances automatic QoS implementation on the switch so you can use both features simultaneously. With the enhancement, if you configure 802.1AB MED, the switch publishes the private Automatic QoS DSCP value to the end device rather than the default value defined by the network policy.

Cisco CLI commands

The old NNCLI commands are still available but are hidden. The new CISCO style commands are available by way of auto-completion and also appear when you use the help menu (question mark). You can use the following IOS CLI commands:

Address Resolution Protocol (ARP)	
`arp [A.B.C.D] [H.H.H] [port] [vlan id]`	**`A.B.C.D`** — IP address **`H.H.H`** — MAC address **`port`** —- the port to which the ARP entry is assigned.

no arp A.B.C.D	**A.B.C.D** — IP address
show arp	Displays the current ARP status.
Spanning Tree Protocol (STP)	
spanning-tree mode	The command that changes STP operation mode. Modes include **mst, rstp,** or **stpg**.
spanning-tree mode mst	The command that changes STP operation mode to MSTP.
show spanning-tree mode	Displays the current Spanning Tree mode.
Virtual Local Area Network (VLAN)	
show vlan id <vlan_id>	Displays the specified VLAN information.

Content-based forward to next hop (formerly source address-based route selection)

Routing is improved in this release with the introduction of source address-based route selection. Applied on a per VLAN basis, source address-based addresses can be an IP address or subnet and a TCP/UDP port or range of ports.

DHCP option 82 support

DHCP option 82 support is an extension of Dynamic Host Configuration Protocol (RFC3046 and RFC3993) that enables the switch to send information about DHCP clients to the authenticating DHCP server. When you enable option 82, in either Layer 2 or Layer 3 mode, the switch inserts additional port-based identification information into the DHCP packets traversing the switch enroute to the DHCP server. The DHCP server stores this additional identification information within the IP allocation record to assist in tracking of end device locations.

DHCP enhancements

The DHCP Snooping table entries have been increased to 1,024 so that you can deploy a full stack of 8 units using IP Phones and PCs.

You can add and delete DHCP snooping table entries manually so that devices assigned to static IP addresses can appear in the DHCP Snooping table and be protected by Dynamic Address Resolution Protocol (DARP) and IP Source Guard which rely on the DHCP Snooping table to protect statically configured IP devices.

Dual Syslog Server Support

In Release 6.2, you can use the Dual Syslog Server Support feature to configure a second syslog server to run in tandem with the first. If you configure Dual Syslog Server Support, the system sends syslog messages simultaneously to both servers to ensure that syslog messages are logged, even if one of the servers becomes unavailable.

EAP/ NEAP separation

The EAP/ NEAP separation command allows you to disable EAP clients without disabling NEAP clients.

Enhanced QoS engine

Release 6.2 introduces an enhanced QoS engine to provide more efficient resource use.

Enterprise Device Manager

Enterprise Device Manager (EDM) replaces both the Java-based Device Manager and Web-based management. EDM is an embedded element management and configuration application for Ethernet Routing Switch 5000 Series switches. EDM uses a Web-based graphical user interface for the convenience of full integration onto the switch, but it retains the look and feel of Device Manager.

EDM navigation has been enhanced. To access command tabs from the EDM navigation tree, the documented procedures specify using a double-click to open the tab in the work area. With the enhancement, you can access all objects in the navigation tree with a single click.

ATTENTION
With the introduction of EDM the use of Device Manager (sometimes referred to as JDM) is no longer suported because the use of JDM to control the switch could lead to potential corruption of the switch configuration.

ATTENTION
If you upgrade the software on your switch, and if you are managing the switch with EDM, then you should refresh the browser cache on your end device to ensure that EDM loads the latest tabs for all respective features.

Filter limiting

Enabled by default, Filter Limiting limits the maximum number of user-defined protocol VLANs to 7. When you disable Filter Limiting, you can create up to 16 user-defined protocol VLANs. The ERS 5510 switch supports a maximum of 7 user-defined protocol VLANs and cannot join a stack if you disable Filter Limiting. For more information about Filter Limiting, see *Nortel Ethernet Routing Switch 5000 Series Configuration—Quality of Service* (NN47200-504).

Full IGMPv3

Release 6.2 supports Full IGMPv3 in this release with the addition of source filtering for IGMPv3 Snooping and IGMPv3 Routing (PIM-SSM). This release supports six group record types for IGMPv3 Snooping and three group record types IGMPv3 Routing.

IPv4 Tunneling for IPv6

IPv4 Tunneling for IPv6 supports communication between IPv6 networks across an IPv4 domain using manually configured tunnels.

IPv6 Automatic Address Assignment

IPv6 automatic address assignment assigns IPv6 addresses for PCs.

When IPv6 routing is enabled for an interface, or when an IPv6 IP address is configured on an interface, the system automatically creates an IPv6 local route entry in the IPv6 routing table. The IPv6 automatic address assignment functions with the following limitations.

- works only when IPv6 forwarding is enabled.
- only one IPv6 address per interface.
- works only on ERS 5600 units

The IPv6 automatic address assignment supports the following:

- 256 prefixes are permitted (you can assign more then one prefix per VLAN).
- each IPv6 prefix with eui 2/3 a local routes is added in the IPv6 routing table.

IPv6 Routing DHCP Relay

Ethernet Routing Switch 5000 Series switches support IPv6 DHCP Relay per RFC 3315.

IPv6 Static Routing

IPv6 Static Routing supports configurable IPv6 static routes and per-VLAN IPv6 routes to provide:

- multiple configurable IPv6 interfaces associated with VLANs (you can associate only one IPv6 interface with one VLAN)
- multiple configurable static entries in the IPv6 routing table
- router functionality based on the routing table
- configuration of prefix lists advertised to the host for stateless autoconfiguration.
- support only on the ERS 5600.

Link Aggregation Control Protocol (LACP) over Split Multi-link Trunk

LACP over SMLT improves handling in fail-over situations, for example, when a stack breaks, and improves trunking resilience.

MAC Security enhancement

In Release 6.2, you can use the MAC Security enhancement to specify ports to lock out of MAC-based security.

MAC Security Uplink Port Lockout

You can configure specified ports to exclude them from participating in MAC-based security to simplify switch operation and provide protection against improper configurations.

Multicast group scaling

This release provides three levels of improved multicast group support as follows:

- ERS 5510 supports 250 multicast groups
- ERS 5520 and ERS5530 support 492 multicast groups
- ERS 5600 supports 992 multicast groups

In a hybrid stack, multicast group support conforms to the lowest common denominator—if the stack contains an ERS 5510, then 250 multicast groups are supported; if the stack contains an ERS 5520 or 5530, then 492 multicast groups are supported.

Multiple Hosts with Multiple VLANs for EAP-enabled Ports

The Multiple Hosts with Multiple VLANs for EAP-enabled ports (MHMV) feature can direct multiple hosts on a single port to different VLANs. You can use MHMV to separate voice and data traffic on the same port. For more information about MHMV, see *Nortel Ethernet Routing Switch 5000 Series Configuration—Security* (NN47200-501).

Nortel Energy Saver

NES can reduce network infrastructure power consumption without impact to network connectivity. NES reduces direct power consumption by up to 40% because it uses intelligent switching capacity reduction in off-peak mode. NES can also use Power over Ethernet (PoE) port power priority levels to shut down PoE ports and provide more power savings

PIM-SM support

PIM-SM support extends to both pure and hybrid stack configurations.

Port Mirroring – Bi-directional monitor port

You can enable bi-directional traffic on the monitor port to allow a connected IDS/IPS device to recognize traffic posing a threat to the network and disable the port. Also, when bi-directional port mirroring is enabled you can manage ERS 5000 switches on that port.

QoS DSCP mutation

QoS DSCP mutation extends Quality of Service trusted interface support by using the mapping tables, rather than filters, to permit the recolor of DSCP values on egress. The enhancment adds an egress DSCP value the DSCP-to-COS mapping table; the switch uses the egress DSCP value to set the Class of Service (COS) and recolor the DSCP value on egress.

In the current QoS implementation of Trusted interface class, the IPv4 traffic received on trusted interfaces is remarked at the layer 2 level, that is, the 802.1p user priority value is updated based on the DSCP value in the packet at ingress and the installed DSCP-to-CoS mapping data.

The remarked CoS value is used for queuing at egress and possibly for downstream packet processing in a tagged VLAN environment. In some cases, you may need to remark the packet DSCP value at egress as well based on the incoming DSCP value.

This DSCP mutation operation can be used by defining individual filters to match and remark targeted DSCP values. The DSCP-to-COS Mapping Table can be easily extended to specify DSCP mutation values and to apply these automatically on Trusted interfaces.

QoS Egress Queue Shaping

You can use QoS Egress Queue Shaping to configure egress shaping based on a per queue basis without traffic interruption.

Both port-based shaping and per-port per-egress queue shaping are supported in this release. The enhancement allows the traffic flow to be shaped at a CoS level and you can implement the egress queue shaping to provide control on a per queue by queue basis.

QoS lossless buffering mode for data center applications

QoS lossless buffering mode is critical in data center applications, where reliable data transfer is more important than enhanced throughput. With lossless buffering mode, when a port receives volumes of traffic greater than port bandwidth, the port sends flow control (pause) frames to the sender. QoS lossless buffering is applicable for ERS 5600 series switches only. For more information about QoS lossless buffering mode, see *Nortel Ethernet Routing Switch 5000 Series Configuration—Quality of Service* (NN47200-504).

Route scaling

Up to 4000 routes, a doubling of routes available in the previous release, are available for the ERS 5600 Series products.

Running configuration NNCLI display command enhancements

The show running-config NNCLI command enhancements change the operation of the show running-configuration command. By default, **`show running-configuration`** displays only parameters that differ from the default configuration. You can use the verbose qualifier to display the entire ASCII configuration for the switch or stack. You can also use the module qualifier in the command to display the ASCII configuration for a specific feature.

The operation of the copy running-config tftp NNCLI command has been modified. By default, **`copy running-config tftp`** copies the complete contents of the running configuration file to a specified file on the TFTP server. With Release 6.2, you can use the module qualifier in the command to display the ASCII configuration for a specific feature, or you can use the verbose qualifier to copy the entire ASCII configuration for the switch or stack.

The operation of the copy running-config usb NNCLI command has been modified. By default, **`copy running-config usb`** copies the complete contents of the running configuration file to a USB mass storage device. With Release 6.2, you can use the module qualifier in the command to display the ASCII configuration for a specific feature, or you can use the verbose qualifier to copy the entire ASCII configuration for the switch or stack.

Secure Shell File Transfer Protocol (SFTP over SSH)

For enhanced network security, Secure FTP for secure file transfer over an SSH session is available in this release.

SFP support

Release 6.2 supports the following additional SFPs:

- AA1419050-E6
- AA1419051-E6
- AA1419052-E6
- AA1419053-E6
- AA1419054-E6
- AA1419055-E6
- AA1419056-E6
- AA1419057-E6
- AA1419058-E6
- AA1419059-E6
- AA1419060-E6

- AA1419061-E6
- AA1419062-E6
- AA1419063-E6
- AA1419064-E6
- AA1419065-E6
- AA1419066-E6
- AA1419067-E6
- AA1419068-E6
- AA1419071-E6
- AA1403007-E6
- AA1419074-E6
- AA1419075-E6
- AA1419076-E6
- AA1419077-E6

SMLT consistency with the Ethernet Routing Switch 8600

In Release 6.2, Split Multi-link Trunk (SMLT) configuration is enhanced to reflect the Ethernet Routing Switch 8600 configuration more closely.

Software Licensing enhancements

Software Licensing is a mechanism that allows you to use designated features, according to the license level that you purchase. In Release 6.2 the licensing process is simplified so that if you purchase a license, it remains valid when you upgrade to a version of software that includes additional features included in the license level—that is, you do not have to regenerate the license file, remove the old license from your switches and reload a new license file. Licensing is further simplified for a stack scenario. Automatic Unit Replacement has been updated to enable automatic update of a license for any replacement stack unit, including the Base Unit.

Trace command

A Trace command is available that is supported in OSPF, RIP, SMLT, IPMC, IGMP, and PIM in 4 levels for each module or application.

Unicast storm control

Unicast storm control blocks all known and unknown unicast traffic when it crosses a user configurable threshold (high water mark) and then allows all unicast traffic to pass/forward once it has dropped below a user configurable (low water mark) threshold. Regardless of the blocking

state of unicast traffic, all broadcast and multicast traffic continues to pass/forward (unless blocked/limited by other means such as broadcast rate limiting).

VLAN Scaling

VLAN Scaling can support up to 4,096 concurrent VLAN IDs with the scaling and demonstration capacity limited to 1,024 simultaneous VLANs.

The VLAN 4K scaling feature is controlled by the demo command and appropriate password provided to activate the functionality. This feature allows you to extend the number of VLANs supported by a device up to 4k. The scaling limits for each platform can be determined based on the business need and available system resources. All of the VLAN-configured applications can work properly with the maximum configured of VLANs. The standard scaling limit is 256, 512, 1024, or 4094 VLANs.

In ERS 5000 Seres Release 6.2, the target scaling number is a maximum of 1024 active VLANs with full support. **Note**: No other capabilities extension for Layer 2 or Layer 3 will be enhanced as a result of VLAN scaling.

Introduction

This document explains the organization of the technical documentation for the Nortel Ethernet Routing Switch 5000 Series Release 6.2. Use this document to understand where you can find specific types of information in the customer documentation suite.

Navigation

Roadmap

This section is a roadmap for the Nortel Ethernet Routing Switch 5000 Series documentation. Use this section to find the correct document for the task you need to perform.

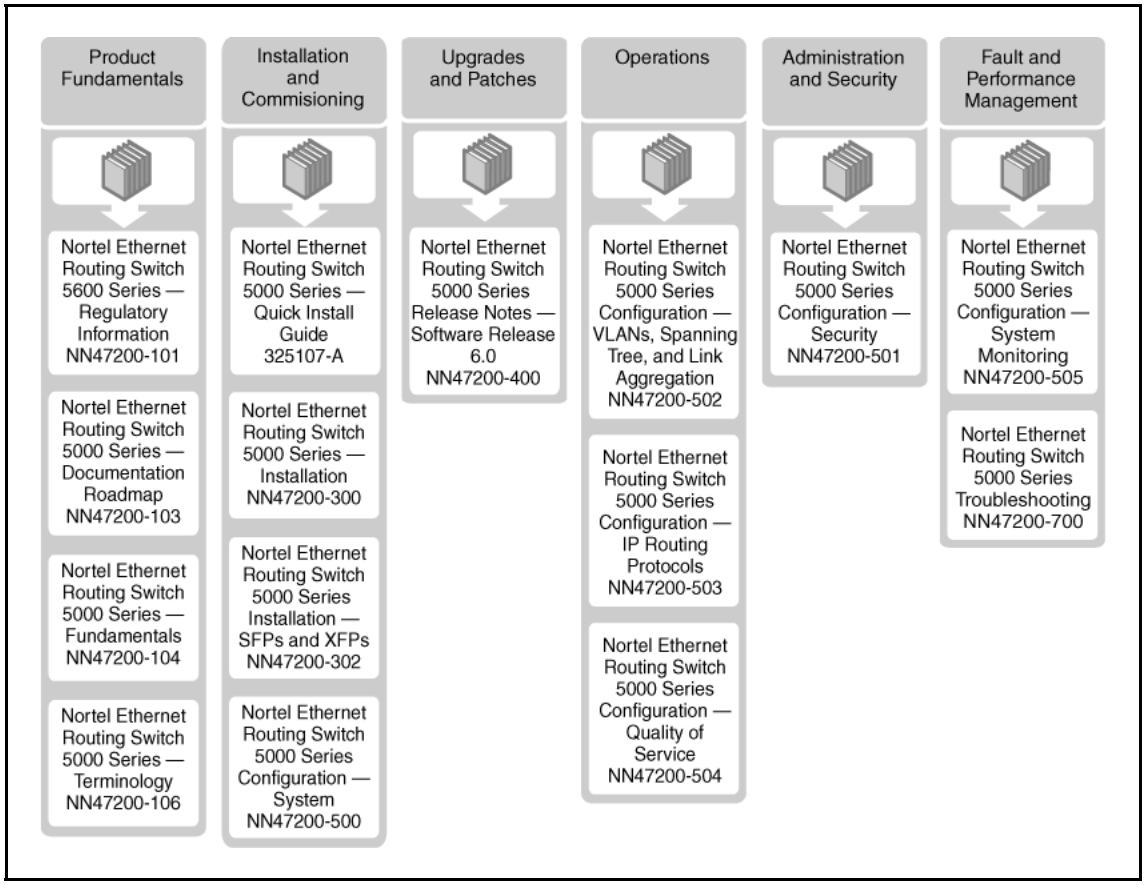
Nortel Ethernet Routing Switch 5000 Series technical documents are structured with an emphasis on the tasks you perform.

Navigation

Customer documentation packaging

Nortel technical documents are organized according to job functions. For information about how the Nortel Ethernet Routing Switch 5000 Series NTP suite is organized, see the following figure.

Figure 1
Nortel Ethernet Routing Switch 5000 Series documentation packaging



Product Fundamentals

Product Fundamentals documentation includes product overview and information that applies to all areas of the product.

Table 1
Nortel Ethernet Routing Switch 5000 Series product fundamentals documents

Document title	Description
Nortel Ethernet Routing Switch 5600 Series — Regulatory Information (NN47200-101)	This document provides regulatory and precautionary messages applicable to the Nortel Ethernet Routing Switch 5600 Series.
Nortel Ethernet Routing Switch 5000 Series Documentation Roadmap (NN47200-103)	This document contains an overview of the documentation suite and explains how to use task-based documentation.

Table 1
Nortel Ethernet Routing Switch 5000 Series product fundamentals documents (cont'd.)

Document title	Description
Nortel Ethernet Routing Switch 5000 Series — Fundamentals (NN47200-104)	This document provides instructions to use the Nortel Ethernet Routing Switch 5000 Series user interfaces, including Nortel Networks command line interface (NNCLI) and Enterprise Device Manager (EDM), and includes procedures to use configuration files.
Nortel Ethernet Routing Switch 5000 Series — Terminology (NN47200-106)	This document contains common terms and acronyms used in the Nortel Ethernet Routing Switch 5000 Series documentation suite.

Installation and Commissioning

Installation and Commissioning documentation includes information that supports initial installation and commissioning (initial configuration) activities, including preparation, processes, safety requirements, and instructions for rollback procedures.

The following table describes Nortel Ethernet Routing Switch 5000 Series installation and commissioning documents.

Table 2
Nortel Ethernet Routing Switch 5000 Series installation and commissioning documents

Document title	Description
Nortel Ethernet Routing Switch 5000 Series — Quick Install Guide (325107-A)	This document provides abbreviated instructions for experienced users to install the Nortel Ethernet Routing Switch 5000 Series in an equipment rack or on a shelf.
Nortel Ethernet Routing Switch 5000 Series — Installation (NN47200-300)	This document provides instructions to install the Nortel Ethernet Routing Switch 5000 Series in an equipment rack (individually or in a stack) or on a shelf. It also provides instructions to perform the initial IP configuration on the switch using the console menu, NNCLI, or UI button. It also provides instructions to verify switch status using the front-panel LEDs.

Table 2
Nortel Ethernet Routing Switch 5000 Series installation and commissioning documents (cont'd.)

Document title	Description
Nortel Ethernet Routing Switch 5000 Series Installation — SFPs and XFPs (NN47200-302)	This document provides instructions to install small form factor pluggable transceivers, 10 Gigabit small form factor pluggable transceivers, and includes specifications for these hardware components.
Nortel Ethernet Routing Switch 5000 Series — System Configuration (NN47200-500)	This document provides instructions to perform basic configuration of the Nortel Ethernet Routing Switch 5000 Series including procedures to configure the switch IP address after hardware installation. It also provides instructions to configure system-level features such as stacking, feature licensing, Simple Network Time Protocol, BootP, Domain Name System, PoE, and LLDP.

Upgrades and Patches

Upgrades and Patches documentation includes information to upgrade software and hardware components.

The following table describes Nortel Ethernet Routing Switch 5000 Series upgrades and patches documents.

Table 3
Nortel Ethernet Routing Switch 5000 Series upgrades and patches documents

Document title	Description
Nortel Ethernet Routing Switch 5000 Series Release Notes — Software Release 6.0 (NN47200-400)	This document describes new features and important information about the latest release. Release Notes includes a list of known issues (including workarounds where appropriate) and a list of fixed issues.

Operations

Operations documents include information that supports tasks related to configuration (post-commissioning) of services or applications, routine maintenance of hardware or software, and accounting or billing activities.

The following table describes Nortel Ethernet Routing Switch 5000 Series operations documents.

Table 4
Nortel Ethernet Routing Switch 5000 Series operations documents

Document title	Description
Nortel Ethernet Routing Switch 5000 Series Configuration — VLANs and Spanning Tree, and MultiLink Trunking (NN47200-502)	This document describes procedures and conceptual information to configure VLANs, Spanning Tree, Link Aggregation Control Protocol, and Multi-Link Trunking on the Nortel Ethernet Routing Switch 5000 Series.
Nortel Ethernet Routing Switch 5000 Series Configuration — IP Routing Protocols (NN47200-503)	This document provides procedures and conceptual information to configure IP routing features on the Nortel Ethernet Routing Switch 5000 Series, including static routes, RIP, OSPF, Proxy ARP, DHCP Relay, and UDP forwarding. It also provides procedures and conceptual information to manage multicast traffic using IGMP snooping and PIM-SM.
Nortel Ethernet Routing Switch 5000 Series Configuration — Quality of Service (NN47200-504)	This document provides procedures and conceptual information to configure Quality of Service on the Nortel Ethernet Routing Switch 5000 Series.

Administration and Security

Administration and Security documentation includes information that supports tasks that operations personnel perform that relate to network administration or product security, including the configuration and management of systems data and users. The documentation also includes the management and protection of resources from unauthorized or detrimental access and use.

The following table describes Nortel Ethernet Routing Switch 5000 Series administration and security documents.

Table 5
Nortel Ethernet Routing Switch 5000 Series administration and security documents

Document title	Description
Nortel Ethernet Routing Switch 5000 Series Security (NN47200-501)	This document provides procedures and conceptual information to administer and configure security features for the Nortel Ethernet Routing Switch 5000 Series, including MAC-based security, RADIUS, EAPOL, IP Source Guard, DHCP Snooping, SSH, and NSNA.

Fault and Performance Management

Fault and Performance Management documents include information that supports the tasks that operations personnel perform that relate to managing or preventing faults, troubleshooting, and monitoring and improving the performance of the network or product

The following table describes Nortel Ethernet Routing Switch 5000 Series fault and performance management documents.

Table 6
Nortel Ethernet Routing Switch 5000 Series fault and performance management documents

Document title	Description
Nortel Ethernet Routing Switch 5000 Series Configuration — System Monitoring (NN47200-505)	This document provides information about system diagnostics tools including syslog, Remote Monitoring, port mirroring, and displaying port and chassis statistics.
Nortel Ethernet Routing Switch 5000 Series Troubleshooting (NN47200-700)	This document describes common problems and error messages and the techniques to resolve them.

Documentation file formats

To locate the Nortel Ethernet Routing Switch 5000 Series software Release 6.2 documentation on the Nortel Web site, see “Customer service” (page 41), or the documentation CD. The following documents are also available in print format:

- *Nortel Ethernet Routing Switch 5000 Series — Quick Install Guide* (325107-A)
- *Nortel Ethernet Routing Switch 5000 Series — Regulatory Information* (NN47200-101)

Information quality

Nortel technical documents are tested by subject matter experts (SMEs) throughout the product development lifecycle. SMEs from Design, Product Verification (PV), Product Line Management (PLM), Verification Office (VO), and Global Network Product Support (GNPS), all contribute to document quality.

Nortel releases technical documents in the early stages of development that have not completed all testing milestones, on a limited basis. Documents that have not completed testing bear a Draft watermark on every page to indicate that the content they contain may change as the product is refined and document testing is completed. Draft documents are not widely available.

Text conventions

This chapter describes the text conventions used in the Nortel Ethernet Routing Switch 5000 Series documentation.

Navigation

Angle brackets

Indicates that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command.

Example: If the command syntax is **`ping <ip_address>`**, you enter **`ping 192.32.10.12`**

Bold or Bold Courier text

Bold or **`Bold Courier`** text indicates command names, options, and text that you must enter.

Example: Use the **`info`** command.

Example: Enter **`show ip {alerts|routes}`**.

Example: **Protocols**, **IP** identifies the IP command on the Protocols menu.

Braces

Braces ({ }) indicate required elements in syntax descriptions where more than one option is available. You must choose only one option. Do not type the braces when you enter the command.

Example: If the command syntax is
`stack oper-mode {Pure|Hybrid}`, you must enter either
`stack oper-mode Pure` or **`stack oper-mode Hybrid`**, but not both.

Brackets

Brackets ([ ]) indicate optional elements in syntax descriptions. Do not type the brackets when you enter the command.

Example: If the command syntax is
`show ip interfaces [-alerts]`, you can enter either **`show ip interfaces`** or**`show ip interfaces -alerts`**.

Ellipses

An ellipsis (...) indicates that you repeat the last element of the command as needed.

Example: If the command syntax is
`ethernet/2/1 [ <parameter> <value> ]...`,
you enter **`ethernet/2/1`** and as many parameter-value pairs as you need.

Italic text

Italic text indicates book titles or new terms followed by a definition.

Example: *Nortel Ethernet Routing Switch 5000 Series Release Notes* (NN47200-400).

Plain Courier text

`Plain Courier` text indicates system output, for example, prompts and system messages.

Example: `Set Trap Monitor Filters`

Separator

A separator (,) shows menu paths.

Example: **Protocols** , **IP** identifies the IP command on the Protocols menu.

Vertical bar

A vertical bar (|) separates choices for command keywords and arguments. Enter only one choice. Do not type the vertical line when you enter the command.

Example: If the command syntax is
`show ip {alerts|routes}`, you enter either
`show ip alerts` or **`show ip routes`**, but not both.

cr convention

In NNCLI procedures, when you see <cr> as an option for a command, you can press the **Enter** key on your keyboard to execute the command.

Modular, task-based information

Modular, task-based information (MTBI) is a quick reference for using the Nortel Ethernet Routing Switch 5000 Series task-based documentation. MTBI describes the structure of task-based information and how it can be used most effectively.

Navigation

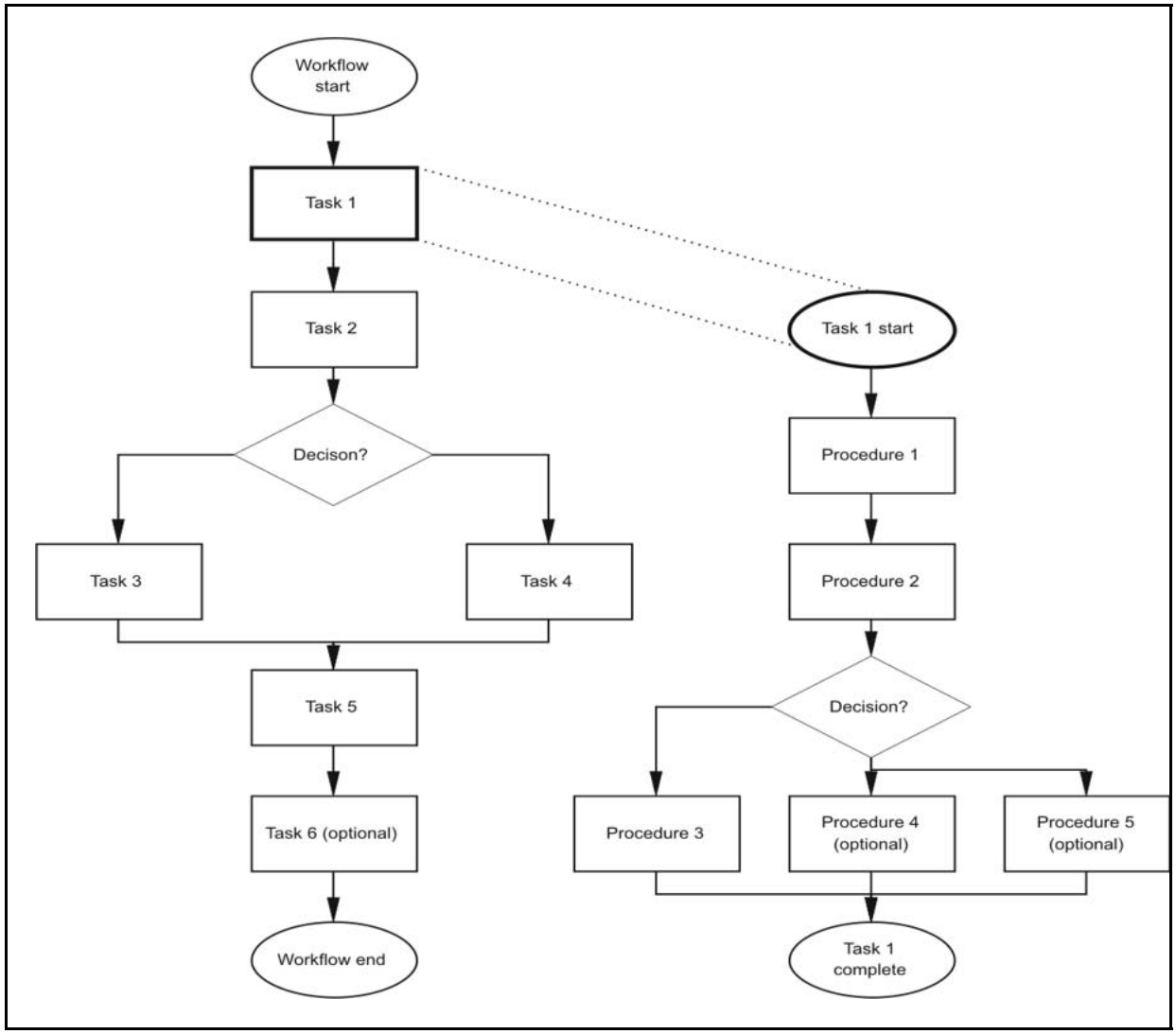
Task-based documentation

Task-based documentation is a new way of packaging customer information in a structured, modular, task-centric format.

Task-based documentation focuses on what the user must do and the sequence in which to perform tasks.

The goal is to make Nortel documentation easy to find, easy to use, timely, and accurate.

The following figure describes the relationship between work flows, task flows, and procedures.



How to use task-based documentation

In task-based documentation, procedural information is included in the document. Conceptual and reference information is provided, and the user is guided on how to use conceptual and reference material by identified prerequisites or direct links and references.

The user navigates the information by following the flows that are provided for tasks and procedures.

Task flow overview

Task flows are flowcharts that illustrate which procedures and decisions are involved to complete an activity.

The task flows guide you through activities to use the Nortel Ethernet Routing Switch 5000 Series, whether it is configuration, upgrading, installation, maintenance, or troubleshooting.

Each flow provides the prerequisites and links to the tasks or procedures.

To perform or refer to a procedure, always follow the task flow. Following the task flows ensures that you meet all the requirements for successful completion of the task.

Work flows, task flows, and procedures

Work flows, task flows, and procedures have similar elements to maintain consistency and usability. Each of the following sections have a specific function:

Purpose statements

Purpose statements explain why or when you would perform a work flow, task, or procedure and impact.

Prerequisites

Prerequisites list everything you must do or understand before you start the workflow, task, or procedure. Prerequisites can include tasks that should already be completed, risks, confirmation of system status, required knowledge, time estimates or limitations, and links to supporting information.

The prerequisite section is omitted if no required prerequisites exist.

Work flows or task flows

This section is the flow chart diagram that represents the task flow with navigational links to the tasks or procedures in the flow.

Procedure steps

Procedures provide numerical steps that help you perform the procedure. Each step is a single action.

Example procedures

Some procedures use examples to show how to correctly perform the procedure with realistic settings.

Variable definitions

Variable definitions provide the possible values, ranges, or definitions of variables used in the procedure steps.

If variables are not used in the procedure, then the variables definition section is omitted.

Job aid

Job aids provide information help to successfully perform the procedure.

The job aid is only used when required.

Task-based documentation terms

The following table describes task-based documentation terms.

Term	Description
Work flow	A high or top-level group of tasks.
Task or task flow	A logical group of procedures represented as a single action in a flowchart diagram. Complex tasks can be divided into simpler tasks or subtasks.
Procedure	A logical group of single action steps in a task.
Step	A single action performed in a procedure.
Variable	A placeholder in procedure steps representing a value or definition.

Restructuring Nortel technical documents into a task-based format is an ongoing initiative. The documentation for some Nortel products is already converted to the new format.

Customer service

Visit the Nortel Web site to access the complete range of services and support that Nortel provides. Go to www.nortel.com or go to one of the pages listed in the following sections.

Navigation

Updated versions of documentation

You can download and print the latest versions of Nortel Ethernet Routing Switch 5000 Series technical documentation and Release Notes directly from the Internet at http://nortel.com/documentation.

How to get help

If you 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 purchased a Nortel service program, you can get help by contacting one of the Nortel Technical Solutions Centers found at http://www.nortel.com/callus; or visit our Technical Support site at http://www.nortel.com/support.

Express Routing Codes

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 particular product or service. To locate an ERC for any product or service, go to http://www.nortel.com/erc.

Additional information

Use the information in the following table to access other areas of the Nortel Web site.

For information about	Contact
Contact Us	http://www.nortel.com/contactus
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Products (marketing)	http://www.nortel.com/product
Partner Information Center (PIC)	http://www.nortel.com/pic
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Services	http://nortel.com/services
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Nortel Ethernet Routing Switch 5000 Series

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