



JUNOS® Software for EX Series Ethernet Switches, Release 10.0: Alarms and System Log Messages

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Table of Contents

| | | |
|------------------|---|-----------|
| | About This Topic Collection | ix |
| | How to Use This Guide | ix |
| | List of EX Series Guides for JUNOS Release 10.0 | ix |
| | Downloading Software | x |
| | Documentation Symbols Key | xi |
| | Documentation Feedback | xii |
| | Requesting Technical Support | xiii |
| | Self-Help Online Tools and Resources | xiii |
| | Opening a Case with JTAC | xiii |
| Part 1 | Alarms and System Log Messages on EX Series Switches | |
| Chapter 1 | JUNOS Software—Overview | 3 |
| | EX Series Switch Software Features Overview | 3 |
| | Understanding Software Infrastructure and Processes | 15 |
| | Routing Engine and Packet Forwarding Engine | 15 |
| | JUNOS Software Processes | 16 |
| Chapter 2 | Alarm Types and Severity Levels on EX Series Switches | 19 |
| | Understanding Alarm Types and Severity Levels on EX Series Switches | 19 |
| | Checking Active Alarms with the J-Web Interface | 20 |
| | Monitoring Chassis Alarms for an EX8200 Switch | 21 |
| Chapter 3 | System Log Messages in EX Series Switches | 25 |
| | Monitoring System Log Messages | 25 |
| Chapter 4 | Troubleshooting | 29 |
| | Troubleshooting Loss of the Root Password | 29 |

About This Topic Collection

- How to Use This Guide on page ix
- List of EX Series Guides for JUNOS Release 10.0 on page ix
- Downloading Software on page x
- Documentation Symbols Key on page xi
- Documentation Feedback on page xii
- Requesting Technical Support on page xiii

How to Use This Guide

Complete documentation for the EX Series product family is provided on webpages at http://www.juniper.net/techpubs/en_US/release-independent/information-products/pathway-pages/ex-series/product/index.html. We have selected content from these webpages and created a number of EX Series guides that collect related topics into a book-like format so that the information is easy to print and easy to download to your local computer.

The release notes are at

http://www.juniper.net/techpubs/en_US/junos10.0/information-products/topic-collections/release-notes/10.0/junos-release-notes-10.0.pdf.

List of EX Series Guides for JUNOS Release 10.0





| Title | Description |
|---|---|
| <i>Complete Hardware Guide for EX3200 and EX4200 Switches</i> | Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX3200 and EX4200 switches |
| <i>Complete Hardware Guide for EX8208 Switches</i> | Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX8208 switches |
| <i>Complete Hardware Guide for EX8216 Switches</i> | Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX8216 switches |
| <i>Complete Software Guide for JUNOS® Software for EX Series Switches, Release 10.0</i> | Software feature descriptions, configuration examples, and tasks for JUNOS Software for EX Series switches |

| Title | Description |
|--|--|
| Software Topic Collections | Software feature descriptions, configuration examples and tasks, and reference pages for configuration statements and operational commands (This information also appears in the <i>Complete Software Guide</i> .) |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Access Control</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Alarms and System Log Messages</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Configuration and File Management</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Class of Service</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Device Security</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Ethernet Switching</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Interfaces</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Layer 3 Protocols</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: MPLS</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Multicast</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Network Management and Monitoring</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Port Security</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Routing Policy and Packet Filtering</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Spanning-Tree Protocols</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: System Setup</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: User and Access Management</i> | |
| <i>JUNOS® Software for EX Series Switches, Release 10.0: Virtual Systems</i> | |

Downloading Software

You can download JUNOS Software for EX Series switches from the Download Software area at <http://www.juniper.net/customers/support/>. To download the software, you must have a Juniper Networks user account. For information about obtaining an account, see <http://www.juniper.net/entitlement/setupAccountInfo.do>.

Documentation Symbols Key

| Notice Icons | | |
|---|--------------------|---|
| Icon | Meaning | Description |
|  | Informational note | Indicates important features or instructions. |
|  | Caution | Indicates a situation that might result in loss of data or hardware damage. |
|  | Warning | Alerts you to the risk of personal injury or death. |
|  | Laser warning | Alerts you to the risk of personal injury from a laser. |

| Text and Syntax Conventions | | |
|------------------------------|--|--|
| Convention | Description | Examples |
| Bold text like this | Represents text that you type. | To enter configuration mode, type the <code>configure</code> command: user@host> configure |
| Fixed-width text like this | Represents output that appears on the terminal screen. | user@host> show chassis alarms No alarms currently active |
| <i>Italic text like this</i> | <ul style="list-style-type: none"> ■ Introduces important new terms. ■ Identifies book names. ■ Identifies RFC and Internet draft titles. | <ul style="list-style-type: none"> ■ A policy <i>term</i> is a named structure that defines match conditions and actions. ■ <i>JUNOS System Basics Configuration Guide</i> ■ RFC 1997, <i>BGP Communities Attribute</i> |
| <i>Italic text like this</i> | Represents variables (options for which you substitute a value) in commands or configuration statements. | Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i> |
| Plain text like this | Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components. | <ul style="list-style-type: none"> ■ To configure a stub area, include the <code>stub</code> statement at the [edit protocols ospf area area-id] hierarchy level. ■ The console port is labeled CONSOLE. |

| Text and Syntax Conventions | | |
|--------------------------------|--|---|
| Convention | Description | Examples |
| < > (angle brackets) | Enclose optional keywords or variables. | stub <default-metric <i>metric</i> >; |
| (pipe symbol) | Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity. | broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>) |
| # (pound sign) | Indicates a comment specified on the same line as the configuration statement to which it applies. | rsvp { # Required for dynamic MPLS only |
| [] (square brackets) | Enclose a variable for which you can substitute one or more values. | community name members [<i>community-ids</i>] |
| Indentation and braces ({ }) | Identify a level in the configuration hierarchy. | [edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } } |
| ; (semicolon) | Identifies a leaf statement at a configuration hierarchy level. | |
| J-Web GUI Conventions | | |
| Bold text like this | Represents J-Web graphical user interface (GUI) items you click or select. | <ul style="list-style-type: none"> ■ In the Logical Interfaces box, select All Interfaces. ■ To cancel the configuration, click Cancel. |
| > (bold right angle bracket) | Separates levels in a hierarchy of J-Web selections. | In the configuration editor hierarchy, select Protocols > Ospf . |

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. Send e-mail to techpubs-comments@juniper.net with the following:

- Document URL or title
- Page number if applicable
- Software version
- Your name and company

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <http://www.juniper.net/customers/support/downloads/710059.pdf> .
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/> .
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

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- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting support.html> .

Part 1

Alarms and System Log Messages on EX Series Switches

- JUNOS Software—Overview on page 3
- Alarm Types and Severity Levels on EX Series Switches on page 19
- System Log Messages in EX Series Switches on page 25
- Troubleshooting on page 29

Chapter 1

JUNOS Software—Overview

- EX Series Switch Software Features Overview on page 3
- Understanding Software Infrastructure and Processes on page 15

EX Series Switch Software Features Overview

Table 1 on page 3 lists the Juniper Networks EX Series Ethernet Switch software features and the Juniper Networks JUNOS Software release in which they were introduced.

Table 1: Summary of Software Features Available on EX Series Switches

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|--|--|---|-------------------------------------|
| Activity Logging and Monitoring | J-Web event view for system log messages | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Real-time performance monitoring (RPM) | JUNOS 9.3R2 | Not supported |
| | System logging (syslog) over IPv4 | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | System logging (syslog) over IPv6 | JUNOS 9.3R2 | Not supported |
| | Traceroute tool in J-Web interface | JUNOS 9.0R2 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|-----------------------|--|---|-------------------------------------|
| Administration | Automatic software download | JUNOS 9.6R1 | Not supported |
| | Configuration rollback | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Confirmation of configuration changes | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Software upgrades | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Support for RADIUS external administrator databases | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Supports the following features for automating network operations and troubleshooting: <ul style="list-style-type: none"> ■ Commit scripts ■ Operation scripts ■ Event policies | JUNOS 9.0R2 | JUNOS 9.4R1 |
| Encapsulation | 802.1Q encapsulation tags | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | 802.1Q filtering and forwarding | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Ethernet: <ul style="list-style-type: none"> ■ Media access control (MAC) encapsulation ■ 802.1p tagging | JUNOS 9.0R2 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|---|--|---|-------------------------------------|
| High Availability and Resiliency | Graceful protocol restart for IS-IS | JUNOS 9.3R2 | JUNOS 9.4R1 |
| | Graceful protocol restart for OSPF and BGP | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Graceful Routing Engine switchover (GRES) for EX4200 Virtual Chassis configurations | JUNOS 9.1R1 | Not applicable |
| | Graceful Routing Engine switchover (GRES) for ARP entries | JUNOS 9.2R1 | JUNOS 9.4R1 |
| | Graceful Routing Engine switchover (GRES) for the forwarding database | JUNOS 9.2R1 | JUNOS 9.4R1 |
| | Graceful Routing Engine switchover (GRES) for port security | JUNOS 9.2R1 | JUNOS 9.6R1 |
| | Link aggregation control protocol (LACP) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Link aggregation control protocol (LACP) support for dual-homing applications in data centers | JUNOS 10.0R1 | |
| | Link aggregation groups (LAGs) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Link aggregation groups (LAGs) over Virtual Chassis ports (VCPs) | JUNOS 9.6R1 | Not applicable |
| | Redundant trunk groups | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Virtual Chassis <ul style="list-style-type: none"> ■ Atomic software upgrade ■ Fast failover ■ Split and merge | JUNOS 9.3R2 | Not applicable |
| | Virtual Chassis <ul style="list-style-type: none"> ■ Automatic software update on prospective member switches ■ Front-panel configuration of uplink module ports as Virtual Chassis ports (VCPs) | JUNOS 10.0R1 | Not applicable |
| | Virtual Chassis <ul style="list-style-type: none"> ■ Autoprovisioning of Virtual Chassis ports (VCPs) | JUNOS 9.5R1 | Not applicable |
| | Virtual Chassis <ul style="list-style-type: none"> ■ Support for SFP uplink module ports | JUNOS 9.2R1 | Not applicable |
| | Virtual Router Redundancy Protocol (VRRP) | JUNOS 9.0R2 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|------------------------------|---|---|-------------------------------------|
| | Virtual Router Redundancy Protocol (VRRP) for IPv6 (except authentication-type and authentication key) | JUNOS 10.0R1 | Not supported |
| Interfaces | Digital optical monitoring (DOM) | JUNOS 10.0R1 | JUNOS 10.0R1 |
| | Interface range support | JUNOS 10.0R1 | JUNOS 10.0R1 |
| | Power over Ethernet (PoE) | JUNOS 9.0R2 | Not applicable |
| | VLAN-tagged Layer 3 subinterfaces | JUNOS 9.2R1 | JUNOS 9.4R1 |
| Internet Protocols | IPv4 | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | IPv6 (except multicast protocols) | JUNOS 9.3R2 | Not supported |
| | A separate software license is required for IPv6. See Understanding Software Licenses for the EX Series Switch. | | |
| IP Address Management | DHCP server and relay with option 82 for Layer 2 VLANs | JUNOS 9.3R2 | JUNOS 9.4R1 |
| | DHCPv6 and IPv6 DNS | JUNOS 9.3R2 | Not supported |
| | Dynamic Host Configuration Protocol (DHCP) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Local DHCP server | JUNOS 9.3R2 | JUNOS 9.4R1 |
| | Static addresses | JUNOS 9.0R2 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|----------------------------------|--|---|-------------------------------------|
| Layer 2 Network Protocols | BPDU protection for spanning-tree protocols | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | Extended Q-in-Q VLAN support for multiple S-VLANs per access interface, firewall-filter-based VLAN assignment, and routed VLAN interfaces (RVIs) | JUNOS 9.6R1 | Not supported |
| | GARP VLAN Registration Protocol (GVRP) | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | Layer 2 protocol tunneling (L2PT) | JUNOS 10.0 | Not supported |
| | Link Layer Discovery Protocol (LLDP) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) with voice over IP (VoIP) integration | JUNOS 9.0R2 | Not supported |
| | Loop protection for spanning-tree protocols | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | Multiple VLAN Registration Protocol (MVRP) | JUNOS 10.0R1 | JUNOS 10.0R1 |
| | Private VLANs (PVLANS) | JUNOS 9.3R2 | Not supported |
| | Q-in-Q tunneling | JUNOS 9.3R2 | Not supported |
| | Root protection for spanning-tree protocols | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | Routed VLAN interfaces (RVIs) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Spanning tree: <ul style="list-style-type: none"> ■ Spanning Tree Protocol (STP) ■ Rapid Spanning Tree Protocol (RSTP) ■ Multiple Spanning Tree Protocol (MSTP) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Spanning tree: <ul style="list-style-type: none"> ■ VLAN Spanning Tree Protocol (VSTP) | JUNOS 9.4R1 | JUNOS 9.6R1 |
| | Storm control | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | Unknown Layer 2 unicast forwarding | JUNOS 9.3R2 | JUNOS 10.0R1 |
| | Virtual routing and forwarding (VRF)—virtual routing instances | JUNOS 9.2R1 | JUNOS 9.6R1 |
| | Virtual routing and forwarding (VRF)—virtual routing instances for multicast traffic | JUNOS 10.0R1 | JUNOS 10.0R1 |
| | VLAN ID translation | JUNOS 10.0R1 | Not supported |
| | VLAN range | JUNOS 9.2R1 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|--|--|--|-------------------------------|
| Layer 3 Protocols | Bidirectional Forwarding Detection (BFD) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Border Gateway Protocol (BGP) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | A separate software license is required for BGP and MBGP. See Understanding Software Licenses for the EX Series Switch. | | |
| | Intermediate System-to-Intermediate System (IS-IS) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | A separate software license is required for IS-IS. See Understanding Software Licenses for the EX Series Switch. | | |
| | IGMPv1 and IGMPv2 | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | IGMPv3 | JUNOS 9.3R2 | JUNOS 9.4R1 |
| | Internet Group Management Protocol (IGMP) | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | IPv6 protocols: Open Shortest Path First version 3 (OSPFv3), RIPng, IS-IS for IPv6, IPv6 BGP | JUNOS 9.3R2 | Not supported |
| | Jumbo frames on routed VLAN interfaces (RVIs) | JUNOS 9.4R1 | JUNOS 9.4R1 |
| | Multicast Source Discovery Protocol (MSDP) | JUNOS 9.4R1 | JUNOS 9.4R1 |
| | See the <i>JUNOS Software Routing Protocols Guide</i> at http://www.juniper.net/techpubs/software/junos/junos100/index.html . | | |
| | OSPF Multitopology Routing (MT-OSPF) | JUNOS 9.5R1 | JUNOS 9.5R1 |
| | See the <i>JUNOS Software Routing Protocols Guide</i> at http://www.juniper.net/techpubs/software/junos/junos100/index.html . | | |
| OSPFv2 | JUNOS 9.0R2 | JUNOS 9.4R1 | |
| Protocol Independent Multicast dense mode (PIM DM) | JUNOS 9.2R1 | JUNOS 9.4R1 | |
| See the <i>JUNOS Software Multicast Configuration Guide</i> at http://www.juniper.net/techpubs/software/junos/junos100/index.html . | | | |
| Protocol Independent Multicast source specific multicast (PIM SSM) | JUNOS 9.2R1 | Not supported | |
| See the <i>JUNOS Software Multicast Configuration Guide</i> at http://www.juniper.net/techpubs/software/junos/junos100/index.html . | | | |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|------------------|---|---|-------------------------------------|
| | Protocol Independent Multicast sparse mode (PIM SM) See the <i>JUNOS Software Multicast Configuration Guide</i> at http://www.juniper.net/techpubs/software/junos/junos100/index.html . | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Routing Information Protocol version 1 (RIPv1) and RIPv2 | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Single-source multicast | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Static routes | JUNOS 9.0R2 | JUNOS 9.4R1 |
| Multicast | IGMP snooping with routed VLAN interfaces (RVIs) | JUNOS 9.2R1 | JUNOS 9.4R1 |
| | IGMPv3 snooping | JUNOS 9.6R1 | JUNOS 9.6R1 |
| | Multicast VLAN registration (MVR) | JUNOS 9.6R1 | Not supported |
| MPLS | MPLS with RSVP-based label switched paths (LSPs) and MPLS-based circuit cross-connects (CCCs) A separate software license is required for MPLS. See Understanding Software Licenses for the EX Series Switch. | JUNOS 9.5R1 | Not supported |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|--|--|---|-------------------------------------|
| Network Management and Monitoring | Class of service (CoS)—Class-based queuing with prioritization | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Class of service (CoS)—DSCP, IEEE 801 .p, and IP precedence packet rewrites are enabled on routed VLAN interfaces (RVIs). | JUNOS 9.5R1 | Not supported |
| | Class of service (CoS)—Interface-specific classifiers on routed VLAN interfaces (RVIs) | JUNOS 9.4R1 | Not supported |
| | Class of service (CoS) multidestination | Not applicable | JUNOS 9.5R1 |
| | Class-of-service (CoS) support on LAGs | JUNOS 9.2R1 | JUNOS 9.4R1 |
| | Class-of-service (CoS) support on routed VLAN interfaces (RVIs) | JUNOS 9.4R1 | JUNOS 9.4R1 |
| | Ethernet OAM link fault management (LFM) | JUNOS 9.4R1 | JUNOS 10.0R1 |
| | Interface-specific CoS rewrite rules | JUNOS 9.4R1 | Not supported |
| | JUNOS EZQoS for CoS | JUNOS 9.3R2 | JUNOS 9.4R1 |
| | Policing | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Port shaping and queue shaping | JUNOS 9.3R2 | Not supported |
| | Port mirroring | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Port mirroring enhancements <ul style="list-style-type: none"> ■ Multiple VLAN support ■ Layer 3 interface support | JUNOS 9.5R1 | JUNOS 9.5R1 |
| | Port mirroring enhancements <ul style="list-style-type: none"> ■ Support for setting ingress-only and egress-only attributes on members of a VLAN to avoid the flooding of mirrored traffic to the member interfaces of a VLAN in the intermediate switch | JUNOS 10.0R1 | Not supported |
| | RMON | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Real-time performance monitoring (RPM) | JUNOS 9.3R2 | Not supported |
| | sFlow monitoring technology | JUNOS 9.3R2 | JUNOS 10.0R1 |
| | Simple Network Management Protocol version 1 (SNMPv1), SNMPv2, and SNMPv3 | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | System snapshot | JUNOS 10.0R1 | JUNOS 10.0R1 |

Table 1: Summary of Software Features Available on EX Series Switches *(continued)*

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|------------------|----------------------|---|-------------------------------------|
| | Transparent bridging | JUNOS 9.0R2 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|------------------|--|--|-------------------------------|
| Security | 802.1X authentication | JUNOS 9.0R2 | Not supported |
| | Denial-of-service (DoS) and distributed DoS (DDoS) protection | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Dynamic allocation of TCAM memory to firewall filters | JUNOS 10.0R1 | Not supported |
| | Dynamic firewall filters for 802.1X authentication | JUNOS 9.0R2 | Not supported |
| | Filter-based forwarding | JUNOS 9.4R1 | JUNOS 9.6R1 |
| | Firewall filters and rate limiting | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Firewall filters on LAGs | JUNOS 9.0R2 | JUNOS 10.0R1 |
| | Firewall filter on loopback interface | JUNOS 9.2R1 | JUNOS 9.6R1 |
| | Firewall filter processing points, additional | JUNOS 9.3R2 | Not applicable |
| | MAC-based VLAN | JUNOS 9.2R1 | Not supported |
| | MAC RADIUS authentication | JUNOS 9.3R2 | Not supported |
| | Port security: ■ DHCP option 82 | JUNOS 9.3R2 | Not supported |
| | Port security: ■ DHCP snooping ■ Dynamic ARP inspection (DAI) ■ MAC limiting ■ MAC move limiting | JUNOS 9.0R2 | Not supported |
| | Port security: ■ IP source guard | JUNOS 9.2R1 | Not supported |
| | Port security: ■ Persistent storage for DHCP snooping | JUNOS 9.4R1 | Not supported |
| | Port security: ■ Static ARP support | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Port security and storm control: ■ Automatic recovery for port error disable conditions | JUNOS 9.6R1 | JUNOS 10.0R1 |
| | Proxy ARP ■ Restricted proxy ARP | JUNOS 10.0R1 | JUNOS 10.0R1 |

Table 1: Summary of Software Features Available on EX Series Switches *(continued)*

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|------------------|---------------------------------------|---|-------------------------------------|
| | Proxy ARP ■ Unrestricted proxy ARP | JUNOS 9.6R1 | Not supported |
| | Server fail fallback | JUNOS 9.3R2 | JUNOS 9.4R1 |
| | TACACS + | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | Unicast reverse-path forwarding (RPF) | JUNOS 9.3R2 | JUNOS 9.4R1 |

Table 1: Summary of Software Features Available on EX Series Switches (continued)

| Feature Category | Feature | First Release EX3200 and EX4200 Switches | First Release EX8200 Switches |
|---|--|--|-------------------------------|
| System Management | Autoinstallation | JUNOS 9.4R1 | Not supported |
| | IP directed broadcast | JUNOS 9.4R1 | JUNOS 9.4R1 |
| | JUNOS command-line interface (CLI)—For switch configuration and management through the console, Telnet, SSH, or J-Web CLI editor | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | J-Web interface, for switch configuration and management | JUNOS 9.0R2 | JUNOS 9.4R1 |
| | J-Web interface enhancements: <ul style="list-style-type: none"> ■ The dashboard displays the DC power supply. ■ The Monitoring Chassis Information page displays details about the DC power supply. ■ The Virtual Chassis Monitoring page displays details of Virtual Chassis port (VCP) error and drop counts, VCP maximum bandwidth, and VCP actual bandwidth. | JUNOS 9.4R1 | Not applicable |
| | J-Web interface enhancements: <ul style="list-style-type: none"> ■ The Interface Configuration page displays details about port role configuration. ■ The Link Aggregation Configuration page supports aggregating interfaces with any speed setting. ■ Configuring spanning-tree protocols, GVRP, IGMP snooping, and redundant trunk groups is supported. ■ Monitoring Ethernet switching, spanning-tree protocols, GVRP, and IGMP snooping is supported. ■ Setting up real-time performance monitoring (RPM) and viewing monitoring results is supported. | JUNOS 9.5R1 | JUNOS 9.5R1 |
| | J-Web license-management tool | JUNOS 9.1R1 | JUNOS 9.4R1 |
| | J-Web Port Troubleshooting tool | JUNOS 9.2R1 | JUNOS 9.4R1 |
| | Online insertion and removal (OIR) of uplink modules | JUNOS 10.0R1 | Not supported |
| | Platform-specific JUNOS Software installation packages—EX Series switches have specific installation packages for each family of switches. Names of the installation packages include the switch family name. | JUNOS 9.4R1 | JUNOS 9.4R1 |
| Power over Ethernet (PoE) power management mode | JUNOS 9.3R2 | Not supported | |
| Related Topics | <ul style="list-style-type: none"> ■ Features in JUNOS Software for EX-series Switches, Release 9.2 ■ New Features in JUNOS Software for EX-series Switches, Release 9.3 ■ New Features in JUNOS Software for EX-series Switches, Release 9.4 | | |

- New Features in JUNOS Software for EX-series Switches, Release 9.5
- New Features in JUNOS Release 10.0 for EX Series Switches
- EX3200 and EX4200 Switches Hardware Overview
- EX8208 Switch Hardware Overview
- EX8216 Switch Hardware Overview
- High Availability Features for EX Series Switches Overview
- Layer 3 Protocols Supported on EX Series Switches
- Layer 3 Protocols Not Supported on EX Series Switches

Understanding Software Infrastructure and Processes

Each switch runs the Juniper Networks JUNOS Software for Juniper Networks EX Series Ethernet Switches on its general-purpose processors. JUNOS Software includes processes for Internet Protocol (IP) routing and for managing interfaces, networks, and the chassis.

The JUNOS Software runs on the Routing Engine. The Routing Engine kernel coordinates communication among the JUNOS Software processes and provides a link to the Packet Forwarding Engine.

With the J-Web interface and the command-line interface (CLI) to the JUNOS Software, you configure switching features and routing protocols and set the properties of network interfaces on your switch. After activating a software configuration, use either the J-Web or CLI user interface to monitor the switch, manage operations, and diagnose protocol and network connectivity problems.

- Routing Engine and Packet Forwarding Engine on page 15
- JUNOS Software Processes on page 16

Routing Engine and Packet Forwarding Engine

A switch has two primary software processing components:

- Packet Forwarding Engine—Processes packets; applies filters, routing policies, and other features; and forwards packets to the next hop along the route to their final destination.
- Routing Engine—Provides three main functions:
 - Creates the packet forwarding switch fabric for the switch, providing route lookup, filtering, and switching on incoming data packets, then directing outbound packets to the appropriate interface for transmission to the network
 - Maintains the routing tables used by the switch and controls the routing protocols that run on the switch.
 - Provides control and monitoring functions for the switch, including controlling power and monitoring system status.

JUNOS Software Processes

The JUNOS Software running on the Routing Engine and Packet Forwarding Engine consists of multiple processes that are responsible for individual functions.

The separation of functions provides operational stability, because each process accesses its own protected memory space. In addition, because each process is a separate software package, you can selectively upgrade all or part of the JUNOS Software, for added flexibility.

Table 2 on page 16 describes the primary JUNOS Software processes.

Table 2: JUNOS Software Processes

| Process | Name | Description |
|----------------------------|----------|--|
| Chassis process | chassisd | <p>Detects hardware on the system that is used to configure network interfaces.</p> <p>Monitors the physical status of hardware components and field-replaceable units (FRUs), detecting when environment sensors such as temperature sensors are triggered.</p> <p>Relays signals and interrupts—for example, when devices are taken offline, so that the system can close sessions and shut down gracefully.</p> |
| Ethernet switching process | eswd | <p>Handles Layer 2 switching functionality such as MAC address learning, Spanning Tree protocol and access port security. The process is also responsible for managing Ethernet switching interfaces, VLANs, and VLAN interfaces.</p> <p>Manages Ethernet switching interfaces, VLANs, and VLAN interfaces.</p> |
| Forwarding process | pfem | <p>Defines how routing protocols operate on the switch. The overall performance of the switch is largely determined by the effectiveness of the forwarding process.</p> |
| Interface process | dcd | <p>Configures and monitors network interfaces by defining physical characteristics such as link encapsulation, hold times, and keepalive timers.</p> |
| Management process | mgd | <p>Provides communication between the other processes and an interface to the configuration database.</p> <p>Populates the configuration database with configuration information and retrieves the information when queried by other processes to ensure that the system operates as configured.</p> <p>Interacts with the other processes when commands are issued through one of the user interfaces on the switch.</p> <p>If a process terminates or fails to start when called, the management process attempts to restart it a limited number of times to prevent thrashing and logs any failure information for further investigation.</p> |
| Routing protocol process | rpd | <p>Defines how routing protocols such as RIP, OSPF, and BGP operate on the device, including selecting routes and maintaining forwarding tables.</p> |

Related Topics ■ For more information about processes, see the *JUNOS Network Operations Guide* at <http://www.juniper.net/techpubs/software/junos/junos90/index.html>.

- For more information about basic system parameters, supported protocols, and software processes, see *JUNOS System Basics Configuration Guide* at <http://www.juniper.net/techpubs/software/junos/junos94/index.html>.

Chapter 2

Alarm Types and Severity Levels on EX Series Switches

- Understanding Alarm Types and Severity Levels on EX Series Switches on page 19
- Checking Active Alarms with the J-Web Interface on page 20
- Monitoring Chassis Alarms for an EX8200 Switch on page 21

Understanding Alarm Types and Severity Levels on EX Series Switches

Before monitoring alarms on the switch, become familiar with the terms defined in Table 3 on page 19.

Table 3: Alarm Terms

| Term | Definition |
|-----------------|---|
| alarm | Signal alerting you to conditions that might prevent normal operation. On a switch, the alarm signal is the yellow ALARM LED lit on the front of the chassis. |
| alarm condition | Failure event that triggers an alarm. |
| alarm severity | Seriousness of the alarm. The level of severity can be either major (red) or minor (yellow). |
| chassis alarm | Predefined alarm triggered by a physical condition on the switch such as a power supply failure, excessive component temperature, or media failure. |
| system alarm | Predefined alarm triggered by a missing rescue configuration or failure to install a license for a licensed software feature. |

Alarm Types

The switch supports these alarms:

- Chassis alarms indicate a failure on the switch or one of its components. Chassis alarms are preset and cannot be modified.
- System alarms indicate a missing rescue configuration. System alarms are preset and cannot be modified, although you can configure them to appear automatically in the J-Web interface display or CLI display.

Alarm Severity Levels

Alarms on an Juniper Networks EX Series Ethernet Switches have two severity levels:

- Major (red)—Indicates a critical situation on the switch that has resulted from one of the following conditions. A red alarm condition requires immediate action.
 - One or more hardware components have failed.
 - One or more hardware components have exceeded temperature thresholds.
 - An alarm condition configured on an interface has triggered a critical warning.
- Minor (yellow or amber)—Indicates a noncritical condition on the switch that, if left unchecked, might cause an interruption in service or degradation in performance. A yellow alarm condition requires monitoring or maintenance.

A missing rescue configuration generates a yellow system alarm.

- Related Topics**
- Checking Active Alarms with the J-Web Interface on page 20
 - Understanding How to Use the J-Web Interface to View System Information

Checking Active Alarms with the J-Web Interface

Purpose Use the monitoring functionality to view alarm information for the EX Series switches including alarm type, alarm severity, and a brief description for each active alarm on the switching platform.

Action To view the active alarms:

1. Select **Monitor > Events and Alarms > View Alarms** in the J-Web interface.
2. Select an alarm filter based on alarm type, severity, description, and date range.
3. Click **Go**.

All the alarms matching the filter are displayed.



NOTE: When the switch is reset, the active alarms are displayed.

Meaning Table 4 on page 20 lists the alarm output fields.

Table 4: Summary of Key Alarm Output Fields

| Field | Values |
|-------|---|
| Type | Category of the alarm: <ul style="list-style-type: none"> ■ Chassis—Indicates an alarm condition on the chassis (typically an environmental alarm such as one related to temperature). ■ System—Indicates an alarm condition in the system. |

Table 4: Summary of Key Alarm Output Fields (continued)

| Field | Values |
|-------------|--|
| Severity | Alarm severity—either major (red) or minor (yellow). |
| Description | Brief synopsis of the alarm. |
| Time | Date and time when the failure was detected. |

- Related Topics**
- Monitoring System Log Messages on page 25
 - Dashboard for EX Series Switches
 - Understanding Alarm Types and Severity Levels on EX Series Switches on page 19

Monitoring Chassis Alarms for an EX8200 Switch

Purpose This document provides information on chassis alarm conditions, and how you should respond when a certain chassis alarm is seen on your switch.

Various conditions related to the chassis components trigger yellow and red alarms. You cannot configure these conditions. See “Understanding Alarm Types and Severity Levels on EX Series Switches” on page 19.

Action You can monitor chassis alarms by watching the ALM chassis status LED and using the LCD panel to gather information about the alarm. See Chassis Status LEDs in an EX8200 Switch and LCD Panel in an EX8200 Switch.

To display switch chassis alarms in the CLI, use the following command

```
user@host> show chassis alarms
```

The command output displays the number of alarms currently active, the time when the alarm began, the severity level, and an alarm description. Note the date and time of an alarm so that you can correlate it with error messages in the messages system log file.

You can also monitor chassis alarms using the J-Web interface. See “Checking Active Alarms with the J-Web Interface” on page 20.

Table 1 lists some of the chassis alarms that an EX8200 switch can generate.

Table 5: Chassis Alarms for EX8200 Switches

| Component | Alarm Condition | Remedy | Severity | Additional Information |
|-----------|-----------------|--------|----------|------------------------|
|-----------|-----------------|--------|----------|------------------------|

Table 5: Chassis Alarms for EX8200 Switches (continued)

| | | | | |
|--------------|--|---|------------|--|
| Fan tray | The fan tray has been removed from the chassis. | Install the fan tray. | Yellow/Red | <p>The switch will eventually get too hot to operate if a fan tray is removed. Temperature alarms will follow.</p> <p>This alarm is expected during fan tray removal and installation.</p> |
| Fan tray | One or more fans in a fan tray is spinning below the required speed. | Replace the fan tray. | Red | Individual fans cannot be replaced; you must replace the fan tray. |
| Fan tray | The fan tray's internal connection to the switch is not functioning properly. | <p>Remove and reinsert the fan tray.</p> <p>If removing and reinserting the fan tray does not resolve the problem, reboot the switch.</p> | Red | The switch will eventually get too hot to operate if a fan tray is not operating. Temperature alarms will follow. |
| Power supply | A power supply slot that contained a power supply at bootup is now empty. | Install a power supply in the empty power supply slot. | Yellow | <p>You can ignore this alarm in cases in which a power supply slot can remain empty.</p> <p>You will not see this alarm if the switch is booted with an empty power supply slot.</p> <p>This alarm is expected during power supply removal and installation.</p> <p>This alarm can be triggered by a line card insertion. The alarm condition corrects itself when seen for this reason.</p> |
| Power supply | A power supply has failed due to an input or output failure, or due to temperature issues. | Replace the failed power supply. | Red | |
| Power supply | A power supply's internal connection to the switch is not operating properly. | <p>Remove and reinsert the power supply.</p> <p>If removing and reinserting the power supply does not resolve the problem, reboot the switch.</p> | Red | |

Table 5: Chassis Alarms for EX8200 Switches (continued)

| | | | | |
|-------------|--|---|--------|--|
| Temperature | The chassis warm temperature threshold has been exceeded and fan speeds have increased. | Adjust room temperature downward, if possible. Ensure airflow through the switch is unobstructed. | Yellow | The chassis is warm and should be cooled down. The switch is still functioning normally. To monitor temperature: user@switch > show chassis environment To monitor temperature thresholds: user@switch > show chassis temperature-thresholds |
| Temperature | The chassis high temperature threshold has been exceeded and the fans are operating at full speed. | Adjust room temperature downward, if possible. Ensure airflow through the switch is unobstructed. | Red | The chassis is hot and should be cooled down. The switch might still function normally but is close to shutting down if it hasn't already. To monitor temperature: user@switch > show chassis environment To monitor temperature thresholds: user@switch > show chassis temperature-thresholds |
| Temperature | The chassis warm temperature threshold has been exceeded, and one or more fans are not operating properly. The operating fans are running at full speed. | Replace the fan tray that has the faulty fan or fans. Adjust room temperature downward, if possible. Ensure airflow through the switch is unobstructed. | Yellow | The chassis is warm and should be cooled down. The switch is still functioning normally. To monitor temperature: user@switch > show chassis environment To monitor temperature thresholds: user@switch > show chassis temperature-thresholds |

Table 5: Chassis Alarms for EX8200 Switches (continued)

| | | | | |
|---|---|--|---------------|---|
| Temperature | The chassis high temperature threshold has been exceeded, and one or more fans is not operating properly. The operating fans are running at full speed. | <p>Replace the fan tray that has the faulty fan or fans.</p> <p>Adjust room temperature downward, if possible.</p> <p>Ensure airflow through the switch is unobstructed.</p> | Red | <p>The chassis is hot and should be cooled down. The switch might still function normally but is close to shutting down if it hasn't already.</p> <p>To monitor temperature:</p> <pre>user@switch > show chassis environment</pre> <p>To monitor temperature thresholds:</p> <pre>user@switch > show chassis temperature-thresholds</pre> |
| Temperature | The temperature sensor on a hardware component has failed. | Replace the hardware component. | Yellow | |
| Routing Engine (RE), Switch Fabric and Routing Engine (SRE), or Switch Fabric (SF) module | The RE, SRE, or SF module has failed. | The RE, SRE, or SF module must be replaced. | Red | |
| Link Status | The link to the network is down. | Check network connectivity. | Red or Yellow | The network link is disabled by default, so you might see this alarm before you connect the switch to the network. |

- Related Topics**
- Checking Active Alarms with the J-Web Interface on page 20
 - Chassis Status LEDs in an EX8200 Switch

Chapter 3

System Log Messages in EX Series Switches

- Monitoring System Log Messages on page 25

Monitoring System Log Messages

Purpose Use the monitoring functionality to filter and view system log messages for EX Series switches.

Action To view events in the J-Web interface, select **Monitor > Events and Alarms > View Events**.

Apply a filter or a combination of filters to view messages. You can use filters to display relevant events. Table 6 on page 25 describes the different filters, their functions, and the associated actions.

To view events in the CLI, enter the following command:

```
show log
```

Table 6: Filtering System Log Messages

| Field | Function | Your Action |
|-----------------|--|---|
| System Log File | <p>Specifies the name of a system log file for which you want to display the recorded events.</p> <p>Lists the names of all the system log files that you configure.</p> <p>By default, a log file, <code>messages</code>, is included in the <code>/var/log/</code> directory.</p> | <p>To specify events recorded in a particular file, select the system log filename from the list—for example, <code>messages</code>.</p> <p>Select Include archived files to include archived files in the search.</p> |
| Process | <p>Specifies the name of the process generating the events you want to display.</p> <p>To view all the processes running on your system, enter the CLI command <code>show system processes</code>.</p> <p>For more information about processes, see the <i>JUNOS Software Installation and Upgrade Guide</i> at www.juniper.net/techpubs</p> | <p>To specify events generated by a process, type the name of the process.</p> <p>For example, type <code>mgd</code> to list all messages generated by the management process.</p> |

Table 6: Filtering System Log Messages (continued)

| Field | Function | Your Action |
|-----------------|--|---|
| Date From To | <p>Specifies the time period in which the events you want displayed are generated.</p> <p>Displays a calendar that allows you to select the year, month, day, and time. It also allows you to select the local time.</p> <p>By default, the messages generated in the last hour are displayed. End Time shows the current time and Start Time shows the time one hour before End Time.</p> | <p>To specify the time period:</p> <ul style="list-style-type: none"> ■ Click the Calendar icon and select the year, month, and date—for example, 02/10/2007. ■ Click the Calendar icon and select the year, month, and date—for example, 02/10/2007. ■ Click to select the time in hours, minutes, and seconds. |
| Event ID | <p>Specifies the event ID for which you want to display the messages.</p> <p>Allows you to type part of the ID and completes the remainder automatically.</p> <p>An event ID, also known as a system log message code, uniquely identifies a system log message. It begins with a prefix that indicates the generating software process or library.</p> | <p>To specify events with a specific ID, type the partial or complete ID—for example, TFTPD_AF_ERR.</p> |
| Description | <p>Specifies text from the description of events that you want to display.</p> <p>Allows you to use regular expressions to match text from the event description.</p> <p>NOTE: Regular expression matching is case-sensitive.</p> | <p>To specify events with a specific description, type a text string from the description with regular expression.</p> <p>For example, type ^Initial* to display all messages with lines beginning with the term <i>Initial</i>.</p> |
| Search | <p>Applies the specified filter and displays the matching messages.</p> | <p>To apply the filter and display messages, click Search.</p> |

Meaning Table 7 on page 27 describes the Event Summary fields.



NOTE: By default, the View Events page in the J-Web interface displays the most recent 25 events, with severity levels highlighted in different colors. After you specify the filters, Event Summary displays the events matching the specified filters. Click the **First**, **Next**, **Prev**, and **Last** links to navigate through messages.

Table 7: Viewing System Log Messages

| Field | Function | Additional Information |
|-------------------|--|--|
| Process | Displays the name and ID of the process that generated the system log message. | The information displayed in this field is different for messages generated on the local Routing Engine than for messages generated on another Routing Engine (on a system with two Routing Engines installed and operational). Messages from the other Routing Engine also include the identifiers re0 and re1 to identify the Routing Engine. |
| Severity | <p>Severity level of a message is indicated by different colors.</p> <ul style="list-style-type: none"> ■ Unknown—Gray—Indicates no severity level is specified. ■ Debug/Info/Notice—Green—Indicates conditions that are not errors but are of interest or might warrant special handling. ■ Warning—Yellow—Indicates conditions that warrant monitoring. ■ Error—Blue—Indicates standard error conditions that generally have less serious consequences than errors in the emergency, alert, and critical levels. ■ Critical—Pink—Indicates critical conditions, such as hard-drive errors. ■ Alert—Orange—Indicates conditions that require immediate correction, such as a corrupted system database. ■ Emergency—Red—Indicates system panic or other conditions that cause the switch to stop functioning. | A severity level indicates how seriously the triggering event affects switch functions. When you configure a location for logging a facility, you also specify a severity level for the facility. Only messages from the facility that are rated at that level or higher are logged to the specified file. |
| Event ID | <p>Displays a code that uniquely identifies the message.</p> <p>The prefix on each code identifies the message source, and the rest of the code indicates the specific event or error.</p> | <p>The event ID begins with a prefix that indicates the generating software process.</p> <p>Some processes on a switch do not use codes. This field might be blank in a message generated from such a process.</p> <p>An event can belong to one of the following type categories:</p> <ul style="list-style-type: none"> ■ Error—Indicates an error or failure condition that might require corrective action. ■ Event—Indicates a condition or occurrence that does not generally require corrective action. |
| Event Description | Displays a more detailed explanation of the message. | |
| Time | Displays the time at which the message was logged. | |

Related Topics ■ Checking Active Alarms with the J-Web Interface on page 20

- Understanding Alarm Types and Severity Levels on EX Series Switches on page 19

Chapter 4

Troubleshooting

- Troubleshooting Loss of the Root Password on page 29

Troubleshooting Loss of the Root Password

Problem If you forget the root password for the switch, you can use the password recovery procedure to reset the root password.

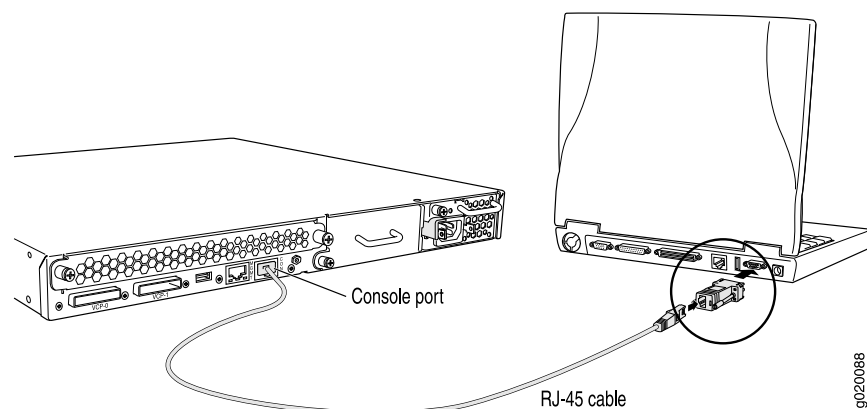


NOTE: You need physical access to the switch to recover the root password.

Solution To recover the root password:

1. Power off your switch by unplugging the power cord or turning off the power at the wall switch.
2. Insert one end of the Ethernet cable into the serial port on the management device and connect the other end to the console port on the back of the switch. See Figure 1 on page 29

Figure 1: Connecting to the Console Port on the EX Series Switch



3. On the management device, start your asynchronous terminal emulation application (such as Microsoft Windows Hyperterminal) and select the appropriate COM port to use (for example, COM1).
4. Configure the port settings as follows:

- Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None
5. Power on your switch by plugging in the power cord or turning on the power at the wall switch.
 6. When the following prompt appears, press the Spacebar to access the switch's bootstrap loader command prompt:

```
Hit [Enter] to boot immediately, or space bar for command prompt.
Booting [kernel] in 1 second...
```

7. At the following prompt, type **boot -s** to start up the system in single-user mode:
loader> **boot -s**
8. At the following prompt, type **recovery** to start the root password recovery procedure:
Enter full path name of shell or 'recovery' for root password recovery or RETURN for /bin/sh: **recovery**

A series of messages describe consistency checks, mounting of filesystems, and initialization and checkout of management services. Then the CLI prompt appears.

9. Enter configuration mode in the CLI:
user@switch> **configure**
10. Set the root password. For example:
user@switch# **set system root-authentication plain-text-password**
11. At the following prompt, enter the new root password. For example:
New password: **juniper1**

```
Retype new password:
```

12. At the second prompt, reenter the new root password.
13. If you are finished configuring the network, commit the configuration.
root@switch# **commit**

```
commit complete
```

14. Exit configuration mode in the CLI.
root@switch# **exit**
15. Exit operational mode in the CLI.
root@switch> **exit**
16. At the prompt, enter **y** to reboot the switch.
Reboot the system? [y/n] **y**

- Related Topics**
- Connecting and Configuring an EX Series Switch (CLI Procedure)
 - Connecting and Configuring an EX Series Switch (J-Web Procedure)
 - For information about configuring an encrypted root password, configuring SSH keys to authenticate root logins, and configuring special requirements for plain-text passwords, see the *JUNOS System Basics Configuration Guide* at <http://www.juniper.net/techpubs/software/junos/junos90/>.

