

# About This Guide

This *Command Reference Guide* provides all the commands available to configure your system. Refer to the *Configuration Guides* for detailed information on configuring your ERX system.



**Note:** If the information in the latest Release Notes differs from the information in this guide, follow the Release Notes.

Your ERX system is shipped with the latest system software installed. If you need to install a future release or reinstall the system software, refer to the procedures in *ERX Installation and User Guide, Appendix E, Installing ERX System Software*.

## ERX Edge Routers

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Four models of ERX edge router are available:

- ERX-1440 system
- ERX-1400 system
- ERX-705 system
- ERX-700 system

All models use the same software. For information about the differences between the models, see *ERX Installation and User Guide, Chapter 1, ERX System Overview*.

In the ERX documentation, the term ERX-1400 series refers to both the ERX-1440 system and the ERX-1400 system. Similarly, the term ERX-700 series refers to both the ERX-705 system and the ERX-700 system. The terms ERX-1440 system, ERX-1400 system, ERX-705 system, and ERX-700 system refer to the specific models.




## Audience

This guide is intended for experienced system and network specialists who will configure a Juniper Networks ERX system in an Internet access environment.

## Conventions

Table 1, Table 2, and Table 3 list all the conventions used in the ERX documentation. Table 1 defines notice icons. Table 2 shows text conventions used throughout the book, except for command syntax. Table 3 provides command syntax conventions used primarily in the *ERX Command Reference Guide*. For more information about command syntax, see *ERX System Basics Configuration Guide, Chapter 1, Planning Your Network*.

**Table 1** Notice icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates that you may risk losing data or damaging your hardware.
	Warning	Alerts you to the risk of personal injury.

**Table 2** Text conventions (except for command syntax)

Convention	Description	Examples
<b>Bold typeface</b>	Represents commands and keywords in text.	<ul style="list-style-type: none"> <li>Command example: Issue the <b>clock source</b> command.</li> <li>Keyword example: Specify the keyword <b>exp-msg</b>.</li> </ul>
<b>Bold Courier typeface</b>	Represents text that the user must type.	<b>user input</b>
Key name in angle brackets	Indicates the name of a key on the keyboard.	Press <Enter>.
Key names linked with a plus sign (+) in angle brackets.	Indicates that you must press two or more keys simultaneously.	Press <Ctrl+B>.
Plain Courier typeface	Represents information as displayed on your terminal's screen.	<pre>host1#show ip ospf 2 Routing Process OSPF 2 with Router ID 5.5.0.250 Router is an Area Border Router (ABR)</pre>

**Table 2** Text conventions (except for command syntax) (continued)

Convention	Description	Examples
<i>Italics</i>	<ul style="list-style-type: none"> <li>Emphasize words.</li> <li>Identify variables.</li> <li>Identify chapter, appendix, and book names.</li> </ul>	<ul style="list-style-type: none"> <li>There are two levels of access, <i>user</i> and <i>privileged</i>.</li> <li><i>clusterId</i>, <i>ipAddress</i>.</li> <li><i>Appendix A, System Specifications</i>.</li> </ul>

**Table 3** Syntax conventions in *Command Reference Guide*

Convention	Description	Examples
Words in plain text	Represent keywords.	terminal length
Words in italics	Represent variables.	<i>mask</i> , <i>accessListName</i>
Words separated by the   symbol	Represent a choice to select one keyword or variable to the left or right of this symbol. (The keyword or variable may be either optional or required.)	diagnostic   line
Words enclosed in [ brackets ]	Represent optional keywords or variables.	[ internal   external ]
Words enclosed in [ brackets ]*	Represent optional keywords or variables that can be entered more than once.	[ level1   level2   l1 ]*
Words enclosed in { braces }	Represent required keywords or variables.	{ permit   deny } { in   out } { clusterId   ipAddress }

### *Using the no vs. the default Version of Commands*

Most system configuration commands have a **no** version, which you can use to negate a command (or a portion of it specified by an optional keyword) or restore its default setting. When you use a command *without* the keyword **no**, you can reenable a disabled feature or override a default setting. You have the option of using the **default** keyword whenever the **no** keyword is also a choice; simply enter the keyword **default** instead of **no**.

In most cases, when you execute the **default** version of a command, it produces the exact results as the **no** version. There are some commands for which the **default** version yields a different result than the **no** version.

Commands for which the **default** behavior differs from the **no** behavior are clearly identified in this guide. Unless otherwise specified, therefore, the **default** command is identical to the **no** command and will neither be documented nor discussed.

The syntax for each **no** command is described in this guide. Some commands do not have a **no** version; this is indicated in the individual

command descriptions except for the **show** commands, none of which has a **no** version.

The CLI can act on **no** versions of commands when you have entered sufficient information to distinguish the command syntactically, and ignores all subsequent input on that line.

To be compatible with some non-ERX implementations, the **no** versions of commands will accept the same options as the affirmative version of the commands. The CLI ignores the optional input if it has no effect on the command behavior. If using the option changes the behavior of the **no** version, the individual command entry in this guide describes the difference in behavior.

### *Filtering show Commands*

You have access to a variety of **show** commands that display system and protocol information. You can filter the output of a **show** command by specifying `|` (the UNIX pipe symbol), one of the following keywords, and either a case-sensitive text string or a regular expression.

- **begin** – displays output beginning with the first line that contains the text string or regular expression
- **include** – displays output lines that contain the text string or regular expression and excludes lines that do not contain the text string or regular expression
- **exclude** – displays output lines that do not contain the text string or regular expression and excludes lines that do contain the text string or regular expression

For a list of regular expressions, see *ERX Routing Protocols Configuration Guide, Vol. 1, Chapter 1, Configuring Routing Policy*.

You can press `<Ctrl+C>` to interrupt the **show** command output.



**Note:** The system does not recognize beginning spaces of the text string. For example, if you enter the **include** option with “IP” as the text string on which to filter, the system ignores the space and displays lines that include words such as “RIP”.

**Example** In the following example, the output display consists only of lines that contain the string *ip*. The system omits all other lines of the output from the display because none of them contain the string *ip*.

```
host1#show config include-defaults | include ip
! Configuration script generated on FRI NOV 12 1999 16:56:41
  UTC
  ip address 192.168.1.229 255.255.255.0
```

```

ip rip receive version 2 1
ip rip send version 1
ip rip authentication mode md5 17
ip rip authentication key
ip route 10.6.0.0 255.255.0.0 192.168.1.1
ip route 10.10.0.0 255.255.0.0 192.168.1.1
ip route 10.10.0.166 255.255.255.255 192.168.1.1
ip debounce-time 0
router rip

```

### Interface Types and Specifiers

Many commands take the variables *interfaceType* and *interfaceSpecifier*. Some commands support all types of interfaces, whereas other commands support only certain types of interfaces. The interface specifier depends on the type of interface. Table 4 shows the interface specifiers for each type of interface.

**Table 4** Interface types and specifiers

Interface Type	Description	Interface Specifier	Example
atm	ATM interface	<i>slot/port</i> [ <i>.subinterface</i> ] <ul style="list-style-type: none"> <li><i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li><i>port</i> – port number on the I/O module</li> <li><i>subinterface</i> – number of the subinterface in the range 1–4294967293</li> </ul>	atm 3/2.6
fastEthernet	IEEE 802.3 Fast Ethernet (FE) interface	<i>slot/port</i> [ <i>.subinterface1</i> [ <i>.subinterface2</i> ]] <ul style="list-style-type: none"> <li><i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li><i>port</i> – port number on the I/O module</li> <li><i>subinterface1</i> – number of the FE subinterface in the range 1–4294967293; not more than 2 subinterfaces per FE interface.<sup>a</sup></li> <li><i>subinterface2</i> – number of the higher-level subinterface in the range 1–4294967293; not more than 4094 higher-level subinterfaces per FE subinterface<sup>a</sup></li> </ul>	fastEthernet 3/2.6.20

**Table 4** Interface types and specifiers (continued)

Interface Type	Description	Interface Specifier	Example
gigabitEthernet	IEEE 802.3 Gigabit Ethernet (GE) interface	<i>slot/port</i> [ <i>.subinterface1</i> [ <i>.subinterface2</i> ]] <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>subinterface1</i> – number of the GE subinterface in the range 1–4294967293; not more than 2 subinterfaces per GE interface.<sup>a</sup></li> <li>• <i>subinterface2</i> – number of the higher-level subinterface in the range 1–4294967293; not more than 4094 higher-level subinterfaces per GE subinterface.<sup>a</sup></li> </ul>	gigabitEthernet 3/2.6.20
hssi	High-speed serial interface	<i>slot/port</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> </ul>	hssi 3/0
loopback	Loopback interface	<i>integer</i> <ul style="list-style-type: none"> <li>• <i>integer</i> – integer in the range 1–4294967293</li> </ul>	loopback 20
mlframe-relay	Multilink frame relay interface	<i>bundle-name</i> [ <i>.link</i> ] <ul style="list-style-type: none"> <li>• <i>bundle-name</i> – name of the bundle</li> <li>• <i>link</i> – number of the MFR link in the range 1–4294967293</li> </ul>	mlframe-relay boston.1
mlppp	Multilink PPP interface	<i>bundle-name</i> <ul style="list-style-type: none"> <li>• <i>bundle-name</i> – name of the bundle</li> </ul>	mlppp chicago
null	Null interface, which cannot forward or receive traffic	0	null 0
pos	Packet over SONET (POS) interface	<i>slot/port</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> </ul>	pos 3/2
serial	CE1, CT1, CT3, E3-FRAME, T3-FRAME, cOCx/STMx interface, or X.21/V.35 interface	Refer to the individual formats listed below.	

**Table 4** Interface types and specifiers (continued)

Interface Type	Description	Interface Specifier	Example
› CE1/CT1		<i>slot/port.channel-group</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>channel-group</i> – number of the channel group associated with a range of DS0 timeslots on a CE1 or CT1 module; in the range 1–31 for a CE1 module, and 1–24 for a CT1 module</li> </ul>	serial 3/2:20
› CT3		<i>slot/port.channel/subchannel</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>channel</i> - number of a T1 channel on a CT3 module; in the range 1–28</li> <li>• <i>subchannel</i> – number of the channel group associated with a range of DS0 timeslots on a CT3 module; in the range 1–28</li> </ul>	serial 3/2:20/15
› E3/T3 FRAME		<i>slot/port</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> </ul>	serial 3/2

**Table 4** Interface types and specifiers (continued)

Interface Type	Description	Interface Specifier	Example
› cOCx/STMx: unframed E1		<i>slot/port:path-channel/path-payload/ tributary-group/tributary-number/ channelNumber</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>path-channel</i> – number of the STS-1 or STM-0 line in the range 1–2147483648</li> <li>• <i>path-payload</i> – number of the payload within the path</li> <li>• <i>tributary-group</i> – number of the tributary group within the path</li> <li>• <i>tributary-number</i> – number of the tributary within the group</li> <li>• <i>channelNumber</i> – 1 (the system assigns the number one to an unframed E1 channel)</li> </ul>	serial 3/0:10/1/2/2/1
› cOCx/STMx: fractional E1/T1		<i>slot/port:path-channel/path-payload/ tributary-group/tributary-number/ channel-group</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>path-channel</i> – number of the STS-1 or STM-0 line in the range 1–2147483648</li> <li>• <i>path-payload</i> – number of the payload within the path</li> <li>• <i>tributary-group</i> – number of the tributary group within the path</li> <li>• <i>tributary-number</i> – number of the tributary within the group</li> <li>• <i>channel-group</i> – number of a fractional T1 or E1 line</li> </ul>	serial 3/0:10/1/2/2/1

**Table 4** Interface types and specifiers (continued)

Interface Type	Description	Interface Specifier	Example
› cOCx/STMx: unchannelized DS3		<i>slot/port:path-channel/ ds3-channel-number</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>path-channel</i> – number of the STS-1or STM-0 line in the range 1–2147483648</li> <li>• <i>ds3-channel-number</i> – number of a T3 channel</li> </ul>	serial 3/0:1/1
› cOCx/STMx: DS3 channelized to DS0		<i>slot/port:path-channel/ ds3-channel-number/ ds1-channel-number /subchannel-number</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>path-channel</i> – number of the STS-1or STM-0 line in the range 1–2147483648</li> <li>• <i>ds3-channel-number</i> – number of a T3 channel</li> <li>• <i>ds1-channel-number</i> – number of a T1 channel</li> <li>• <i>subchannel-number</i> – number of a fractional T1 channel</li> </ul>	serial 3/0:1/1/10/15
› X.21/V.35		<i>slot/port</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> </ul>	
sonet – line layer	Line layer of a SONET/SDH interface	<i>slot/port</i> <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> </ul>	sonet 3/0

**Table 4** Interface types and specifiers (continued)

Interface Type	Description	Interface Specifier	Example
sonet – path layer	Path layer of a SONET/SDH interface	slot/port:path-channel <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> <li>• <i>path-channel</i> – number of the STS-1 or STM-0 line in the range 1–2147483648</li> </ul>	sonet 3/0:2
sonet – section layer	Section layer of a SONET/SDH interface	slot/port <ul style="list-style-type: none"> <li>• <i>slot</i> – number of the chassis slot in the range 0–6 (ERX-700 series) and 0–13 (ERX-1400 series)</li> <li>• <i>port</i> – port number on the I/O module</li> </ul>	sonet 3/0
tunnel	Tunnel interface	tunnel-type:tunnel-name <ul style="list-style-type: none"> <li>• <i>tunnel-type</i> – type of the tunnel: dvmrp, gre, ipsec, l2tp, or mpls</li> <li>• <i>tunnel-name</i> – name of the tunnel</li> </ul>	tunnel gre:boston

a. See the **interface fastEthernet** command and the **interface gigabitEthernet** command for details on specifying subinterfaces with and without VLANs on Ethernet interfaces.

## Documentation

The *ERX Installation Quick Start* poster is shipped in the box with all new systems. This poster provides the basic procedures to help you get the system up and running quickly.

The document set contains the following books and online resources:

- *ERX Installation and User Guide* – Provides the necessary procedures for getting your system operational, including information on installing, cabling, powering up, configuring your system for management access, and general troubleshooting.
- *ERX System Basics Configuration Guide* – Describes planning and configuring your network, managing the system, passwords, and security, and configuring the system clock and virtual routers.
- *ERX Physical and Link Layers Configuration Guide* – Describes configuring physical and link layer interfaces.
- *ERX Routing Protocols Configuration Guide, Vol. 1* – Provides information about configuring routing policy and configuring IP, IP routing, and IP security.

- *ERX Routing Protocols Configuration Guide, Vol. 2* – Describes BGP Routing, MPLS, and related VPNs.
- *ERX Policy and QoS Configuration Guide* - Provides information about configuring policy management and quality of service (QoS).
- *ERX Broadband Access Configuration Guide* – Provides information about configuring remote access.
- *ERX Command Reference Guide* – Contains important information about all system commands implemented in the system software. Use to look up command descriptions, command syntax, a command's related mode, or a description of a command's parameters. It is intended to be used in conjunction with the *ERX Configuration Guides*.
- *ERX Product Overview Guide* – Gives a thorough overview of the system from a software and hardware perspective. It provides illustrations and configuration examples that present the “big picture.”
- *ERX Release Notes* – Contains information about features, changes, known problems, and limitations. Provides final information that did not make it into the documentation.
- *ERX Online Documentation CD* – Provides an online version of this guide and the documents listed above. The online documents contain numerous links between guides, giving easy access to a vast amount of technical information.

### Abbreviations

A complete list of abbreviations used in this document set, along with their spelled-out terms, is provided in the *ERX System Basics Configuration Guide, Appendix A, Abbreviations and Acronyms*.

## Using the Online Documentation CD

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To use the Online Documentation CD:

- 1 Place the Online Documentation CD in your CD drive.
- 2 Follow the instructions located on the inside cover of your CD jewel case to install Acrobat Reader.
- 3 From the *Documentation* folder on the CD, open the *CDtips.pdf* file for information on using Adobe Acrobat Reader.
- 4 From the *Documentation* folder on the CD, open the *Welcome.pdf* file for access to the documentation set.

## Comments About the Documentation

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