



7450 Ethernet Service Switch
7750 Service Router
7950 Extensible Routing System
Virtualized Service Router
Release 23.7.R1

Guide to Documentation

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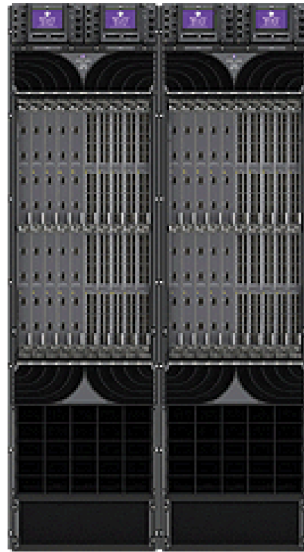
1 About this guide

This guide provides information about the Service Router Operating System (SR OS) user guides available for the 7450 ESS, 7750 SR, 7950 XRS, and VSR. The following figures show the products included under each platform.

Figure 1: 7950 eXtensible Routing System (XRS)



7950 XRS-20



7950 XRS-40



7950 XRS-20e

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Figure 2: 7750 Service Router (SR), 7450 Ethernet Service Switch (ESS), and VSR



2 SR OS documentation suite

The SR OS documentation suite covers the software and hardware features and functionality of the 7450 ESS, 7750 SR, 7950 XRS, and VSR platforms. The documentation suite covers areas such as configuration guidelines, services, routing protocols, troubleshooting methods, and chassis and card installation.

2.1 Software guides

Intended audience:

- A – network architects and designers
- B – installers and hardware maintenance technicians
- C – network technicians, administrators, operators, and service providers

The following tables describe the software guides in this documentation suite and the intended audience for each guide.

Table 1: Software guides

| Document | Description | Intended audience | | |
|---|---|-------------------|---|---|
| | | A | B | C |
| Install and commission | | | | |
| VSR Installation and Setup Guide | Describes Nokia Virtualized Service Router (VSR) system architecture, functional overview, features, and how to install and set up the VSR | ✓ | ✓ | ✓ |
| Virtualized 7250 IXR, 7750 SR, and 7950 XRS Simulator (vSIM) Installation and Setup Guide | Describes how to install and set up the Virtualized 7750 SR and 7950 XRS Simulator (vSIM) | ✓ | — | — |
| System Management | | | | |
| 7450 ESS, 7750 SR, and 7950 XRS Advanced Configuration Guide | Provides advanced configuration solutions and is a supplement to the other guides in this suite | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Basic System Configuration Guide | Describes file system management, boot option file (BOF) configuration, basic system management configuration, node timing, and synchronization functions | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR | Describes how to provision Input/Output Modules (IOMs), XMA Control Modules (XCMs), Media Dependent | ✓ | — | ✓ |

| Document | Description | Intended audience | | |
|--|--|-------------------|---|---|
| | | A | B | C |
| Interface Configuration Guide | Adapters (MDAs), XRS Media Adapters (XMAs), connectors, and ports | | | |
| 7450 ESS, 7750 SR, 7950 XRS and VSR Pay-as-You-Grow Licensing Reference Guide | Describes SR OS Pay-As-You-Grow licensing, including FP4 licensing upgrades | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Router Configuration Guide | Describes logical IP routing interfaces and associated attributes such as IP addresses, as well as IP and MAC-based filtering, Virtual Router Redundancy Protocol (VRRP), and cflowd | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR System Management Guide | Describes system security features, SNMP and NETCONF features, and event and accounting logs; the guide also covers basic tasks such as configuring management access filters, passwords, and user profiles | ✓ | ✓ | ✓ |
| Operate and maintain | | | | |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR MD-CLI Quick Reference Guide | Provides a comparison of the Nokia SR OS Model-Driven Command Line Interface (MD-CLI) with those used by Junos OS and IOS XR | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR MD-CLI User Guide | Provides information about how to use the MD-CLI | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Security Best Practices and Hardening Guide | Provides an overview of the main security features available in SR OS routers along with configuration examples that focus on management, control, and data planes | ✓ | — | ✓ |
| Services | | | | |
| 7750 SR and VSR BNG CUPS User Plane Function Guide | Describes all aspects related to a Broadband Network Gateway (BNG) User Plane Function (UPF) in a BNG Control and User Plane Separation (CUPS) system | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Layer 2 Services and EVPN Guide | Describes Layer 2 service and Ethernet Virtual Private Network (EVPN) functionality and provides examples to configure and implement Virtual Leased Lines (VLLs), Virtual Private LAN Service (VPLS), Provider Backbone Bridging (PBB), and EVPN | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Layer 3 Services Guide: IES and VPRN | Describes Layer 3 service functionality and provides examples to configure and implement Internet Enhanced Services (IES) and Virtual Private Routed Network (VPRN) services | ✓ | — | ✓ |

| Document | Description | Intended audience | | |
|--|--|-------------------|---|---|
| | | A | B | C |
| 7450 ESS, 7750 SR, and VSR Multiservice ISA and ESA Guide | Provides an overview of services provided by integrated service adapters and extended service appliances, such as Application Assurance, IPsec, ad insertion (ADI), and Network Address Translation (NAT), and provides configuration examples | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Quality of Service Guide | Provides an overview of Quality of Service (QoS) policy management and provides configuration examples | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Services Overview Guide | Provides a general overview of functionality provided by the routers and describes how to configure service parameters such as Service Access Points (SAPs), Service Distribution Points (SDPs), customer information, and user services | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, and VSR Triple Play Service Delivery Architecture Guide | Describes the Triple Play Service Delivery Architecture (TPSDA) support and provides examples to configure and implement various protocols and services | ✓ | — | ✓ |
| Routing | | | | |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR MPLS Guide | Provides an overview of Multiprotocol Label Switching (MPLS), Resource Reservation Protocol (RSVP), and Label Distribution Protocol (LDP) and provides configuration examples | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Multicast Routing Protocols Guide | Provides an overview of multicast routing concepts and provides configuration examples for Internet Group Management Protocol (IGMP), Multicast Listener Discovery (MLD), Protocol Independent Multicast (PIM), Multicast Source Discovery Protocol (MSDP), Multipoint LDP, multicast extensions to BGP, and Multicast Connection Admission Control (MCAC) | ✓ | — | ✓ |
| 7750 SR and 7950 XRS Segment Routing and PCE User Guide | Provides an overview of segment routing features with MPLS (SR-MPLS) and IPv6 (SRv6) data path encapsulations and path computation element (PCE) features | ✓ | — | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Unicast Routing Protocols Guide | Provides an overview of unicast routing concepts and provides configuration examples for Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Intermediate-system-to-intermediate-system (IS-IS), and Border Gateway Protocol (BGP) routing protocols; also provides an overview of route policies and configuration examples | ✓ | — | ✓ |
| Command reference | | | | |

| Document | Description | Intended audience | | |
|--|---|-------------------|---|---|
| | | A | B | C |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Classic CLI Command Reference Guide | Describes all classic CLI commands (except for the clear, monitor, show, and tools commands) and their supported values and parameters | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Clear, Monitor, Show, and Tools Command Reference Guide | Describes all clear, monitor, show, and tools commands for both classic and MD-CLI and their supported values and parameters | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR MD-CLI Command Reference Guide | Describes all MD-CLI commands (except for the clear, monitor, show, and tools commands) and their supported values and parameters | ✓ | ✓ | ✓ |
| Technical reference | | | | |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR Acronyms Reference Guide | Provides expansions of acronyms found in the user guides | ✓ | ✓ | ✓ |
| SR BNG TPSDA Python3 API documentation | Describes the APIs BNG Triple Play services used by Python developers to integrate with supported Nokia routers running the SR OS | ✓ | | ✓ |
| 7750 SR and VSR Gx AVPs Reference Guide | Describes Gx Attribute Value Pairs (AVPs) | ✓ | — | ✓ |
| 7750 SR and VSR Gy AVPs Reference Guide | Describes Gy Attribute Value Pairs (AVPs) | ✓ | — | ✓ |
| 7750 SR and VSR Network Interface Shell Configuration and User Guide | Describes the Nokia Network Interface Shell (NISH) system architecture, functional overview, features, and how to install and set up the NISH | ✓ | ✓ | ✓ |
| pySROS API documentation | Describes the APIs for a model-driven management interface used by Python developers to integrate with supported Nokia routers running the SR OS | — | — | ✓ |
| 7450 ESS, 7750 SR, and VSR RADIUS Attributes Reference Guide | Describes all supported RADIUS authentication, authorization, and accounting attributes | ✓ | — | ✓ |
| Monitor and troubleshoot | | | | |
| SR OS Log Events Guide | Provides general information about log events | ✓ | ✓ | ✓ |
| 7450 ESS, 7750 SR, 7950 XRS, and VSR OAM and Diagnostics Guide | Describes how to configure features such as service mirroring and Lawful Intercept (LI), and how to use the Operations, Administration, and Maintenance (OAM) and diagnostics tools | ✓ | — | ✓ |

| Document | Description | Intended audience | | |
|--|--|-------------------|---|---|
| | | A | B | C |
| 7450 ESS and 7750 SR Troubleshooting Guide | Provides troubleshooting procedures for the 7450 ESS and 7750 SR routers; describes commonly encountered problems and events | — | ✓ | ✓ |
| 7950 XRS Troubleshooting Guide | Provides troubleshooting procedures for the 7950 XRS; describes commonly encountered problems and events | — | ✓ | ✓ |

2.2 Hardware guides

The intended audience for the hardware guides in this documentation suite are network architects and designers, installers, and hardware maintenance technicians. These guides are not included with the SR software documentation package. See [Accessing documentation](#) for information about accessing hardware documentation.

7750 SR guides

- 7750 SR IOM5-e Installation Guide
- 7750 SR MDA-e-XP Installation Guide
- 7750 SR-1e, SR-2e, and SR-3e Chassis Installation Guide
- 7750 SR-12e Chassis Installation Guide
- 7750 SR-a4 and SR-a8 Chassis Installation Guide
- 7750 SR-1 Chassis Installation Guide
- 7750 SR-1s Chassis Installation Guide
- 7750 SR-1s-3.0T Chassis Installation Guide
- 7750 SR-1se Chassis Installation Guide
- 7750 SR-2s Chassis Installation Guide
- 7750 SR-2se Chassis Installation Guide
- 7750 SR-7s and SR-14s Chassis Installation Guide
- 7750 SR-7s and SR-14s: Upgrading the Chassis Hardware from FP4 to FP5
- 7750 SR ESA Chassis Installation Guide
- 7750 SR IOM-s Installation Guide
- 7750 SR IOM2-se Installation Guide
- 7750 SR MDA-s Installation Guide
- 7750 SR MDA-se Installation Guide
- 7750 SR and 7450 ESS SFM6 and IOM5-e FP4 Hardware Upgrade Guide
- 7750 SR-1 FP5 Chassis Installation Guide
- Vertical Rack Mount Kit Installation Guide

7450 ESS and 7750 SR guides

- 7450 ESS and 7750 SR IOM4-e Installation Guide
- 7450 ESS and 7750 SR MDA-e Installation Guide
- 7450 ESS-7 and 7750 SR-7 Chassis Installation Guide
- 7450 ESS-12 and 7750 SR-12 Chassis Installation Guide
- 7450 ESS and 7750 SR Integrated Media Module Installation Guide
- 7750 SR and 7450 ESS SF/CPM to SF/CPM5 Hardware Upgrade Guide
- 7450 ESS and 7750 SR MDA-XP Installation Guide
- 7750 SR-7 and 7450 ESS-7 PEM-3 Upgrade Installation Note
- 7750 SR-12 and 7450 ESS-12 PEM-3 Upgrade Installation Note

7950 XRS guides

- 7950 XRS-20 and 7950 XRS-40 Chassis Installation Guide
- 7950 XRS-20 and 7950 XRS-20e FP4 Hardware Upgrade Guide
- 7950 XRS-20e and 7950 XRS-40 Chassis Installation Guide

7750 SR and 7950 XRS guides

- 7750 SR, 7950 XRS, and 7250 IXR Optical Patch Panel Installation Guide

Supplementary information

- Best Practices for Improving Equipment Protection and Longevity
- GNSS Installation Guide

2.3 Release notes

The release notes are not included with the SR software documentation package. See [Accessing documentation](#) for information about accessing release notes.

- SR OS Software Release Notes
- SR OS AA Protocols and Applications Release Notes (spreadsheet)
- Application Assurance (AA) Protocols and Application Support
- 7750 SR VSR BNG CUPS Features Release Reference

3 Accessing documentation

Nokia customer documentation can be accessed through [WebHelp](#) or through the [Nokia Documentation Center](#).

Most SR OS software user guides are publicly available (no authentication is required). The hardware guides, release notes, and some technical documents are restricted (authentication is required).



Note: At this time, release notes are only available through the Nokia Documentation Center.

The SR OS software user guides can be accessed using a Google search. For best results, search using the term "SR OS" followed by the current release and any applicable keywords. Because the hardware guides are restricted, they cannot be accessed using a Google search.



Note: Depending on your account permissions and login status, you may not be authorized to display or download restricted guides (indicated by a lock or key symbol). If the guide remains restricted after a valid login, contact a Nokia technical support representative to check your account permissions.

The SR OS documentation is available in the following formats:

- WebHelp HTML
- downloadable HTML library (WebHelp format)
- PDF
- zipped PDF library

4 Searching for information in PDFs

You can search the contents of one or more downloaded PDF files for a specific term. When searching the contents of multiple PDF files, ensure the files are located in the same folder.



Note: These instructions apply only to Adobe Acrobat or Adobe Reader and will not work for other readers or browsers.

Procedure

Step 1. From the Adobe Acrobat or Adobe Reader main menu, choose **Advanced Search**.

The **Search** panel opens.

- To search for a specific term in the current document, click the **In the current document** button.
- To search for a specific term in multiple documents, click the **All PDF Documents in** button and select the applicable folder from the drop-down menu.



Note: If you downloaded a zip file of the PDF documents, you can open the Search panel by clicking the index.pdx icon in the unzipped folder. The index search of all PDF documents in the folder will be preselected.

Step 2. Enter the term to search for.

Select one or more of the following search criteria, if required:

- Whole words only
- Case-Sensitive
- Include Bookmarks
- Include Comments

Step 3. Click the **Search** button.

The search results are displayed.

Click the **+** symbol to expand the entries for each file.

5 Technical support

Customer support representatives are available to assist you 24 hours a day, 7 days a week. To contact Technical Support, visit the Nokia Support portal: <https://customer.nokia.com/support/s/>.

6 How to give feedback on documentation

You can use the following methods to report issues with the documentation, including errors or areas that need clarification, or to provide suggestions for improvement:

- **email**
Send your feedback in an email to documentation.feedback@nokia.com. Include the guide name, topic, and release.
- **online WebHelp**
In the online WebHelp click the email feedback icon next to the topic title. Use the pop-up email to provide your comments about the topic.

Customer document and product support



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Technical support

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Documentation feedback

[Customer documentation feedback](#)