

SRC PE Software Release Notes

Release 4.13.0
June 2020
Revision 2

These release notes cover Release 4.13.0 of the Juniper Networks Session and Resource Control (SRC) portfolio. The SRC software runs on C Series Controllers and acts as a VM. If the information in these release notes differs from the information found in the published documentation set, follow these release notes.

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Release Overview

If the information in your current release notes differs from the information found in the other documentation sources, follow the *SRC PE Release Notes*.

Before You Start

Before you use your new software, read these *Release Notes* in their entirety, especially the section *Known Problems and Limitations*. You need the following documentation to fully understand all the features available in Release 4.13.0:

- These *SRC 4.13.0 Release Notes*, which describe the changes between Releases 4.12.0 and 4.13.0.
- The 4.13.0 SRC Policy Engine (SRC PE) software documentation set, which provides detailed information about features available in Release 4.13.x.

If the information in your current release notes differs from the information found in the other documentation sources, follow the *Release Notes*.

Documentation

The SRC 4.13.x SRC PE core documentation set consists of several manuals and is available only in electronic format. Refer to the following table to help you decide which document to use.

NOTE: The configurations and features explained in the SRC 4.13.x SRC PE software documentation set for the C Series Controllers are also applicable to virtualized SRC software unless otherwise specified.

Task	Related Documentation
Install SRC software on the C Series Controller.	<p><i>C Series Controllers C3000 and C5000 Hardware Guide</i></p> <p><i>C Series Controllers C2000 and C4000 Hardware Guide</i></p>

Task	Related Documentation
Get up and running quickly.	<p><i>C3000 and C5000 Quick Start Guide</i></p> <p><i>C2000 and C4000 Quick Start Guide</i></p>
Learn about the general operation of the SRC software.	<i>SRC PE Getting Started Guide</i>
Perform basic configuration.	<i>SRC PE Getting Started Guide</i>
Use the SRC CLI.	<i>SRC PE CLI User Guide</i>
Use the License Manager and directory events.	<i>SRC PE Getting Started Guide</i>
Use the SAE, Juniper Networks routers, NIC, ACP, and SIC.	<i>SRC PE Network Guide</i>
Use the SNMP agent and logging utilities.	<i>SRC PE Monitoring and Troubleshooting Guide</i>
Integrate external network devices into the SRC network.	<i>SRC PE Network Guide</i>
Work with SRC services and policies.	<i>SRC PE Services and Policies Guide</i>
Work with SRC subscribers and subscriptions.	<i>SRC PE Subscribers and Subscriptions Guide</i>
Use the enterprise portals.	<i>SRC Sample Applications Guide</i>
Use the residential portal.	<i>SRC Sample Applications Guide</i>
Use the C-Web interface to configure the SRC software.	<i>SRC PE C-Web Interface Configuration Guide</i>
<p>Get specific information about commands and statements for:</p> <ul style="list-style-type: none"> ● CLI and system ● Juniper Networks database ● Service Activation Engine (SAE) ● Network Information Collector (NIC) ● Subscriber Information Collector (SIC) ● SNMP agent ● SRC Admission Control Plug-In (SRC ACP) ● Volume Tracking Application (VTA) ● SRC License Management ● Common Object Services (COS) Naming Service 	<i>SRC PE CLI Command Reference, Volume 1</i>

Task	Related Documentation
<p>Get specific information about commands and statements for:</p> <ul style="list-style-type: none"> • Services • Policies • Subscribers • Redirect server • External Subscriber Monitor • Application Server • Dynamic Service Activator • IP Multimedia Subsystem (IMS) • Diameter application 	<p><i>SRC PE CLI Command Reference, Volume 2</i></p>

The entire documentation set, including the release notes, in PDF format is available on the Juniper Networks website:

https://www.juniper.net/documentation/en_US/release-independent/src/information-products/pathway-pages/c-series/product/index.html

SRC Software

You can download the SRC software and the product release notes from the Juniper Networks website at:

<https://www.juniper.net/support/downloads/?p=src#sw>

You must download the SRC iso, qcow2, or vmdk image from the Juniper Networks website for deploying the SRC software as a virtual machine (VM).

Release Highlights

Highlights include the following product enhancements:

NOTE: The SRC software runs as VMs and runs on C Series Controllers—a range of hardware platforms. The SRC 4.13.0 software contains the features found in the SRC 4.12.0 release plus the features listed in this section. The SRC 4.13.0 software may contain references to the service activation engine (SAE) Release version 7.17.0. SRC 4.13.0 software does not run on the discontinued C2000 and C4000 controllers because of hardware incompatibility.

CentOS Upgrade

The base operating system of SRC software has now been upgraded from CentOS 6.5 to CentOS 7.6. To migrate to SRC Release 4.13.0, see [Migrating the C Series Controller to Software Release 4.13.0 on page 13](#).

Monitor Components Connectivity (MCC) Component

A new component, Monitor Components Connectivity (MCC), is introduced in the SRC software to monitor the connectivity state between SAEs in a community and between SAE and RADIUS server periodically. The MCC collects diagnostic information about the connectivity state of the components, such as connection error, connection timeout, and socket read/write timeout. MCC logs are stored in the `/opt/UMC/mcc/var/log/cc-logs/<source-ip>-<destination-ip>.log` file. You can use the `/opt/UMC/mcc/etc/mcc-config.properties` file to configure the MCC.

NOTE: MCC monitors the connectivity only between SAEs in a community and between SAE and RADIUS server. MCC does not support monitoring other SRC components.

Security Updates

The following third-party libraries have been updated to address security vulnerabilities:

- NSS has been upgraded from 3.12.3 to 3.36.0.
- NSPR has been upgraded from 4.7.4 to 4.19.0.
- OpenSSL has been upgraded from 0.9.8h to 1.0.2k.

- Net-SNMP has been upgraded from 5.4 to 5.7.2.
- Zlib has been upgraded from 1.2.3 to 1.2.7.

Features Not Fully Qualified

The SRC Release 4.13.x documentation set describes some features that are present in the code, but that have not yet been fully qualified by Juniper Networks. These features will be fully tested and supported in a future release. We expect these features to operate as documented; however, if you use any of these features before they have been fully qualified, it is your responsibility to ensure that the feature operates correctly in your targeted configuration.

The following features are available in the product, but they are not fully qualified in this release.

DMI

- Using the SRC Device Management Interface (DMI) driver and Junos Space, the SRC software can manage DMI devices connected to routers that run on Junos. This feature is supported only for demonstration purposes.

Upgrading the System Software

You cannot directly upgrade to SRC Release 4.13.0 from an earlier release, because the SRC 4.13.0 release uses a different operating system (CentOS 7.6). To migrate to SRC Release 4.13.0, please see [Migrating the C Series Controller to Software Release 4.13.0 on page 13](#).

Recovering Passwords for the Juniper Networks Database

The documentation does not disclose the default passwords that the Juniper Networks database uses. If you need access to these passwords or need to recover a password, contact Juniper Networks Technical Assistance Center (JTAC) for assistance.

Known Behavior

This section describes certain SRC software behaviors and related issues to clarify how the system works.

For the most complete and latest information about known defects, use the Juniper Networks online [Problem Report Search](#) application.

Aggregate Services

- NIC does not map primary username to managing SAE in aggregate services.

If you use aggregate services and specify a primary username for a subscriber reference expression, note that the configuration scenarios provided with the NIC do not provide a mapping from a primary username to the managing SAE. Consider using the login name instead. If you want to use the primary username as the subscriber reference expression for a fragment service, contact Juniper Networks Professional Services for assistance with setting up the NIC configuration to resolve the primary username to locate the managing SAE.

Application Server

- If the application server (**edit slot 0 application-server https**) is configured to use TLSv1 or TLSv1.1 or all TLSv1, TLSv1.1, and TLSv1.2, then the following ciphers (including weak ciphers) are supported. We recommend you to configure TLSv1.2 alone to avoid vulnerabilities.
 - ECDHE-RSA-AES128-SHA256
 - ECDHE-RSA-AES128-SHA
 - ECDHE-RSA-AES128-SHA

- EDH-RSA-DES-CBC3-SHA
 - AES128-SHA256
 - AES128-SHA
 - DES-CBC3-SHA
 - DHE-RSA-AES128-SHA256
 - DHE-RSA-AES128-SHA
- If the application server (**edit slot 0 application-server https**) is configured to use the TLSv1.2 version, then the following strong ciphers are only supported:
 - TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
 - TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA
 - TLS_DHE_RSA_WITH_AES_128_CBC_SHA256
 - TLS_DHE_RSA_WITH_AES_128_CBC_SHA

Configuration Updates

- When you use the **load merge**, **load override**, or **load replace** command at any hierarchy level, the command loads all the configuration in the specified file.

If you want to load the configuration for a specified hierarchy level:

- Ensure that the file contains the **sdx:current=true** text to identify the level at which the configuration is to be loaded.
- Run a **load** command with the **relative** option at the level at which you want to update the configuration.

If a file contains configuration statements other than those at and below the level identified by **sdx:current=true**, the command disregards the other statements.

If you enter a **load** command with the **relative** option and the file does not contain the text **sdx:current=true**, you receive a message indicating that the configuration cannot be loaded.

Hardware

- From Release 4.8.0 to 4.12.0, the SRC software runs on CentOS 6.5. From Release 4.13.0 onwards, the SRC software runs on CentOS 7.6. However, neither version of CentOS supports older C series controllers (C2000 and C4000) because of hardware incompatibility. [PR1049794](#)

Juniper Networks Database

- Recommendations for use of multiple primary Juniper Networks databases.

We recommend that you configure two to four Juniper Networks databases as primary databases in a community. If you plan to use more than two Juniper Networks databases in a primary role and expect to have frequent updates to the Juniper Networks database, we recommend that you test your application scenario with a projected traffic load. For assistance testing your application scenario, contact Juniper Networks Professional Services or JTAC.

MIBs

- Recommendations for use of latest SNMP MIBs that the SRC software supports in this release.

We recommend that you download the latest MIBs from the Juniper Networks website at https://www.juniper.net/documentation/en_US/src/information-products/pathway-pages/c-series/index.html while using the latest version of the SRC software.

Policy Management

- Use care when modifying configurations with other policy management tools for interfaces on JunosE routers that are managed by the SRC software.

When applying policies to interfaces on JunosE routers that are managed by the SRC software, carefully consider using other policy management tools, such as CLI, RADIUS, CoA, or Service Manager. Policies that are applied to the interface before SRC management begins, such as at access-accept time, are properly replaced. However, if other policy managers change existing policies while SRC management is active, problems can occur.

- If you have a preconfigured policy through CLI or RADIUS as part of subscriber PVC/VLAN provisioning, the existing policy becomes inactive and the SAE manages the subscriber interface. When the SAE

stops managing the interface, the preconfigured policy becomes active. However, if you change the policy on the interface using CLI or CoA, problems can occur.

- If you have a policy in Access-Accept, the existing policy becomes inactive and the SAE manages the interface.

SAE

- When you configure an interface classifier rule under the [**edit shared classification-script interface classifier**] hierarchy level, the changes do not take effect immediately on the SRC software. For a workaround, see the PR record. [PR973224](#)
- When policies are installed via RAR, service mismatch between SRC and SCG occurs if there are partial charging rule install failures at SCG side. For a workaround, see the PR record. [PR1127708](#)
- For JSRC dual-stack subscribers, if dynamic-profile in MX Series router has either one of the inet or inet6 policies and if the corresponding family gets deactivated, MX Series router triggers an ACR-Stop for the service. This results in deactivation of that service in SRC. As SRC does not reprovision the service when the family gets reactivated, we recommend to have dynamic-profiles with both inet and inet6 families at the MX Series router end.
- MX Series router does not send Framed-IPv6-Netmask and the prefix length of the Framed-IPv6-Address is always considered as 128. Hence, the ignore-framed-ipv6-netmask configuration will not have any effect.

Known Problems and Limitations

This section identifies known problems and limitations in this release.

For the most complete and latest information about known defects, use the Juniper Networks online [Problem Report Search](#) application.

3GPP Gy

- If SRC's Gy is enabled after the SAE, SRC's plug-ins are not initialized for certain subscribers. For a workaround, see the PR record. [PR1097126](#)

LDAP

- The scheduler format has been changed, but new attributes (action name, event name, and except name) are not currently supported in Enterprise Manager. [PR1325483](#)

NTP

- Time synchronization is not observed for unauthenticated NTP broadcast client when default restrict commands are configured. For a workaround, see [PR1389059](#).
- The **kod** option under the **system ntp restrict address *address***, **system ntp restrict default-v4**, and **system ntp restrict default-v6** commands may not function properly because there is no option to configure limited requests. The behaviors of **nopeer** and **notrap** options have not been tested by Juniper Networks. [PR1389024](#)
- SRC updates date and time from the hardware clock with no preference to the user configured date and time during reboot. [PR1444678](#)

SAE

- After changing the VM memory of vSRC, the new SAE heap parameter values are not displayed in the CLI even though the new values are properly allotted to the SAE. For a workaround, see [PR1389004](#).
- While configuring global service schedule, the "Mismatch in system and scheduler time zones" warning is displayed even if the time zones are identical. [PR1444688](#)

SIC

- SRC produces a core dump file in background while configuring SIC component. [PR1443133](#)

Documentation Updates

There are no errata or changes in the documentation set published for SRC Release 4.13.x.

Migration

This section provides information about migrating from earlier SRC software releases to SRC Release 4.13.0.

Policy Changes

Starting with SRC Release 4.2.0, an action configured for a policy rule no longer requires a name to identify the action. Old configurations with a name are accepted.

NOTE: You cannot have multiple instances of the same action configured for one rule.

Migrating the C Series Controller to Software Release 4.13.0

You cannot upgrade the C Series Controller software to Release 4.13.0 from an earlier release by using the **request system upgrade url url** command, because SRC 4.13.0 release uses a different operating system (CentOS 7.6). You must reimage the controller by using the USB storage device. For more information about using the USB storage device to reimage the controller, see *Recovering or Installing System Software on a C Series Controller by Using the USB Storage Device Supplied by Juniper Networks*.

The basic procedure to migrate the C Series Controller from an earlier release to Release 4.13.0 is:

1. Back up the configuration to the USB storage device or to a remote server by using the **save** and **file copy** commands.

NOTE: We recommend that you back up the configuration to the remote server.

2. Create an installation medium by using the read/write USB storage device.
3. Boot the controller from the USB storage device and install the software.
4. Load the backup configuration by using the **load** command.

NOTE: The default username and password for grub menu are “root” and “password”, respectively. You can change the default password by executing the **grub2-setpassword** command in shell mode.

You can load backup configuration from the XML, text, or LDAP LDIF file. Before loading backup configuration from XML or text file, you must perform the following steps in the backup configuration to avoid errors:

- For all router drivers, set the minimum thread pool size to 100.
- For all SRC components, set the maximum file size to 2,000,000.
- Define network device type and SAE connection.
- Delete logrotate configurations.
- Delete the external interface configurations.
- Configure the new SAE heap percentage options (java-min-heap-size-percentage, java-heap-size-percentage, java-min-new-size-percentage, and java-new-size-percentage) based on the values set to the existing heap options (java-min-heap-size, java-heap-size, java-min-new-size, and java-new-size).
- Delete the JPS component and configurations related to JPS.
- If the redirect server is set to SSLv2 for HTTPS, change it to a supported protocol (SSLv23, SSLv3, TLSv1, TLSv1.1, or TLSv1.2).
- Delete Telnet configurations.

- Delete the following SSH host keys: dsa-private, dsa-public, rsa1-private, and rsa1-public.
- Under the `slot number sae java-garbage-collection-options` command, if the value of `ThreadStackSize` is less than 228, then you must change it to 228.

Upgrading the SRC Software from Release 4.13.0R1/R2 to 4.13.0R3 or Later

Direct upgrade from the SRC software release 4.13.0R1/R2 to 4.13.0R3 or later does not fix the [PR1512354](#). To address this issue, you must install the hot patch “SRC-PE-4.13.0-Hot-Patch-1.zip” on your system before you upgrade the SRC software from release 4.13.0R1/R2 to 4.13.0R3 or later.

NOTE: If the SRC base version is not 4.13.0R1/R2, this hot patch is not required; and you can perform a direct upgrade.

Restrictions and Recommendations

VTA

VTAs have been tested with the following databases:

- MySQL version 4.0.13 (<http://www.mysql.com>)
- Oracle Database version 9i (<http://www.oracle.com>)

RADIUS Server

Juniper Networks SRC Release 4.13.0 was tested with Juniper Networks Steel-Belted Radius Carrier server.

Any RADIUS product compliant with RFC 2865 and RFC 2866 should be suitable for use with SRC Release 4.13.0.

Web Browsers

The C-Web interface in SRC Release 4.13.0 was tested with and supports the following Web browsers:

- Firefox 10.0 or later
- Internet Explorer 8.0 or later
- Chrome 17.0 or later

SRC Virtualization

The SRC 4.13.0 software installation was tested and supported on VMware Workstation 12 Player, VMware Workstation 12 Pro, VMware ESXi 5.5.0, 6.0, and 6.5, and the KVM hypervisor on CentOS 7.6.

Resolved Problems

This section lists known problems that have been resolved in the current release. For more information about resolved problems, contact JTAC.

For the most complete and latest information about resolved issues, use the Juniper Networks online [Problem Report Search](#) application.

Application Server

- When removing a mandatory attribute with duplicate values, the commit is successful without any errors. [PR1392803](#)

CLI

- The help configuration command in CLI is not working and showing syntax error. [PR1335505](#)

C-Web

- An existing HTTP session will get logged out automatically if you log in to C-Web through HTTPS and then try to log in to C-Web through HTTP in the same browser. [PR1389011](#)

Policy Management

- With load bootstrap-only, policy configurations in the file are loaded. [PR903551](#)

SAE

- When modifying service session, fileACCT shows a large amount of extra traffic. [PR903344](#)
- The "show sae subscribers" command does not report active subscribers while "show sae subscribers terse" reports as expected. [PR1439728](#)
- SAE Jacorb properties load default entries after SAE restart. [PR1383212](#)

Software Upgrade

- JPS component has been removed from the SRC software but SNMP notify alarm and event configurations related to JPS have not been removed. [PR1388388](#)

- JPS component is loaded after upgrading SRC from release 4.11.0 to 4.12.0. [PR1383211](#)
- SAE is not starting after upgrading from SRC Release 4.11 to 4.12. [PR1414194](#)

SRC Software Compatibility Matrix

[Table 1 on page 18](#) shows which versions of the SRC software are compatible with specified versions of the Junos OS and JunosE OS.

For the most current information about supported software releases, contact JTAC.

Table 1: SRC Software Compatibility with JunosE OS and Junos OS

SRC Software Release	Tested with JunosE Release	Tested with Junos OS Release
4.2.0	12.2.1, 12.3.0, 13.0.0	11.1R5.4 - 11.2R2.4 - 11.4R1.9
4.3.0	13.0.0, 13.1.0, 13.2.0b1-7	11.4, 12.2, 12.3
4.4.0	13.2.0, 13.3.0, 14.1.0	11.4x27, 12.2x49, 12.3R3
4.5.0	14.2.0, 13.2.2, 14.3.0	12.3R3.1, 11.4X27.46, 13.3
4.6.0	14.3.0, 14.1.1, 13.2.3	11.4X27.55, 12.3R4.6, 13.3
4.7.0	14.3.0, 14.3.1, 15.1.0b1-7	12.3R6.6, 13.3R2.7, 14.1X50 - D40.1
4.8.0	14.3.2, 15.1.0	12.3R8.7, 13.3R5.4, 14.1.X50-D75
4.9.0	15.1.0, 15.1.1, 16.1.0 Beta 1	13.3R6.5, 14.1X50-D100.3
4.10.0	15.1.1, 15.1.2, 16.1.0	14.1.X50, 15.1R3.6, 16.1
4.11.0	15.1.2, 16.1.0	15.1R6-S1.1, 17.2R1.12, 16.1R5
4.12.0	15.1.2, 16.1.0	15.1R6-S1.1, 17.2R1.12, 16.1R5
4.13.0	15.1.2, 16.1.0	18.4R2.2

Third-Party Software

This section lists the third-party software that is included with SRC Release 4.13.0. The third-party software is required to work with certain SRC components, and Juniper Networks supports issues associated with this software.

- 389 Directory Server v1.2.11.32 (<http://directory.fedoraproject.org/>)
- 4Suite 1.0.2-0 (<http://sourceforge.net/projects/foursuite/>)
- Apache-Axis 1.4 (<https://axis.apache.org/axis/>)
- Apache-Avalon 4.1.4 (<http://avalon.apache.org>)
- Apache-jakarta-oro 2.0.8 (<http://jakarta.apache.org/oro/>)
- asn1crypto 0.24.0 (<https://pypi.python.org/pypi/asn1crypto>)
- Beepcore-java 0.0.08 (<http://www.beepcore.org>)
- BouncyCastle CryptoAPI 1.45 (<http://bouncycastle.org/java.html>)
- Castor 0.9-AA (<http://mvnrepository.com/artifact/castor/castor>)
- CentOS 7.6 (<http://centos.org>)
- cfggen 2.16.00 (<http://avagotech.com>)
- Cryptography 2.1.4 (<https://pypi.python.org/pypi/cryptography>)
- eliben-pycparser 2.18 (<https://github.com/eliben/pycparser>)
- expect4j 1.0 (<https://github.com/cverges/expect4j>)
- freeradius_pam_radius 1.3.16-1 (http://freeradius.org/pam_radius/)
- GNUPROLOG for Java 0.2.1 (<http://gnuprologjava.sourceforge.net>)
- ini4j 0.4 (<http://ini4j.sourceforge.net>)
- JacORB 2.3.1 (<http://www.jacorb.org>)
- Jakarta Commons Collections 3.1 (<http://jakarta.apache.org/commons/collections>)
- Apache Struts 1.1-Beta3 (<http://struts.apache.org>)
- jax 0.0.15 (<http://www.ibr.cs.tu-bs.de/projects/jasmin/jax.html>)
- JBoss J2EE Server 6.1.0 Final Neo (<http://jboss.org>)
- JDBC 0.12 (<http://jdbm.sourceforge.net>)
- Jersey 1.4 (<http://jersey.java.net>)
- JETTY 9.2.25 (<http://www.eclipse.org/jetty>)
- Jython 2.2 (<http://www.jython.org>)

- kjd-idna 2.6 (<https://github.com/kjd/idna>)
- Mozilla C SDK 6.0.4 (<https://github.com/mozilla-services/mozldap>)
- mozilla rhino javascript engine 1.5 (<http://www.mozilla.org/rhino>)
- netconf-java 1.0.2 (<https://github.com/Juniper/netconf-java>)
- NetSNMP 5.7.2 (<http://www.net-snmp.org>)
- OmniORB 4.2.0-3 (<http://omniorb.sf.net>)
- omniORB-utils 4.2.0-3 (<http://omniorb.sourceforge.net/>)
- omniORBpy-4.2.0-2 (<http://omniorb.sf.net>)
- OpenJDK 1.7.0.85 (<http://openjdk.java.net>)
- pam-tacplus 1.2.9 (http://freecode.com/projects/pam_tacplus)
- pConfig-General 2.61-1 (<https://metacpan.org/release/TLINDEN/Config-General-2.61>)
- perl-RRD-Simple 1.44-1 (<http://search.cpan.org/dist/RRD-Simple>)
- dvarrazzo-py-setproctitle 1.1.8 (<https://pypi.python.org/pypi/setproctitle/>)
- py2-ipaddress 3.4.1 (<https://pypi.python.org/pypi/py2-ipaddress>)
- pyca-pyopenssl 17.5 (<https://pyopenssl.readthedocs.io/>)
- PYSNMP 1.6.5-1 (<http://pysnmp.sourceforge.net>)
- python-enum34 1.1.6 (<https://pypi.python.org/pypi/enum34>)
- python-cffi 1.11.4 (<https://pypi.python.org/pypi/cffi>)
- python-six 1.11.0 (<http://pypi.python.org/pypi/six/>)
- pyxml 0.8.4 (<http://pyxml.sourceforge.net/>)
- RRD Bot 0.9.7 (<http://thewalter.net/stef/software/rrdbot>)
- rrdtool 1.3.8-6 (<http://oss.oetiker.ch/rrdtool/>)
- SLF4J 1.7.5 (<http://www.slf4j.org>)

SRC Documentation and Release Notes

For a list of related SRC documentation, see

https://www.juniper.net/documentation/en_US/release-independent/src/information-products/pathway-pages/c-series/product/index.html.

If the information in the latest release notes differs from the information in the documentation, follow the *SRC PE Release Notes*.

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <https://www.juniper.net/documentation/>.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/documentation/feedback/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

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 <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://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

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <https://www.juniper.net/customers/support/>
- Search for known bugs: <https://kb.juniper.net/>
- Find product documentation:
https://www.juniper.net/documentation/en_US/release-independent/src/information-products/pathway-pages/c-series/product/index.html.
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes:
<https://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:
<https://www.juniper.net/company/communities/>
- Open a case online in the Juniper Networks Customer Service Portal: <https://my.juniper.net>

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 Juniper Networks Customer Service Portal at <https://my.juniper.net>.
- 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 <https://www.juniper.net/support/requesting-support.html>.

Revision History

August 2019—Revision 1, SRC Release 4.13.0

June 2020—Revision 2, SRC Release 4.13.0

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