

SRC PE Software Release Notes

Release 4.9.0
November 2015
Revision 3

These release notes cover Release 4.9.0 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.

Contents

Release Overview	3
Before You Start	3
Documentation	3
SRC Software	5
Release Highlights	5
Southbound Gx Interface Support to Manage MX Series Router (Services Control Gateway) Acting as PCEF	5
Northbound Gy Interface Support to Handle Charging-Related Information	6
SRC Virtualization Support	6
Features Not Fully Qualified	7
DMI	7
Upgrading the System Software	7
Recovering Passwords for the Juniper Networks Database	7
Migrating SDX Data to a Juniper Networks Database	7
Migrating Solaris-Based VTAs to the SRC VTA Running on the C Series Controller	8
Known Behavior	8
Aggregate Services	8
Configuration Updates	8
Hardware	9
Juniper Networks Database	9
Memory Test Utility	9
MIBs	10
Policy Management	10
SAE	11
VTA	11

Known Problems and Limitations	11
3GPP Gy	11
CLI	11
Gx Router Driver (Services Control Gateway)	12
PTSP	12
SAE	12
Virtualized SRC Software	13
Documentation Updates	13
Migration	13
Policy Changes	13
Migrating VTAs Running on Solaris to SRC VTA Running on the C Series Controller	13
Migrating the C Series Controller to Software Release 4.9.0	14
Restrictions and Recommendations	15
VTA	15
RADIUS Server	15
Web Browsers	15
SRC Virtualization	15
Resolved Problems	15
CLI	15
DSA	16
JDB	16
SAE	16
SRC Software Compatibility Matrix	16
Third-Party Software	17
SRC Documentation and Release Notes	19
Documentation Feedback	19
Requesting Technical Support	19
Self-Help Online Tools and Resources	19
Opening a Case with JTAC	20
Revision History	21

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 4.9.0:

- These *SRC 4.9.0 Release Notes*, which describe the changes between Releases 4.8.0 and 4.9.0.
- The 4.9.0 SRC Policy Engine (SRC PE) software documentation set, which provides detailed information about features available in Release 4.9.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 4.9.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 4.9.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.	<i>C Series Controllers C3000 and C5000 Hardware Guide</i> <i>C Series Controllers C2000 and C4000 Hardware Guide</i>
Get up and running quickly.	<i>C3000 and C5000 Quick Start Guide</i> <i>C2000 and C4000 Quick Start Guide</i>
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>

Task	Related Documentation
Use the SAE, Juniper Networks routers, NIC, ACP, SSR, 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>
Get specific information about commands and statements for: <ul style="list-style-type: none"> • CLI and system • Juniper Networks database • Service Activation Engine (SAE) • Network Information Collector (NIC) • Session State Registrar (SSR) • 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>
Get specific information about commands and statements for: <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 • Juniper Policy Server (JPS) 	<i>SRC PE CLI Command Reference, Volume 2</i>

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

<http://www.juniper.net/techpubs/software/management/src/>

SRC Software

The SRC software for C Series Controllers is preinstalled on the device and available on the USB storage device supplied with the platform.

You can also 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 image or SRC qcow2 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 4.9.0 software contains the features found in the SRC 4.8.0 release plus the features listed in this section. The SRC 4.9.0 software may contain references to the service activation engine (SAE) Release version 7.15.0. SRC 4.9.0 software does not run on the discontinued C2000 and C4000 controllers because of hardware incompatibility.

Southbound Gx Interface Support to Manage MX Series Router (Services Control Gateway) Acting as PCEF

The SRC software now includes a Gx router driver to establish a southbound Gx interface between the MX Series router (that is, Services Control Gateway) acting as a PCEF and the SRC software acting as a PCRF. The SRC software performs the following actions:

- Provides solicited and unsolicited provisioning of PCC or ePCC rules to the Services Control Gateway.
- Removes the provisioned PCC or ePCC rules.
- Detects and controls traffic of the Services Control Gateway.
- Monitors service usage for the subscriber.
- Sends Diameter messages to activate the rules predefined on the Services Control Gateway.

The SRC software uses the CCA and RAR messages to communicate with the Services Control Gateway over the southbound Gx interface. The SRC software supports specific attributes mentioned in the 3GPP TS 29.212 specification to implement this feature. You can configure the supported attributes by defining static PCC rules, dynamic PCC rules, or dynamic ePCC rules. You can also configure some 3GPP attributes at service level and subscriber level through newly introduced CLI commands.

The outputs of the **show** commands displaying SAE driver details, SAE subscriber information, and Diameter statistics are enhanced to display the message statistics and 3GPP attributes details for the Gx router driver.

The **routerConnUp** and **routerConnDown** traps are now enhanced to notify the SAE when the Gx router driver is in operational state or in unconnected state.

New plug-in attributes are introduced in the SRC software to publish usage monitoring information and detected application information related to the Services Control Gateway.

The SRC software does not currently support interim accounting interval functionality, time and money based usage monitoring functionality, dual stack functionality for Services Control Gateway, and time of day procedure.

Northbound Gy Interface Support to Handle Charging-Related Information

A new component, 3GPP Gy, is introduced in the SRC software to provide Gy-based integration with the OCS. SRC's Gy uses a northbound Gy interface to handle charging-related information between the OCS and Juniper Networks routers like the E Series Broadband Services routers and MX Series routers. SRC's Gy issues corresponding requests to the OCS on receiving a service authorization, service stop, or service tracking event from the SAE. Based on the response received from the OCS, SRC's Gy requests the SAE to activate or not to activate the service for the subscriber.

The SRC software enables you to define multiple OCSes. In this case, SRC's Gy selects the active peer among the defined OCSes and interacts with the active peer. If the active peer fails, SRC's Gy selects another active peer. SRC's Gy does not switch back to the original active peer when it comes online.

The SRC software enables you to define multiple instances of SRC's Gy pointing to the same namespace in the shared configuration to handle communication between the same group of SAEs and OCSes. In this case, all instances of the same namespace use a community manager to elect an active member to handle communication between the SAE and OCS. If the active member fails, the community manager elects another active member.

SRC's Gy always assumes that the service identifier and subscription identifier are in synchronization between the SRC software and OCS. SRC's Gy sends a separate request message to the OCS for each services and supports only service identifier based credit control messages.

SRC's Gy does not currently support time-based quota, money-based quota, service specific units, unit determination functionality, rating functionality, quota holding time functionality for volume-based quota, quota consumption time functionality for volume-based quota, traffic time change functionality, rating group functionality, and redirection for final unit indication.

SRC Virtualization Support

The SRC software can now be deployed as a VM either using an iso image or qcow2 image. All SRC functionalities are supported on the virtualized SRC software except the following:

- Hardware-specific commands such as show disk status
- Hardware-related alarm or traps such as diskFailure
- IPMI-related commands

We recommend you to create a virtualized SRC instance by using the qcow2 image. You must ensure that enough system resources (similar to that of C series controller) are allocated to the virtualized SRC software for better management and support of SRC functionalities.

The SRC software installation is currently tested and supported only over the KVM hypervisor on CentOS 6.5. The SRC software does not have any hypervisor management tool.

Features Not Fully Qualified

The SRC Release 4.9.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 4.9.0 from releases earlier than SRC Release 4.8.0, because the SRC software uses CentOS 6.5 from Release 4.8.0 onwards. To migrate to SRC Release 4.9.0, please see [Migrating the C Series Controller to Software Release 4.9.0 on page 14](#).

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.

Migrating SDX Data to a Juniper Networks Database

If you have an existing SDX installation and want to migrate your data from the directory storing the SDX data to the Juniper Networks database on an SRC platform, contact Juniper Networks Professional Services.

Migrating Solaris-Based VTAs to the SRC VTA Running on the C Series Controller

To run both Solaris-based VTAs and SRC VTAs (running SRC Release 4.2 and later) in the same SRC network, the Solaris-based VTAs must be running SRC Release 4.1 software.

If you have Solaris-based VTAs running and want to migrate to the SRC 4.9 VTA, contact Juniper Networks Professional Services for assistance in the migration.

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.

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 onwards, the SRC software runs on CentOS 6.5. However, this operating system does not support 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.

Memory Test Utility

- From Release 4.8.0 onwards, the SRC software does not support the memory test utility. Hence, the boot menu in SRC Release 4.8.0 and later does not display the option for memory test utility. In addition, you cannot execute the memory test utility in SRC Release 4.7.0 and earlier even though the utility option is displayed in the boot menu if you have restored SRC to Release 4.7.0 and earlier from Release 4.8.0 and later.

We recommend that you use a bootable USB storage device for executing the memory test utility. To test the SRC system memory using the memory test utility:

1. Download the **memtest86-usb.img** image file to your Linux workstation from the <http://www.memtest86.com/download.htm> link.
2. Insert your USB storage device into the USB port on your Linux workstation.
3. Determine the system device of your USB storage device by executing the **fdisk -l** command.
4. Copy the downloaded image onto your USB storage device by using the **dd** command. For example, if **sda** is the system device of the USB storage device then the **dd** command should be executed as:
dd if=/tmp/memtest86-usb.img of=/dev/sda
5. Remove the USB storage device from the Linux workstation.
6. Plug the USB storage device into the USB port on the SRC system.

7. Restart the SRC system.
8. Change the boot order to boot from the USB storage device while the SRC system is rebooting.

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 http://www.juniper.net/techpubs/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](#)

VTA

- In SRC 4.1 and earlier software releases, the SRC VTA provided a public Enterprise Java Bean (EJB)-based API. In the SRC 4.2.x software release, this API has been deprecated. It may be removed in a future release. In SRC 4.2.0 and later software releases, the EJB-based API has been replaced with a SOAP API that provides the same functionality.

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

- When services are modified through DSA, SRC's Gy sends CCR-I message instead of CCR-U message to the OCS. For a workaround, see the PR record. [PR1097134](#)
- 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](#)

CLI

- The SRC software supports VSA definitions only in the format **Vendor-Specific.4874.<vsa#>.<type>**, even though the SRC software accepts other formats too. [PR939170](#)
- When you load backup configuration from XML or text file by using the **load replace** command, the CLI displays a null pointer exception because of the new logrotate files added in the SRC Release 4.8.0. The **load merge** and **load override** commands load the backup configuration without any error. For a workaround, see the PR record. [PR1039688](#)

Gx Router Driver (Services Control Gateway)

- When the SRC software receives an incremented origin state ID in the first CCR-I message sent from the Services Control Gateway after the SAE restarts, the subscriber sessions with lesser origin state ID are not cleared from the session store. [PR1098493](#)
- The output of the **show sae subscribers** command displays IPv4 address instead of IPv6 address even though activate-on-login provision is provided for IPv6 subscribers. [PR1098520](#)
- For interface policies, the SAE does not send the Charging-Rule-Remove AVP to the Services Control Gateway during the SRC software triggered subscriber session detach scenario. [PR1096826](#)
- When you modify the default policy configuration in the SRC software for active subscribers, the SRC software does not trigger the RAR messages. [PR1098513](#)
- The SAE does not deactivate the services for the associated charging rules which are partially failed during provisioning of policies to the Services Control Gateway. For a workaround, see the PR record. [PR1098515](#)
- The output of the **show sae drivers** command displays erroneous RAR attempt count in the Gx router driver statistics. [PR1098496](#)
- When the SRC software receives CCR messages with two different origin state IDs from the Services Control Gateway during SAE startup or failover, the subscriber sessions with lesser origin state ID are not cleared from the session store. [PR1098492](#)
- The SRC software sends the UNABLE_TO_DELIVER error to the Services Control Gateway instead of the UNABLE_TO_COMPLY error, when the origin state ID received in the CCR-I message is lesser than the value received in the previous message. [PR1098499](#)
- CLI displays the application-accounting attribute in the **policies group name list name rule name** command for Gx router driver until the Gx specific rule type is selected. For a workaround, see the PR record. [PR1097580](#)
- Subscriber classification based on interface name is not supported for IPv6 subscribers of Services Control Gateway. [PR1098522](#)

PTSP

- Subscribers get some services activated without subscription, if services refer to the same policy group. For example, if a subscriber is only subscribed to Internet-Bronze, Internet-Gold may get activated if both the services refer to the same policy group. [PR906540](#)

SAE

- The **show sae drivers device-name** command displays the number of junos-ise and junos-ptsp devices that are not currently connected. [PR904065](#)
- The service associated with the incorrect ESSMD policy exists in SAE but not in the MX series router if the Diameter component in the SRC software or Diameter service in the

router is restarted before the router sends a session-sync-AAR message with failed policy information to SAE. [PR1049102](#)

- SAE RADIUS local address and SAE real portal address are not getting updated properly after installing the SRC Release 4.8.0. As a workaround, you must manually configure these attributes. For more information on the workaround, see the PR record. [PR1039725](#)

Virtualized SRC Software

- The create_vm.py script fails to create a virtualized SRC instance by using the qcow2 image if an invalid memory value is provided as input. For a workaround, see the PR record. [PR1097104](#)
- The create_vm.py script fails to create a virtualized SRC instance by using the qcow2 image if the qcow2 image path provided as input contains a leading or trailing space. For a workaround, see the PR record. [PR1095166](#)

Documentation Updates

There are no errata or changes in the documentation set published for SRC Release 4.9.x.

Migration

This section provides information about migrating from earlier SRC software releases to SRC Release 4.9.0.

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 VTAs Running on Solaris to SRC VTA Running on the C Series Controller

If you have Solaris-based VTAs running and want to migrate to the SRC 4.9 VTA, which runs on the C Series Controller, contact Juniper Networks Professional Services.

The basic procedure to migrate from Solaris-based VTAs to a VTA running on SRC 4.9 C Series Controllers is:

1. Copy your VTA configuration data into the Juniper Networks database (if necessary).
2. Execute a shell script to copy the VTA configuration to a new version compatible with the SRC VTA. This script is specific to your environment. Please contact Juniper Networks Professional Services for assistance.
3. Configure and start the SRC VTA.

4. Shut down the Solaris VTA.
5. Modify the SAE EJB plug-ins to send their events to the SRC VTA.

To run both Solaris-based VTAs and SRC-based VTAs, the Solaris-based VTAs must be running a minimum of SRC Release 4.1 software.



NOTE: With the inclusion of the VTA in the SRC software package that runs on the C Series Controller and acts as VMs, there is no longer a separate application library package. If you wish to continue running your VTA on a Solaris host, use the SRC 4.1 Application Library package. The SRC 4.1 VTA is compatible with SRC 4.9.

Migrating the C Series Controller to Software Release 4.9.0

You cannot upgrade the C Series Controller software to Release 4.9.0 from a release earlier than 4.8.0 by using the **request system upgrade url url** command, because SRC 4.8.0 and 4.9.0 use a different operating system (CentOS 6.5). 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 release earlier than 4.8.0 to Release 4.9.0 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.

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.

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 4.9.0 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 4.9.0.

Web Browsers

The C-Web interface in SRC Release 4.9.0 was tested with and supports only with the following Web browsers:

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

SRC Virtualization

The SRC 4.9.0 software installation was tested and supported only over the KVM hypervisor on CentOS 6.5.

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.

CLI

- Remote authentication (TACACS or RADIUS) is not working after migrating to the SRC Release 4.8.0, because the **remote** user is not getting mapped to the TACACS or RADIUS user. For a workaround, see the PR record. [PR1049786](#)
- File operational commands (for example, the **file list** command) are not working when used with `usb://` url. For a workaround, see the PR record. [PR1050706](#)

DSA

- When upgrading the DSA RPM, a ZIP warning message **Local Entry CRC does not match CD: WEB-INF/bootstrap.properties** is displayed but the RPM is installed successfully. The DSA functionalities are not impacted so you can ignore this warning message. [PR1048403](#)

JDB

- When deleting the JDB community in secondary node, the SRC software sometimes displays a service unavailable exception but sets the mode to standalone and retains the replication agreement. If the community is configured again, the erroneous attributes in the agreement sometimes affect the replication feature. For a workaround, see the PR record. [PR1042609](#)

SAE

- After you change IP address and then restart the components such as SAE and NIC, the newly changed addresses are not displayed in the *sminfo.log* file. [PR904184](#)

SRC Software Compatibility Matrix

[Table 1 on page 16](#) 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

Third-Party Software

This section lists the third-party software that is included with SRC Release 4.9.0. 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-ora 2.0.8 (<http://www.jajakarta.org/oro/>)
- Beepcore-java 0.0.08 (<http://www.beepcore.org>)
- BouncyCastle CryptoAPI 1.33 (<http://bouncycastle.org/java.html>)
- Castor 0.9-AA (<http://mvnrepository.com/artifact/castor/castor>)
- CentOS 6.5 (<http://centos.org>)
- expect4j 1.0 (<https://github.com/cverges/expect4j>)
- 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>)
- Jakarta Struts 1.1-Beta3 (<http://jakarta.apache.org/struts/index.html>)
- 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>)
- JDBM 0.12 (<http://jdbm.sourceforge.net>)
- Jersey 1.4 (<http://jersey.java.net>)
- JETTY 4.2.24 (<http://www.eclipse.org/jetty>)
- Jython 2.2 (<http://www.jython.org>)
- lksctp-tools 1.0.10-7 (<http://lksctp.sourceforge.net>)
- mozilla rhino javascript engine 1.5 (<http://www.mozilla.org/rhino>)
- MySQL Cluster 7.1 (<http://www.mysql.com/products/cluster>)
- OmniORB 4.2.0-45.1 (<http://omniorb.sf.net>)
- omniORBpy-4.2.0-30.1 (<http://omniorb.sf.net>)
- OpenJDK 1.6.0.26 (<http://openjdk.java.net>)
- pam-radius_auth 1.3.16-1 (http://freeradius.org/pam_radius/)

- pam-tacplus 1.2.9-4 (http://freecode.com/projects/pam_tacplus)
- perl-Config-General 2.38-1 (<http://search.cpan.org/dist/Config-General/General.pm>)
- 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/>)
- PYSNMP 1.6.5-1 (<http://pysnmp.sourceforge.net>)
- RRD Bot 0.9.7 (<http://thewalter.net/stef/software/rrdbot>)

SRC Documentation and Release Notes

For a list of related SRC documentation, see http://www.juniper.net/techpubs/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 <http://www.juniper.net/techpubs/>.

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 <http://www.juniper.net/techpubs/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 <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.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

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: <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>.

Revision History

November 2015—Revision 3, SRC Release 4.9.0

July 2015—Revision 2, SRC Release 4.9.0

June 2015—Revision 1, SRC Release 4.9.0

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