

# SRX 5600 and SRX 5800 Services Gateway Switch Control Board Installation Instructions

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This document describes how to remove and replace a Switch Control Board (SCB) on a Juniper Networks SRX 5600 and SRX 5800 services gateway. The illustrations in this document show the SRX 5800 services gateway, but the instructions apply to all SRX 5600 and SRX 5800 services gateways.

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## Switch Control Board

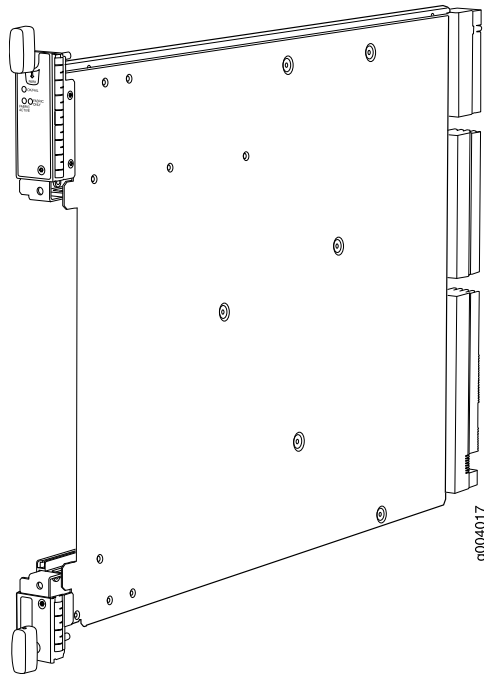
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The Switch Control Board (SCB) provides the following functions:

- Powers on and powers off IOCs and SPCs
- Controls clocking, system resets, and booting
- Monitors and controls system functions, including fan speed, board power status, PDM status and control, and the system front panel
- Provides interconnections to all the IOCs within the chassis through the switch fabrics integrated into the SCB

When the SCB is part of a host subsystem, the Routing Engine installs directly into a slot on the SCB (see Figure 1 on page 2).

**Figure 1: SCB**



### SCB Slots

You must install at least one SCB in the services gateway as part of a host subsystem.

The SCBs install into the front of the chassis in the slots labeled **0** and **1** on an SRX 5600 services gateway and **0**, **1**, and **2/6** on an SRX 5800 services gateway. If any slots are empty, you must install a blank panel.

## SCB Redundancy

If two SCBs are installed in an SRX 5600 services gateway, one SCB functions as the master SCB and the other as its backup. If the master fails or is removed, the backup becomes the master.

On SRX 5800 services gateways, SCBs installed in slots 0 and 1 provide nonredundant fabric connections. A third installed SCB in slot 2/6 provides fabric redundancy but no additional control or routing functions.

**Table 1: SCB Slot Mapping and Functionality**

Functionality	SRX 5600 Services Gateway	SRX 5800 Services Gateway
Full fabric (nonredundant)	SCB in slot 0	SCBs in slot 0 and slot 1
Redundant fabric	SCBs in slot 0 and slot 1	SCBs in slot 0, slot 1, and slot 2/6

## SCB Components

Each SCB consists of the following components:

- Chassis management Ethernet switch.
- I2C bus logic, used for low-level communication with each component.
- Component redundancy circuitry.
- Control Board/Routing Engine mastership mechanism.
- Gigabit Ethernet switch that is connected to the embedded CPU complex on all components.
- Switch fabric—Provides the switching functions for the I/O cards (IOC)s.
- Control FPGA—Provides the Peripheral Component Interconnect (PCI) interface to the Routing Engine.
- 1000Base-T Ethernet controller—Provides a 1-Gbps Ethernet link between the Routing Engines.
- Ethernet switch—Provides 1-Gbps link speeds between the Routing Engine and the IOCs.
- Circuits for chassis management and control.
- Power circuits for the Routing Engine and SCB.
- LEDs—Provide status (see “SCB LEDs” on page 3).

## SCB LEDs

Three LEDs on the SCB indicate the status of the SCB. The LEDs, labeled **FABRIC ACTIVE**, **FABRIC ONLY**, and **OK/FAIL**, are located directly on the SCB. Table 2 on page 4 describes the functions of the SCB LEDs.

**Table 2: Switch Control Board LEDs**

Label	Color	State	Description
FABRIC ACTIVE	Green	On steadily	Fabric is in active mode.
FABRIC ONLY	Green	On steadily	SCB operates in fabric-only mode.
		Off	SCB operates in fabric/control board mode.
OK/FAIL	Green	On steadily	SCB is online.
	Off		SCB is offline.
	Red	On steadily	SCB has failed.

## Replacing an SCB

The services gateway can have up to three SCBs. They are located in the front of the chassis in the slots marked **0** and **1** on an SRX 5600 services gateway and **0**, **1**, and **2/6** on an SRX 5800 services gateway. With a Routing Engine installed, the SCB weighs approximately 9.6 lb (4.4 kg).

Before you replace an SCB or a Routing Engine, you must power off the services gateway (see “Powering Off the Services Gateway” on page 4). To replace an SCB, use the following procedures:

- Powering Off the Services Gateway on page 4
- Operating and Positioning the SCB Ejectors on page 5
- Removing an SCB on page 5
- Installing an SCB on page 6

## Powering Off the Services Gateway

Before installing or removing SCBs you must power off the services gateway:

1. On the external management device connected to the Routing Engine, issue the `request system halt` operational mode command. The command shuts down the Routing Engine cleanly, so its state information is preserved.

```
user@host> request system halt
```

Wait until a message appears on the console confirming that the operating system has halted. For more information about the command, see the *JUNOS System Basics and Services Command Reference*.

2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see “Preventing Electrostatic Discharge Damage” on page 8.

3. On an AC-powered services gateway, switch the circuit breaker on each power supply to the off position (O). On a DC-powered services gateway, switch the circuit breaker on each power supply to the off position (OFF).

### **Operating and Positioning the SCB Ejectors**

- When removing or inserting an SCB, ensure that the SCBs or blank panels in adjacent slots are fully inserted to avoid hitting them with the ejector handles. The ejector handles require that all adjacent components be completely inserted so the ejector handles do not hit them, which could result in damage.
- The ejector handles have a center of rotation and need to be stored toward the center of the board. Ensure the long ends of the ejectors located at both the top and the bottom on an SRX 5800 services gateway, left and right on an SRX 5600 services gateway of the board are horizontal and pressed as far as possible towards the center of the board.
- To insert or remove the SCB, slide the ejector across the SCB horizontally, rotate it, and slide it again another quarter of a turn. Turn the ejector again and repeat as necessary. Utilize the indexing feature to maximize leverage and to avoid hitting any adjacent components.
- Operate both ejector handles simultaneously. The insertion force on an SCB is too great for one ejector.

### **Removing an SCB**

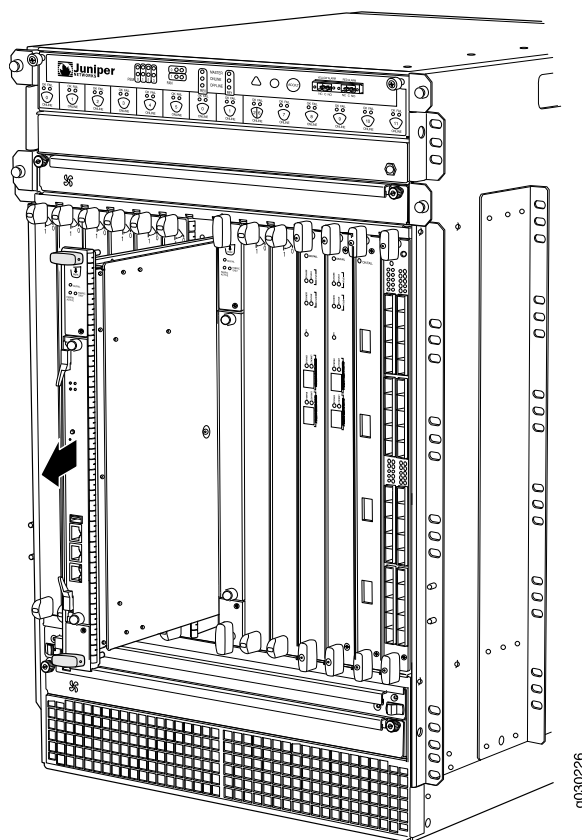
To remove an SCB (see Figure 2 on page 6):



**NOTE:** The SCB and Routing Engine are removed as a unit. You can also remove the Routing Engine separately.

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1. Power off the device. See “Powering Off the Services Gateway” on page 4.
2. Place an electrostatic bag or antistatic mat on a flat, stable surface.
3. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see “Preventing Electrostatic Discharge Damage” on page 8.
4. Rotate the ejector handles simultaneously counterclockwise to unseat the SCB.
5. Grasp the ejector handles and slide the SCB about halfway out of the chassis.
6. Place one hand underneath the SCB to support it and slide it completely out of the chassis.
7. Place the SCB on the antistatic mat.
8. If you are not replacing the SCB now, install a blank panel over the empty slot.

**Figure 2: Removing an SCB**

## Installing an SCB

To install an SCB (see Figure 3 on page 8):

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see “Preventing Electrostatic Discharge Damage” on page 8.
2. If you have not already done so, power off the device as described in “Powering Off the Services Gateway” on page 4.
3. Carefully align the sides of the SCB with the guides inside the chassis.
4. Slide the SCB into the chassis until you feel resistance, carefully ensuring that it is correctly aligned.
5. Grasp both ejector handles and rotate them simultaneously clockwise until the SCB is fully seated.
6. Place the ejector handles in the proper position, horizontally and toward the center of the board.
7. Switch the circuit breaker or toggle switch for each power supply to the ON position to start the device. The OK LED on the power supply faceplate should blink, then light steadily.

For detailed instructions on powering-on the device see the *SRX 5600 Services Gateway Hardware Guide* or the *SRX 5800 Services Gateway Hardware Guide*.

8. To verify that the SCB is functioning normally, check the LEDs on its faceplate. The green OK/FAIL LED should light steadily a few minutes after the SCB is installed. If the OK/FAIL LED is red, remove and install the SCB again (see “Removing an SCB” on page 5 and “Installing an SCB” on page 6). If the OK/FAIL LED still lights steadily, the SCB is not functioning properly. Contact your customer support representative.

To check the status of the SCB:

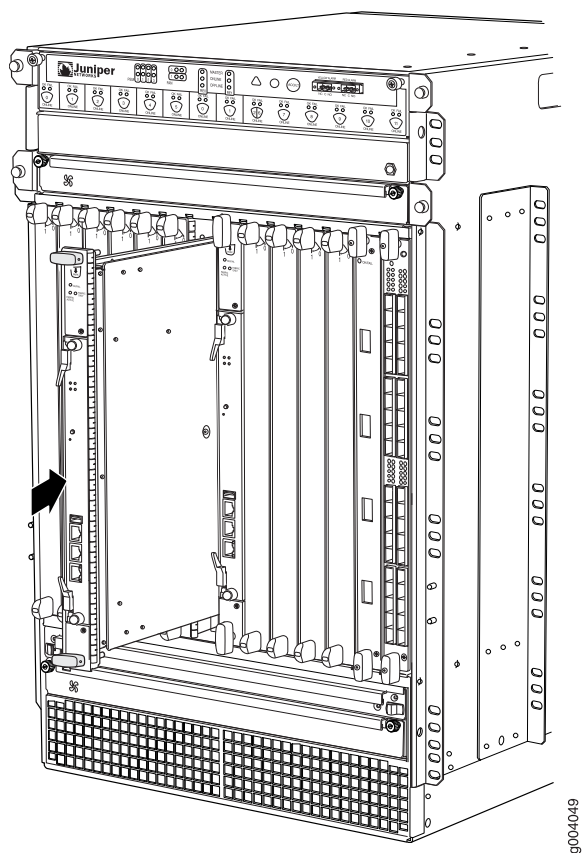
```
user@host> show chassis environment cb
```

```
CB 0 status:
```

```
State Online Master
Temperature 30 degrees C / 86 degrees F
Power 1
  1.2 V 1202 mV
  1.5 V 1511 mV
  1.8 V 1798 mV
  2.5 V 2481 mV
  3.3 V 3306 mV
  5.0 V 4956 mV
  12.0 V 12084 mV
  1.25 V 1250 mV
  3.3 V SM3 3287 mV
  5.0 V RE 5046 mV
  12.0 V RE 11910 mV
Power 2
  11.3 V bias PEM 11292 mV
  4.6 V bias MidPlane 4833 mV
  11.3 V bias FPD 11156 mV
  11.3 V bias POE 0 11253 mV
  11.3 V bias POE 1 11272 mV
Bus Revision 42
FPGA Revision 1
```

```
CB 1 status:
```

```
State Online
Temperature 31 degrees C / 87 degrees F
Power 1
  1.2 V 1205 mV
  1.5 V 1508 mV
  1.8 V 1817 mV
  2.5 V 2507 mV
  3.3 V 3306 mV
  5.0 V 5053 mV
  12.0 V 12200 mV
  1.25 V 1256 mV
  3.3 V SM3 3306 mV
  5.0 V RE 5091 mV
  12.0 V RE 0 mV
Power 2
  11.3 V bias PEM 11214 mV
  4.6 V bias MidPlane 4821 mV
  11.3 V bias FPD 11350 mV
  11.3 V bias POE 0 11350 mV
  11.3 V bias POE 1 11330 mV
Bus Revision 42
FPGA Revision 0
```

**Figure 3: Installing an SCB**

## Preventing Electrostatic Discharge Damage

Many services gateway hardware components are sensitive to damage from static electricity. Some components can be impaired by voltages as low as 30 V. You can easily generate potentially damaging static voltages whenever you handle plastic or foam packing material or if you move components across plastic or carpets. Observe the following guidelines to minimize the potential for electrostatic discharge (ESD) damage, which can cause intermittent or complete component failures:

- Always use an ESD wrist strap or ankle strap, and verify that it is in direct contact with your skin.



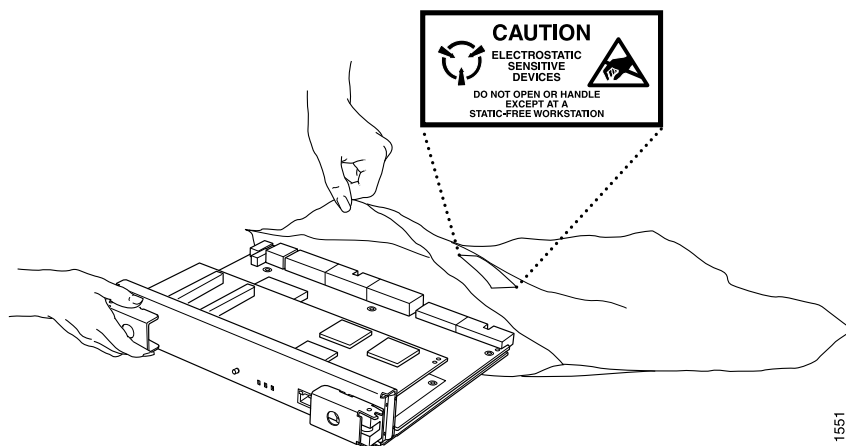
**CAUTION:** For safety, periodically check the resistance value of the ESD strap. The measurement should be in the range of 1 to 10 Mohms.

- When handling any component that has been removed from the chassis, verify that the equipment end of your ESD strap is attached to one of the ESD points on the chassis, which are shown in Figure 5 on page 9, and Figure 6 on page 10.



- Avoid contact between the component and your clothing. ESD voltages emitted from clothing can still damage components.
- When removing or installing a component, always place it component-side up on an antistatic surface, in an antistatic card rack, or into an electrostatic bag (see Figure 4 on page 9). If you are returning a component, place it into an electrostatic bag before packing it.

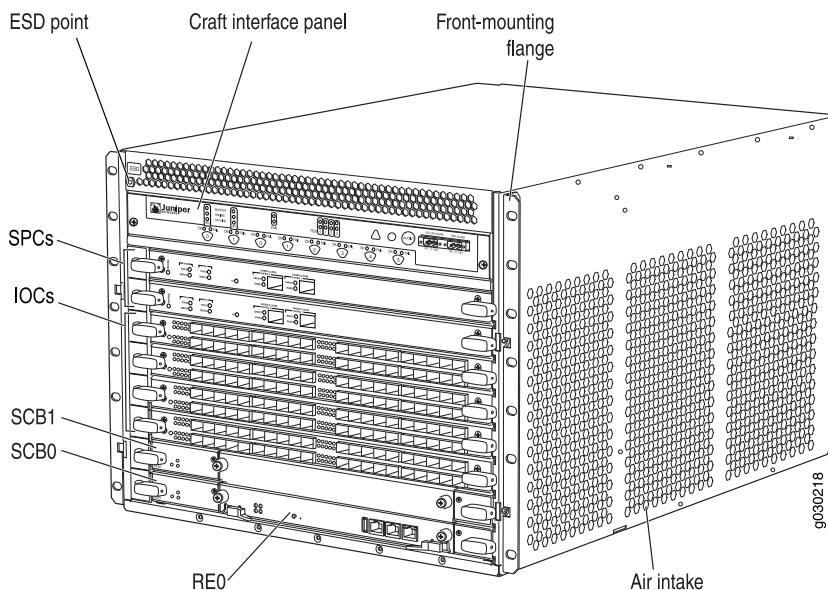
**Figure 4: Placing a Component into an Electrostatic Bag**



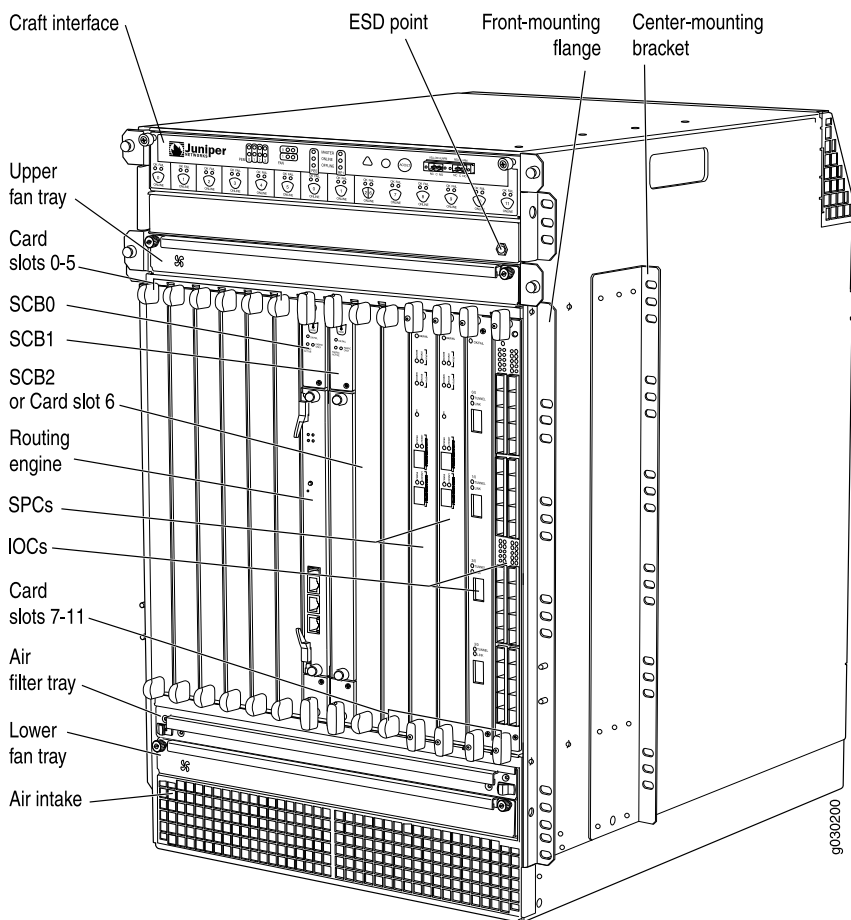
## Electrostatic Discharge Point

Figure 5 on page 9 and Figure 6 on page 10 show the location of the ESD point on the front of each chassis.

**Figure 5: Front View of a Fully Configured SRX 5600 Services Gateway Chassis**



**Figure 6: Front View of a Fully Configured SRX 5800 Services Gateway Chassis**



## List of Technical Publications

Table 3 on page 10 lists the hardware guides and release notes for Juniper Networks SRX-series services gateways and describes the contents of each document. All documents are available at <http://www.juniper.net/techpubs/>.

**Table 3: Technical Documentation for Supported Devices**

Book	Description
<b>Hardware Documentation</b>	
<i>SRX 5600 Services Gateway Hardware Guide</i> or <i>SRX 5800 Services Gateway Hardware Guide</i>	Describes how to install, maintain, and troubleshoot the services gateway and components. Each services gateway type has its own hardware guide.
<b>Release Notes</b>	

**Table 3: Technical Documentation for Supported Devices** (continued)

Book	Description
<i>JUNOS Software for SRX-series Services Gateway Release Notes</i>	Summarizes new features and known problems for a particular release of JUNOS software on SRX-series services gateways, including J-Web interface features and problems. The release notes also contain corrections and updates to the manuals and software upgrade and downgrade.

## 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 postsales technical support, you can access our tools and resources online or open a case with JTAC.

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

### Self-Help Online Tools and Resources

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 located at <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, visit us at <http://www.juniper.net/support/requesting-support.html>.

## Revision History

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August 2008—530-026269-01 Revision 01 Initial release.

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