

Contrail Service Orchestration Quick Start Guide

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Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

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Contrail Service Orchestration Quick Start Guide
Release 5.0.3
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About the Documentation

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This document provides information about the essential steps for an enterprise (tenant) administrator or a managed service provider (OpCo) administrator to quickly get started with Contrail Service Orchestration.

Documentation and 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/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <https://www.juniper.net/books>.

Documentation Conventions

[Table 1 on page vi](#) defines notice icons used in this guide.

Table 1: Notice Icons







Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page vi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

GUI Conventions

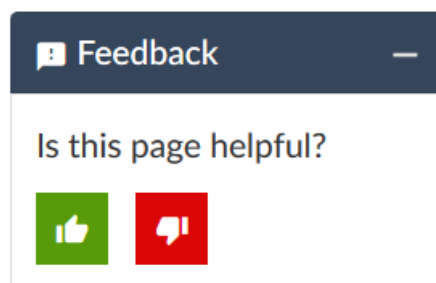
Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback so that we can improve our documentation. You can use either of the following methods:

- Online feedback system—Click TechLibrary Feedback, on the lower right of any page on the [Juniper Networks TechLibrary](#) site, and do one of the following:



- Click the thumbs-up icon if the information on the page was helpful to you.
- Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software 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 Juniper Care or Partner Support Services 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://prsearch.juniper.net/>
- Find product documentation: <https://www.juniper.net/documentation/>
- 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://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <https://www.juniper.net/company/communities/>
- Create a service request online: <https://myjuniper.juniper.net>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://entitlementsearch.juniper.net/entitlementsearch/>

Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit <https://myjuniper.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://support.juniper.net/support/requesting-support/>.

1

CHAPTER

Quick Start Guide

Quick Start Guide for Conrail Service Orchestration, Release 5.0.3 | 13

Quick Start Guide for Contrail Service Orchestration, Release 5.0.3

Contrail Service Orchestration (CSO) Release 5.0.3 is a Juniper Networks-hosted public cloud-based Software as a Service (SaaS) solution.

This topic lists the essential steps for an enterprise (tenant) administrator or a managed service provider (OpCo) administrator to quickly get started with Contrail Service Orchestration. For details about CSO administrator roles, see [CSO documentation](#).

After you receive the account activation credentials e-mail, start with the following steps:

1. Log in to the CSO portal by using the link provided in the activation mail.
2. If you are an OpCo administrator setting up a tenant, perform the following tasks:
 1. [Configure SMTP settings on page 75](#)
 2. [Add one or more tenants on page 71](#)
 3. Optionally, “[Add a Provider Hub \(DATA_ONLY Capability\)](#)” on page 79
3. If you are a tenant administrator add one or more on-premise spoke sites to enable the following services:
 - [SD-WAN on page 17](#)
 - [Hybrid WAN on page 39](#)
 - [Next-Generation Firewall on page 47](#)
 - [LAN on page 57](#)

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CHAPTER

SD-WAN

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SD-WAN Sites

A typical SD-WAN site topology includes an on-premise spoke site and a hub site. A hub site can be an enterprise hub site, which is an SD-WAN site that is used to carry site-to-site traffic between on-premise spoke sites and to break out backhaul (central breakout) traffic from on-premise spoke sites.

An on-premise spoke site represents an endpoint that is part of a customer premise equipment (CPE) at some physical location such as a branch office or a point-of-sale (PoS) location. Typically, these points are connected using overlay connections to hub sites.

CSO Release 5.0.0 supports SD-WAN sites that contain an EX Series switch for the branch network along with the CPE device.

You can [“Add an Enterprise Hub Site for SD-WAN Deployments” on page 17](#) and one or more of the following on-premise spoke sites for SD-WAN:

- [SD-WAN On-Premise Spoke Site on page 25](#)
- [SD-WAN On-Premise Spoke Site with LAN for Branch Networks on page 29](#)

Add an Enterprise Hub Site for SD-WAN Deployments

An enterprise hub is an SD-WAN site that is used to carry site-to-site traffic between on-premise spoke sites and to break out backhaul (central breakout) traffic from on-premise spoke sites.

NOTE: You can add enterprise hubs only if the SD-WAN mode is set to real-time optimized.

To add an enterprise hub:

1. On the Sites page (**Resources > Site Management**) of the CSO portal, click **Add**, and select **Enterprise Hub**.

The **Add enterprise hub for *Tenant-Name*** page appears.

2. Complete the configuration settings according to the guidelines provided in [Table 3 on page 18](#).
3. Click **OK**.

When the site is successfully created, the Site Status on the Sites page changes to Provisioned.

Table 3: Enterprise Hub Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	SD-WAN capability is selected by default. You cannot clear the selection.
WAN	
Device Series	Select the device series to which the CPE device belongs—SRX, NFX150, or NFX250.
Device Template	Select a device template for the selected device series. The device template contains information for configuring a device.
Serial Number	Enter the serial number of the CPE device.
Auto Activate	<p>If the selected device template supports auto authorization, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added.</p> <p>The Activation Code field appears if the selected device template does not support auto authorization or if you disable the Auto Activate option.</p> <p>In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p> <p>NOTE:</p>
IP Prefix	<p>Enter the IPv4 prefix to be used for the management network. This IP address must be unique across the entire management network.</p> <ul style="list-style-type: none"> For NFX150 and NFX250 devices, if the USE_SINGLE_SSH_TO_NFX parameter is disabled in the device template, then enter the IP address prefix as /29 or lower based on the number of VNFs. For all other devices, enter the IP address prefix as /32.
WAN Links	
WAN_0	<p>This field is enabled by default.</p> <p>You can configure up to 4 WAN links as required.</p>

Table 3: Enterprise Hub Site Settings (*continued*)

Field	Description
Link Type	<p>Select whether the link would be an MPLS link or Internet link.</p> <p>NOTE: If the enterprise hub and the SD-WAN branch site are not in the same network, that is if these devices are not directly reachable, select one link as Internet and assign a public IP to the Internet-type link.</p>
Egress Bandwidth	<p>Enter the maximum bandwidth, in Mbps, allowed on the WAN link.</p> <p>Range: 1 through 10,000.</p>
Address Assignment	<p>Select the method of assigning an IP address to the WAN link—DHCP or STATIC.</p> <p>If you select STATIC, you must provide the IP address prefix and the gateway address for the WAN link.</p>
Static IP Prefix	<p>If you configured the address assignment method as STATIC, enter the IP address prefix of the WAN link.</p> <p>NOTE:</p> <p>If the enterprise hub and the SD-WAN branch site are not in the same network, assign a public IP to the Internet-type link</p>
Gateway IP Address	<p>If you configured the address assignment method as STATIC, enter the IP address of the gateway of the WAN service provider.</p>
Advanced Settings	
Use For Fullmesh	<p>Click the toggle button to specify whether the WAN link can be a part of a full mesh topology.</p> <p>A site can have a maximum of three links enabled for meshing.</p>
Add LAN Segment	
Name	<p>Enter a name for the LAN segment.</p> <p>The name for a LAN segment should be a unique string of alphanumeric characters and some special characters (. -). No spaces are allowed and the maximum length is 15 characters.</p>

Table 3: Enterprise Hub Site Settings (*continued*)

Field	Description
Type	<p>Select the type of LAN segment:</p> <ul style="list-style-type: none"> • Directly Connected—Indicates that the LAN segment is directly connected to the site. This is the default. • Dynamic Routed—Indicates that the LAN segment is not directly connected to the site and is reachable by using a dynamic route. If you select this option, you must specify the dynamic routing information.
Department	<p>Select a department to which the LAN segment is to be assigned.</p> <p>Alternatively, click the Create Department link to create a new department and assign the LAN segment to it. See <i>Adding a Department</i> for details.</p> <p>You group LAN segments as departments for ease of management and for applying policies at the department-level. For LAN segments that are dynamically routed, you can assign only a data center department.</p>
Gateway Address/Mask	Enter a valid gateway IP address and mask for the LAN segment; for example, 192.0.2.8/24.
CPE Ports	Select the ports from the Available column and click the right-arrow to move the ports to the Selected column.

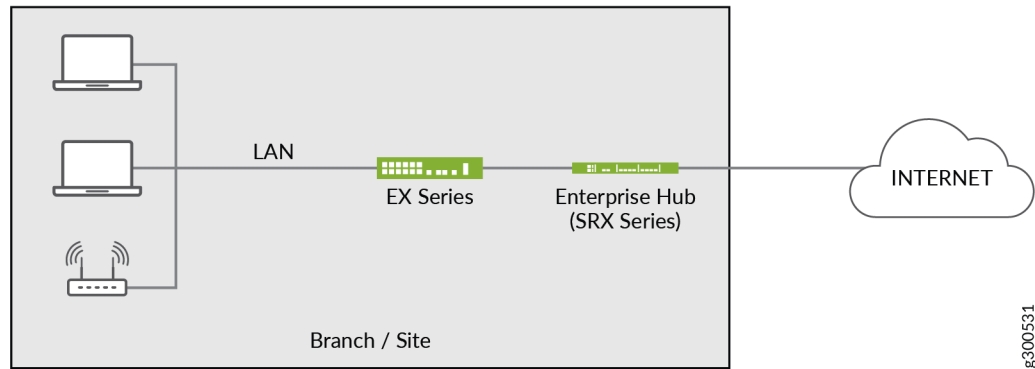
SEE ALSO

[Add an SD-WAN On-Premise Spoke Site | 25](#)
[Add an SD-WAN On-Premise Spoke Site with LAN for Branch Networks | 29](#)

Add an Enterprise Hub Site with SD-WAN and LAN Capabilities

An enterprise hub is an SD-WAN site that is used to carry site-to-site traffic between on-premise spoke sites and to break out backhaul (central breakout) traffic from on-premise spoke sites. You can add an EX Series switch for branch network as part of the enterprise hub site. The following illustration shows a

simple topology that contains an enterprise hub and an EX Series switch.



To add an enterprise hub:

1. On the Sites page (**Resources > Site Management**) of the CSO portal, click **Add**, and select **Enterprise Hub**.

The **Add enterprise hub for *Tenant-Name*** page appears.

2. Complete the configuration settings according to the guidelines provided in [Table 4 on page 22](#).
3. Click **OK**.

The site activation job is initiated and the Site Activation: Site-Name page appears displaying the progress of the steps executed for activating the devices in the site.

4. To activate the switch, you must manually configure the stage-1 configuration on the switch.
 - a. On the Site Activation page, after the Prestage Device step completes successfully for the switch, the **View Stage-1 Configuration** link appears next to the Prestage Device step.
 - b. Click the **View Stage-1 Configuration** link.

The Stage-1 Configuration page appears displaying the stage-1 configuration.

- c. Copy the stage-1 configuration and log in to the CLI of the EX Series switch.
- d. Enter the configuration mode, paste, and commit the configuration.

After the stage-1 configuration is committed, the switch has the outbound SSH configuration to connect with CSO. CSO then executes the bootstrap and provisioning processes on the switch and completes provisioning the switch.

When the site is successfully created, the Site Status on the Sites page changes to Provisioned.

Table 4: Enterprise Hub Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	SD-WAN capability is selected by default. You cannot clear the selection. If you want to include LAN capabilities in the enterprise hub site, select LAN .
WAN	
Device Series	Select the device series to which the CPE device belongs—SRX, NFX150, or NFX250.
Device Template	Select a device template for the selected device series. The device template contains information for configuring a device.
Serial Number	Enter the serial number of the CPE device.
Auto Activate	<p>If the selected device template supports auto authorization, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added.</p> <p>The Activation Code field appears if the selected device template does not support auto authorization or if you disable the Auto Activate option.</p> <p>In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p> <p>NOTE:</p>
IP Prefix	<p>Enter the IPv4 prefix to be used for the management network. This IP address must be unique across the entire management network.</p> <ul style="list-style-type: none"> For NFX150 and NFX250 devices, if the USE_SINGLE_SSH_TO_NFX parameter is disabled in the device template, then enter the IP address prefix as /29 or lower based on the number of VNFs. For all other devices, enter the IP address prefix as /32.
WAN Links	
WAN_0	<p>This field is enabled by default.</p> <p>You can configure up to 4 WAN links as required.</p>

Table 4: Enterprise Hub Site Settings (*continued*)

Field	Description
Link Type	Select whether the link would be an MPLS link or Internet link.
Egress Bandwidth	Enter the maximum bandwidth, in Mbps, allowed on the WAN link. Range: 1 through 10,000.
Address Assignment	Select the method of assigning an IP address to the WAN link—DHCP or STATIC. If you select STATIC, you must provide the IP address prefix and the gateway address for the WAN link.
Static IP Prefix	If you configured the address assignment method as STATIC, enter the IP address prefix of the WAN link.
Gateway IP Address	If you configured the address assignment method as STATIC, enter the IP address of the gateway of the WAN service provider.
Advanced Settings	
Use For Fullmesh	Click the toggle button to specify whether the WAN link can be a part of a full mesh topology. A site can have a maximum of three links enabled for meshing.
LAN	
NOTE: This tab is enabled only if you select LAN from the Site Capabilities options in General Settings.	
Device Profile	
Device Name	Enter a name for the switch. You can use alphanumeric characters and hyphen (-). The maximum length allowed is 15 characters.
Device Type	Select the type of switch—EX2300, EX3400, or EX4300 When you change the default device type, a carousel for device template appears.
Device Model	Select the model for the switch you specified in the Device Type. The models vary in the number and type of ports the switch contains. For example, If you selected EX3400, select a model such as EX3400-24P, EX3400-48P, EX3400-24T among others.

Table 4: Enterprise Hub Site Settings (*continued*)

Field	Description
CPE Settings	
Trunk Ports	<p>Select at least two trunk ports on the CPE device to connect with the switch.</p> <p>The trunk ports are used for carrying the following:</p> <ul style="list-style-type: none"> • LAN traffic between the switch and the CPE • Management traffic for in-band management of the switch.
Switch Management Subnet	Specify the subnet that the DHCP can use to assign IP addresses to the switch and the access devices connected to the switch.
Switch Details	
Serial Number	Specify the serial number of the switch.
Auto Activate	<p>Auto Activate is enabled by default. When Auto Activate is enabled, the device activation is automatically triggered when the site is added. The Activation Code field appears if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p> <p>NOTE: You must physically connect the switch to the CPE and power it on for the switch to be automatically activated when the auto activate option is enabled.</p>

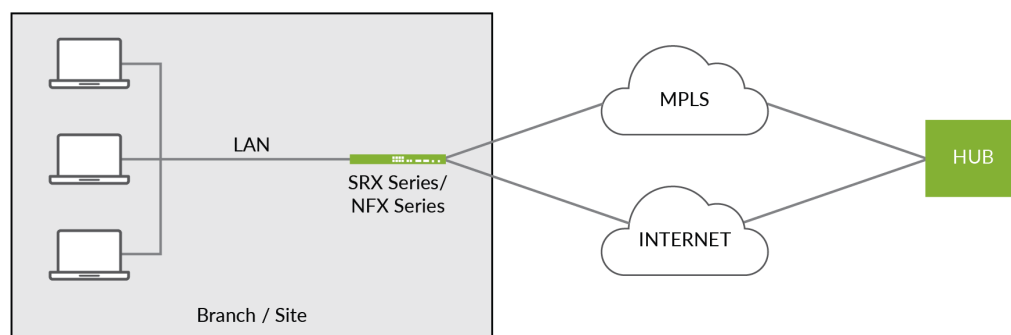
SEE ALSO

[On-premise spoke site for LAN | 58](#)

[Next-generation firewall site with LAN for branch networks | 50](#)

Add an SD-WAN On-Premise Spoke Site

The following illustration shows a simple SD-WAN topology.



Before you add an on-premise spoke site:

- Add an [“enterprise hub site”](#) on [page 17](#).
- Connect cables to the device according to your network design and power on the device.

NOTE:

This task assumes that the device will get DHCP IP address and will have Internet connectivity along with DNS resolution when connected according to the network design.

For more information about connecting the cables and connecting the device to a console, see the documentation for the CPE device as listed in [Table 5 on page 26](#).

- Ensure that ESP protocol traffic is allowed on the network.
- Ensure that the ports listed in [Table 5 on page 26](#) are open on the network.

NOTE: Ensure that the devices are running the recommended version of Junos OS. For information about the supported Junos OS versions, see the Release Notes for Contrail Service Orchestration Release 5.0.0.

Table 5: CPE Devices, Port Information, and Documentation Links

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	Hardware Documentation
SRX4x000 devices	443	xe-0/0/0	SRX4100
	500	xe-0/0/1	<ul style="list-style-type: none"> • SRX4100
	4500	xe-0/0/2	SRX4200
		xe-0/0/3	<ul style="list-style-type: none"> • SRX4200
SRX3xx devices, SRX550M, and vSRX devices	443	ge-0/0/0	SRX300
	500	ge-0/0/1	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx300-chassis.html
	4500	ge-0/0/2	SRX320
		ge-0/0/3	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx320-chassis.html
NFX250	443	ge-0/0/10	SRX340
	500	ge-0/0/11	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx340-chassis.html
	4500	xe-0/0/12	SRX345
	7804	xe-0/0/13	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx345-chassis.html
			SRX550M
			<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx550-hm-chassis.html

Table 5: CPE Devices, Port Information, and Documentation Links (*continued*)

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	Hardware Documentation
NFX150	443 500 4500	heth4 heth5 heth2 heth3	NFX150 • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/reference/specifications/chassis-nfx150-physical.html

- If you are using a GRE-only overlay between an SRX CPE and a hub device, ensure that GRE Traffic is enabled between CPE and the hub device.

To add an on-premise spoke site for SD-WAN:

1. From the Sites page (**Resources > Site Management**) of the CSO portal, click **Add** and select **On-Premise Spoke Site**.

The **Add Site** wizard appears.

2. Complete the settings as explained in [Table 6 on page 27](#).

3. Click **OK** to add the site.

When the site is successfully created, the Site Status in the Sites page changes to Provisioned.

Table 6: SD-WAN On-Premise Spoke Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	Select SD-WAN .
Primary Hub	Select an enterprise hub site as the primary hub from the list of available hub sites. If there is only one hub site available, that one is selected by default.
WAN	
Device Series	Select the CPE device.
Device Template	Select a device template for the CPE device.

Table 6: SD-WAN On-Premise Spoke Site Settings (*continued*)

Field	Description
Serial Number	Enter the serial number of the CPE device.
Auto Activate	<p>If the selected device template supports ZTP, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added.</p> <p>The Activation Code field appears if the selected device template does not support ZTP or if you disable the Auto Activate option.</p> <p>In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p>
Link Type	<p>Specify whether the link is an Internet link or an MPLS link.</p> <p>If you select Internet as the Link Type, select the Access Type. The access type options available for Internet link are: Ethernet, LTE, ADSL, and VDSL.</p>
Egress Bandwidth	Specify the maximum bandwidth allocated for the WAN link.
Address Assignment	<p>Specify whether to use DHCP or Static addresses.</p> <p>If you select Static, specify a Static IP Prefix and Gateway IP Prefix.</p>
Service Provider	Enter the name of the service provider.
Cost per month	Enter the per month cost of the link. This information is used to identify the least expensive link when link switch occurs.
LAN Segment	
Add LAN Segment	Click to add a LAN segment.
Name	Enter a unique name for the LAN segment.
Gateway Address/Mask	Enter a valid gateway IP address and mask for the LAN segment; for example, 192.0.2.8/24.
Department	<p>Select a department from the list; if no department is available, click Create Department and add one.</p> <p>A department is a grouping of LAN segments within a site. You use departments to apply specific policies to LAN segments that are members of a department.</p>

Table 6: SD-WAN On-Premise Spoke Site Settings (*continued*)

Field	Description
CPE Port	Select at least one CPE port.

After the site is provisioned, you can complete the following tasks as required:

- Upload and install licenses. For example, **Administration > Licenses**.
- Install signatures. For example, **Administration > Signature Database**.
- Add, edit, and deploy an SD-WAN policy. For example, **Configuration > SD-WAN Policy**.
- Create and generate reports. For example, **Reports > Report Definitions > SD-WAN**.
- Monitor alerts and alarms, SLA performance of tenants, and jobs. For example, **Monitor > Jobs**.

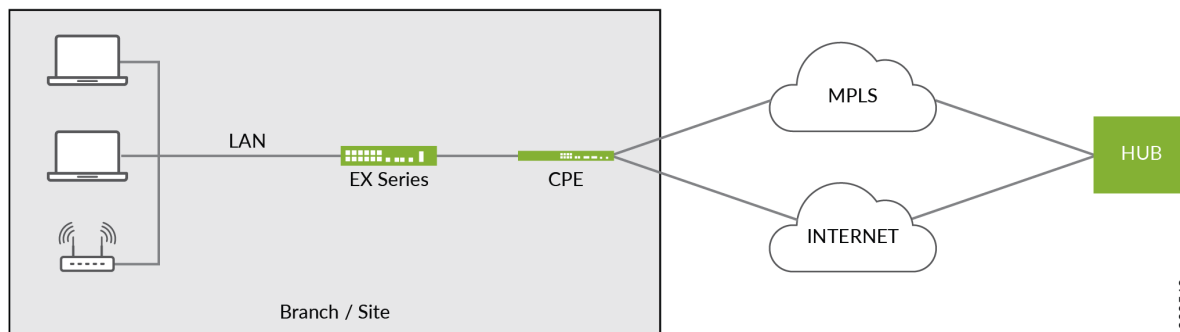
For more information about these tasks, see the Contrail Service Orchestration user guide at https://www.juniper.net/documentation/product/en_US/contrail-service-orchestration.

SEE ALSO

[Add an SD-WAN On-Premise Spoke Site with LAN for Branch Networks](#) | 29

Add an SD-WAN On-Premise Spoke Site with LAN for Branch Networks

The following image illustrates a simple network topology that contains a CPE and an EX Switch. The CPE can be an SRX Series device or an NFX250 device.



After you connect the devices as shown in the topology diagrams and power on the devices, log into the CSO portal and add an SD-WAN site.

Before you add an on-premise spoke site:

- Add an “enterprise hub site” on page 17.
- Connect cables to the device according to your network design and power on the device.

NOTE:

This task assumes that the CPE device will get DHCP IP address and will have Internet connectivity along with DNS resolution when connected according to the network design.

For more information about connecting the cables and connecting to the device console, see the documentation for the CPE device. The port numbers including the WAN link ports for each of the supported CPE device models and the NAT and firewall ports that need to be enabled and links to the hardware documentation for the supported models are provided in Table 7 on page 30.

- Ensure that ESP protocol traffic is allowed on the network.
- Ensure that the ports listed in Table 7 on page 30 are open.

NOTE: Ensure that the devices are running the recommended version of Junos OS. For information about the supported Junos OS versions, see the Release Notes for Contrail Service Orchestration Release 5.0.0.

Table 7: CPE Devices, Port Information, and Documentation Links

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	Hardware Documentation
SRX4x00 devices	443	xe-0/0/0	SRX4100
	500	xe-0/0/1	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx4100-chassis.html
	4500	xe-0/0/2	SRX4200
		xe-0/0/3	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx4200-chassis.html

Table 7: CPE Devices, Port Information, and Documentation Links (*continued*)

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	Hardware Documentation
SRX3xx devices, SRX550M, and vSRX devices	443	ge-0/0/0	SRX300
	500	ge-0/0/1	<ul style="list-style-type: none"> https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx300-chassis.html
	4500	ge-0/0/2	SRX320
		ge-0/0/3	<ul style="list-style-type: none"> https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx320-chassis.html
NFX250			SRX340
			<ul style="list-style-type: none"> https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx340-chassis.html
			SRX345
			<ul style="list-style-type: none"> https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx345-chassis.html
NFX250			SRX550M
			<ul style="list-style-type: none"> https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx550-hm-chassis.html
	443	ge-0/0/10	NFX250
	500	ge-0/0/11	<ul style="list-style-type: none"> https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/nfx250-chassis.html
NFX250	4500	xe-0/0/12	
	7804	xe-0/0/13	
LAN Switches			
EX2300	—	—	https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex2300-system-overview.html
EX3400	—	—	https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex3400-chassis.html

Table 7: CPE Devices, Port Information, and Documentation Links (*continued*)

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	Hardware Documentation
EX4300	—	—	https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex4300-system-overview.html

NOTE: Among the supported LAN devices, only EX4300 supports ZTP. For EX2300 and EX3400 devices, you must manually copy the stage-1 configuration from CSO to the device console and commit before you can activate the device.

- If you are using a GRE-only overlay between an SRX CPE and a hub device, ensure that GRE Traffic is enabled between CPE and the hub device.

To add an SD-WAN site with a CPE device and a LAN device:

1. From the Sites page (**Resources > Site Management**) of the CSO portal, click **Add** and select **On-Premise Spoke Site**.

The **Add Site** wizard appears.

2. Complete the configuration as explained in [Table 8 on page 33](#)
3. Click **Save**.

When the site is successfully provisioned, the Site Status in the Sites page changes to Provisioned.

4. To activate the switch, you must manually configure the stage-1 configuration on the switch.
 - a. On the Site Activation page, after the Prestage Device step completes successfully for the switch, the **View Stage-1 Configuration** link appears next to the Prestage Device step.
 - b. Click the **View Stage-1 Configuration** link.
- The Stage-1 Configuration page appears displaying the stage-1 configuration.
- c. Copy the stage-1 configuration and log in to the CLI of the EX Series switch.
 - d. Enter the configuration mode, paste, and commit the configuration.

After the stage-1 configuration is committed, the switch has the outbound SSH configuration to connect with CSO. CSO then executes the bootstrap and provisioning processes on the switch and completes provisioning the switch.

Table 8: SD-WAN On-Premise Spoke Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	Select SD-WAN and LAN .
Primary Hub	Select an enterprise hub site as the primary hub from the list of available hub sites. If there is only one hub site available, that one is selected by default.
WAN	
Device Series	Select the CPE device.
Device Template	Select a device template for the CPE device.
Device Name	Enter a unique name for the CPE device.
Serial Number	Enter the serial number of the CPE device.

Table 8: SD-WAN On-Premise Spoke Site Settings (*continued*)

Field	Description
Auto Activate	<p>If the selected device template supports ZTP, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added.</p> <p>The Activation Code field appears if the selected device template does not support ZTP or if you disable the Auto Activate option.</p> <p>In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p>
Link Type	<p>Specify whether the link is an Internet link or an MPLS link.</p> <p>If you select Internet as the Link Type, select the Access Type. The access type options available for Internet link are: Ethernet, LTE, ADSL, and VDSL.</p>
Egress Bandwidth	Specify the maximum bandwidth allocated for the WAN link.
Address Assignment	Specify whether to use DHCP or static addresses.
Service Provider	Enter the name of the service provider.
Cost per month	Enter the per month cost of the link. This information is used to identify the least expensive link when link switch occurs.
LAN	
Device Name	Enter a unique name for the device.
Device Type	Select the type of the device.
Serial Number	Specify the serial number of the switch.
Auto Activate	<p>Auto Activate is enabled by default. When Auto Activate is enabled, the device activation is automatically triggered when the site is added. The Activation Code field appears if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p>

After you add the site, you can complete the following tasks as required:

NOTE: If **Auto Activate** is not enabled for the devices, ensure that device is activated before you install licenses or signatures, or deploy policies.

- If the EX Series switch has Mist access points associated with that, you could integrate the Mist access points with CSO. For more information about integrating Mist access points with CSO, see [“Enabling Integration with Mist Access Points” on page 67](#).
- Upload and install licenses. For example, **Administration > Licenses**.
- Add, edit, and deploy an SD-WAN policy. For example, **Configuration > SD-WAN Policy**.
- Create and generate reports. For example, **Reports > Report Definitions > SD-WAN**.
- Monitor alerts and alarms, SLA performance of tenants, and jobs. For example, **Monitor > Jobs**.

For more information about these tasks, see the Contrail Service Orchestration documentation at https://www.juniper.net/documentation/product/en_US/contrail-service-orchestration.

SEE ALSO

| [Add an SD-WAN On-Premise Spoke Site](#) | 25

3

CHAPTER

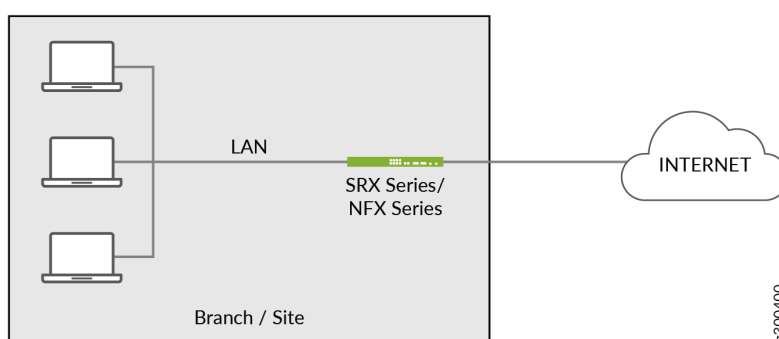
Hybrid WAN

Add an On-Premise Spoke Site with Hybrid WAN Capability | 39

Add an On-Premise Spoke Site with Hybrid WAN Capability

You add an on-premise spoke site with Hybrid WAN capability from the **Sites** page. The Hybrid WAN sites can have a maximum of two WAN links (one of the links functions as a backup) and run network services from the CPE device.

The following image illustrates a simple Hybrid WAN topology.



Before you add an on-premise spoke site with Hybrid WAN capability:

- Complete the connections as shown in the topology diagram and power up the devices.

NOTE: This task assumes that the firewall device will get DHCP IP address and will have Internet connectivity along with DNS resolution when connected according to the network design.

For more information about connecting the cables and connecting a console to the device, see the documentation for the CPE device. Links to the hardware documentation for the supported models are provided in [Table 9 on page 40](#).

- Ensure that ESP protocol traffic is allowed on the network.
- Ensure that the ports listed in [Table 9 on page 40](#) are open.

NOTE: Ensure that the devices are running the recommended version of Junos OS. For information about the supported Junos OS versions, see the Release Notes for Contrail Service Orchestration Release 5.0.0.

Table 9: Ports for Hybrid WAN

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	
SRX 4x000 devices	443	xe-0/0/0	SRX4100
	500	xe-0/0/1	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx4100-chassis.html
	4500	xe-0/0/2	SRX4200
		xe-0/0/3	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx4200-chassis.html
SRX 3xx devices, SRX 550M and vSRX devices	443	ge-0/0/0	SRX340
	500	ge-0/0/1	<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx340-chassis.html
	4500		SRX345
			<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx345-chassis.html
NFX 250	443	ge-0/0/8	SRX550M
	500		<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx550-hm-chassis.html
	4500		
	7804		
			NFX250
			<ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/nfx250-chassis.html

Table 9: Ports for Hybrid WAN (continued)

Device Model	NAT/Firewall Ports	CPE WAN Link Ports	
NFX 150	443 500 4500	heth4 and LTE	NFX150 <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/reference/specifications/chassis-nfx150-physical.html

To add a hybrid WAN site:

1. From the **Add** list of the **Sites** page, click **On-Premise Spoke Site**.
The **Add Site** wizard appears.
2. Complete the configuration settings in the General and WAN sections according to the guidelines provided in [Table 10 on page 41](#).
3. Review the configuration and modify the settings, if needed, from the **Summary** tab.
4. Click **Next** to review the settings and then, click **OK** to add the site.

When the site is successfully created, the Site Status in the Sites page changes to Provisioned.

Table 10: Fields on the Add OSpoke Site Page

Field	Description
General	
Site Information	
Site Name	Enter a site name. You can use any number of alphanumeric characters, including special characters. The maximum length is 10 characters.
Site Capabilities	
WAN Capabilities	Select Hybrid WAN to include Hybrid WAN capability in the on-premise spoke site.
Device Profile	

Table 10: Fields on the Add OSpoke Site Page (continued)

Field	Description
Device Series	Select the device series to which the CPE belongs—SRX, NFX150, or NFX250.
Device Template	Select a device template for the selected device series. The device template contains information for configuring a device.
Device Information	
Serial Number	Enter the serial number of the CPE device.
Auto Activate	If the selected device template supports ZTP, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added. The Activation Code field appears if the selected device template does not support ZTP or if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85 .
CPE Info	
CPE AS Number	Specify the autonomous system(AS) number.
Access Info	
Router Name	Specify the router name.
Router AS Number	Specify the AS number for the router.
Management Connectivity	
OAM Traffic Information	Select this option to set up an OAM link with CSO.

Table 10: Fields on the Add OSpoke Site Page (continued)

Field	Description
IP Prefix	<p>Enter the IPv4 prefix to be used for the management network. This IP address must be unique across the entire management network.</p> <ul style="list-style-type: none"> For NFX150 and NFX250 devices, if the USE_SINGLE_SSH_TO_NFX parameter is disabled in the device template, enter the IP address prefix as /29 or lower based on the number of VNFs. For all other devices, enter the IP address prefix as /32.
Gateway IP	If you configured the address assignment method as STATIC, enter the IP address of the gateway of the WAN service provider.
WAN links	
One of the two links functions as a backup link.	
WAN_0	
Link Type	Select whether the link would be an MPLS link or Internet link.
VLAN ID	Specify the identifier for the Layer 2 VLAN for the CPE device.
VRF Name	Specify the name of the virtual routing and forwarding (VRF) instance.
IPsec Concentrator Name	Specify the name of the IPsec concentrator device.
Internet Gateway IP	If you specified that the device is an IPsec concentrator, then specify the IPv4 address of the Internet gateway.
WAN_1	Refer to the fields described for WAN_0 for an explanation of the fields.

4

CHAPTER

Next Generation Firewall

[Next-Generation Firewall Sites](#) | 47

Next-Generation Firewall Sites

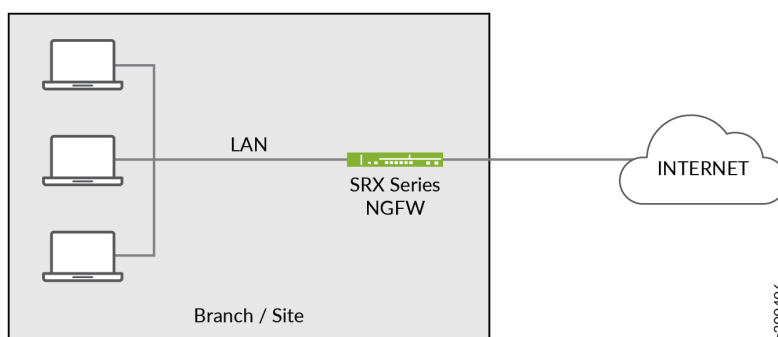
You can add a next-generation firewall site to manage a standalone SRX device that is configured as a firewall device. You can also create a next-generation firewall site with LAN for branch networks to manage an SRX firewall device and an EX Series switch.

This topic explains how you can:

- [Add an On-Premise Spoke Site for Next Generation Firewall on page 47](#)
- [Add an On-Premise Spoke Site with Next-Generation Firewall and LAN Capabilities on page 50](#)

Add an On-Premise Spoke Site for Next Generation Firewall

The following image shows a simple network topology for a standalone next-generation firewall site.



Complete the connections as shown in the topology diagram and power up the device.

This task assumes that the device will get DHCP IP address and will have Internet connectivity along with DNS resolution when connected according to the network design.

NOTE: When you configure the SRX device, ensure that you configure either the first port (**ge-0/0/0**) or the last port (**ge-0/0/7** or **ge-0/0/15** based on the SRX model) for Internet connectivity.

For more information about connecting the cables and connecting a console to the device, see the documentation for the firewall device. Links to the hardware documentation for the supported models are provided in [Table 11 on page 48](#).

NOTE: Ensure that the devices are running the recommended version of Junos OS. For information about the supported Junos OS versions, see the Release Notes for Contrail Service Orchestration Release 5.0.0.

Table 11: CPE Devices, Port Information, and Documentation Links

Device Model	Hardware Documentation
SRX3xx device and , SRX550M	SRX340 <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx340-chassis.html
	SRX345 <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx345-chassis.html
	SRX550M <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx550-hm-chassis.html

To add a next-generation firewall site:

1. From the Sites page (**Resources > Site Management**) of the CSO portal, click **Add** and select **On-Premise Spoke Site**.

The **Add Site** wizard appears.

2. Complete the configuration as explained in [Table 12 on page 48](#).

3. Click **Next** to review the settings and then, click **OK** to add the site.

When the site is successfully created, the Site Status in the Sites page changes to Provisioned.

Table 12: SD-WAN On-Premise Spoke Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	Select Next Gen Firewall .

Table 12: SD-WAN On-Premise Spoke Site Settings (*continued*)

Field	Description
WAN	
Serial Number	Enter the serial number of the device.
Auto Activate	Auto Activate is enabled by default. When Auto Activate is enabled, the device activation is automatically triggered when the site is added. The Activation Code field appears if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85 .
Zero Touch Provisioning	Zero Touch Provisioning is enabled by default. When Zero Touch Provisioning is enabled, zero-touch provisioning of the device is automatically triggered when the site is added. Note that the SRX device must support phone home client for ZTP to work. If the device does not support phone home client, disable Zero Touch Provisioning and manually copy-paste the stage-1 configuration from the device CLI.

After you add the site, you can complete the following tasks as required:

NOTE: The device must be activated before you install licenses or signatures, or deploy policies.

- Upload and install licenses. For example, **Administration > Licenses**.
- Install signatures. For example, **Administration > Signature Database**.
- Add, modify, and deploy firewall policies. For example, **Configuration > Firewall Policy**.
- Monitor alerts, alarms, and jobs. For example, **Monitor > Jobs**.

For more information about these tasks, see the Contrail Service Orchestration documentation at https://www.juniper.net/documentation/product/en_US/contrail-service-orchestration.

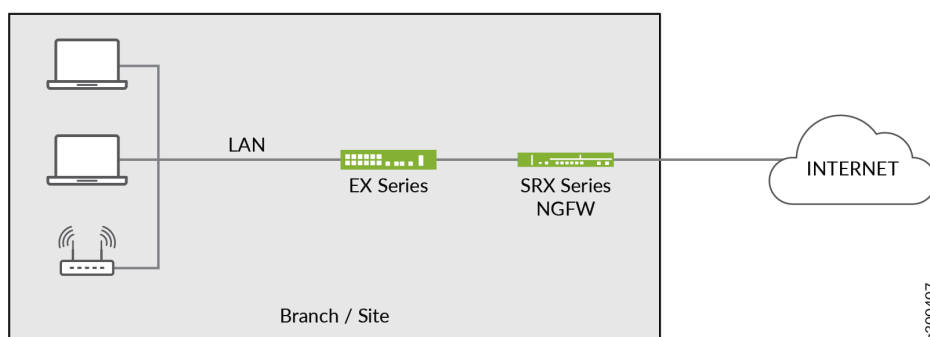
SEE ALSO

[Add an On-Premise Spoke Site with Next-Generation Firewall and LAN Capabilities](#) | 50

Add an On-Premise Spoke Site with Next-Generation Firewall and LAN Capabilities

You can add a next-generation firewall site with LAN capabilities to manage an SRX device that is configured as a firewall device along with an EX series switch that is configured for the LAN network.

The following image shows a simple network topology for an on-premise spoke site with next-generation firewall and LAN capabilities.



Complete the connections as shown in the topology diagram and power up the devices.

This task assumes that the firewall device will get DHCP IP address and will have Internet connectivity along with DNS resolution when connected according to the network design.

NOTE: When you configure the SRX device, ensure that you configure either the first port (**ge-0/0/0**) or the last port (**ge-0/0/7** or **ge-0/0/15** based on the SRX model) for Internet connectivity.

For more information about connecting the cables and connecting a console to the device, see the documentation for the firewall device. Links to the hardware documentation for the supported models are provided in [Table 13 on page 51](#).

NOTE: Ensure that the devices are running the recommended version of Junos OS. For information about the supported Junos OS versions, see the Release Notes for Contrail Service Orchestration Release 5.0.0.

Table 13: Documentation Links for the Supported Hardware Devices

Device Model	Hardware Documentation
SRX3xx devices and SRX550M	SRX340 <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx340-chassis.html
	SRX345 <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx345-chassis.html
	SRX550M <ul style="list-style-type: none"> • https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/srx550-hm-chassis.html
LAN Switches	
EX2300	https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex2300-system-overview.html
EX3400	https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex3400-chassis.html
EX4300	https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex4300-system-overview.html

1. From the Sites page (**Resources > Site Management**) of the CSO portal, click **Add** and select **On-Premise Spoke Site**.

The **Add Site** wizard appears.

2. Complete the configuration as explained in [Table 14 on page 52](#).

3. Click **OK** to add the site.
4. To activate the switch, you must manually configure the stage-1 configuration on the switch.
 - a. On the Site Activation page, after the Prestage Device step completes successfully for the switch, the **View Stage-1 Configuration** link appears next to the Prestage Device step.
 - b. Click the **View Stage-1 Configuration** link.
The Stage-1 Configuration page appears displaying the stage-1 configuration.
 - c. Copy the stage-1 configuration and log in to the CLI of the EX Series switch.
 - d. Enter the configuration mode, paste, and commit the configuration.
After the stage-1 configuration is committed, the switch has the outbound SSH configuration to connect with CSO. CSO then executes the bootstrap and provisioning processes on the switch and completes provisioning the switch.

When the site is successfully created, the Site Status in the Sites page changes to Provisioned.

Table 14: SD-WAN On-Premise Spoke Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	Select Next Gen Firewall .
WAN	
Serial Number	Enter the serial number of the device.
Auto Activate	Auto Activate is enabled by default. When Auto Activate is enabled, the device activation is automatically triggered when the site is added. The Activation Code field appears if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see "Activate a Device" on page 85 .

Table 14: SD-WAN On-Premise Spoke Site Settings (*continued*)

Field	Description
Zero Touch Provisioning	Zero Touch Provisioning is enabled by default. When Zero Touch Provisioning is enabled, zero-touch provisioning of the device is automatically triggered when the site is added. Note that the SRX device must support phone home client for ZTP to work. If the device does not support phone home client, disable Zero Touch Provisioning and manually copy-paste the stage-1 configuration from the device CLI.
In Band Management	Use the same port that you have configured for Internet connectivity for in-band management. Based on the SRX device, the port can be the first port (ge-0/0/0) or the last port (ge-0/0/7 or ge-0/0/15).
LAN	
Device Name	Enter a unique name for the device.
Device Type	Select the type of the device.
Trunk Ports	Select at least two trunk ports on the CPE device to connect with the switch.
Switch Management Subnet	Specify the subnet that the DHCP can use to assign IP addresses.
Serial Number	Enter the serial number of the device.
Auto Activate	<p>If the selected device supports ZTP, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added.</p> <p>The Activation Code field appears if the selected device template does not support ZTP or if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p>

After you add the site, you can complete the following tasks as required:

NOTE: The device must be activated before you install licenses or signatures, or deploy policies.

- If the EX Series switch has Mist access points associated with that, you could integrate the Mist access points with CSO. For more information about integrating Mist access points with CSO, see [“Enabling Integration with Mist Access Points” on page 67](#).
- Upload and install licenses. For example, **Administration > Licenses**.
- Install signatures. For example, **Administration > Signature Database**.
- Add, modify, and deploy firewall policies. For example, **Configuration > Firewall Policy**.
- Create and generate reports. For example, **Reports > Report Definitions > .**

For more information about these tasks, see the Contrail Service Orchestration documentation at https://www.juniper.net/documentation/product/en_US/contrail-service-orchestration.

SEE ALSO

| [Add an On-Premise Spoke Site for Next Generation Firewall](#) | 47

5

CHAPTER

LAN

LAN Sites | 57

Enabling Integration with Mist Access Points | 67

LAN Sites

You can add an on-premise spoke site to provision, manage, and monitor EX Series switches by using CSO. You can either add an on-premise spoke site to manage a standalone EX Series switch or add an EX Series switch along with a CPE, a next-generation firewall device, or an enterprise hub. The EX Series switch can be added when you create an on-premise spoke site or enterprise hub. Alternatively, you can add the switch to an existing SD-WAN site, a next-generation firewall site, or an enterprise hub.

You can create one or more of the following sites to manage EX series switches:

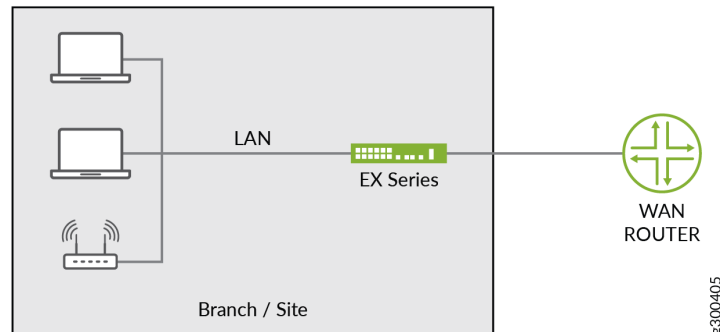
- [On-premise spoke site for LAN on page 58](#)
- [On-premise spoke site for SD-WAN and LAN capabilities on page 29](#)
- [On-premise spoke site for next-generation firewall and LAN capabilities on page 50](#)
- [Add an Enterprise Hub Site with SD-WAN and LAN Capabilities on page 20](#)

Alternatively, you can also add an EX Series switch to one of the existing sites as explained in the [“Add LAN Capabilities to an Existing Site by Using a Switch” on page 65](#) topic.

If the EX Series switch has Mist access points associated with that, you could integrate the Mist access points with CSO. For more information about integrating Mist access points with CSO, see [“Enabling Integration with Mist Access Points” on page 67](#).

Add an On-Premise Spoke Site for LAN

Adding an on-premise spoke site for LAN enables you to provision, manage, and monitor EX Series switches by using CSO. The following image illustrates a simple topology of LAN for branch networks.



Connect the devices as shown in the topology diagram and power on the devices.

NOTE: This task assumes that the device will get DHCP IP address and will have Internet connectivity along with DNS resolution when connected according to the network design.

NOTE: Ensure that the devices are running the recommended version of Junos OS. For information about the supported Junos OS versions, see the Release Notes for Contrail Service Orchestration Release 5.0.0.

For information about connecting the device and connecting a console to the device, see the hardware documentation for your LAN device:

- EX2300 https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex2300-system-overview.html
- EX3400 https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex3400-chassis.html
- EX 4300 https://www.juniper.net/documentation/en_US/release-independent/junos/topics/topic-map/ex4300-system-overview.html

To add an on-premise spoke site for LAN:

1. From the Sites page (**Resources > Site Management**) of the CSO portal, click **Add** and select **On-Premise Spoke Site**.

The **Add Site** wizard appears.

2. Complete the configuration as explained in [Table 15 on page 60](#).

3. Click **OK** to add the site.

The site activation job is initiated and the Site Activation: Site-Name page appears displaying the progress of the steps executed for activating the switch.

4. To activate the switch, you must manually configure the stage-1 configuration on the switch.

a. On the Site Activation page, after the Prestage Device step completes successfully for the switch, the **View Stage-1 Configuration** link appears next to the Prestage Device step.

b. Click the **View Stage-1 Configuration** link.

The Stage-1 Configuration page appears displaying the stage-1 configuration.

c. Copy the stage-1 configuration and log in to the CLI of the EX Series switch.

d. Enter the configuration mode, paste, and commit the configuration.

After the stage-1 configuration is committed, the switch has the outbound SSH configuration to connect with CSO. CSO then executes the bootstrap and provisioning processes on the switch and completes provisioning the switch.

When the site is successfully created, the Site Status in the Sites page changes to Provisioned.


Table 15: Settings for an On-Premise Spoke Site with LAN Capabilities

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	Select LAN .
LAN	
Device Name	Enter a unique name for the device.
Device Type	Select the type of the device.
Serial Number	Specify the serial number of the switch.

Table 15: Settings for an On-Premise Spoke Site with LAN Capabilities (continued)

Field	Description
Auto Activate	Auto Activate is enabled by default. When Auto Activate is enabled, the device activation is automatically triggered when the site is added. The Activation Code field appears if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “ Activate a Device ” on page 85.

After you add the site, you can complete the following tasks as required:

**NOTE:** The device must be activated before you install licenses or signatures, or deploy policies.

- Monitor alerts, alarms, and jobs. For example, **Monitor > Jobs**.

For more information about these tasks, see the Contrail Service Orchestration documentation at https://www.juniper.net/ documentation/product/en_US/contrail-service-orchestration.

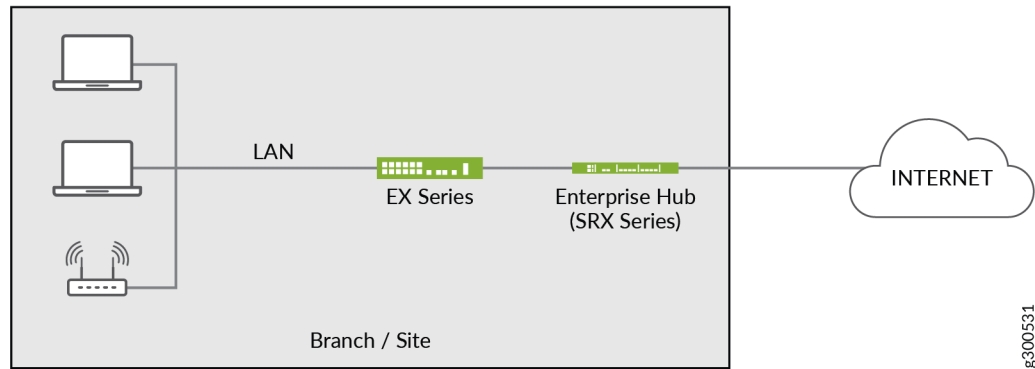
SEE ALSO

| [Add an SD-WAN On-Premise Spoke Site with LAN for Branch Networks](#) | 29

Add an Enterprise Hub Site with SD-WAN and LAN Capabilities

An enterprise hub is an SD-WAN site that is used to carry site-to-site traffic between on-premise spoke sites and to break out backhaul (central breakout) traffic from on-premise spoke sites. You can add an EX Series switch for branch network as part of the enterprise hub site. The following illustration shows a

simple topology that contains an enterprise hub and an EX Series switch.



To add an enterprise hub:

1. On the Sites page (**Resources > Site Management**) of the CSO portal, click **Add**, and select **Enterprise Hub**.

The **Add enterprise hub for *Tenant-Name*** page appears.

2. Complete the configuration settings according to the guidelines provided in [Table 4 on page 22](#).
3. Click **OK**.

The site activation job is initiated and the Site Activation: Site-Name page appears displaying the progress of the steps executed for activating the devices in the site.

4. To activate the switch, you must manually configure the stage-1 configuration on the switch.
 - a. On the Site Activation page, after the Prestage Device step completes successfully for the switch, the **View Stage-1 Configuration** link appears next to the Prestage Device step.
 - b. Click the **View Stage-1 Configuration** link.

The Stage-1 Configuration page appears displaying the stage-1 configuration.

- c. Copy the stage-1 configuration and log in to the CLI of the EX Series switch.
- d. Enter the configuration mode, paste, and commit the configuration.

After the stage-1 configuration is committed, the switch has the outbound SSH configuration to connect with CSO. CSO then executes the bootstrap and provisioning processes on the switch and completes provisioning the switch.

When the site is successfully created, the Site Status on the Sites page changes to Provisioned.

Table 16: Enterprise Hub Site Settings

Field	Description
General	
Site Name	Enter a unique name for the site. You can use alphanumeric characters and hyphen (-); the maximum length is 10 characters.
Site Capabilities	SD-WAN capability is selected by default. You cannot clear the selection. If you want to include LAN capabilities in the enterprise hub site, select LAN .
WAN	
Device Series	Select the device series to which the CPE device belongs—SRX, NFX150, or NFX250.
Device Template	Select a device template for the selected device series. The device template contains information for configuring a device.
Serial Number	Enter the serial number of the CPE device.
Auto Activate	<p>If the selected device template supports auto authorization, Auto Activate is enabled. When Auto Activate is enabled, zero-touch provisioning of the device is automatically triggered when the site is added.</p> <p>The Activation Code field appears if the selected device template does not support auto authorization or if you disable the Auto Activate option.</p> <p>In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p> <p>NOTE:</p>
IP Prefix	<p>Enter the IPv4 prefix to be used for the management network. This IP address must be unique across the entire management network.</p> <ul style="list-style-type: none"> For NFX150 and NFX250 devices, if the USE_SINGLE_SSH_TO_NFX parameter is disabled in the device template, then enter the IP address prefix as /29 or lower based on the number of VNFs. For all other devices, enter the IP address prefix as /32.
WAN Links	
WAN_0	<p>This field is enabled by default.</p> <p>You can configure up to 4 WAN links as required.</p>

Table 16: Enterprise Hub Site Settings (continued)

Field	Description
Link Type	Select whether the link would be an MPLS link or Internet link.
Egress Bandwidth	Enter the maximum bandwidth, in Mbps, allowed on the WAN link. Range: 1 through 10,000.
Address Assignment	Select the method of assigning an IP address to the WAN link—DHCP or STATIC. If you select STATIC, you must provide the IP address prefix and the gateway address for the WAN link.
Static IP Prefix	If you configured the address assignment method as STATIC, enter the IP address prefix of the WAN link.
Gateway IP Address	If you configured the address assignment method as STATIC, enter the IP address of the gateway of the WAN service provider.
Advanced Settings	
Use For Fullmesh	Click the toggle button to specify whether the WAN link can be a part of a full mesh topology. A site can have a maximum of three links enabled for meshing.
LAN	
NOTE: This tab is enabled only if you select LAN from the Site Capabilities options in General Settings.	
Device Profile	
Device Name	Enter a name for the switch. You can use alphanumeric characters and hyphen (-). The maximum length allowed is 15 characters.
Device Type	Select the type of switch—EX2300, EX3400, or EX4300 When you change the default device type, a carousel for device template appears.
Device Model	Select the model for the switch you specified in the Device Type. The models vary in the number and type of ports the switch contains. For example, If you selected EX3400, select a model such as EX3400-24P, EX3400-48P, EX3400-24T among others.

Table 16: Enterprise Hub Site Settings (*continued*)

Field	Description
CPE Settings	
Trunk Ports	<p>Select at least two trunk ports on the CPE device to connect with the switch.</p> <p>The trunk ports are used for carrying the following:</p> <ul style="list-style-type: none"> • LAN traffic between the switch and the CPE • Management traffic for in-band management of the switch.
Switch Management Subnet	Specify the subnet that the DHCP can use to assign IP addresses to the switch and the access devices connected to the switch.
Switch Details	
Serial Number	Specify the serial number of the switch.
Auto Activate	<p>Auto Activate is enabled by default. When Auto Activate is enabled, the device activation is automatically triggered when the site is added. The Activation Code field appears if you disable the Auto Activate option. In such cases, specify the activation code of the device to manually activate a device. For information about manually activating a device, see “Activate a Device” on page 85.</p> <p>NOTE: You must physically connect the switch to the CPE and power it on for the switch to be automatically activated when the auto activate option is enabled.</p>

SEE ALSO

[On-premise spoke site for LAN | 58](#)

[Next-generation firewall site with LAN for branch networks | 50](#)

Add LAN Capabilities to an Existing Site by Using a Switch

You can add a switch to an existing SD-WAN site, next-generation firewall site, or an enterprise hub site.

Before you add a switch to an existing site, ensure that you connect the switch to the network as shown in the topology diagrams provided in the following topics. After you connect the switch to the network as required, power on the device.

- [SD-WAN site with LAN for branch networks on page 29](#)

NOTE: You can add a LAN switch to an SD-WAN site only if the CPE is an SRX series device or an NFX250 device.

- [Next-generation firewall site with LAN for branch networks on page 50](#)
- [Add an Enterprise Hub Site with SD-WAN and LAN Capabilities on page 20](#)

To add a switch to an existing site, follow these steps:

1. From the Sites page (**Resources > Site Management**) of the CSO portal, select the site to which you want to add the switch, click **Add**, and select **Add Switch**.

The Add Switch page appears.

2. Complete the following configuration:

- Device Name - specify a unique name for the device.
- Device Type - select the type of device from the Device Type drop-down list.
- Device Model - select a device model for the switch.
- Trunk Ports - specify the CPE trunk ports.
- Switch Management Subnet - specify the subnet that the DHCP can use to assign IP addresses to the switch and the access devices connected to the switch.
- Serial Number - specify the serial number of the switch.

NOTE: Based on the device template you selected, the Auto Activate Switch toggle button is enabled or disabled by default. You can click to enable or disable this option. When Auto Activate Switch is enabled, zero-touch provisioning of the switch is automatically triggered when the site is created.

If you choose to disable the Auto Activate Switch option, you must specify the activation code of the device to [“manually activate a device” on page 85](#).

3. Click **Save**.

The site activation job is initiated and the Site Activation: Site-Name page appears displaying the progress of the steps executed for activating the devices in the site.

4. To activate the switch, you must manually configure the stage-1 configuration on the switch.
 - a. On the Site Activation page, after the Prestage Device step completes successfully for the switch, the **View Stage-1 Configuration** link appears next to the Prestage Device step.

- b. Click the **View Stage-1 Configuration** link.

The Stage-1 Configuration page appears displaying the stage-1 configuration.

- c. Copy the stage-1 configuration and log in to the CLI of the EX Series switch.

- d. Enter the configuration mode, paste, and commit the configuration.

After the stage-1 configuration is committed, the switch has the outbound SSH configuration to connect with CSO. CSO then executes the bootstrap and provisioning processes on the switch and completes provisioning the switch.

Enabling Integration with Mist Access Points

You can enable integration with the Mist access points to easily access and view Mist access points connected to the branch network. When integration with Mist access point is enabled, the connected access points are listed in the **Devices** tab of the **Resources > Site Management > Site Name** page. You can click the access point name to view the Mist access point details from the Mist portal that is integrated with CSO.

To enable integration with the Mist access point:

1. Select **Administration > WiFi Settings**.

The WiFi Settings page appears.

2. Click the Enable toggle button to enable integration with Mist access points.

The Login E-mail and Login Password fields appear.

3. In the Login E-mail page, enter the e-mail address that is the username for your Mist account.

4. In the Login Password page, enter the password for your Mist account.
5. Click **Save**.

After you enable integration and enter the login credentials, CSO adds the access point to the list of devices associated with a site. To view details about the access point, **Devices** tab of the **Resources > Site Management > Site Name** page and click the access point name. The Mist portal page for the selected device appears.

6

CHAPTER

Tenant Management

[Add a Tenant](#) | **71**

Add a Tenant

To add a tenant to the OpCo portal, follow these steps:

1. From the CSO portal, go to the **Tenants** page and click **+**.

The Add Tenant wizard appears.

2. Configure the settings as explained in [Table 17 on page 71](#).

After you complete the configuration in each of the sections, click **Next**.

3. Click **Submit** to add the tenant.

An Add Tenant job is created, and when the job is successfully completed, the tenant is listed in the Tenants page. When a new tenant is added, an account activation e-mail is sent to the tenant.

Table 17: Add Tenant Settings

Field Name	Description
Name	Enter a unique name for the tenant. The name can contain alphanumeric characters and underscore and should not exceed 15 characters.
First Name	Enter the first name of the tenant administrator user.
Last Name	Enter the last name of the tenant administrator user.
Username (Email)	Enter the e-mail address of the tenant administrator user to set as the user name for the tenant administrator.
Roles	Select one or more of the available roles to assign that to the tenant administrator user.

Table 17: Add Tenant Settings (*continued*)

Field Name	Description
Service for Tenant	<p>Select one or more of the following services that the tenants can manage by using CSO:</p> <ul style="list-style-type: none"> • SD-WAN—Enables tenants to manage sites that have up to four WAN links with intelligent, SLA-based traffic routing among the WAN links. • Hybrid WAN—Enables tenants to manage sites where the network services are run from the CPE device and supports up to WAN links to provide an active/backup model. • Next-Generation Firewall—Enables the tenants to manage next generation firewall devices and firewall policies. • LAN—Enables the tenants to manage EX Series switches. <p>When tenants add sites, they can implement any of the services that you selected. For example:</p> <ul style="list-style-type: none"> • If you select only SD-WAN, tenants can create one or more on-premise spoke site for SD-WAN. • If you select only LAN, tenants can create one or more on-premise spoke site for standalone EX Series switches. • If you select SD-WAN and LAN, tenants can create one or more of the following sites: <ul style="list-style-type: none"> • An on-premise spoke site for SD-WAN • An on-premise spoke site for a standalone EX Series switch • An on-premise spoke site for SD-WAN with LAN capabilities

RELATED DOCUMENTATION

[Configure SMTP Settings | 75](#)

7

CHAPTER

SMTP Configuration

[Configure SMTP Settings](#) | **75**

Configure SMTP Settings

Configure an SMTP server for sending e-mail messages.

1. When you log in to the CSO portal for the first time after changing the default password, you are prompted to configure the SMTP server. Click **OK** to open the SMTP page.

Alternatively, select **Administration >SMTP** from the CSO portal.

The SMTP page appears.

2. Configure the settings as explained in [Table 18 on page 75](#).

3. Click **Save**.

Table 18: SMTP Settings

Field	Description
Server Address	Enter the hostname for the SMTP server.
Port Number	Enter the port number for the SMTP server. Check with your e-mail service provider for the SMTP port number.
From Name	Enter the name that you want to appear as the from name in the e-mail.
User Name	If you have enabled SMTP Authentication , enter the user name that you want to use for authentication.
Password	If you have enabled SMTP Authentication , enter and confirm the password that you want to use for authentication.
From Email Address	Enter the e-mail address that you want to appear as the from address in the e-mail.

RELATED DOCUMENTATION

| [Add a Tenant](#) | 71

8

CHAPTER

Provider Hub

[Add a Provider Hub \(DATA_ONLY Capability\) | 79](#)

Add a Provider Hub (DATA_ONLY Capability)

You can add an SRX Series services gateway or a vSRX instance as a provider hub device. The device template that is currently supported for provider hub devices is SRX as SD-WAN Hub. You can configure a provider hub with the DATA_ONLY capability.

To add a provider hub device with DATA_ONLY capability:

1. Select **Resources > Cloud Hub Devices**.

The Cloud Hub Devices page appears.

2. Click the add icon (+).

The Add Cloud Hub Device page appears.

3. Complete the configuration according to the guidelines provided in [Table 19 on page 79](#).

4. Click **Ok**. If you want to discard your changes, click **Cancel** instead.

If you click **Ok**, the provider hub device is added. The information about the new provider hub device appears on the Cloud Hub Devices page.

Table 19: Fields on the Add Cloud Hub Device Page

Field	Description
Name	<p>Enter the name of the cloud hub device.</p> <p>You can use alphanumeric characters, including special character(-). The maximum length is 15 characters.</p> <p>Example: SRX-cloud-hub</p>
Management Region	<p>Displays the regional server with which the device communicates. The management region name is populated based on the information from the device template.</p> <p>Example: regional</p>
POP	<p>Select the POP where the hub device needs to be added.</p> <p>Example: pop_blue</p>

Table 19: Fields on the Add Cloud Hub Device Page (*continued*)

Field	Description
Site Capability	<p>Select the site capability of the provider hub device as DATA_ONLY, which indicates that the hub transmits only the data traffic.</p> <p>A secure connection is established between the provider hub with data capability and the provider hub (with OAM capability) that are owned and managed by the Juniper Network team that hosts the cloud-based CSO.</p>
Authentication Type	Select the authentication method—Preshared Key (PSK) or Public Key Infrastructure (PKI).
Advanced Configuration	
Name Server IP List	<p>Specify one or more IPv4 addresses of the DNS server. To enter more than one DNS server address, type the address, press Enter, and then type the next address, and so on.</p> <p>DNS servers are used to resolve hostnames into IP addresses.</p>
NTP Server	<p>Specify the fully qualified domain names (FQDNs) or IP addresses of one or more NTP servers.</p> <p>Example: ntp.example.net</p> <p>The site must have DNS reachability to resolve the FQDN during site configuration.</p>
Select Timezone	Select the time zone of the site.
Device Template	
Device Series	Select the device series to which the provider hub belongs—MX or SRX.
Device Template	<p>Select a device template for the selected device series.</p> <p>The device template contains information for configuring a device.</p>
Device Information	

Table 19: Fields on the Add Cloud Hub Device Page (*continued*)

Field	Description
Serial Number	<p>Enter the serial number of the provider hub device.</p> <p>The serial number is a 12-digit number present on the rear panel of the device. Serial numbers are case-sensitive.</p>
Auto Activate	<p>Click the toggle button to enable or disable automatic activation of the provider hub device.</p> <p>When you enable this field, zero-touch provisioning (ZTP) of the provider hub device is automatically triggered after the site is added to CSO.</p> <p>The device template that you select determines whether this option is enabled or disabled by default.</p>
Boot image	<p>Select the boot image from the drop-down list if you want to upgrade the image for the provider hub device.</p> <p>The boot image is the latest build image uploaded to the image management system. The boot image is used to upgrade the device when the CSO starts the ZTP process.</p> <p>If the boot image is not provided, then the device skips the procedure to upgrade the device image. The boot image (NFX or SRX) is populated based on the device template that you have selected while creating a site. .</p>
Management Connectivity	
Loopback IP Prefix	<p>By default, CSO assigns the IPv4 address prefix for the loopback interface on the device. If you prefer to use a specific loopback address contact the Juniper Networks team.</p>
WAN Links	

Table 19: Fields on the Add Cloud Hub Device Page (*continued*)

Field	Description
WAN_0	Select a WAN link to enable it. After selecting the link, specify the following information: <ul style="list-style-type: none"> • WAN Interface—Displays the interface name configured in the device template. You cannot modify this field. Example: ge-0/0/0 • Link Type—Select the link type (MPLS or Internet) configured in the device template. Example: Internet • Address Assignment—Select STATIC to assign a static IP address. • Static IP Prefix—Enter a private IPv4 address from the subnet • Gateway IP Address—Enter the gateway IP address of the default route. • Data VLAN ID—(Optional) Enter the VLAN ID that is associated with the data link. A data VLAN identifier is an integer in the range 0–65,535. Example: 201
WAN_1	
WAN_2	
WAN_3	

After you add the cloud hub device:

- If you have enabled the Auto Activate field, the cloud hub device gets automatically activated.
- If you have disabled the Auto Activate field, select the cloud hub device on the **Resources > Cloud Hub Devices** page and click **Activate Device**.

During activation, the cloud hub device is discovered and the required details are stored in CSO.

9

CHAPTER

Device Activation

Activate a Device | 85

Activate a Device

To manually activate a device, follow these steps:

1. From the Customer Portal, click **Sites**.

The **Sites** page appears.

2. Click the site with which the device that you want to activate is associated.

The *Site* page for the selected site appears.

3. Go to the **Devices** tab of the *Site* page.

4. Select the device that you want to activate and click **Activate Device**.

The **Activate Device** page appears.

5. On the **Activate Device** page, enter the activation code for the device. The activation code must match the activation code that was provided during the site addition workflow.

6. Click **Next**.

The progress of the device activation task is displayed.

7. Click **OK** when the device activation is complete.

The sites page appears. The status of the device is set to PROVISIONED if the device is successfully activated. Once the device is provisioned, you can use the device to route traffic.

RELATED DOCUMENTATION

[Add an SD-WAN On-Premise Spoke Site | 25](#)

[Add an On-Premise Spoke Site for LAN | 58](#)

[Add an SD-WAN On-Premise Spoke Site with LAN for Branch Networks | 29](#)

[Add an On-Premise Spoke Site with Hybrid WAN Capability | 39](#)

[Add an On-Premise Spoke Site for Next Generation Firewall | 47](#)

[Add an On-Premise Spoke Site with Next-Generation Firewall and LAN Capabilities | 50](#)