



# Configuring High Speed Stacking

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## Restrictions for High Speed Stacking

- A high speed stack can support a maximum of 16 ASICs. The maximum switches on a stack in the high speed mode depend on the sum of total number of ASICs on the stack ring.
- This feature is supported only on the C9300X-12Y, C9300X-24Y, C9300X-48HX and C9300X-48TX models of the Cisco Catalyst 9300 Series Switches.

## Information about High Speed Stacking

High Speed Stacking allows you to configure the bandwidth of Standard Interchange Format (SIF) ports to 1 Tbps.

The following topics provide information about High Speed Stacking.

## Overview of High Speed Stacking

High Speed Stacking allows you to configure the bandwidth of the SIF ports on a stack to 1Tbps. High Speed stacking is applicable only when all the switches in a stack are Catalyst 9300X switches.

You can use the configuration command **switch stack-speed [high | low]** to configure the bandwidth of the SIF ports from 480Gbps (legacy mode) to 1Tbps (high speed mode). You need to reload the stack after the command is issued.

When a stack consisting of Catalyst 9300X switches boots up, a script will detect that the stack is capable of high speed. It will trigger a second reboot and change the configuration of all the switches to high speed. The script works only when all the switches have the manufacture default configuration.

The SIF port speed in the manufacture default configuration is 480 Gbps. Two stack ports on the same switch must have the same SIF port speed. If a stack cable connects to two stack ports with mismatched speeds the port link will go down. The stack will be split into sub-rings. To correct the stack-split situation, you can configure each sub-stack with the same speed by using the **switch stack-speed [high | low]** command.

## Manufacture Default Stack Bootup with High Speed Stacking

When a stack boots up in the manufacture default configuration, it always boots up with the lowest speed among members. If the stack is homogenous and consists of switches capable of High Speed Stacking, a script running on the active switch determines that the switches are capable of high speed. The active switch configures the stack to high speed and initiates a second round of reloads. After the second reload all the members of the stack load with high speed configured. The stack becomes a high speed ring. The homogenous stack of Catalyst 9300X switches must be a full ring stack for the automatic script to work. The script will work automatically within the first 15 minutes of uptime only.

You can use the command **show switch stack-ring speed** to display the current speed of the stack ring and what the speed will be after the next reboot.

You can use the command **show switch stack-bandwidth** to display the current stack bandwidth and what the bandwidth will be after the next reboot.

## Second Time Stack Bootup with High Speed Stacking

After the stack boots up for the first time, the speed is configured to be low speed (480Gbps) and the stack is a full-ring (indicating all physically connected switches are up). If the stack is homogenous and supports High Speed Stacking, it will undergo a second boot up and the speed will be configured to high speed (1Tbps). If the stack does not support High Speed Stacking it will not undergo the second boot up and will continue at low speed.

## Inserting a Switch into a High Speed Stack

The following scenarios detail how to manage the insertion of a new switch into a high speed stack.

- **Hot insertion of a High Speed Stacking capable switch into a high speed stack:** If the new switch has been configured for high speed it will join the stack in high speed. If the switch has not been configured for high speed it will boot up as an active island. You will have to connect to the switch using a console, enter the configuration command **switch stack-speed high**. After entering the command the following notice will be displayed: "Stack speed does not take effect until after the reboot." After the second reboot the switch will match the speed of the stack.
- **Hot insertion of a Cisco Catalyst 9300 switch into a high speed stack:** All Cisco Catalyst 9300 switches are not capable of High Speed Stacking. The switch will become an active island in the high speed autonomous stack. If you intend to have a mixed stack running at legacy speed (480 Gbps), you should configure the command **switch stack-speed low** on the high speed homogenous stack. Once you reload the stack and the new switch you will have a mixed stack operating at low speed.
- **Hot Insertion of a High Speed Stacking capable switch into a mixed stack:** A new switch capable of High Speed Stacking is configured for low speed by default. Mixed stacking can function only at low speed (480 Gbps). The new switch will join the mixed stack and function at low speed.

## Preconfiguring a Switch to a Speed Setting

You can use the following methods to configure a switch to the desired speed setting.

- **Cisco Zero Day Deployment:** You can apply the startup configuration with the desired speed setting on a stand-alone switch using Cisco Zero Day Deployment.
- **CLI:** You can connect the stand-alone switch to a console and enter the configuration command **switch stack-speed [high | low]**. You can configure the desired speed and reload the switch. After the reload you can insert the switch into the stack.
- **Configuration Auto-install:** You can auto-configure a stand-alone switch by connecting it to a TFTP server reachable by management Gigabit Ethernet port. You can also use a USB key to auto-configure the switch in standalone mode.

## Configuring High Speed Stacking

To configure High Speed Stacking, perform this procedure.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> Device# <b>configure terminal</b>	Enters global configuration mode.
<b>Step 3</b>	<b>switch stack-speed [high   low]</b> <b>Example:</b> Device(config)# <b>switch stack-speed high</b>	Configures the stack speed to high (1Tbps) or low (480Gbps). The configuration requires a reload to take effect.
<b>Step 4</b>	<b>end</b> <b>Example:</b> Device(config)# <b>end</b>	Returns to privileged EXEC mode.
<b>Step 5</b>	<b>show switch stack-ring speed</b> <b>Example:</b> Device# <b>show switch stack-ring speed</b>	Displays the current stack ring speed and the stack ring speed after the next reload.
<b>Step 6</b>	<b>show switch stack-bandwidth</b>	Displays the current stack bandwidth and the stack bandwidth after the next reload.

# Configuration Examples for High Speed Stacking

The following sections provide examples of High Speed Stacking configurations.

## Example: Displaying Switch Stack-ring speed

The following example shows how to display the switch stack-ring speed

```
Device#show switch stack-ring speed
Stack Ring Speed      : 1000G
Stack Ring Configuration: Full
Stack Ring Protocol   : StackWise
Stack Ring Next-boot Speed: 1000G.
```

## Example: Displaying Switch Stack Bandwidth

The following example shows how to display the switch stack bandwidth.

```
Device#sh switch stack-bandwidth
Switch#   Stack Role   Current Bandwidth   State   Next-boot Bandwidth
-----
*1        Active  480G      Ready        1000G
2         Standby  480G      Ready        1000G
3         Member   480G      Ready        1000G
```

# Feature History for Configuring High Speed Stacking

This table provides release and related information for the features explained in this module.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Bengaluru 17.5.1	Configuring High Speed Stacking	The High Speed Stacking feature allows you to configure a homogenous stack of switches to run at the speed of 1Tbps.  The feature was introduced on the C9300X-12Y and C9300X-24Y models of the Cisco Catalyst 9300 Series Switches.
Cisco IOS XE Bengaluru 17.6.2	Configuring High Speed Stacking	The feature was introduced on the C9300X-48HX and C9300X-48TX models of the Cisco Catalyst 9300 Series Switches.

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