Configure Stack Settings on a Switch through the CLI

Objective

Stacking allows you to expand your network capacity without the hassle of managing multiple devices. Stackable switches can be added or removed from a stack as needed without affecting the overall performance of the stack. Depending on its topology, a stack can continue to transfer data even if a link or unit within the stack fails. This makes stacking an effective, flexible, and scalable solution to expand network capacity.

By default, a switch is always stackable, but has no port configured as a stack port. All the ports in the devices are configured as network ports by default. A device without any stack port can be thought of as the active device in a stack of only itself or as a standalone device. To stack two or more switches, you can reconfigure the desired network ports as stack ports in the switches and connect them with the resulting stack ports in a ring or chain topology.

The units or switches in a stack are connected through stack ports. Stacked switches are then collectively managed as a single logical device. In some cases, stack ports can become members in a stack of Link Aggregation Groups (LAGs) increasing the bandwidth of the stack interfaces.

Some of these stacking terms may be unfamiliar to you. For further explanation, check out Cisco Business: Glossary of New Terms.

A stack provides the following benefits:

- Network capacity can be expanded or reduced dynamically. By adding a unit, the administrator can dynamically increase the number of ports in the stack while maintaining a single point of management. Similarly, units can be removed to decrease network capacity.
- The stacked system supports redundancy in the following ways:

- The Standby unit becomes the active of the stack if the original active fails.

- The stack system supports two types of topologies: Chain and Ring. Ring topology is more reliable than a chain topology. The failure of one link in a ring does not affect the function of the stack, whereas the failure of one link in a chain connection might cause the stack to be split.

This article provides instructions on how to configure stack settings through the Command Line Interface (CLI) of your switch.

To know how to configure the stack settings of your SG350X switch through the web-based utility, click here for instructions. For Sx500 switches, click here. For SG350XG or SG550XG switches, click here.
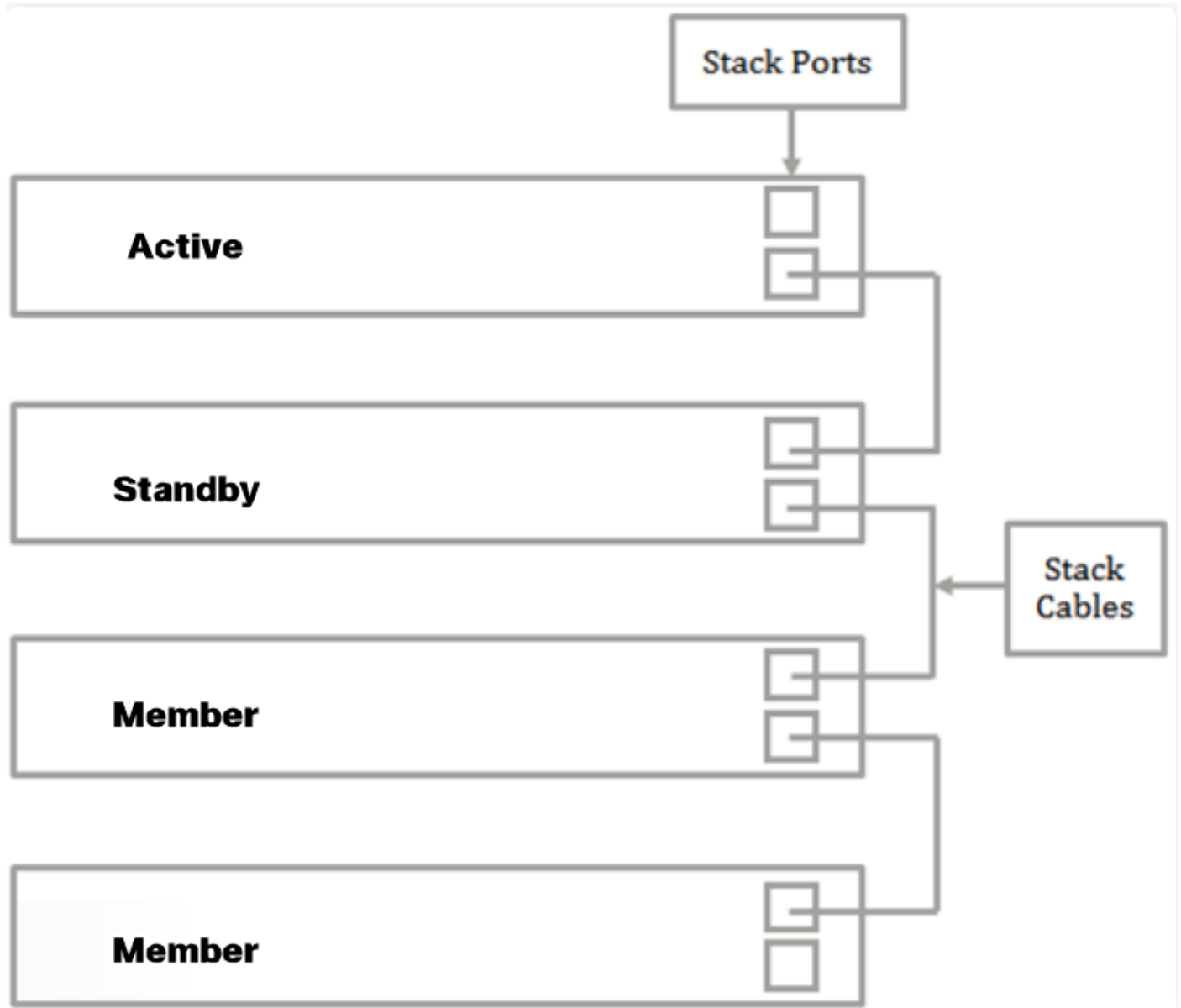
Applicable Devices | Firmware Version

- Sx350 | 2.2.8.4 (Download latest)
- SG350X | 2.2.8.4 (Download latest)
- Sx500 | 1.4.7.05 (Download latest)
- Sx550X | 2.2.8.4 (Download latest)
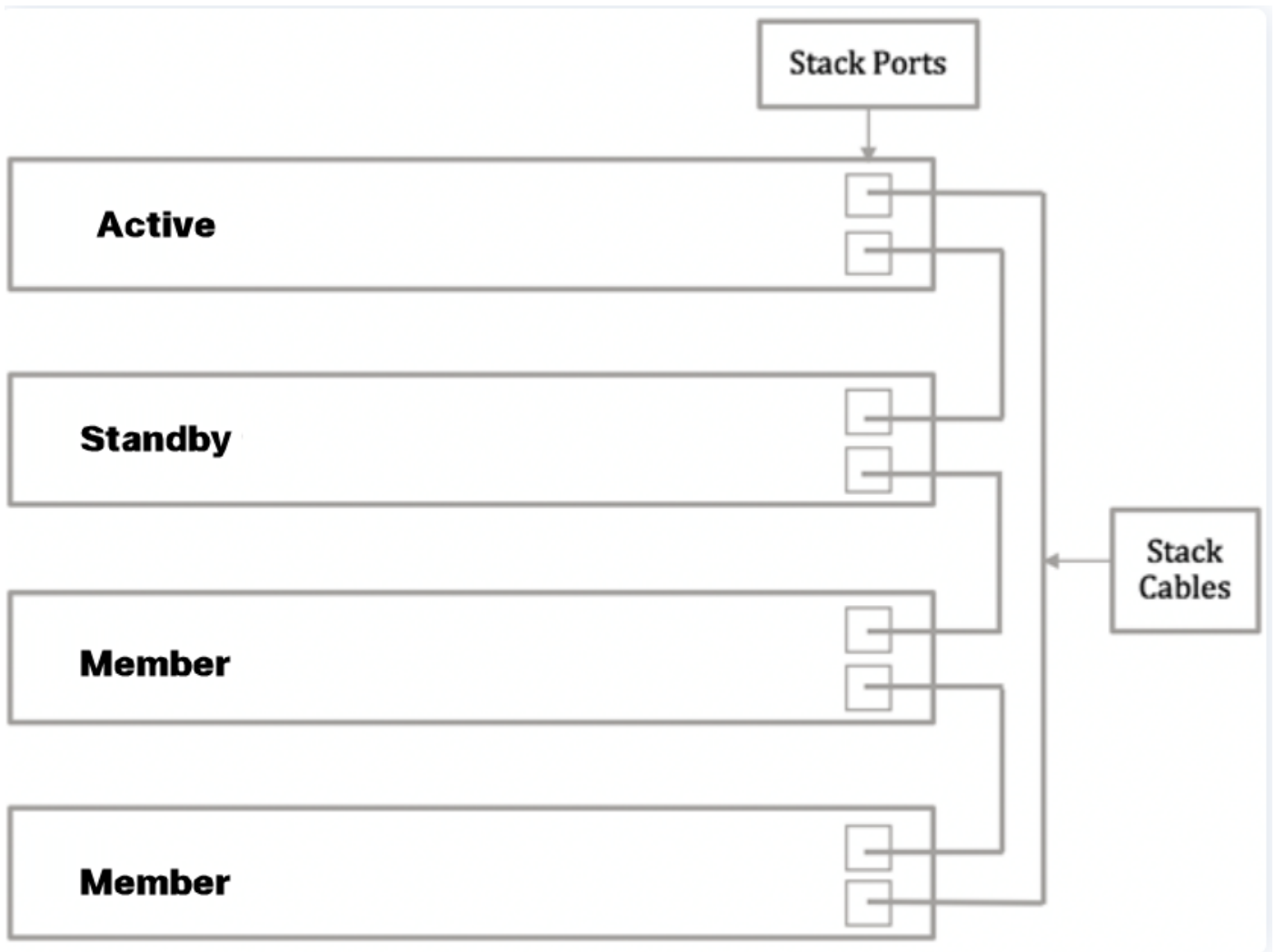
Configure Stack Settings on a Switch

Connect the Switches

Step 1. Determine the stack mode that you would want to configure. The options are:

- Chain - Each unit is connected to the neighboring unit, but there is no cable connection between the first and last unit. This is the default stack mode. The image below shows a chain topology of a four-unit stack:

- Ring - Each unit is connected to the neighboring unit. The last unit is connected to the first unit. The image below shows a ring topology of a four-unit stack:

Step 2. Connect one end of the Small Form-Factor Pluggable (SFP) cable that came with your device into the SFP+, XG3, or XG4 port of your switch.

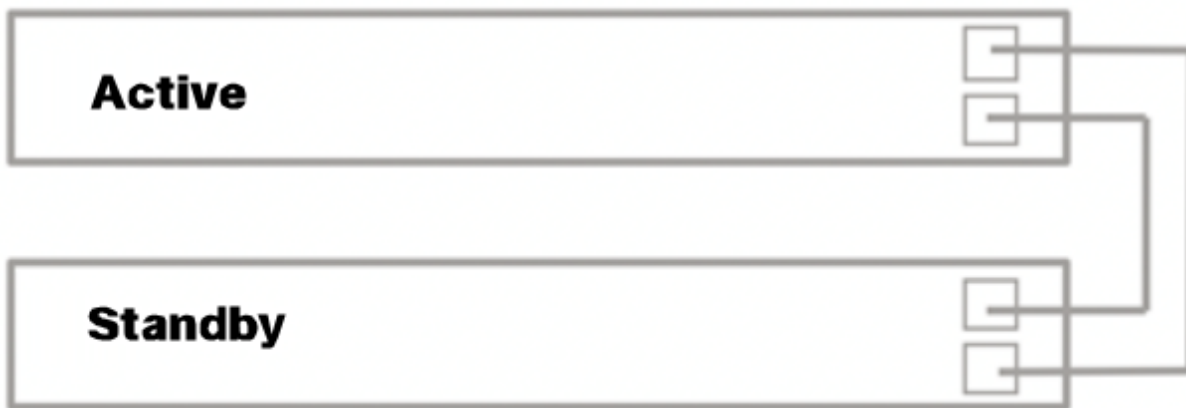**Note:** In this example, the cable is connected to XG3 port of the switch.

Step 3. Connect the other end of the SFP+ cable into the SFP+, XG3 or XG4 port of your switch.

In this example, the cable is connected to XG3 port of the switch.

Step 4. Repeat Steps 2 to 3 to the remaining switches.

In this scenario, two switches are being configured for stacking and the SFP cables are connected to ports 3 and 4 on both switches.

You should now have connected your switches according to your desired topology.

Configure Stack Settings on the Active Switch

Active Switch Selection Process

The active unit is selected from the active-enabled units (1 or 2). The factors in selecting the active unit are taken into account in the following priority:

- System Up Time - The active-enabled units exchange up-time, which is measured in segments of 10 minutes. The unit with the higher number of segments is selected. If both units have the same number of time segments, and the unit ID of one of the units was set manually while the unit ID of the other was set automatically, the unit with the manually-defined unit ID is selected; otherwise the unit with the lowest unit ID is selected. If both units IDs are the same, the unit with the lowest Media Access Control (MAC) address is chosen.

The up time of the Standby unit is retained when it is selected as active in the switch failover process.

- Unit ID - If both units have the same number of time segments, the unit with the lowest unit ID is selected.

- MAC Address - If both units IDs are the same, the unit with the lowest MAC address is chosen.

For a stack to operate, it must have an active unit. An active unit is defined as the Active unit that assumes the active role. The stack must contain a Unit 1 and/or Unit 2 after the active selection process. Otherwise, the stack and all its units are partially shut down, not as a complete power-off, but with traffic-passing capabilities halted.

Follow these steps to configure stack settings on the Active switch:

Step 1. Log in to the console of the first switch. The default username and password is cisco/cisco. If you have configured a new username or password, enter the credentials instead.

```
[User Name:cisco
[Password:**********
```

The available commands may vary depending on the exact model of your device. In this example, SG350X-48MP switch is used.The hostname of the Standby switch is SG350X-2.

Step 2. Enter the Global Configuration mode of the switch by entering the following:

```
SG350X-1#configure
```

Step 3. To enter the context of the specified stack unit or all stack units, enter the stack unit command in the Global Configuration mode by entering the following:

```
SG350X-1(config)#stack unit [unit-id | all]
```

In this example, stack unit 1 is used.

```
[SG350X-1#configure
[SG350X-1(config)#stack unit 1
 SG350X-1(unit)#
```

Step 4. Enter the stack configuration command to configure the stack ports and unit ID after reboot by entering the following:

```
SG350X-1(unit)#stack configuration {[links ports-list] [unit-id | auto]}
```
The options are:

- ports-list - a list of one or more stack ports separated by comma, or a range of sequential ports marked by dash.
- links - Choose port list to be used as stack links after reload.
- unit-id - Choose the unit ID to be used after reload. The range is 1 to 4. You can use auto to enable stack auto numbering feature.

In this example, stack configuration links unit-id 1 is entered.

```
SG350X-1#configure
SG350X-1(config)#stack unit 1
SG350X-1(unit)#stack configuration links te3-4 unit-id 1
SG350X-1(unit)#
```

Step 5. (Optional) To remove stack configuration settings on the switch, use the no stack configuration command by entering the following:

```
SG350X-1(unit)#no stack configuration
```

Step 6. Enter the **end** command to go back to the Privileged EXEC mode of the switch.

```
SG350X-1(unit)#end
```

```
[SG350X-1(unit)#stack configuration links te3-4 unit-id 1
[SG350X-1(unit)#end
 SG350X-1#
```

Step 7. (Optional) To display the stack configuration settings, enter the following:

```
[SG350X-1(unit)#end
[SG350X-1#show stack configuration

Unit Id   After Reboot Configuration

            Unit Id    Stack Links
--------  -------  ----------------
1          1         te3-4

SG350X-1#
```

```
SG350X-1#show stack configuration
```

In this example, the Active (Unit 1) switch now uses te3-4 as stack links. These settings will take effect after the switch reboots.

Step 8. (Optional) In the Privileged EXEC mode of the switch, save the configured settings to the startup configuration file, by entering the following:

```
SG350X-1#copy running-config startup-config
```

```
[SG350X-copy running-config startup-config
 Overwrite file [startup-config].... (Y/N)[N] ?
```

Step 9. (Optional) Press **Y** for Yes or **N** for No on your keyboard once the Overwrite file [startup-config]… prompt appears.

```
[SG350X-1#copy running-config startup-config
 Overwrite file [startup-config].... (Y/N)[N] ?Y
 21-Apr-2017 03:10:46 %COPY-I-FILECPY: Files Copy - source URL running-config
 destination URL flash://system/configuration/startup-config
 21-Apr-2017 03:10:50 %COPY-N-TRAP: The copy operation was completed successfu
 lly

 SG350X-1#
```

In this example, Y is pressed.

Step 10. Reload the switch to apply the configured stack settings by entering the following:

```
SG350X-1#reload
```

```
[SG350X-1#reload
 This command will reset the whole system and disconnect your current session.
  Do you want to continue ? (Y/N)[N]
```

Important: When a switch is reloaded, the running configuration file is deleted. Before proceeding with the reload instructions, make sure to save all the running configuration settings to avoid data loss.

Step 11. Press **Y** for Yes or **N** for No on your keyboard once the Do you want to continue prompt appears.

In this example, Y is pressed.

The Active unit will now reboot. You should now have configured the stack settings of your active unit.

Configure Stack Settings on the Standby or Member Switch

Step 1. Log in to the console of the second switch. The default username and password is cisco/cisco. If you have configured a new username or password, enter the credentials instead.

The available commands may vary depending on the exact model of your device. In this example, SG350X-48MP switch is used.The hostname of the Standby switch is SG350X-2.

Step 2. Enter the Global Configuration mode of the switch by entering the following:

`SG350X-2#configure`

Step 3. To enter the context of the specified stack unit or all stack units, enter the stack unit command in the Global Configuration mode by entering the following:

`SG350X-2(config)#stack unit [unit-id | all]`

In this example, stack unit 1 is used.

Step 4. Enter the stack configuration command to configure the stack ports and unit ID after reboot by entering the following:

`SG350X-2(unit)#stack configuration {[links ports-list] [unit-id | auto]}`

The options are:

- ports-list - a list of one or more stack ports separated by comma, or a range of sequential ports marked by dash.
- Links - Choose port list to be used as stack links after reload.

- unit-id - Choose the unit ID to be used after reload. The range is 1 to 4. You can use auto to enable stack auto numbering feature.

In this example, stack configuration links unit-id 2 is entered.

```
[SG350X-2#configure
[SG350X-2(config)#stack unit 1
[SG350X-2(unit)#stack configuration links te3-4 unit-id 2
 SG350X-2(unit)#
```

Step 5. (Optional) To remove stack configuration settings on the switch, use the no stack configuration command by entering the following:

```
SG350X-2(unit)#no stack configuration
```

Step 6. Enter the **end** command to go back to the Privileged EXEC mode of the switch.

```
SG350X-2(unit)#end
[SG350X-2#configure
[SG350X-2(config)#stack unit 1
[SG350X-2(unit)#stack configuration links te3-4 unit-id 2
[SG350X-2(unit)#end
 SG350X-2#
```

Step 7. (Optional) To display the stack configuration settings, enter the following:

```
SG350X-2#show stack configuration
[SG350X-2#configure
[SG350X-2(config)#stack unit 1
[SG350X-2(unit)#stack configuration links te3-4 unit-id 2
[SG350X-2(unit)#end
[SG350X-2#show stack configuration

 Unit Id  After Reboot Configuration

          Unit Id   Stack Links
 -------- ------- ---------------
 1        2        te3-4

 SG350X-2#
```

In this example, the Unit 2 switch now uses te3-4 as stack links. These settings will take effect after the switch reboots.

Step 8. (Optional) In the Privileged EXEC mode of the switch, save the configured settings to the startup configuration file, by entering the following:

```
SG350X-2#copy running-config startup-config
[SG350X-2#copy running-config startup-config
 Overwrite file [startup-config].... (Y/N)[N] ?
```

Step 9. (Optional) Press **Y** for Yes or **N** for No on your keyboard once the Overwrite file [startup-config]… prompt appears.

In this example, Y is pressed.

Step 10. Reload the switch to apply the configured stack settings by entering the following:

```
SG350X-2#reload
```


Important: When a switch is reloaded, the running configuration file is deleted. Before proceeding with the reload instructions, make sure to save all the running configuration settings to avoid data loss.

Step 11. Press **Y** for Yes or **N** for No on your keyboard once the Do you want to continue prompt appears.

After the switch reboots, the Standby switch will no longer be a standalone device and will only be accessible through the active switch.

Step 12. Repeat steps 1 to 11 for the configuration of the member switch or switches.

You should now have configured the stack settings on your Standby and/or member switches.

Show Stack Configuration Settings on the Switch

Step 1. Log back in to the console of the Active unit.

Quick Tip: Access the Active unit while configuring the Standby and/or Member switches to monitor the progress. Once the Standby or Member switch reboots, the active switch will be notified with the stacking activities.

```
SG350X-1#21-Apr-2017 01:18:21 %LINK-W-Down:  gi1/0/2
21-Apr-2017 01:19:18 %LINK-I-Up:  gi1/0/2
21-Apr-2017 01:19:23 %STP-W-PORTSTATUS: gi1/0/2: STP status Forwarding
21-Apr-2017 01:19:28 %LINK-W-Down:  gi1/0/2
21-Apr-2017 01:19:31 %LINK-I-Up:  gi1/0/2
21-Apr-2017 01:19:35 %STP-W-PORTSTATUS: gi1/0/2: STP status Forwarding
21-Apr-2017 01:19:54 %CSCDLAG-I-UP: Stack port te4 operational status is UP
21-Apr-2017 01:19:54 %CSCDLAG-I-ACTIVE: Stack port te4 is active in stack LAG 1
21-Apr-2017 01:20:00 %LINK-W-Down:  gi1/0/2
21-Apr-2017 01:20:00 %MLDP-I-CONNECT: Connection to Unit 2 is established.
21-Apr-2017 01:20:00 %STCK SYSL-I-UNITMSG: UNIT ID 2,Msg:%INIT-I-InitCompleted:
 Initialization task is completed

21-Apr-2017 01:20:00 %STCK SYSL-I-UNITMSG: UNIT ID 2,Msg:%CSCDLAG-I-UP: Stack p
ort te4 operational status is UP

21-Apr-2017 01:20:00 %STCK SYSL-I-UNITMSG: UNIT ID 2,Msg:%CSCDLAG-I-ACTIVE: Sta
ck port te4 is active in stack LAG 1

21-Apr-2017 01:20:00 %STCK SYSL-I-UNITMSG: UNIT ID 2,Msg:%MLDP-I-SLAVE: Switchi
ng to the Slave Mode.

21-Apr-2017 01:20:00 %STCK SYSL-I-UNITMSG: UNIT ID 2,Msg:%MLDP-I-CONNECT: Conne
ction to Unit 1 is established.

21-Apr-2017 01:20:18 %Entity-I-SEND-ENT-CONF-CHANGE-TRAP: entity configuration
change trap.
21-Apr-2017 01:20:20 %LINK-W-Down:  gi2/0/1
21-Apr-2017 01:20:21 %NT_poe-I-PoEPowerSourceChange: Active power source set to
 PS for unit 2
21-Apr-2017 01:20:21 %LINK-W-Down:  gi2/0/2
21-Apr-2017 01:20:22 %LINK-W-Down:  gi2/0/3
21-Apr-2017 01:20:23 %LINK-W-Down:  gi2/0/4
21-Apr-2017 01:20:24 %DFS-I-SYNC-START: Synchronizing file system to unit 2
21-Apr-2017 01:20:24 %DFS-I-SYNC-OK: File system synchronization to unit 2 succ
eeded
21-Apr-2017 01:20:24 %DSYNCH-I-SYNCH_SUCCEEDED: Synchronization with unit 2 is
finished successfully

21-Apr-2017 01:20:24 %LINK-W-Down:  gi2/0/5
21-Apr-2017 01:20:26 %LINK-W-Down:  gi2/0/6
21-Apr-2017 01:20:27 %LINK-W-Down:  gi2/0/7
21-Apr-2017 01:20:28 %LINK-W-Down:  gi2/0/8
21-Apr-2017 01:20:28 %LINK-W-Down:  gi2/0/9
```

Step 2. In the Privileged EXEC mode of the switch, use the show stack command to show the stack settings on the switch by entering the following:

```
SG350X-1#show stack
```

In this example, the configured unit 2 is now known as the Standby switch of the stack.

Step 3. Enter the show stack links command to show the stack links on the switch by entering the following:

```
SG350X-1#show stack links [details]
```

The options are:

- stack links - Displays the stack links information for an entire stack.

- stack links details - Displays the stack links information for an entire stack with details.

Step 4. (Optional) To access the Standby switch, enter the stack unit ID of the switch in the Global Configuration context by entering the following:

```
[SG350X-1#configure
[SG350X-1(config)#stack unit 2
 SG350X-1(unit)#
```

In this example, the configured Standby switch is now accessible as unit 2.
You should now have configured the stack settings on your switches.

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