Configuration Notes for the Cisco eXpandable Power System 2200

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The Cisco eXpandable Power System (XPS) 2200 is a standalone power system that you can connect to Catalyst 3560-X and Catalyst 3750-X switches that are running Cisco IOS Release 12.2(55)SE1 and later. The XPS 2200 can provide backup power to connected devices that experience a power supply failure or, in a Catalyst 3750-X power stack, it can supply additional power to the power stack budget. The XPS 2200 power ports and internal power supplies can operate in redundant power supply (RPS) mode or stack power (SP) mode. When two power supplies are present, the system can operate in mixed mode, where one power supply operates in RPS mode and the other in SP mode. You can configure the ports and power supplies for the way that you plan to use the XPS 2200.

Overview

The XPS 2000 has nine power ports that can operate in an RPS role or in an automatic stack power (Auto-SP) role (the default), where mode of operation is determined by the type of switch connected to the port.

- When a Catalyst 3750-X (stackable) switch running the IP base or IP services license is connected to the port, the mode is SP, which enables the switch to be part of the stack power system.
- When a Catalyst 3750-X switch running the LAN base image, or a Catalyst 3560-X (nonstackable) switch is connected to the port, the mode is RPS, and the XPS 2200 acts as a backup if the switch power supply goes down.

You can also use the CLI to force the mode to be RPS for stackable switches.

For more information about stack power, see the "Managing Catalyst 3750-X Stack Power" chapter in the *Catalyst 3750-X and 3560-X Switch Software Configuration Guide*:

http://www.cisco.com/en/US/docs/switches/lan/catalyst3750x_3560x/software/release/12.2_55_se/configuration/guide/swstkpwr.html

You configure the XPS through any switch connected to a power port. You can use any XPS port for configuration, and you can configure any port from any switch connected to the XPS. If you enter XPS configuration commands on more than one switch, the last configuration applied takes effect.

Although all XPS configuration is done through a switch, the XPS 2200 also runs its own software. You can upgrade this software through the XPS Service Port.

The XPS has two power supplies that can also be in either SP or RPS mode.

- When both power supplies are in RPS mode, the XPS provides active backup power for two power supply failures. Each power supply in RPS mode can provide redundancy for a single power supply of equal value or less. The failed power supplies can be in different switches or in the same switch.

- When one power supply is in RPS mode and one is in SP mode, the XPS can provide backup power for one power supply of equal value or less. The power from the other power supply is added to the power stack pool.

- When both power supplies are in SP mode, RPS mode is denied, any connections to nonstackable switches are disabled, and connections to stackable switches are automatically put in SP mode. In this case, the XPS supports only stack power, and the power provided by the XPS is added to the power stack pool.

By default, power supply A (PS1) is in RPS mode, and power supply B (PS2) is in SP mode, dedicated to stack power.

In SP mode, all SP ports on the XPS belong to the same power stack. When a power stack includes an XPS, the stack topology is a star topology and consists of up to nine member switches plus the XPS 2200. The XPS power supply or power supplies that are in SP mode are considered in the power budgeting. If both XPS power supplies are in RPS mode, the power stack consists only of the switches connected to XPS ports in SP mode, and the power budget is determined by the power supplies in these switches.

If there is a power supply role mismatch, for example, if an XPS port is configured for RPS and both power supplies are in SP mode, the XPS detects the mismatch, and an error message is sent.

RPS Mode

When both XPS power supplies are in RPS mode, the XPS can back up two power supply failures for switch power supplies of equal value or less. The smallest power supply in the XPS must be greater than the largest power supply in a switch connected to an XPS port in RPS mode.

If only one supply is in RPS mode, the XPS can back up only one power supply, even when the failed power supply is much smaller. For example, if an XPS 1100 W power supply is in RPS mode and two 350 W switch power supplies fail, the XPS can back up only one of the switch power supplies.

When one XPS power supply in RPS mode is backing up a switch power supply and another switch power supply fails, a message appears that the XPS backup is not available. When the failed power supply comes up, the XPS becomes available to back up other power supplies.

If the XPS is backing up two failed power supplies in a single switch (both XPS power supplies in RPS mode), the XPS is not available to back up other switch power supplies until *both* of the failed supplies are repaired or replaced.

In mixed mode, with one power supply in RPS mode and one in SP mode, if two power supplies in a single switch fail, because the XPS can back up only one of them, it denies power to both power supplies, and the switch shuts down. This occurs only in mixed power mode.

If a switch is connected to a port configured as RPS, but neither of the power supplies is RPS, the RPS port configuration is rejected and the XPS attempts to add the switch to a power stack. If the switch is not capable of operating in SP mode (is not a stackable switch), the port is disabled.

Ports in RPS mode have a configurable priority. The default priority is based on the XPS port number, with port 1 as the highest priority port. A higher priority port has a higher precedence for backup than a lower priority port. If a switch connected to a higher priority port has a power supply failure while a switch connected to a low priority port is being backed up, the XPS drops power to the low priority port to supply power to the high priority port.

Stack Power Mode

Stack-power mode is used only on Catalyst 3750-X switches in a power stack. With no XPS, a power stack operates in ring topology with a maximum of four switches in the stack. When an XPS is in the power stack, you can connect up to nine switches in the stack plus the XPS, providing power budgets to power stack members similar to stack-power ring topology operation.

All Catalyst 3750-X switches connected to an XPS on SP ports are part of the same power stack, and all power from the XPS and the switches is shared across all switches in the stack. Power sharing is the default mode, but the XPS supports the same stack power modes that are supported in a ring topology (strict and nonstrict power-sharing or redundant modes).

See the "Managing Catalyst 3750-X Stack Power" chapter in the *Catalyst 3750-X and 3560-X Switch Software Configuration Guide*:

http://www.cisco.com/en/US/docs/switches/lan/catalyst3750x_3560x/software/release/12.2_55_se/configuration/guide/swstkpwr.html

The XPS uses neighbor discovery to create the power stack. When it discovers a Catalyst 3750-X switch on an unconfigured port, it marks the port as an SP port, and the switch joins the power stack. The XPS notifies the switch, begins the power-budgeting process, and assigns budgets to each switch in the power stack based on their requirements, priorities, current power allocations, and the stack aggregate power capability.

The XPS sends the power budget to each switch. If not enough input power is available to provide every switch with its maximum requested power, power is distributed based on priority. Switches with the highest priority receive required power first, followed by any powered devices that have already been allocated power, in order of their priority. Any remaining power is distributed equally through the stack.

The RPS port priority (1 through 9) does not affect stack power priority. Each switch participating in stack power has its own system priority and a high and low priority for devices connected to its ports. These priorities are used for stack power, as is the case in a ring topology. You configure stack power priority for the system and for high and low-priority ports by using the **power-priority switch**, **power-priority high**, and **power-priority low** commands in switch stack power configuration mode. If a system or set of powered devices are using the default priority, the XPS automatically assigns a priority (1 through 27), with lower MAC addresses receiving higher priorities.

There are four power stack modes: power sharing, strict power sharing, redundant, or strict redundant. You configure the power stack mode by using the **mode** {**power-sharing** | **redundant**} [**strict**] command in power-stack configuration mode. The **power-sharing** or **redundant** configurations affect the power budgeting aspect of the stack; **strict** or non-strict affects the actions of the PoE application when a budget reduction does not result in load shedding.

- In power sharing modes (strict or nonstrict), the stack power budget is the cumulative capacity of all the power supplies in the stack (minus 30 W reserved power). This is the default.

- In redundant modes (strict or nonstrict), the stack power budget is the total available power (minus 30 W) after the capacity of the largest power supply in the power stack is subtracted. Redundant mode guarantees that no switch or powered device loses power or experiences load sheds if a single power supply fails, but load sheds can occur if more than one power supply fails.

- In strict modes, if a loss of input power results in reduced power budgets but does not result in any hardware load shedding, the XPS automatically begins denying power to low-priority powered devices and then the high-priority powered devices until the amount of allocated power is less than or equal to the amount of available PoE power.

- In nonstrict modes, in the event of a power reduction, the amount of allocated power is allowed to fall under budget.

For example, a system with a total PoE budget (available power) of 400 W can allocate 390 W of the budget (allocated power) to powered devices. The allocated power of a device is the maximum amount of power that the device needs. The actual power consumption (consumed power) for a set of powered devices is usually not equal to the allocated power. In this example, the actual power might be approximately 200 W. If a power loss in the stack reduces the available power to 210 W, this amount is enough to sustain the power being consumed by the powered devices, but less than the worst-case allocated power, which would put the system *under budget*. In strict mode, the stack would immediately deny power to powered devices until the allocated power was 210 W or less. In nonstrict mode, no action is taken, and the state is allowed to persist. In nonstrict mode if the actual power consumption becomes more than 210 W, this triggers a load shed and can result in the loss of power to all powered devices or switches with the lowest priority level.

Mixed Modes

The XPS 2200 can also operate in mixed mode, where some ports connected to switches are RPS and others are SP. At least one power supply must be an RPS power supply in this configuration. The power supply in the XPS can back up only one switch power supply and the XPS supply must be greater than the largest power supply in a switch connected to an XPS port in RPS mode.

Switches connected to SP ports belong to a single power stack. If the SP switches have a large enough power budget, an SP power supply is not required on the XPS. When an XPS power supply is configured, its power is added to the power pool shared by the power stack.

XPS 2200 System Guidelines

- When using the XPS power supplies in the RPS mode for backing up switch power supplies, the smallest power supply in the XPS must be greater than the largest power supply in a switch connected to an XPS port in RPS mode.

- In RPS mode, each XPS power supply can back up one and only one switch power supply, regardless of the size.

- If you remove a power supply from the power stack (from a switch or the XPS), be sure that removing it does not deplete available power enough to cause load shedding.

Configuring the XPS 2200

You can configure the XPS from any switch connected to an XPS port. If you enter XPS configuration commands on more than one switch, the last configuration applied takes effect. Only the switch and port name are saved in the switch configuration file.

XPS 2200 System Defaults

The default role for a port is Auto-SP, where the power mode is determined by the switch connected to the port (RPS for Catalyst 3560-X or Catalyst 3750-X switches running the LAN base image, or SP for Catalyst 3750-X switches running the IP base or IP services image).

The default for the XPS power supply A (PS1) is RPS mode. The default for power supply B (PS2) is SP mode.

The default mode for all ports and power supplies is enabled.

On ports configured for RPS, the default priority is the same as the port number.

Configuring the System Names

Beginning in privileged EXEC mode, follow these steps to configure a name for the XPS 2200 system and for an XPS port connected to a switch.

	Command	Purpose
Step 1	**configure terminal**	Enter global configuration mode.
Step 2	**power xps** *switch-number* **name** {*name* | **serialnumber**}	Configure a name for the XPS 2200 system. • *name*—Enter a name for the XPS 2000 port. The name can have up to 20 characters. • **serialnumber**—Use the serial number of the XPS 2200 as the system name. The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.
Step 3	**power xps** *switch-number* **port** {*name* | **hostname** | **serialnumber**}	Configure a name for an XPS 2200 port connected to the switch. • *name*—Enter a name for the XPS 2000 port. • **hostname**—Use the hostname of the switch connected to the port. • **serialnumber**—Use the serial number of the switch connected to the port. The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.

	Command	Purpose
Step 4	**end**	Return to privileged EXEC mode.
Step 5	**show env xps system**	Verify the configured name of the system and ports.
Step 6	**copy running-config startup-config**	(Optional) Save your entries in the configuration file.

Use the **no power xps** *switch-number* **name** command to remove the system name. Use the **no power xps** *switch-number* **port** command to remove the port name.

Configuring XPS Ports

Beginning in privileged EXEC mode, follow these steps to configure XPS 2200 ports. These commands apply to the XPS and are saved in the XPS, but the configuration is not saved in the switch configuration file.

	Command	Purpose
Step 1	**power xps** *switch-number* **port** {*number* | **connected**} **mode** {**disable** | **enable**}	Set the port to be enabled or disabled. • *number*—Enter the XPS 2200 port number. The range is 1 to 9. • **connected**—Enter this keyword if you do not know the port number to which the switch is connected. • **mode disable**—Disable (shut down) the XPS port. **Note** Disabling an XPS port is like removing the cable and appears the same in the **show** command outputs. If the physical cable is connected, you can still use the **enable** keyword to enable the port. • **mode enable**—Enable the XPS port. This is the default. The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.
Step 2	**power xps** *switch-number* **port** {*number* | **connected**} **role** {**auto** | **rps**}	Set the role of the XPS port. • **role auto**—The port mode is determined by the switch connected to the port. This is the default. When a Catalyst 3560-X switch or Catalyst 3750-X switch running the LAN base image is connected, the mode is RPS. When a Catalyst-3750-X switch is connected, the mode is stack power (SP). • **role RPS**—The XPS acts as a back up if the switch power supply fails. At least one RPS power supply must be in RPS mode for this configuration. The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.

	Command	Purpose
Step 3	**power xps** *switch-number* **port** {*number* | **connected**} **priority** *port-priority*	Set the RPS priority of the port, where higher priority ports take precedence over low priority ports if multiple power supplies fail. This command takes effect only when the port mode is RPS. When the port mode is stack power, you set priority by using the stack power commands.
		• **priority** *port-priority*—Set the RPS priority of the port. The range is 1 to 9, with 1 being the highest priority. The default priority is the XPS port number.
		The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.
Step 4	**show env xps port**	Verify the XPS configuration of the port.

For auto-SP ports participating in stack power, configure stack power characteristics by using the stack power commands described in the software configuration guide.

http://www.cisco.com/en/US/docs/switches/lan/catalyst3750x_3560x/software/release/12.2_55_se/configuration/guide/swstkpwr.html

Configuring XPS Power Supplies

You can configure the mode of an XPS power supply and you can configure it to be on or off. Beginning in privileged EXEC mode, follow these steps to configure XPS 2200 power supplies.

	Command	Purpose
Step 1	**power xps** *switch-number* **supply** {**A** | **B**} **mode** {**rps** | **sp**}	Set the XPS power supply mode.
		• **supply** {**A** | **B**}—Select the power supply to configure. Power supply A is on the left (labeled PS1) and power supply B (PS2) is on the right.
		• **mode rps**—Set the power supply mode to RPS, to back up connected switches. This is the default setting for power supply A (PS1).
		• **mode sp**—Set the power supply mode to stack power (SP), to participate in the power stack. This is the default setting for power supply B (PS2).
		The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.
Step 2	**power xps** *switch-number* **supply** {**A** | **B**} {**on** | **off**}	Set the XPS power supply to be on or off. The default is for both power supplies to be on.
		The *switch-number* appears only on Catalyst 3750-X switches and represents the switch number in the data stack, a value from 1 to 9.
Step 3	**end**	Return to privileged EXEC mode.
Step 4	**show env xps power**	Display the status of the XPS power supplies.

Upgrading the XPS Image

The XPS ships with the latest power system image. If you need to upgrade the image in the future, follow these steps.

Step 1 Connect an XPS port to a Catalyst 3560-X or 3750-X switch that is running Cisco IOS Release 12.2(55)SE1 or later.

Step 2 Connect the XPS front-panel Service Port to a terminal server using the same cable type you would use to connect to a switch console port. For most terminal servers, including the Cisco 2500 or 2800 series, this is a regular patch cable.

Step 3 Set the terminal server connection settings to 115200 baud, 1 stop bit, no parity, 8 data bits, and no flow control.

Step 4 Using the switch CLI, enter the **power xps 1 upgrade start** privileged EXEC command to prepare the XPS for an upgrade.

Step 5 Wait about 10 seconds or until you see a message showing that the XPS is ready for an upgrade. Then send the XPS image file (xps2200-1.0.bin) to the terminal server port through the Xmodem or Xmodem-1K Protocol. You can use one of these methods:

- Use *xmdcp* if you are used to that method with Switch: bootloaders.

- Use the Unix/Linux command: *sz -Xkvv --tcp-client <term-serv:port-40xx> <file>*

  The "-vv" parameter is not necessary but shows the progress in bytes from the sender.

- Use Windows Hyperterminal with TCP/IP Winsock, and send it to the terminal server port (20xx).

- Use a DB9-to-RJ45 blue flat-ribbon cable to directly connect to the XPS Service Port and use Hyperterminal COM and the *Send File* menu option to send the file. If you are using a Linux/Unix machine, you can also use *sz ... .*

Step 6 The upgrade should take 3 to 5 minutes, during which time the XPS LEDs display the progress. When the upgrade is complete, a message appears. Within 10 to 20 seconds, the XPS automatically power cycles and reconnects to the switch.

You can enter the **show env xps upgrade** privileged EXEC command during the upgrade to view the upgrade progress. You can enter the **show env xps version** command to verify that the new version has been successfully installed.

XPS Commands

- power xps (global configuration)
- power xps (privileged EXEC)
- power xps port
- show env xps

power xps (global configuration)

To configure a name for the Cisco eXpandable Power System 2200 (XPS 2200) that is connected to a Catalyst 3750-X or 3650-X switch, or to configure the XPS port used for the connection, use the **power xps** command in global configuration mode. To remove the name, use the **no** form of the command.

power xps *switch-number* {**name** {*name* | **serialnumber**} | **port** *port-number* {*name* | **hostname** | **serialnumber**}}

no power xps *switch-number* {**name** {*name* | **serialnumber**} | **port** *port-number* {*name* | **hostname** | **serialnumber**}}

Syntax Description		
switch-number	Specifies the stack member to which the XPS 2200 is connected. The range is 1 to 9, depending on the switch member numbers in the stack. This variable appears only on Catalyst 3750-X switches.	
name {*name*	**serialnumber**}	Configures a name for the XPS: • *name*—Specifies the name such as *port1* or *port 1*. Using quotation marks before and after the name is optional, but you must use quotation marks if you want to include spaces in the port name. The name can have up to 16 characters. • **serialnumber**—Configures the switch to use the XPS serial number as the name. **Note** The switch name is saved at the switch, not at the XPS.	
port *port-number* {*name*	**hostname**	**serialnumber**}	Configures a name for an XPS port connected to a switch. • *port-number*—The port number range is from 1 to 9. • **hostname—**Use the hostname of the switch connected to the port as the port name. • **serialnumber**—Configures the switch to use the switch serial number as the port name.	

The name of the XPS 2200 and XPS ports are not configured.

Command Modes   Global configuration

Command History

Release	Modification
12.2(55)SE1	This command was introduced.

Usage Guidelines   The XPS name is a 16-character maximum character string. In a standalone switch, the name applies to the connected XPS. In a switch stack, the name applies to the XPS connected to the specified switch.

Use the **no power xps** *switch-number* **name** command to remove the system name. Use the **no power xps** *switch-number* **port** command to remove the port name.

Naming conflicts can occur when multiple data-stacked switches are connected to the same XPS. To avoid conflicts, configure the name only for the lowest switch number in the stack that is connected to the XPS. The **show** commands display only the name configured for the lowest switch number in the stack that is connected to the XPS. Other configured names are stored in the config.text file, but are ignored in the **show** command outputs.

You can verify your settings by entering the **show env xps configuration** or **show env xps port** privileged EXEC command.

Examples

This example shows how to configure the name of the XPS 2200 that is connected to a Catalyst 3750-X switch stack in a stack as a *accounting*:

```
Switch> power xps 2 name accounting
```

This example shows how to configure the name of an XPS 2200 that is connected to a Catalyst 3560-X switch as the serial number of the XPS:

```
Switch> power xps name serialnumber
```

This example shows how to configure the name of XPS port 1 as *switcha*:

```
Switch> power xps port 1 switcha
```

Related Commands

Command	Description
power xps (privileged EXEC command)	Configures XPS ports and power supplies.
show env xps [**system**]	Displays the status of the XPS connected to a switch or switch stack, including the names of the ports and XPS.

power xps (privileged EXEC)

To configure and manage the Cisco eXpandable Power System (XPS) 2200 connected to a Catalyst 3750-X or Catalyst 3650-X switch, use the **power xps** command in privileged EXEC mode.

power xps *switch-number* {**factory-default** | **port** | **reload** {**hard** [**force**] | **soft**} | {**supply** {**A** | **B**} {**mode** {**rps** | **sp**} | {**on** | **off**}} | **upgrade** {**abort** | **start**}}

Syntax Description		
	switch-number	Specifies the stack member to which the XPS 2200 is connected. The range is 1 to 9, depending on the switch member numbers in the stack. This variable appears only on Catalyst 3750-X switches.
	factory-default	Resets the XPS configuration to the factory defaults.
	port	See the **power xps port** command.
	reload {**hard** [**force**] | **soft**}	Reloads the XPS. • **hard**—Initiates a hard reset of the XPS. • **force**—(Optional) Forces a hard reset even if the XPS is providing power. • **soft**—Initiates a soft reset of the XPS.
	supply {**A** | **B**}	Configures an XPS power supply: • **A**—Specifies configuration of PS1, the power supply on the left. • **B**—Specifies configuration of PS2, the power supply on the right.
	mode {**rps** | **sp**}	Sets the mode of the specified power supply: • **rps**—Puts the power supply in redundant power supply (RPS) mode to back up a failed power supply of a connected switch of equal or lesser value. This is the default mode for power supply A. • **sp**—Puts the power supply in stack power (SP) mode to participate in the stack power budget for the connected switches. This is the default mode for power supply B.
	off | **on**	Turns power supply A or B off or on. The default state is on.
	upgrade {**abort** | **start**}	Reloads the XPS. • **abort**—Aborts a firmware upgrade. • **start**—Starts a firmware upgrade using Xmodem over the XPS service port.

Defaults Power supply A is in RPS mode and power supply B is in SP mode. Both power supplies are on.

Command Modes Privileged EXEC

Command History

Release	Modification
12.2(55)SE1	This command was introduced.

Usage Guidelines
A power supply in RPS mode can supply power to only one failed power supply, regardless of the power level of the supply or the failed power supply. The smallest power supply in RPS mode must be equal to or greater than the largest switch power supply connected to an XPS port in RPS mode.

When a failed power supply is repaired or replaced, the XPS automatically backs off from supplying power.

When a power supply is in SP mode, the available power from the power supply is added to the power stack budget, along with the available power from all switches in the power stack.

When both power supplies are in SP mode, any connections from the XPS to nonstackable switches are disabled, and connections to stackable switches are put in SP mode.

In mixed mode, with one power supply in RPS mode and one in SP mode, if two power supplies in a single switch fail, because the XPS can back up only one of them, it denies power to both power supplies, and the switch shuts down. This occurs only in mixed power mode.

You can verify your settings by entering the **show env xps power** or **show env xps configuration** privileged EXEC command.

Examples
This example shows how to set power supply A to RPS mode:

```
Switch# power xps supply A mode RPS
```

This example shows how to set power supply B to stack power mode when the XPS is connected to stack member 2:

```
Switch# power xps 2 supply B mode SP
```

This example shows the switch messages when you begin a software upgrade:

```
Switch# power xps upgrade start

This will begin the upgrade of the XPS firmware. Do not power off or reset the XPS until
this process has completed. Continue? (yes/[no]): yes
XPS 0022.bdd7.9b14 will now reload and prepare for an upgrade using
Xmodem or Xmodem-1K protocol through the Service Port.
Switch#
*Mar 22 03:12:29.753: %PLATFORM_XPS-6-UPGRADE_READY: XPS 0022.bdd7.9b14 is in a
non-operational state and is waiting for an upgrade using Xmodem or Xmodem-1K protocol
through the Service Port.
```

Related Commands

Command	Description
power xps (global configuration command)	Configures XPS and XPS port names.
show env xps [**system**]	Displays the status of the XPS connected to a switch or switch stack, or displays the status of the power system.

power xps port

To configure and manage a Cisco eXpandable Power System (XPS) 2200 port connected to a Catalyst 3750-X or Catalyst 3650-X switch, use the **power xps port** command in privileged EXEC mode.

power xps *switch-number* **port** {*port-number* | **connected**} **mode** {**enable** | **disable**} | **priority** *value* | **role** {**auto** | **rps**}

Syntax Description		
switch-number	Specifies the stack member to which the XPS 2200 is connected. The range is 1 to 9, depending on the switch member numbers in the stack. This variable appears only on Catalyst 3750-X switches.
port-number | **connected**	Specifies the port to configure. • *port-number*—Identify the XPS port number. The range is from 1 to 9. • **connected**—If you do not know the XPS port number, enter **connected** to identify the port to which the switch is connected.
mode {**enable** | **disable**}	Specifies the operation mode of the XPS port. • **enable**—Sets the port mode to enable. This is the default. • **disable**—Sets the port mode to disable.
priority *value*	Sets the priority of the port to receive power when the port and a power supply are in redundant power supply (RPS) mode. The range is from 1 to 9. The default priority is the port number.
role {**auto** | **rps**}	Sets the mode of the XPS port. • **auto**—The mode is determined by the switch connected to the port. When a Catalyst 3750-X switch running the IP base or IP services image is connected, the role is stack power (SP). When a Catalyst 3560-X switch or a Catalyst 3750-X switch running the LAN base image is connected, the mode is RPS. This is the default. • **rps**—Sets the port mode to RPS regardless of the connected switch.

Defaults   The port mode is enabled.

The port priority in RPS mode is the same as the port number.

The port role is auto, determined by the connected switch.

Command Modes   Privileged EXEC

Command History	Release	Modification
	12.2(55)SE1	This command was introduced.

Usage Guidelines   The priority setting applies only to RPS mode. You configure stack power priority for the system and for high and low-priority ports by using the **power-priority switch**, **power-priority high**, and **power-priority low** commands in switch stack power configuration mode.

You can verify your settings by entering the **show env xps power** or **show env xps configuration** privileged EXEC command.

Examples   This example shows how to set power supply A to RPS mode:

```
Switch> power xps supply A mode RPS
```

This example shows how to set power supply B to stack power mode when the XPS is connected to stack member 2

```
Switch> power xps 2 supply B mode SP
```

Related Commands

Command	Description
power xps (global configuration command)	Configures XPS and XPS port names.
show env xps	Displays the status of the XPS connected to a switch or switch stack.

show env xps

To display budgeting, configuration, power, and system power information for the Cisco eXpandable Power System (XPS) 2200, use the **show env xps** command in privileged EXEC mode.

> **show env xps** {**budgeting** | **configuration** | **port** [**all** | *number*] | **power** | **system** | **thermal** | **upgrade** | **version**}

Syntax Description

budgeting	Displays XPS power budgeting, the allocated and budgeted power of all switches in the power stack.
configuration	Displays the configuration resulting from the **power xps** privileged EXEC commands. The XPS configuration is stored in the XPS. Enter the **show env xps configuration** command to retrieve the non-default configuration.
port [**all**	*number*]	Displays the configuration and status of all ports or the specified XPS port. Port numbers are from 1 to 9.
power	Displays the status of the XPS power supplies.
system	Displays the XPS system status.
thermal	Displays the XPS thermal status.
upgrade	Displays the XPS upgrade status.
version	Displays the XPS version details.

Command Modes   Privileged EXEC

Command History

Release	Modification
12.2(55)SE1	This command was introduced.

Usage Guidelines   Use the **show env xps** privileged EXEC command to display the information for XPS 2200.

Examples   This is an example of output from the **show env xps budgeting** command:

```
Switch# show env xps budgeting
=========================================================
XPS 0101.0100.0000 :
=========================================================
      Data                  Current    Power      Power
Port  Switch #  PS A  PS B  Role-State Committed  Budget
----  --------  ----  ----  ---------- ---------  ------
1     -         -     715   SP-PS      223        1543
2     -         -     -     SP-PS      223        223
3     -         -     -     -          -          -
4     -         -     -     -          -          -
5     -         -     -     -          -          -
6     -         -     -     -          -          -
7     -         -     -     -          -          -
8     -         -     -     -          -          -
9     1         1100  -     RPS-NB     223        1070
XPS   -         -     1100  -          -          -
```

This is an example of output from the **show env xps configuration** command:

```
Switch# show env xps configuration
==========================================
XPS 0101.0100.0000 :
==========================================
power xps port 4 priority 5
power xps port 5 mode disable
power xps port 5 priority 6
power xps port 6 priority 7
power xps port 7 priority 8
power xps port 8 priority 9
power xps port 9 priority 4
```

This is an example of output from the **show env xps port all** command:

```
Switch# show env xps port all

XPS 0101.0100.0000 Port 1
----------------------------------------
Port name          : -
Connected          : Yes
Mode               : Enabled (On)
Priority           : 1
Data stack switch # : -
Configured role    : Auto-SP
Run mode           : SP-PS : Stack Power Power-Sharing Mode
Cable faults       : 0x0

XPS 0101.0100.0000 Port 2
----------------------------------------
Port name          : -
Connected          : Yes
Mode               : Enabled (On)
Priority           : 2
Data stack switch # : -
Configured role    : Auto-SP
Run mode           : SP-PS : Stack Power Power-Sharing Mode
Cable faults       : 0x0

XPS 0101.0100.0000 Port 3
----------------------------------------
Port name          : -
Connected          : No
Mode               : Enabled (On)
Priority           : 3
Data stack switch # : -
Configured role    : Auto-SP
Run mode           : -
Cable faults       : 0x0

<output truncated>
```

This is an example of output from the **show env xps power** command:

```
Switch# show env xps power
================================================================================
XPS 0101.0100.0000 :
================================================================================
Port-Supply  SW  PID                Serial#      Status          Mode  Watts
-----------  --  -----------------  -----------  --------------  ----  -----
XPS-A            Not present
XPS-B            NG3K-PWR-1100WAC   LIT13320NTV  OK              SP    1100
1-A          -   -                  -            -
1-B          -   -                  -            -               SP    715
2-A          -   -                  -            -
2-B          -   -                  -            -
9-A          1A  C3KX-PWR-1100WAC   LIT141307RK  OK              RPS   1100
9-B          1B  Not Present
```

This is an example of output from the **show env xps system** command:

```
Switch# show env xps system
================================================================================
XPS 0101.0100.0000 :
================================================================================
XPS                       Cfg   Cfg      RPS  Switch  Current     Data
Port  XPS Port Name       Mode  Role     Pri  Conn    Role-State  Switch #
----  ------------------  ----  -------  ---  ------  ----------  --------
1     -                   On    Auto-SP  1    Yes     SP-PS       -
2     -                   On    Auto-SP  2    Yes     SP-PS       -
3     -                   On    Auto-SP  3    No      -           -
4     none                On    Auto-SP  5    No      -           -
5     -                   Off   Auto-SP  6    No      -           -
6     -                   On    Auto-SP  7    No      -           -
7     -                   On    Auto-SP  8    No      -           -
8     -                   On    Auto-SP  9    No      -           -
9     test                On    Auto-SP  4    Yes     RPS-NB      1
```

This is an example of output from the **show env xps thermal** command:

```
Switch# show env xps thermal
==========================================
XPS 0101.0100.0000 :
==========================================
Fan   Status
----  -----------
1     OK
2     OK
3     NOT PRESENT
PS-1  NOT PRESENT
PS-2  OK

Temperature is OK
```

This is an example of output from the **show env xps upgrade** command when no upgrade is occuring:

```
Switch# show env xps upgrade
No XPS is connected and upgrading.
```

Theseare examples of output from the **show env xps upgrade** command when an upgrade is in process:

```
Switch# show env xps upgrade
XPS Upgrade  Xfer
SW  Status      Prog
--  ----------  ----
 1  Waiting     0%
Switch#
*Mar 22 03:12:46.723: %PLATFORM_XPS-6-UPGRADE_START: XPS 0022.bdd7.9b14 upgrade has
started through the Service Port.

Switch# show env xps upgrade
XPS Upgrade  Xfer
SW  Status      Prog
--  ----------  ----
 1  Receiving   1%

Switch# show env xps upgrade
XPS Upgrade  Xfer
SW  Status      Prog
--  ----------  ----
 1  Receiving   5%

Switch# show env xps upgrade
XPS Upgrade  Xfer
SW  Status      Prog
--  ----------  ----
 1  Reloading   100%
Switch#
*Mar 22 03:16:01.733: %PLATFORM_XPS-6-UPGRADE_DONE: XPS 0022.bdd7.9b14 upgrade has
completed and the XPS is reloading.
```

This is an example of output from the **show env xps version** command:

```
Switch# show env  xps version
==========================================
XPS 0022.bdd7.9b14:
==========================================
Serial Number:     FDO13490KUT
Hardware Version:  8
Bootloader Version: 7
Software Version:  18
```

Related Commands	Command	Description
	power xps (global configuration command)	Configures XPS and XPS port names.
	power xps (privileged EXEC command)	Configures the XPS ports and system.

XPS System Messages

PLATFORM_XPS Messages

Error Message `PLATFORM_XPS-6-RPS_NO_DATA: XPS [char] port [chars] is an unpowered RPS switch with no backup information. Cannot power up.`

Explanation The XPS cannot power on a switch that has no power and that is connected to the XPS port. The switch is either a nonstackable RPS-only switch, or the port is configured for RPS mode but no information is known about any previously installed switch power supply.

Recommended Action Install a power supply in the switch to power on the switch.

Error Message `PLATFORM_XPS-6-CFG_REJECTED,: XPS [char] port [chars] RPS configuration was rejected because there are no XPS supplies set to RPS mode.`

Explanation The XPS port is configured for RPS mode, but neither XPS power supply is configured for RPS mode, so the connected switch cannot be put into RPS mode.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-XPS_PWR_RPS: XPS [char] is/was powered up in StackPower mode by the switch on port [chars]. The port's RPS configuration was rejected.`

Explanation An attempt was made to configure an XPS port for RPS mode, but it was rejected. A switch in RPS mode cannot power on an XPS. A switch powering on an XPS must be in StackPower mode.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-NS_NO_RPS:XPS [char] port [chars] is a non-stackable (RPS only) switch when XPS has no RPS power supplies. Switch denied.`

Explanation The nonstackable switch connected to this port can operate only in RPS mode, but no XPS power supplies are configured for RPS mode, so the connection was rejected.

Recommended Action Configure an XPS power supply for RPS mode to enable RPS backup for the switch.

Error Message `PLATFORM_XPS-6-MAX_CUR_IN: XPS [char] port [chars] is drawing maximum current.`

Explanation The XPS port is drawing more than 40 A, and the port could be automatically shut down.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-MAX_CUR_OUT: XPS [char] port [chars] is sourcing maximum current.`

Explanation The XPS port is supplying more than 40 A, and the port could be automatically shut down.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-SC_BISP: XPS [char] port [chars] experienced a short-circuit BISP event.`

Explanation The XPS port experienced a short-circuit Built-In Self-Protection event.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-SEVERE_BISP: XPS [char] port [chars] experienced a severe BISP event.`

Explanation The XSP port experienced a severe Built-In Self-Protection event that was not a short-circuit.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-VER_MISMATCH: XPS [char] port [chars] is connected to a switch with a different major version. Port has been automatically disabled.`

Explanation The switch connected to the XPS port has an earlier version of software and must be upgraded before it can be used with the XPS.

Recommended Action Upgrade the switch software.

Error Message `PLATFORM_XPS-6-FRU_PS_OIR: XPS [char] FRU Power Supply [char].`

Explanation A FRU power supply was installed, removed, powered on, or powered off in the indicated XPS slot.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-FRU_PS_ACCESS: XPS [char] FRU Power Supply [char] is [char]`

Explanation A FRU power supply is either responding again or is not responding now.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-FRU_PS_SIGNAL_FAULTY: POWER_GOOD signal on XPS [char] FRU Power Supply [char] is [char]`

    Explanation The POWER_GOOD signal on the XPS power supply is either restored (good) or is faulty.

    Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-FAN_STATUS,: XPS [char] Fan [char] is [char]`

    Explanation The XPS fan is either faulty, OK, or not present.

    Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-TEMP: XPS [char] system temperature is too high.`

    Explanation The XPS system temperature is exceeding the normal operating temperature threshold.

    Recommended Action Make sure the ambient temperature in the surrounding area is not too high.

Error Message `PLATFORM_XPS-6-UPGRADE_READY: XPS [char] is in a non-operational state and is waiting for an upgrade using Xmodem or Xmodem-1K protocol through the Service Port.`

    Explanation The XPS is ready for an upgrade by using the Service Port with Xmodem or Xmodem-1K protocol.

    Recommended Action Proceed with the Service Port upgrade.

Error Message `PLATFORM_XPS-6-UPGRADE_REQD: XPS [char] is in a non-operational state and requires an upgrade using Xmodem or Xmodem-1K protocol through the Service Port.`

    Explanation The XPS booted in a state that requires an upgrade that uses the Service Port with Xmodem or Xmodem-1K protocol.

    Recommended Action Upgrade the XPS by using the Service Port with Xmodem or Xmodem-1K protocol.

Error Message `PLATFORM_XPS-6-UPGRADE_INVALID: XPS [char] received an Xmodem or Xmodem-1K transfer through the Service Port containing an invalid XPS image file.`

    Explanation An image file received by the XPS through the Service Port was not a valid XPS image file.

    Recommended Action Upgrade the XPS with a valid XPS image file.

Error Message `PLATFORM_XPS-6-UPGRADE_ERROR: XPS [char] experienced a transfer error and the transfer failed. Please check the connection settings and try upgrading the XPS again.`

Explanation The XPS experienced a transfer failure during a software upgrade.

Recommended Action Verify the connection settings, and try the upgrade again.

Error Message `PLATFORM_XPS-6-UPGRADE_MAXERR: XPS [char] has seen too many upgrade transfer failures or has timed out waiting and is reloading now.`

Explanation The XPS experienced too many upgrade failures or timeouts and is reloading.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-UPGRADE_START: XPS [char] upgrade has started through the Service Port.`

Explanation The XPS software upgrade through the Service Port has started.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-UPGRADE_DONE: XPS [char] upgrade has completed and the XPS is reloading.`

Explanation The XPS software upgrade is complete and the XPS is automatically reloading.

Recommended Action This is only a notification message.

Error Message `PLATFORM_XPS-6-MINOR_VERSION: XPS has a different minor software version. Some functionality may be limited or inconsistent.`

Explanation The XPS software version is does not match the Cisco IOS software version. Some functionality could be affected.

Recommended Action Upgrade Cisco IOS or the XPS to the same software version.

Error Message `PLATFORM_XPS-6-FRU_PS_RPS_INVALID: XPS [char] FRU Power Supply [char] is configured for RPS mode but is smaller than a supply on a switch currently being backed up. RPS configuration rejected until RPS backup is inactivated.`

Explanation An XPS power supply configured for RPS mode cannot be smaller than any power supply in a switch that is currently being backed up. Because the XPS power supply has less wattage than a switch power supply, the RPS configuration is rejected.

Recommended Action Replace the backed-up power supply in any switch being backed up to use the new XPS supply in RPS mode.

Related Publications

These documents provide more information about the XPS 2200 and the supported switches:

- *Cisco eXpandable Power System 2200 Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for the Cisco eXpandable Power System 2200*
- *Installation Notes for the Catalyst 3750-X and Catalyst 3560-X Switch Power Supply Modules*
- *Installation Notes for the Catalyst 3750-X and 3560-X Switch Fan Module*
- *Installation Notes for the Catalyst 3750-X and 3560-X Switch Network Modules*
- *Catalyst 3750-X and 3560-X Switch Getting Started Guide*
- *Catalyst 3750-X and 3560-X Switch Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for the Catalyst 3750-X and 3560-X Switch*
- *Catalyst 3750-X and 3560-X Switch Software Configuration Guide*
- *Catalyst 3750-X and 3560-X Switch Command Reference*
- *Catalyst 3750-X, 3750-E, 3560-X, and 3560-E Switch System Message Guide*
- *Release Notes for the Catalyst 3750-X and 3560-X Switch*
- *Cisco IOS Software Installation Document*

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html