CHAPTER 26

Administering the Switch

This chapter describes how to perform various administrative tasks on the Catalyst enterprise LAN switches.

Note For complete syntax and usage information for the commands used in this chapter, refer to the *Command Reference—Catalyst 4000 Family, Catalyst 2948G, and Catalyst 2980G Switches*.

This chapter consists of these sections:

Setting the System Name and System Prompt

The system name on the switch is a user-configurable string that identifies the device. The default configuration has no system name configured.

If you do not manually configure a system name, the switch obtains the system name through a Domain Name System (DNS) lookup. To configure the switch manually:

- Assign the sc0 interface an IP address that is mapped to the switch name on the DNS server
- Enable DNS on the switch
- Specify at least one valid DNS server on the switch

If the DNS lookup is successful, the DNS host name of the switch is configured as the system name of the switch and is saved in NVRAM (the domain name is removed).

If you have not configured a system prompt, the first 20 characters of the system name are used as the system prompt (a greater-than symbol [>] is appended). The prompt is updated whenever the system name changes, unless you have manually configured the prompt using the **set prompt** command.

The switch performs a DNS lookup for the system name whenever one of the following occurs:

- when the switch is initialized (power on or reset)
- when you configure the IP address on the sc0 interface using the CLI or Simple Network Management Protocol (SNMP)
- when you configure a route using the **set ip route** command
- when you clear the system name using the **set system name** command
- when you enable DNS or specify DNS servers

If you configured the system name, no DNS lookup is performed.

Configuring a Static System Name and Prompt

These sections describe how to configure the static system name and prompt:

- Setting a Static System Name, page 26-2
- Setting a Static System Prompt, page 26-2
- Clearing the System Name, page 26-3

Setting a Static System Name

To set the static system name, perform this task in privileged mode:

Task	Command
Set the static system name.	**set system name** *name_string*

Note When you set the system name, the system name is used as the system prompt; you can override this with the **set prompt** command.

This example shows how to set the system name on the switch:

```
Console> (enable) set system name Catalyst 4003
System name set.
Catalyst 4003> (enable)
```

Setting a Static System Prompt

To set the static system prompt, perform this task in privileged mode:

Task	Command
Set the system prompt.	**set prompt** *prompt_string*

This example shows how to set the system prompt the switch:

```
Console> (enable) set prompt Catalyst4012>
Catalyst4012> (enable)
```

Clearing the System Name

To clear the system name, perform this task in privileged mode:

Task	Command
Clear the system name.	**set system name**

This example shows how to clear the system name:

```
Console> (enable) set system name
System name cleared.
Console> (enable)
```

Setting the System Contact and Location

You can specify the contact name and location to help you with resource management tasks.

To specify the system contact and location, perform this task in privileged mode:

	Task	Command
Step 1	Set the system contact.	**set system contact** [*contact_string*]
Step 2	Set the system location.	**set system location** [*location_string*]
Step 3	Verify the global system information.	**show system**

This example shows how to specify the system contact to sysadmin@corp.com and location to Sunnyvale CA, and verify the configuration:

```
Console> (enable) set system contact sysadmin@corp.com
System contact set.
Console> (enable) set system location Sunnyvale CA
System location set.
Console> (enable) show system
PS1-Status PS2-Status
---------- ----------
ok         ok

Fan-Status Temp-Alarm Sys-Status Uptime d,h:m:s Logout
---------- ---------- ---------- -------------- ---------
ok         off        ok         3,00:33:07     20 min

PS1-Type     PS2-Type
------------ ------------
WS-C4008     WS-C4008

Modem   Baud  Traffic Peak Peak-Time
------- ----- ------- ---- -------------------------
disable  9600   0%      0% Mon Jun 11 2001, 07:26:48
```

```
Power Capacity of the Chassis: 1 supply

System Name              System Location          System Contact           CC
------------------------ ------------------------ ------------------------ ---
                         Sunnyvale CA             sysadmin@corp.com
Console> (enable)
```

Setting the System Clock

Note You can configure the switch to obtain the time and date using the Network Time Protocol (NTP). For information on configuring NTP, see Chapter 35, "Configuring NTP."

To set the system clock, perform this task in privileged mode:

	Task	Command
Step 1	Set the system clock.	**set time** [*day_of_week*] [*mm/dd/yy*] [*hh:mm:ss*]
Step 2	Display the current date and time.	**show time**

This example shows how to set the system clock and display the current date and time:

```
Console> (enable) set time Fri 06/15/01 12:30:00
Fri Jun 15 2001, 12:30:00
Console> (enable) show time
Fri Jun 15 2001, 12:30:02
Console> (enable)
```

Creating a Login Banner

You can create a single or multiline message-of-the-day (MOTD) banner that appears on the screen when someone logs in to the switch. The first character following the **motd** keyword is used to delimit the beginning and end of the banner text. Characters following the ending delimiter are discarded. After entering the ending delimiter, press **Return**. The banner must be fewer than 3070 characters.

Configuring a Login Banner

To configure a login banner, perform this task in privileged mode:

	Task	Command
Step 1	Enter the message of the day.	**set banner motd** *c message_of_the_day c*
Step 2	Display the login banner by logging out and logging back into the switch.	

This example shows how to set the login banner on the switch using the # symbol as the beginning and ending delimiter, but you can use any character for the delimiter.

```
Console> (enable) set banner motd #
Welcome to the Catalyst 4012 Switch!
Unauthorized access prohibited.
Contact sysadmin@corp.com for access.
#
MOTD banner set
Console> (enable)
```

Clearing the Login Banner

To clear the login banner, perform this task in privileged mode:

Task	Command
Clear the message of the day.	**set banner motd** *cc*

This example shows how to clear the login banner:

```
Console> (enable) set banner motd ##
MOTD banner cleared
Console> (enable)
```

Defining and Using Command Aliases

You can use the **set alias** command to define command aliases (shorthand versions of commands) for frequently used or long and complex commands. Using command aliases can save you time and help prevent typing errors when you are configuring or monitoring the switch.

For the *name* argument, specify a name for the command alias. The *parameter* argument is the text you type, at the command line, which activates the command.

To define a command alias on the switch, perform this task in privileged mode:

	Task	Command
Step 1	Define a command alias on the switch.	**set alias** *name command* [*parameter*] [*parameter*]
Step 2	Verify the currently defined command aliases.	**show alias** [*name*]

This example shows how to define two command aliases:

- **sm3**, which executes the **show module 3/1** command
- **sp3**, which executes the **show port 3** command.

```
Console> (enable) set alias sm3 show module 3
Command alias added.
Console> (enable) set alias sp3 show port 3/1
Command alias added.
Console> (enable)
```

This example also shows how to verify the currently defined command aliases and what happens when you enter the command aliases at the command line:

```
Console> (enable) show alias
sm8             show module 3
sp8             show port 3
Console> (enable) sm3
Mod Slot Ports Module-Type               Model               Sub Status
--- ---- ----- ------------------------- ------------------- --- --------
3   3    6     1000BaseX Ethernet        WS-X4306            no  ok

Mod Module-Name         Serial-Num
--- ------------------- --------------------
3                       JAB024000YY

Mod MAC-Address(es)                         Hw     Fw          Sw
--- --------------------------------------- ------ ----------- ------------------
3   00-10-7b-f6-b2-1a to 00-10-7b-f6-b2-1f 0.2
Console> (enable) sp3
Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
 3/1                     notconnect 1          normal   full  1000 1000BaseSX

Port  Security Violation Shutdown-Time Age-Time Max-Addr Trap     IfIndex
----- -------- --------- ------------- -------- -------- -------- -------
 3/1  disabled  shutdown              0        0        1 disabled       9

Port  Num-Addr Secure-Src-Addr   Age-Left Last-Src-Addr     Shutdown/Time-Left
----- -------- ----------------- -------- ----------------- ------------------
 3/1         0                 -        -                 -        -         -

Port   Send FlowControl    Receive FlowControl   RxPause TxPause Unsupported
       admin    oper       admin    oper                       opcodes
-----  -------- --------   -------- --------     ------- ------- -----------
 3/1   desired  off        off      off          0       0       0

Port  Status     Channel              Admin Ch
                 Mode                 Group Id
----- ---------- -------------------- ----- -----
 3/1  notconnect auto silent             29     0

Port  Align-Err  FCS-Err    Xmit-Err   Rcv-Err    UnderSize
----- ---------- ---------- ---------- ---------- ---------
 3/1           -          0          0          0         0

Port  Single-Col Multi-Coll Late-Coll  Excess-Col Carri-Sen Runts     Giants
----- ---------- ---------- ---------- ---------- --------- --------- ---------
 3/1           0          0          0          0         0         0         0

Last-Time-Cleared
-------------------------
Mon Jun 26 2000, 08:53:49
Console> (enable)
```

Defining and Using IP Aliases

You can use the **set ip alias** command to define aliases for IP addresses. IP aliases can make it easier to refer to other network devices when you use **ping**, **telnet**, and other commands, even when (DNS) is not enabled.

For the *name* argument, specify a name for your IP alias. For the *ip_addr* argument, specify the IP address to which the name refers.

To define an IP alias on the switch, perform this task in privileged mode:

	Task	Command
Step 1	Define an IP alias on the switch.	**set ip alias** *name ip_addr*
Step 2	Verify the currently defined IP aliases.	**show ip alias** [*name*]

This example shows how to define two IP aliases, **sparc**, which refers to IP address 172.20.52.3, and **cat4003**, which refers to IP address 172.20.52.71. This example also shows how to verify the currently defined IP aliases:

```
Console> (enable) set ip alias sparc 172.20.52.3
IP alias added.
Console> (enable) set ip alias cat4003 172.20.52.71
IP alias added.
```

This example show what happens when you use the IP aliases with the **ping** command.

```
Console> (enable) show ip alias
default         0.0.0.0
sparc           172.20.52.3
cat5509         172.20.52.71
Console> (enable) ping sparc
sparc is alive
Console> (enable) ping cat4003
cat4003 is alive
Console> (enable)
```

Configuring Permanent and Static ARP Entries

To enable your Catalyst LAN switch to communicate with devices that do not respond to Address Resolution Protocol (ARP) requests, you can configure a static or permanent ARP entry that maps the IP addresses of those devices to their MAC addresses. You can configure an ARP entry so that it does not age out, by configuring it as either static or permanent. When you configure a static ARP entry using the **set arp static** command, the entry is removed from the ARP cache after a system reset. When you configure a permanent ARP by using the **set arp permanent** command, the ARP entry is retained even after a system reset.

Because most hosts support dynamic resolution, you usually do not need to specify static or permanent ARP cache entries. When a device does not respond to ARP requests, you can configure an ARP entry to be statically or permanently entered into the ARP cache so that those devices can still be reached.

To configure a static or permanent ARP entry, perform this task in privileged mode:

	Task	Command
Step 1	Configure a static or permanent ARP entry.	**set arp** [**dynamic** | **permanent** | **static**] {*ip_addr hw_addr*}
Step 2	(Optional) Specify the ARP aging time.	**set arp agingtime** *seconds*
Step 3	Verify the ARP configuration.	**show arp**

This example shows how to define a static ARP entry:

```
Console> (enable) set arp static 20.1.1.1 00-80-1c-93-80-40
Static ARP entry added as
20.1.1.1                                 at 00-80-1c-93-80-40 on vlan 1
Console> (enable)
```

This example shows how to define a permanent ARP entry:

```
Console> (enable) set arp permanent 10.1.1.1 00-80-1c-93-80-60
Permanent ARP entry added as
10.1.1.1                                 at 00-80-1c-93-80-60 on vlan 1
Console> (enable)
```

This example sets the ARP aging time:

```
Console> (enable) set arp agingtime 300
ARP aging time set to 300 seconds.
Console> (enable)
```

This example shows how to display the ARP cache:

```
Console> (enable) show arp
ARP Aging time = 300 sec
+ - Permanent Arp Entries
* - Static Arp Entries
* 20.1.1.1                               at 00-80-1c-93-80-40 on vlan 1
172.20.52.35                             at 00-80-1c-93-80-40 on vlan 1
172.20.52.35                             at 00-80-1c-93-80-40 on vlan 1
Console> (enable)
```

To clear ARP entries, perform this task in privileged mode:

	Task	Command
Step 1	Clear a dynamic, static, or permanent ARP entry.	**clear arp** [**dynamic** | **permanent** | **static**] {*ip_addr hw_addr*}
Step 2	Verify the ARP configuration.	**show arp**

This example shows how to clear all permanent ARP entries and verify the configuration:

```
Console> (enable) clear arp permanent
Permanent ARP entries cleared.

Console> (enable) show arp
ARP Aging time = 300 sec
+ - Permanent Arp Entries
* - Static Arp Entries
+ 10.1.1.1                                 at 00-80-1c-93-80-60 on vlan 1
* 20.1.1.1                                 at 00-80-1c-93-80-40 on vlan 1
Console> (enable)
```

Configuring Static Routes

Note For information on configuring a default gateway (default route), see the "Configuring Default Gateways" section on page 3-7.

In some situations, you might need to add a static routing table entry for one or more destination networks. Static route entries consist of the destination IP network address, the IP address of the next-hop router, and the metric (hop count) for the route.

In software release 5.1 and later, you can configure Classless InterDomain Routing (CIDR) routes, such as IP supernets, in the switch IP routing table. You can specify the subnet mask for a destination network using the number of subnet bits or using the subnet mask in dotted decimal format. If no subnet mask is specified, the default (classful) mask is used.

The switch uses the longest-match network address in the IP routing table to determine which gateway to use to forward IP traffic. In releases prior to release 5.1, the switch always uses the classful subnet mask for IP routing table entries.

The switch forwards IP traffic generated by the switch using the longest address match in the IP routing table. The switch does not use the IP routing table to forward traffic from connected devices, only to forward IP traffic generated by the switch itself (for example, Telnet, TFTP, and ping).

In software releases prior to release 5.1, the classful subnet mask is always used (you cannot specify the subnet mask for the destination network).

To configure a static route, perform this task in privileged mode:

	Task	Command
Step 1	Configure a static route to the remote network.	**set ip route** *destination*[*/netmask*] *gateway* [*metric*]
Step 2	Verify that the static route appears correctly in the IP routing table.	**show ip route**

This example shows how to configure a static route on the switch and how to verify that the route is configured properly in the routing table:

```
Console> (enable) set ip route 172.16.16.0/20 172.20.52.127
Route added.
Console> (enable) show ip route
Fragmentation   Redirect   Unreachable
-------------   --------   -----------
enabled         enabled    enabled

The primary gateway: 172.20.52.121
Destination      Gateway          RouteMask    Flags   Use       Interface
---------------  ---------------  ----------   -----   --------  ---------
172.16.16.0      172.20.52.127    0xfffff000   UG      0           sc0
default          172.20.52.121    0x0          UG      0           sc0
172.20.52.120    172.20.52.124    0xffffffff8  U       1           sc0
default          default          0xff000000   UH      0           sl0
Console> (enable)
```

Scheduling a System Reset

These sections describe how to schedule a system reset:

- Scheduling a Reset at a Specific Time, page 26-10
- Scheduling a Reset Within a Specified Amount of Time, page 26-11

You can use the **reset at** command to schedule a system to reset at a future time. This feature allows you to upgrade software during business hours and schedule the system upgrade after business hours to avoid a major impact on users.

You can also use the schedule reset feature when trying out new features on a switch. To avoid misconfiguration or the possibility of losing network connectivity to the device, you can set up the startup configuration feature and schedule a reset to occur in 30 minutes. You can then change the configuration, and if connectivity is lost, the system will reset in 30 minutes and return to the previous configuration.

Scheduling a Reset at a Specific Time

You can specify an absolute time and date at which the reset will take place, using the **reset at** command. The month and day argument is optional. If you do not specify a month and day, the reset will take place on the current day if the time specified is later than the current time. If the time scheduled for reset is earlier than the current time, the reset will take place on the following day.

Note The maximum scheduled reset time is 24 days.

To schedule a reset at a specific time, perform this task in privileged mode:

	Task	Command
Step 1	Schedule the reset time at a specific time.	**reset** [**mindown**] **at** {*hh:mm*} [*mm/dd*] [*reason*]
Step 2	Verify the scheduled reset.	**show reset**

This example shows how to schedule a reset at a specific time:

```
Console> (enable) reset at 20:00
Reset scheduled at 20:00:00, Sat Aug 18 2001.
Proceed with scheduled reset? (y/n) [n]? y
Reset scheduled for 20:00:00, Sat Aug 18 2001 (in 0 day 5 hours 40 minutes).
Console> (enable)
```

This example shows how to schedule a reset at a specific time and include a reason for the reset:

```
Console> (enable) reset at 23:00 08/18 Software upgrade to 5.3(1)
Reset scheduled at 23:00:00, Sat Aug 18 2001.
Reset reason: Software upgrade to 6.3(1).
Proceed with scheduled reset? (y/n) [n]? y
Reset scheduled for 23:00:00, Sat Aug 18 2001 (in 0 day 8 hours 39 minutes).
Console> (enable)
```

This example shows how to schedule a reset with a minimum of downtime:

```
Console> (enable) reset mindown at 23:00 08/18 Software upgrade to 6.3(1)
Reset scheduled at 23:00:00, Sat Aug 18 2001.
Reset reason: Software upgrade to 6.3(1).
Proceed with scheduled reset? (y/n) [n]? y
Reset mindown scheduled for 23:00:00, Sat Aug 18 2001 (in 0 day 8 hours 39 minutes).
Console> (enable)
```

Scheduling a Reset Within a Specified Amount of Time

You can schedule a reset within a specified time with the **reset in** command. For instance, if the current system time is 9:00 a.m. and the reset is scheduled to take place in one hour, the scheduled reset will take place at 10:00 a.m. If you or NTP advances the system clock to 10:00 a.m., the reset will take place at 11:00 a.m. If the clock is advanced ahead of the scheduled reset time, the reset will take place 5 minutes after the command is issued.

To schedule a reset within a specified time, peform this task in privileged mode:

	Task	Command
Step 1	Schedule the reset time within a specific amount of time.	**reset** [**mindown**] **in** [*hh*] {*mm*} [*reason*]
Step 2	Verify that the scheduled reset time is correct.	**show reset**

Note The minimum downtime argument is valid only if the system has a redundant supervisor engine.

This example shows how to schedule a reset in a specified time:

```
Console> (enable) reset in 5:20 Configuration update
Reset scheduled in 5 hours 20 minutes.
Reset reason: Configuration update
Proceed with scheduled reset? (y/n) [n]? y
Reset scheduled for 19:56:01, Wed Aug 18 1999 (in 5 hours 20 minutes).
Reset reason: Configuration update
Console> (enable)
```

Power Management

This section describes power management in the Catalyst 4006 switch and includes the following major sections:

- Power Redundancy, page 26-12
- Setting the Power Budget, page 26-15

The power management feature is designed to support an optimized Catalyst 4006 chassis consisting of a WS-X4013 supervisor engine and four WS-X4148-RJ or WS-X4148-RJ21 modules operating in 1+1 redundancy mode. Additional configurations are possible.

In systems with redundant power supplies, both power supplies must be of the same wattage. The Catalyst 4000 family switches allow you to mix AC-input and DC-input power supplies in the same chassis. For detailed information on supported power supply configurations for each chassis, refer to the *Catalyst 4000 Family Installation Guide*.

Catalyst 4000 family modules have different power requirements; thus, some switch configurations require more power than 1+1 redundancy mode (a single power supply) can provide. In those configurations, redundancy requires three power supplies. Redundant and nonredundant power configurations are discussed in the following sections.

Power Redundancy

The Catalyst 4006 switch contains holding bays for up to three power supplies. You need two primary power supplies to operate a fully loaded Catalyst 4006 chassis. You can set the power redundancy to two primary plus one redundant power supply (2+1 redundancy mode) or to one primary plus one redundant power supply (1+1 redundancy mode). The 1+1 redundancy mode does not support a fully loaded chassis.

If your switch has only two power supplies and is in 2+1 redundancy mode (the default mode), there is no redundancy. You can create redundancy with only two power supplies by setting the power redundancy to operate in 1+1 redundancy mode (one primary plus one redundant power supply). However, 1+1 redundancy will not support all configurations.

The 1+1 redundancy mode is designed and optimized for a specific hardware configuration: a Catalyst 4006 chassis with a WS-X4013 supervisor engine and four WS-X4148-RJ or WS-X4148-RJ21 modules. Although other configurations are possible, we do not recommend that you use them without careful consideration of the power usage in the system. For example, other similar and possible configurations can consist of four modules, where each module consumes 65W or less (for a total of 265W), or more generally, where the total module power usage does not exceed the absolute maximum module usage of 265W.

The supervisor engine uses 110W and the fan box uses 25W, for a system total of 400W (modules + supervisor + fan). The 1+1 redundancy mode cannot support a fully loaded chassis, regardless of the module configuration, and, therefore, one slot of the chassis *must be empty.* Any attempt to use five modules guarantees an oversubscription of available power.

If you opt to use the 1+1 redundancy mode, the type and number of modules supported are limited by the power available from a single power supply. To determine the power consumption for each module in your chassis, see the "Power Consumption of Modules" section on page 26-14.

To choose a 1+1 redundancy configuration, you must change the system configuration from the default 2+1redundancy mode to 1+1 redundancy mode by using the **set power budget** command. The **set power budget 1** command sets the power budget to accommodate a 1+1 redundancy mode. In the 1+1 redundancy mode, the nonredundant power available to the system is the power of a single power supply. The second power supply installed in your switch provides full redundancy.

Limitations of the 1+1 Redundancy Mode

If you attempt to configure the system to operate in 1+1 redundancy mode, and you have more modules installed in the chassis than a single power supply can handle, the system will prevent you from enabling the1+1 redundancy mode.

If you are already operating in 1+1 redundancy mode with a valid module configuration and you attempt to insert additional modules that require more power than the single power supply provides, the system immediately places the newly inserted module into reset mode and issues these error messages: `Module has been inserted` and `Insufficient power supplies operating`. Additionally, if a chassis that has been operating in 1+1 redundancy mode with a valid module configuration is powered down, and you insert a module or change the module configuration inappropriately and power on the switch again, the module(s) in the chassis (at boot up) that require more power than is available, are placed into reset mode.

Both of these scenarios initiate the five minute evaluation countdown timer. When this timer runs out, the system attempts to resolve this power usage limitation by evaluating the type and number of modules installed. The evaluation process may require several cycles to stabilize the chassis' power usage.

During the evaluation cycle, the modules are in effect removed and re-inserted thus causing disruption of network connectivity; the switch reactivates only the modules it is able to support with the limited power available and leaves the remaining modules in reset mode. The supervisor engine always remains enabled. Modules placed into reset mode still consume some power. If the chassis module combination, including the modules in reset, still require more power than is available, the five-minute evaluation countdown timer starts for another evaluation cycle, and additional modules are placed into reset mode until the power usage is stable.

If the power requirement of the active modules, along with the modules in reset, does not exceed the available power, the system is stable and no more evaluation cycles are run, until something again causes insufficient power usage. One, possibly two cycles, are required to stabilize the system. If you configure the chassis correctly, the system will not enter the evaluation cycle.

Note If you have all three power supplies installed and you still choose to operate in 1+1 redundancy mode but later add additional modules which exceed the power available, the five-minute evaluation timer starts again. The switch may require several evaluation cycles to stabilize the system. To correct this power situation caused by the additional modules, you can either remove the extra modules or change the power budget to 2+1 redundancy mode. If you choose to return to the 2+1 redundancy mode, each module held in reset mode is brought up one by one to an operational state.

A module in reset continues to draw power as long as it is installed in the chassis; however, the module is not shown in the **show module** command output, because the system considers it removed.

To compute the power requirements for your system and verify that your system has enough power, add up the power consumed by the supervisor engine module, the fan box, and the modules you wish to use. A single power supply provides 400W, and two power supplies provide 750W. For 1+1 redundancy mode, verify that the total is less than 400W.

For example, the following configuration requires a minimum of 395W:

- WS-X4013 supervisor engine—110W
- Four WS-X4148-RJ modules—65W each (260W total—the optimized module configuration)
- Fan box—25W

This is 5W less than the maximum that a single power supply can provide in 1+1 redundancy mode.

The following configuration, however, requires more power than a single power supply can supply:

- WS-X4013 supervisor engine—110W
- Two WS-X4148-RJ modules in slots 2 and 3—65W each (130W total)
- Two WS-X4448-GB-LX modules in slots 4 and 5—90W each (180W total)
- Fan box—25W

This configuration requires 445W and cannot be used in 1+1 redundancy mode.

Remember, when considering the 1+1 redundancy mode, you must carefully plan the configuration of the module power usage of your chassis. An incorrect configuration will momentary disrupt your system during the evaluation cycle. To avoid this disruption, carefully plan your configuration to ensure it is within the power limits, or return to the default 2+1 redundancy configuration by installing a third power supply in your switch and set the power budget to 2+1 redundancy mode.

Use the **set power budget 2** command to set the power budget to the 2+1 redundancy mode.

Power Consumption of Modules

A single power supply provides 400W; two power supplies provide 750W. When operational, the supervisor engines consume no more than 110W and the fan box consumes 25W. For power consumption of common Catalyst 4006 modules, see Table 26-1.

Note Enter the **show environment power** command to display the current power budget and the current system power usage.

Table 26-1 Power Consumption for Catalyst 4006 Modules

Module	Power Consumed During Operation (W)	Power Consumed in Reset Mode (W)
6-port 1000BASE-X (GBIC) Gigabit Ethernet WS-X4306-GB	35	30
32-port 10/100 Fast Ethernet RJ-45 WS-X4232-RJ-XX	55	35
Catalyst 4000 Access Gateway Module with IP/FW IOS WS-X4604-GWY	120	60
24-port 100BASE-FX Fast Ethernet switching module WS-X4124-FX-MT	90	75
32-port 10/100 Fast Ethernet RJ-45, plus 2-port 1000BASE-X (GBIC) Gigabit Ethernet WS-4232-GB-RJ	50	35
48-port 100BASE-FX Fast Ethernet switching module WS-4148-FX-MT	120	10
18-port server switching 1000BASE-X (GBIC) Gigabit Ethernet WS-4418-GB	80	50
Catalyst 4006 Backplane Channel Module WS-X4019	10	10
48-port 10/100 Fast Ethernet RJ-45 WS-X4148-RJ	65	40
Catalyst 4003 and 4006 Layer 3 Services Module WS-X4232-L3	120	70
12-port 1000BASE-T Gigabit Ethernet, plus 2-port 1000BASE-X (GBIC) Gigabit Ethernet WS-X4416	110	70
24-port 1000BASE-X Gigabit Ethernet WS-X4424-GB-RJ45	90	50
48-port 1000BASE-X Gigabit Ethernet WS-X4448-GB-RJ45	120	70
48-port 1000BASE-X Gigabit Ethernet WS-X4448-GB-LX	90	50

Table 26-1 Power Consumption for Catalyst 4006 Modules (continued)

Module	Power Consumed During Operation (W)	Power Consumed in Reset Mode (W)
48-port Telco 10/100BASE-TX switching module WS-X4148-RJ21	65	40
48-port inline power 10/100BASE-TX switching module WS-X4148-RJ45V	60	50
4-port MT-RJ Uplink module WS-U4504-FX-MT	10	10

Setting the Power Budget

To configure the power budget, perform the following step in privileged mode:

	Task	Command
Step 1	Set the power budget.	**set power budget** {**1** | **2**}
Step 1	Verify the power budget and the current power usage for the switch.	**show environment power**

The following example shows how to set the power budget to 1 (1+1 redundancy mode) and display the power budget and current power usage for the switch.

```
Console> (enable) set power budget 1
Warning:
Your power supply budget will be constrained to
the power available from only one power supply.
Do you want to continue? [confirm (y/n)]:y
Console> (enable) show environment power
Power Budget is : 2 supplies
Power Available to the System: 750 Watts (62.06 Amps @12V)
Power Drawn from the System: 490 Watts (40.10 Amps @12V)
Remaining Power: 260 Watts (21.08 Amps @12V).
.
.
Console> (enable)
```

Generating System Status Reports for Tech Support

Using a single command, you can generate a report that contains status information about your switch. This command is a combination of several **show system status** commands (Refer to the *Command Reference—Catalyst 4000 Family, Catalyst 2948G, and Catalyst 2980G Switches* for these commands.) You can upload the report to a TFTP server and send it to the Technical Assistance Center (TAC).

You can use keywords to limit the report, such as for specific modules, VLANs, and ports. If you do not specify any keywords, a report for the entire system is generated.

To write and send a report for TAC, perform this task in privileged mode:

Task	Command
Generate a system status report for TAC.	**write tech-support** {*host*} {*file*} [**module** *mod_num*] [**port** *mod_num/port_num*] [**vlan** *vlan_num*] [**memory**] [**config**]

The following example shows a report sent to host 172.20.32.10 and to a filename techsuport.txt. No keywords are specified, so the complete status of the switch is included in the report.

```
Console> (enable) write tech-support 172.20.32.10 techsupport.txt
Upload tech-report to techsupport.txt on 172.20.32.10 (y/n) [n]? y
/
Finished network upload.  (67784 bytes)
Console> (enable)
```