

7 Configuring Switch-Wide Parameters

The OmniStack provides commands to display and configure parameters on a switch-wide basis. These commands are grouped into two menus: the Summary menu and the System menu. Descriptions for commands in the Summary menu begin below; descriptions for commands in the System menu begin on page 7-5.

In addition, this chapter contains documentation for duplicate MAC address support (described in *Duplicate MAC Address Support* on page 7-24), multicast claiming (described in *Multicast Claiming* on page 7-25), and disabling flood limits (described in *Disabling Flood Limits* on page 7-25).

Summary Menu

The summary menu consists of commands for displaying summary information about the switch. Enter

summary

at the prompt to enter the Summary menu. Press the question mark (?) to see the following list of commands.

<u>Command</u>	<u>Summary Menu</u>
ss	Display MIB-II System group variables
sc	OmniStack chassis summary
si	Current interface status

Main	File	Summary	VLAN	Networking
Interface	Security	System	Services	Help

The Summary menu commands are described in the sections that follow.

Displaying the MIB-II System Group Variables

To display the MIB-II system group variables, enter

ss

at the system prompt. Something similar to the following will be displayed.

```
System description:  Alcatel OmniStack
System Object ID:   1.3.6.1.4.1.800.3.1.1.1.
Agent Up Time:      0 days, 00:28:14.38
Contact:            Administrator
Name:               Engineering
Location:           Bldg 46
Device Services:
  DataLink/Subnetwork Layer
  Internetwork Layer
  Host Layernetwork Layer
  Application Layer (Telnet, FTP)
```

The fields displayed by the **ss** command are described below.

System description. When shipped from the factory, the default system description is “Alcatel OmniStack.” This field can be changed using the **syscfg** command, which is described in *Configuring a System Description* on page 7-22.

System Object ID. The MIB entry for the switch (where the object ID starts). This is read only. This value helps you locate Alcatel-specific variables in the MIB tree.

Agent Up Time. The time (in days, hours, minutes, and seconds) since the switch was re-initialized.

Contact. The name of a person to contact about this OmniStack. This field is set by the **syscfg** command, which is described in *Configuring a System Description* on page 7-22.

Name. The name the system administrator assigned to this switch (the node’s fully qualified domain name, by convention). This field is set by the **syscfg** command, which is described in *Configuring a System Description* on page 7-22.

Location. The physical location of the switch. This field is set by the **syscfg** command, which is described in *Configuring a System Description* on page 7-22.

Device Services. The type of services provided by the switch. The service types are listed below:

- **Data Link /Subnetwork Layer**
- **Internetwork Layer**
- **Host Layernetwork**
- **Application Layer (Telnet, FTP)**

Displaying the Chassis Summary

To display the chassis summary information, enter

sc

at the system prompt. Something similar to the following will be displayed.

Type:	OmniStack 5-slot
Chassis ID:	Alcatel
Description:	DESCRIPTION NOT SET.
Backplane:	Fixed - 5024
Master MPM Serial No.:	81150942
Physical Changes:	1
Logical Changes:	0
Number of Resets:	6
Base MAC Address:	00:20:da:02:04:80
Free Slots:	0

The fields displayed by the **sc** command are described below.

Type. The description of the specific type of chassis.

Chassis ID. The chassis ID for this OmniStack.

Description. The description of this chassis. This field is set by the **syscfg** command, which is described in *Configuring a System Description* on page 7-22.

Backplane. The style of backplane used in this switch.

Master MPM Serial No. The serial number for this OmniStack.

Physical Changes. The number of physical changes that has occurred since the last reset or power-on.

Logical Changes. The number of logical changes that has occurred since the last reset or power-on.

Number of Resets. The number of times this switch has been reset since the configuration file (**mpm.cnf**) was first removed.

Base MAC Address. The base MAC address for this OmniStack.

Free Slots. If the switch provides an uplink sub-module slot and it is in use, zero (0) is displayed. If an uplink sub-module is not installed in the slot, a one (1) is displayed.

Displaying Current Router Interface Status

To display current interface status information, enter

si

at the system prompt. Something similar to the following will be displayed.

Interface Summary Status			
2 Interfaces			
Logical Interface	Interface Type	Administrative Status	Operational Status
1	Slip	Enabled	Enabled
2	Virtual Router	Enabled	Active

The fields displayed by the **si** command are described below.

Logical Interface. A number, in sequence, that has been assigned to the virtual router port.

Interface Type. The type of interface, which can be virtual router (the standard interface type), SLIP, and software loopback.

Administrative Status. Whether the administrator has enabled or disabled the port. The port can be enabled by the administrator but still be made inactive by the system.

Operational Status. Whether the port is active (operational) or inactive. This status is set by software.

System Menu

The System menu contains commands to view or set system-specific parameters. Enter

system

at the UI prompt to enter the System menu. If you are not in verbose mode, press a question mark (?) and then press **<Enter>** to display the commands in the system menu, as shown below.

Command	System Menu
info	Basic info on this system
dt	Set system date and time
ser	View or configure the DTE or DCE port
mpm	Configure a Management Processor Module
slot	View Slot Table information
systat	View system stats related to system, power and environment
taskstat	View task utilization stats
memstat	View memory use statistics
fsck	Perform a file system check on the flash file system
newfs	Erase all file from /flash and create a new file system
syscfg	Configure info related to this system
uic	UI configuration; change - prompt, timeout, more, verbose.
camstat	View CAM info and usage
camcfg	Configure CAM info and usage
ver/ter	Enables/disables automatic display of menus on entry
echo/noecho	Enable/disable character echo
chpr	Change the prompt for the system
logging	View system logs.
health	Set health parameters or view health statistics
cli	Enter command line interface

Main	File	Summary	VLAN	Networking
Interface	Security	System	Services	Help

All of the System menu commands — except for the **camcfg**, **ver**, **ter**, **echo**, **noecho**, **chpr**, **logging**, **health**, and **cli** commands — are described in the following sections. The **ver/ter**, **echo**, **noecho**, **chpr**, and **cli** commands are described in Chapter 3, “The User Interface.” The **camcfg** command is no longer supported on the OmniStack. The **logging** command is described in Chapter 8, “Switch Logging.” The **health** command is described in Chapter 9, “Health Statistics.”

◆ **Note** ◆

The **ver/ter**, and **chpr** commands now appear as items in the UI Configuration menu (displayed through the **uic** command). If you enter the **ver**, **ter**, and **chpr** commands, a message will advise you to use the **uic** command, and the UI Configuration menu will automatically display. For more information on the UI Configuration menu, refer to Chapter 3, “The User Interface.”

The **mpm** command returns the message “Slot 1 holds the MPM.”

Displaying Basic System Information

To display basic information on the switch, enter

info

at the system prompt. The following display is a typical example.

/ % info

System Make: Alcatel OmniStack
System Type: 3-slot OmniStack
Description: DESCRIPTION NOT SET.

Backplane: FIXED-4024 **Bus Speed:** 960

Physical changes to the system since power-up or reset: 1
Logical changes to the system since power-up or reset: 0
Number of Resets to this system: 3

System base MAC Address: 00:20:da:04:32:80
Number of Free Slots: 0
Action on Cold Start: Load & go
Action on Reset: Restart

Script File: /flash/mp4.cmd
Boot File: /flash/mp4.img
Ni Image Suffix: img

The fields displayed by the **info** command are described below.

System Make. By default, “Alcatel OmniStack” is displayed.

System Type. The OmniStack model.

Description. A description of the chassis and product. This field is set by the **syscfg** command, which is described in *Configuring a System Description* on page 7-22.

Backplane. The style of backplane used in this switch.

Bus Speed. The speed of backplane, in Mbs, used in this chassis. This will be 960 Mbs.

Physical Changes to the system since power-up or reset. The number of physical changes that has occurred since the last reset or power-on.

Logical Changes to the system since power-up or reset. The number of logical changes that has occurred since the last reset or power-on.

No. of Resets to the System. Number of times the switch has been reset since the last cold start.

System Base MAC Address. The MAC address for this OmniStack.

Number of Free Slots. If the switch provides an uplink sub-module slot and it is in use, zero (0) is displayed. If an uplink sub-module is not installed in the slot, a one (1) is displayed.

Action on Cold Start. The action taken when you switch the power on.

Action on Reset. The action taken when you reboot.

Script File. The name of the command file (**mp4.cmd** is the default) containing user-configurable commands.

Boot File. The boot file (**mp4.img** is the default) used by the switch when it boots up or reboots.

Ni Image Suffix. The name of the file extension (**img** is the default) indicating that the file is an executable binary file.

Setting the System Date and Time

The **dt** command allows you to set the local date, time, and time zone. Additionally, you can set the system clock to run on Universal Time Coordinate (UTC or GMT). If applicable, you can also configure Daylight Savings Time (DST) parameters. To view or make changes to date, time, time zone, and DST for the switch, enter

dt

at the system prompt. This command displays a screen similar to the following:

Modify Date and Time Configuration

```

1) Local time                : 1:45:41
2) Local date                : 10/31/99
3) Timezone (-13 .. 12, name) : MST   UTC-7 hrs
4) Daylight Savings Time active : Enabled
   41) DST Start Month (1 .. 12) : April
   42) DST Start Week (1 .. 4, Last) : 1st
   43) DST Start Day of Week (1 .. 7) : SUNDAY
   44) DST Start Time (hh:mm) : 2:00
   45) DST End Month (1 .. 12) : October
   46) DST End Week (1 .. 4, Last) : Last
   47) DST End Day of Week (1 .. 7) : SUNDAY
   48) DST End Time (hh:mm) : 2:00
   49) DST Offset (hh:mm) : 1:00

```

Command {Item=Value/?/Help/Quit/Redraw/Save} (Redraw) :

To use the **dt** command, you must have UI write privileges. Enter the line number for the variable that you would like to change, an equal sign (=), and then the new value for the variable. For example, to set a new date, you would enter:

2=4/20/99

After you have made changes, enter

save

to save your changes and to exit the **dt** menu. If you do not wish to make any changes, enter

quit

at the system prompt. The following sections describe the variables on this screen.

1) Local time

Indicates the current and local time. To set the time, enter the line number for **Local Time (1)** followed by the new time. The time format is as follows:

HH:MM:SS

where **HH** is the hour to be set based on a 24 hour (military) clock, **MM** is the minutes to be set, and **SS** is the seconds to be set. For example, if you wanted to set the time to 3:15 p.m., you would enter:

1=15:15:00

2) Local date

The current and local date. To set the date, enter the line number for **Local Date (2)** followed by the new date. The date format is as follows:

MM/DD/YY

where **MM** is the month to be set, **DD** is the day to be set, and **YY** is the last two digits of the year to be set. Remember to include a slash (/) between the month and the day and between the day and the year. For example, if you wanted to set the date to April 20, 1999, you would enter:

2=04/20/99

3) Timezone

This parameter specifies the time zone for the switch and sets the system clock to run on UTC time (or Greenwich Mean Time). Additionally, if Daylight Savings Time is enabled (see option 4 below), the clock automatically sets up default DST parameters (if applicable) for the local time zone. The local time remains active for all User Interface commands and other subsystems that require the local time. To set the time zone for the switch, you may use one of two methods:

- a. Enter the line number for **Timezone (3)** followed by the hour(s) offset from UTC. This can be a number from -13 to +12. The number you enter will set the system clock *x* hours from the local time. For example, if the local time, 1:45:00, is seven hours behind UTC time, you would enter:

3=-7

This specification sets the UTC time to 8:45:00, seven hours ahead of the local time, 1:45:00.

- b. Enter the line number for **Timezone (3)** followed by the time zone name. There is a limited number of time zone names available. For example, if the local time zone name is Mountain Standard Time (MST), you would enter:

3=MST

This specification automatically sets the switch to -7 hours, the number of hours MST is offset from UTC.

Daylight Savings Time. The software will automatically configure DST values for a specified time zone. However, the user can manually modify DST values.

Non-integer Offsets. Non-integer offsets are acceptable for **Timezone**. Some parts of the world are offset from UTC by increments of 15, 30, or 45 minutes. India, for example, is offset from UTC by 5 hours and 30 minutes. If you wanted to enter the time zone offset for India, for example, you would type the line number for Timezone (3), followed by the non-integer hour offset in the **HH:MM** format, as follows:

3=05:30

where the value of **05:30** is five hours and thirty minutes offset from UTC.

◆ Note ◆

The switch automatically enables UTC. However, if you do not want your system clock to run on UTC, simply enter the offset **+0** for the **Timezone** parameter. This sets UTC to run on local time.

The table on the following page lists the options available for **Timezone** names:

Timezone and DST Parameters

Abbr.	Name	Hours from UTC	DST Start	DST End	DST Change
NZST	New Zealand	+12:00	1st Sunday in Oct. at 2:00 a.m.	3rd Sunday in March at 3:00 a.m.	1:00
ZP11	No standard name	+11:00	No default	No default	No default
AEST	Australia East	+10:00	Last Sunday in Oct. at 2:00 a.m.	Last Sunday in March at 3:00 a.m.	1:00
GST	Guam	+10:00	No default	No default	No default
ACST	Australia Central Time	+9:30	Last Sunday in Oct. at 2:00 a.m.	Last Sunday in March at 3:00 a.m.	1:00
JST	Japan	+9:00	No default	No default	No default
KST	Korea	+9:00	No default	No default	No default
AWST	Australia West Time	+8:00	No default	No default	No default
ZP8	China, Manila, Philippines	+8:00	No default	No default	No default
ZP7	Bangkok	+7:00	No default	No default	No default
ZP6	No standard name	+6:00	No default	No default	No default
ZP5	No standard name	+5:00	No default	No default	No default
ZP4	No standard name	+4:00	No default	No default	No default
MSK	Moscow	+3:00	Last Sunday in March at 2:00 a.m.	Last Sunday in Oct. at 3:00 a.m.	1:00
EET	Eastern Europe	+2:00	Last Sunday in March at 2:00 a.m.	Last Sunday in Oct. at 3:00 a.m.	1:00
CET	Central Europe	+1:00	Last Sunday in March at 2:00 a.m.	Last Sunday in Oct. at 3:00 a.m.	1:00
MET	Middle European Time	+1:00	Last Sunday in March at 2:00 a.m.	Last Sunday in Oct. at 3:00 a.m.	1:00
BST	British Standard Time	+0:00	Last Sunday in March at 1:00 a.m.	Last Sunday in Oct. at 3:00 a.m.	1:00
WET	Western Europe	+0:00	Last Sunday in March at 1:00 a.m.	Last Sunday in Oct. at 3:00 a.m.	1:00

Timezone and DST Parameters Con't

Abbr.	Name	Hours from UTC	DST Start	DST End	DST Change
GMT	Greenwich Mean Time	+0:00	No default	No default	No default
WAT	West Africa	-1:00	No default	No default	No default
ZM2	No standard name	-2:00	No default	No default	No default
ZM3	No standard name	-3:00	No default	No default	No default
NST	Newfoundland	-3:30	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
AST	Atlantic Standard Time	-4:00	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
EST	Eastern Standard Time	-5:00	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
CST	Central Standard Time	-6:00	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
MST	Mountain Standard Time	-7:00	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
PST	Pacific Standard Time	-8:00	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
AKST	Alaska	-9:00	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
HST	Hawaii	-10:00	No default	No default	No default
ZM11	No standard name	-11:00	No default	No default	No default

4) Daylight Savings Time active

Enables and disables DST (Daylight Savings Time). To enable DST, enter:

4=Enable

To disable DST, enter:

4=Disable

If DST is disabled, options 41-49 will not be displayed.

41) DST Start Month

Indicates which month of the year DST starts. To set the month when DST should start, enter the sequential number of the month (January=1, February=2, . . . December=12). For example, if you wanted DST to begin in April, you would enter the line number for **DST Start Month (41)** and the month, as follows:

41=4

42) DST Start Week

Indicates which week in a month DST starts. To set the week DST should start, enter the sequential number of the week. The possible values are 1st (1), 2nd (2), 3rd (3), 4th (4), and Last. For example, if you wanted DST to start on the 3rd Tuesday of a month, you would enter the line number for **DST Start Week (42)** and the week, as follows:

42=3

43) DST Start Day

Indicates which day of the week DST starts. To set the day DST should start, enter the sequential number of the day (Sunday=1, Monday=2, . . . Saturday=7). For example, if you wanted DST to begin on Friday, you would enter the line number for **DST Start Day (43)** and the day, as follows:

43=6

44) DST Start Time

Indicates what time of day (in local time) DST starts. To set the time DST should start, enter the time in the form **HH:MM**, where **HH** is the clock hours of a 24 hour (military) clock and **MM** is the clock minutes that DST should start. For example, if you wanted DST to start at 1:00 a.m., you would enter the line number for **DST Start Time (44)** and the time, as follows:

44=1:00

45) DST End Month

Indicates which month of the year DST ends. To set the month DST should end, enter the sequential number of the month (January=1, February=2, . . . December=12). For example, if you wanted DST to end in April, you would enter the line number for **DST End Month (45)** and the month, as follows:

45=4

46) DST End Week

Indicates which week in a month DST ends. To set the week DST should end, enter the sequential number of the week. The possible values are 1st (1), 2nd (2), 3rd (3), 4th (4), and Last. For example, if you wanted DST to end on the last Tuesday of a month, you would enter the line number for **DST End Week (46)** and the week, as follows:

46=Last

47) DST End Day

Indicates which day of the week DST ends. To set the day DST should end, enter the sequential number of the day (Sunday=1, Monday=2, . . . Saturday=7). For example, if you wanted DST to end on Wednesday, you would enter the line number for **DST End Day (47)** and the day, as follows:

47=4

48) DST End Time

Indicates what time of day (in local time) DST ends. To set the time DST should end, enter the time in the form of **HH:MM**, where **HH** is the clock hours of a 24 hour (military) clock and **MM** is the clock minutes that DST should end. For example, if you wanted DST to end at 2:00 a.m., you would enter the line number for **DST End Time (48)** and the time, as follows:

48=2:00

49) DST Offset

Indicates the amount of time to change the local time when DST changes. To set how much time DST should change, enter the change in the form of **HH:MM**, where **HH** is the clock hours and **MM** is the clock minutes that DST should change. For example, if you wanted the local time to move 1 hour when **DST** changes, you would enter the line number for **DST Offset** and the hour, as follows:

49=1:00

Configuring the Serial Port Parameters

To configure the OmniStack's serial port parameters, follow the steps below.

1. At the system prompt, enter

ser

The following will be displayed.

Port to configure? {(C)onsole,(M)odem} (Console) :

2. Enter **c** to configure the console port. The **m** modem option is not valid. OmniStack switches do not provide a separate modem port. The **ser** command will display the current serial port parameters and prompt you to set the speed, as shown below.

Current Console port configuration:

9600 bps, 8 data bits, None parity, 1 stop bit, running Console (shell)

Speed {1200/9600/19200/38400} (9600) :

3. Enter the new serial port speed or just press **<Enter>** to accept the default value. Valid values are 1200, 9600, 19200, and 38400 bps. The system will prompt you to set the data size, as shown below.

Data size {7/8} bits (8) :

4. Enter **7** to set the data size to 7 bits or press **<Enter>** set it to 8 bits (the default). The system will prompt you to set the parity, as shown below.

Parity {(N)one/(E)ven/(O)dd} (None) :

Press **<Enter>** for none (the default), enter **e** for even parity, or enter **o** for odd parity. The system will prompt you to set the number of stop bits, as shown below.

Stop bits {0/1/2} (1) :

5. Enter **0** for 0 stop bits, press **<Enter>** for 1 stop bit (the default), or enter **2** for 2 stop bits. The system will prompt you to set the port's mode, as shown below.

Mode {(D)own,(C)onsole,(A)uxConsole,(S)LIP} (C) :

Enter **d** for down, press **<Enter>** for console (the default), or enter **s** for SLIP. If you want configure this port as a console port, enter **c**. If you want to disable this port, enter **d**. The **(A)uxConsole** option is not valid. OmniStack switches do not provide a separate modem port. If you entered **d** or **c**, proceed to Step 6. If you entered **s**, perform steps a through c.

- a. The following will be displayed.

Current SLIP configuration:

If SLIP is not running on any ports, the following prompt will be displayed.

SLIP not running on any ports, do you want to configure it?

Yes, No {Y/N} (Y) :

- b. Enter **y** to display current information. Enter **n** to skip the display. If you enter **y**, the system will prompt you for the local IP address, as shown below.

Configuring SLIP device sl0:

Local IP address (0.0.0.0) :

c. Enter a valid local IP address. The system will prompt you for the remote IP address, as shown below.

Remote IP address (0.0.0.0) :

d. Enter a valid remote IP address.

6. The system will prompt you to save the changes you have made.

Set (and save) these settings? {(S)ave/(Q)uit} (Save) :

Press **<Enter>** to save the changes you have made, or enter **quit** to exit this command without saving your changes.

Viewing Slot Data

You can view slot table information by entering the **slot** command. You can enter **slot** to view information on all slots in the switch, or enter slot and the slot number to view information only on the specified slot. To view the slot table data, enter

slot

at the system prompt. Something similar to the following will be displayed.

Slot	Module-Type Part-Number	Adm-Status Oper-Status	HW Rev	Board Serial #	Mfg Date	Firmware-Version Base-MAC-Address
1*	MPM-OS 05002600	Enabled Operational	B5	81350801	05/07/99	3.2.3 00:20:da:95:ca:a0 00:20:da:95:ca:b0 00:20:da:95:ca:c0 00:20:da:95:ca:d0
2	HSM3 05019606	Enabled Operational	B5	80750118	05/19/99	3.2.3 None
2-1	ATM2-155RFM 05003706		A	80750118	05/24/99	
3	Ether10/100 05015906	Enabled Operational	B5	81350801	08/21/99	3.2.3 None
3-1	Ether10/100 05015906		B5	81350801	10/11/99	
4	Ether10/100 05015906	Enabled Operational	B5	81350801	02/07/99	3.2.3 None
5	Ether10/100 05015906	Enabled Operational	B5	81350801	08/07/99	3.2.3 None

The fields display by the **slot** command are described below.

Slot. The OmniStack's front panel is divided into several areas labeled S1, S2, S3, etc. These areas relate to the conceptual division of the switch into several modules. S1 is the management module (referred to as the MPM) S2 is the uplink module (if the switch supports an uplink module), and S3, S4, etc., are the device connection modules (i.e., Ethernet ports).

Module-Type. The type of module in this slot.

Part-Number. The factory-assigned part number.

Adm-Status. The administration status. This can be enabled or disabled by the operator through the **reset** command, which is described in Chapter 40, "Running Hardware Diagnostics."

Oper-Status. The operational status. Whether the port is Up (Operational), Down, or Unknown. (Unknown means uninitialized or that the module is in a transitional state.)

HW Rev. The switch's revision number. This number may be helpful when troubleshooting.

Board Serial #. Serial number for this module.

Mfg Date. The manufacturing date for this module.

Firmware-Version. The version of the switch's's firmware.

Base-MAC-Address. The base MAC address(es) of this module.

Viewing System Statistics

The **systat** command displays statistics related to system, power, and environment. To view these parameters, enter

systat

at the system prompt. A screen similar to the following will be displayed.

```

System Uptime                : 3 days, 12:09:22.64
MPM Transmit Overruns       : 0
MPM Receive Overruns        : 22
MPM total memory             : 16 MB
MPM free memory              : 6875208 bytes
MPM CPU Utilization ( 5 sec) : 5% ( 0% intr 0% kernel 3% task 95% idle)
MPM CPU Utilization ( 60 sec) : 5% ( 0% intr 0% kernel 3% task 96% idle)
Power Supply 1 State         : OK
Power Supply 2 State         : Not Present
Temperature Sensor           : OK - between 0c and 50c
Temperature Alarm Masking    : Disabled

```

The fields displayed by the **systat** command are described below.

System Uptime. The time since the last boot that the system has been running, displayed in days, hours, minutes, and seconds (to the nearest hundredth).

MPM Transmit Overruns. The number of times a VSE transmit buffer could not be allocated by a task on the OmniStack.

MPM Receive Overruns. The number of times packets were dropped because the bus had more packets to deliver than the OmniStack could handle. This is a “receive overrun” condition which can happen when a storm occurs or when the switch is first powered up and many unknown MAC frames are being forwarded to the OmniStack.

MPM total memory. The amount of total memory installed on the OmniStack.

MPM Free Memory. The amount of free, or unused, memory available in the OmniStack. This data is also displayed by the **memstat** command, which is described in *Viewing MPM Memory Statistics* on page 7-19.

MPM CPU Utilization (5 seconds). The amount of time, by percent, the OmniStack processor actually worked during the last 5 seconds.

MPM CPU Utilization (60 sec). The amount of time, by percent, that the OmniStack processor actually did work during the last minute.

Power Supply 1 State. Valid states are **OK**, **Not Present**, and **Bad**. A power supply that has been turned off will be in the **Bad** state. If not installed, it will be in the **Not Present** state. Note that Power Supply 2 on the OmniStack will be a Backup Power System (BPS).

Power Supply 2 State. Valid states are **OK**, **Not Present**, and **Bad**. A power supply that has been turned off will be in the **Bad** state. If not installed, it will be in the **Not Present** state.

Temperature Sensor. Indicates whether the OmniStack temperature sensor detects overheating.

Temperature Alarm Masking. Indicates whether temperature alarm masking is Enabled or Disabled. You enable masking through the **maskta** command, which is described in Chapter 40, “Running Hardware Diagnostics.”

Viewing Task Utilization Statistics

The **taskstat** command displays the task utilization statistics of the switch. To display the task utilization statistics, enter

```
taskstat <task-number> <sample-period>
```

at the system prompt. The **<task-number>** is an optional number of tasks and the **<sample-period>** is an optional sample period of 1 to 60 seconds. You must enter the **<task-number>** if you want to enter the **<sample-period>**.

The default number for **<task-number>** is 5 and the default sample period for **<sample-period>** is 5 seconds. To display the task utilizations statistics for 10 tasks over a 20-second period, for example, enter

```
taskstat 10 20
```

at the system prompt. A screen similar to the following will be displayed.

Task Name	Utilization (20 secs)
tUi_shell0	0.76%
tCMProber	0.70%
tUi_shellC	0.60%
tSnmp_agent	0.34%
tNetTask	0.32%
tTelnetOut0	0.19%
tif_vblInput	0.19%
vseReceive	0.11%
tTelnetIn0	0.08%
bslMgr	0.07%
All Other Tasks:	0.68%
Total Task Utilization:	4.04%

The **taskstat** command displays the tasks in descending order in terms of the switch's CPU utilization. In addition, if you want to display all the tasks executed by the switch, enter **0** for the number of tasks.

Viewing MPM Memory Statistics

The **memstat** command displays the OmniStack memory statistics. The statistics will tell you how memory is currently being used and help determine if memory problems exist, such as memory exhaustion. To view the OmniStack memory statistics, enter

memstat

at the system prompt. A screen similar to the following will be displayed.

Summary of Memory Usage

status	bytes	blocks	avg block	max block
-----	-----	-----	-----	-----
current				
free	4761672	64	74401	4719704
alloc	6429088	9114	705	-
cumulative				
alloc	24942880	148235	168	-
MPM total memory			: 16MB	

The fields displayed by the **memstat** command are described below.

status. The statistics appear in two groups: **current** and **cumulative**. The current status shows free and allocated memory. The cumulative status shows only allocated memory. Cumulative memory is the total amount of memory that has been allocated since the switch was started up. This value increases each time a memory allocation takes place. It can never decrease.

bytes. The number of bytes for free and allocated memory.

blocks. Block size is dynamic and depends upon memory usage and the amount of fragmentation.

avg block. The average block indicates the average size of all the memory blocks.

max block. The maximum block indicates the largest free memory block available. When this value drops to around 10K it usually indicates that the free memory is highly fragmented and probably near exhaustion.

MPM total memory. The total number of megabytes available in the OmniStack memory.

Checking the Flash File System

The **fsck** command performs a file system check of flash memory, which consists of the flash file system. All image files are stored in flash memory and loaded into system memory when the switch boots up. It also provides diagnostics in the case of file corruption. To perform a file system check of flash memory, enter

fsck

at the system prompt. A screen similar to the following will be displayed.

Your bootroms support Flash File System Version 2 and greater.

Out of 16 file descriptors in use, 0 of these are opened on the /flash device.

Performing a file system check using manual mode. If a file is encountered with a potential problem, you may wish to consider preserving it for technical support analysis...

Flash file system check in progress...

Checking root file system... OK

Performing file consistency check...

Done.

There doesn't appear to be a system problem related to the Flash File system or kernel file system data structures. If you are experiencing problems with the flash file system, perhaps try using the "info", "systat", or "memstat" commands. They may indicate some other condition (such as low memory) which could prohibit correct operation of the file system.

If the **fsck** command finds a problem with the flash file system, a message will be displayed detailing the problems found and/or actions taken to correct those problems.

Creating a New File System

The **newfs** command removes a complete flash file system and all files within it. It then creates a new flash file system, which is empty. You can use this command when you want to reload all files in the file system or in the unlikely event that the flash file system becomes corrupted.

To re-initialize the flash memory, enter

newfs

at the system prompt. The following will be displayed.

You are about to destroy all files on file system /flash. If you are experiencing problems with the flash file system, you might want to use the "fsck" command to help determine where problems may exist.

Are you absolutely sure you want to strip the current file system and create a new one? (n)

Enter **y** to re-initialize the flash memory or **n** to cancel (the default is **n**). If you enter **y**, you will have to load new software into the switch.

◆ Warning ◆

Do not power-down the switch after running the **newfs** command until you reload your image and configuration files. If you do, you will have to reload the image files at the boot monitor prompt using the serial interface (e.g., ZMODEM), which can take several minutes.

You can then download new files via FTP or ZMODEM. Also, before you execute the **newfs** command, you may also want to preserve your configuration file by saving it to another host.

Configuring a System Description

You can enter or modify a description of a switch, its location, and a contact person. Although this information is not required, you may find it helpful in managing the switch. To enter or modify the switch descriptions, perform the following steps.

1. At the system prompt, enter

syscfg

The current system information will appear with a prompt asking if you want to change any of the information; for example:

```
System Contact           : Usenet
System Name              : no_name
System Location          : Unset
System Description       : DESCRIPTION NOT SET.
Duplicate MAC Aging Timer : 0 (not configured)
Change any of the above {Y/N}? (N) :
```

If you enter **n**, the **syscfg** command will exit and no changes will be made (the default is **n**). If you enter **y**, the current system information will be displayed line by line. To keep the current value (shown in brackets) for a line, press **<Enter>**. To change a value, enter the new value and press **<Enter>**.

◆ Important Note ◆

All changes you make take place immediately.

If you entered **y**, something similar to the following will be displayed.

System Contact (Usenet) :

2. Enter the new system contact or just press **<Enter>** to accept the default. A screen similar to the following will be displayed.

System Name (no_name) :

3. Enter the new system name or just press **<Enter>** to accept the default. A screen similar to the following will be displayed.

System Location (Unset) :

4. Enter the new system location or just press **<Enter>** to accept the default. A screen similar to the following will be displayed.

System Description (DESCRIPTION NOT SET.) :

5. Enter the new system description or just press **<Enter>** to accept the default. A screen similar to the following will be displayed.

Duplicate Mac Aging Timer :

The **Duplicate MAC Aging Timer** indicates the time, in seconds, duplicate MACs remain in CAM if there's no traffic from those MACs. After this time, inactive MACs will age out of the CAM. Duplicate MAC addresses will display as normal MAC addresses in other software commands, such as **fw** and **macinfo**. See *Duplicate MAC Address Support* on page 7-24 for further discussion.

6. Enter a new duplicate MAC aging timer value (the valid range is from 10 to 1000000) or just press **<Enter>** to accept the default.

Viewing CAM Information

The **camstat** command displays information and usage about the content addressable memory (CAM) on each switching module in the chassis. To view this CAM information, enter

camstat

at the system prompt. Something similar to the following will be displayed.

Slot	# of CAMs	Cfg Usage	Adj Usage	Max Avail	Actual Usage
2-3	2	0	1920	1907	0
4-5	1	0	1024	1000	27

The fields displayed by the **camstat** command are described below.

Slot. The OmniStack slot numbers for which CAM information is provided. Note that some CAMs will be assigned multiple slots.

of CAMs. The number of CAM chips installed for those slots.

Cfg Usage. The number of CAM entries the slot is configured to support. By default a slot will use the maximum amount of entries supported by on-board CAM. Depending on the model type, up to 8K of CAM can be supported over all modules in an OmniStack.

Adj Usage. The number of CAM entries available after considering the considered usage, the maximum available entries, and extra entries required by the switch for internal processing.

Max Avail. The number of CAM entries available. This number will be less than the number of CAM entries configured because some entries will be used by learned MAC addresses (shown in the **Actual Usage** column) and others are used internally by the OmniStack.

Actual Usage. The number of MAC addresses learned by the module in this slot.

◆ Note ◆

For CAM statistics for an entire chassis, use the **hdstat** command, which is described in Chapter 9, “Health Statistics.”

Duplicate MAC Address Support

When the switch sees the same MAC address sending traffic on a different switch port (a Duplicate MAC Address), it assumes the original network device moved. The switch sends a trap notifying network management of this station move event. It sends one trap for a device move within the same Group and another trap for a device move outside of the home Group.

A station move trap is normally sent after an actual station move. However, certain network configurations assign the same MAC address to different network devices (physical and virtual) as standard practice. In these situations, the duplicate MAC address appears as a station move when it is really a normal occurrence in these network configurations. These network configurations that use the same MAC address for different devices include:

- LAN Emulation under Cisco routers. Cisco routers use the same MAC address for each LAN Emulation Client (LEC). In LAN Emulation, each ELAN needs to be treated as a separate LAN and should therefore have a separate MAC address.
- IBM Front End Processor (FEP). Many IBM FEPs use the same MAC address assigned to the connecting devices for the purpose of redundancy.
- DECnet networks. The DECnet protocol assigns the special MAC address, AA000400XXYY (XXYY is an internal protocol ID) to each DECnet station or routing device regardless of the number of physical interfaces.

Initially, duplicate MAC addresses in these special situations may be no more of a problem than extra traps being sent for an event (station move) that did not really happen. However, when a large number of these network devices send the same MAC address out the same port, flooding can occur and the switch will eventually shut the port down.

To prevent a port from being shut down, the switch needs some way of knowing the duplicate MAC addresses originating from the port are not an error condition.

The OmniStack will treat duplicate MAC addresses as separate addresses as long as they are learned from a different Group as the original MAC. Each duplicate MAC address will use one entry in the CAM. Up to 32 duplications of the same MAC address are supported. Duplicate MAC addresses learned from virtual ports within the same Group are treated as station moves and will generate corresponding traps. If the MAC address moves from one VLAN to another VLAN within the same Group, the switch will not treat the MAC addresses as separate.

If your network supports duplicate MAC addresses, there may be a significant performance impact due to the following reasons:

- A MAC address is usually stored only in the CAM of the switching module where its destination address is located. If duplicate MAC addresses are treated as separate addresses, then the same MAC address may have to be stored in the CAM of multiple switching modules, not just the module that originally learned the address.
- Every duplicate MAC address becomes a CAM table entry, so there will be less room in the CAM for other entries to be learned. Since up to 32 duplications of a single MAC address are possible, this CAM can become crowded with these duplicate entries.

You can reduce the impact of a crowded CAM by configuring the **Duplicate MAC Aging Timer** in the **syscfg** command, which is described in *Configuring a System Description* on page 7-22. This timer allows you to age out Duplicate MAC CAM entries from devices that are inactive for the time period you specify.

- Extra search time will be required for each lookup of the same MAC address since it is treated as a separate entry in the CAM.

In addition to these performance impacts, you will lose the tracking of legitimate station moves. No traps will be sent for Duplicate MAC addresses that appear in different Groups.

Multicast Claiming

Multicast claiming can be enabled for networks with heavy multicast traffic. When enabled, multicast claiming frees the OmniStack from processing multicast packets by off-loading this traffic from the management processor. When multicast claiming is enabled, the switch “claims” destination multicast addresses and places them in the CAMs of all switching modules in the OmniStack.

You can enable multicast claiming by adding the following line to the **mp4.cmd** file:

```
bslLearnMcPkt=1
```

You can use the **edit** command to make this change. (See Chapter 5, “Managing Files,” for instructions on using the **edit** command.) You will need to reboot the switch for this parameter to take effect. Multicast claiming can later be disabled by changing the setting for this parameter to zero (0), as follows:

```
bslLearnMcPkt=0
```

An alternative method for managing multicast traffic is through the use of Multicast VLANs. See Chapter 20, “Managing AutoTracker VLANs” and Chapter 21, “Multicast VLANs” for further information.

Disabling Flood Limits

Two UI commands are available for controlling flood limits for individual ports and Groups. The **modvp** command (described in Chapter 17, “Managing Groups and Ports”) allows you to control the flood limits for a specific port. The **flc** command (described in Chapter 15, “Configuring Bridging Parameters”) allows you to configure flood limits for all ports in a group.

You can also disable flood limits on a switch-wide basis by adding the following line to the **mp4.cmd** file:

```
disableFloodLimiting=1
```

You can use the **edit** command to make this change. See Chapter 5, “Managing Files,” for instructions on using the **edit** command. You will need to reboot the switch for this parameter to take effect.

