6 Configuring Switch-Wide Parameters

The OmniAccess 512 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 6-5.

In addition, this chapter contains documentation for duplicate MAC address support (described in *Duplicate MAC Address Support* on page 6-26), multicast claiming (described in *Multicast Claiming* on page 6-27), and disabling flood limits (described in *Disabling Flood Limits* on page 6-27).

Summary Menu

The Summary menu consists of commands for displaying summary switch information. To access this menu, enter

```
summary
```

at the UI prompt. Type the question mark (**?**) to see the following list of commands.

```
Command          Summary Menu
ss               Display MIB-II System group variables
sc               OmniAccess 512 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

MIB-II is a core set of definitions created to define the SNMP-based management framework. This MIB module contains definitions for both end systems and routers using the Internet protocol suite. 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 OmniAccess 512
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 (Rlogin, 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 OmniAccess 512." This field can be changed using the **syscfg** command, which is described in *Configuring a System Information* on page 6-24.

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 OmniAccess 512. This field is set by the **syscfg** command, which is described in *Configuring a System Information* on page 6-24.

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 Information* on page 6-24.

Location. The physical location of the switch. This field is set by the **syscfg** command, which is described in *Configuring a System Information* on page 6-24.

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

- **Data Link /Subnetwork Layer**
- **Internetwork Layer**
- **Host Layer**
- **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:                    OmniAccess 512 4-Slot
Chassis ID:              Alcatel
Description:             DESCRIPTION NOT SET.
Backplane:               512
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 OmniAccess 512.

Description. The description of this chassis. This field is set by the **syscfg** command, which is described in *Configuring a System Information* on page 6-24.

Backplane. The style of backplane used in this switch.

Master MPM Serial No. The serial number for this OmniAccess 512.

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 OmniAccess 512.

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. A screen 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 the system software.

System Menu

The System menu contains commands to view or set system-specific parameters. To access this menu, 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          View/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 (obsolete)
echo/noecho     Enable/disable character echo
chpr            Change the prompt for the system (obsolete)
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 2, "The User Interface." The **camcfg** command is no longer supported on the OmniAccess 512. The **logging** command is described in Chapter 7, "Switch Logging." The **health** command is described in Chapter 8, "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 UIC menu will automatically display. For more information on the UI Configuration menu, refer to Chapter 2, "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 OmniAccess 512
System Type:     OmniAccess 512
Description:     DESCRIPTION NOT SET.

Backplane:       FIXED-512       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/oa5.cmd
Boot File:         /flash/oa5.img
Ni Image Suffix:   img
```

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

System Make. By default, “Alcatel OmniAccess 512” is displayed.

System Type. The OmniAccess 512 model.

Description. A description of the chassis and product. This field is set by the **syscfg** command, which is described in *Configuring a System Information* on page 6-24.

Backplane. The style of backplane used in this switch.

Bus Speed. The speed of backplane, in Mbs, used in this chassis.

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 OmniAccess 512.

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 (**oa5.cmd** is the default) containing user-configurable commands.

Boot File. The boot file (**oa5oa5.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                              :01/15/01
3) Timezone (-13 . . 12, name)             : MST    UTC-7 hrs
4) Daylight Savings Time active            : Disabled

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 January 15, 2001, you would enter:

2=01/15/01

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	Newfound-land	-3:30	1st Sunday in April at 2:00 a.m.	Last Sunday in Oct. at 2:00 a.m.	1:00
AST	Atlantic Stan-dard 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 Stan-dard 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 Stan-dard 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 Stan-dard 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 want 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 want 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 want 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 want 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 want 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 want 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 want 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 want 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 want 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 OmniAccess 512'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. OmniAccess 512 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. OmniAccess 512 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      Adm-Status    HW   Board      Mfg       Firmware-Version
      Part-Number      Oper-Status   Rev  Serial #   Date      Base-MAC-Address
------- ---------------- ---------------- -------- ---------- ---------- -----------------------------
 1*        OA512          Enabled        A    0000007  05/07/01  4.3 EA
           05002600       Operational                             00:20:da:95:ca:a0

 2       OA512-ESM        Enabled        A   80750118  05/19/01  4.3 EA
           05019606       Operational                             None

 3-1     WAN-FT1E1        Enabled        A   81350801  08/21/01  4.3 EA
           05015906       Operational                             None

 3-2       WAN-SER        Enabled        A   81350801  10/11/01  4.3 EA
           05015906       Operational

 4           Empty
```

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

Slot. The OmniAccess 512'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 33, "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)
Temperature                    : ok, between 0c and 45c
```

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 OmniAccess 512.

MPM Receive Overruns. The number of times packets were dropped because the bus had more packets to deliver than the OmniAccess 512 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 OmniAccess 512.

MPM total memory. The amount of total memory installed on the OmniAccess 512.

MPM Free Memory. The amount of free, or unused, memory available in the OmniAccess 512. This data is also displayed by the **memstat** command, which is described in *Viewing MPM Memory Statistics* on page 6-23.

MPM CPU Utilization (5 seconds). The amount of time, by percent, the OmniAccess 512 processor actually worked during the last 5 seconds.

MPM CPU Utilization (60 sec). The amount of time, by percent, that the OmniAccess 512 processor actually did work during the last minute.

Temperature. Indicates whether the OmniAccess 512 temperature sensor detects overheating.

Clearing System Statistics

You may want to clear statistics for a specific module, port or service for diagostic or accounting purposes. To clear switch statistics enter

```
clearstat
```

at the system prompt. A screen similar to the following will display.

```
Usage: clearstat slot [,port] [,service] [,instance]
```

As indicated in the prompt, you can clear all statistics from a module by entering the slot number as shown here:

```
clearstat 3
```

This entry will clear all statistics for the module located in slot 3. If you want to clear statistics for a specific port, service or instance, enter the **clearstat** command followed by the appropriate numbers. You must use a comma (,) to separate the slot number from the port, service and instance numbers. The following command will clear all statistics for port 1 of the module located in slot 3.

```
clearstat 3,1
```

♦ Caution♦

When the **clearstat** command is used, no notification is sent to the SNMP manager about the cleared statistics. Use of this command can cause unpredictable results with your NMS statistics.

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 display.

Task Name	Utilization (20 secs)
tUi_shellt0	0.76%
tCMProber	0.70%
tUi_shellC	0.60%
tSnmp_agent	0.34%
tNetTask	0.32%
tTelnetOut0	0.19%
tif_vbInput	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. You may use the **taskstat 0** command if you want to list utilization statistics for all the tasks executed by the switch.

The **taskshow** command displays a table listing all tasks and their priority, status and memory allocation. A partial table is shown here.

NAME	ENTRY	TID	PRI	STATUS	PC	SP	ERRNO	DELAY
tExcTask	_excTask	499f7f20	0	PEND	4892067c	499f7d38	9	0
tLogTask	_logTask	499f5598	0	PEND	4892067c	499f53b0	0	0
tCMWatcher	_cmWatchdogK	4999f108	0	DELAY	4893c028	4999efb8	0	5
tHelperTask	_exc2Task	499fc018	2	PEND	4892067c	499fbe30	0	0
tAscSTimer	_ascSessTime	49a53498	10	DELAY	4893c028	49a53348	0	170
bpeMgr	_bpm_initial	46037630	20	PEND	4892a41c	46037430	3d0002	0
ipxTimer	_ipxTimerTas	49a83168	49	DELAY	4893c028	49a83010	0	26
ipxGapper	_ipxGapperTa	49a7cdc0	49	PEND	4892067c	49a7cb70	0	0
tNetTask	_netTask	499eee40	50	PEND	4892a0a4	499eec68	0	0
ipx	_ipxMain	49fe0350	50	PEND	4892a41c	49fe0168	3d0002	0

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

NAME. Name of the task whose statistics are being shown.

ENTRY. Shows the routines that are currently being executed by the specified task.

TID. Address of the task listed in this row.

PRI. Priority of the specified task.

STATUS. Current status of the specified task.

PC. Program Counter. The program counter identifies the routing code as it enters the stack.

SP. Stack pointer. The stack pointer points to the code being loaded when the status is taken.

ERRNO. Error number indicator.

DELAY. The time elapsed between task routines.

Viewing Memory Utilization

The leak monitor diagnostic utility is used to display information about memory utilization. This utility requires the use of three UI commands: **leakstart**, **leakstop** and **leakdumpall**.

♦ Note♦

You may want to log this operation to a text file to make it easier to view the data.

To start the utility, enter

leakstart

at the system prompt. This command starts a leak monitor daemon that gathers memory information in the background until you stop it by using the **leakstop** command. The **leakstop** command stops the leak monitor daemon from recording data and preserves the data already recorded. To view the memory utilization information enter the following command

leakdumpall

at the system prompt. This command dumps all memory recorded by the leak daemon. A screen similar to the following will display.

```
Outstanding Memory  -  at TUE   APRI  24    19:00:29    2001

Task ID     Name     Functi 1  Functi 2   Functi 3   Address  Len        Time
========  =======  ========  ========   ========  =======  ===    ====================
49a69a58  tUi_she  484fe4do  484f1284   484ffbc8  4800ef28   9 TUE APR 24 18:06:4 7 2001
49559bb8  t_AtmMg  49db6e90  49d6a780   49d4c3bd  4800ef88  16 TUE APR 24 18:06:4 6 2001
49559bb8  t_AtmMg  49db6e90  49d4be4c   49d8639c  4800efb8  64 TUE APR 24 18:06:4 6 2001
49559bb8  tUi_she  49db6e90  49d9cce4   49d9c910  4800f050   4 TUE APR 24 18:06:4 6 2001

   End of memory report.
```

The length of the display shown will vary depending on the length of time between use of the **leakmon** command and the **leakstop** command. The fields displayed by the **leakdumpall** command are described below.

Task ID. The address of the task that is allocating the block of memory.

Name. Name of the task that is allocating the block of memory.

Functi 1, 2, 3. These three columns indicate functions entered above the *malloc* package. Function 1 is the function that called *malloc*. Function 2 is the function that called Function 1. Function 3 is the function that called Function 2.

Address. The starting address space for the memory that was allocated.

Length. The length of the block requested on the *alloc( )* call

Time. The timestamp taken when the *alloc* call occurred.

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 display.

Task Name	Utilization (20 secs)
tUi_shellt0	0.76%
tCMProber	0.70%
tUi_shellC	0.60%
tSnmp_agent	0.34%
tNetTask	0.32%
tTelnetOut0	0.19%
tif_vbInput	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. If you want to display all the tasks executed by the switch, enter

taskstat 0

at the system prompt. A table will display listing all system tasks.

Viewing MPM Memory Statistics

The **memstat** command displays the OmniAccess 512 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 OmniAccess 512 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                                 : 32MB
```

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 OmniAccess 512 memory.

Configuring a System Information

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                       : testnet_4
   System Location                   : Calabasas
   System Description                : Marketing_testnet
   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 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 is 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 **fwt** and **macinfo**. See *Duplicate MAC Address Support* on page 6-26 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	1 (0+0+0+0)	0	1920	1907	0
4-5	1 (0+0+0+0)	0	1024	1000	27

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

Slot. The OmniAccess 512 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 OmniAccess 512.

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 OmniAccess 512.

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 8, "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 OmniAccess 512 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 Information* on page 6-24. 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 OmniAccess 512 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 OmniAccess 512.

You can enable multicast claiming by adding the following line to the **oa5.cmd** file:

```
bslLearnMcPkt=1
```

You can use the **edit** command to make this change. (See Chapter 4, "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 19, "Managing AutoTracker VLANs" and Chapter 20, " 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 16, "Managing Groups and Ports") allows you to control the flood limits for a specific port. The **flc** command (described in Chapter 14, "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 **oa5.cmd** file:

```
disableFloodLimiting=1
```

You can use the **edit** command to make this change. See Chapter 4, "Managing Files," for instructions on using the **edit** command. You will need to reboot the switch for this parameter to take effect.

Saving Configurations

Under normal conditions, configurations you make using the UI are written into cache and automatically saved into the switch's flash memory. In this case, it is not necessary to issue a special command to save your configurations. When you use the UI to enter multiple configurations, periodically the switch will display the following message.

```
File system compaction in progress . . .
```

This message indicates that the switch is compacting data in the cache buffer before writing it into the mpm.cnf file. This message normally disappears after a few seconds.

♦ Warning ♦

It is highly recommended that you use the default setting and allow the switch's save function to operate automatically.

You can change the switch's save function so that the cache is not saved automatically by executing the **cacheconfig** command. To turn off the switch's automatic save function, enter

```
cacheconfig on
```

at the system prompt. The following message will display.

```
Cache Configuration is now on
```

♦ Warning ♦

Any configurations you enter before executing the **saveconfig** command will not be saved in case of system failure or reboot.

Once **cacheconfig** is implemented, you must use the **saveconfig** command to manually synchronize your configurations into flash memory. When you execute the **saveconfig** command at the system prompt, the following message will display.

```
File system compaction in progress . . .
```

The UI does not indicate when the **cacheconfig** function is in operation. However, if you attempt a reboot the following message will display if you are in the cache configuration mode.

```
!!!Warning!!! You are in the cache configuration mode.
              Please enter 'n'/'N' to the following confirm prompt.
              Then enter the UI command "saveconfig", or
              enter the CLI command "dump configuration cache" to
              save the current configuration to mpm.cnf in the flash.

              Otherwise, all/some your configuration changes will be lost!

Confirm? (n) :
```

This message gives you the opportunity to execute the **saveconfig** command prior to the reboot.

To determine whether you are in the cache configuration mode, enter the **cacheconfig** command. If cache config is operational the following message will display one of the following messages.

```
Cache Configuration is currently on.
```

or

```
Cache Configuration is currently off.
```

To turn off the cache configuration mode, enter the following command at the system prompt.

```
cacheconfig off
```

The following message will display.

```
File system compaction in progress . . .
Cache Configuration is now off
```