14 OmniCore Software

OmniCore software is saved locally to the switch's onboard flash memory, which provides nonvolatile memory for the storage of software images, configuration files, and other information. The OmniCore routing switch supports two flash memory sources: onboard Enterprise Management Module (EMM) memory, and external PCMCIA flash card memory. Both sources support redundant software images, the updating of software images, and the testing of one image while preserving another image.

OmniCore software can be downloaded and uploaded via a TFTP server that is located on your network, or via Xmodem protocol. The OmniCore routing switch can also be used as a standalone TFTP server. Software upgrades can be performed via TFTP, Xmodem, or a flash card. In addition, customized configurations can be saved to named files or to a default filename (either *startup.config* or user-specified).

In the CLI, you can specify the flash device's physical location and the filename with which a particular action will be performed. This information is entered in the format *device:file*, where *device:* is the flash device and *file:* is the filename. You can also enter the number of a specific slot in which a desired device is located. Available *device:* values are as follows:

- *emm[N]:* – Specifies that an action will be performed using onboard EMM flash memory, where *N* is an optional slot number.
- *card[N]:* – Specifies that an action will be performed using external PCMCIA flash card memory, where *N* is an optional slot number.
- *boot[N]:* – Specifies that an action will be performed using the boot device, where *N* is an optional slot number.
- *slotN:* – Specifies that an action will be performed using the boot device, where *N* is the slot number.
- *tftp:[//<serveraddr>/][<filename>]* – Specifies that an action will be performed using a TFTP server; this option is applicable only to the copy, install, and save functions. You can enter the IP address of a specific TFTP server, where *//<serveraddr>/* is the address. Or, you can allow the system to use the default TFTP server (see the *utils tftp remote-server* command in the *OmniCore CLI Reference Manual*), in which case you would only enter *tftp:[<filename>]*.

Only one flash device acts as the boot device during the rebooting process (the default of which depends on the EMM's jumper position). A boot device refers to the flash device from which the currently running system is loaded. For information on assigning the default boot device, see *Setting the EMM's Jumper Position* on page 14-6.

OmniCore Software Commands

The major software commands in the OmniCore CLI are listed in the following table. Other commands are available for fine-tuning your software configuration. To see a complete list of these commands or for more information regarding the commands used in this chapter, see the *OmniCore CLI Reference Manual*.

OmniCore Software Commands

Command	Default	Description
utils defconfig	startup.config	Designates the default configuration file that will be loaded upon rebooting.
utils file copy	no default	Copies a file from one device to the same or other device.
utils file delete	no default	Deletes a specified file from the specified device.
utils file format	no default	Reformats a specified flash device.
utils file install	no default	Installs bootstrap software into the proper location on the specified device.
utils file rename	no default	Defines a new name for the specified file.
utils file save	startup.config	Writes user-defined configuration settings to a file on the specified device.
utils reboot	no default	Reboots the switch.
utils tftp remote-server	no default	Specifies the address for the remote TFTP server.
utils tftp status	enable	Enables the switch as a TFTP server.

Booting Options

The OmniCore routing switch can be rebooted at the root prompt.

```
OmniCore> reboot
```

The switch will reboot using the default boot device and the default configuration file (defined through the *utils defconfig* command). If you wish to view the current boot option settings or to select a different boot device, file, or image, immediately press CTRL-B when the following text is displayed during the booting process:

```
Hit CONTROL-B during memory test for booting options...
```

The main boot options menu will appear.

```
Enter one of the following options:
'B' to select boot device [Onboard flash]
'C' to select the EMM configuration file      [startup.config]
'D' to start Xmodem download
'I' to select an EMM image to run             [EMM.sys]
'S' to set option for the serial BAUD rate    [9600]
'L' to list files on the boot device
'!' to ERASE the boot flash (with verification)
'ESC' to continue startup

Your choice:
```

Each option's current setting is displayed between [ ] brackets. You can modify boot parameters by simply selecting the desired option and following the on-screen instructions. Or, press Esc to continue the booting process.

Selecting a Boot Device

Follow these steps to select a boot device:

1. (Optional) If booting from a flash card, insert the desired PCMCIA flash card into the flash card slot.

   ❖ Note ❖

   The default boot device is determined by the EMM's jumper position. However, you can use the following steps to interrupt the rebooting process and select an intermediate boot device for the current reboot only. All future reboots will continue to access the default boot device.

2. Reboot the switch and display the boot options menu as described at the beginning of this section. Note that the switch will have already accessed the bootstrap software from the default boot device.

3. At the bottom of the boot options menu, enter **b** to select the desired boot device.

   ```
   Your choice: b
   ```

   The following menu appears:

   ```
   To select boot flash device

   'E' for EMM onboard flash
   'C' for removable flash card

   #   Date         Time       Vers      Size   Name
   1   1999-06-03   17:57:37   2.5.0r3   1746   startup.config
   2   1999-05-20   16:09:51   2.2.0r7   1746   old.config
   ```

4. Type the letter for the desired flash device and then press Enter.

```
Enter your choice, or ESC to return to the previous menu: e

Select a configuration file by number,
   or enter "0" for none,
   or ESC to return to the previous menu: 2
```

5. When the main boot options menu appears again, you can select another option from the menu or press Esc to continue booting using the specified boot device.

6. The boot options menu appears again. Select another option from the menu or press Esc to continue booting using the specified configuration file.

Selecting a Boot Configuration File

Follow these steps to select a Boot Configuration file:

1. (Optional) If booting from a configuration file contained on a specific PCMCIA flash card, insert the card into the flash card slot on the EMM.

2. Reboot the switch and display the boot options menu as described at the beginning of this section.If necessary, at this point you can select a new boot device (see *Selecting a Boot Device* on page 14-3). Then, return to the boot options menu.

❖ Note ❖

You can select a boot configuration file only from the boot device. For example, you cannot select a configuration file from an external PCMCIA flash card if you have rebooted the system using the onboard EMM flash memory.

3. At the boot options menu, enter **c** to view a list of the available configuration files contained on the specified flash device. You can also use this option to view the date and time each file was loaded.

```
Your choice: c
```

A table listing the available configuration files will then appear.

```
#   Date         Time       Vers      Size   Name
1   1999-06-03   17:57:37   2.5.0r3   1746   startup.config
2   1999-04-21   16:09:51   2.2.0r5   1746   old.config
```

4. Type the number of the desired file and then Enter.

```
Select a configuration file by number,
   or enter "0" for none,
   or ESC to return to the previous menu: 2
```

5. The boot options menu appears again. Select another option from the menu or press Esc to continue booting using the specified configuration file.

Selecting a Boot Image File

Follow these steps to select a Boot Image file:

1. (Optional) If booting from an image file contained on a specific PCMCIA flash card, insert the card into the flash card slot on the EMM.

2. Reboot the switch and display the boot options menu as described at the beginning of this section. If necessary, at this point you can select a new boot device (see *Selecting a Boot Device* on page 14-3). Then, return to the boot options menu.

   ❖ Note ❖

   You can select a boot image file only from the boot device. For example, you cannot select an image file from an external PCMCIA flash card if you have rebooted the system using the onboard EMM flash memory.

3. At the boot options menu, enter `i` to see a list of the available EMM image files contained on the specified flash device. You can also use this option to view the date and time each file was loaded.

   ```
   Your choice: i
   ```

   A table listing the available image files will then appear.

   ```
   #   Date         Time       Vers      Size      Name
   1   1999-06-03   16:30:10   2.5.0r3   2953296   emm.sys
   2   1999-04-21   06:28:55   2.2.0r5   89900     emmold.sys
   ```

4. Type the number of the desired image file and press Enter.

   ```
   Select an EMM executable file by number,
      or ESC to return to the previous menu: 1
   ```

5. The boot options menu will appear again. Select another option from the menu or press Esc to continue booting using the specified image file.

Setting the EMM's Jumper Position

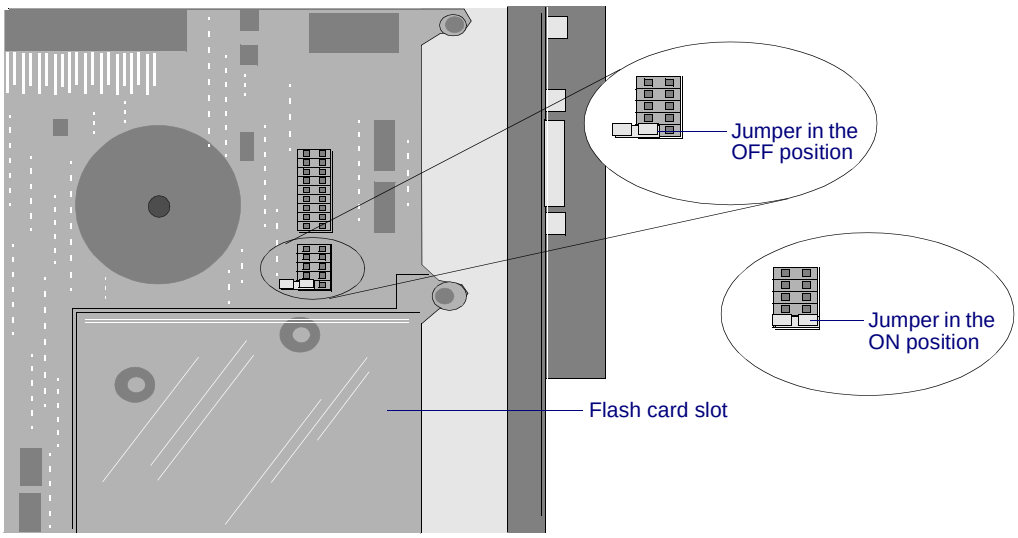
The position of the EMM's jumper will determine the OmniCore routing switch's default boot device. If the jumper is in the *on* or *in* position, the switch will boot from the external PCMCIA flash card. If the jumper is in the *off* or *out* position (the factory default configuration), the switch will boot from the EMM's onboard flash memory.

Follow these steps to set the jumper for booting from a flash card:

1. Avoid unnecessary ESD damage by putting on a wrist strap and connecting it to the chassis. The OmniCore routing switch provides one grounding plug on the far-left front of the chassis.

2. Remove the EMM. For EMM removal procedures please see Appendix A, "Servicing Components".

3. Locate the jumper. The jumper, located on the EMM's component side just above the flash card slot, should be attached to only one of the bottom pins which are nearest the flash card slot, as shown in the following illustration.



Jumper Set to On Position

4. Remove the jumper and apply it to both bottom pins so that it is in the *on* position, as shown in step 3.

5. Install the EMM back into its slot. For EMM installation procedures please refer to Appendix A, "Servicing Components".

The EMM jumper is now in the *on* position. All future reboots will access external PCMCIA flash card memory.

✦ Caution✦

Any configuration data will be saved only to the currently active boot device.

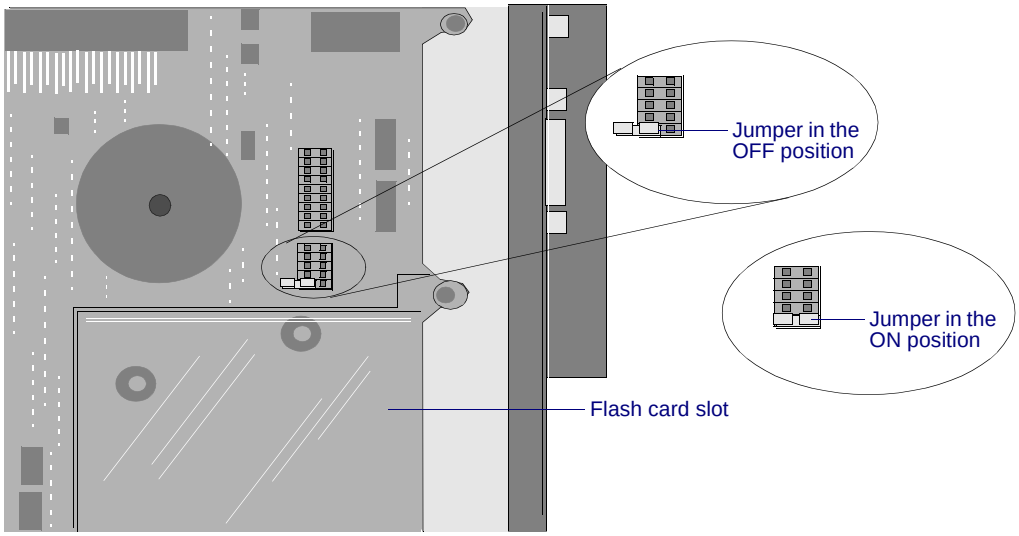
Setting the Jumper for Booting from the EMM

Follow these steps to set the jumper for booting from the EMM:

1. Avoid unnecessary ESD damage by putting on a wrist strap and connecting it to the chassis. The OmniCore routing switch provides one grounding plug on the far-left front of the chassis.

2. Remove the EMM. For EMM removal procedures please refer to Appendix A, "Servicing Components".

3. Locate the jumper. The jumper, located on the EMM's component side just above the flash card slot, should be attached to only one of the bottom pins which are nearest the flash card slot as shown in the following illustration.



Jumper Set to Off Configuration

4. Remove the jumper and apply it to only one of the bottom pins so that it is in the *off* position, as shown in step 3.

5. Install the EMM back into its slot. For EMM installation procedures, see Appendix A, "Servicing Components"

The EMM jumper is now in the *off* position. All future reboots will access onboard EMM flash memory.

❖ Caution❖

Any configuration data will be saved only to the currently active boot device.

Transferring Files

This section describes how to transfer files between the OmniCore routing switch and another server or client using Trivial File Transfer Protocol (TFTP) or Xmodem.

Using TFTP to Transfer Files

The OmniCore routing switch supports both the upload and download of files between the switch and a TFTP server or client that is on the network. TFTP is a file transfer application that is used where directory visibility and user authentication is unnecessary. Any file that is saved in either onboard or external flash memory can be written to a TFTP server or client.

✦ Note✦

The procedures for transferring files via TFTP assume that the primary EMM in your OmniCore routing switch is booting from the onboard flash memory. If this is not the case, see *Booting Options* on page 14-3 to select the primary EMM onboard flash memory as the boot device.

Downloading a File Using TFTP

Follow these steps to download a file using TFTP:

1. Specify the IP address of the TFTP server from which the desired file will be downloaded. For this example, an IP address of 10.0.3.34 is used.

```
OmniCore> utils
OmniCore/utils> tftp remote-server 10.0.3.34
```

2. Download the desired file from the TFTP server to the primary EMM's onboard flash memory. For this procedure, a file named *monday.config* is used.

```
OmniCore/utils> file copy tftp:monday.config emm:
55896 bytes copied in 1.5 seconds (92K/sec).
```

Uploading a File Using TFTP

Follow these steps to upload a file using TFTP:

1. Specify the IP address of the TFTP server to which the desired file will be uploaded. For this example, an IP address of 10.0.3.34 is used.

```
OmniCore> utils
OmniCore/utils> tftp remote-server 10.0.3.34
```

2. Upload the desired file from the TFTP server to the primary EMM's onboard flash memory. For this procedure, a file named *friday.config* is used.

```
OmniCore/utils> file copy emm:friday.config tftp:
55896 bytes copied in 1.5 seconds (92K/sec).
```

Using Xmodem to Transfer Files

In order to recover from the inadvertent deletion of a software file, you can use Xmodem to transfer a file to the OmniCore routing switch. Xmodem, designed for use with modems, is a file transfer application that uses the checksum method for ensuring that data is received in the order and condition in which it was sent.

It is recommended that you first download the desired file to your network or hard drive, then use the following process to transfer the file to the OmniCore routing switch flash memory. When transferring a file via Xmodem, that file will be transferred to the boot device.

To perform this task, you will need a terminal emulation program that supports Xmodem. Note that the following steps are performed with the Microsoft Windows HyperTerminal program. If you are using a different terminal emulator, the steps for configuring its settings may vary.

Downloading a File Using Xmodem

Follow these steps to download a file using Xmodem:

1. (Optional) If booting from a PCMCIA flash card, insert the card into the flash card slot on the EMM.
2. Reboot the switch and display the boot options menu (see *Booting Options* on page 14-3).
3. At the bottom of the boot options menu, enter **s** to display the serial baud rate menu.
4. Your choice: **s**
5. Set the serial baud rate for the file transfer. To minimize transfer time, select the fastest baud rate your terminal emulator will support.

```
Select serial BAUD rate for use in Boot Menu ONLY!!
'1' = 9600 BAUD
'2' = 38400 BAUD
'3' = 57600 BAUD
'4' = 115200 BAUD
Enter your choice, or ESC to return to the previous menu: 4

Please change your BAUD rate to 115200 now!
```

6. Change the baud rate in your terminal emulator to match the value selected in step 4. In HyperTerminal, do this by selecting Properties from the File menu. In the New Connection Properties window, select the Connect To tab, click Configure, and select the appropriate value from the Bits Per Second pull-down menu. Click OK twice to return to the session screen.
7. Press Esc.
8. When the main boot options menu is displayed, enter **d** to begin the download process.

```
Your choice: d
Starting Xmodem download, ESC to abort transfer
and return to the previous menu.
```

9. Start the Xmodem send function by locating the desired file on your network or hard drive and initiating an Xmodem or 1K Xmodem send. In HyperTerminal, do this by selecting Send File from the Transfer menu. In the Filename field, enter the directory in which the desired file is located, or click the Browse button to locate the file. Then, select either Xmodem or 1K Xmodem from the Protocol pull-down menu and click Send.

The following text is then displayed in the CLI.

```
Flashing image.
#.#.#.#.#.#.#.#.
Image flashed successfully!
```

10. The main boot options menu will again be displayed. Select another option from the menu or press Esc to continue booting using the specified configuration source.

✦ Note ✦

Once the booting process resumes, the CLI baud transfer rate will return to the default setting of 9600 baud. You will need to reset the terminal emulator to the appropriate baud setting.

Performing Software Upgrades

This section describes how to perform software upgrades via TFTP, Xmodem, or an external PCMCIA flash card.

Upgrading Software Via TFTP

The following procedure describes how to perform upgrades via TFTP. Note that you will need access to a TFTP server program to perform this procedure.

❖ Note ❖

This upgrade procedure assumes that the primary EMM on the OmniCore routing switch is booting from the onboard flash memory. If this is not the case, see *Booting Options* on page 14-3 to select the primary EMM's onboard flash memory as the boot device.

Follow these steps to ugrade OmniCore software via TFTP:

1. Obtain the desired software version from the Alcatel FTP site.
2. Launch the desired TFTP server program.
3. (Optional) Save your current CLI settings to the currently set default configuration file and boot device.

   ```
   OmniCore> utils
   OmniCore/utils> file save
   ```

   Or, save new CLI settings to the currently set default configuration file on a PCMCIA flash card by first inserting the card into the desired EMM's flash card slot.

   ```
   OmniCore/utils> file save card:
   ```

   Wait at least five seconds to ensure that the saving process is complete, then remove the flash card.
4. Set the IP address of the TFTP remote server. For this procedure, an IP address of 10.0.3.34 is used.

   ```
   OmniCore/utils> tftp remote-server 10.0.3.34
   ```
5. We recommend that you enter the following commands to make a backup copy of the *current* software for archival reasons. In this example, software version information is added to the filename so it can be identified easily.

   ```
   OmniCore/utils> file

   OmniCore/utils/file> copy emmboot.sys emmboot_270R17.sys
   94848 bytes copied in 2.7 seconds (34K/sec).

   OmniCore/utils/file> copy system.lib system_270R17.lib
   3213304 bytes copied in 30.6 seconds (102K/sec).
   ```
6. We recommend that you enter the following commands to make a backup copy of the *new* software for archival reasons. In this example, software version information is added to the filename so it can be identified easily.

   ```
   OmniCore/utils/file> copy tftp:emmboot.sys emmboot_300R7.sys
   96855 bytes copied in 2.8 seconds (35K/sec).

   OmniCore/utils/file> copy tftp:system.lib system_300R7.lib
   3313114 bytes copied in 31.1 seconds (101K/sec).
   ```

7. Enter the following commands to install the new software.

```
OmniCore/utils/file> copy system_300R7.lib system.lib
3213304 bytes copied in 30.6 seconds (102K/sec).

OmniCore/utils> ..

OmniCore/utils> install emmboot_300R7.sys emmboot.sys
94848 bytes copied in 2.7 seconds (34K/sec).
```

8. Display the directory contents to make sure that the correct software version numbers are displayed for each file.

```
OmniCore/utils/file> emm: dir
boot: [8704K bytes free]
  Date       Time      Version   Size     Address   Type    Name
  ---------- --------  --------  -------  --------  ------  -------------------
* 2000-03-30 07:23:03  3.0.0r7   137940   FFF00000  'EBT1'  EMMBOOT.sys
  2000-03-30 08:07:07  3.0.0r7   2851704  FF000000  'gen1'  SYSTEM.lib
  2000-01-18 00:35:36  2.7.0r17  132632   FF800000  'EBT1'  emmboot_270r17.sys
  2000-03-30 07:13:03  3.0.0r7   137940   FFF00000  'EBT1'  emmboot_300r7.sys
  2000-02-11 08:01:11  3.0.0a9   2831792  FF300000  'gen1'  system_270r17.lib
  2000-03-30 08:04:02  3.0.0r7   2851704  FF000000  'gen1'  system_300r7.lib
```

❖ If You Have a Secondary EMM ❖

Make sure that you upgrade the secondary EMM (:emm1) software with the same system.lib, emmboot.sys, and configuration file as the primary EMM. Otherwise, you may experience incompatability problems in the event of a failover. You should also remove and reinstall the secondary EMM after upgrading the software. This forces a reboot and ensures that the new images are loaded in memory.

9. Reboot the switch to load the new software version.

```
OmniCore> reboot
```

Once the opening title screen is displayed, make sure that the correct software version is displayed.

```
**********************************************************

            PowerRail 7652/OmniCore 5052

       Version 3.3

       Copyright(c) 1997-2000
          Alcatel Internetworking (PE), Inc.
       Spokane, Washington, USA
       All rights reserved.
       System MAC Address: 00:e0:b1:41:14:50

**********************************************************
```

Upgrading Software Via Xmodem

The following procedure describes how to perform upgrades via the Xmodem download protocol. To perform this task, you will need access to a terminal emulation program that supports Xmodem.

Follow these steps to upgrade OmniCore software via Xmodem:

1. Obtain the desired software version from the Alcatel FTP site.

2. (Optional) Save your current CLI settings to the currently set default configuration file and boot device.

   ```
   OmniCore> utils file save
   ```

   Or, save new CLI settings to the currently set default configuration file on a PCMCIA flash card by first inserting the card into the desired EMM's flash card slot.

   ```
   OmniCore> utils file save card:
   ```

   Wait at least five seconds to ensure that the saving process is complete, then remove the flash card.

3. Perform the Xmodem file transfer process (described in Using Xmodem to Transfer Files, earlier in this chapter) for each of the following files:

   - emmboot.sys
   - system.lib

   ❖ If You Have a Secondary EMM ❖

   Make sure that you upgrade the secondary EMM (:emm1) software with the same system.lib, emmboot.sys, and configuration file as the primary EMM. Otherwise, you may experience incompatability problems in the event of a failover. You should also remove and reinstall the secondary EMM after upgrading the software. This forces a reboot and ensures that the new images are loaded in memory.

4. After transferring the appropriate files, press Esc to continue the booting process. The switch will now boot using the new software version. Once the opening title screen is displayed, make sure that the correct software version is displayed.

   ```
   ********************************************************

            PowerRail 7652/OmniCore 5052

         Version 3.3

         Copyright(c) 1997-2000
            Alcatel Internetworking (PE), Inc.
         Spokane, Washington, USA
         All rights reserved.
         System MAC Address: 00:e0:b1:41:14:50

   ********************************************************
   ```

The OmniCore software is now upgraded.

Upgrading Software Via Flash Card

The following procedure describes how to perform upgrades using an external PCMCIA flash card.

✦ Note ✦

This upgrade procedure assumes that the primary EMM on the OmniCore routing switch is booting from the onboard flash memory. If this is not the case, see *Booting Options* on page 14-3 to select the primary EMM's onboard flash memory as the boot device.

Follow these steps to upgrade OmniCore software via a flash card:

1. Obtain a flash card with the desired software version from Alcatel Customer Support.
2. (Optional) Save your current CLI settings to the onboard EMM flash memory.

```
OmniCore> utils file
OmniCore/utils/file> save emm:
```

3. Insert the flash card into the primary EMM's flash card slot.
4. Enter the following command to install the necessary file from the flash card to the primary EMM. Please ensure that, when entering this command, there is no space between the device and filename.

```
OmniCore/utils/file> install card:emmboot.sys emm:
```

5. Enter the following commands to copy the *system.lib* file from the flash card to the primary EMM. Ensure that, when entering this command, there is no space between the device and filename.

```
OmniCore/utils/file> copy card:system.lib emm:
3213304 bytes copied in 30.6 seconds (102K/sec).
```

6. Display the directory contents on the EMM. Make sure that the correct version number is displayed for each file.

```
OmniCore/utils/file> emm: dir
emm: [6400K bytes free]
  Date       Time      Version   Size     Address   Type    Name
  ---------- --------  --------  -------  --------  ------  ------------------
* 1999-10-15 14:45:12  2.7.0a8   132488   83F00000  'EBT1'  EMMBOOT.SYS
  1999-10-15 16:06:22  2.7.0a8   2321440  83000000  'gen1'  SYSTEM.LIB
```

7. Remove the flash card.
8. Reboot the switch to load the new software version.

```
OmniCore/utils/file> ..
OmniCore/utils> reboot
```

✦ If You Have a Secondary EMM ✦

Make sure that you upgrade the secondary EMM (:emm1) software with the same system.lib, emmboot.sys, and configuration file as the primary EMM. Otherwise, you may experience incompatability problems in the event of a failover. You should also remove and reinstall the secondary EMM after upgrading the software. This forces a reboot and ensures that the new images are loaded in memory.

9. When the opening title screen is displayed, make sure that the desired software version number is displayed.

```
**********************************************************

            PowerRail 7652/OmniCore 5052

       Version 3.3

       Copyright(c) 1997-2000
          Alcatel Internetworking (PE), Inc.
       Spokane, Washington, USA
       All rights reserved.
       System MAC Address: 00:e0:b1:41:14:50

**********************************************************
```

The OmniCore software is now upgraded. Please return the old flash card to Alcatel Customer Support.

Working with Software Images and Configuration Files

This section describes how to copy, save, delete, and rename files. It also describes how to use software image naming conventions and how to view the directory contents on a flash device. Finally, this section details how to install bootstrap software to and from external PCMCIA flash card memory or onboard EMM flash memory, depending on the flash device you specify.

Copying Files

You can copy files from one flash device to another by specifying the source device and source filename, and the destination device and destination filename. However, you cannot copy over any image file (e.g., *emmboot.sys*) that has been installed.

The following example shows how to copy one file to the EMM from the flash card in slot 2, and a second file from slot 1 to the boot device. When using the *copy* command, ensure that there is no space between the specified flash device and the filename.

```
OmniCore> utils file

OmniCore/utils/file> copy card2:slc.sys emm:slc.sys
789288 bytes copied in 7.6 seconds (101K/sec).

OmniCore/utils/file> copy slot1:xclc.sys boot:xclc.sys
394872 bytes copied in 4.3 seconds (89K/sec).
```

You can also copy the source file to a destination file with a name that differs from that of the source file. In this example, the source file *xclc.sys* is copied from the onboard EMM flash memory to the external flash card as the destination file *xclcnew.sys*.

```
OmniCore/utils/file> copy emm:xclc.sys card:xclcnew.sys
394872 bytes copied in 4.3 seconds (89K/sec).
```

If you wish to copy a source file to the source device, you will need to supply a destination filename that is different from the source filename. In this example, since the source file is to be copied to the source device, the supplied destination file must differ from the source file *gsr.sys*.

```
OmniCore/utils/file> copy card:gsr.sys card:gsr.sys
   emm:gsr.sys: File already in use.

OmniCore/utils/file> copy card:gsr.sys card:gsrnew.sys
408996 bytes copied in 3.9 seconds (102K/sec).
```

If you do not specify a source or a destination device, the file will be copied from or copied to (respectively) the boot device. In the first of the following examples, the source file *gsr.sys* is copied from boot device to the onboard EMM flash memory in slot 2. In the second example, the source file *xclc.sys* is copied from the external flash card to the boot device.

```
OmniCore/utils/file> copy gsr.sys emm2:gsr.sys
408996 bytes copied in 3.9 seconds (102K/sec).

OmniCore/utils/file> copy card:xclc.sys xclc.sys
394872 bytes copied in 4.3 seconds (89K/sec).
```

If you do not specify a destination filename, the file will be copied to the specified device as a file with the same name as the source file. In this example, the source file *flc.sys* is copied from the boot device in slot 2 to the default TFTP remote server as destination file *flc.sys*.

```
OmniCore/utils/file> copy boot2:flc.sys tftp:
666992 bytes copied in 6.3 seconds (103K/sec).
```

Saving Files

You can save customized configuration settings to file at any time.

The following example shows how to save two files, one to a flash card and the second to a TFTP server with an IP address of 10.100.0.5. When using the *save* command, ensure that there is no space between the specified flash device and the filename.

```
OmniCore> utils file
OmniCore/utils/file> save card:green.config
OmniCore/utils/file> save tftp://10.100.0.5/ogb.config
```

If you do not specify a device, the file will be saved to the default boot device, as shown here with the file *green.config*.

```
OmniCore/utils/file> save green.config
```

If you do not specify a filename, the file will be saved to the specified device with the default configuration filename (defined through the *utils defconfig* command, the default of which is *startup.config*). In this example, the current configurations are saved to the boot device in slot 2 as a file with the default configuration filename.

```
OmniCore/utils/file> save boot2:
```

If you enter *save* without specifying a device and a filename, the file will be saved to the boot device with the default filename. In this example, the current configurations are saved to the boot device as a file with the default configuration filename.

```
OmniCore/utils/file> save
```

See the *OmniCore CLI Reference Manual* for more information on the *save* and *utils defconfig* commands.

Deleting Files

You can delete files that are no longer being used by specifying the source device and the desired filename. However, you cannot delete any image file (i.e., *emmboot.sys*) that has been installed.

The following example shows how to delete two files, one from the flash card and another from the EMM. When using the *delete* command, ensure that there is no space between the specified flash device and the filename.

```
OmniCore> utils file
OmniCore/utils/file> delete card:monday.config
OmniCore/utils/file> delete emm:friday.config
```

If you do not specify a source device, the system will delete the file from the boot device.

```
OmniCore/utils/file> delete wednesday.config
```

If the file does not exist on the boot device, you will need to specify the device where the file resides.

```
OmniCore/utils/file> delete tuesday.config
   tuesday.config: File not found.
OmniCore/utils/file> delete slot2:tuesday.config
```

Renaming Files

You can define a new name for any existing file in flash memory by specifying the source device and the desired filename followed by the new filename.

The following example shows how to rename the file *rhead.config* on the external flash card in slot 1. When using the *copy* command, ensure that there is no space between the specified flash device and the filename.

```
OmniCore> utils file

OmniCore/utils/file> rename card1:rhead.config newrhead.config
```

If you do not specify a source device, the system will rename the file on the boot device.

```
OmniCore/utils/file> rename jbic.config
```

If the file does not exist on the boot device, you will need to specify the device where the file resides.

```
OmniCore/utils/file> rename jbic.config
   kiron.config: File not found.

OmniCore/utils/file> rename slot1:jbic.config
```

Using Configuration File Naming Conventions

The OmniCore switch will boot up whether or not a configuration file is present. Some users want the option to have the OmniCore switch *not* boot up if the configuration file is missing. You can change the boot behaviour of your OmniCore switch by changing the default configuration filename to use the <*config name*>*.required* naming convention as shown in the example below.

```
OmniCore> utils defconfig startup.required
```

Upon reboot, the switch will attempt to locate *startup.required*.

- If *startup.required* is found, the switch will boot normally.
- If *startup.required* is not found, the switch displays the following message.

```
WARNING!  The selected config file was not found.
          Booting with no config file CAN CAUSE
          network problems since all ports will
          be in a single layer-2 switched VLAN
          with no Spanning Tree or trunking enabled.

ARE YOU SURE you want to boot anyway with no config[y/n]?
```

Respond by entering “y” to boot with no configuration file or enter “n” to abort the boot process and select another configuration file, if present.

Basic System Configuration (BSC) File

The BSC file, bsyscfg.sys, is used to store non-routing configuration information, such as user parameters and timezone settings. Preferences stored for each user include the current *more* command setting as well as settings for commands under the *utils/preferences* submenu: *dual-save*, *prompt*, and *more*. This file is unaffected by changes to other configuration files. It name is fixed, so if the bsyscfg.sys file does not exist, the OmniCore switch creates one. The file never has to be explicitly saved because any time a parameter is changed, the BSC file is saved automatically.

Installing Bootstrap Software

Installing system bootstrap software (i.e., the *emmboot.sys* file) allows the switch to place software into its exact mandatory location in flash memory. Installing differs from copying in that it is only used with regard to bootstrap software.

The following example shows how to install bootstrap software from the external flash card in slot 1 to the onboard EMM flash memory in slot 2. When using the *install* command, ensure there is no space between the specified flash device and the filename.

```
OmniCore> utils file
OmniCore/utils/file> install card1://emmboot.sys emm2:emmboot.sys
```

You can also install the source file to a destination file using a name that differs from that of the source file. In this example, the source file *emmboot.sys* is installed from the boot device to the external flash card as the destination file *emmbootnew.sys*.

```
OmniCore/utils/file> install boot:emmboot.sys card:emmbootnew.sys
```

If you wish to install a source file to the source device, you will need to supply a destination filename that is different from the source filename. In this example, since the source file is to be installed to the source device, the supplied destination file must differ from the source file *emmboot.sys*.

```
OmniCore/utils/file> install slot2:emmboot.sys slot2:emmboot.sys
   slot2:emmboot.sys: File already in use.
OmniCore/utils/file> install slot2:emmboot.sys slot2:emmbootnew.sys
94848 bytes copied in 2.0 seconds (46K/sec).
```

If you do not specify a source or a destination device, the file will be installed from or installed to (respectively) the boot device. In the first of the following examples, the source file *emmboot.sys* is installed from the boot device to the onboard EMM flash memory in slot 2. In the second example, the source file *emmboot.sys* is installed from the external flash card to the boot device.

```
OmniCore/utils/file> install emmboot.sys emm2:emmboot.sys
94848 bytes copied in 1.9 seconds (48K/sec).
OmniCore/utils/file> install card:emmboot.sys emmboot.sys
94848 bytes copied in 1.9 seconds (48K/sec).
```

If you do not specify a destination filename, the file will be installed to the specified device as a file with the same name as the source file. In this example, the source file *emmboot.sys* is installed from the external flash card to the onboard EMM flash memory in slot 1 as destination file *emmboot.sys*.

```
OmniCore/utils/file> install card:emmboot.sys emm1:
94848 bytes copied in 2.0 seconds (46K/sec).
```

Viewing Directory Contents

It is recommended that you view the directory contents of flash memory once its contents have been modified. This will allow you to confirm that the correct files were modified.

```
OmniCore> utils file

OmniCore/utils/file> dir emm:
emm: [6400K bytes free]
  Date       Time      Version   Size     Address   Type    Name
  ---------- --------  --------  -------  --------  ------  ------------------
* 1999-10-15 14:45:12  2.7.0a8   132488   83F00000  'EBT1'  EMMBOOT.SYS
  1999-10-15 16:06:22  2.7.0a8   2321440  83000000  'gen1'  SYSTEM.LIB
```

If you do not specify a device, the contents of the boot device will be displayed.

```
OmniCore/utils/file> dir
emm: [6400K bytes free]
  Date       Time      Version   Size     Address   Type    Name
  ---------- --------  --------  -------  --------  ------  ------------------
* 1999-10-15 14:45:12  2.7.0a8   132488   83F00000  'EBT1'  EMMBOOT.SYS
  1999-10-15 16:06:22  2.7.0a8   2321440  83000000  'gen1'  SYSTEM.LIB
```

Reformatting Flash Memory

You can erase all contents (except for bootstrap software) on either the external PCMCIA flash card or the EMM onboard flash memory by reformatting the desired device. This is useful when a file is corrupt or when you want to build a new boot device. Reformatting a device can be performed during an active CLI session or during the reboot process. Note that only users with super-user/admin access to the CLI can format a flash device.

Reformatting a Device During an Active CLI Session

Follow these steps to reformat a device during an active CLI session:

1. (Optional) If you wish to reformat a PCMCIA flash card, insert the desired card into the flash card slot on the EMM.

2. Type the following command and press Enter. This example erases the contents of onboard EMM flash memory in slot 2.

   ```
   OmniCore> utils file format emm2:
   ```

3. Type **y** to complete the reformatting process. Note that all contents on the specified flash device, other than bootstrap software will be erased.

   ```
   Are you sure (y/n)? y

   Erasing:
   ############################################################
   All files on onboard flash have been erased
   except for any installed bootstrap.

   You must reinstall your software now using XMODEM or through the flash card slot.
   ```

4. Reinstall software onto the reformatted flash device. For more information on installing/upgrading software, see *Performing Software Upgrades* on page 14-11.

Reformatting a Device During Rebooting

Follow these steps to reformat a device during rebooting:

1. (Optional) If booting from a PCMCIA flash card, insert the card into the flash card slot on the EMM.

❖ Caution ❖

Performing this procedure will reformat only the default boot device, which is determined by the EMM's jumper position. If you wish to reformat a device other than the default boot device, refer to the previous *To format a device during an active CLI session* procedure.

2. Reboot the switch and display the boot options menu (see *Booting Options* on page 14-3).

3. At the bottom of the boot options menu, type **!** and press Enter.

```
Your choice: !

WARNING: This will erase ALL files on the onboard flash.
```

4. Type **y** to complete the reformatting process. In this example, all contents of the onboard EMM flash memory other than bootstrap software are erased.

```
Are you REALLY SURE you want to do this? y

Erasing:
############################################################
All files on onboard flash have been erased
except for any installed bootstrap.

You must reinstall your software now using XMODEM.
```

5. At the reappearance of the boot options menu, you will need to do one of the following:

   - enter **d** to reinstall software via Xmodem onto the reformatted device.
   - Enter **b** to select an intermediate boot device (if applicable, first insert the appropriate PCMCIA flash card into the EMM), then follow the onscreen instructions. Once the reboot is complete, reinstall software onto the reformatted boot device.

For more information on installing/upgrading software, see *Performing Software Upgrades* on page 14-11.