Disc Building Installation

for Sun Workstations®

Optimage Interactive Services Company, L.P.

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Optimage Interactive Services Company, L.P.
1501 50th Street, Suite 100
West Des Moines, Iowa 50266

Phone numbers:

In the USA: **1 800 CDI-5484**
(515) 225-7000
(515) 225-0252 FAX
In Europe: **+31 (40) 73 6228**
In Japan: **(03) 3 665 9740**

Online Information:

Applelink® D6431
America Online®, Keyword: Optimage
Optimage B.B.S. (515) 225-1933

Installation

This chapter describes the installation and verification procedures for ***master, cdedit*** *and* ***emulate.***

Overview

The Disc Building package consists of the following utilities:

master **cdedit** **emulate** **emutool** **discmap**

These utilities are standard features in many OptImage products. The installation procedures provided here assume the Disc Building software was purchased separately and distributed in the following formats:

- one 1/4 inch tape (**master, cdedit,** emulator tools)
- two 3.5 inch diskettes (two copies of the emulator boot diskette)

The installation procedure is divided into three parts:

- software installation
- hardware installation of the OptImage emulator
- installation verification of **master** and the **emulate**

NOTE: If you purchase the Disc Building software with the CD-I emulator, then the hard disk supplied with the emulator has the emulation and the Disc Building software installed on it.

Required hardware and software

To use the Disc Building software, you must minimally have the following hardware/software components:

- Sun-3 or Sun-4 Workstation® running UNIX® OS 4.1.1 or greater
- 1/4" tape drive or EXABYTE

The following hardware and software are not required to build disc images, but are necessary for emulation:

- OptImage CD-I emulator
- Sun-emulator serial cable
- Sun SCSI cable
- Sun-Philips 605 serial cable or Sun-Philips 180 serial cable
- Emulator power cord
- Emulator EBU cables
- CD-I 180 player
  or
  CDI 605 player
- 650 MB (or larger) hard disk drive

Software installation

The Sun software is delivered on a 1/4-inch or EXABYTE tape. To install the software on your Sun, follow the steps below. If you purchased the emulator with the software pre-installed on the hard disk drive, skip steps 1 through 4 and begin with step 5.

1. Load the tape in your Sun tape drive.
2. Log in as root or set your user ID to root.
3. Change your current directory to the directory in which you want to install the software.
4. Use the following command lines to copy the distribution software to your directory and set up the ownership and access permissions:

```
tar -xvf /dev/rst0
chown -R root ./Sun3 ./Sun4
cd ./Sun3
chmod 4755 emulate
cd ../Sun4
chmod 4755 emulate emutool
cd ..
```

NOTE: The above command lines assume that the name of your tape device is **rst0**. *If not, replace* **rst0** *with the correct device name.*

The **tar** command copies four directories into your current directory: **Sun3, Sun4, Demo,** and **Sample_Scripts.** The **Sun3** and **Sun4** directories contain versions of **master, cdedit,** and **emulate** for the Sun-3 and Sun-4 (SPARC), respectively. The **Sun4** directory also contains the **emutool** program.

The **Demo** directory contains a simple CD-I application (a slide show with audio), along with the disc-building script, the audio

and video files, and the source code for the application. You can use these files to verify proper installation.

The **Sample_Scripts** directory contains a number of sample **master** scripts.

5. Once you have installed the software, you should either copy the executable files to the desired bin directory or set the **PATH** environment variable to point to the installation directory.

Hardware configuration

This section describes how to connect the emulator to the CD-I player and your Sun Workstation. Instructions are provided for both the CD-I 180 player and the CDI 605 player.

Preparation

1. Back up local disks.
2. Turn off all hardware used in emulation: the Sun workstation, emulator, CD-I player, and any devices attached to these machines (such as hard disks).
3. Verify that no SCSI device other than the Sun uses SCSI ID 2 or SCSI ID 6. These are the SCSI IDs used for the emulator hard disk (2) and the emulator host adaptor (6). If there is a device using SCSI ID 2 or 6, you must change the SCSI ID of the device or the emulator hard disk or host adaptor. See the Appendix immediately following this section for information on changing the emulator SCSI ID.
4. Verify that no other SCSI device on the Sun has terminating resistors installed. The emulator has terminating resistors installed, so you should make sure no other device in the SCSI chain has terminating resistors except the emulator and the Sun. If you do have a SCSI device that is self-terminating, you cannot use that device and the emulator in the SCSI chain at the same time.
5. Verify that the emulator is the last device in the SCSI chain.

Connecting the emulator to the Sun Workstation

Use the following steps to connect the emulator to your Sun Workstation. Figure 1 is a rear view of the emulator showing the location of the cable connections.

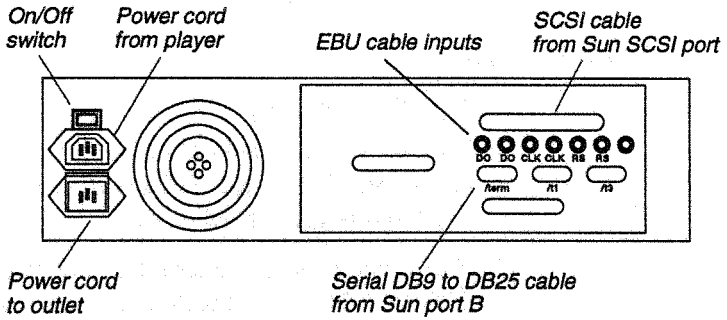


Figure 1: Rear view of Emulator showing cable connections

1. Connect the serial cable (25 pin D-shell to 9 pin D-shell delivered with package) from port B on the Sun (**/dev/ttyb**) to the /term port on the emulator.
2. Connect the SCSI cable from the emulator SCSI port to the Sun SCSI port.

Connecting the emulator to the CD-I player

CD-I 180 player

1. Connect the 3-plug EBU cables to the emulator (see Figure 2) and to the CD-I player (see Figure 3). Be careful to match the DO, RS, and CLOCK (CLK) lines to the correct CD-I player module connectors.

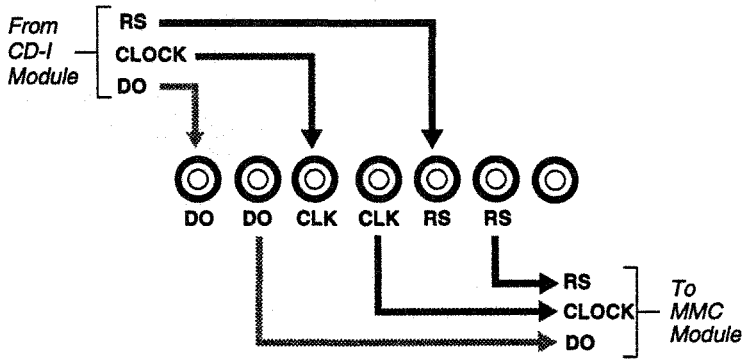


Figure 2: Emulator EBU connections to CD-I 180 player

Figure 2 illustrates the emulator EBU cable connections. Figure 3 is a view of the right side of the CD-I 180, 181 player stack showing the location of the EBU cable connections.

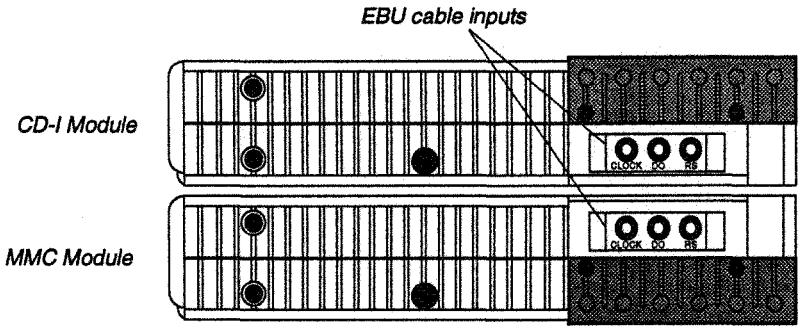


Figure 3: CD-I player EBU inputs

CDI 605 player

Connect the EBU cables to the emulator (see Figure 4) and to the CDI 605 player (see Figure 5). The 605 player requires only the DO and RS cables to be connected; it is not necessary to connect the CLOCK cable.

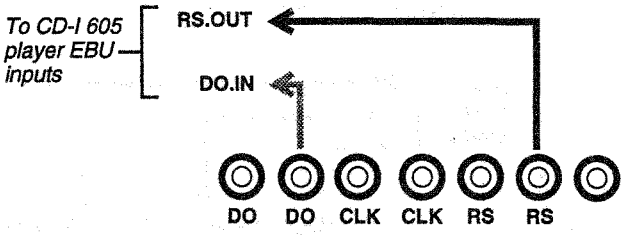


Figure 4: Emulator EBU connections to the CDI 605 player

Figure 5 is a rear view of the CDI 605 player showing the location of the EBU cable connections.

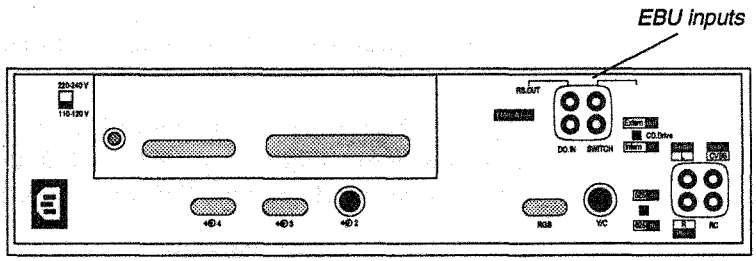


Figure 5: CDI 605 player EBU inputs

Completing configuration

After you connect the emulator, Sun, and CD-I player, follow the steps below to complete the hardware configuration:

1. Connect the power cord to the emulator.
2. Switch on the power to the SCSI bus devices.
3. Switch on the power to the emulator.
4. Insert the emulator boot diskette in the floppy drive of the emulator.
5. Press the *Reset* button on the emulator.
6. Switch on the power to the Sun Workstation.
7. If the emulator hard disk has not been pre-formatted by OptImage, please format it according to the instructions in the Appendix immediately following this section.

Verifying installation

The Disc Building software installation can be verified by building and emulating the provided disc image.

Building the demo disc image

1. Change your directory to the provided **Demo** directory. For example,

   cd ./Demo

2. Execute **master** using the following command line:

   master -t=demo.cdi.toc demo.cdi.scr

master reads the **demo.cdi.scr** script file and displays the following output:

NOTE: If errors occur or the following output is not displayed, reinstall the distribution software. If repeated problems with installation occur, contact your local OptImage Support Group.

```
VIDEO REALTIME
VIDEO REALTIME
Start generation of album "Disc Building Demo"
Start generation of volume "Build Demo" [about 01:33]
Start generation of MESSAGE area
Start generation of COPYRIGHT file copyright
Start generation of ABSTRACT file abstract
Start generation of BIBLIOGRAPHIC file bibliographic
Start generation of APPLICATION file CMDS/play_demo
Start generation of GREEN file RTF/demo.rtf
Start generation of DIRECTORY /
Start generation of DIRECTORY CMDS
Start generation of DIRECTORY RTF
Start generation of PATH table file
Start generation of volume "Build Demo"'s label
End generation of volume "Build Demo" [01:33 - space efficiency 45%]
```

```
                Directory of /
Owner   Last modified   Attributes   Sector   Bytecount   Name
0.0     92/05/07 1635   ----r---r    8de             2   copyright
0.0     92/05/07 1635   ----r---r    8df             2   abstract
0.0     92/05/07 1635   ----r---r    8e0             2   bibliographic
0.0     92/05/20 1435   d---r---r    8e1           140   CMDS
0.0     92/05/20 1435   d---r---r    8eb           140   RTF
0.0     92/05/20 1435   ----r---r    8dc            34   path_tbm
                Directory of CMDS
Owner   Last modified   Attributes   Sector   Bytecount   Name
0.0     92/05/07 1635   -e-re-re-r   8e2         17452   play_demo

                Directory of RTF
Owner   Last modified   Attributes   Sector   Bytecount   Name
0.0     92/05/20 1435   ----r---r    8ec       9289728   demo.rtf

End generation of album "Disc Building Demo"
```

After **master** displays the above message, the image can be emulated.

Emulating the demo image

1. Type the following command:

   ```
   emulate -t=demo.cdi.toc demo.cdi
   ```

   After initializing, the emulator produces the following standard status messages:

   ```
   no disc map ('demo.cdi.cd.map') not found
   Creating disk map ..
   connected
   cdem -s=16405200 -t
   >>> Waiting to Receive Image Map <<<
   >>> Waiting to Receive TOC <<<
   diskread: beginning Disk Caching
   Image Type is CD-I
   Track 01/00 - 0
   Track 01/01 - 150
   Emulation Started
   stop at sector 0
   ```

2. Reset the player and click the *CD-I* button on the CD-I Player startup screen to play the **demo** image. The emulator displays the following messages:

```
start
-- Sending Lead-In with 03 TOC Entries
jump to 00:02.16, sector     166
jump to 00:02.12, sector     162
jump to 00:02.12, sector     162
jump to 00:32.14, sector    2414
jump to 00:32.19, sector    2419
jump to 00:32.20, sector    2420
jump to 00:32.28, sector    2428
jump to 00:02.12, sector     162
jump to 00:32.14, sector    2414
jump to 00:32.29, sector    2429
jump to 00:32.30, sector    2430
stop  at sector  6980
stop  at sector  6980


eof
```

3. Press *Control*-C to exit the emulation process.

NOTE: If errors occur, reset the emulator and/or re-install the distribution software. If repeated problems with installation occur, contact your local OptImage Support Group.

Appendix Emulator Configuration

This appendix describes how to reconfigure emulator SCSI IDs and prepare unformatted SCSI hard disks for emulation.

Overview

As delivered, the emulator hard disk is set to SCSI ID 2 and the emulator's system initiator (CPU) is set to SCSI ID 6. These settings should work with most system configurations. If the settings conflict with previously installed devices, it is possible to change the SCSI ID of the emulator disk or the emulator system initiator.

The emulator is equipped with a SCSI ID and Option select switch bank for changing the SCSI ID and parity settings for both the internal hard disk drive and the system initiator. The switch bank is located on the back of the emulator near the fan. The bank has a total of eight switches. Figure A-1 shows the switch bank set to the default switch settings for Sun Workstations.

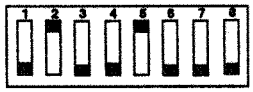


Figure A-1: Default SCSI ID and Option switch settings for Sun

Changing the hard disk SCSI ID

Switches 1-3 on the switch bank control the SCSI ID of the internal hard disk drive. Switch 4 enables/disables parity for the internal hard disk drive. Switch 4 must remain in the default position (parity disabled) shown in Figure A-1. Figure A-2 shows the settings for switches 1-3 for SCSI ID numbers 0 to 7.

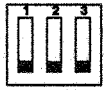
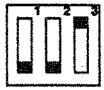
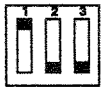
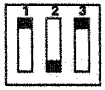
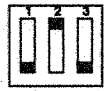
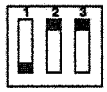
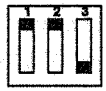
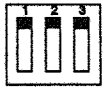
SCSI ID number	Setting for switches 1-3	SCSI ID number	Setting for switches 1-3
0		4	
1		5	
2		6	
3		7	

Figure A-2: Switch settings for hard drive SCSI ID numbers 0 to 7

Changing the system initiator SCSI ID

Switches 5-7 on the switch bank control the SCSI ID of the system initiator. Switch 8 enables/disables parity for the system initiator. Switch 8 must remain in the default position (parity disabled) shown in Figure A-1. Figure A-3 shows the settings for switches 5-7 for SCSI ID numbers 0 to 7.

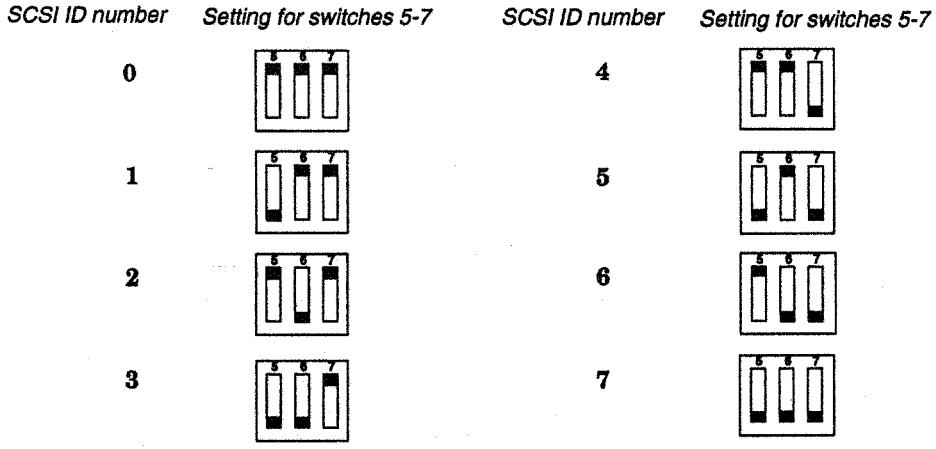


Figure A-3: Switch settings for system initiator SCSI ID numbers 0 to 7

Adding the emulator disk to the kernel

If the emulator is attached to a diskless workstation, it may be necessary to reconfigure the UNIX kernel to allow proper operation. The SunOS kernel may have been set up to "boot GENERIC", with its root and swap partitions accessed remotely over the network. This can cause a problem when adding a local disk because the Sun first tries to boot off the local disk before it looks for the network. The root and swap partitions MUST be set to use the network, rather than the local disk, and the emulator disk must be added to the kernel by adding the following lines to the kernel configuration file:

```
config vmunix root on type nfs swap on type nfs
scsibus0 at esp
disk sd2 at scsibus0 target 2 lun 0
```

IMPORTANT: Chapter 9 of the Sun System Administration and Networking manual details *"Reconfiguring the System Kernel"* and should be read and understood before proceeding with any kernel modification.

Formatting the emulation disk

This section explains how you prepare an unformatted SCSI hard disk for emulation using a Sun Workstation as the host computer. Before proceeding, please read all instructions. If you are unfamiliar with any of the following commands, review the SunOS documentation concerning them.

1. Log in as root or set your user ID to root.
2. Execute the **format** command.
   a. Type **format.**
   b. Select the disk to format.
   c. Select the defect submenu.
   d. Extract the original defect list.
   e. Commit the defect list to the drive.
   f. Quit the defect submenu.
   g. Select the format operation.
   h. Wait for the verify pass to complete.
   i. Select the partition submenu.
   j. Label the disk.
   k. Quit the partition submenu.
   l. Quit the format command.
3. Type the following command to put the new file system on the disk:

   newfs /dev/rsd2a -d0

4. Verify the hard disk size with the **df** command. The size should equal the size of your hard disk.
5. Verify the hard disk file system with the **fsck** command.