CD Emulator Release 1.13.2
README Document
10/28/97

```
HISTORY:

- 12/31/96: Version 1.8
     Release of CD Emulation Software.

- 2/18/97 : Version 1.9
Major formatting changes and new software updates.

-3/10/97: Version 1.10
Updated new software for bcdflat.exe and updatecd.exe.  Incorporated
translation of Japanese instructions into this text.

-4/16/97: Version 1.11
Added the description of ccs2cti.exe v1.10.  Incorporated a
warning about the contiguous declaration of directories for ".cti"
files.

-7/12/97: Version 1.12
Added the description of emulator hard-drives that can act as CD-
Emulation hard drives.

-8/06/97: Version 1.13
Changed the Technical Support section.  Updated new software for the
cdboot36 and cdboot66.  New cdemuprim.  New version of cdmon software.
Rolled the section on updating the software into one section, near the
disk contents table.  Fixed the bad "-m" option.  Added a new sample,
"\sample\basic".  Added documentation for cutcd.  Move the "wildcard"
and "test.cti" files to "\sample\".

-9/18/97: Version 1.13.1
No new software, but modified the tutorial to include specific
instructions to start up the Dexbios or h25bios.

-10/28/97: Version 1.13.2
No new software, but modified the tutorial "\sample\basic\cd.c" to
correct a bug in "MyLoadFileFromCD" by adding this line:

      if (!cnt) break;
```

Introduction

This release contains software and files for use with the PSSN CD
Emulator. Instructions for using the software are included with this
readme document. Briefly, the most important files reside in the "bin"
directory. The "Doc" directory contains the <u>CD Emulator Manual</u>, and the
"Sample" directory contains a sample program that shows you how to run
the emulator.

For additional information, the Technical Reference CD contains a FAQ on
CD emulation.

The latest updates are always available from the SN ftp site. For more
details, contact **http://www.snsys.com**.

Technical Support

If you're having problems, we highly recommend that you first search the
Technical Reference CD -- it's the same tool we use at Technical Support
when we attack a problem. Chances are that somebody has had your problem
before, and it's been solved and documented on the Technical Reference
CD. But don't bang your head against the wall! If (and only if) you are
a licensed developer, you can reach technical support for your region at
the following addresses and telephone numbers. For more information and
for a set of bug report forms, refer to the Technical Reference CD.

SN Systems
*SN Systems **designed** and **built** the CD Emulator software and hardware. If
you have **any** questions, feel free to send them email.*
E-mail: support@snsys.com .
Web Site: http://www.snsys.com.

Sony Computer Entertainment America
*SCEA is available to licensees in North America only. SCEA compiled and
wrote this document to enhance the tools usually distributed on the SN
dikette.*
E-mail: DevTech_Support@interactive.sony.com
Web Site: http://www.scea.sony.com/dev
Developer Support Hotline: 650-655-8181, Monday through Friday, 8am to
5pm, Pacific Standard Time.
Mail: Sony Computer Entertainment America Inc., 919 East Hillsdale
Blvd., 2nd Floor, Foster City CA 94404

Sony Computer Entertainment Europe
SCEE is available to licensees in Europe only.
E-mail: dev_support@interactive.sony.com
Web Site: https://www-s.playstation.co.uk
Developer Support Hotline:+44 (0) 171 390 1680
Mail: Waverley House 7-12 Noel Street London W1V 4HH

Diskette Contents

A brief description of the contents of your diskette appears in the sections below. File have been zipped with sub-directories. Use pkunzip -d <file> version 2.04g or the latest version of WinZip to unzip the file.

Binaries

The following CD-emulation executables and utilities provided by SN Systems appear in the directory **cdemu\bin** on your diskette. More information on how to use them is presented in the section on installing the CD-emulator.

File	Version	Description
bcdflat.exe	2.41	BETA version of flat model for buildcd.
buildcd.exe	2.41	Build image program
ccs2cti.exe	1.10	CCS (cdgen output) to CTI file converter.
Cdbios.com	1.04	Emulator board communication driver.
Cddisk.exe	1.17	Emulator HD disk utility
cdemuprm.exe	1.00	Allows you to select normal or zero seek timings; and also control errors within CD streams. Both settings are unaffected by RESETPS (which causes the CD emulator's micro controller to reload CDBOOT from the SCSI HD). Requires at least CDBOOT35/CDBOOT65.
cdmon.com	1.03	TSR program for debugging.
cti2cd.exe	1.03 beta	Bug fix for Yamaha audio track cutting.
Cutcd.exe	1.02 beta	YAM CDR100/SONY CDW900E cutter utility from CD emulator image.
Gencti.exe	1.0 beta	GenCTI generates a ".cti" file based on the directory structure on your PC.
dos4gw.exe	1.97	Dos extender (for bcdflat)
multicd.exe	1.01	Multi CD emulator Utility. Allows simulation of CD emulator image changing and door opening.

```
updatecd.exe  1.18          Update the build image utility.
```

CD boot files

Boot files are binary files that contain the initialization routines for the CD-emulator to use on start up. You install them whenever you need to format the CD-emulator dedicated hard-drive. For instructions on updating your files, read the section "CDBIN3x updates" in this document.

Note: If you install version 3.x of the boot code then no information will be passed back to the PC but you do not need to worry about the interrupt at all.

File	Version	Description
CBOOT36.bin	3.6	Emulator Boot code.
CDNOSK3x.bin	DELETED	For old timers: The reason there is no CDNOSK3x.BIN any more is that, with the advent of version CDBOOT3.6, the seek timings are now programmable using the utility called CDEMUPRM.
cdboot66.bin	6.6	Emulator Boot code, identical to version 36.bin, except that version 6.6 reports information back to the PC so that the PC can show the current CD activity on screen. This is achieved with the use of the CDMON.COM TSR.

Documentation

The following files appear on your diskette in the directory **CDMENU\DOC.**

File	Version	Description
cdemul.pdf	–	CD Emulator Manual

Samples

CDEMU\Sample\Basic. This tutorial is a very basic overview of how to use the CD-Emulator. Compiles with Library 4.0 and later; it may also compile with earlier versions of the library.

CDEMU\Sample\Rcube. This is an example that you can use on your emulator. This is the standard sample was provided by SN Systems. You cannot compile this sample, as source was not provided.

CDEMU\Sample\GenCti. This sample directory contains a sample "Test.cti" output file from the "GenCTI" program. Refer to the "GenCTI" instructions in the "readme.doc" of this distribution for more details on the syntax of GenCTI.

Please note that "GenCTI" was never updated beyond 1.0beta. For more details on the CTI syntax, refer to the CD Emulator manual.

CD-Emulator Hard Drives

Older documentation recommends the use of Micropolis AV harddrives, but with the rapid pace of technology, these have become obsolete. The following hard drives are suitable for use as CD-Emulator harddrives. This list is current as of August 1997:

```
DCAS-34330            ULTRA SCSI 4.3GB/IBM
Fireball ST-3200S     ULTRA SCSI 3.2GB/Quantum
Fireball TM-3200S     ULTRA SCSI 3.2GB/Quantum
Atlas XP-4550S        ULTRA SCSI 4.5GB/Quantum
Medalist ST52160N     ULTRA SCSI 2GB/Seagate
Barracuda ST32171N    ULTRA SCEI 2GB/Seagate
```

These were tested on the following PC models:

```
GL5200ST/DEC
GL5133ST/DEC
GXPRO6200/DELL
MILLENNIA-C/MICRON
FMV-6200T5/FUJITSU
G6-200 MALTI MEDIA/GATEWAY
P5-200/GATEWAY
```

Warning: The list above is not comprehensive, and does not include data about whether a DTL-H2500 or DTL-H2000 was used in the test. Therefore, if you have a DTL-H2500 board, please don't run out and buy a Gateway or a Micron, because these have had problems with DTL-H2500 software in the past.

CD Emulator Installation and Tutorial

Follow these steps to install the PSY-Q CD-Emulator Board. We assume that your DTL-H2500 or DTL-H2000 board has already been set up. The *CD Emulator* manual, included in the "docs" directory of this diskette, contains installation instructions starting on page 5; however the material here provides additional information.

1. Set and confirm the emulation board I/O, DMA, and IRQ jumper. Since there is a jumper for the I/O address setting in the lower central section of the board, select an address which does not interfere with another board. (Refer to pages 5-7 of the CD Emulator manual included in the "docs" directory of this diskette for the location of the jumper.) The factory default setting is 308 (decimal notation), which also happens to be the default setting of the DTL-H2000 (308 is 134 in hexadecimal notation, which actually corresponds to the hexadecimal address of 1340). This odd notation conversion scheme is explained by the following: although the emulator board's actual address is in 4 byte *hexadecimals*, the DIP switch host's A15 -A4 3 bytes are in *decimal* format. The actual addresses and a table of their equivalents are entered below:

Decimal Notation	Hex Notation	Actual Address (in hex)	Remarks
300	0x12C	0x12C0	
308	**0x134**	**0x1340**	**Default**
310	0x136	0x1360	
318	0x13E	0x13E0	
380	0x17C	0x17C0	
388	0x184	0x1840	
390	0x186	0x1860	
398	0x18E	0x18E0	

In this case, take A15-A4 from 0x1340 and match it with 0x134 to get "308".

You must also set the DMA channel jumper. The numbers 5 and 7 on the baord can sometimes be printed in reverse, so be careful --- the jumper to the farthest left is 7. Finally, set the interrupt level jumper (located below the DMA); the factory default is 15. Make sure not to change any of the other jumper pins.

2. Install the emulation board in the PC/AT Interchanger ISA Bus expansion slot. Insert the emulation board into an available ISA slot next to the DTL-H2000 PIO board or the DTL-H2500 board. Connect the emulation board and the DTL-H2000 using the flat connection cable. (See page 6 of the *CD Emulator* manual for a diagram). Since the emulation board and the development CD-ROM (either the DTL-H2010 or the DTL-H2510 are able to coexist), there is no need to detach the CD-ROM drive.

3. Connect the emulator-dedicated hard-drive to the emulator board. Both internal and external connection methods are possible. We

recommend the Micropolis 4110AV, the IBM Spitfire (0662), and the IBM Pegasus. The IBM drives arequire that the auto start jumper be set prior to use. Refer to page 6 of the CD Emulator manual for a diagram of where you should connect the emulator board to the emulator-dedicated hard drive.

4. Install the software. Copy the CD emulator software on this diskette to your computer. We recommend copying the files to **c:\ps\psx\cdemu**.

5. Modify the autoexec.bat. Your autoexec.bat file should contain the line listed below.

>   [full path to "cdbios.com"]\cdbios /aXXX /iXX /dXX

where

>   **aXXXX** refers to I/O base address select on the PSY-Q
>   CD-Emulation card. Possible settings are (from left
>   to right) 300, 308, 310, 318, 380, 388, 390, 398.
>   Refer to the table in Step 1 for the actual addresses
>   to which these correspond.
>
>   **iXX** refers to Interrupts request settings on the PSY-Q
>   CD-Emulation card. Possible settings are (from left
>   to right) 15, 12, 11, 10, 7, and 5.
>
>   **dXX** refers to DMA channel selects on the board.
>   Possible settings are (from left to right) 7,6 or 5

For example,

>   c:\ps\psx\cdemu\bin**cdbios /a**398 **/i**11 **/d**5

IMPORTANT. Care should be taken that the settings on the Psy-Q CD-Emulator Card do not conflict with any other cards in the system. For example, CDBIOS must be installed at a different address from a previously installed DEXBIOS.com or H25BIOS.com. The interrupt you choose should be used exclusively for the emulator.

6. Modify your path variable. Edit your autoexec.bat file to contain the path to the cd-emulator binaries. For example, you could add the line

>   set path=c:\ps\psx\cdemu\bin;%path%

if the cd-emulator binaries are in c:\ps\psx\cdemu\bin.

7. Reboot your machine. Make sure that the PSY-Q CD-Emulator card is connected to either an external or internal hard Power on the external hard drive **BEFORE** powering on the PC.

8. Open up a DOS-console box and run the appropriate driver for your development boards. Run Dexbios (DTL-H2000 ISA boards) or H25bios (DTL-H2500 PCI boards) as usual, by typing in "dexbios /aXXXX /iXXX" or

"h25bios /aXXXX /iXXX". Refer to the DTL-H2000 or DTL-H2500 manuals for more details.

9. Format the hard-drive using cddisk.exe and cdboot*xx*.bin. Assuming that the SCSI ID of the hard drive is 4, type the following in an MS-DOS command window:

        cddisk -n 4

You'll be prompted to install the cdbootXX.bin file (such as cbdoot34.bin), located in your cdemu\bin directory.   The "-n" option initializes the hard-drive. *You only need to do this once*, unless you receive updates of cdboot*xx*.bin, such as cdboot34.bin.

10. Create an active partition. Within "cddisk", you can partition the hard-drive. Refer to the section "Preparing for Emulation" in the CD Emulator manual on the Technical Reference CD-ROM. Since the partition size can be changed later, you can set the parition size value to the maximum available.   Make "1" the *active partition* in this example.

11. Build the image of the RCUBE demo executable onto the hard drive. The following steps will install the **RCUBE demo** included on your diskette. We assume the PSY-Q CD-Emulator card has these settings:

     I/O addr = 0x390
     IRQ = 5
     DMA = 7
     SCSI ID of connected internal or external HD = 4.

At an MS-DOS command window, type

        cd c:\ps\psx\cdemu\sample\rcube
        buildcd -mcd.map cd.cti -s4:1

where

        cd.cti = the RCUBE demo cti file included on your diskette
        -m = option that enables map file output. In this example,
             the output is "cd.map"
        -s4:1 = option that forces the image to be output to SCSI
              device at SCSI "4" in the partition "1".

buildcd will run in the MS-DOS window. Ignore the warning message #66. When **buildcd** finishes successfully, exit the program by hitting ESC on the keyboard.   The result of the "buildcd" command is an image of the CD-ROM on the emulator hard disk. The generated image is an ISO-9660 formatted MODE 1 CDROM, and the files PSX.EXE, RCUBE.EXE, RCUBE.TIM, and RCUBE.TMD are on Track 1.

12. Run the RCUBE demo. After building the image onto the CD drive, you may now execute the program. These steps can be used to launch your examples. You should already have "h25bios.com" or "dexbios.com" running as a TSR in the background.

        resetps 1
        pause

```
        run <dir>:\psyq\bin\snpatch    Warning: this is only for DTL-
                                       H2000 boards!
        pause

        run <dir>:\psyq\bin\selemu
```

This command instructs the DTL2000 to boot up from the CD-Emulation HD.
(To instruct the DTL2000 or the DTLH2500 to boot up from the CD-ROM
unit, execute "run c:\psx\bin\selcd". The selemu utility needs to be
executed prior to first emulation session. It doesn't need to be
executed before every emulation session, as long as selemu has been
executed once before.)

Now you are ready to launch the program:

```
        pause
        run <dir>:\pssn\bin\cdexec
```

You should notice the green LED flashing on your attached emulation HD.
After a long interval the colorbars on your NTSC monitor disappear and
the RCUBES demo appears on screen.

To quit this program, you must press the rectangular button. If a
program does not start, insure that you have quit a previous running
program. You may also type RESETPS 1 at any time to reset the ISA
Boards and the PSY-Q CD-Emulator card.

Controller button naming conventions (for the remaining of this
document):

        The Playstation controller has 14 buttons arranged, as follows:

        Lpad: Left pad (left set of four buttons, located on top of
                controller, similar to D-PAD)
        Rpad: Right pad (right set of four buttons, located on top of
                controller, four circular buttons)
        Lflip: Left side (set of two flipper buttons on the left side)
        Rflip: Right side (set of two flipper buttons on the right side)
        Select: Rectangular button (located on top between Lpad and Rpad)
        Start: Triangle button (located on top between Lpad and Rpad)

        RCUBE: 3D Texture map, transparency, lighting example
        Rpad Left: Toggle between black background and fog effect
        Rpad Up: Toggle between texture maps, lighting effects etc
        Lpad: rotation
        LFlip: Explode cubes
        RFlip: Reset cubes
```

# How to develop with the CD-emulator: Tools and Files

**.CTI file**

It is easier to create the *.CTI (emulator control files) by using the
CDGEN software to generate your CD-R image, saving out the *.CCS file,
and converting this *.CCS file to *.CTI file by using the routine
CCS2CTI.EXE.   You can also use the "gencti" program described in
further detail below.

Refer to the following control (.CTI) file for an  example of
Playstation CD-ROM disc with interleaved audio and video. For more
examples, refer to CD-Emulator Manual version 1.1

File with interleave audio & video

```
        Disc CDROMXA
          MapFile vid.map
          LeadIn XA
            Empty     1000
            PostGap   150
          EndTrack
          Track  XA
            Pause     150
            Volume          ISO9660         cd.ISO
              PrimaryVolume
                SystemIdentifier                "PSX"
                VolumeIdentifier                "PSXTEST"
                VolumeSetIdentifier             "PSXTEST"
                PublisherIdentifier             "SONY"
                DataPreparerIdentifier          "SONY"
                ApplicationIdentifier           "SONY"
                Lpath
                Mpath
                Hierarchy
                  XAFileAttributes Form1 Data
                        File            PSX.EXE
                    Source          PSX.EXE
                  EndFile
                  Gap 26749
                  File Mov.str
                   XASource mov.str
                  EndFile
                EndHierarchy
              EndPrimaryVolume
            EndVolume
          EndTrack
          LeadOut XA
            Empty     500
          EndTrack
        EndDisc
```

CDBIN3x updates

If you are installing the CD-emulator software for the first time, go back to the section "CD Emulator Installation and Tutorial". Otherwise, if you need to update a previously existing boot file, either use the 'Load boot program' option from CDDisk, or perform the following steps:

Step 1: Launch cdbios: cdbios /a<address> /I<interrupt> /d<dma channel>. For example,

        cdbios /a398 /i5 /d7

Step 2: If DEXBIOS or H25BIOS are running, **then** stop emulation, which is necessary since emulator hogs the SCSI drive. Do this by typing the following commands **else** skip to step 3:

        RESETPS 1   **Note:** *allows DEX target to be selected*
        RUN SelCD   **Note:** *suspend emulation*

Step 3: Install new CDBOOT using CDDISK.

        CDDISK -bCDBOOT3x.BIN <*SCSI id*>

where "x" is the version number, and where "SCSI id" is the SCSI id number of the emulator harddrive. ("cdbios" should be running).

Step 3: If DEXBIOS or H25BIOS are running, **then** restart emulation **else** end:

        RESETPS 1   **Note:** *forces emulator to load new CDBOOT code from*
                     SCSI drive
        RUN SelEmu   **Note:** *restarts emulation*

CDBOOT6x.BIN usage

Run the program CDMON, which will install a TSR that displays
information from the CD emulator in the top right of a standard text
screen. This information will continuously update as the emulation
progresses. It can be switched on and off by holding down the *left*
hand control and shift keys and pressing C.

This display will only work if :

(1) You install version 6.x of the boot code   and
(2) You have the PC hardware interrupt configured on the CD emulator
     card and you have informed CDBIOS of the interrupt number.

If you install version 6.x of the boot code but do not have the
interrupt
set up properly or use an old version of CDBIOS then the emulator will
fail to function correctly.

If the PC executes programs that disable interrupts for an extensive
amount of time then version 6.x of the CD emulator

2mbyte Emulation

Emulation sessions can be successfully executed with 8MBYTE RAM images,
but the production Playstation and the debugging stations can only
handle 2MBYTE RAM image. Make sure that your application emulates
correctly with 2MBYTE, before going to GOLD DISC. Also make sure to
remove pollhost and other debugging hooks (PC READS&WRITES) before going
to GOLD DISC.

CCS2CTI.EXE Instructions

CCS2CTI is an MS-DOS command that converts a CD-ROM format data from CCS to CTI. The ".ccs" file can be generated by the CDGEN program (go to "File:Save as…").   The format is simply

```
ccs2cti [-o <file>] [-v] <ccs-filename>

-o <file>  Output to file value of <file>.  By default, this
            is <ccs-filename>.cti.
-v          Verbose mode.
```
such as

```
ccs2cti foo.ccs
```

This will produce "foo.cti", which you can then use to build your cdrom image on the hard-drive.

Warning: In the CTI format, be careful about the layout of files on a CD The contents of a sub-directory must be physically contiguous.

Use the "layout-mode" of the CDGEN program to see the actual location layout.

Here's an acceptable layout:

```
\DIR1\
\DIR1\AAA.DAT
\DIR1\BBB.DAT
\CCC.DAT
```

This is acceptable because the contents of "DIR1" immediately follow the declaration of the directory "DIR1".

The next layout is unacceptable:

```
\DIR1\
\DIR1\AAA.DAT
\DDD.DAT
\DIR1\BBB.DAT   <---split contents of DIR1
\CCC.DAT
```

This is not acceptable because the contents of "DIR1" are scattered among the declarations of other directories and files.

Cdemuprim instructions

This utility allows you to select normal or zero seek timings; and
also control errors within CD streams.

Both settings are unaffected by RESETPS (which causes the CD emulator's
micro controller to reload CDBOOT from the SCSI HD).

Requirements: Use at least CDBOOT35/CDBOOT65.

Seek Control:

To select zero seek times:
CDEMUPRM s 0

To reset the seek time to the default algorithm parameters:
CDEMUPRM s 1

Error Control:

General usage:
CDEMUPRM e [prm1,,prmN]

The error insertion algorithm is activated by the DEX issuing a
CdlReadS command to the CD sub-system.
This command is used to playback streams - if an error occurs, then
the DEX will receive an interrupt, but the sub-system won't retry to
read the sector.

Errors can be inserted at a fixed frequency or randomly via seed &
threshold parameters. A RESETPS will reset the internal parameters
to what you originally specified, so that error patterns can be
repeated on you CD sector stream.

The error algorithm is done before a CD sector is signalled ready for
the DEX to receive it. This means that error patterns can be reproduced,
since during seeks (which vary for same seeks!) the Random() fn isn't
called.

```
    Rnd = Random()

    err_Count--
    if(err_Count==0)
    {
      err_Count=err_Period    // Reset the Count

      if(Threshold>=Rnd)
          Signal to DEX that this sector contains an error.
    }
```


CDEmuPrm ERROR parameters: Default values:
  (UInt32)PERIOD   0000 0000

```
   (UInt16)THRESHOLD              0000
   (UInt47)SEED                   7FFF FFFF FFF8
```

PERIOD is in CD sectors.
THRESHOLD is a 16 bit unsigned WORD.
SEED is a 47 bit WORD.

--- To obtain a fixed frequency:
Specify a PERIOD only.

Eg: CDEMUPRM e 100
This will setup the system to produce errors every 256 sectors.

IMPORTANT: Use a PERIOD > 1.

--- To obtain a random error pattern:
Specify a PERIOD, THRESHOLD & an optional SEED.

Eg: CDEMUPRM e 10 1000
This will setup the system to produce an error every 16 sectors, but only
if the current random value is >= 0x1000.

Some values that could be useful:
PERIOD   THRESHOLD   # of sectors read after 0x80 errors:
0x10   0xF000   0x4000
0x10   0x8000   0x0F00
0x10   0x1000   0x0880

--- To stop errors occurring:
CDEMUPRM e
This will set all parameters to their defaults.

** Important Notes
The way the parameters are modified is fundamentally:
- Open door
- Modify parameters
- Close door

So parameters can't be modified on the fly during streaming playback.
You should set the parameters up at the start of your emulation session
and only adjust them at suitable times; IE after a RESETPS 1.

Contact me if you have any problems or suggestions:
tom@snsys.com

18.Apr.97

cti2cd instructions

Very beta. – almost alpha

"cti2cd" generates a cd without having to use cdgen. To use it, follow these steps:

1.Write cti file
2.Run cti2cd

eg. cti2cd <file> -c<cutter> -r<cutter id> -x<speed> -t

<file> specifies the cti file

-t specifies test mode, use first time round.
-c cutter type, sony(1), yamaha(2), kodak(3)
-r scsi id of cutter

Be sure the correct aspi driver is installed for your adapter

This has only been tested on 1540 compatibles.

<u>**CutCD Version 1.0**</u>

Documentation for CutCD Version 1.0 Beta

CutCD provides the user with the abilty to produce a Gold Disc CD from a
CD emulator image stored on a SCSI Hard Drive. The program currently
upports two CDR devices the Sony CDW-900E and the Yamaha CDR-100(
Firmware version1.08 or higher). To use the program you must specify
from the command line:

CutCD -s<hd id:patition no.> [options [-t] [-d<CDR id>] [-x<1,2 or 4>]]

Note: / as well as - can be used to specify options.

Invocation and options.

S - This must be present. This is where the image is located on the CD
emulator. The number preceeding the colon must be the SCSI of the drive
and the number after the colon will be the particular partition where
the image is located. This is the same as the option used to specify
the image location using BuildCD/BCDFlat.

T - This is optional, although recommended the first time you use the
program for a new image. This enables the test mode. In this mode the
burning of the CD will be simulated, without actually burning the disc.
Read rather than the write power of the laser is used. This is useful
for setting up the program and determing at which speed it is capable of
cutting.

D - This is optional. This will specify the location (SCSI ID) of the
device you wish to use to cut the image. If this option is not present
the program will attempt to locate a device from those it finds on the
SCSI bus. If you are sure of the location then program speed will be
greatly enhanced if this is specified. If more than one cutter is found
on the bus you will be asked to specify which device you wish to use,
from a list of options.

X - This enables the selection of the cutting speed. The default option
is single speed cutting.

Once the program has begun you will be shown a detailed breakdown of
information concerning the image you are cutting and the cutting device
you have specified. This is also accompanied by an image completion
counter. **Note:** If the cutter is stopped or too fast a cutting speed is
selected for your computer any disc not finished will be unusable in
most instances. It is recommended that the program is not run whilst
multi-tasking under windows.

!! IMPORTANT !!
Futhermore the image must have been built using BuildCD or BCDFlat
version 2.32 *or* greater. This also means that the complimentary tools
CDdisk and UpdateCD *must* be compatible. The lowest versions of these
that should be used are 1.17 and *1.18* respectively. If an older release
is used the programs will report the disc *image* to be of an invalid mode
or form. Also note that Cutter and hard drive are *both* connected to the
PSY-Q scsi card. I.e. the program does not yet run off aspi.

E.g

```
cutcd -s0:2 -d2 -t
```

this will perform a test cut to the cutter, located at SCSI ID 2, from
partition 2 of the hard drive located at SCSI ID 0. Once this has
completed succesfully,

```
cutcd -s0:2 -d2
```

will cut the disc properly.

If there are any problems experienced whilst using the program, or any
suggestions you wish to make please contact:

david@snsys.com

Tel: +44 (0)117 9299 733
Fax: +44 (0)117 9299 251

Note:

Please make sure before cutting that you have modified the size of the
partition that the image is located so that it is the mininmun size.
Otherwise the program will write the excess to the disc as well.
Something that needs fixing! You will probably get better performance
if you run the program natively in DOS, although I have used it in a
windows DOS box. When you load Cdbios use the /d option to specify a
DMA channel (if you do not already do this) to increase performance.
There will be less likelihood of the buffer in the CDW or CDR machines
underflowing. Note also that the CDW will take a noticeacble time
between starting the image write (where it writes the Lead-in) and
when it starts to use the image data. Do not worry. There is a small
problem with setting the timeout in this part of the program and this is
one of the areas where I would be most grateful for feedback. This is
due to selecting x1 or x2 speed. Most developers have expressed that x2
cutting on the CDW can be unreliable. Therefore, for the moment, I have
optimised the timeout for single speed cutting to ensure reliabilty of
data transfered. The writer ID of the CDW-900e must be 0,(zero).
Finally, if you are cutting an image shorter than 4 mins add some dummy
data to the image using AddLength or Minlength commands.

GenCTI Instructions

GenCTI is designed to make to creation of cti (cti, being the usual extension for CD emulator and CD cutting software control files) files easier for those people who have not constructed one before. It is not the aim of this program to generate fully any but the most simple and straightforward of control files. Saying that, the program does provide a certain amount of flexibility, such as the specification of wildcard inclusions.

There are two programs which rely on these control files, namely, BuildCD (with a flat model version known as BCDFlat) and CTI2CD. BuildCD is for use with the PSY-Q CD emulator, and CTI2CD will cut CD gold discs (presently on the Sony CDW-900E & Yamaha CDR-100) based on a control file.

GenCTI is a DOS command line program. To run it and display a full list of options type:

>gencti

at the command prompt.

The following will be displayed:

```
GenCTI version 1.0 Beta
Copyright (c) SN Systems Ltd. 26 March 1996

Format: GenCTI outfile [options]
Purpose: Automatically generates a cti file from the file contained
in the directory and subdirectories from where the program is invoked.
Directory can be overridden, see options.'outfile' given default
extension .cti
Options:
        /t=target               Playstation - PlayStation specific
                                saturn - saturn specific
                                (default mode 1, data )
        /dir=<dir>              specify directory to be root on CD
        /system=<file> specify filename for system file
        /nosubdirs              do not recurse subdirectories
        /wildcard=<file>        specify wildcard list
        /audio=<dir>   specify directory for audio tracks

Note: Only the first letter of each option needs to be specified
        - or / may be used as switches.
```

The following is a definition of the options:

Option **t=target**. This option explicitly defines the target machine and generates a cti file suitable for the machine.

Option **dir=<directory>**. By default the program will use the directory from where it is called as the root directory in the cti file. To override this specify a different dir, (full path) with this option.

Option **system=<system file>. T**he system file is a special file, specific to individual machines/territories/developers which is positioned before the main disc data. This option enables the location and name of this system file to be specified and correctly included.

Option **nosubdirs**. This option speaks for itself, sub directories will not be included. i.e. the control file will only contain one directory, the root.

Option **wildcards**. This option is a bit more involved than the others, relying on the creation of a wildcard file. Just create a text file including the wildcard definitions, each separated by a newline/return and save. The wildcard definitions can be 31 characters maximum. This file is then added as the file specified in the option.

Eg. View of example wildcard file wild.wcd

```
*.bin
s*.tex
game?.aud
t*.ma*
*.dat
lev*.00?
```

the command line option would then appear as /wildcard=wild.wcd

Presently a maximum of 15 definitions are allowed.

Option audio. This option requires further explanation as well to avoid including these audio files twice. The directory specified for the location of audio tracks should not lie as a subdirectory off the directory specified as the root. Using this will generate a separate audio track for each file present in the audio directory.

Note: Wildcards apply throughout the program if specified. i.e if wildcards are specified and an audio directory is specified the wildcards must contain inclusion information for the audio files. E.G if the audio tracks all have extension .wav then include *.wav in your wildcard list.

Further information on cti files may be found in PSSN (formerly known as PSY-Q) CD emulator manual.

If you have any difficulties or require support contact **support@snsys.com**

Multicd instructions

MultiCD can be used to change to a 'new CD' without using CDDisk to write a new partition offset onto the harddisk or having to reset the target.

The 'new CD' can be another partition on the current harddisk or on any other harddisk on the SCSI bus that contains valid CD images.

* For DEX boards use at least: CDBoot30.BIN or CDBoot60.BIN
  For Saturn use at least: SatCD12.BIN or SatCD22.BIN
* Use at least: CDBIOS.COM v1.04

* For full feedback using CDBoot60.BIN, use CDMon v1.02
  (This will display the partition baseblock on an emulator reset.)

Usage: MultiCD [id [partition]]

- MultiCD id partition

This simulates an open door for 1 second, then changes to the new
CD at the specified SCSI ID and Partition.

NB. If an ID is selected with no HD then you will receive a
'Target did not respond' message, but as a side effect the emulator
will begin open door simulation. To close it, either reissue the
command with a valid ID and partition or close it via the MultiCD
main menu.

Release History

```
Release 1.9 – 02/14/97


Release 1.5.3 – 01/25/95
-------------------------------------------------------
cdboot18.bin - Version 1.8 to Version 3.0
cdboot28.bin - Version 2.8 to Version 6.0
 -------------------------------------------------------

        o    Files CDBOOT30.BIN and CDBOOT60.BIN are the latest versions
             of the emulator boot code for the DEX boards.

             These new versions provide the following:

             - Door open simulation (use MultiCD).
             - Ability to change to another CD image (use MultiCD).

             TC - 24.Jan.96

        o    New program Multicd (v1.01) to support multi-CD


        Release 1.5.2 – 10/19/95
        ---------------------------------------------------------
        buildcd.exe  - Version 1.23 to Version 2.28
        cdboot28.bin - Version 2.24 to Version 2.30
        ---------------------------------------------------------

        *    No information is available at this time.

        Release 1.5.1 – 9/06/95
        ---------------------------------------------------------
        cdboot18.bin - Version 1.7 to Version 1.8
        cdboot28.bin - Version 2.7 to Version 2.8
        ---------------------------------------------------------

        *    This version attempts to model the lens seeks correctly.

             The previous release set seek time to zero for seeks less
             than 128 tracks (this is for distances under 00:16:00
             (1200 frames) at the centre and 00:42:00 (3150 frames)
             at the outer edge).

        Release 1.5 – 8/29/95
        ---------------------------------------------------------
        cdboot17.bin – Version 1.6 to Version 1.7
        cdboot27.bin – Version 2.6 to Version 2.7
        ---------------------------------------------------------

        *    Fixes slow emulator problem:
             This is more accurate that then the previous version.


        Release 1.4 – 8/25/95
        ---------------------------------------------------------
        buildcd.exe – Version 1.22 to Version 1.23
        ---------------------------------------------------------
```

```
*    Fix for map file negative file size.


--------------------------------------------------------------
bcdflat.exe - Version 2.24 - BETA VERSION
--------------------------------------------------------------


*    Beta version of the flat model of buildcd.exe.

Release 1.1 - 6/28/95
----------------------
*    The CDEMU\EXEC directory has been removed from this
     release.  It is being released as a separate release item.


--------------------------------------------------------------
buildcd.exe - Version 1.20 to Version 1.22
--------------------------------------------------------------


*    This version replaces the previous released version 1.20


--------------------------------------------------------------
cddisk.exe - Version 1.12 to Version 1.15
--------------------------------------------------------------


*    This version replaces the previous released version 1.12

*    SCSI errors now are returned.


--------------------------------------------------------------
cdboot16.bin - Version 1.5 to Version 1.6
cdboot26.bin - Version 2.5 to Version 2.6
--------------------------------------------------------------


*    Latest versions of the emulator boot code.

*    Versions 1.6 and 2.6 are identical except that version
     2.6 reports information back to the PC so that the PC
     can show the current CD activity on the screen.

*    Fixes the slow emulator timing (speed) problem.



--------------------------------------------------------------
updatecd.exe - Version 1.13 to Version 1.14
--------------------------------------------------------------


*    Now checks for SCSI errors.  Automatically retries if
     any failure occurs and then outputs error messages if
     still failing.  This is over and above the initial
     SCSI checks that have always been there, these are done
     on every SCSI read or write.


Release 1.2 - 7/10/95
--------------------
--------------------------------------------------------------
cdbios.com - Version 1.02 to Version 1.03
--------------------------------------------------------------


*    Latest version.
```

```
Release 1.1 - 6/28/95


------------------------------------------------------------
updatecd.exe - Version 1.13
------------------------------------------------------------
*    Fixes problem of multiple files being left open by
     UpdateCD as it worked on a image.


Release 1.0 - 6/20/95
--------------------
------------------------------------------------------------
buildcd.exe - Version 1.20
------------------------------------------------------------

*    This version replaces the previous released version 1.18

*    Contains various fixes to outstanding bugs most notably
     the fixing of the SourceDirectory Command in an XA track.

------------------------------------------------------------
cddisk.exe - Version 1.12
------------------------------------------------------------

*    This version replaces the previous released version 1.11

*    Contains the fix to get around the problem with the
     Seagate Hawk drives that do not fully support SCSI-1.
   This problem only occurred when using the -n option.  The
   Seagate return a value of zero for the number of sectors
   available which is displayed as -99 sectors within CDDISK.


------------------------------------------------------------
cdboot15.bin - Version 1.5
cdboot25.bin - Version 2.5
------------------------------------------------------------

*    Latest versions of the emulator boot code.

*    Versions 1.5 and 2.5 are identical except that version
     2.5 reports information back to the PC so that the PC
     can show the current CD activity on the screen.
```

CDBOOT Release History

```
3.4/6.4  - TC: 24.Jan.97
- Continuously trying to Play DA until successful (in a tight loop)
  would fail, since the simulated seek count would be reset each time.
  The upshot of this is that \psx\sample\cd\tuto\tuto3 now works!


3.3/6.3  - TC: 02.Dec.96
- Zero seek version.
- Some bug fixes.


3.2/6.2  - TC: 30.May.96
- Certain combinations of DEX board & Emulator card occasionally caused
  infinite seeking symptoms.
  This release has modified various time critical sections of code to be
  more tolerant to hardware timing thresholds.


3.1/6.1      - TC: 11.Apr.96
- CD-DA now works after loading of CD-ROM data (why was this never
reported?)
- More robust CD image swapping.


3.0/6.0  - TC: 24.Jan.96
- Door open simulation (use MultiCD).
- Ability to change to another CD image (use MultiCD).


1.8/2.8  - TC
- This version attempts to model the lens seeks correctly, and as with
  1.7 (& 2.7) longer arm seeks are also simulated better.
  It gives much better seeking accuracy that the older releases 1.5 and
  1.6.

1.7/2.7  - TC
1.6/2.6  - MD
1.5/2.5  - MD
1.0..1.4 - MD
```

KNOWN PROBLEMS

```
buildcd.exe - v1.20
```

   *   A ~BUILDCD.TOC is produced on every run (512 bytes
       long). This will be modified in a future release.
       The file can be ignored.

   *   Sometimes one is unable to remove the CD that is
       in the DTL-2010. Make sure the "selcd" switch is
       executed to activate it.

Note for H2500 users:

Don't use RESETPS v1.04. This sends an 'OPEN DOOR' signal to the
emulator giving the impression that the emulator has crashed! Use
RESETPS v1.05+