



## Cobra ODE User Manual v1.8

The Cobra ODE is the world's most advanced and feature rich ODE for PS3 which is also simple and easy to use!

The following consoles are supported:

### **FAT;**

CECHA (PATA)

CECHB (PATA)

CECHC (PATA)

CECHE (PATA)

CECHG (PATA)

CECHH (PATA)

CECHK (PATA)

CECHL (SATA) (most consoles)\*\*\*

### **SLIM;**

CECH2XXX (SATA)

CECH21XX (SATA)

CECH25XX (SATA)

CECH3XXX (SATA)

## **SUPER SLIM;**

CECH4XXX (SATA)

\*\*\*FAT consoles (SATA) CECHL, CECHM, CECHP and CECHQ with drive controller BMD-21 are currently not supported, It will be supported in a future HW revision. please visit our web site for more news concerning upcoming product available.

### **Feature list:**

Supports virtually all PS3's including previously "unbreakable" 2k5,3k and 4k systems!

Homebrew now possible on previously "unbreakable" 2k5,3k and 4k systems!

Play games on SEN in pass-through or emulation modes\*\*!

On screen selection of games through Cobra ODE manager or Cobra ODE Browser in XMB

Emulation or pass-through modes

Advanced Smart Fusion AES encryption and decryption engine on board

Fully updatable high speed FPGA's and high speed secure MCU on board

Updatable via USB storage

Expansion ports for future proofing

Simple and easy to use

High quality components used throughout

Built at a high tech facility

Solderless installation on all FAT\* and SLIM (2xxx and 21xx) series

Easy installation on 25xx,3xxx and 4xxx series Slim and Super Slim series consoles with QSB (quick solder board)

Easy setup for PATA or SATA consoles

Advanced software onboard and frequent free updates

*BD Movie support to follow\*\*\* (In a future update)*

*PS1 and PS2 ISO support to follow (on BC consoles in a future update)*

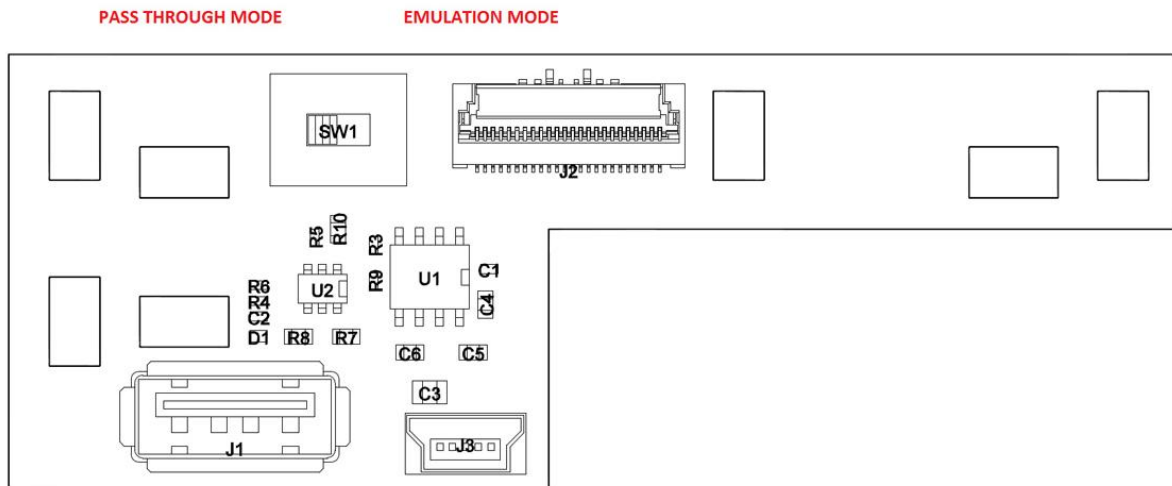
*PS3 BD game disc dumping on all PS3 consoles is supported and can be enabled through third party managers (dumping throughput will be improved in future updates)*

*\*\*We cannot guarantee the longevity of this feature for people using homebrew apps.*

### **Selection of Emulation or Pass-through mode:**

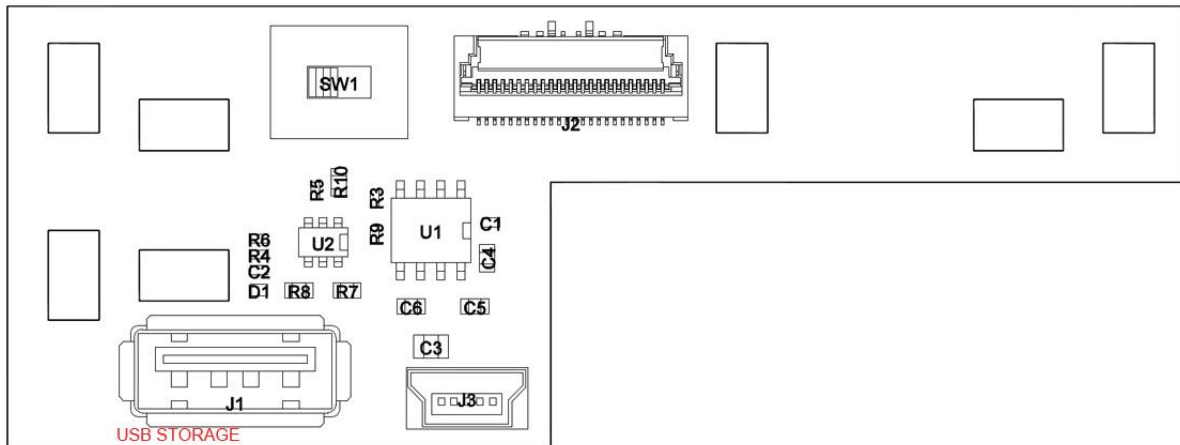
Pass through is enabled when the switch is to the left as shown. Emulation mode can be selected by simply sliding the switch on the clip on PCB to the right as shown in the picture below. This enables the emulation functionality of the device and allows you to run games from external mass storage on your PS3. Pass-through mode silently disables the ODE and allows your PS3 to act as a stock OFW or CFW console, when you want to play games directly from the BD drive, watch movies or go online for SEN etc...

**Please do not switch between Pass-through and Emulation modes whilst the console is running. Only switch modes when the console is in standby or powered off.**



### **Connecting USB storage:**

There are two USB connectors on the clip on PCB, a full size USB A connector for connection of mass storage devices and a Mini USB B connector for the optional UI commander (currently not required). As shown in the photo below. Please connect your USB mass storage device to the USB A connector.



Three types of USB cable are included in the kit:

USB 2.0 Mini USB Y cable

USB 3.0 Y cable

USB extension cable

The USB 2.0 or USB 3.0 may be coupled with the USB extension cable and connected to a port on the front of the PS3 and then to the CLIP on USBA A connector and your hard drive, in cases where a standard USB cable cannot supply enough power.

### **USB mass storage preparation:**

The Cobra ODE supports reading files from the vast majority of USB HDD's and USB pen drives available in the market.

Kindly follow the instructions and notes below for setting up USB storage devices for use with the Cobra ODE.

- Your USB pen drive or USB HDD must be formatted with either NTFS 4k (4096 allocation unit size) or FAT32 file system: If formatting the NTFS partition, make sure the cluster size (named "Allocation unit size" in Windows' format tool) is a multiple of 2048. This means that 512 and 1024 cluster sizes will not work, but 2048 and 4096 will work. We recommend you use 4096 which should be the default and recommended setting that Windows will use for drives with a capacity lower than 16 TB.

- Should you decide to use FAT32, then this must be the first partition on the drive and the subsequent partition may be NTFS

- The first NTFS partition found will be the partition recognized by the ODE
- When an HDD has both FAT32 and NTFS partitions, then the FAT32 partition will be ignored by the ODE
- The partition should contain a COBRA directory containing the "cobra.db" file (the .db database file can be downloaded from the cobra-ode.com downloads section) and a game manager iso with the filename "manager.iso".
- The COBRA manager iso can also be substituted by any other manager which incorporates support for our board (instructions for enabling Cobra ODE in other managers is provided at the end of this document)
- PS3 games must be placed in a directory named "PS3\_GAMES" in the root of the partition.
- Filenames can be complex or simple, so long as unicode and special characters are avoided.
- User may split an iso into multiple files (convenient if you have a FAT32 partition, subsequent files must however be named with extension .1, .2, .3 and so on

Example:

uncharted.iso.0, uncharted.iso.1, uncharted.iso.2,

or;

uncharted.foobar, uncharted.foobar.1, uncharted.foobar.2

- We would recommend partitioning your hard drive with a 10MB FAT32 partition as the first partition on the drive, and the second partition as NTFS taking the rest of the HDD space. The FAT32 partition can then be used for updates to the ODE.

**The final file structure should look something like this :**

NTFS/FAT32 partition

```
|
|_ COBRA
| |
| |_ cobra.db
| |_ manager.iso
|
|_ PS3_GAMES
|
|_ game.iso
|_ uncharted.dec
|_ split.iso.0
|_ split.iso.1
|_ split.iso.2
```

- The genps3iso tool may be used to generate .iso images from a directory structure of a game dumped using CFW. Split type files generated by the tool are also supported (available from our downloads section on the cobra-ode.com website).

- As a user convenience we also support iso files generated by the 3k3y ripper tool. However, 3k3y iso files must be decrypted before use on Cobra ODE. You should first decrypt the 3k3y generated iso file using the "ISOCrypto" button in the 3k3y ripper PC application.

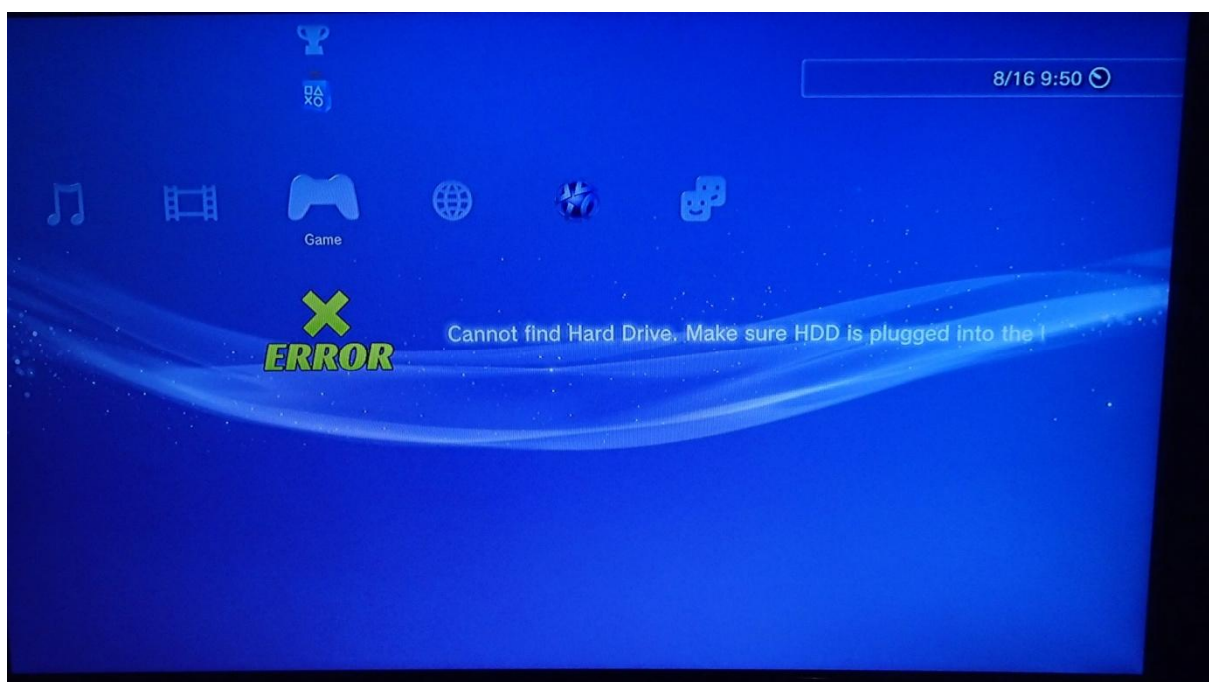
Please note that in order to benefit from the superior performance of the Cobra ODE device, the decrypted images files should be extracted and then re-processed with the Geniso tool we provide for better performance.

### **Booting requirements :**

- Cobra ODE requires an original disc to be inserted in the drive at all times to boot the Cobra ODE manager and run games from HDD. The game disc used must be supported by the Cobra ODE database. A current list of supported titles is available in the downloads section of our website. We will provide updates to expand the list of supported titles.

### **Error conditions:**

- On booting the PS3, the XMB will display the COBRA ODE manager icon, if the icon is not shown, then you have not inserted a disc into the PS3. Should the XMB fail to display the COBRA ODE manager, an error message may be displayed in the XMB which will inform you of the current error condition. Currently supported error messages are as follows :



*"Cannot find Hard Drive. Make sure HDD is plugged into the USB port"*

*"Hard drive does not contain a valid NTFS or FAT32 partition"*

*"Cannot find COBRA/cobra.db file. Please refer to user manual."*

*"Error loading COBRA/manager.iso file."*

*"COBRA/manager.iso file is too fragmented. You should defragment your hard drive. Please refer to user manual."*

*"ISO file is too fragmented. You should defragment your hard drive. Please refer to user manual."*

*"Error loading selected ISO file."*

*"Inserted disc is not supported by the COBRA database."*

*"Error loading custom manager configuration file."*

The error message displayed should provide enough information to rectify the problem by either taking the necessary action directly or by additionally referring to the user manual for guidance.

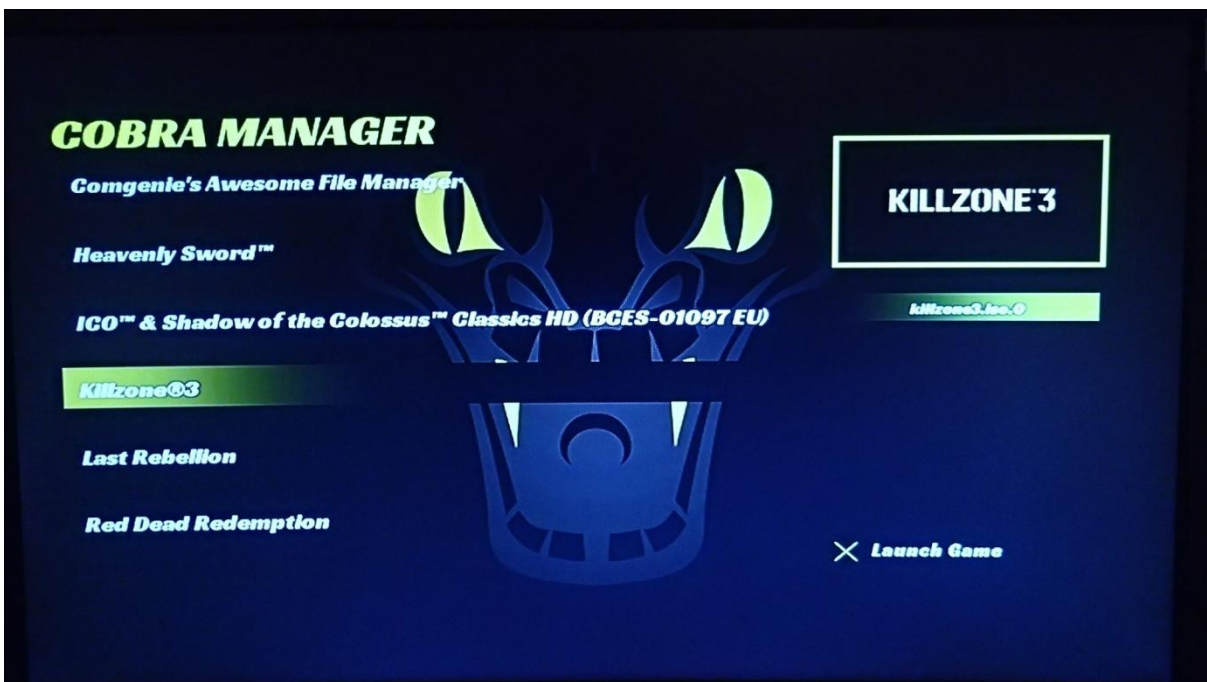
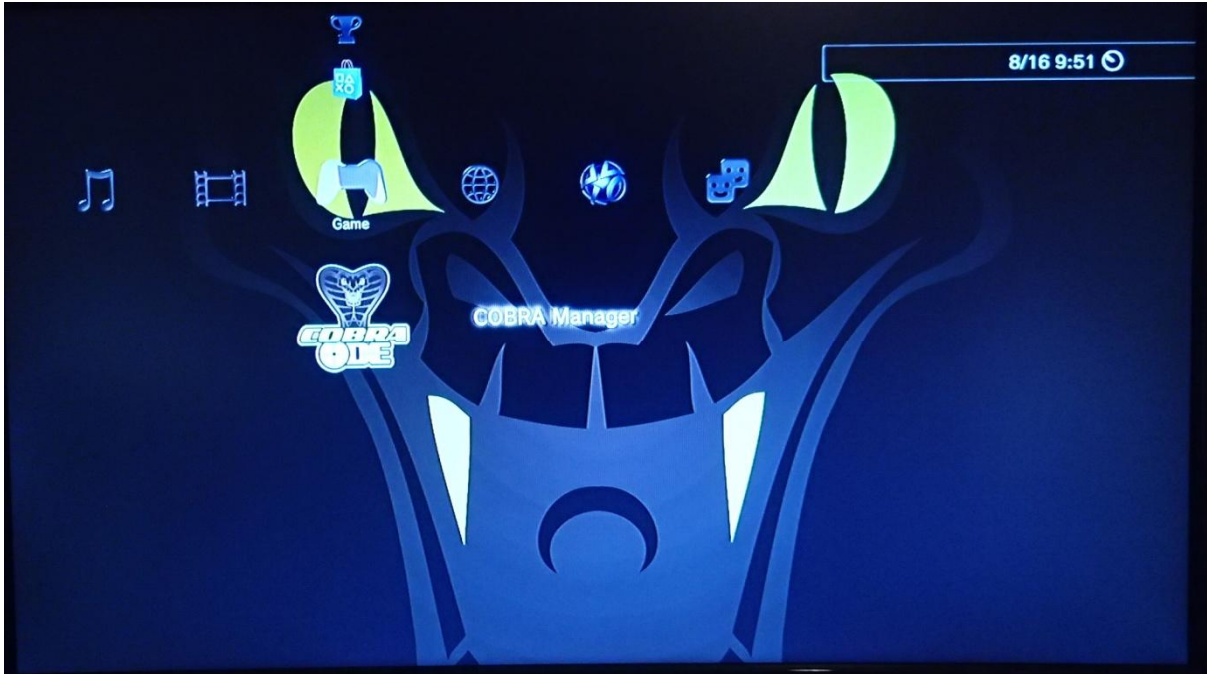
### **Defragmenting your HDD**

Defragmenting your hard drive may be required by the Cobra ODE in some circumstances. Defragmenting increases performance and reduces the chances of errors. Windows can be used to defragment your HDD. We recommend that you do this occasionally to enjoy best performance.



**Using Cobra ODE manager:**

Once executed the COBRA ODE Manager will display a list of current valid iso images on your HDD's partition, game selection is achieved by simply scrolling (using the d-pad of your PS3 controller) to the image you wish to play and then pressing the X button on your pad.



The Cobra ODE 1.6 update no longer requires you to restart the console to select the game. Simply quit the manager and the game will appear in the XMB.

Restarting the PS3 during game play will retain your current game selection, for the sake of convenience.

Should you wish to return to the Cobra ODE manager in order to choose another game or homebrew application, then simply eject the disc via the XMB and reinsert it, or in the case of the 4k series PS3, slide the door cover open and then closed again.

Starting from Cobra ODE 1.4 update, you can however disable this and have the PS3 return to the manager after each reboot by enabling the ***manager.on\_reboot=1*** option in the cobra.cfg configuration file.

Starting from Cobra ODE 1.6 update, you can also return to the Cobra ODE manager by selecting the "Remove disc" option from the XMB. The option is available for fat and slim models by pressing the Triangle button in the disc icon in the XMB.

**Cobra ODE has been designed with simplicity and ease of use in mind! Enjoy....**

### Using Cobra ODE Browser:

An alternative to the COBRA Manager homebrew application is to use the COBRA ODE Browser which does not require the use of homebrew and may appear more stealth to the PS3.

The Cobra ODE Browser can only be used from MCU firmware version 1.5 and requires the use of the genps3extra PC application to be run every time the list of ISO files changes on the HDD.

There will be two menus for the Cobra ODE Browser, the first one in the Game category of the XMB, it will show the game icon and title :



And the second Cobra ODE Browser is in the Video category of the XMB, which will show the game icon, the animated icon, the background image and play the game's music :



To generate the Cobra ODE Browser, simply run the genps3extra application and select the COBRA\_ODE\_BROWSER directory when asked for the EXTRA directory, then select the COBRA directory from your HDD. It will then scan the games on the HDD and generate a new manager.iso and cobra.cfg configuration file tailored to your HDD games which will provide you with the browser for game selection.

The genps3extra application will also ask you if you wish for the manager to appear as a BD disc. Enabling that option will make the manager appear as a bluray disc to the PS3, increasing even more the stealth for the more paranoid users. Note however that doing so will only give you access to the ODE Browser through the Video category of the XMB and will disable access to the Browser from the Game section of the XMB.

Note that the PS3 has a limit of 100 items in the browser for the Game category and 200 items in the browser for the Video category. If you have more than 100 iso files, it is suggested to use the ODE Browser from the Video category of the XMB, and if you have more than 200 iso files, it is suggested to use the Cobra Manager instead.

Do not forget to rerun the application every time your list of iso files changes on the HDD.

Once you have made your game selection from the browser, you must reboot the console or eject the disc in the drive and reinsert it (or slide door cover open and then closed in the case of 4xxx series) in order to switch to the selected game.

Starting from Cobra ODE 1.6 update, the Cobra ODE Browser will automatically trigger the auto-eject feature and the game will be loaded as soon as you select your game.

Should you wish to return to the Cobra ODE browser in order to choose another game or homebrew application, then simply eject the disc via the XMB and reinsert it, or in the case of the 4k series PS3, slide the door cover open and then closed again. you can however disable this and have the PS3 return to the manager after each reboot by enabling the `manager.on_reboot=1` option in the `cobra.cfg` configuration file.

Starting from Cobra ODE 1.6 update, you can also return to the Cobra ODE manager by selecting the "Remove disc" option from the XMB. The option is available for fat and slim models by pressing the Triangle button in the disc icon in the XMB.

The `genps3extra` application allows you to customize the behaviour of the browser depending on the files available in the EXTRA directory :

If the EXTRA directory has a `PS3_EXTRA/PARAM.SFO` file, then it will generate browser items for the `PS3_EXTRA` section which will appear in the Game category of the XMB. If a `PS3_EXTRA/D000/DATA000.MP4` file exists, then it will be used for every item in the Game browser and that video will be used every time you select a game. If a `PS3_EXTRA/D000/DATA000.PKG` file exists, then it will be used for every item in the Game browser and that package will be installed every time you select a game. If a `PS3_EXTRA/D000/DATA000.P3T` file exists, then it will be used for every item in the Game browser and that PS3 theme will be installed every time you select a game. If there is no `MP4/PKG/P3T` file, then a fake `PKG` file will be generated which will show an error on XMB when trying to run it, however, the game will still be correctly selected, despite the error on XMB.

If the EXTRA directory has a `PS3_CONTENT/VIDEODIR/D000/DATA000.MP4` file, then it will generate browser items for the `VIDEODIR` section which will appear in the Video category of the XMB. The `MP4` will be used for every item in the Video browser and that video will be used every time you select a game. Make sure the video has a file size greater than 128KB in order to avoid fake selections.

### **Auto-eject feature :**

Since firmware version 1.6, Cobra ODE allows you to switch games and go back to manager mode without the need to reboot the console or eject the disc.

This auto-eject feature can be used to quickly switch games from the comfort of your couch. There are two ways to cause the manager to switch to the game you selected. You can either add the **`eject.on_selection=1`** configuration option to the `cobra.cfg` file which will cause the ODE to switch to



game mode as soon as you select your game. See below for more information on the cobra.cfg file. Your second option is to press the Triangle button on the disc in the XMB and select "Remove disc" option in the XMB menu. If you made your game selection, this will cause the COBRA ODE to eject the disc and switch to the game. You can also let the manager automatically handle the auto-eject for you.

If you wish to return to the manager, you can press the Triangle button on the disc in the XMB and select "Remove disc" option in the XMB menu. This will trigger the auto-eject feature and the manager will appear in the XMB.

If you select the "Remove disc" option while the COBRA ODE is in manager mode and no game has been selected yet, then the real disc will be ejected from the drive.

For superslim 4xxx model users, the "Remove disc" option is not available in the XMB, you can enable the "***manager.on\_reboot=1***" configuration option in the cobra.cfg file and reboot the console or you can open and close the drive cover to switch back to manager mode.

### **Instructions to generate iso :**

In order to generate a valid ISO, run genps3iso and specify the correct directory (The parent directory which contains the PS3\_GAME directory) and the output .iso file, as well as whether or not to split the iso into 4GB files. The resulting iso file (or files) can be put into the PS3\_GAMES directory of the USB drive and will work with the COBRA manager.

Splitting the iso into 4GB files is only useful if you want to use a FAT32 drive.

Starting from version 2.2, genps3iso will ask for an IRD file which will generate a 1:1 copy of an original disc. IRD files are optional, and the IRD file selection dialog can be cancelled in which case genps3iso will work as it did before.

### **Updating the MCU firmware of the Cobra ODE**

From time to time MCU updates will be made available for the Cobra ODE. You can check for the latest version from the downloads section of our website on <http://www.cobra-ode.com>.

Once downloaded, extract the file "mcu.rom" to your PC and then copy it to a FAT32 formatted USB stick or USB HDD, in the root directory. Power off the console and remove the power cable entirely or use the switch on the back for PS3 fat models. Wait 5 seconds, then connect the USB stick or USB drive to the Cobra ODE clip on board then plug back the power on the console.

The update should takes a couple of seconds to finish. The LED should flash very briefly, and appear purple for a second, indicating that the update is in progress, then it becomes solid red to indicate there is no manager or database on the usb stick, or green if the fat32 drive you're using also contains the manager and cobra.db file. Once it is done, then you can turn on the console and enjoy the new features provided by the firmware upgrade.

## Updating the BOOTLOADER firmware of the Cobra ODE

Occasionally, an update to the bootloader will be made available. You can download the latest bootloader version from the downloads section of our website on <http://www.cobra-ode.com>. Once downloaded, extract the file "ldr.rom" to your PC and then copy it to a FAT32 formatted USB stick or USB HDD, in the root directory. Power off the console and remove the power cable entirely or use the switch on the back for PS3 fat models. Wait 5 seconds, then connect the USB stick or USB drive to the Cobra ODE clip on board then plug back the power on the console.

The update should takes a couple of seconds to finish. The LED should flash very briefly, and appear purple for a second, indicating that the update is in progress, then it becomes solid red to indicate there is no manager or database on the usb stick, or green if the fat32 drive you're using also contains the manager and cobra.db file. Once it is done, then you can turn on the console and enjoy the new features provided by the firmware upgrade.

**\*IMPORTANT\*** Please note that your device may be damaged if there is a loss of power during the update of the bootloader. Make sure you connect your power cable correctly and do not disconnect it while the update is in progress. There are no risks however during a normal update of the MCU firmware, and bootloader updates will be very rare.

## COBRA ODE Configuration file

Since Firmware version 1.4, a configuration file can be placed in the COBRA directory with the filename cobra.cfg.

The configuration file takes the form of :

**key=value**

MCU v1.0 to 1.3: Configuration file not supported

MCU v1.4: Three options are supported :

**manager.type=disabled**

**manager.on\_reboot=1**

**game.path=.**

MCU v1.5: Six new options are supported :

**manager.type=custom**

**manager.type=custom+homebrew** and **manager.type=custom+homebrew**

**manager.disctype=cd/dvd/bd/ps1/ps2/ps3**

**game.disctype=cd/dvd/bd/ps1/ps2/ps3**

**iso.INT.sector=HEX**

**iso.INT.path=**

MCU v1.6: three new options are supported :

**eject.on\_selection=1**

**eject.sector=HEX**

**hdd.poll=INT**

**The available configuration options for the latest MCU version are :**

**manager.type=homebrew/disabled/custom/custom+homebrew/homebrew+custom**

Allows setting the type of manager the ODE should handle when it is in manager mode.

homebrew	The default homebrew manager mode where the /dev_bdvd/COBRA directory is populated with ode and iso information files.
disabled	If set, the manager is disabled and the ODE will directly boot into ISO mode. The iso file that will be loaded is /PS3_GAMES/game.iso by default, and can be changed with the <b>game.path</b> configuration option.
custom	A custom manager mode where the /dev_bdvd/COBRA directory is <b>not</b> created, and the game triggers are defined with the <b>iso.INT.sector</b> and <b>iso.INT.path</b> configuration options.
custom+homebrew homebrew+custom	A custom manager mode where the /dev_bdvd/COBRA directory is populated with ode and iso information file, and where <b>iso.INT.sector</b> and <b>iso.INT.path</b> configuration options can be used to create custom sector triggers.



Any value other than the ones listed here will default back to the homebrew manager mode.

**manager.on\_reboot=1**

If set, the manager will be reloaded every time the PS3 reboots. The ISO mode will not stay persistent between reboots. This can be useful for users with PS3 consoles in hard to reach places. Any value other than '1' will default back to the behavior of switching to manager mode on disc eject only.

**game.path=/PS3\_GAME/game.iso**

If **manager.type=disabled** is set, then this option will specify the path of the ISO to load when the HDD is inserted. The path is not case-sensitive, and path separator is the '/' character. The path has a limit of 128 characters. If this option is not set, then it will default to /PS3\_GAMES/game.iso

**manager.disctype=cd/dvd/bd/ps1/ps2/ps3**

If set, the disc type of the manager can be overridden and the ODE will emulate a different type of disc inserted in the tray. This is useful in order to experiment with different disc types, other than PS3 discs, and could help the manager appear more stealth.

cd	The manager iso will appear as being burned on a CD-ROM disc
dvd	The manager iso will appear as being burned on a DVD-R disc
bd	The manager iso will appear as being burned on a BD-R disc
ps1	The manager iso will appear as being an original PS1 disc
ps2	The manager iso will appear as being an original PS2 disc
ps3	The manager iso will appear as being an original PS3 disc

Note that appearing as a PS1 or PS2 disc does not guarantee that the PS3 will recognize the iso as valid PS1/PS2 discs. It will only appear as being a PS1/PS2 disc type. This cannot add support for PS1/PS2 games using this method. It is only for experimenting with different types of discs.

Any value other than the ones listed here will default to appearing as the type of disc inserted in the tray.

**game.disctype=cd/dvd/bd/ps1/ps2/ps3**

If set, the disc type of a game ISO can be overridden and the ODE will emulate a different type of disc inserted in the tray. This is useful in order to experiment with different disc types, other than PS3 discs.

cd	The game iso will appear as being burned on a CD-ROM disc
dvd	The game iso will appear as being burned on a DVD-R disc
bd	The game iso will appear as being burned on a BD-R disc
ps1	The game iso will appear as being an original PS1 disc
ps2	The game iso will appear as being an original PS2 disc
ps3	The game iso will appear as being an original PS3 disc

Note that appearing as a PS1 or PS2 disc does not guarantee that the PS3 will recognize the iso as valid PS1/PS2 discs. It will only appear as being a PS1/PS2 disc type. This cannot add support for PS1/PS2 games using this method. It is only for experimenting with different types of discs.

Any value other than the ones listed here will default to appearing as the type of disc inserted in the tray.

#### **iso.INT.sector=HEX**

If the manager is in custom or custom+homebrew mode with the **manager.type=custom** configuration option, then this option can be used to define the sector of the game trigger for a specific game. The **INT** value must be a base 10 integer lower than 500 and determines the iso index. The **HEX** value must be a hexadecimal value representing the sector number to act as a trigger. If the game is triggered, by reading of that sector, then the iso file in the matching **iso.INT.path** option will be used.

#### **iso.INT.path=**

If the manager is in custom or custom+homebrew mode with the **manager.type=custom** configuration option, then this option can be used to define the path to the iso when the associated **iso.INT.sector** configuration option is triggered. The **INT** value must be a base 10 integer lower than 500 and determines the iso index. The path is not case-sensitive, and path separator is the '/' character. The path has a limit of 128 characters. If this option is not set, then it will default to /PS3\_GAMES/game.iso

#### **eject.sector=HEX**

If the manager is in custom or custom+homebrew mode with the **manager.type=custom** configuration option, then this option can be used to define the sector that triggers the disc's auto-eject feature. The **HEX** value must be a hexadecimal value representing the sector number to act as

a trigger. If the eject is triggered, by reading of that sector, then the ODE will emulate a disc ejection and reinsertion automatically.

#### **eject.on\_selection=1**

If set, the ODE will automatically trigger the auto-eject feature as soon as a game selection has been triggered.

Any value other than '1' will default back to the behavior of switching to manager mode on disc eject only.

#### **hdd.poll=INT**

If set, the ODE will poll the hard drive every *INT* minutes to prevent the HDD from going idle and entering sleep mode. The *INT* value must be a base 10 integer.

If the value is set to 0, then HDD polling is disabled. If a value is not set, then HDD polling value defaults to '1'.

Here are examples of valid COBRA/cobra.cfg configurations:

Homebrew manager with automatic return to manager mode on reboot

```
manager.type=homebrew
manager.on_reboot=1
```

Manager is disabled and the /PS3\_GAMES/Uncharted.iso game is automatically loaded.

```
manager.type=disabled
game.path=/PS3_GAMES/Uncharted.iso
```

Custom manager appearing as bluray disc with triggers for 3 games and returns to manager mode on reboot

```
manager.type=custom
manager.disctype=bd
manager.on_reboot=1

iso.0.sector=400
iso.0.path=/PS3_GAMES/Uncharted.iso
iso.1.sector=6A0
iso.1.path=/PS3_GAMES/GTA5.iso
iso.3.sector=AC0
iso.3.path=/PS3_GAMES/Killzone3.iso
```

**Note:** The PS3 always reads in groups of 32 sectors, on the 0x20 sector boundary. For a trigger to be effective, it must not be accidentally read when a different file is read from the same group of 32 sectors.

**Note 2:** In the case of custom disc with PS3\_CONTENT/VIDEODIR, the PS3 will read the header and footer of every MP4 file to retrieve its duration and validate it, which will trigger every game. It is therefore recommended to always use MP4 file longer than 128KB and set the trigger to 32 sectors or more after the start and before the end of the file.



**Valid iso file specifications :**

If you wish to generate a valid ISO file programmatically, or implement your own version of genps3iso, then we provide you with the specifications of the iso file so it can be recognized by the PS3 as a valid disc image.

A disc image is a normal iso file with the exception of the first two sectors which contain information that will be used by the PS3. The iso file's content can either be encrypted or plain-text, the first sector defining which sector regions are encrypted and which aren't. Another consideration is that the PS3 will always read in 64KB blocks, 32 sectors at a time of 2048 bytes each. An encrypted region must always start and end at the 0x20 sector index boundary.

The first sector has the following format :

32 bit big endian integer : number of plain regions in the disc image

32 bit zeroes

array of <num\_plain\_regions> containing :

32 bit big endian integer : start sector of the plain region

32 bit big endian integer : end sector of the plain region (inclusive)

The encrypted regions are any region that exists between plain regions. For example :

```
00000000 00 00 00 02 00 00 00 00 00 00 00 00 00 02 3f |.....?|
00000010 00 00 07 c0 00 00 08 5f 00 00 00 00 00 00 00 |....._|
```

This iso has 2 plain regions, starting from sector 0 to 0x23F and from 0x7C0 to 0x85F, and one encrypted region from 0x240 to 0x7DF. The total number of sectors in the iso would be 0x860 sectors.

All SELF files must reside on encrypted sectors, as well as the LICDIR/LIC.DAT license file.

The second sector of the iso must contain the string "PlayStation3" padded with zeroes to 16 bytes total, followed by the game id padded with spaces to 32 bytes total, then 16 bytes of zeroes then 448 bytes of random data.

For example :

```
00000800 50 6c 61 79 53 74 61 74 69 6f 6e 33 00 00 00 00 |PlayStation3....|
00000810 42 43 45 53 2d 30 30 39 30 38 20 20 20 20 20 20 |BCES-00908      |
00000820 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 |                |
00000830 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |.....|
00000840 c9 27 db 82 7c 18 b5 c5 7e 39 4e cb ba f0 ec 2e |.'...|...~9N....|
...
000009f0 38 f3 59 1d 97 42 7d 17 35 aa c7 f5 ec cc 08 5b |8.Y..B}.5.....[|
```

**The following specifications are pertinent to third party manager compatibility :**

On loading the manager iso, the Cobra ODE will automatically and dynamically add a /COBRA directory to the disc structure and populate it with files. Since firmware version 1.2, a COBRA.NFO file will be available with information about the ODE firmware and other data the ODE needs to communicate. See below for more information. Each valid ISO found on the HDD will appear as a file with its game id as the respective filename. The generated file will have a size of 2048 bytes and will contain information about the iso file. See below for more information. Each title will also have a file with .PNG, .SFO and .RUN extensions, where the base filename will be the game id. The .PNG and .SFO files respectively represent the ICON0.PNG and PARAM.SFO files inside the .iso and the .RUN file, if read, will tell the COBRA ODE that that game must be selected. An iso file must provide a .SFO file, but some discs do not have the ICON0.PNG file, such as install discs, so the .PNG file may not be available.

A DISC.ISO file will also be made available which will be a direct access to the real disc in the drive of the PS3.

This can be useful for dumping games. Note that the COBRA ODE will trick the PS3 into automatically decrypting the DISC.ISO, however, the decryption will not be perfect due to the sector position on the disc. Post-processing of the DISC.ISO is therefore required in order to obtain a valid copy of the disc. See below for more information.

Since firmware version 1.6, a EJECT file will also be made available which can be read in order to trigger the auto-eject feature of the ODE.

Example:

Assuming the HDD has a file "game.iso" with game id BLUS12345, on loading of manager, it will have access to the following files :

/dev_bdvd/COBRA/COBRA.NFO	File containing extra information from the COBRA ODE
/dev_bdvd/COBRA/DISC.ISO	Disc image of the disc in the drive
/dev_bdvd/COBRA/EJECT	Auto-eject disc trigger
/dev_bdvd/COBRA/BLUS12345	File containing information on the iso file
/dev_bdvd/COBRA/BLUS12345.PNG	ICON0.PNG file contained inside game.iso
/dev_bdvd/COBRA/BLUS12345.SFO	PARAM.SFO file contained inside game.iso
/dev_bdvd/COBRA/BLUS12345.RUN	Game selection trigger

Our downloads section on the cobra-ode.com website provides for a simple function (manager.h and manager.c) provided for free use (public domain) which will parse the directory and provide a simple structure, enabling access to all files. Developers using those functions should find it easier to integrate with our product.

**The iso file information has the following format :**

Firmware 1.0: A null-terminated string containing the original filename of the iso from the HDD. The remainder of the file will be empty.

Firmware 1.3: The first byte will be zero to allow backward compatibility and recognize the format, it is then followed by the filename of the iso from the HDD, preceded by a single byte containing the length of that string. It is then followed by 64 bits representing the file size of the iso file in little-endian format. The remainder of the file will be empty.

Example :

```
00 08 67 61 6d 65 2e 69 73 6f 78 56 34 12 00 00 |..game.iso.....|
00 00 ..... |.....|
```



**The COBRA.NFO has the following format :**

Firmware 1.0: File did not exist

Firmware 1.2: The file contains 2 bytes, the major and the minor version of the ODE firmware respectively

Example:

```
01 02
```

Firmware 1.3: The file contains 6 bytes, the structure is extended with a 32 bit little-endian value representing the sector of the disc in which the DISC.ISO file starts. This is necessary for the post-processing of the DISC.ISO to recreate the original image.

Example:

```
01 02 0C 0B 00 00
```

Firmware 1.6: The file contains 7 bytes, the structure is extended with an 8 bit boolean to determine if the console support a quick eject method when the /dev\_bdvd/COBRA/EJECT file is read. Quick-eject is only possible on FAT and 2xxx/21xx models. The information is not required for the auto-eject feature to work.

Example:

```
01 02 0C 0B 00 00 01
```

### **Information about DISC.ISO post-processing :**

While the disc is encrypted, the COBRA ODE will instruct the PS3 to decrypt the encrypted sectors from the disc automatically while being read. However, the PS3 uses the sector LBA as the initialization vector for decrypting the sectors. Since the sectors of the DISC.ISO file are positioned on the manager disc on a different sector than the original disc is, the decryption will use the wrong initialization vector. It is therefore needed to XOR the first 16 bytes of every encrypted sector with the appropriate value to recover the original decrypted data. The LBA sector of the DISC.ISO is provided in the COBRA.NFO file since MCU firmware v1.3.

The first 16 bytes of every encrypted sector must first be XORed with the disc's LBA + sector in the file to retrieve the AES decrypted block, then XORed with the original sector to get the AES-CBC decrypted block. All other blocks use the cipher data as IV so they will be decrypted correctly.

The third-party library can be used to do it automatically, or can be used as reference for the post-processing algorithm.