

Upgrade or Restore Firmware and Hard Drive on Genesi Pegasos II

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This application note describes the steps to upgrade or restore the Pegasos II Firmware, the Debian partitions, and the Yellow Dog Linux distribution on the Genesi Pegasos II.

1 Introduction

The Yellow Dog Linux 4 (YDL4) upgrade is now available.

The Firmware and Debian upgrade will be available in late November 2004. Although, a preliminary version is available now by contacting risc10@freescale.com. To upgrade the Genesi Pegasos II or restore the hard drive if it becomes corrupted beyond usability, request the Genesi Pegasos II Firmware and Debian Linux DVD from risc10@freescale.com. Then follow the instructions given in this document.

The original Genesi Pegasos II Firmware was installed on April 4, 2004. A hardware and firmware upgrade are required to allow large data transfers. The original Debian distributions used the 2.4 and 2.6.4 kernels. The original Yellow Dog Linux distribution, YDL3, on the Genesi Pegasos II system was severely broken. A new, well behaved distribution is now available.

This upgrade has three separate operations.

1. Upgrade the firmware
2. Upgrade the Debian partitions
3. Upgrade the Yellow Dog Linux partition

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2 Terminology

The following terms are used in this document.

Debian	One of the distributions of Linux
Firmware	Permanently installed into ROM software to start a computer. Can be upgraded.
Hotkey	Simultaneously pressing a set of keys causes certain actions to occur. For example, Ctrl+Alt+Backspace kills the window manager.
Linux OS	Linux operating system
OF	Open Firmware, the firmware used on the Genesi Pegasos II computers.
ROM	Read only memory.
RPM	Red Hat Package Manager, the system that is used by Red Hat Linux and Yellow Dog Linux, as well as others, to organize, manage, and install into the running Linux system.
Yellow Dog	One of the distributions of Linux

3 Upgrading the Firmware (Available in November 2004)

This procedure upgrades the firmware to update-2004.08.10 from update-2004.04.05 This is only required on the original Pegasos systems delivered in April 2004.

Follow these steps:

1. Boot into the firmware, that is, use menu item 6, boot to OF
2. Insert the Firmware and Debian upgrade DVD

NOTE

The ISO file for the DVD image will be available on the web in late November 2004. However a preliminary version is available now by contacting risc10@freescale.com.

3. At the ok prompt, type: `boot cd update-2004.08.10`
4. Ignore all dire warnings
5. Press Enter, after '<ENTER> to start, any other key aborts' displays
6. When complete, the DVD does not eject and the machine reboots
7. Re-enter the firmware by choosing the OF option
8. Correct these environment variables:
 - `setenv boot-device ide:0`
 - `setenv boot-file menu`
 - `setenv auto-boot? true`

Ensure that the environment variables above are set correctly with this command:

- `printenv`

Either of these commands shuts down the machine:

- `reset`
- `shut-down`

4 Upgrading the Debian Distributions (Available in November 2004)

This procedure completely rewrites the hard disk, completely removing all current files on the hard drive. This step upgrades all the Debian partitions and the Debian kernels. It recreates the guest user and the associated fae training files. It creates an old unusable Yellow Dog 3 Linux partition. See [Section 5, “Upgrading the Yellow Dog Distribution,”](#) for upgrading the YDL4 partition separately or for newer updates.

Follow these steps:

1. Save all desired files from the hard drive onto another medium
2. Insert the Firmware and Debian upgrade DVD
3. Boot into the firmware, that is, use menu item 6, boot to OF

There are two ways to invoke the installer: automatic upgrade and manual control upgrade.

4.1 Automatic Upgrade

1. At the ok prompt,

NOTE

For the automatic upgrade mode, the disk is repartitioned and new images are built. There is no way to stop this after it starts, the disk will be erased.

2. Type: `boot cd install`
3. Sit back and relax, this takes about 15 minutes
4. When complete, the DVD ejects and the machine shuts down

If there are any failures, a hardware upgrade to the CPU card is needed. Contact risc10@freescale.com for help.

4.2 Manual Upgrade

1. At the ok prompt,

NOTE

For the manual upgrade mode, the disk will not be erased unless requested.

2. Type: `boot cd install manual`
3. This shell has limited capabilities.
 - Mount partitions with these commands:
 - Mount the CD-ROM: `mount /dev/ide/host0/bus1/target0/lun0/cd`
 - Mount the entire /dev/hda disk: `mount /dev/ide/host0/bus0/target0/lun0/disk`
 - Mount /dev/hda1 through /dev/hda6 partitions:
`mount /dev/ide/host0/bus0/target0/lun0/part1`

NOTE

The /dev/hda and /dev/hda1 do not work for this Linux install.

- View these partitions with these commands: `cd`, `ls`, `cat`, and others. However, `vi` is not supplied. To see all the available commands, do an `ls /bin` and `ls /sbin`.

Upgrading the Yellow Dog Distribution

- Shut down this limited shell with the hardware reset button
- 4. The partitions or the disk cannot be upgraded from this shell automatically.

4.3 Menu

The menu now has a new entry, 4: Debian GNU/Linux 2.6.8 kernel. This is the default.

Old entry 4: Yellow Dog Linux, is now entry 5.

Old entry 5: boot to OF, is now entry 6.

5 Upgrading the Yellow Dog Distribution

This procedure upgrades the Yellow Dog Partition, /dev/hda6, with YDL4

NOTE

Partition /dev/hda6, the YDL partition, is erased, any data on it is lost, backup any data, via tar, and store it on another machine.

Be careful while following these directions, it is possible to completely repartition the hard drive removing the Debian partitions leaving only a YDL4 system. Then the procedure has to be started again at [Section 4, “Upgrading the Debian Distributions \(Available in November 2004\).”](#)

5.1 Upgrade

1. Boot into the firmware, that is, use menu item 6, boot to OF
2. Remove the Debian DVD
3. Insert the YDL4 CD

NOTE

The ISO file for this YDL4 CD is available at this location:

<http://www.terasoftsolutions.com/realworld/showcase/oem/freescale/>

Download the ISO file and burn a CD using the ISO to CD image option on the CD burning software.

The YDL4 install manual is also available at this web site.

4. At the ok prompt, type: `boot cd ydl-install root=/dev/ram0 ramdisk=22000 rw`

Once the YDL4 installer begins, answer the questions shown below.

5. Choose item 1, install YDL4
6. Enter the device address for the CD-ROM, which is /dev/hdc
7. Enter the device address for the hard drive, which is /dev/hda
8. Choose item 2, do not partition the hard drive
9. Type 6 only, for the partition desired, not /dev/hda6.
10. /dev/hdc and /dev/hda6 display, if this is correct, type `y` and the installation begins.
11. When complete, the installer waits for further input. It takes about 15 minutes.

NOTE

If the monitor screen goes blank during this operation, restore it by pressing the backspace key.

12. Remove the CD
13. Reboot by pressing the hardware reset button

If there are any failures during this installation, a hardware upgrade to the CPU card may be needed. Contact risc10@freescale.com.

5.2 Menu

After the upgrade is installed, the menu items have a new entry 6: Yellow Dog Linux 4 (2.6.8-1) and the old entry 6, is entry 7: return to OF prompt.

NOTE

The menu entry 5: Yellow Dog Linux 2.4 Kernel, should not be used, it starts YDL4 and hangs. It will mess up the configuration and YDL4 will have to be reinstalled.

The default is now 6: YDL 2.6.8-1 kernel.

6 Starting Debian

Debian can be started by choosing any of the menu items, 2, 3, or 4. The recommended item is 4: 2.6.8 kernel.

If the resolution is very low, then see Freescale application note AN2739, *Genesi Pegasos II Debian Linux* for information on how to fix the /etc/X11/XF86Config-4 file.

7 Starting Yellow Dog Linux 4 (YDL4)

7.1 Initial Start Up

Choose item 6: Yellow Dog Linux (2.6.8-1) to start YDL4.

NOTE

If a picture of a computer and monitor do not appear on the video display, menu item 5 has probably been selected and YDL4 will be corrupted.

YDL4 prompts the user for initial information before starting a normal login menu. Follow this series of steps for the initial set up.

1. The first screen is KUDZU the configuration manager.
 - If the message ‘hardware removed and the request to reconfigure your video adapter’ displays, respond with the center button, KEEP CONFIG.

NOTE

If the response is with a button other than KEEP CONFIG or DO NOTHING, the video will no longer work and YDL4 will have to be reinstalled. Or more simply just boot into the rescue disk, or boot into a shell, see [Section 7.9, “YDL4 Does not Boot.”](#) Or boot into Debian and mount /dev/hda6, then copy the backup file over the current file, cp /etc/X11/XF86Config.backup /etc/X11/XF86Config.

- The original installation expects a wireless keyboard and mouse. If a wired keyboard and mouse is in use, KUDZU asks that they be removed. Respond with the button REMOVE CONFIGURATION.
- If the message ‘hardware added and the request to configure a new video adapter’ appears, respond with the center button, IGNORE.

NOTE

If the response is with any button other than IGNORE or DO NOTHING, the video will no longer work and YDL4 will have to be reinstalled.

- If a wired keyboard and mouse are in use, they need to be configured, respond with the button, CONFIGURE.
 - Choose the correct keyboard selection. For the US, choose US keyboard, and press the tab key to highlight the ok button. Respond with the ok button.
 - KUDZU is now complete and booting will continue.
2. Follow the series of screens to set up YDL4.
 - Choose the language, the only choice is English, click next.
 - Look at the welcome screen and click next.
 - Choose yes for the license agreement and click next.
 - Choose the appropriate keyboard language, for the U.S. choose U.S. English and click next.
 - Choose the correct mouse type and click next. The highlighted choice is usually correct.
 - Type in a root password. It must be at least 8 characters, and click next. Freescale is the password used at Freescale, however, one appropriate to the site and usage.
 - Choose the network protocol and click next. Usually the choice is dhcp.
 - Choose to enable or disable a firewall. Typically, if on a network that already contains a firewall, chose to disable it, otherwise, leave it enabled. Choose, then click next.
 - Choose the time zone and click next.
 - Ensure the time is correct or set it and click next.
 - Choose the resolution and the color depth desired. Then click next. If there are only one or two low resolution choices and the monitor can handle more, then the video adapter may have been reconfigured during the KUDZU phase. If it was reconfigured, the video may not work and YDL4 may have to be reinstalled. Or boot into the rescue disk, or boot into a shell, see [Section 7.9, “YDL4 Does not Boot.”](#) Or boot into Debian and mount /dev/hda6, then copy the backup file over the current file, cp /etc/X11/XF86Config.backup /etc/X11/XF86Config.

- Create an initial user. Additional users may also be created when YDL4 is running. The guest account is created here with user name `guest` and password `guestguest`. Passwords must be at least 8 characters.
- Test the sound card. Sound may only come from the rear speaker connections. The front speakers are considered to be earphone connections and do not produce sound at this time. Therefore use the rear connection at this time. Choose ‘play test sound’ button. Click OK if some guitar music plays. See [Section 7.8, “Sound,”](#) for instructions on turning on the earphone connection.
- There are no additional CDs to install at this time, click next.
- Finish setup, click next.

7.2 Login Screen

The login screen now displays. Log in as root and create more users, or log in as guest.

For more information on YDL4, see AN2802, *Genesi Pegasos II Yellow Dog Linux 4*. AN2751, *Genesi Pegasos II Yellow Dog Linux* described a broken YDL3 and is now obsolete.

7.3 Printers

The print server and client are CUPS, Common Unix Printing System Architecture.

7.3.1 Installing a Printer

Open the Mozilla browser. In the browse window, type, <http://localhost:631>, then enter. The printer daemon uses port 631. Follow these instructions:

- Choose manage printers
- Look at available printers
- Choose add a printer
- Use root user and password
- Enter the name, location, and description (such as Cannon400-bw in room b2455)
- Enter device (for example, AppSocket/HP jetDirect)
- Choose the network protocol (for example, LaserJet Series cups v1.1)
- Specify device URI (for example, `socket://IP:9100`, where IP is a valid IP address, or `socket://10.82.119.224:9100`)
- Specify the driver (for example, Cannon400, HP 4SI/4SI MX driver or Raw Print Queue)

7.3.2 Other Operations with a Printer

Once the ‘manage a printer’ screen displays, choose to print a test page, delete a printer, or execute other tasks associated with printers.

7.3.3 Using a Printer

The `lp <file>` command sends a file to a printer.

The `lpstat -t` command displays the status of the printer.

`enscript` formats a file for fancy printing, such as more than one page per physical page, rotated page, and other things. As an example of printing, create a file with any editor and call it `test.prt`.

The `lp test.prt` command sends it to the printer.

`lp -d <printer name> test.prt` sends it to a specific printer instead of the default printer.

Creating and printing a post script file:

`man enscript | col -b > j` captures the man page for `enscript` and formats it for printing and stores the results in the file, `j`.

`enscript -c -2r -o out.ps J`, formats the man page for a post script file printing two pages per physical page, rotated.

`gv out.ps` is a utility to view post script files.

`lp out.ps` prints it to a post script file.

`lpstat -a` shows the status of the print job.

7.3.4 Using the Printer Icon

The printer icon starts a GUI printer configuration manager. It asks the same questions as the Mozilla browser for <http://localhost:631> in a different order.

7.3.5 Stopping, Starting, and Staturing a Printer

The CUPS facility is controlling the printer. To access the printer driver use the CUPS command `/etc/init.d/cups [status | start | stop]`

7.4 Setting up the Host Name

7.4.1 Manual Method

Modify the `etc/sysconfig/network` file for the host name desired.

```
[maurie@mr-blonde maurie]$ cat /etc/sysconfig/network
```

```
NETWORKING=yes
```

```
HOSTNAME=localhost.localdomain
```

7.4.2 GUI Method

Start the GUI network command with `menu|system settings| network`. Then enter the new hostname under the DNS tab location.

7.5 Creating New Users

7.5.1 Manual Method

Use a terminal window and set up a new user. Only the root user can create a new user.

```
adduser <name>
```

```
passwd <name>
```

For example:

```
adduser guest
```

```
passwd guest
```

Then the prompt asks for a password and then asks to confirm it.

7.5.2 GUI METHOD

Start the GUI user command with menu| system settings | Users and Groups. Then enter the data as requested.

7.6 USB stick

7.6.1 Manual Method

Plug the USB stick into the USB port on the front bottom of the machine. Then create a directory in '/' to mount it.

NOTE

Only root user can mount and unmount the USB stick.

Use these commands:

```
cd /
```

```
mkdir usbstick
```

```
mount /dev/sda1 /usbstick
```

Now the data on the USB stick can be accessed. Be sure and unmount it before it is removed, using the following command:

```
umount /usbstick
```

7.6.2 Automated Method.

Once this automated method is set up, then the manual method can still be used, however, only one of these two methods can be used at a time.

1. Edit /etc/fstab and add this line
`/dev/sda1 /mnt/usb vfat noauto,ro,users 0 0`
2. Create an icon for the desktop
 - Right click on the desktop
 - Choose add device

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- Choose harddisk ...,
 - select /dev/sda1 under the device tab
3. In the future, after inserting a USB stick, then double click on the USB icon

7.7 CD-ROM

7.7.1 Previously Written CD-ROM device

Just put the CD in the CD-ROM reader. It should automount.

If it does not automount, then use either of these two methods:

1. Type: `mount /dev/cdrom /mnt/cdrom`
2. Double left click on the CD-ROM icon on the desktop

Remove the CD-ROM in any of these three ways.

1. Type: `umount /mnt/cdrom`
2. Type: `eject /mnt/cdrom`—The advantage of this way is that it ejects the CD-ROM.
3. Right click the CD-ROM icon on the desktop and choose unmount.
4. Right click the CD-ROM icon on the desktop and choose actions|eject. The advantage of this way is that it ejects the CD-ROM.

7.7.2 Writing to a CD-R

7.7.2.1 Manual Method

Just put the blank CD-R in the CD-ROM writer. It automatically opens the CDWRITER window on the desktop or choose menu item sound and video | K3B. Using the menu|browse filesystem menu, navigate to the files to copy to the CD-R and drag and drop them into the CDWRITER window. Change the name of the CD label with this window. This copies files exactly as they are, directory structure included to the CD. The menu|write CD writes the CD.

This does not work for *.iso type files. The method above copies the *.iso file as a file to the CD, it does not create a CD image from the *.iso file.

To create a CD from a cd image *.iso file, ignore the CDWRITER window and issue this command

```
cdrecord -v -speed=0 -dev=/dev/hdc -d <name>.iso
```

where <name>.iso is the name of the iso file, such as ydl4-pegasos.iso

7.7.2.2 Project Method

Open a data project, then select tools, CD, then burn image.

7.7.3 Hotkeys

Several hotkeys are available after booting into the graphics windows.

1. Ctrl+Alt+Backspace kills the GDM window manager and starts the chooser. If this does not work, then use the menu|system settings|keyboard and select US keyboard. Then hotkeys will work. Alternatively, just use the menu|logout to return to the chooser. Then from the chooser, start any user.
2. Ctrl+Alt+<F3> (and several others) changes to a text window
3. Ctrl+Alt+<F7> changes to the graphics window
4. Ctrl+Alt+<+> changes the resolution
5. Ctrl+Alt+<-> also changes the resolution

7.7.4 Add Menu Bar Icons

Log in as a user. To add a terminal window icon, right click on the menu bar, just the bar, not the menu icon. Then use the resulting menu as add to panel|launch from menu|system tools|terminal. Then just click on the terminal icon.

7.8 Sound

The rear speaker is enabled by default, the front earphone connection is not enabled. To enable it, choose menu|sound and video|Kmix. This starts a sound mixer board graphic. Turn the headphone volume switch up to enable it. The other slide switches may be adjusted as well. When enabled, quit this application and the settings will remain.

To test sound or turn on/off alerts and bells chose menu|control center|sound and multimedia. The application starts and alerts, bells, and other sound features are available for selection.

7.9 YDL4 Does not Boot

If Yellow Dog Linux hangs during boot whether or not it had trouble opening the partition, it may say something about having 5 seconds to repair the partition, the partition may be corrupted.

7.9.1 Using YDL4.

There are several ways to gain control in YDL4 after this error.

1. Reboot into Yellow Dog Linux and accept the repair the partition message which may fail or may still hang on reboot.
2. If the system is not hung, the shell may be accessed by typing the root password if requested.
3. Boot the YDL4 rescue CD option 2 and try to fsck the partition, `fsck /dev/hda6`.
4. Boot YDL4 from the hard drive in rescue shell. From the Open Firmware ok prompt, type: `boot ide:5 boot/2.6.8.ydl-freescale init=/bin/sh root=/dev/hda6`
Run the `fsck /dev/hda6` command.

7.9.2 Using Debian

If it still fails to boot, then try booting into Debian and use the `fsck` command to fix the partition:

```
fsck /dev/hda6
```

7.9.3 If YDL still Fails

If YDL4 still fails to boot successfully after all these attempts, then the disk is so corrupted it will have to be rebuilt. Save all data by booting into YDL4 or Debian as shown above, tar up the data and save it on the Debian partition or ftp it to some other machine. Then start at Section 5 and reinstall YDL4.

7.10 FTP and Telnet Daemon Packages

These packages can be downloaded from the YDL web site. RPMs have the form, name.packageNumber.rpm. Once obtained they can be queried with the command `rpm -q -l name.packageNumber.rpm` and installed with the command `rpm -i name.packageNumber.rpm`.

7.10.1 FTP Daemon

The FTP daemon is called vsftpd.

1. Download the vsftpd RPM from YDL4 site
2. Install it with this command:
`rpm -i vsftpd-<packageNumber>.rpm`
3. Start it with this command:
`service vsftpd start`
4. Verify its status with this command:
`service vsftpd status`

Look at all services with either this command `service --status-all` or use a GUI that is started from this path: menu | system settings | server | services.

7.10.2 Telnet Daemon

Using Telnet is not recommended, instead use ssh, secure shell.

1. The Telnet daemon is called telnet-services
2. Download the telnet-services from the YDL4 site.
3. Install it with this command
`rpm -i telnet-services.<packageNumber>.rpm`
4. Enable it by editing the `/etc/xinetd.d/telnet` text file
change the 'Disable yes' line to 'Disable no'

8 References

The following Freescale documents are referenced in this application note:

- AN2739, *Genesi Pegasos II Debian Linux*
- AN2802, *Genesi Pegasos II Yellow Dog Linux 4*
- AN2751, *Genesi Pegasos II Yellow Dog Linux*

For assistance or answers to any question on the information that is presented in this document, send an e-mail to risc10@freescale.com.

9 Document Revision History

Table 1 provides a revision history for this application note.

Table 1. Document Revision History

Revision	Date	Substantive Change(s)
0	10/19/2004	Initial release.

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