

Dreamplug - Change OS from Debian to Ubuntu

V 0.1

I. Introduction

DreamPlug is a powerful, low-cost development platform, which is based on Marvell high-performance, highly integrated controller 88F6281. The DreamPlug internal micro SD card for boot-up has two partitions - one is a DOS file system(fat16) where the kernel image is stored, the other partition is Linux file system(ext3) with a root file system. The default file system of DreamPlug is Debian5.0. This document provides the procedure to set up a new file system - Ubuntu 9.04 for the DreamPlug to take the place of the pre-installed Debian5.0.

II. Prerequisites

NOTE: We recommend that only experienced Linux programmers should undertake this project, and done at their own risk, as any changes from the original factory settings will invalidate the warranty.

The prerequisites for set-up a new file system on DreamPlug are mentioned below:

1. Linux Host or Windows PC with GParted installed.
2. Globalscale External JTAG Board for access to the DreamPlug console.
3. 2GB or above USB storage disk, used for another boot-up device.
4. Ubuntu file system for DreamPlug is: "dreamplug_ubuntu_v0.1.tar.gz". Ubuntu files are available at the following websites:

<http://www.globalscaletechnologies.com/t-downloads.aspx>

<http://code.google.com/p/dreamplug/downloads/list>

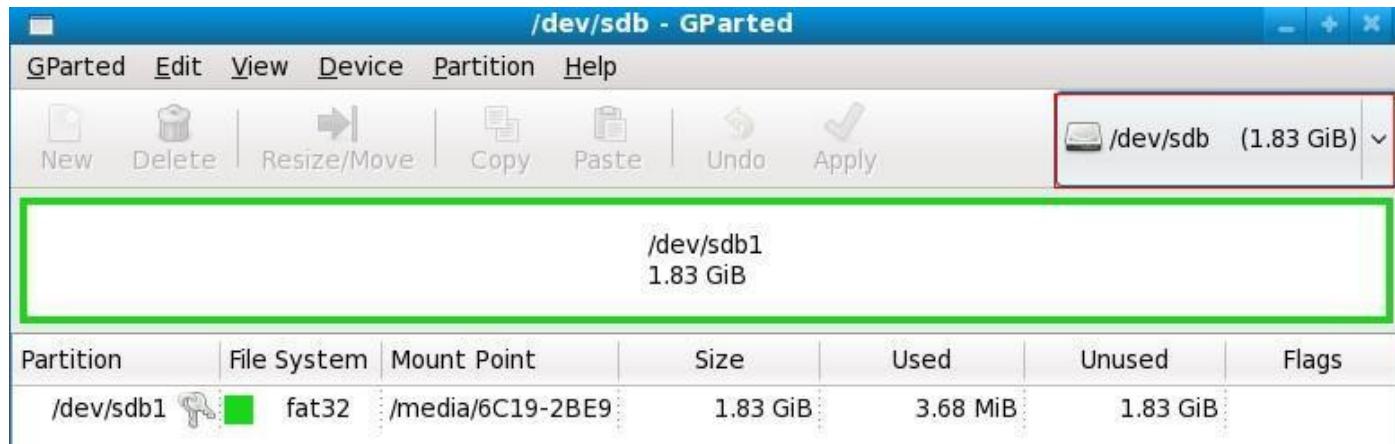
III. Procedure

1. Use GParted to create an ext3 file system in the USB stick

- 1.1 Connect the USB storage disk to the Linux Host and launch the GParted Partition Editor. If the GParted is not installed, please issue the following command in your Host (assumed the network is connected) for auto-installation.

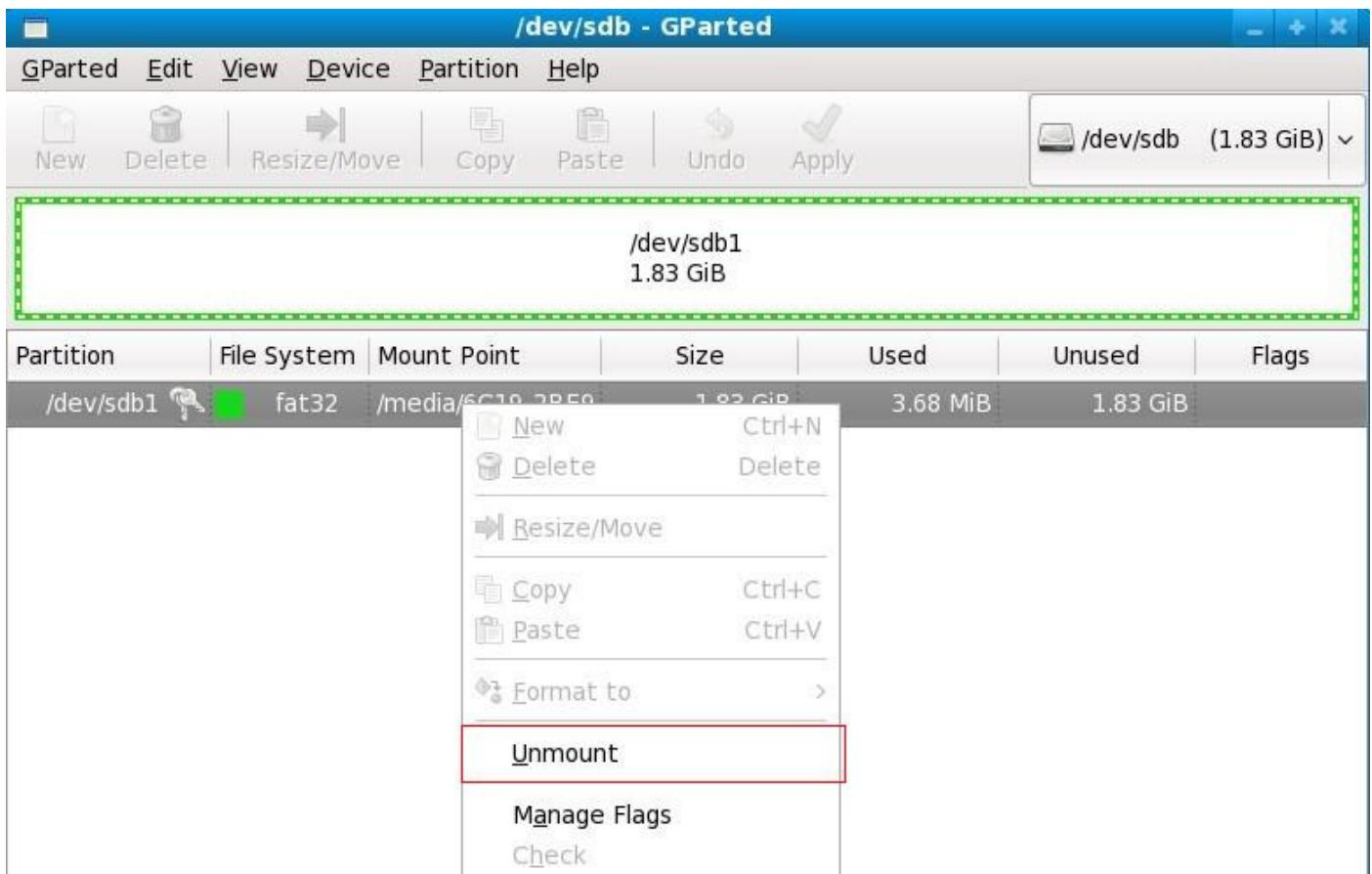
```
#yum -y install gparted
```

- 1.2 Select the USB stick in GParted. Make sure which device is the USB stick.

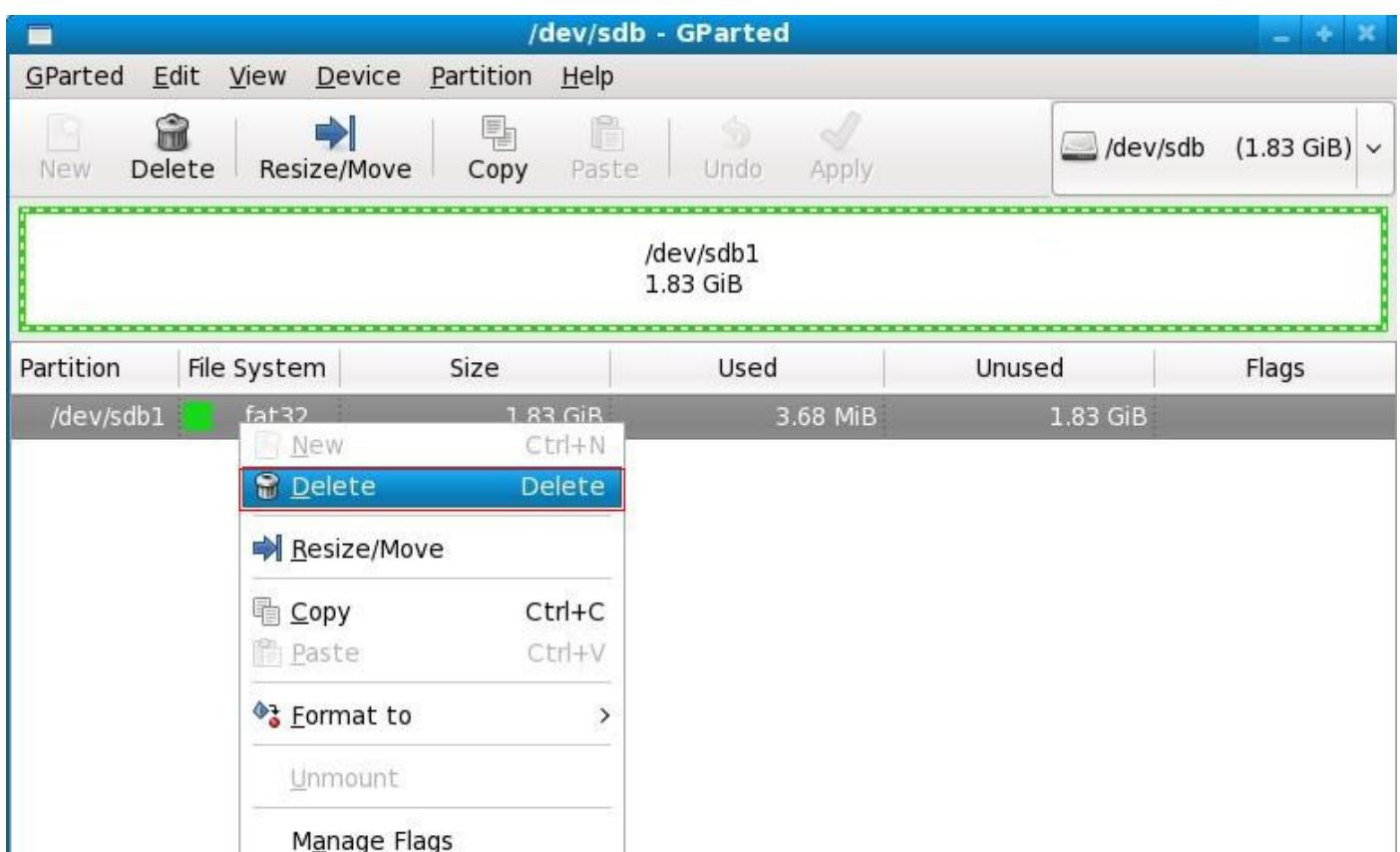


Here let's assume the USB stick is detected as /dev/sdb by the Host.

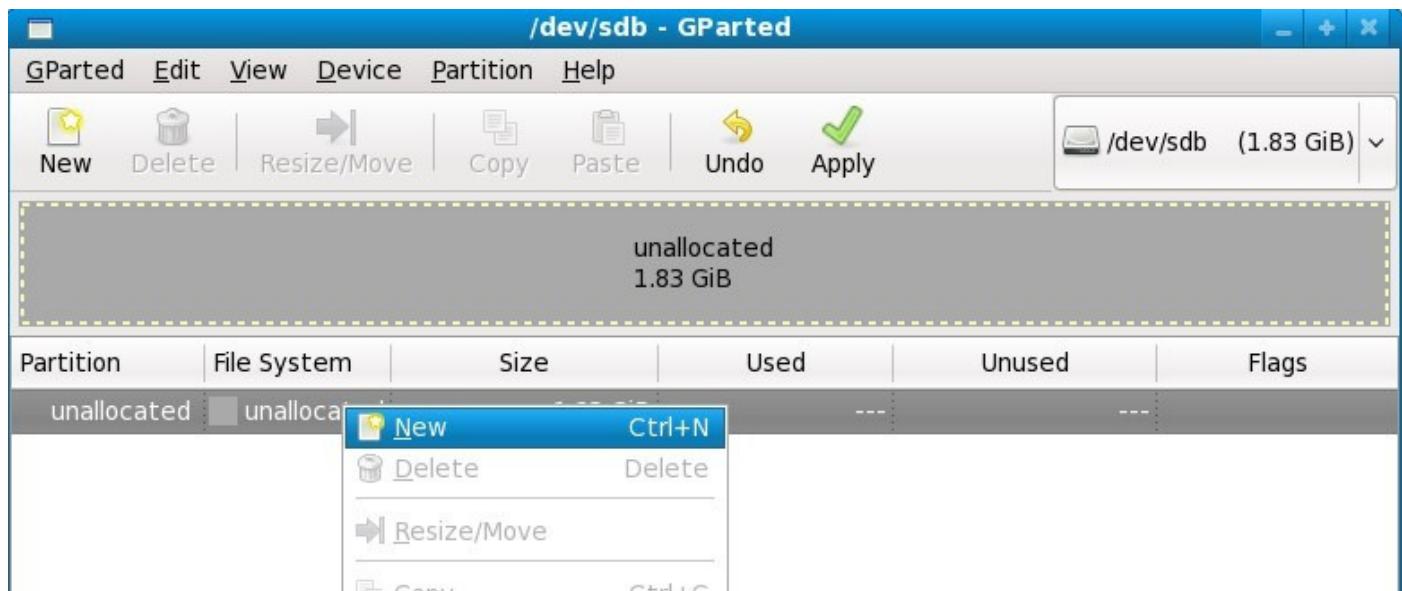
1.3 Unmount all partitions in the USB stick



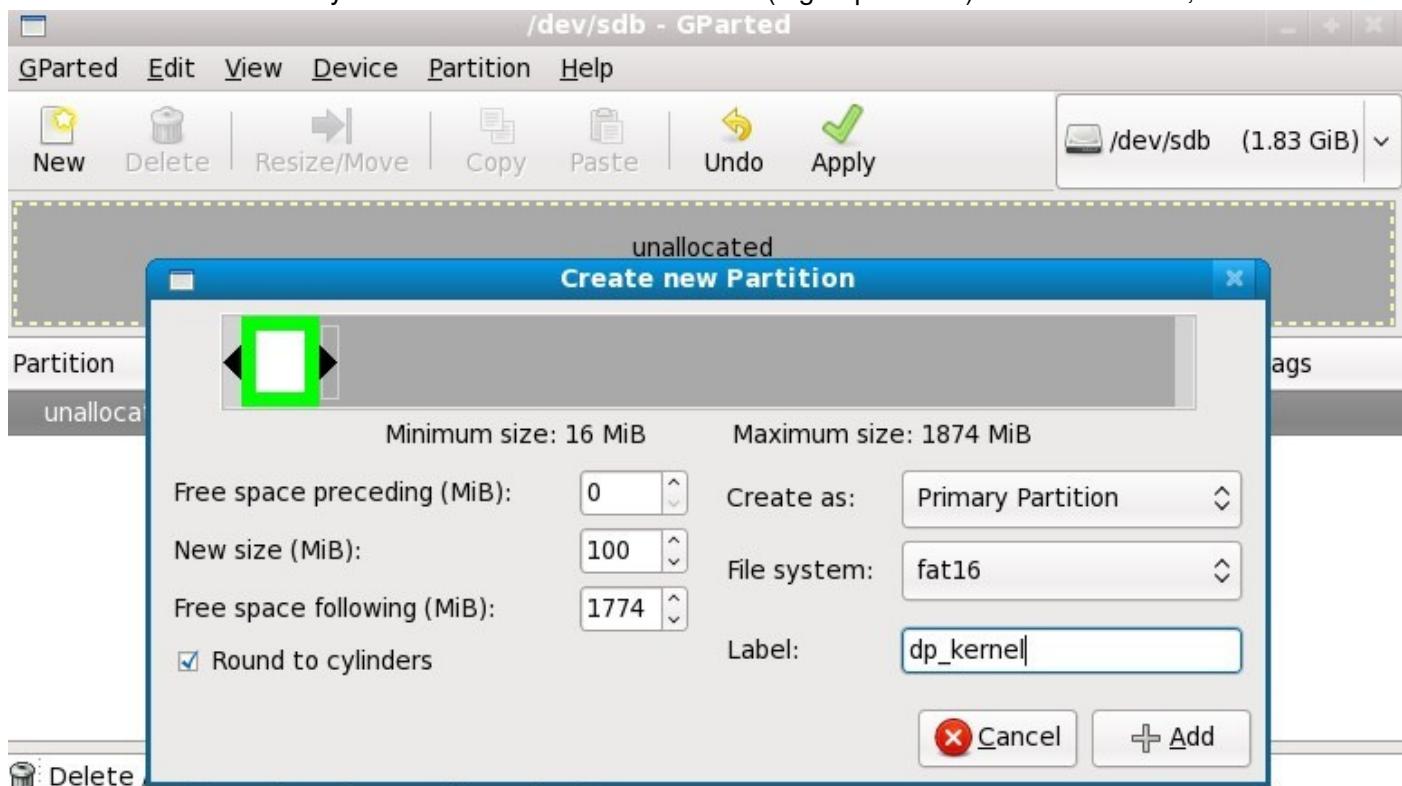
1.4 Delete all partitions in the USB stick. Note: when this behavior is applied, all data in the USB stick will be lost.



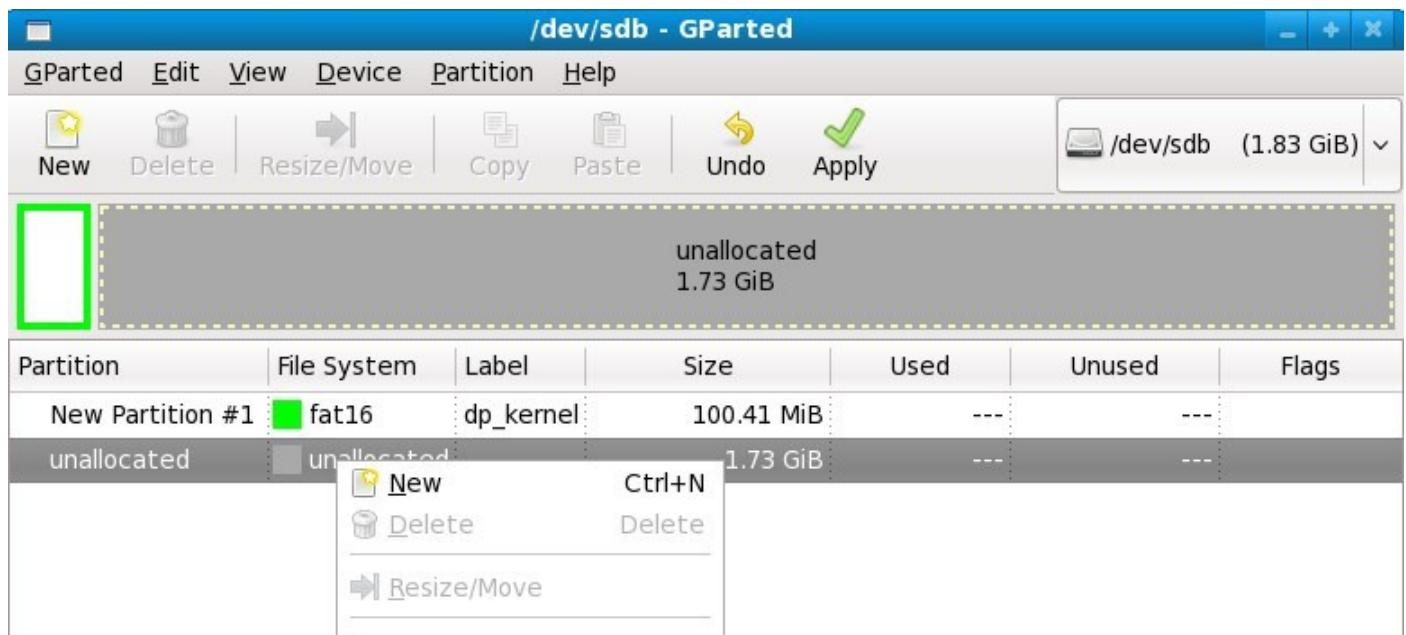
1.5 Create a new Fat16 file system in the USB stick.



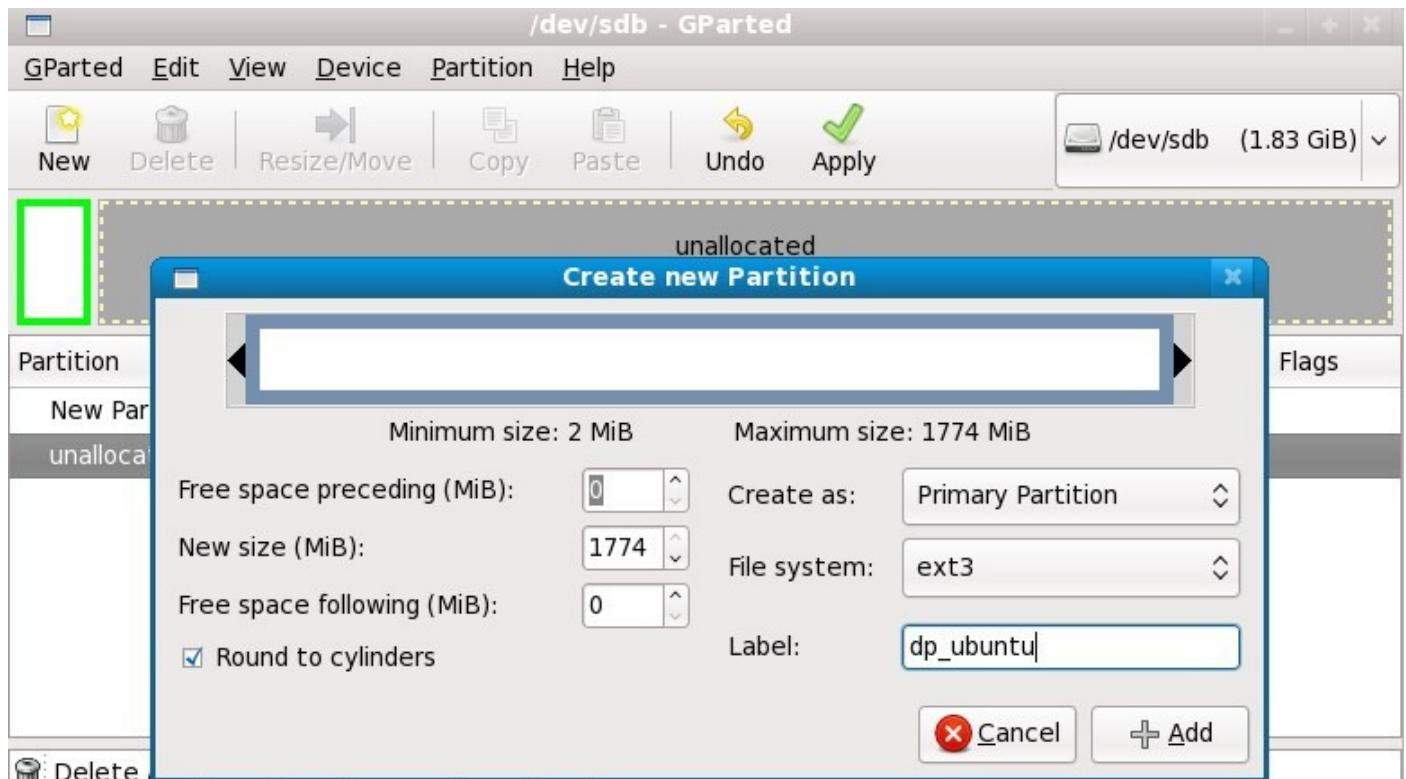
Select "fat16" in the File System field and enter a label name (e.g. "dp-kernel") in the Label field, then click "Add":



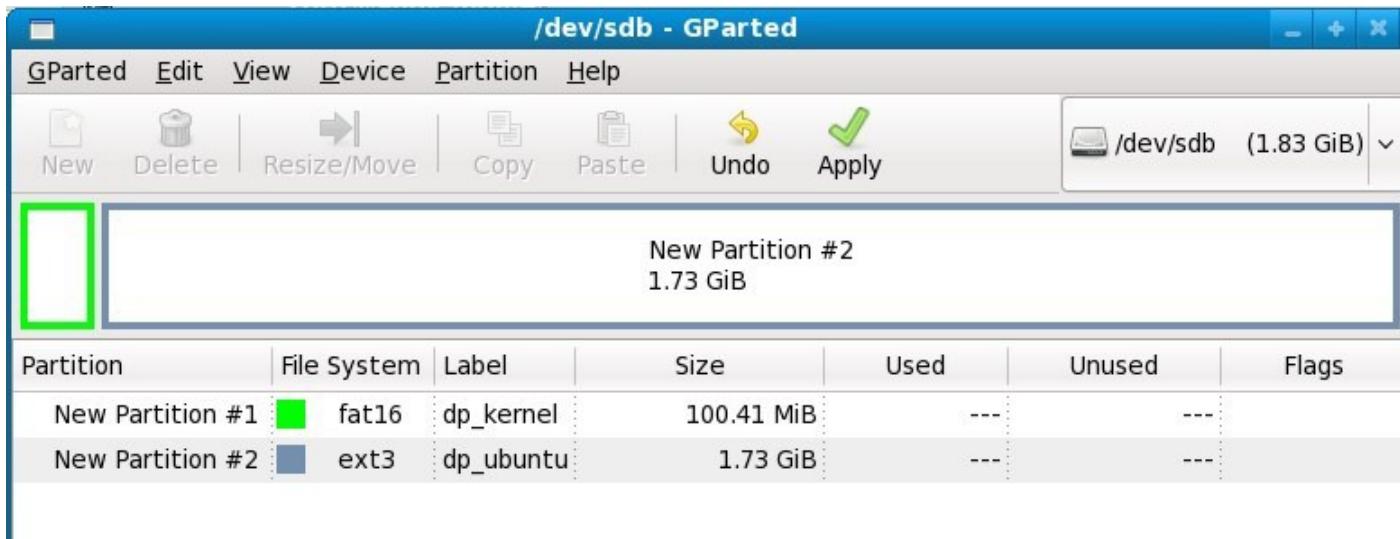
1.6 Create a new ext3 file system in the USB stick.



Select “ext3” in the File System field and enter a label name (e.g. “dp-ubuntu”) in the Label field, then click “Add”:



1.7 To apply the operation to the USB stick, please click the :



When the above steps are correctly performed, the USB stick is ready to be used for Ubuntu file system.

1 Untar and copy the dreamplug_ubuntu_v0.1.tar.gz and ulimage to this newly prepared USB stick.

1.1 Plug the USB stick to the Host and execute the following command as root user in the Host Terminal.

The example here shows the v8r2ubuntu.tar.gz and ulimage has been downloaded to /home folder in the Host, and the USB stick is mounted to /media/dp_ubuntu and /media/dp_kernel in the Host also.

```
# cd /media/dp_ubuntu
# tar -xvf /home/dreamplug_ubuntu_v0.1.tar.gz
...
# cp -af /home/dreamplug_ubuntu_v0.1.tar.gz  home/
...(we will untar this tar file to the internal boot uSD in DreamPlug later)
#cp -af /home/ulimage /home
# cd ../
# sync
# umount /media/dp_ubuntu
#cp -af /home/ulimage /media/dp_kernel
```

Now, the USB stick with ubuntu file system is ready for the boot up device of DreamPlug.

2 Boot-up the DreamPlug from the debian USB stick.

2.1 Connect one end of the External JTAG Box to the DreamPlug via 4-pin UART cable, the other end to Windows PC via USB cable.

Insert the USB stick with Ubuntu file system to the Dreamplug then launch a terminal program such as Putty /Tera Term and Winscp in PC and access to the system console of DreamPlug through SSH protocol.

Regarding the driver and setup of “GlobalScale External JTAG Board” for Windows PC, please refer to the following website:

http://plugcomputer.org/plugwiki/index.php/Serial_terminal

<http://www.ftdichip.com/Drivers/VCP.htm>

- 2.2 Power on the DreamPlug, you will see the boot-up messages on the console. Then stop the auto boot by pressing any key.
- 2.3 Change the UBoot parameters to boot from the USB stick.

In the UBoot prompt, type the following command to set the UBoot variables:

```
Marvell>>setenv x_bootargs_root root=/dev/sdc2 rootdelay=10
Marvell>>setenv x_bootcmd_kernel fatload usb 2 0x6400000 uImage
Marvell>>saveenv
```

Note: you can enter “printenv” to make sure the setting environment is correct before saving it.

```
bootcmd=setenv ethact egiga0; ${x_bootcmd_ether}; setenv ethact egiga1; ${x_b
ootcmd_ether}; ${x_bootcmd_usb}; ${x_bootcmd_kernel}; setenv bootargs ${x_bo
otargs} ${x_bootargs_root}; bootm 0x6400000;
bootdelay=3
baudrate=115200
x_bootcmd_ether=ping 192.168.2.1
x_bootcmd_usb=start
x_bootcmd_kernel=fatload usb 0 0x6400000 uImage
x_bootargs=console=ttyS0,115200
ethaddr=02:50:43:97:5f:25
ethact=egiga0
eth1addr=02:50:43:51:e7:35
x_bootargs_root=root=/dev/sda2 rootdelay=10
stdin=serial
stdout=serial
stderr=serial

Environment size: 524/4092 bytes
Marvell>> setenv x_bootargs_root root=/dev/sdc2 rootdelay=10
Marvell>> setenv x_bootcmd_kernel fatload usb 2 0x6400000 uImage
Marvell>> saveenv
Saving Environment to SPI Flash...
Erasing SPI flash...Writing to SPI flash...done
Marvell>>
```

Usually, the external USB stick is always recognized as /dev/sdc1 and /dev/sdc2, while the internal boot uSD card is /dev/sda1 and /dev/sda2.

- 2.4 Reset the DreamPlug, so it should boot up from the external USB stick with Ubuntu system. Login to the DreamPlug as “root” user with password “nosoup4u”.

3 Transplant the ubuntu file system to the internal uSD card.

- 3.1 Delete the two partitions of u-SD card (/dev/sda1 and /dev/sda2) to the system which now is boot-up from the external USB stick, so it can be prepared for read and write.

In other words, delete the two partitions and create two partitions again.

Unmount all partitions in the USB stick:

```
#umount /dev/sda1
#umount /dev/sda2
```

Delete all partitions in the USB stick. Then create a new fat16 and ext3 file system in the USB stick.

```

root@ubuntu:~# fdisk /dev/sda

Command (m for help): d
Partition number (1-4): 2

Command (m for help): d
Selected partition 1

Command (m for help): n
Command action
  e   extended
  p   primary partition (1-4)
p
Partition number (1-4): 1
First cylinder (1-239, default 1): 1
Last cylinder, +cylinders or +size(K,M,G) (1-239, default 239): +100M

Command (m for help): t
Selected partition 1
Hex code (type L to list codes): 6
Changed system type of partition 1 to 6 (FAT16)

Command (m for help): n
Command action
  e   extended
  p   primary partition (1-4)
p
Partition number (1-4): 2
First cylinder (15-239, default 15): 15
Last cylinder, +cylinders or +size(K,M,G) (15-239, default 239): 239

Command (m for help): t
Partition number (1-4): 2
Hex code (type L to list codes): 83

Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.

```

Format the two partitions of u-SD card:

```
#mkfs.msdos /dev/sda1
#mkfs.ext3 /dev/sda2
```

3.2 Copy the ulimage to the /dev/sda1 and extract the dreamplug_ubuntu_v0.1.tar.gz to the /dev/sda2 by running:

```
# mount /dev/sda1 /mnt
#cp /home/ulimage /mnt
#sync
#umount /mnt/
#mount /dev/sda2 /mnt
#cd /mnt
#tar -zxf /home/dreamplug_ubuntu_v0.1.tar.gz
```

3.3 While the untar is done, unmount the /dev/sda2 safely.

```
./var/cache/man/de/index.db
./var/cache/man/sv/
./var/cache/man/sv/index.db
./var/cache/man/local/
./var/cache/man/tr/
./var/cache/man/tr/index.db
./var/cache/man/cat2/
./var/cache/man/pl.UTF-8/
./var/cache/man/pl.UTF-8/index.db
./var/cache/lighttpd/
./var/cache/lighttpd/uploads/
./var/cache/lighttpd/compress/
./var/cache/samba/
./var/cache/samba/browse.dat
./var/cache/samba/printing/
./var/cache/samba/printing/printers.tdb
guruplug-debian:/mnt# cd ..
guruplug-debian:/# sync
guruplug-debian:/# umount /mnt/
```

Now, the ubuntu file system has been loaded into the internal uSD, reboot the DreamPlug again with USB stick still in place.

4 Change the UBoot parameters in order to boot the DreamPlug from the internal uSD, steps are as follows:

- 4.1 Stop the auto boot in the DreamPlug console, type the following commands in the UBoot prompt:

```
Marvell>>setenv x_bootargs_root root=/dev/sda2 rootdelay=10
Marvell>>setenv x_bootcmd_kernel fatload usb 0 0x6400000 uImage
Marvell>>saveenv
Marvell>>reset
```

```
bootcmd=setenv ethact egigaU; ${x_bootcmd_ether}; setenv ethact egigai; ${x_bootcmd_ether}; ${x_bootcmd_usb}; ${x_bootcmd_kernel}; setenv bootargs ${x_bootargs} ${x_bootargs_root}; bootm 0x6400000;
bootdelay=3
baudrate=115200
x_bootcmd_ether=ping 192.168.2.1
x_bootcmd_usb=usb start
x_bootargs=console=ttyS0,115200
ethaddr=02:50:43:97:5f:25
ethact=egiga0
eth1addr=02:50:43:51:e7:35
x_bootargs_root=root=/dev/sdc2 rootdelay=10
x_bootcmd_kernel=fatload usb 2 0x6400000 uImage
stdin=serial
stdout=serial
stderr=serial

Environment size: 524/4092 bytes
Marvell>> setenv x_bootargs_root root=/dev/sda2 rootdelay=10
Marvell>> setenv x_bootcmd_kernel fatload usb 0 0x6400000 uImage
Marvell>> saveenv
Saving Environment to SPI Flash...
Erasing SPI flash...Writing to SPI flash...done
Marvell>>
```

Remove the external USB stick and reset the DreamPlug. Now the DreamPlug should boot up with a fresh ubuntu file system in the internal uSD.