Marvell® PXA510 D2Plug

Quick Start Guide

Doc. No. MV-S400358-00 Rev. -

October 10, 2011

Document Classification: Public

Document Conventions

	**Note:** Provides related information or information of special importance.
	**Caution:** Indicates potential damage to hardware or software, or loss of data.
	**Warning:** Indicates a risk of personal injury.

Document Status

Doc Status: Preliminary	Technical Publication: 0.1

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1 Introduction

This Quick Start Guide for Marvell® PXA510 Developer Kit (D2Plug DevKit) is a handy reference for developers to get familiar with the DevKit contents, D2Plug functionality, and available resources. This information will help jump-start evaluation and development activities.

1.1 D2Plug Packaging and Components

The D2Plug is shipped in an environmentally friendly package with two compartments as shown in Figure 1.

Figure 1: D2Plug Package

The top compartment contains the D2Plug unit with the AC/DC adapter attached. The bottom compartment contains the power interface cables and adapters, interface cables for HDMI, USB, and Ethernet, and protective plastic covers for use when the AC/DC adapter is separated.

Check the contents as shown in Figure 2. Note that the AC/DC adapter is attached to the D2Plug Main Unit when shipped.

Figure 2: Contents of the D2Plug DevKit

To separate the AC/DC adapter from the D2Plug Main unit, push the unit sideways, as shown in Figure 3. To connect them together, point the printed arrows to each other for proper configuration.

Figure 3: Separating the AC/DC Adapter

When separated, attaching the face plates to each of the separated units is recommended. The printed arrows refer to the direction in which the Main Unit or the AC/DC adapter is to be moved, not the cover.

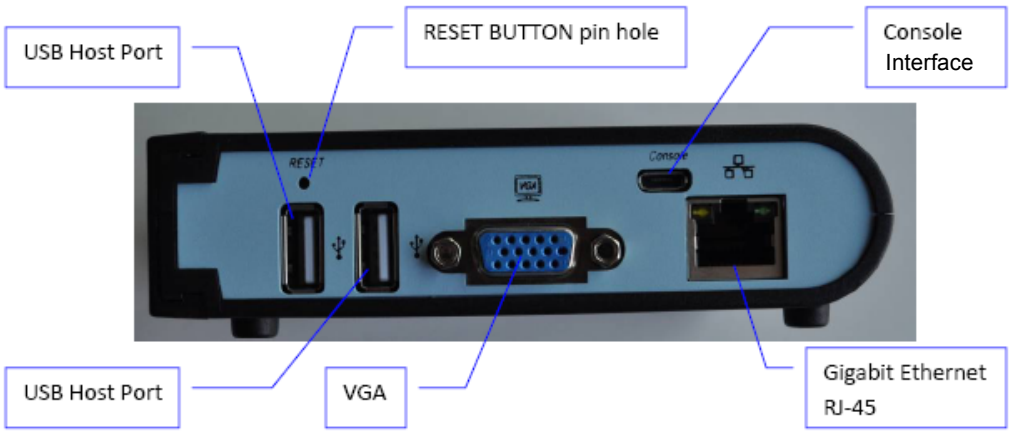
Figure 4: Inserting Protective Cover Plates

1.2 D2Plug Interfaces

Except for power, all the interfaces are located on the sides of the Main Unit, as shown in Figure 5 and Figure 6.

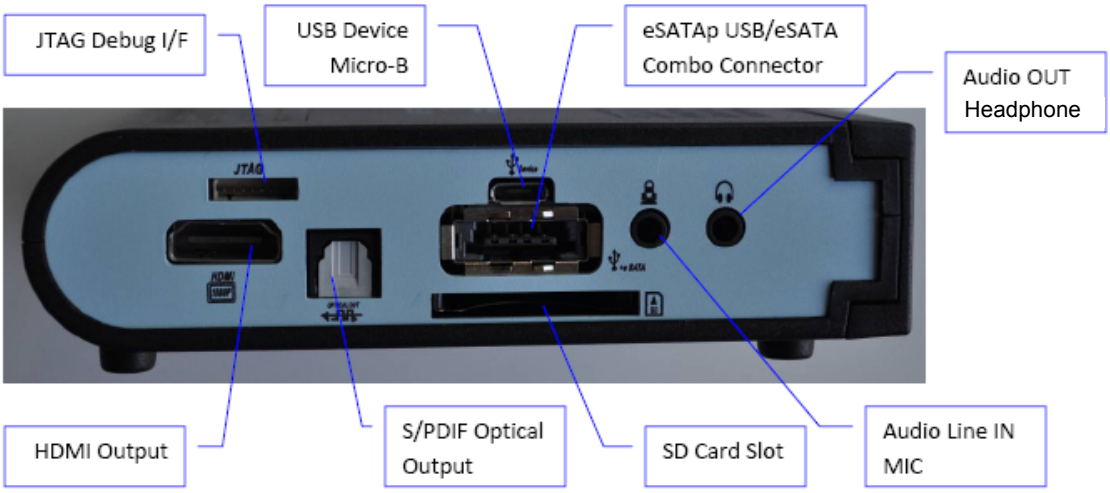
The left-hand side plate has two USB Type-A Host connectors, 15-pin Type-D Connector for VGA output, an RJ-45 Connector with dual LED, and a micro-B USB Device Connector for console interface. The console interface connects to the UART port of the PXA510 SoC through an internal USB to UART device (Prolific PL2303 from www.prolific.com.tw).

Figure 5: Connectors on Left-Hand Side



The right-hand side plate has an HDMI Output connector, eSATAp Combination Connector with USB Host and External SATA interface with 5V Power, Micro-B USB Device Port Connector, a custom connector for JTAG Debug interface, full SD Card slot, and a set of connectors for Audio IN and OUT along with an Optical Audio Output for S/SPIF.

Figure 6: Connectors on the Right-Hand Side



1.3 Options for Power Consumption

D2Plug DevKit offers multiple configurations to connect AC main power to the adaptor. The AC/DC adapter supports interchangeable AC power interfaces. Two interfaces are provided in the DevKit: a US AC plug and an AC cable socket. An AC power cable with US plug is provided for those wanting to keep the AC/DC adapter away from the power socket.

Figure 7: AC Cable Adapter with AC Power Cable

Figure 7 shows the AC/DC adapter attached to the Main Body with AC power cable socket and AC cable connection.

Figure 8: AC Plug

Figure 8 shows the AC/DC adapter attached to the main body, with a power plug. A plug for US power outlet is shown in Figure 8. Similar connections to the AC power can be made with the AC/DC adapter separated from the main body as shown in Figure 9 and Figure 10.

Figure 9: AC Cable Adapter with AC Power Cable in Separated Configuration

Figure 10: AC Plug in Separated Configuration

When connecting the AC/DC adapter in the separated configuration with the Main Unit using the provided DC-DC cable, note that the plugs are different for each end. The thicker plug end goes to the Main Unit.

1.4 Typical System Connection

Recommended typical connections to become familiar with for the D2Plug Dev Kit are shown in Figure 11. The power can be connected with any of the following connection configurations:

- Ethernet to the router for network interface
- HDMI to TV (HDTV with full HD support - 1080p)
- Console interface with USB cable to a host computer (or USB keyboard and USB mouse connected to the USB ports on the left-hand side)

Developers should become familiar with the console interface as access to U-Boot is available only through that connection. The console interface also indicates the boot sequence progress as it requires a couple of minutes before images display on the HDTV.

Figure 11: Typical System Connection

1.5 Recommended Software and Drivers for Windows PC Host

For interacting with the D2Plug for Windows PC hosts, the following items are suggested for installation (note: Links provided as a reference only):

- Terminal emulator: Tera Term Pro ver. 2.3 for Windows 95/NT (http://hp.vector.co.jp/authors/VA002416/teraterm.html)
- PL-2308 USB to Serial Bridge (H, HX, X) Installshield Driver Setup Program (http://www.prolific.com.tw/eng/downloads.asp?ID=31) (download_v1417.zip)
- Telnet and SSH client: PuTTY (http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html)
- SCP Client: WinSCP 4.3.5 (http://winscp.net/eng/download.php#download2)

2 Interactions

To get the interactions started with the D2Plug, familiarize yourself with both console and GUI. This portion of the Quick Start Guide provides an overview of such interactions.

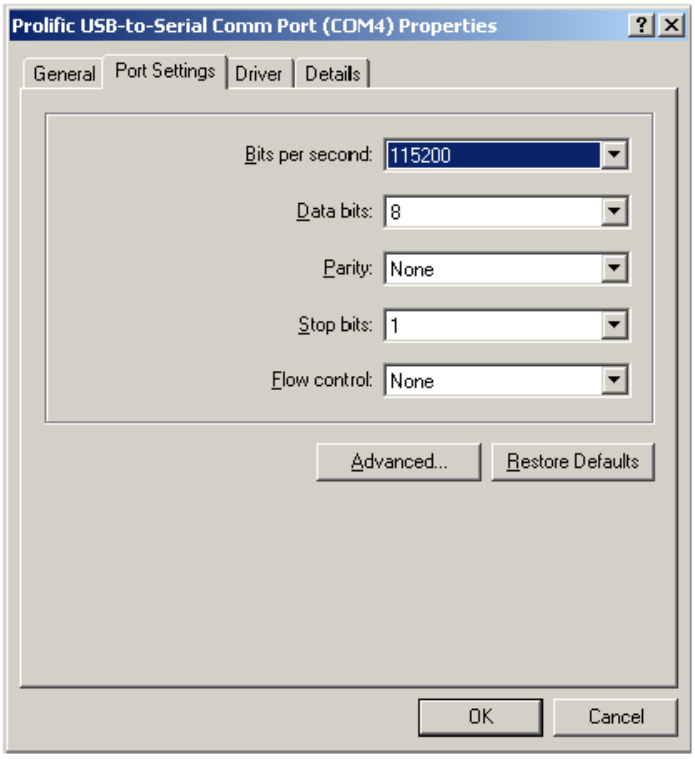
2.1 Console

1. Connect Windows PC host to the USB “Console” micro-B Connector using provided cable. The host PC will indicate “new hardware”, even when D2Plug is not powered.
2. Install PL2303 driver and it will recognize the USB to UART converter. Under Device Manager -->Ports (COMM and LPT), users will see “Prolific USB-to-Serial Comm Port (COMn), where n=assigned COM port

   a) Open “Properties” for the said device (right click-->Properties)

   b) Under the “Port Settings” tab, set the value to match.

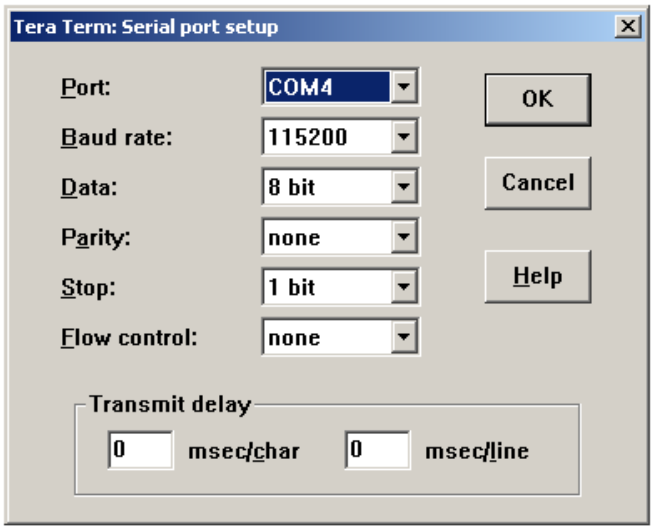
Figure 12: Properties of Prolific USB to Serial Comm Port



To change the COM port setting, click on the “Advanced” button and select the COM port number.

3. Install Tera Term and configure it for the serial interface and set it to the serial port. Choose to connect to the serial port. Under Setup-->Serial Port...enter the appropriate values as shown in Figure 13 and click on “OK.”

Figure 13: Tera Term: Serial Port Setup



Note

Some PCs may require 5 ms/character and 20 ms/line setting

4. Connect the Ethernet cable (provided) to Switch or Router with WAN access to the internet.
5. Power up the D2Plug. The Tera Term console window will display output. Do not press any key at this time as the unit will stop at the U-Boot prompt.
6. After several minutes, the log-in prompt displays. Enter the log-in credentials:
   a) User name: ubuntu
   b) Password: marvell

Note

The same credentials are used for log-in for the GUI. For ubuntu “sudo” (super user) access, use the same password.

```
Issue command:
> ifconfig
```

Ensure that eth0 is bound to the network port and it has matching Ethernet MAC address as shown on the back of the D2Plug.

If the unit is bound to a different port, remove the 70-persistent-net.rules files with the command:

```
> sudo rm /etc/udev/rules.d/70-persistent-net.rules
```

```
> sudo reboot
```

The system reboots with eth0 bound to the network port.

7. For first time use, run the following command:

```
> sudo apt-get update
```

To support console access over the network, install the openssh-server application with the command:

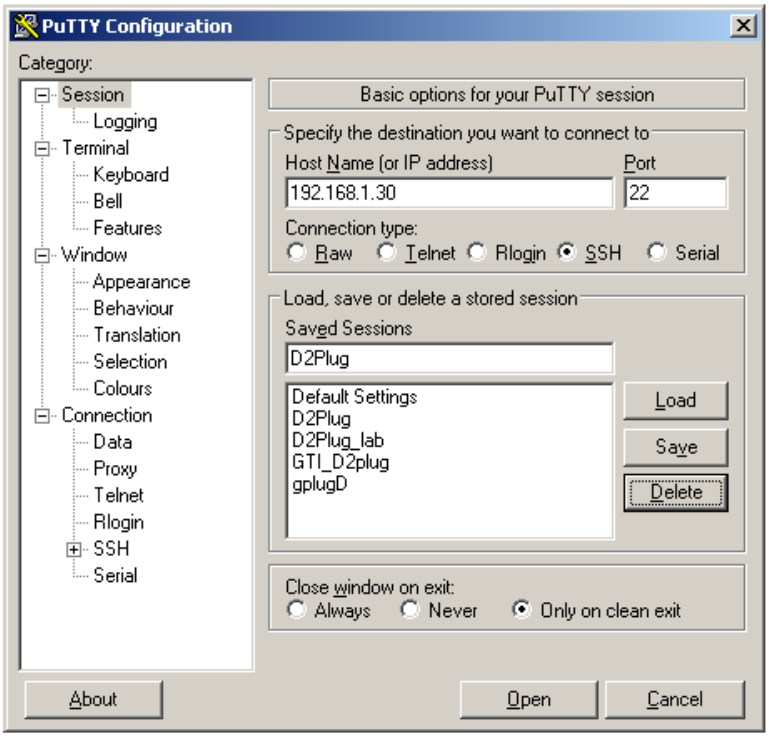
```
> sudo apt-get install openssh-server
```

Use the PuTTY application on the host PC that is connected to the same LAN to access it.

Figure 14: Putty Installation Security Warning Screen

In Figure 14, click on “Run” to continue, and set the IP ddress of D2Plug for a configuration shown in Figure 15:

Figure 15: PuTTY Configuration



2.2 Desktop GUI

Connect a USB keyboard and USB mouse to access the GUI.

Connect HDMI with the provided cable to an HDTV (full 1080p) or monitor to see the log-in prompt. Use the credentials (u: ubuntu, p: marvell) to view the Ubuntu desktop (Lucid Netbook) shown in Figure 16.

Figure 16: Ubuntu Desktop

Open Terminal application for using console command interface as described previously.

When an application is opened, it occupies the entire screen. Use Alt+F5 to change from full screen view to window view.

Open the files and folders to explore the directory structure of the 8GB storage on the Flash device.

2.2.1 Transferring Files from the PC

Files can be transferred to the D2Plug from the PC in several ways.

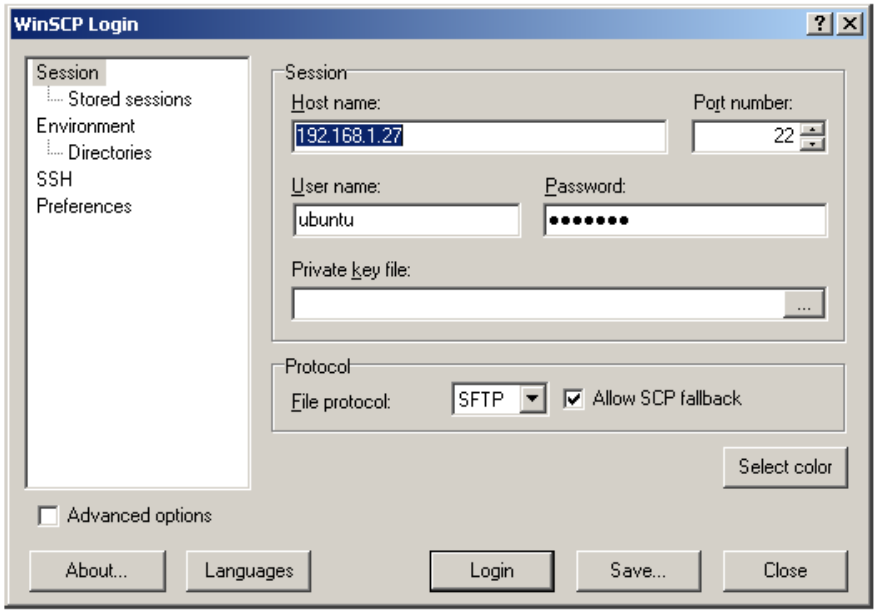
/mount directory shows all the volumes that are mounted. /mount/xxx_krnl (where xxx = internal Flash device type, microSD, or eMMC) contains the linux image.

Files can be transferred by connecting removable media (USB Flash drive, USB HDD, SD/microSD card, etc.)

When mounted, removable media is mounted automatically under the /media directory.

Use WinSCP to transfer files from the PC Host connected over the network. After launching it, set up the configuration similar to that shown in Figure 17.

Figure 17: Configuration Setup



Host Name: D2Plug IP Address

User Name: ubuntu

Password: marvell

Navigation between Host PC and the D2Plug directory is easy once set up.

Suggested directory for adding content to the D2Plug: /usr/ubuntu

2.3 Wi-Fi Driver

The D2Plug may not have a Wi-Fi driver loaded. It is available at: http://www.plugcomputer.org/downloads/d2plug/ as a Debian package.

The package can be downloaded to (create ~/packages directory, if required):

usr/ubuntu/packages

Assuming that the package name is “d2plug-wifi-bt.deb” use the following command sequence:

```
>cd /usr/ubuntu/packages
>sudo dpkg -i d2plug-wifi-bt.deb
```

2.4 Adobe Flash Support

An optimized Flash player binary is available for evaluation from Marvell’s extranet site. Register at https://extranet.marvell.com/login/sign_up.do

Upon registration, the binary is available on the Marvell extranet at:

My Products>Cellular & Handheld Solutions>Applications Processors>ARMADA 510 (Dove)> Software>D2Plug Debian Packages.

Marvell Semiconductor, Inc.
5488 Marvell Lane
Santa Clara, CA 95054, USA

Tel: 1.408.222.2500
Fax: 1.408.752.9028

www.marvell.com

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