Future Technology Devices International Ltd.

Technical Note TN_106

Adding Custom VID and PID Codes to 2.6.x Linux Kernels

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This FTDI technical note gives details on how to configure the FTDI Virtual COM port driver on Linux to handle customized Vendor and Product IDs with Linux 2.6.x

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1 Introduction

This Technical Application note shows FTDI's Linux users an easy way to modify the Linux FTDI Virtual COM port driver (FTDI_SIO) to handle additional Vendor ID & Product ID codes (VID/PID). The default FTDI_SIO driver supports the standard FTDI VID and PID plus a handful of other specialized VID and PID combinations.

This document supersedes the Linux driver installation and update procedure on the FTDI website. This procedure applies to all Linux 2.6.x kernels.

1.1 Procedure To Add Additional VID/PIDs to Linux Driver

To create additional VID/PID combinations for the FTDI_SIO driver, the following procedure should be followed. The FTDI client device should not be connected until indicated by the procedure.

1. Download the Linux VCP driver source files from the FTDI website:

   http://www.ftdichip.com/Drivers/VCP/Linux/ftdi_sio_vid_pid.tar

2. Extract the files by using "tar –xvf ftdi_sio_vid_pid.tar

   Using the preferred Linux text editor, edit the ftdio_sio.h file

3. Search for the following text string:

   "# define FTDI_VID 0x0403"

4. If you have a custom VID for your design, add the following line of code:

   #define FTDI_MY_VID 0xXXXX

   If you have been assigned a block of 8 PIDs from FTDI, add the following code:

   #define FTDI_MY_PID1 0xABC0
   #define FTDI_MY_PID2 0xABC1
   #define FTDI_MY_PID3 0xABC2

   Repeat until you have assigned unique names to the entire PID block that was assigned to you.

5. Save and close the ftdi_sio.h file.
6. Open the ftdi_sio.c file.
7. Search for the following text string:

   "static struct usb_device_id id_table_combined [] = {"

   To instantiate a custom VID & PID(s), enter the following strings after the above line:

   { USB_DEVICE(FTDI_MY_VID, FTDI_MY_PID1) },
   { USB_DEVICE(FTDI_MY_VID, FTDI_MY_PID2) },
   { USB_DEVICE(FTDI_MY_VID, FTDI_MY_PID3) },

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Note:

"0xXXXX" is a dummy value for the VID assigned to you by USB_IF.

"0xABC*n*" is a dummy value for the PID; you will enter the PID assigned to you from FTDI.

To instantiate the default FTDI VID and custom PID(s), enter the following strings after the "static struct…." line :

```
{ USB_DEVICE(FTDI_VID, FTDI_MY_PID1) },
{ USB_DEVICE(FTDI_VID, FTDI_MY_PID2) },
{ USB_DEVICE(FTDI_VID, FTDI_MY_PID3) },
```

8. Save and close the ftdi_sio.c file

The next phase is to create a Linux 2.6.x compliant Makefile.

9. Using your preferred text editor, create a file called "Makefile" and enter the following Linux code:

```
obj-m += ftdi_sio.mod.c

all:

make -C /lib/modules/$(shell uname -r)/build M=$(PWD) modules

clean:

make -C /lib/modules/$(shell uname -r)/build M=$(PWD) clean
```

Save and close the file.

10. Compile the ftdi_sio source file:

```
make <cr>
```

The following files will be created:

```
ftdi_sio.ko
ftdi_sio.o
ftdi_sio.mod.o
```

11. Copy the ftdi_sio.ko file to the /lib/modules directory with the following command:

```
cp ftdi_sio.ko /lib/modules/$(uname –r)/kernel/drivers/usb/serial
```

12. Using the preferred text editor, add the following line to the /etc/modules file:

```
ftdi_sio
```

Close and save the file.

13. Reboot the Linux PC.

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14. Connect the FTDI device with the customized VID/PID and enter:

    dmesg | grep FTDI <CR>

    This command will confirm a successful driver load. You should see the following:

    [15.768872] drivers/usb/serial/usb-serial.c: USB Serial support registered for FTDI USB Serial Device

    [15.768927] ftdi_sio 4-1:1.0: FTDI USB Serial Device converter detected

    [15.769177] usb 4-1: FTDI USB Serial Device converter now attached to ttyUSB0

    Communication with the FTDI device can be set up by using a simple Linux TTY terminal and pointing it to /dev/ttyUSB0.

15. To confirm the new VID/PID combination is present enter the following :

    lsusb <CR>

    Bus 002 Device 001: ID 0000:0000

    Bus 004 Device 004: ID 0403:ABCD Future Technology Devices International, Ltd

    Bus 004 Device 001: ID 0000:0000

    Bus 003 Device 001: ID 0000:0000

(Note 1: lsusb does not confirm that driver is successfully loaded, only that hardware has been attached to the computer.)

(Note 2: At the time of writing this application note, the only method available to modify the hardware (on-chip) PID/VID values is to use the Mprog3.0 application. This application only runs on Microsoft Windows)

If FTDI's standard VID is used, then this MUST be used with a PID allocated by FTDI. It is not permissible to create user defined PIDs. In this case, it is recommended to request a block of 8 unique PIDs from FTDI (at no cost). This can be done by telephoning or emailing FTDI Support (refer to Contact Information section). These FTDI allocated PIDs must be used with the standard FTDI VID of 0x0403.

If a custom VID is used (available to current members of the USB Implementers Forum USB-IF), then users can choose any PID code. (This option has a cost associated with it).

Additional details are available in the FTDI Technical Note
http://www.ftdichip.com/Documents/TechnicalNotes/TN_100_USB_VID-PID_Guidelines(FT_000024).pdf

Additional note for Ubuntu users:

It is not possible to access the Virtual COM port in Ubuntu until the "brltty" port is removed. This is done as follows:

sudo apt-get remove brltty <CR>

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2 Acronyms and Abbreviations

Terms	Description
VID/PID	Vendor ID/Product ID
FTDI_SIO	FTDI Virtual Com Port driver for Linux Operating Systems
sudo	Linux “Substitute User” command, gives administrator privileges
kernel	Code that forms the heart of a Linux Operating System
Terminal Window	A Linux application similar to Windows’ “Command Prompt”
dmesg	Linux “Message of the day” – shows a log of events for the Linux PC.

Table 2.1 Acronyms and Abbreviations

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Appendix A - References

http://www.ftdichip.com/Documents/TechnicalNotes/TN_100_USB_VID-PID_Guidelines(FT_000024).pdf

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Appendix B - Revision History

Revision History

Version 1.00	Initial Release	November, 2008
Version 1.10	Corrected the tarball filename page2	November 26th, 2008

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