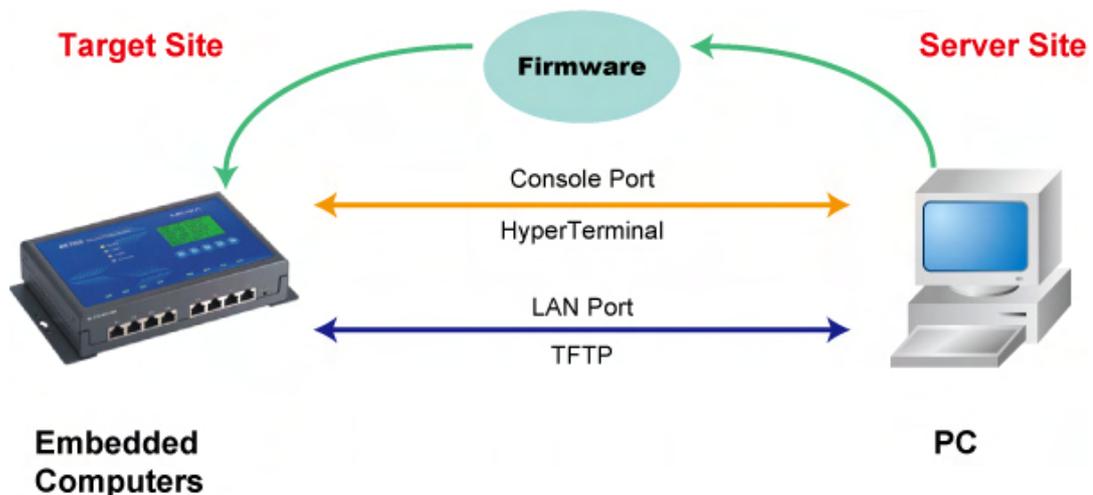# How to Upgrade or Recover the Firmware of the UC-7400 Series Embedded Computers

Bruce Chen, Project Supervisor, Moxa Technical Support Dept.

Moxa offers the boot loader utility for firmware upgrade or recovery. You will need the following items to use this utility.

1. The embedded computer to perform firmware upgrade or recovery.
2. A PC or a laptop computer.
3. A console port cable for connecting through HyperTerminal.
4. A cross-over Ethernet cable for upgrading the firmware through an TFTP server and LAN port.
5. The firmware of the embedded computer.

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This firmware upgrade or recovery includes four steps.

A. Configure HyperTerminal to connect through the console port.

B. Check if your embedded computer supports the boot loader utility.

C. Download and install the TFTP program.

D. Download and then upgrade the firmware through HyperTerminal.

If you are familiar with Moxa's embedded computers and the firmware upgrade procedure, you may skip to Step D to perform the firmware upgrade. However, we suggest that you follow the entire procedure to ensure that each step is correct.
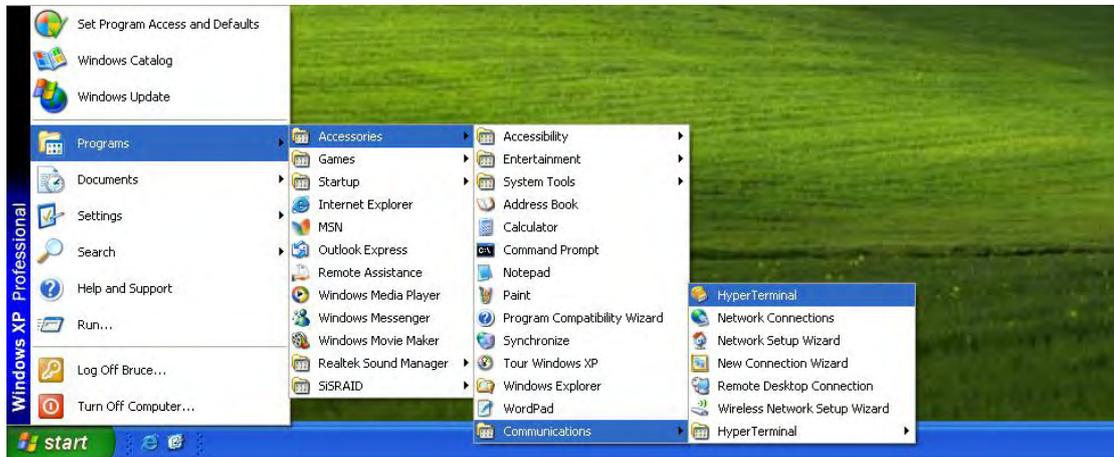
A. Configure HyperTerminal to connect to the console port.

1. Connect your embedded computer to a power source.

2. Use a console port cable to connect the console port of the UC-7400 embedded computer to your PC. Both the power input and console port are located on the rear panel of the UC-7400. See the following figure for details.
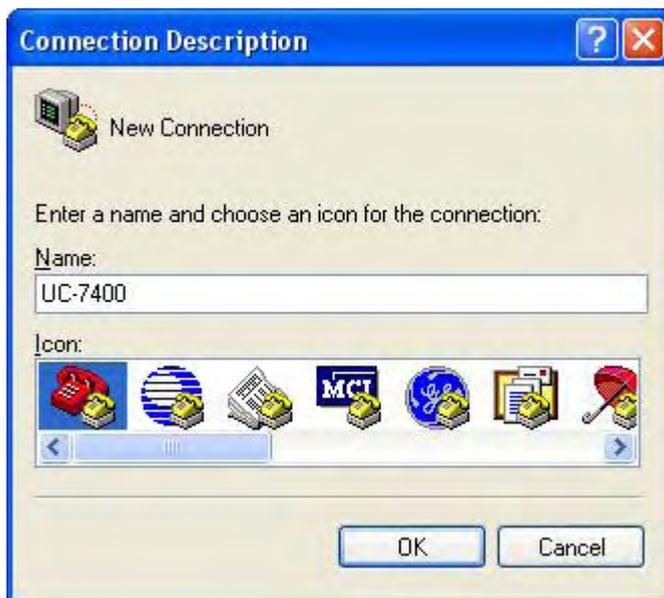
UC-7400 Rear View
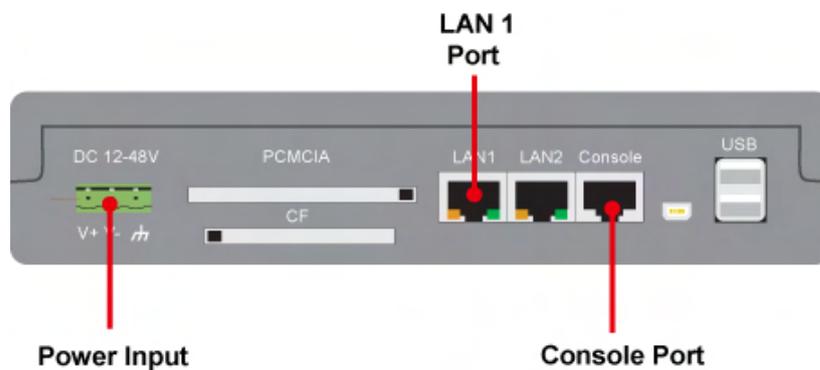
3. Launch a serial communication tool to access your embedded computer. We suggest using HyperTerminal, which comes preinstalled in Windows XP. Click **Start** → **Programs** → **Accessories** → **Communications** and then select **HyperTerminal**.
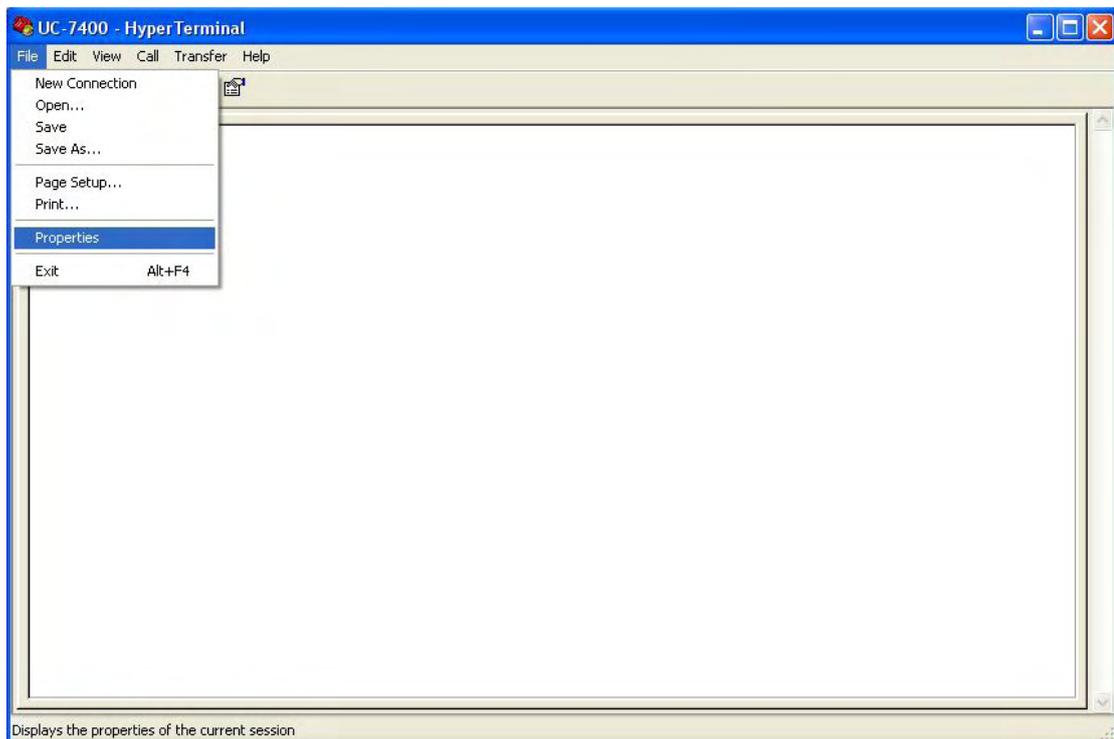

4. After HyperTerminal has launched, enter a name for the connection.

5. On the **Connect To** screen, click **Cancel** to continue.

6. On the main screen, select **Properties** from the **File** menu.

7. You can change the COM port number, and then click **Configure** for additional configuration options.

8. Configure **Port Settings** as follows:
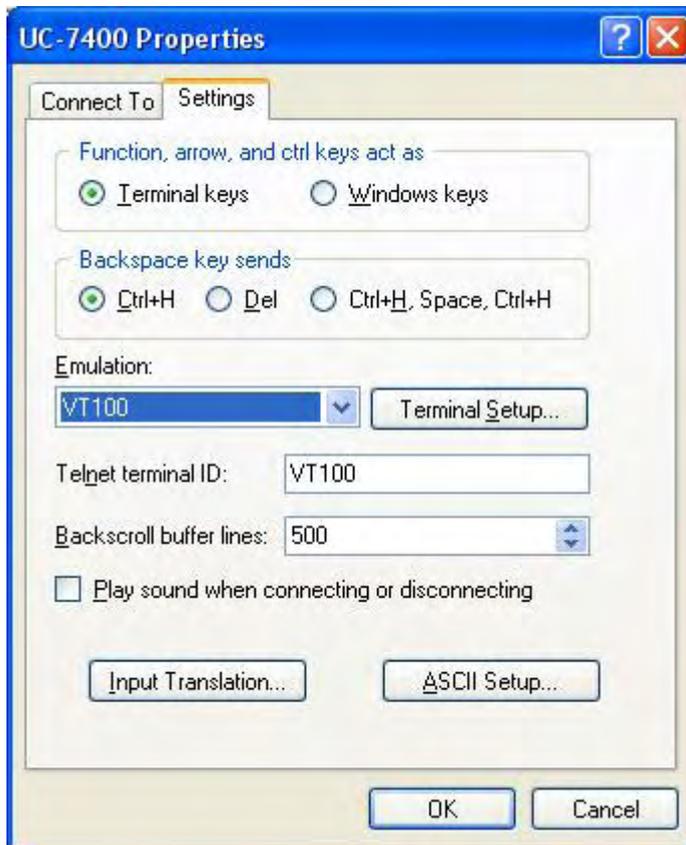   Bits per second: 115200
   Data bits: 8
   Parity: None
   Stop bit: 1
   Flow control: None.
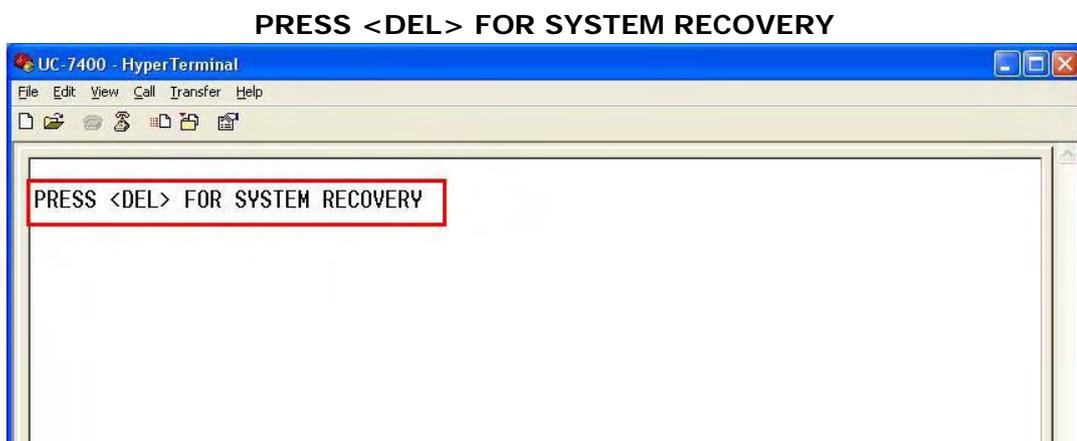   Click **OK** to continue.

9. Click the **Settings** tab and then select **VT100** under Emulation. Click **OK**.

B. Check if your embedded computer supports the boot loader utility.

1. Power on the embedded computer. If the following information appears on the HyperTerminal screen, you can use the boot loader utility to upgrade or recover the firmware.

PRESS <DEL> FOR SYSTEM RECOVERY

2. Some embedded computer models support the boot loader utility, but this screen will not appear. In this case, while holding down the **DEL** key on your PC, power on the embedded computer again. If the boot loader utility menu appears, continue to the next section for instructions on upgrading or recovering the firmware.
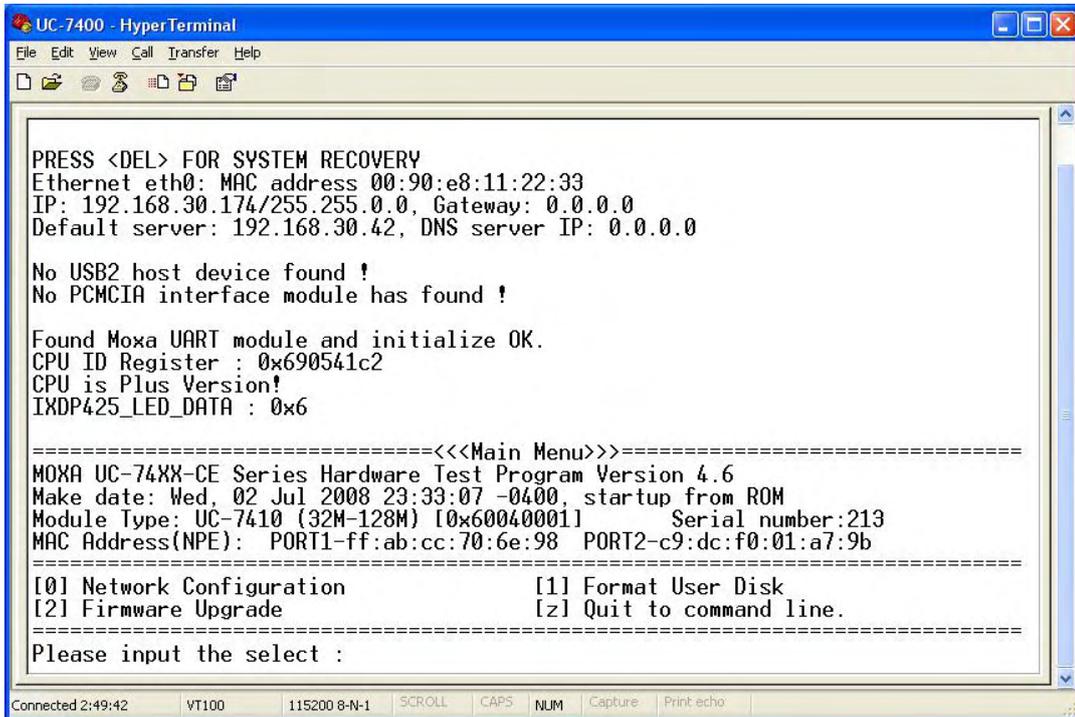
```
PRESS <DEL> FOR SYSTEM RECOVERY
Ethernet eth0: MAC address 00:90:e8:11:22:33
IP: 192.168.30.174/255.255.0.0, Gateway: 0.0.0.0
Default server: 192.168.30.42, DNS server IP: 0.0.0.0

No USB2 host device found !
No PCMCIA interface module has found !

Found Moxa UART module and initialize OK.
CPU ID Register : 0x690541c2
CPU is Plus Version!
IXDP425_LED_DATA : 0x6

================================<<<Main Menu>>>================================
MOXA UC-74XX-CE Series Hardware Test Program Version 4.6
Make date: Wed, 02 Jul 2008 23:33:07 -0400, startup from ROM
Module Type: UC-7410 (32M-128M) [0x60040001]        Serial number:213
MAC Address(NPE):  PORT1-ff:ab:cc:70:6e:98  PORT2-c9:dc:f0:01:a7:9b
==============================================================================
[0] Network Configuration           [1] Format User Disk
[2] Firmware Upgrade                 [z] Quit to command line.
==============================================================================
Please input the select :
```

3. If the information does not appear on the screen, your embedded computer does not support boot loader utility. Contact Moxa's technical support staff for assistance.

C. Download and install the TFTP program.

1. You will need to download a free TFTP server package to upgrade the firmware for the boot loader utility. Link to the following URL to download:
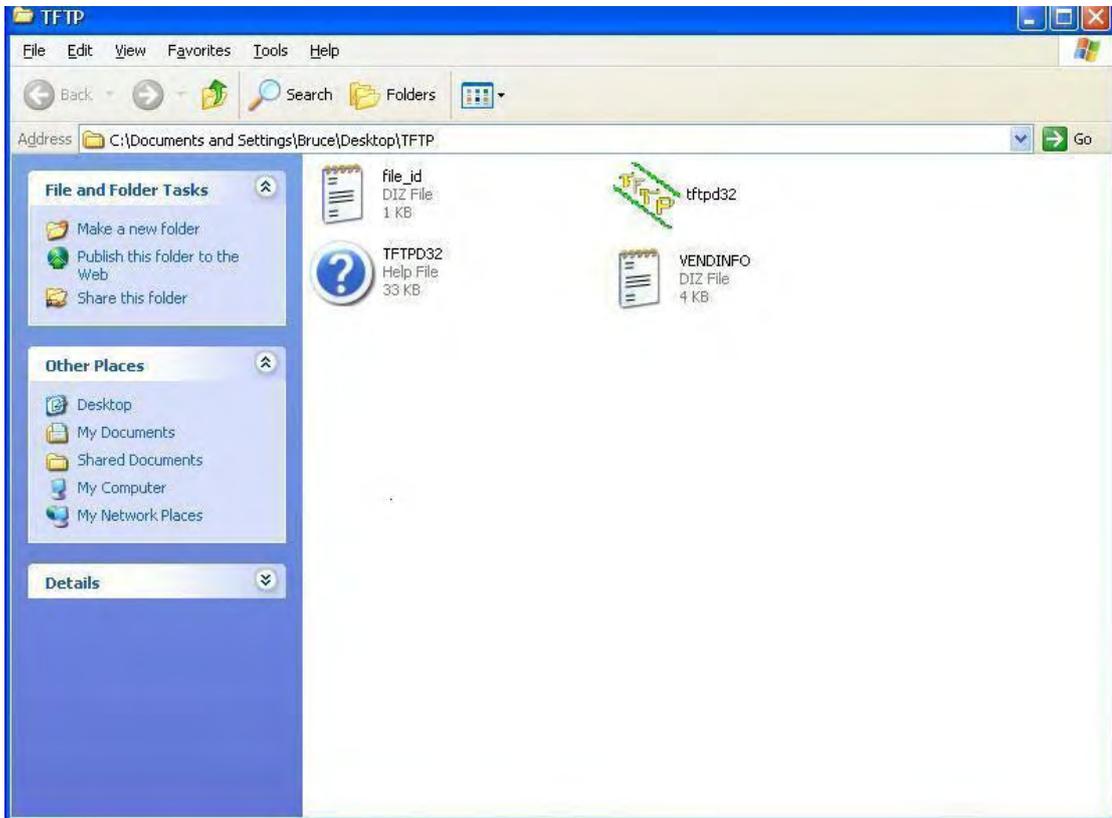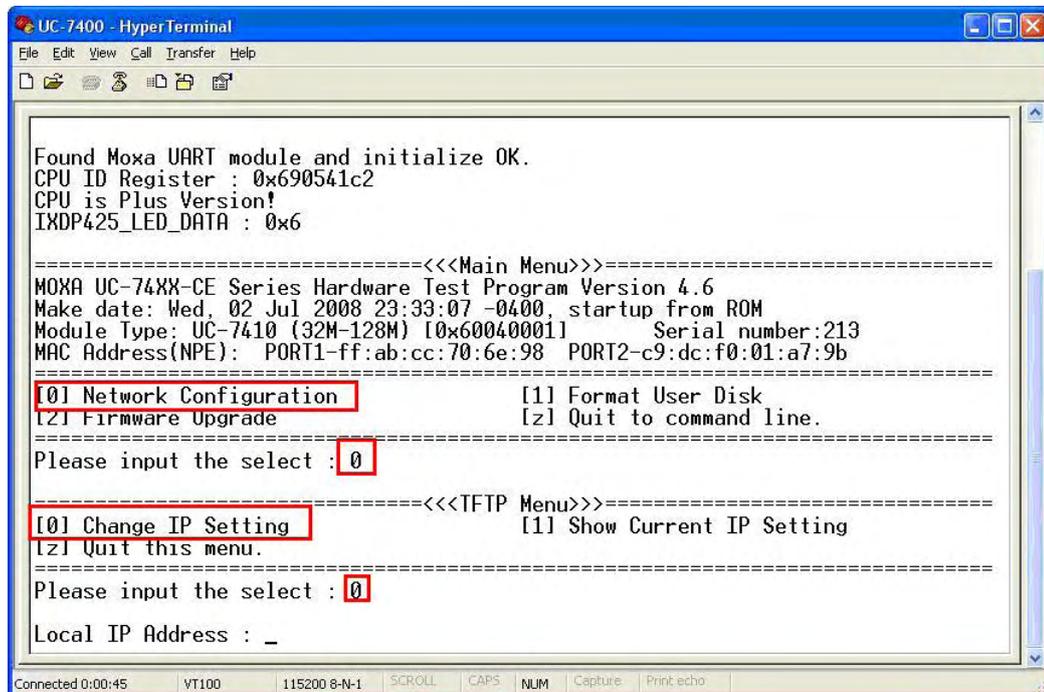
ftp://papa.indstate.edu/

The TFTP program is located at the following path:

/winsock-1/Windows95/Daemons/TFTPD/

Download the file with filename **tftpd32d.zip**.

2. Once the file has been downloaded, extract the files to your PC.

D. Download and upgrade the firmware through HyperTerminal.

1. Connect to Moxa's website at http://www.moxa.com and then select **Software** from the **Support** drop-down menu.

2. Under **Search for Software**, select the product line and then choose the specific product model. Click on **Search** to continue.

3. In the software list, select the firmware for your model. Be sure to choose the product with the correct OS, and then click the download icon to start downloading the new firmware. Check the filename carefully. It may be different from the filename shown in the following figure.

Search for Software

☑ **19 Results** for RISC-based Embedded Computers, "UC-7410, UC-7420, UC-7410 Plus, UC-7420 Plus", "Firmware/Utilities/Software Packages/Drivers/Libraries"

Items 1 to 10 displayed   ◄ Previous | Next ►

Item	Version	OS	Release date	Download
Example for UC-74XX-LX series, DA-660-8/16-LX	1.4	Linux 2.4.x (RISC)	Jun 27,2008	
Example for UC-74XX-LX Plus series, DA-66X-16-LX series	1.4	Linux 2.6.x (RISC)	Jun 27,2008	
Firmware for UC-7410-CE	1.4	Windows CE	Mar 07,2008	
Firmware for UC-7420-CE	1.4	Windows CE	Mar 06,2008	
The firmware for UC-7420-CE	1.4	Windows CE	Mar 06,2008	
Firmware for UC-7410-LX/UC-7420-LX	2.1	Linux 2.4.x (RISC)	Dec 03,2007	
MDM tool	1.1	Windows 2000,Windows XP x86	Nov 16,2007	
MDM Agent for UC-7400-LX series and DA-660-8/16-LX	1.1	Linux 2.4.x (RISC)	Nov 16,2007	

4. Put the latest firmware image in the same directory as the TFTP files.

5. Connect **LAN1** of the embedded computer to your PC using a cross-over Ethernet cable. The LAN1 port is located on the rear panel of the embedded computer.

6. While holding down the **DEL** key on your PC, power on the embedded computer. You will be guided to the boot loader utility menu.

7. In the boot loader utility, select **[0] Network Configuration**, and then **[0] Change IP Setting** to configure IP addresses.

8. You will need to enter the IP addresses of the embedded computer and your PC. Follow the steps below for configuring the IP addresses.

a. Click **Start** → **Settings**, and then select **Network Connections**.

b. Right-click on **Local Area Connection**, and then select **Properties**.
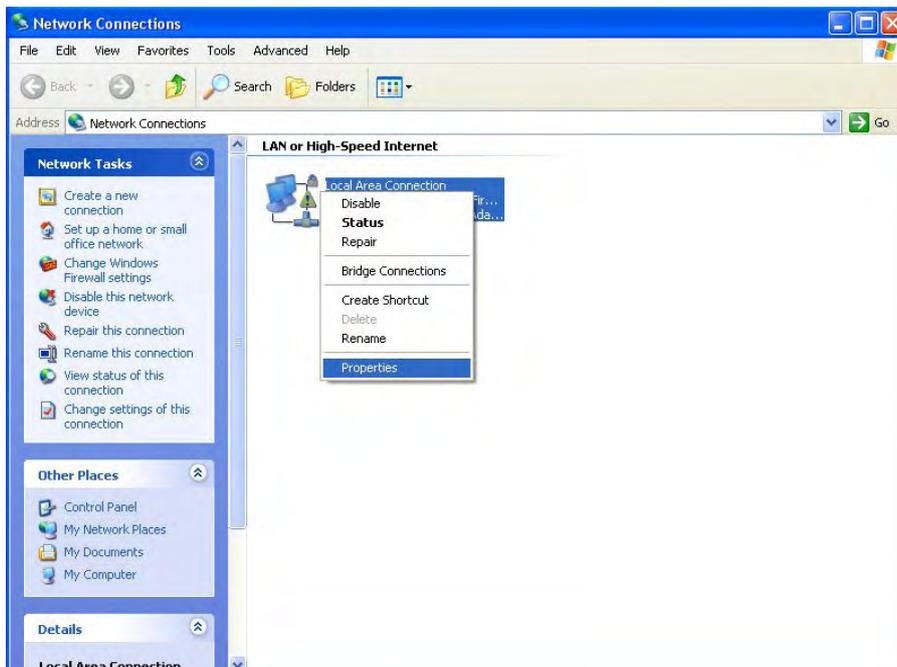
c. Click the **General** tab, select **Internet Protocol (TCP/IP)**, and then click on **Properties**.
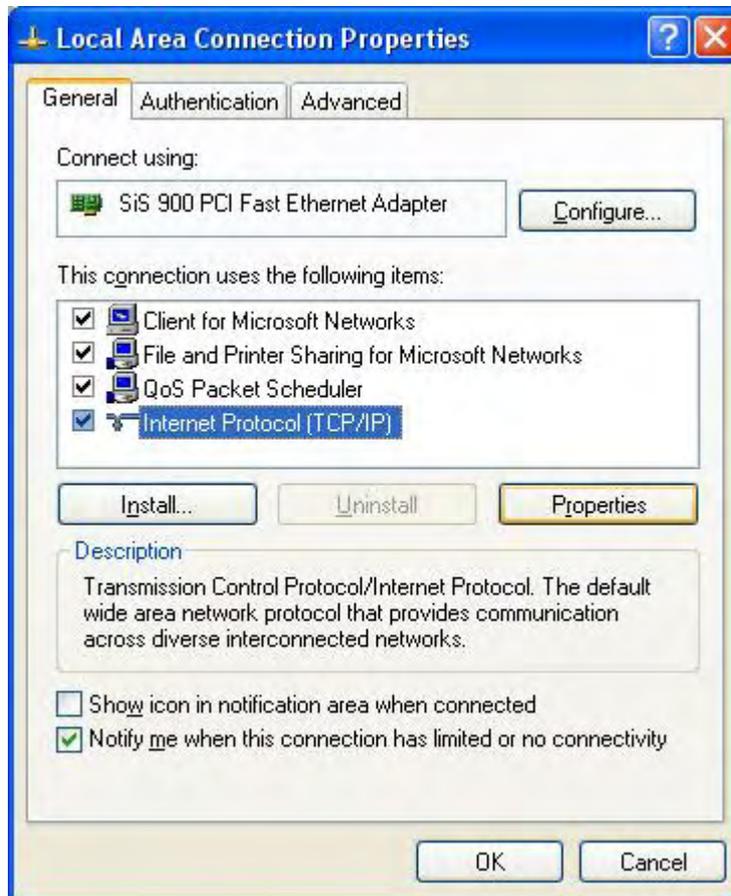
d. In the next screen, select **Use the following IP address** and enter the following information.

IP address: 192.168.1.1 (for example)

Subnet mask: 255.255.255.0

9.   Return to the boot load utility menu and enter the local IP address. This local IP address is the IP address of the embedded computer. **Note that the local IP address must be on the same subnet as the server IP address**. For example, if the server IP address is 192.168.1.1, you can choose the local IP address from the range 192.168.1.2 to 192.168.1.255.

10. When you have finished configuring the IP addresses, select **[1] Show Current IP Setting** to check if the IP addresses are correct.
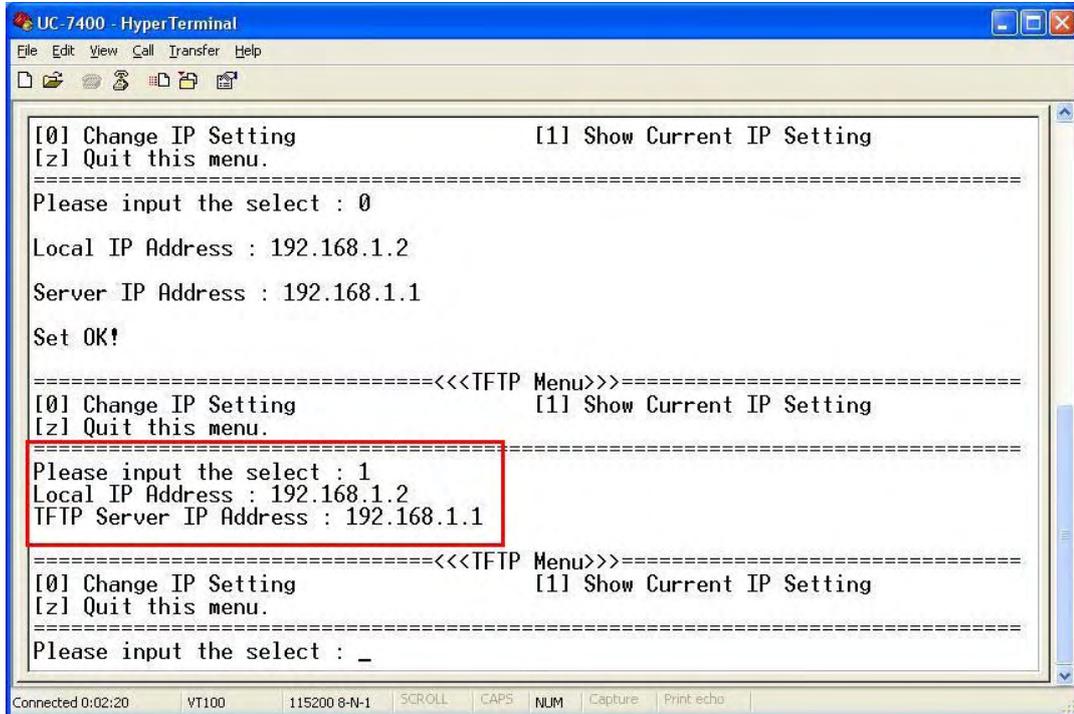
11. Select **[z] Quit to command line** to leave IP setting option, select **[2] Firmware Upgrade**, and then **[0] Load from LAN to continue**.
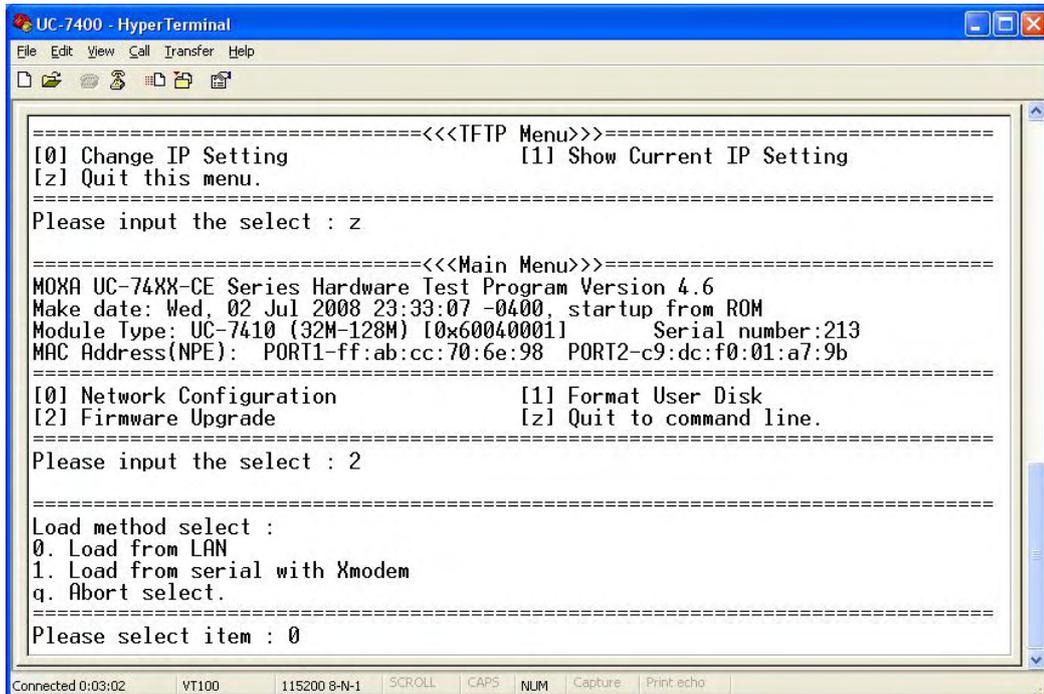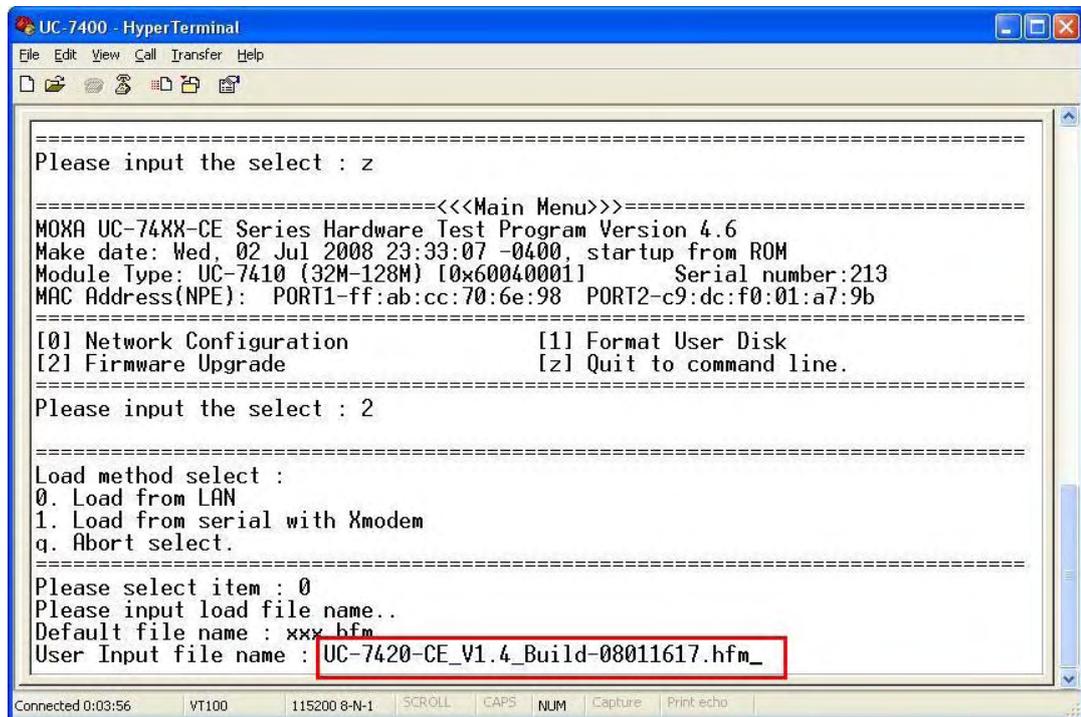
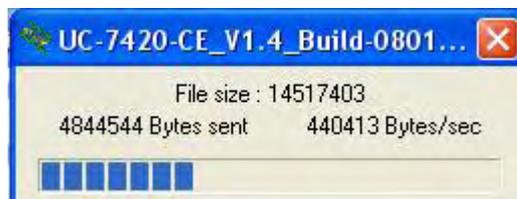12. Start the TFPF server. Double-click on **tftpd32** to launch the TFTP server.
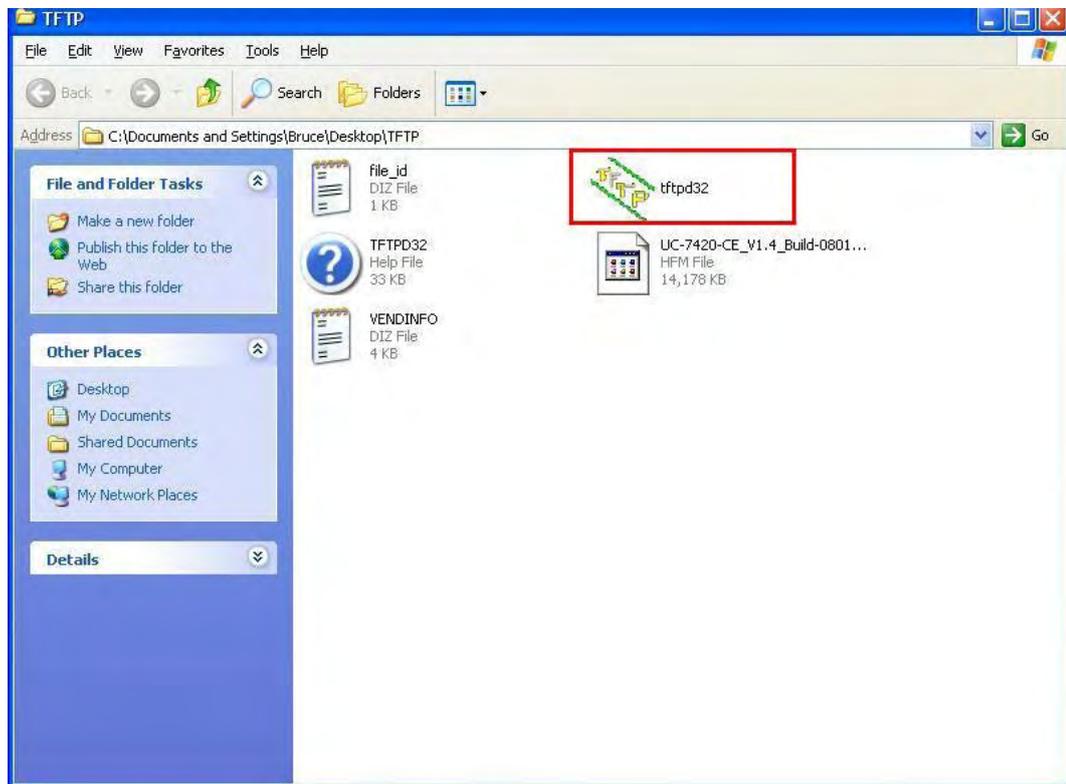
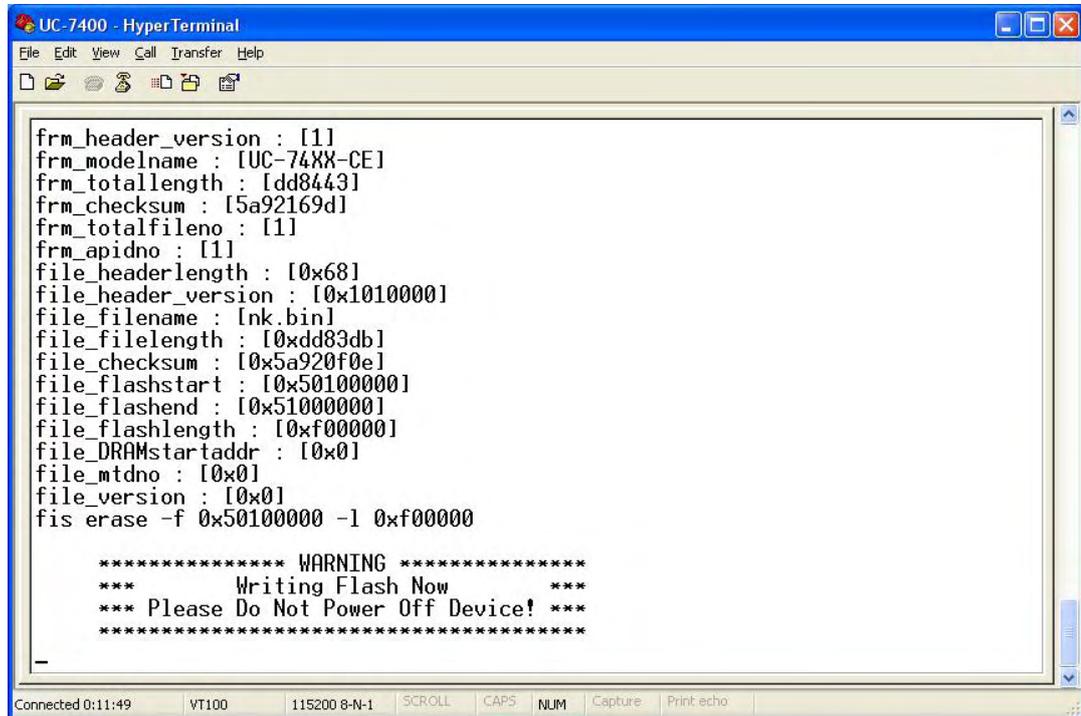13. When the TFTP server has been launched, the following screen will appear.

14. Return to the boot loader utility menu and enter the firmware image file name.

15. The firmware upgrade utility will start running.

16. It will take several minutes for the firmware files to be written to your embedded computer. **Do not power off your computer!**
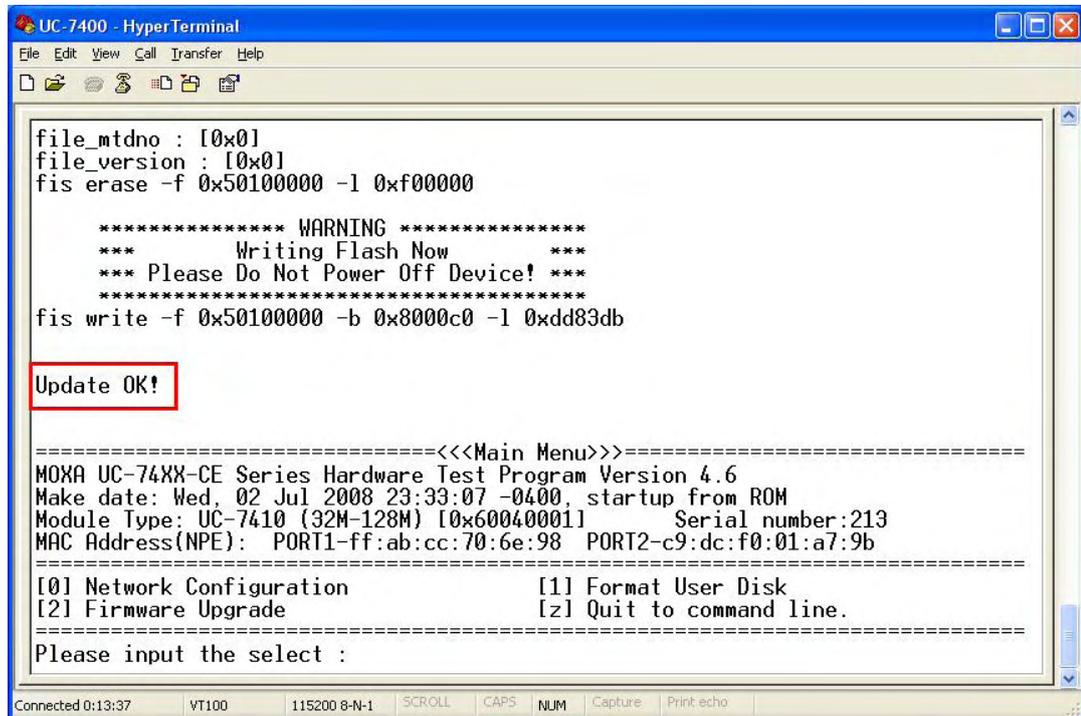
17. When you see **Update OK**, the firmware upgrade has finished. Reboot the embedded computer to complete the firmware upgrade or recovery from the boot loader utility.

18. If you cannot reboot your embedded computer, contact Moxa's technical support staff for assistance.