

Using TFTP Server to Update DeviceMaster firmware

Disable the DeviceMaster drivers in the PC as this will prevent conflicts between the driver and this procedure. In Driver Management Console right click the DeviceMaster and select 'Disable' from the pop-up menu

Required Files

Download from Control the Firmware files needed or as recommended by Control Tech Support.

PortVision DX

http://downloads.control.com/contribs/devicemaster/driver-packages/previous/PortVision_DX_3.05.msi

Bootloader:

http://downloads.control.com/dev_mstr/rtts/software/bootloader/ (bootloader-x.xx.cmtl)

SocketServer firmware for socket communications:

http://downloads.control.com/dev_mstr/rtts/software/socketserver/ (socketserver-x.xx.cmtl)

Please note: SocketServer and NS-Link have been incorporated into a single file with the new extension of .cmtl. By default, once loaded, the file will show SocketServer in both the web page and PortVision DX until a driver begins communication with this particular DeviceMaster. Once a driver establishes communications, the firmware will immediately indicate that it is NS-Link without the driver having to upload that firmware to the DeviceMaster or the DeviceMaster being rebooted as in the past. If SocketServer does not change to NS-Link, then a driver loaded in the PC is NOT in communication with the DeviceMaster.

Download from Control the appropriate version of the Tftpdxx server:

32bit system: http://downloads.control.com/contribs/utilities/3rd_party_utils_free/tftp_server/tftpd32.452.zip

64bit system: http://downloads.control.com/contribs/utilities/3rd_party_utils_free/tftp_server/tftpd64.452.zip

You may use another TFTP server or software should you already have one. These instructions will use the freeware version that, for your convenience, are available from the Control site above or from the vendor at:

http://tftpd32.jounin.net/tftpd32_download.html

Chapter 2 (page3): [Install and Setup the TFTP Server](#)

Chapter 3 (page4): [Set the BootLoader Timeout](#)

Chapter 4 (page6): [Upload the Firmware](#)

Chapter 5 (page8): [Confirm the success of the update](#)

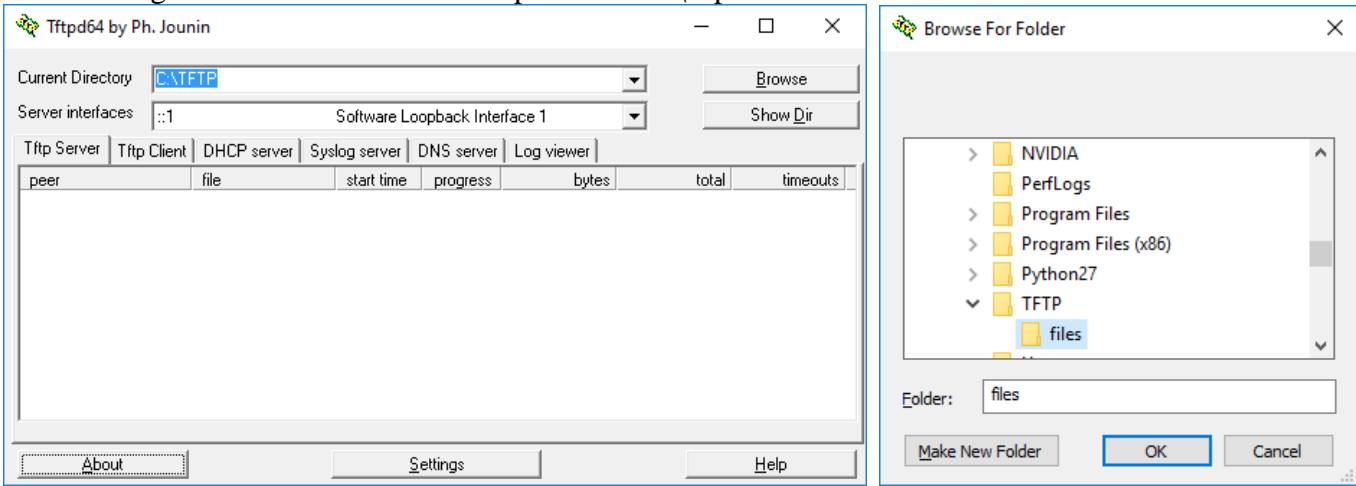
Install and Setup the TFTP Server

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Create a directory to extract the tftpdxx.452.zip to.

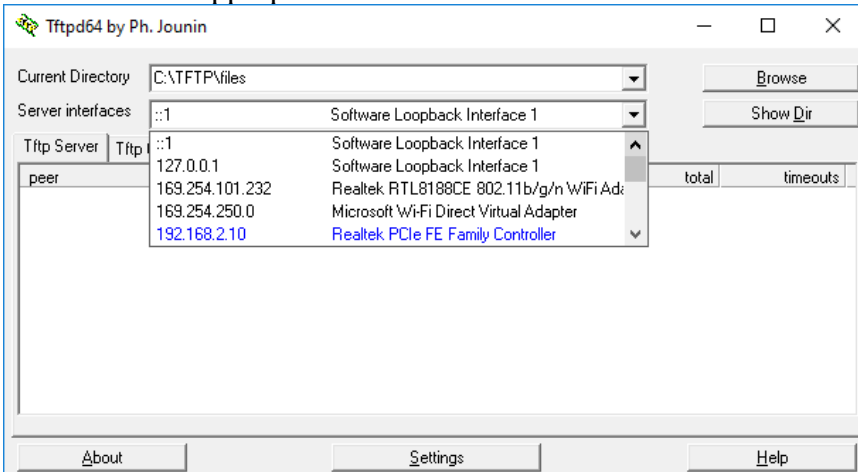
In this example we will create a directory in the 'C' drive root called TFTP. In the TFTP folder create a sub folder called 'files'.

Extract the tftpdxx.452.zip to the C:\TFTP directory. There is no install or setup to run. Once extracted, run the tftp32(64).exe file. It should look something like this showing the directory that it is running from and the IP address assigned to the PC. In this example that is C:\tftp and the Server interface 192.168.2.10.



Click on the Browse button and browse to the 'files' sub folder created earlier.

Now select the appropriate network interface.



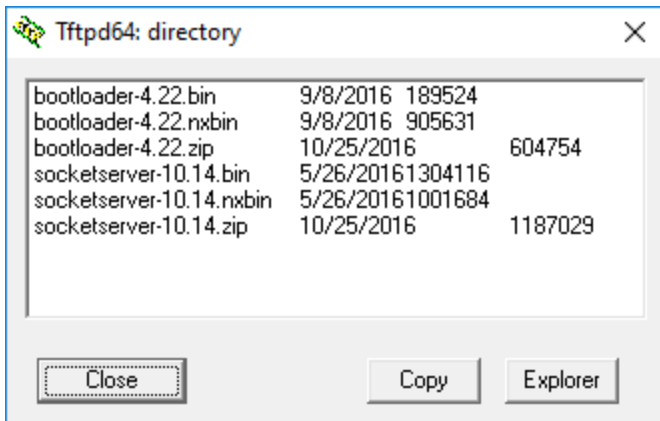
Select the option showing the IP Address of your PC.

Copy the SocketServer and Bootloader files to the C:\TFTP\files directory.

You will need to rename the extension on the files from .cmtl to .zip.

Once the files are renamed, extract the files from the .zip to the c:\tftp\files folder.

When you click on "Show Dir" you will see the files listed like this.



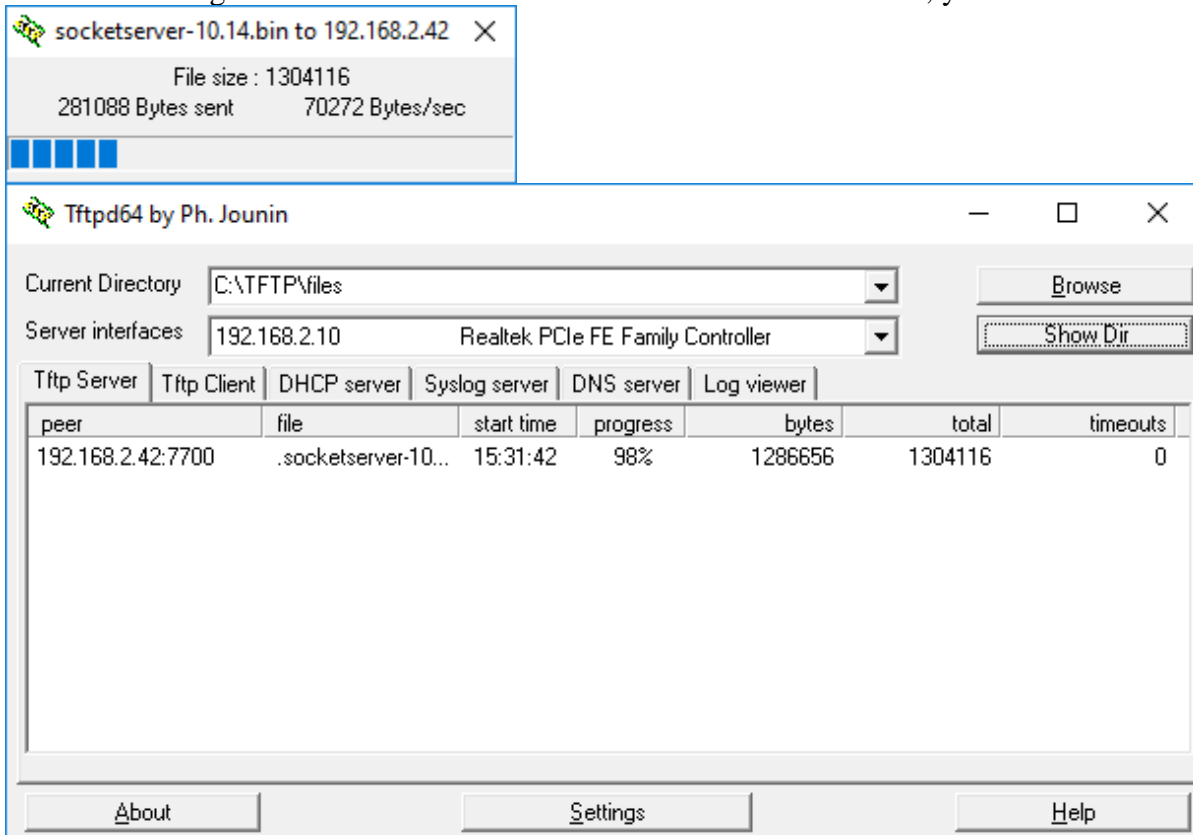
You will have 2 SocketServer files and 2 Bootloader files unzipped - Note the extensions of .bin and .nxbin. The .bin file will be used with DeviceMasters having an ARM processor. The .nxbin file will be used with the newer DeviceMaster models with the NXP processor.

CRITICAL NOTE: YOU WILL HAVE TO KNOW WHICH PROCESSOR YOUR DeviceMaster HAS!

Installing the incorrect Firmware into your DeviceMaster, may cause it to become totally unusable in which case it would have to be returned to Control to be corrected, and there WILL BE charges for this as it is not a warranty repair. If in doubt, do not proceed further.

The TFTP Server is now ready for use.

As files are being transferred from the TFTP server to the DeviceMaster, you should see something like this:

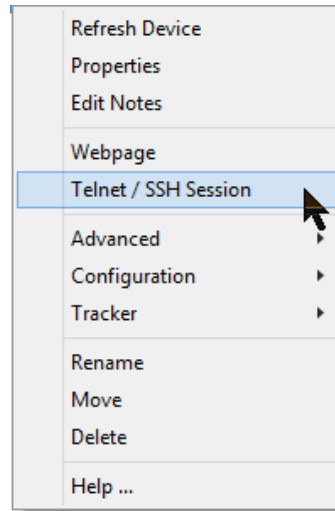
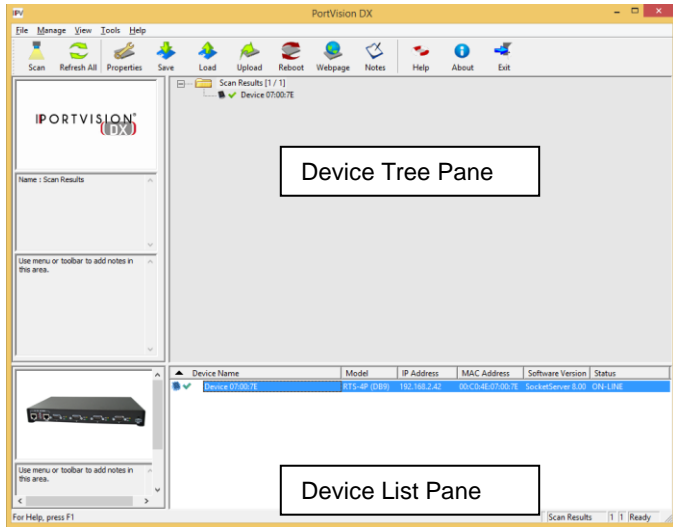


Set the BootLoader Timeout

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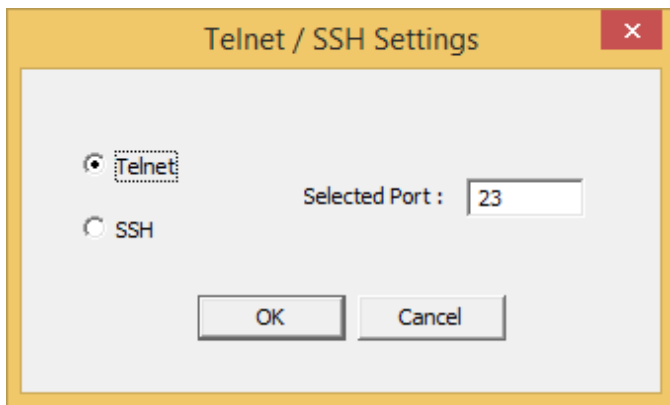
Highlight the line item as shown (version numbers shown in screen shots will not be accurate)

The DeviceMaster MUST have valid TCP/IP communications from PortVision DX at this point forward.



Right click on the DeviceMaster in the Device List Pane.

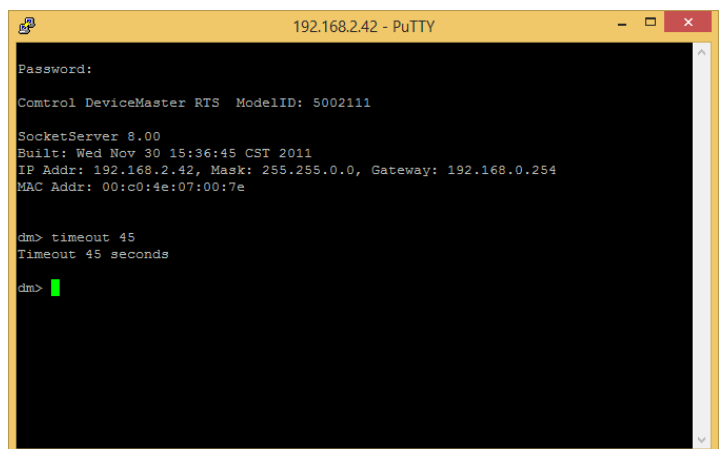
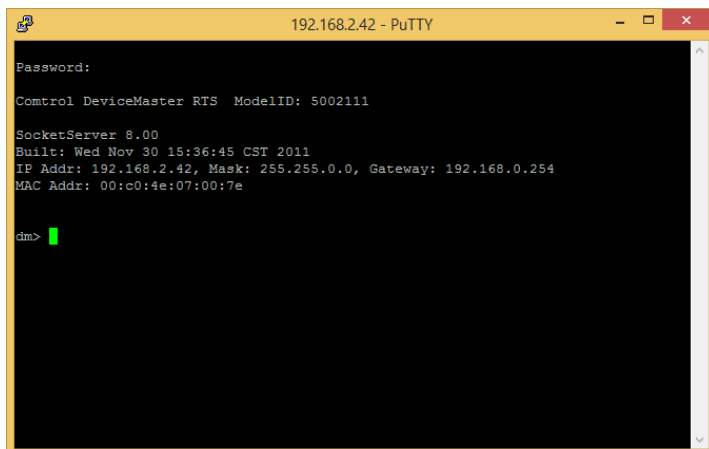
Select Telnet / SSH Session from the menu.



Leave the default settings and click the OK button.



When prompted for a password, press enter as there is no default password.



At the dm> prompt enter “timeout 45” (without quotes) and press Enter. It should echo back ‘Timeout 45 seconds’ and go back to the dm> prompt.

Which Processor (CPU) is installed?

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Now we need to determine the type of CPU installed in this DeviceMaster. This will be used to determine which Firmware files will be used with the DeviceMaster.

Here is how to determine your processor type:

(If you are not still telnet into the DeviceMaster from the previous step, then telnet back into the DeviceMaster)

At the dm> enter "reset" (without quotes) and press the Enter key. This will reboot the DeviceMaster.

Back into PortVision DX and again Right Click on the DeviceMaster and select Telnet / SSH Session

Leave the defaults and click OK.

Now you should now be at a RedBoot> prompt.

```
192.168.2.42 - PuTTY
ver
*****
**
** Control DeviceMaster Bootloader 4.22
** Platform: Control DeviceMaster (ARM 7TDMI)
** RedBoot(tm) environment - built 11:04:05, Sep 8 2016
** Portions Copyright (C) 2000, Red Hat, Inc.
** Portions Copyright (C) Control Corp.
**
*****
RAM: 0x00000000-0x007c0000 [0x00000000-0x007b0000 available]
FLASH: 0x00000000-0x003fffff, 64 x 0x10000 blocks
RedBoot>
```

The second line of text shows ** Platform: Control DeviceMaster (ARM 7TDMI)

Note only one line of RAM values shown.

This is the ARM processor.

```
192.168.2.43 - PuTTY
ver
*****
**
** Control DeviceMaster Bootloader 4.22
** Platform: Control DeviceMaster (Cortex-M3)
** RedBoot(tm) environment - built 11:05:04, Sep  8 2016
** Portions Copyright (C) 2000, Red Hat, Inc.
** Portions Copyright (C) Control Corp.
**
*****
RAM: 0x10000000-0x10018000 [0x1000182c-0x1000bc16 available]
    0x10080000-0x1008a000 [0x10080000-0x1008a000 available]
    0x20000000-0x20010000 [0x20000000-0x20010000 available]
    0x28000000-0x29000000 [0x28000000-0x29000000 available]
FLASH: 0x14000000-0x147fffff, 2048 x 0x1000 blocks
RedBoot>
```

The second line of text shows ** Platform: Control DeviceMaster (Cortex-M3)
Note the four lines of RAM values shown.
This is the NXP Processor.

TFTP Firmware updates must be done from the RedBoot> prompt and you are ready to proceed.

CRITICAL NOTE: YOU WILL HAVE TO KNOW WHICH PROCESSOR YOUR DeviceMaster HAS!
Installing the incorrect Firmware into your DeviceMaster, may cause it to become totally unusable in which case it would have to be returned to Control to be corrected, and there WILL BE charges for this as it is not a warranty repair. If in doubt, do not proceed further.

You must be at a “RedBoot” prompt for the remaining steps.

- For an ARM processor (note the file extension)
C:\TFTP\files\bootloader-4.22.bin (Arm Processor Bootloader Firmware)
C:\TFTP\files\socketsrvr-10.14.bin (Arm Processor SocketServer Firmware)
- For the NXP Processor (note the file extension)
C:\TFTP\files\bootloader-4.22.nxbn (NXP Processor Bootloader Firmware)
C:\TFTP\files\socketsrvr-10.14.nxbn (NXP Processor SocketServer Firmware)

Now that we know the type of Processor and the names of the files that will be used, we can update the Firmware.

ARM Processor

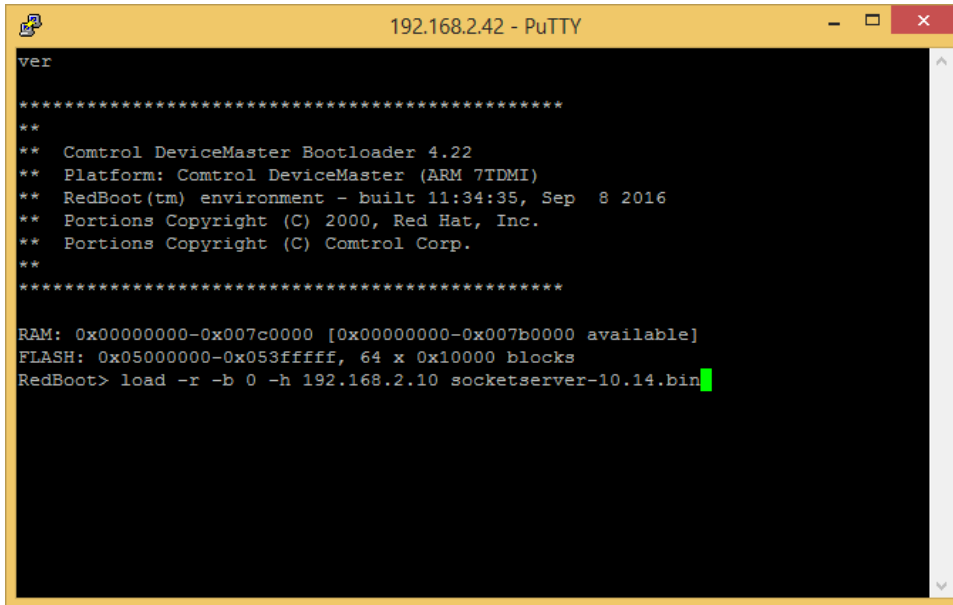
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For the ARM processor use the command:

```
load -r -b 0 -h <TFTP-Server_IP_Addr> <Firmware_File_Name>
```

<TFTP-Server_IP_Addr> is the IP Address of the PC running the TFTP server application.

<Firmware FileName> is the name of the firmware copied to the c:\TFTP\files directory.



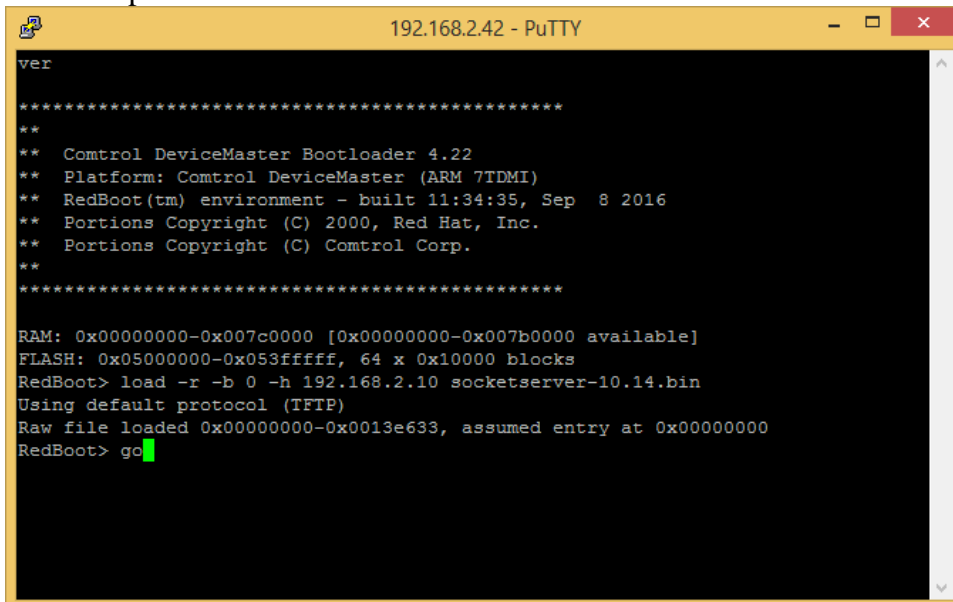
```
192.168.2.42 - PuTTY
ver
*****
**
** Control DeviceMaster Bootloader 4.22
** Platform: Comtrol DeviceMaster (ARM 7TDMI)
** RedBoot(tm) environment - built 11:34:35, Sep  8 2016
** Portions Copyright (C) 2000, Red Hat, Inc.
** Portions Copyright (C) Comtrol Corp.
**
*****

RAM: 0x00000000-0x007c0000 [0x00000000-0x007b0000 available]
FLASH: 0x05000000-0x053fffff, 64 x 0x10000 blocks
RedBoot> load -r -b 0 -h 192.168.2.10 socketserver-10.14.bin
```

In this example, the command line would be:

RedBoot> “load -r -b 0 -h 192.168.2.10 socketserver-10.14” (without quotes) and press Enter.

Please be patient as this will take several seconds.



```
192.168.2.42 - PuTTY
ver
*****
**
** Control DeviceMaster Bootloader 4.22
** Platform: Comtrol DeviceMaster (ARM 7TDMI)
** RedBoot(tm) environment - built 11:34:35, Sep  8 2016
** Portions Copyright (C) 2000, Red Hat, Inc.
** Portions Copyright (C) Comtrol Corp.
**
*****

RAM: 0x00000000-0x007c0000 [0x00000000-0x007b0000 available]
FLASH: 0x05000000-0x053fffff, 64 x 0x10000 blocks
RedBoot> load -r -b 0 -h 192.168.2.10 socketserver-10.14.bin
Using default protocol (TFTP)
Raw file loaded 0x00000000-0x0013e633, assumed entry at 0x00000000
RedBoot> go
```

Once it has finished the upload, we need to initialize it.

At the RedBoot> prompt, enter “go” (without quotes) and press the Enter key.

At this point you may close the Telnet (Putty) window. The DeviceMaster will reboot when it is ready.

Go back into PortVision DX and Right Click on the DeviceMaster and select “Refresh Device” from the pop-up menu until the correct version is discovered and entered in the “Software Version” column.

NXP processor

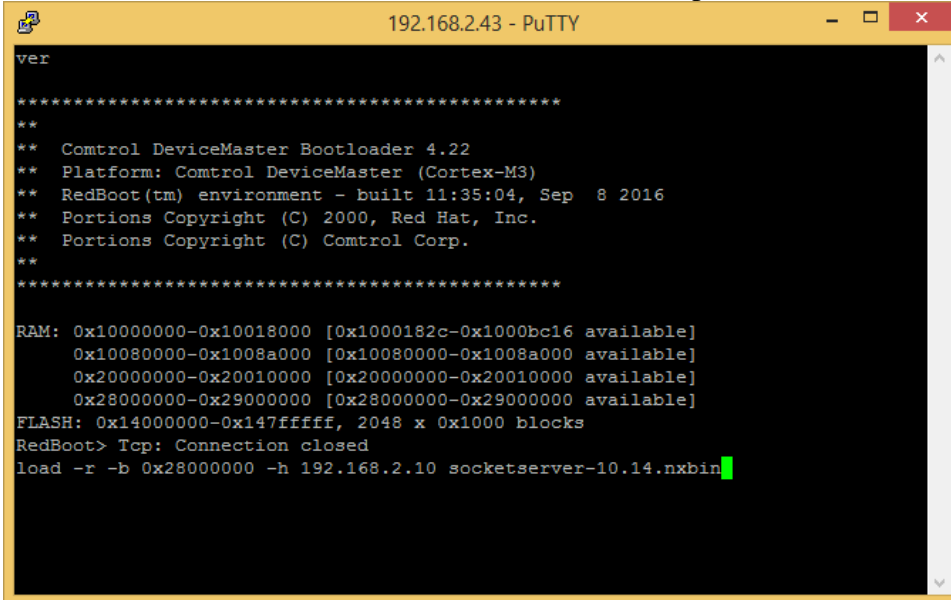
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For the NXP processor enter the command

```
load -r -b 0x28000000 -h <TFTP-Server_IP_Addr> <Firmware_File_Name>
```

<TFTP-Server_IP_Addr> is the IP Address of the PC running the TFTP server application.

<Firmware FileName> is the name of the firmware copied to the c:\TFTP\files directory.

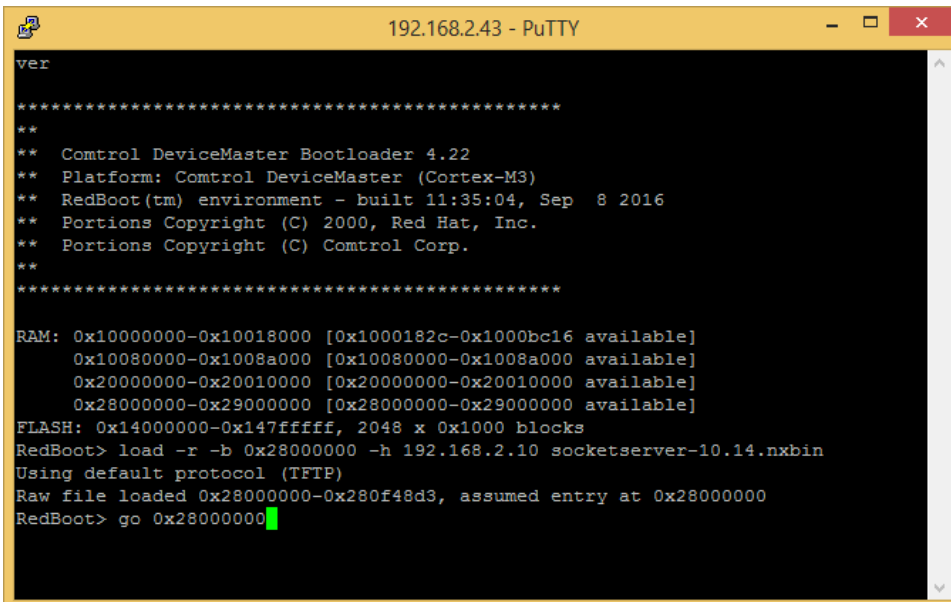


```
192.168.2.43 - PuTTY
ver
*****
**
** Control DeviceMaster Bootloader 4.22
** Platform: Control DeviceMaster (Cortex-M3)
** RedBoot(tm) environment - built 11:35:04, Sep  8 2016
** Portions Copyright (C) 2000, Red Hat, Inc.
** Portions Copyright (C) Control Corp.
**
*****

RAM: 0x10000000-0x10018000 [0x1000182c-0x1000bc16 available]
      0x10080000-0x1008a000 [0x10080000-0x1008a000 available]
      0x20000000-0x20010000 [0x20000000-0x20010000 available]
      0x28000000-0x29000000 [0x28000000-0x29000000 available]
FLASH: 0x14000000-0x147fffff, 2048 x 0x1000 blocks
RedBoot> Tcp: Connection closed
load -r -b 0x28000000 -h 192.168.2.10 socketserver-10.14.nxbin
```

In this example, the command line would be:

```
Load -r -b 0x28000000 -h 192.168.2.10 socketserver-10.14
```



```
192.168.2.43 - PuTTY
ver
*****
**
** Control DeviceMaster Bootloader 4.22
** Platform: Control DeviceMaster (Cortex-M3)
** RedBoot(tm) environment - built 11:35:04, Sep  8 2016
** Portions Copyright (C) 2000, Red Hat, Inc.
** Portions Copyright (C) Control Corp.
**
*****

RAM: 0x10000000-0x10018000 [0x1000182c-0x1000bc16 available]
      0x10080000-0x1008a000 [0x10080000-0x1008a000 available]
      0x20000000-0x20010000 [0x20000000-0x20010000 available]
      0x28000000-0x29000000 [0x28000000-0x29000000 available]
FLASH: 0x14000000-0x147fffff, 2048 x 0x1000 blocks
RedBoot> load -r -b 0x28000000 -h 192.168.2.10 socketserver-10.14.nxbin
Using default protocol (TFTP)
Raw file loaded 0x28000000-0x280f48d3, assumed entry at 0x28000000
RedBoot> go 0x28000000
```

Once it has finished the upload, we need to initialize it.

At the RedBoot> prompt, enter “go 0x28000000” (without quotes) and press the Enter key.

At this point you may close the Telnet (Putty) window. The DeviceMaster will reboot when it is ready.

Go back into PortVision DX and Right Click on the DeviceMaster and select “Refresh Device” from the pop-up menu until the correct version is discovered and entered in the “Software Version” column.