



# Mountaineer

## .NET Gadgeteer compatible platform

### *Installation Guide for Mountaineer Firmware 4.3.1 Beta 2*

31-Mar-2014/bh,cp,ps

This document shows how you can switch from the factory-installed Mountaineer firmware (release 4.2 QFE1), or from any other Mountaineer firmware version, to the 4.3.1 release (also known as 4.3 QFE1).

If you had installed Mountaineer Firmware 4.2 QFE2 or Mountaineer Firmware 4.3 Beta 1, then you already have the WinUSB-based Mountaineer USB driver(s) on your PC. If not, you need to download and unzip the archive with the current USB drivers from <http://www.mountaineer.org/resources/release-4-3-1-beta-2> (see *Step 4*).

To install the firmware, please perform the steps shown in the following chapters.





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### 1) Plug in Mountaineer board

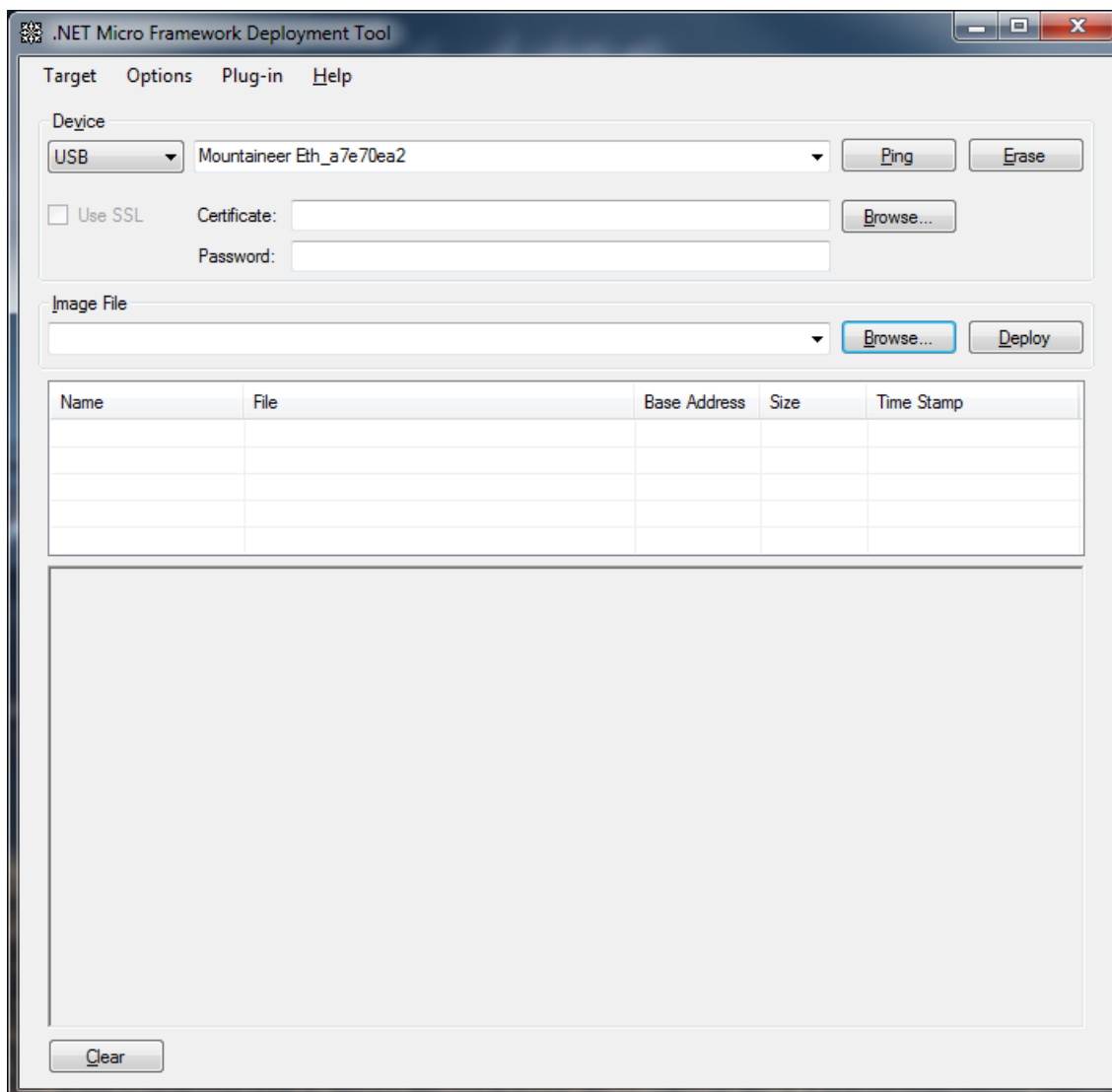
Use the USB cable to connect your Mountaineer board to your PC. Now the green LED on the board indicates that it is powered.

### 2) Start MFDeploy

With the NETMF 4.3 SDK, you have installed Microsoft's *MFDeploy* tool. It can be found in the C drive, at

*C:\Program Files (x86)\Microsoft .NET Micro Framework\v4.3\Tools\MFDeploy.exe*

- Start *MFDeploy*.
- Change the *Device* list box from *Serial* to *USB*. You should now see something like this:



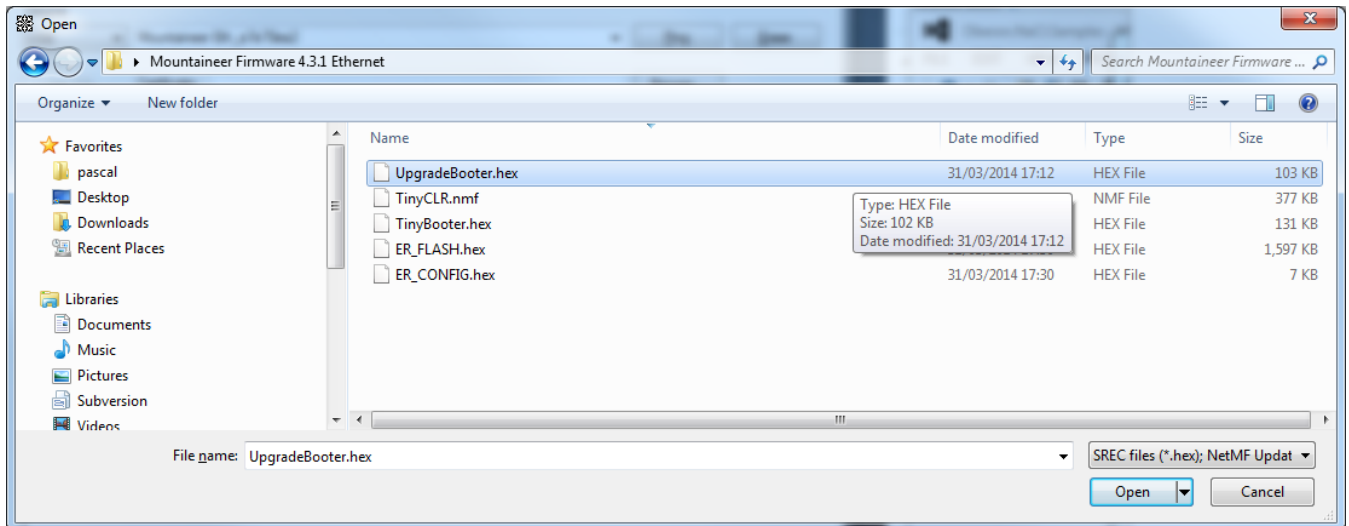


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## 3) Flash UpgradeBooter

- Click on the lower of the two *Browse...* buttons.
- A file dialog box opens. Navigate to the firmware directory that you have downloaded, and open it. You should now see this:



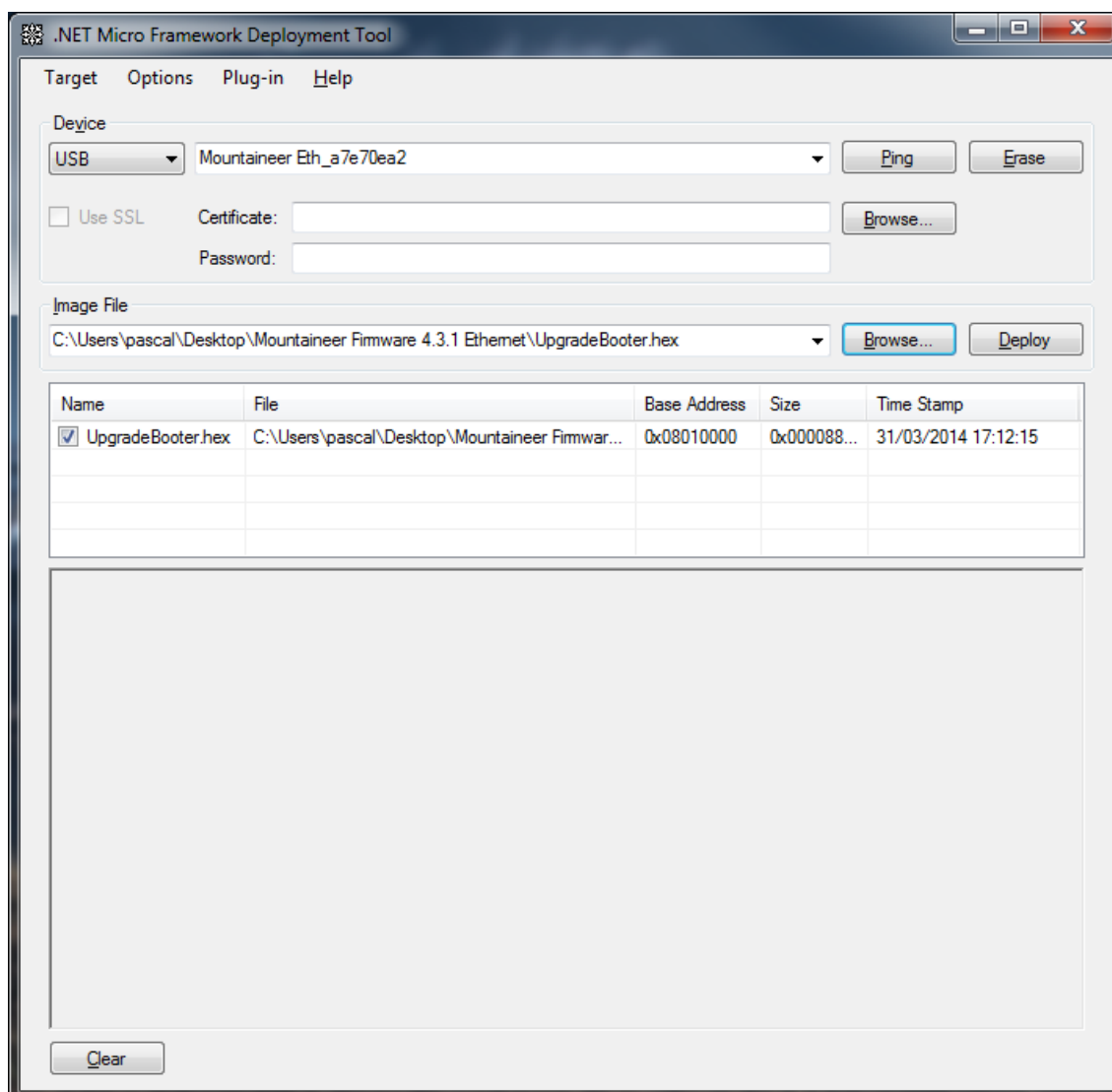
- Open the file *UpgradeBooter.hex*.
- Now you should see something like this:





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- Click on the *Deploy* button. A dialog box showing the deployment status briefly opens, and then closes. Possibly some debug output is written to the text area at the bottom of the window, you can ignore it.
- Note the blue LED on the board that is now lighted up (non-blinking). This indicates that the board is currently in a special upgrade boot loader and waits for further commands.  
(Only this special boot loader is able to overwrite the Flash area where the normal boot loader resides. The normal boot loader cannot overwrite itself.)
  - If the LED is not showing a steady blue light, this means that the board stopped in the normal boot loader. To continue to the upgrade boot loader, execute menu command *Plug-in>Debug>Reboot CLR*. Then the upgrade boot loader should be started, resulting in a steady blue LED light.



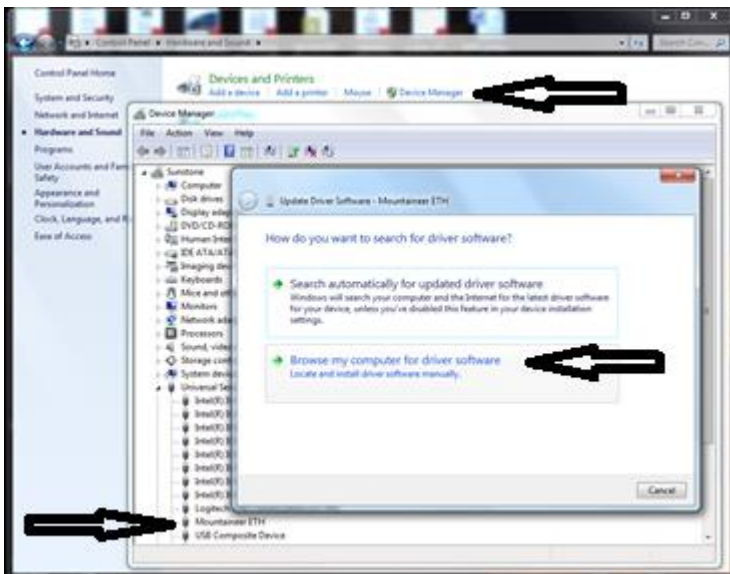


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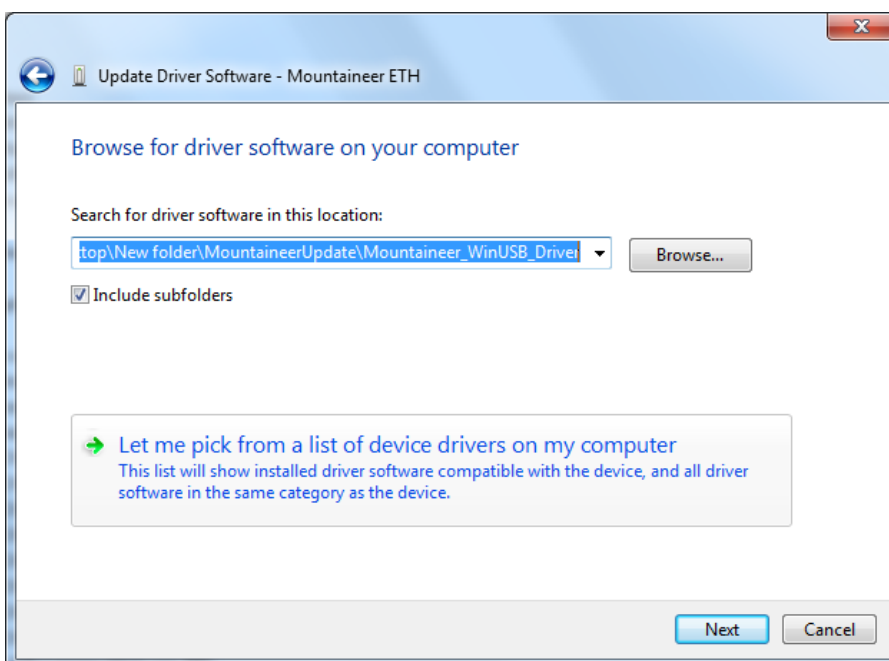
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### 4) Installing the WinUSB driver (only if you still have the original firmware of the boards, as shipped!)

- Skip this chapter if you have already updated your firmware to a newer release than the original, factory-installed software. You already have the new WinUSB driver!
- Otherwise, follow *all* the steps in this chapter! If Windows tells you that it already has a good driver, don't believe it. You need to force Windows to let go of an old driver that you might have installed earlier; it clings to it as long as it can. Therefore, **don't try any shortcuts** to the following sequence of steps.
- In the Device Manager Control panel, open the *Universal Serial Bus controllers* folder, right-click the old *Mountaineer USB* or *Mountaineer ETH* driver, and then choose the "Update Driver Software..." command.
- Click "Browse my computer for driver software" (middle arrow in the following figure)



- Click "Let me pick from a list of device drivers on my computer" (see the following figure).

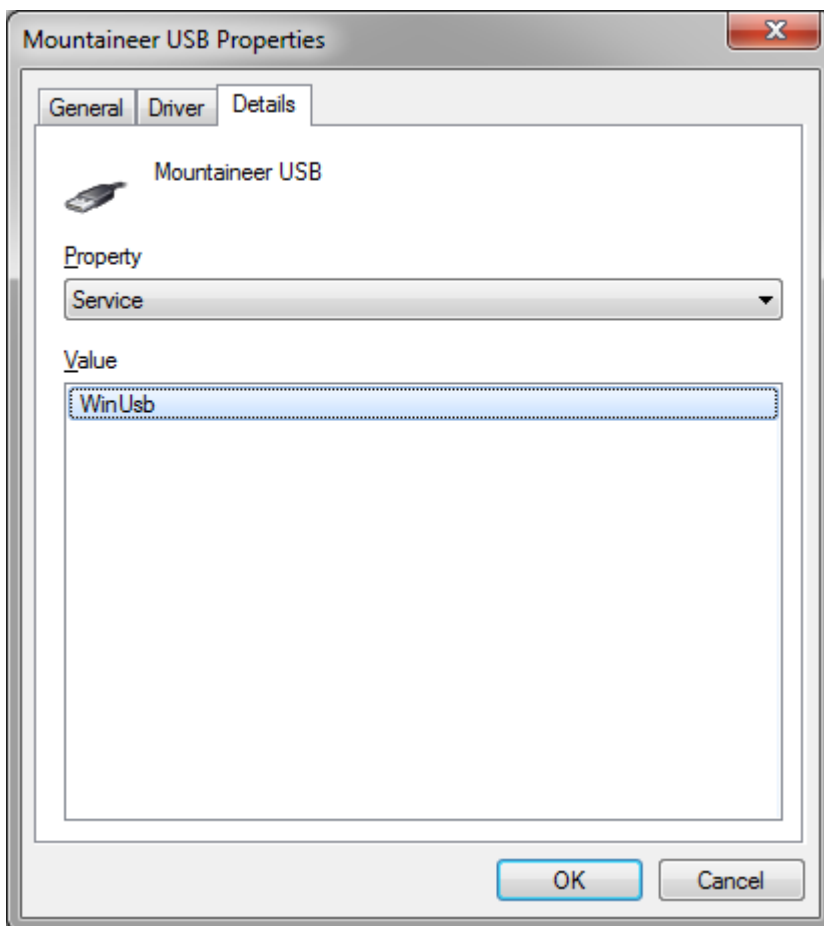




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- Click "Have Disk"
- Click "Browse"
- In the directory that you have downloaded in step 1, open "*Mountaineer WinUSB Driver*". Select "*MountaineerUSB.inf*" or "*MountaineerEth.inf*".
- Click "OK".
- Click "OK".
- Click "Next".
- If dialog box "Windows can't verify the publisher of this driver software" appears, then click "Install this driver software anyway".
- Now go back to the Device Manager, and to the new *Mountaineer USB* or *Mountaineer ETH* driver. Right-click on the driver. Select the *Details* tab, and the *Service* entry in the *Property* list. It **must** show the value "WinUsb" (see the following picture), otherwise Windows has tricked you and kept the old driver.



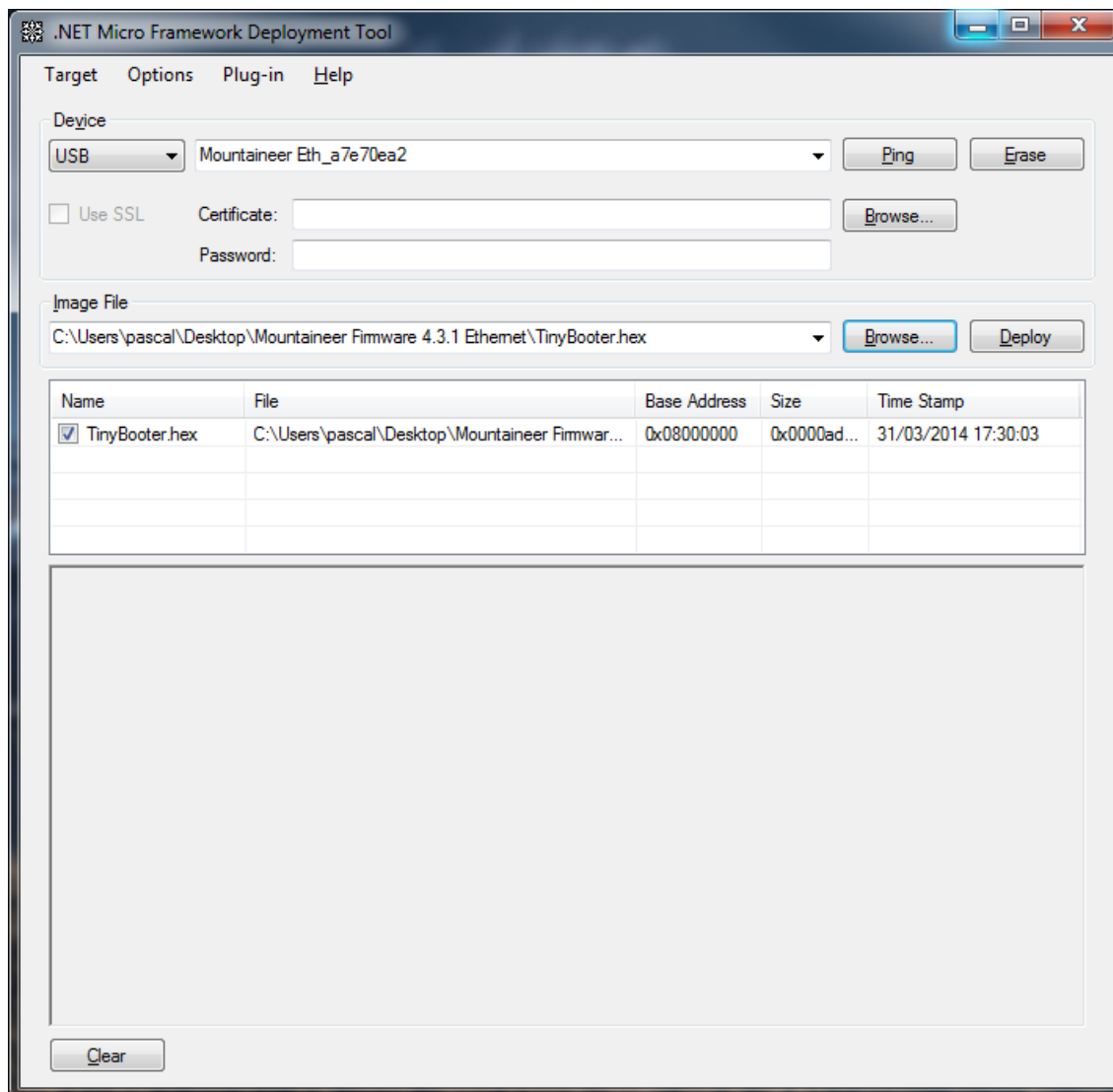


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### 5) Flash TinyBooter

- Click again on the lower of the two *Browse...* buttons. In the dialog box that opens, select the *TinyBooter.hex* file and open it.
- Now you see the following:



- Click on the *Deploy* button, then immediately hold down the *USER* button on the board, and wait until the command completes (with the button still held down). Then you can let go of the button again. (Holding the button down causes the normal boot loader, once it has been saved to Flash, to be started – but *without* immediately continuing to the upgrade boot loader.)
- The blue LED should now be *blinking*. If the blue light is steady instead (i.e., board has continued to the upgrade boot loader), hold down the *USER* button and then briefly press the *RESET* button, then let go of the *USER* button again. Now the blue LED should be blinking.



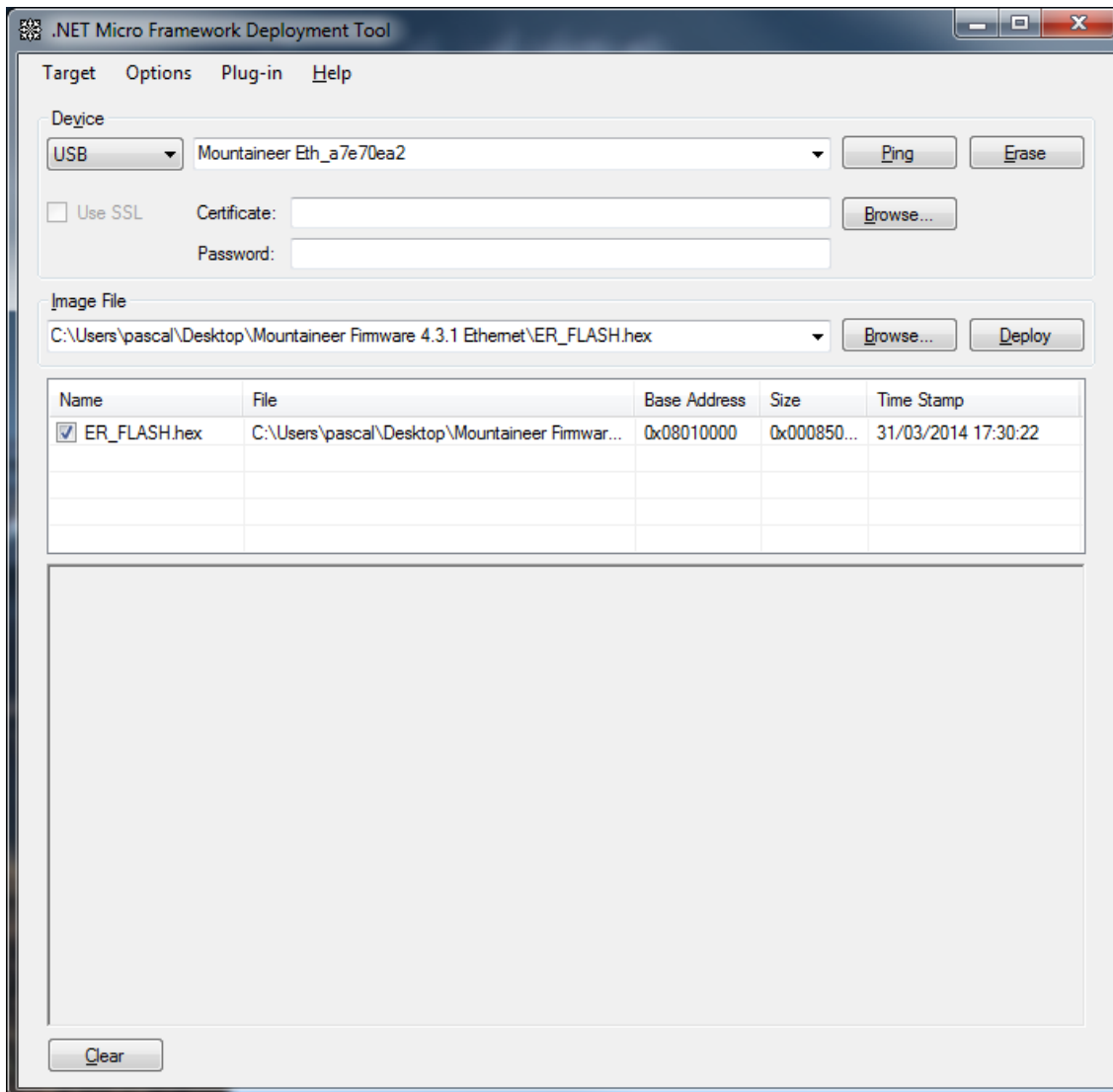


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### 6) Flash the runtime

- Now click again on the lower of the two *Browse...* buttons. In the dialog box that opens, select the *ER\_FLASH.hex* file.  
(This file contains an image of the NETMF hardware abstraction layer (HAL, i.e., the drivers), the NETMF platform abstraction layer (PAL), the .NET Common-Language-Runtime (CLR), plus selected libraries that are all linked together.)
- Now you should see the following:



- Click on the *Deploy* button.







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- To make sure that the installation was successful, execute the *Target>Device Capabilities* command. It should result in the following output:

The screenshot shows the .NET Micro Framework Deployment Tool window. The 'Target' tab is selected. Under 'Device', 'USB' is chosen, and the device ID is 'Mountaineer Eth\_a7e70ea2'. There are 'Ping' and 'Erase' buttons. The 'Image File' section shows the file 'C:\Users\pascal\Desktop\Mountaineer Firmware 4.3.1 Ethernet\ER\_FLASH.hex' with 'Browse...' and 'Deploy' buttons. A table lists the loaded image file.

Name	File	Base Address	Size	Time Stamp
<input checked="" type="checkbox"/> ER_FLASH.hex	C:\Users\pascal\Desktop\Mountaineer Firmware 4.3.1 Ethernet\ER_FLASH.hex	0x08010000	0x000850...	31/03/2014 17:30:22

Below the table, the 'Device Capabilities' are listed:

```
ClrInfo.clrVendorInfo: Copyright Oberon microsystems, Inc.
ClrInfo.targetFrameworkVersion: 4.3.1.0
SolutionReleaseInfo.solutionVersion: 4.3.1.0
SolutionReleaseInfo.solutionVendorInfo: Mountaineer Group
SoftwareVersion.BuildDate: Mar 31 2014
SoftwareVersion.CompilerVersion: 5030076
FloatingPoint: True
SourceLevelDebugging: True
ThreadCreateEx: True
LCD.Width: 0
LCD.Height: 0
LCD.BitsPerPixel: 0
AppDomains: True
ExceptionFilters: True
IncrementalDeployment: True
SoftReboot: True
Profiling: False
ProfilingAllocations: False
ProfilingCalls: False
IsUnknown: False
```

A 'Clear' button is at the bottom left.

- In particular, check the value of property *SoftwareVersion.BuildDate*! It should read *Mar 31 2014*.
- You have the new firmware! Now close *MFUpdate* – make sure to close it, otherwise Visual Studio may not be able to access the device.

