Using WinUSB with .NET Micro Framework Devices

WinUSB installation and usage manual

Abstract

As of version 4.2 QFE2 .NET MF supports WinUSB. This document describes how to install WinUSB for a MF device and how to use it.

1 Installation

WinUSB is native to Vista and later versions of Windows and can be installed on previous versions. All details can be found on [MSDN](#) and [Technet](#).

1.1 Host

It is important to note that on Windows 8 there is no need for an installer because WinUSB is automatically loaded for all WinUSB compatible devices. The WinUSB INF file on Windows 8 already contains a compatible ID that allows any WINUSB device to be loaded.

See below for details of Windows 8 INF file:

```
; WinUsb.inf
; Microsoft Windows WinUsb Driver INF
; Copyright (c) Microsoft Corporation

[Version]
Signature="$Windows NT$"
Class=USB Device
ClassGuid={88BAE032-5A81-49f0-BC3D-A4FF138216D6}
BootCritical=0
Provider=%MS%
pnplockdown=1                       ; Third Party Protected
DriverVer=06/21/2006,6.2.8102.0

[SourceDisksNames]
3426=windows cd

[SourceDisksFiles]
winusb.sys          = 3426

[DestinationDirs]
DefaultDestDir = 12

[Manufacturer]
%Generic.Mfg%=Generic.Section,NTamd64

; ================== Generic =================================

[Generic.Section.NTamd64]
%USB\MS_COMP_WINUSB.DeviceDesc%=WINUSB,USB\MS_COMP_WINUSB

[DefaultInstall]
CopyFiles=WINUSB.CopyFiles
```

For previous versions of windows instead there is a need for a specific INF that needs to be signed and the appropriate co-installer binaries files may be needed as well. In general there is no need for an installer but rather just the INF file and the matching signature. The appropriate VID and PID must be used so that Windows can find the right INF file and install the driver. The signature will prevent Windows from warning the user about an unsigned untrusted driver being loaded. The .NET MF PK comes with a sample INF file for Win7 under directory `%SPOCLIENT%\USB_Drivers\WinUSB\DriverPackage\win7`.

Below the INF file:

E:\src\client_v4_3_dev\USB_Drivers\WinUSB\DriverPackage\win7>more mfwinusb.inf

```
[Version]
Signature = "$Windows NT$"
; Windows 8 uses the values below
;Class     = USB Device
;ClassGUID = {88BAE032-5A81-49f0-BC3D-A4FF138216D6}

; Windows 7 uses the values below
Class     = USB
ClassGUID = {36fc9e60-c465-11cf-8056-444553540000}

Provider = %ManufacturerName%
CatalogFile=MyCatFile.cat
;DriverVer=01/24/2012,6.2.8181.0
DriverVer=06/21/2006,6.1.7601.17514

; ========== Manufacturer/Models sections ==========

[Manufacturer]
%ManufacturerName% = Standard,NTamd64

[Standard.NTamd64]
%DeviceName% =USB_Install, USB\VID_03E8&PID_6150

; =================== Installation ===================

[USB_Install]
Include=winusb.inf
Needs=WINUSB.NT

[USB_Install.Services]
Include=winusb.inf
AddService=WinUsb,0x00000002,WinUsb_ServiceInstall

[WinUsb_ServiceInstall]
DisplayName     = %WinUsb_SvcDesc%
ServiceType     = 1
StartType       = 3
ErrorControl    = 1
ServiceBinary   = %12%\WinUSB.sys

[USB_Install.Wdf]
KmdfService=WINUSB, WinUsb_Install

[WinUsb_Install]
KmdfLibraryVersion=1.09

[USB_Install.HW]
AddReg=Dev_AddReg

[Dev_AddReg]
HKR,,DeviceInterfaceGUIDs,0x10000,"{D32D1D64-963D-463E-874A-8EC8C8082CBF}"

[USB_Install.CoInstallers]
AddReg=CoInstallers_AddReg
CopyFiles=CoInstallers_CopyFiles

[CoInstallers_AddReg]
HKR,,CoInstallers32,0x00010000,"WdfCoInstaller01009.dll,WdfCoInstaller","WinUsbCoInstaller2.dll"

[CoInstallers_CopyFiles]
WinUsbCoInstaller2.dll
WdfCoInstaller01009.dll

[DestinationDirs]
CoInstallers_CopyFiles=11
```

```
; ================= Source Media Section ====================

[SourceDisksNames]
1 = %DiskName%

[SourceDisksFiles]
WinUsbCoInstaller2.dll=1
WdfCoInstaller01009.dll=1

; ================== Strings ==================

[Strings]
ManufacturerName="Freescale"
ClassName="Samples"
DiskName="USB Installation Disk"
WinUsb_SvcDesc="WinUSB Driver"
DeviceName="USB Device"
```

Please note the GUID values, especially "{D32D1D64-963D-463E-874A-8EC8C8082CBF}" that the .NET MF debugger interface uses to enumerate the WinUSB devices.

1.2 Device

As usual, the device configuration must match the compatible ID or the HW IDs as well. An example if provided for the iMXS and SAM9261_EK solutions in the .NET MF PK.

2 Usage

After the driver is installed the .NET MF debug API can enumerate MF devices that are WinUSB –compatible, as well as USB devices that use the legacy custom USB driver. Figure 1 shows that a *"WINUSB"* tag has been added to the transport menu to select the WINUB transport. The *"USB"* tag refers as usual to the devices that use the legacy driver.
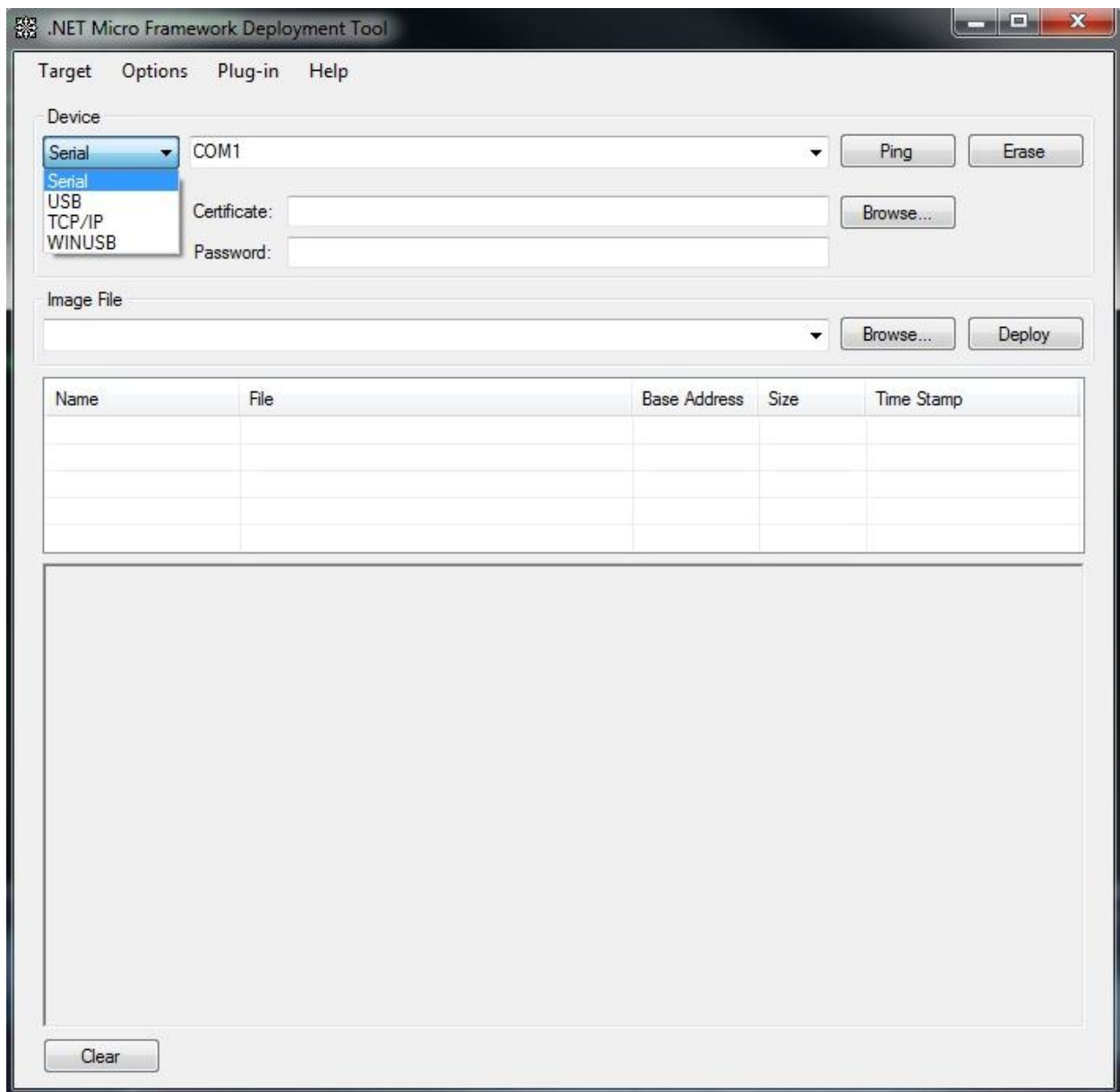
Figure 1 - Enumaration for WinUSB compatible devices