



SMSC™
SUCCESS BY DESIGN

Austin Design Center
11000 North Mopac Expressway
Stonelake Bldg. 6 Suite 500
Austin, Texas 78759

DFU Utility User Guide
V 1.0
DFU Utility revision 1.0

Updated 10/02/08

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Using Device Firmware Upgrade (DFU)

Overview

Device Firmware Upgrade (DFU) is the process by which device firmware is updated through a standard USB cable, eliminating the need to remove, reprogram, and replace flash memory. This operation is accomplished by special code in the internal ROM. This code can then later be called upon to essentially change the USB device into a flash programmable device. Then new firmware can then be uploaded to the device and reprogrammed into the flash. Once the operation is complete, the device configures itself back to a normal USB device and begins utilizing the new firmware.

SMSC's Device Firmware Upgrade (DFU) package gives manufacturers the ability to easily utilize DFU to dynamically update the firmware and descriptor information in their devices. This allows for in circuit programming of new device firmware both on the assembly line, and by the end user in the field. This affords both the manufacturer and the end user a great opportunity to utilize the feature enhancements and bug fixes of new code immediately once it becomes available.

Setting up the Hardware

Either a USB 1.1 or 2.0 controller may be used for the DFU operation, however some USB 2.0 host controller drivers such as OMI's have been found to have defects which prevent DFU from performing normally. If you are going to use a USB 2.0 host controller, it is recommended that you use Microsoft's host controller drivers in order to achieve the best results. Once the board is attached and powered up, it should enumerate as a normal USB flash media controller. When you see the drive icon(s) appear, the device is ready. The following section describes the next step in the process, which is setting up the software application to perform the DFU.

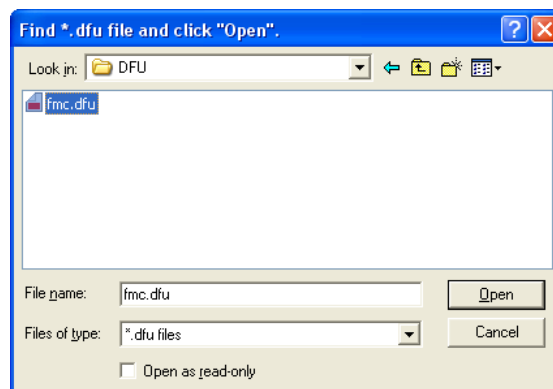
Using the USBDM Application to Perform Device Firmware Upgrade (DFU)

Updating the Firmware:

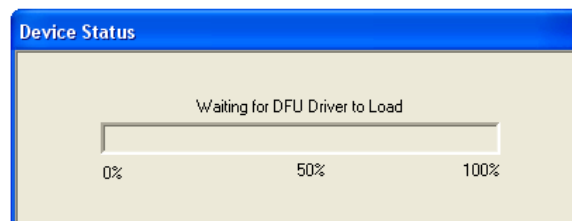
To perform a firmware update, click on the "Upload Firmware" button at the top of the application.



You will then be prompted to select the .dfu file that you wish to upload to your device. Navigate to the .dfu file (if it is not already listed in the current folder) and click open.



You will see a pop up box on your screen that displays the status of the firmware upload. This status will cycle through "Waiting for DFU Driver to Load," "Switching to DFU Mode," "Uploading New Firmware," "Validating New Firmware," and "Firmware Upload Successful." Once the loading is complete you will be prompted to unplug the device and reattach it to continue (or to restart the host if the device is internally mounted). Once the device is reattached, the device will enumerate and the information for the updated firmware will be loaded into the USB Drive Manager application.



Note: The first time USBDM is used for DFU on a Windows XP or Vista host, the found new hardware wizard will be seen when the DFU driver is used during the firmware update process. This will only happen the first time a DFU is performed on a host. When this comes up, choose to have windows automatically install the driver. Choose to continue loading the SMSC DFU driver even though it is unsigned. While this is occurring, you may receive a message from USBDM asking you if you wish to continue waiting for the device to respond. Select yes to continue waiting.

Using the OEM.exe to Update Firmware

The OEM executable icon is shown to the right.



Important: The DFU file (“*.DFU”) must be renamed to “oem.dfu” and placed in the directory c:\windows\smcusbdom.

1) Double click on this executable to begin updating the firmware in your target device.

2) You will be prompted to attach a supported USB device.

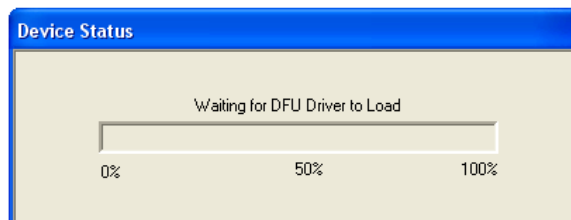
This prompt also displays which firmware version the executable will use to update your device. For this example, Firmware Version 3.00 is used.

3) Connect your device (if not connected already) and click “Continue.”

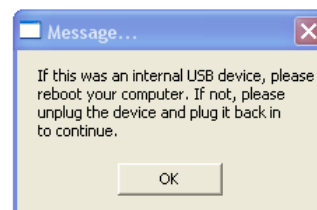


Note: This application allows consumers to make firmware updates to their device provided that 1) a valid DFU file is already programmed on the target device and 2) the firmware that they are attempting to upgrade to is equal to or newer than the firmware version already on the device. This application will not allow an update to a version of firmware that is older than what is currently on the device. You will be asked if you would like to update your device firmware, click “yes” to verify the update and the application will begin to update your device.

The application will show the status of the update. It will cycle through “Waiting for DFU Driver to Load,” “Switching to DFU Mode,” “Uploading New Firmware,” “Validating New Firmware,” and “Firmware Upload Successful.”



4) The USB Drive Manager application will prompt you to either reboot your computer (if an internal USB device was updated) or unplug the device and plug it back in (if an external device was updated).



After this is completed, you will see the device status pop up return with the message "The Update Completed Successfully." The firmware is now updated on your device.

