



Future Technology Devices International Ltd.

Application Note AN_101

Using Microsoft's WHQL Process for Customer Modified FTDI Driver Files

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Device drivers are signed and certified by Microsoft to provide the end user a smooth experience when installing new hardware. This Applications note provides instructions on the required steps an OEM needs to take in order to obtain certification under their own company name.

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1 Introduction:

Many FTDI customers are interested in changing the FTDI drivers to reflect custom Vendor IDs (VID), Product IDs (PID), product names, company names and custom performance options. Customers can do this by editing one or both of the driver INF files (FTDIPORT & FTDIBUS).

INF (or Information) files are scripts which tell the Windows Operating System how to install and configure peripheral hardware drivers (.SYS, .DLL and related files).

When adding custom VIDs or PIDs, FTDI require the default FTDI VID (0x0403) and PID (0x6001, 0x6010 and 0x6011) values are deleted before submitting the WHQL package to Microsoft.

Once an INF file has been edited, its original digital signature is no longer valid. Any attempt to load a driver package that includes a modified INF file as a clean install will result in a warning window (fig. 1.1) to appear.



Figure 1.1 Logo Test Warning Pop-Up Window

This warning is **not fatal** to the install, but many FTDI customers desire a more professional look and feel to the products that they are distributing to their customers. The WHQL process assigns a new digital signature to the CAT files, and prevents the warning window from appearing. **With the release of Windows Vista 64-bit edition, Microsoft requires signed device drivers.** It is likely that this requirement will carry forward to new operating system releases as well.

A WHQL certified driver becomes part of Microsoft's Windows Update catalog, allowing plug and play driver installation.

Note: The current FTDI driver package - CDM 2.04.16 WHQL Certified, consists of the following files that implement and control the VCP and D2XX drivers.

- **INF files** – These files tell Windows how to install the driver : *ftdibus.inf* for D2XX driver, *ftdiport.inf* for VCP driver
- **SYS files** – driver core files – *ftdibus.sys* for D2XX driver, *ftser2k.sys* for VCP driver
- **CAT files** - Windows catalogue files –contain digital signatures
- **DLL files** - Windows dynamic link library – support driver operation
- **LIB files** - Contain API commands used by driver application programs

2 Introducing WHQL for FTDI drivers (also known as Winqual):

WHQL stands for Windows Hardware Quality Labs. WHQL is a process designed to test and certify new Windows hardware drivers.

How does WHQL Work?

Formal driver testing and certification are performed for each release of the FTDI device drivers. With this formal certification, any customer hardware design that uses our chip carries this formal driver certification also. OEM designs which use the default FTDI VID and PIDs also carry this full certification since no modifications are made to the device driver. OEM design which use a unique PID (assigned by FTDI), or their own VID (assigned by the USB-IF at www.usb.org) must obtain a Driver Update certification.

After an OEM submits a driver package with modified INF files for WHQL certification, a new digitally signed driver package will be available for download upon successful completion. This new driver package will install without warning messages on the Windows OS versions selected during the submission process.

In the case of modified INF files, there are 2 submissions that must be made - "Reseller" submission and "Driver Update Acceptable" (DUA) submission.

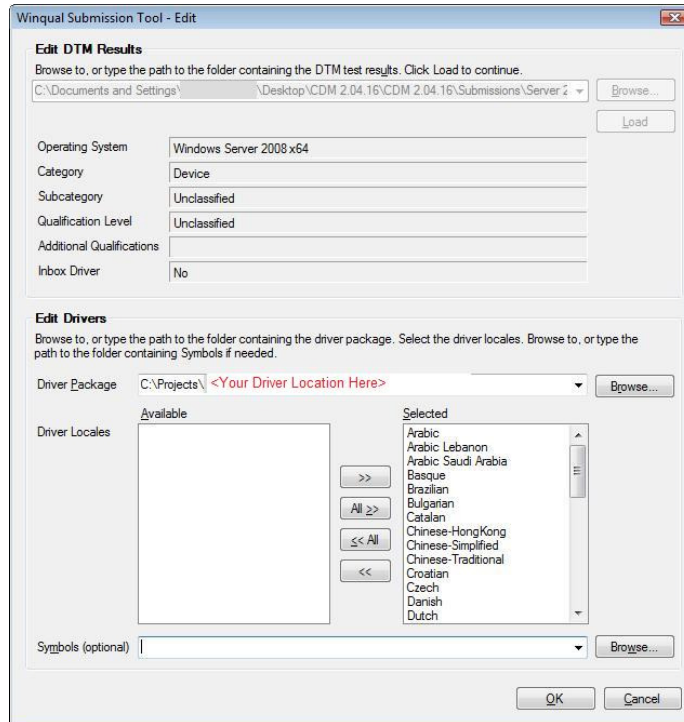
Note: Although some Microsoft documents claim that the DUA process will be phased out, it is still being used at the time of writing this applications note.

If Microsoft suggests that a customer driver package requires a complete hardware test, it is recommended that the customer informs them that they have only changed the INF files, and they are making a Reseller/DUA submission request. In this case, you do not need a complete driver hardware test performed.

How to start a Reseller/ DUA Test Submission

1. Establish a WHQL account and obtain a VeriSign Digital ID: (A VeriSign Digital ID is required for the Winqual account) Refer to this link:
 - o <https://winqual.microsoft.com/SignUp/>
 - o Request a VeriSign Microsoft Authenticode Code Signing Certificate Digital ID from:
 - <http://www.verisign.com/code-signing/content-signing-certificates/microsoft-authenticode/index.html> . This link is typically available from the WinQual web site noted in step 1. The VeriSign Code Signing for Microsoft Authenticode product is required as files must be digitally signed with this certificate during submission to Microsoft.
2. Send a request for "Reseller Rights" to the FTDI UK Support email: support1@ftdichip.com. Include the following information in this request:
 - o "Reseller Rights Request" and your company name in the subject line.
 - o Your company name *as it is registered with your Winqual account*.
 - o Your company contact person and contact details, including mailing address, telephone number and email address.
 - o Your product name.
 - o The intended VID and range of PIDs that will be assigned to this DUA submission
 - o The intended FTDI part number associated with the DUA submission
3. Upon receipt of this data, FTDI UK will review the request. Valid requests will be granted through Winqual and the company contact will be notified by a response to the request email. The response will include the Reseller Submission ID.
4. Follow the instructions to modify the user account and obtain the various submission tools as outlined by this link:
https://winqual.microsoft.com/Help/default.htm#preparing_for_a_logo_submission.htm
5. At this point, do *not* start the Windows Submission Tool (WST).
6. Accept the resold submission. Refer to the following link for details:
 - o https://winqual.microsoft.com/Help/how_to_accept_resold_submission.htm
 - o If you did not execute the licenses as part of Step 5, you may be presented with various license agreements with Microsoft. Acceptance is required to continue. Follow the links to each license file, wait for the license to load and execute the license electronically. Additional "Exhibits" indicated in the license agreement(s) are completed later in the submission process.

7. After you have accepted the resold submission, follow the instructions at this link to create the Driver Update Acceptable submission package:
 - https://winqual.microsoft.com/help/driver_update_acceptable_help_content.htm, which includes building the submission through the WST.
 - Within the instructions of this link, inside of Step 5, you will modify each entry listed with the current location of the *modified* driver which you are submitting. Delete the text in the "Symbols" entry at the bottom of the dialog box.



8. **After the above steps have been successfully completed on the WHQL website, the submission will be checked by the Winqual system, and you will be notified by email that the submission is complete.**
9. At this point, when viewing the submission, you are presented with an option to download the "Signed Catalog File". There should be at least two files in the CAB file that's downloaded:
 - ftdibus.cat
 - ftdiport.cat (if you have enabled the COM port and submitted the DUA with ftdiport.inf)
10. Copy all the files contained within the CAB file to the root your *modified* driver directory.
11. Your *modified* driver directory now contains the complete SIGNED driver.
12. Test the installation on a clean system. The driver will install without any notices.
13. You may distribute this directory as your WHQL certified driver.
14. You have distribution options through Windows Update as well (Driver Distribution Service). FTDI encourages use of the Windows Update service.
 - **Note:**
Your account will show two logo submissions. ONLY enable Windows Update on the DUA submission.

Note:
FTDI is only involved in granting reseller rights to the device driver (Steps 2 and 3 above). All other steps involve interaction with VeriSign and/or Microsoft. Please contact VeriSign and/or Microsoft for assistance in the other steps.

Note:

Maintenance, distribution and support of any new driver is the responsibility of the FTDI customer. Please check our website (www.ftdichip.com) on a regular basis for driver updates.

FTDI do not charge a fee for granting reseller rights; however, there is an associated fee charged by Microsoft for each Windows Driver Certification application.

At the time of writing this document (May 2009) the costs involved are shown below.

Please note that the costs given are provided for information only and are subject to change.

- VeriSign Microsoft Authenticode Code Signing Certificate ID fee: \$399.00
- Reseller Rights Submission fee: \$100.00
- DUA Submission fee: \$100.00, covers all Windows Operating System which are certified in the original FTDI Resold driver version.

This document will not be kept up to date with the most up to date fees.

Please consult the appropriate Microsoft website for latest costs.

3 Acronyms and Abbreviations

Terms	Description
WHQL	Windows Hardware Quality Labs
PID/VID	Product ID/Vendor ID
DUA	Driver Update Acceptable
INF	Windows Information File
DLL	Windows Dynamic Link Library
SYS	Windows peripheral hardware driver file
Clean Install	A first time driver install on a PC, or a re-install of the driver after it has been deleted from the system
Reseller Rights	Conformation sent by FTDI UK to the customer giving permission to continue with the driver certification process

Table 3.1 Acronyms and Abbreviations

4 Contact Information

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Distributor and Sales Representatives

Please visit the Sales Network page of the FTDI Web site for the contact details of our distributor(s) and sales representative(s) in your country.

Appendix A - Revision History

Revision History

Version 1.00	Initial Release	19/08/08
Version 2.00	Additional information added and contact information updated.	09/06/09
Version 2.1	Corrected references to VeriSign certificate types.	10/09/09