HUAWEI Module Windows CE
Integration Guide

Version   1.0

Date   2011-03-30

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About this document

History

Version	Date	Chapter	Description
1.0	2011-03-30		created

Contents

1Introduction

1.1 overview

This document describes the folder structure of HUAWEI Module Windows CE driver package and how to integrate the driver into a Windows CE system.

The latest driver only supports ARM and MIPS CPU on windows CE 5.0 and windows CE 6.0 platform. Other kinds of CPUs or systems are not supported yet.

HUAWEI only provides the USB driver package, you can use the dial tool provided by windows CE OS or developing your own dial tool kit.

There are three main communication interfaces are provided by HUAWEI module on windows CE platform:

Modem port: universal modem port

PCUI port: for AT command

DIAG port: for diagnosis

HUAWEI USB driver is a stream driver framework, MDD layer is a serial device, and PDD layer is responsible for interacting with USB stack. Please refer to MSDN for more information.

2Driver Package structure

The driver package is organized like this, including the following folders (files).
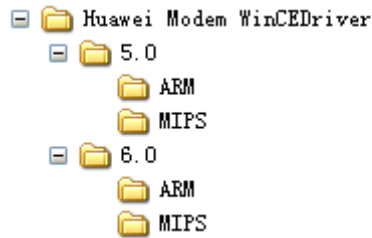

```
|---------------- 5.0     (For WinCE 5.0)

|                   |---- ARM (fro ARM CPU）

|                   |          |--- vsp.reg (All necessary registry key for use the driver)

|                   |          |--- huawei CEDriver.CAB (The CAB file)

|                   |          |--- huawei CEDriver.rar (The RAR file)

|                   |

|                   |-----MIPS (for MIPS CPU）

|                              |--- vsp.reg (All necessary registry key for use the driver)

|                              |--- huawei CEDriver.CAB (The CAB file)

|                              |--- huawei CEDriver.rar (The RAR file)

|

|------------ 6.0       (For WinCE 6.0)

              |--- ARM (for ARM CPU）

              |     |--- vsp.reg (All necessary registry key for use the driver)

              |     |--- huawei CEDriver.CAB (The CAB file)

              |     |--- huawei CEDriver.rar (The RAR file)

              |

              |---MIPS (for MIPS CPU）

                      |--- vsp.reg (All necessary registry key for use the driver)

                      |--- huawei CEDriver.CAB (The CAB file)

                      |--- huawei CEDriver.rar (The RAR file)
```

Remark:

Each folder includes two files with the same name but the different postfix(.rar and .cab). You can choose any of them according to your requirement. The CAB file can be run in your WinCE OS directly, and you also can release the RAR file to extract the driver files and embed it into your WinCE OS. The "vsp.reg" is a sample for applications such as you need customize the serial port number.

You can get four files after releasing the RAR file. They are *"pppvsp.dll", "pppvsp.rel",* *"vsp.bib"* and *"vsp.reg"*.

3 Guideline for driver integration

3.1 Add vsp.reg into project.reg and edit the registry setting.

Please add the content of "vsp.reg" into "project.reg" and then save the file. You may find the file "project.reg" in "ParameterView" window of item "Project Specific Files".
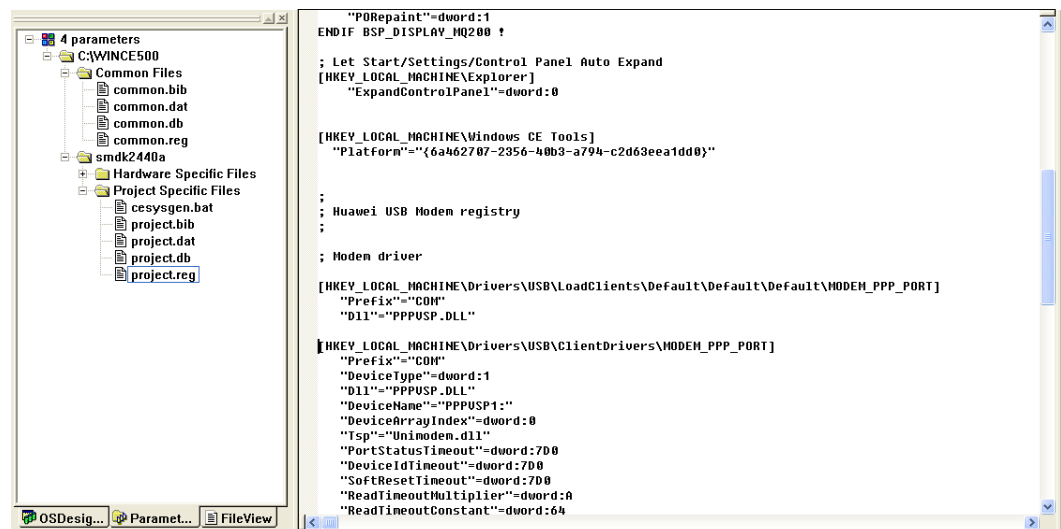
3.2 Add vsp.bib into project.bib

Please add the content of "vsp.bib" into "project.bib" and then save the file.

You may also find the file "project.bib" in "ParameterView" window of item "Project Specific Files".

3.3 Build and Sysgen Platform

Please re-sysgen and build the platform because of the modification from Step1 to Step3. If you have ever built the platform before changing "USBD.cpp", please select "Clean Before Building" in Platform Builder's "Build OS" menu.

Don't run "Make Run-Time Image" now.

3.4 Copy driver binary

Please copy "PPPVSP.dll" and "PPPVSP.rel" into your $(_TARGETPLATROOT) folder.

3.5 Make image

Run "Make Run-Time Image" now. Then you may get the BIN file.

Remark:

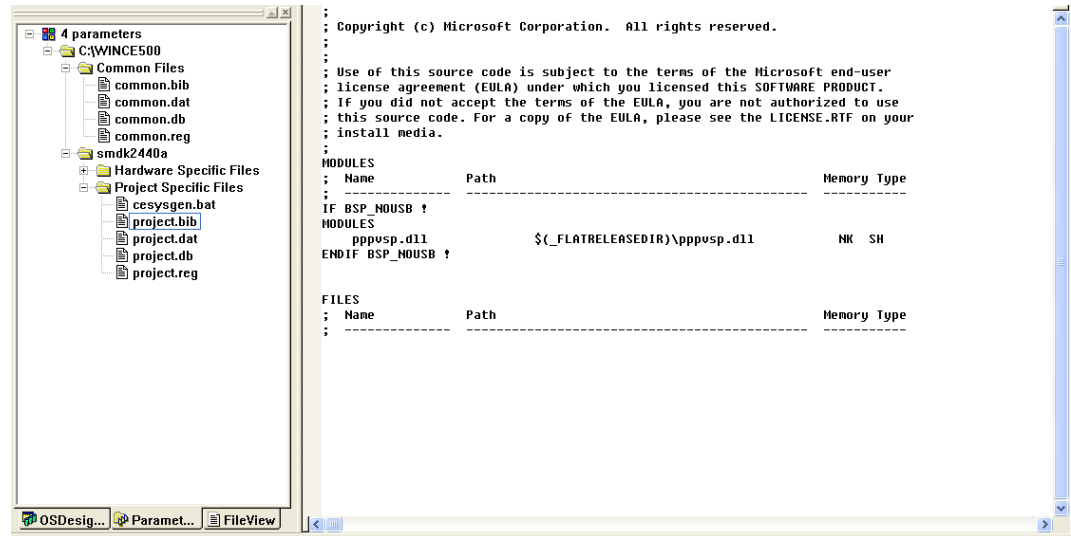If you want to use the CAB file, just copy this file to your embedded OS and then run it according to your requirement. (If you need customize the serial port number, modify the "vsp.reg" first. Additional information about the configuration may be found in Section 5.2.)

In Windows CE 5.0 system, there is a little bug on the USB device driver load processing routine. We strongly recommended you to modify this bug. You can modify this bug in usbd.cpp (X:\WINCE500\PUBLIC\COMMON\OAK\DRIVERS\USB\USBD.) as follows:

```
BOOL LoadDeviceDrivers(SDevice * pDev, BOOL * pfLoaded)

{
```

```
......

if (fRet && bLoaded) { // Driver Loaded for this interface.

  pDev->rgbInterfaceFlag[iInterface] |= INTERFACE_FLAG_ACTIVATE;

}

// delete the "else" branch, or this will lead composite device could not
load driver correctly

/*

else

  break;

*/

......

}
```

4Registry setting

This chapter will describe the content of "vsp.reg". Please read this chapter carefully to create your own registry.

The "vsp.reg" includes two parts approximately, one part for driver loading, another for configuring Modem

All registry entries not mentioned do not need to be modified. Just copy it to your "project.reg"

4.1 Driver loading part

The following registry keys show the PPPVSP driver as a USB function serial client driver. This part must be included to add the driver into your OS.

```
;

; These items used to indicate the system to use PPPVSP as

; the default USB driver.

;

[HKEY_LOCAL_MACHINE\Drivers\USB\LoadClients\4817\Default\8\HU
AWEI_MODEM_PORT]

"Prefix"="COM"

"Dll"="PPPVSP.DLL"


[HKEY LOCAL MACHINE\Drivers\USB\LoadClients\Default\Default\D
efault\HUAWEI_MODEM_PORT]

"Prefix"="COM"

"Dll"="PPPVSP.DLL"
```

```
    [HKEY LOCAL MACHINE\Drivers\USB\ClientDrivers\HUAWEI MODEM PO
RT]

"Prefix"="COM"

"DeviceType"=dword:00000001

"RxBufferSize"=dword:00006000

"Dll"="PPPVSP.DLL"

"DeviceName"="PPPVSP1:"

"DeviceArrayIndex"=dword:00000000

"Tsp"="Unimodem.dll"

"PortStatusTimeout"=dword:000007d0

"DeviceIdTimeout"=dword:000007d0

"SoftResetTimeout"=dword:000007d0

"ReadTimeoutMultiplier"=dword:0000000a

"ReadTimeoutConstant"=dword:00000064

"WriteTimeoutMultiplier"=dword:00000032

"WriteTimeoutConstant"=dword:000003e8

"InterfaceIndex"=dword:00000000

"IClass"="{7690C995-91F2-486A-8983-C4BC3EFC0686}"


[HKEY_LOCAL_MACHINE\Comm\PPPVSP]

"DisplayName"="USB-PPP Port Driver"

"Group"="Serial"

"ImagePath"="PPPVSP.DLL"
```

4.2 Modem configuration part

I. [HKEY_LOCAL_MACHINE\Drivers\Unimodem\Init]

This registry entry is used to set to initialization AT commands for huawei modem

Please confirm the APN and modify it in the initialization AT commands
""4"="AT+cgdcont=1,\"ip\",\"1234\"<cr>"".

The sample APN is "1234", you can change it to the APN you need, such as "3gnet" for China Unicomm

```
;

; Huawei Modem initialization config.
```

```
;                                                                    13



[HKEY_LOCAL_MACHINE\Drivers\Unimodem\Init]

"1"="AT<cr>"

"2"="ATE0V1&C1&D2<cr>"

"3"="ATE0<cr>"

"4"="AT+cgdcont=1,\"ip\",\"1234\"<cr>"
```

II. [HKEY_LOCAL_MACHINE\ExtModems\HayesCompat]

This registry entry is useful when you use a dynamic serial port number for Huawei modem, How to customize the port number is described in Section 5.

```
[HKEY_LOCAL_MACHINE\ExtModems\HayesCompat]

;

;The port number will be created after driver loading, so

;application can get right serial port number to access it.

;Please refer to Section 1 to know what are port

;"MODEM","PCUI and "DIAG"

;

"MODEM"="com1"

"PCUI" ="com2"

"DIAG" ="com3"
```

5 Customize the serial port number

5.1 About serial port number

Serial port numbers are managed by the OS, OS manages the port number resource and distribute a dynamic available number when find a serial port device. But driver can specific fixed serial numbers if needed by adding a registry entry. In this condition, you have to confirm that the serial port number is not used by other device.

5.2 Specific fixed serial number

To customize fixed serial port number, do it as follows.

If you want to specific your modem port as COM3:

```
[HKEY_LOCAL_MACHINE\Drivers\USB\ClientDrivers\HUAWEI_MODEM_PORT]

 "Prefix"="COM"

 "DeviceType"=dword:00000001

 "RxBufferSize"=dword:00006000

 "Dll"="PPPVSP.DLL"

 "DeviceName"="PPPVSP1:"

 "DeviceArrayIndex"=dword:00000000

 "Tsp"="Unimodem.dll"

 "PortStatusTimeout"=dword:000007d0

 "DeviceIdTimeout"=dword:000007d0

 "SoftResetTimeout"=dword:000007d0

 "ReadTimeoutMultiplier"=dword:0000000a

 "ReadTimeoutConstant"=dword:00000064

 "WriteTimeoutMultiplier"=dword:00000032

 "WriteTimeoutConstant"=dword:000003e8

 "InterfaceIndex"=dword:00000000

 "IClass"="{7690C995-91F2-486A-8983-C4BC3EFC0686}"
```

```
                    "Index"=dword:00000003 //add this registry entry
```

You can specific the PCUI or DIAG port number at the same way.

```
[HKEY_LOCAL_MACHINE\Drivers\USB\ClientDrivers\HUAWEI_PCUI_PORT]

 "Index"=dword:00000004          // add this registry entry

[HKEY_LOCAL_MACHINE\Drivers\USB\ClientDrivers\HUAWEI_DIAG_PORT]

 "Index"=dword:00000005          // add this registry entry
```