Scope

This document describes

1. How to test USB Device CDC example.
2. The demo which shows keep alive feature if the SOC supports.

Preparation

Host

Personal computer running Windows Xp or Windows 7.

Device

A board, i.e. twrk70f120m, which is running dev_cdc_virtual_com example.

Libraries dependency

The libraries dependency for various RTOS lists as following,

BM

Library project path:

- *<install_dir>/usb/usb_core/device/build/<tool_chain>/usbd_sdk_<board>_bm*
- *<install_dir>/lib/ksdk_platform_lib/<tool_chain>/<platform>*

FreeRTOS

Library project path:

- *<install_dir>/usb/usb_core/device/build/<tool_chain>/usbd_sdk_<board>_freertos*
- *<install_dir>/lib/ksdk_freertos_lib/<tool_chain>/<platform>*

MQX

Library project path:

- *<install_dir>/rtos/mqx/mqx/build/<tool_chain>/mqx_<board>*
- *<install_dir>/rtos/mqx/mqx_stdlib/build/<tool_chain>/mqx_stdlib_<board>*
- *<install_dir>/usb/usb_core/device/build/<tool_chain>/usbd_sdk_<board>_mqx*
- *<install_dir>/lib/ksdk_mqx_lib/<tool_chain>/<platform>*

uCOSii

Library project path:

- *<install_dir>/usb/usb_core/device/build/<tool_chain>/usbd_sdk_<board>_ucosii*
- *<install_dir>/lib/ksdk_ucosii_lib/<tool_chain>/<platform>*

uCOSiii

Library project path:

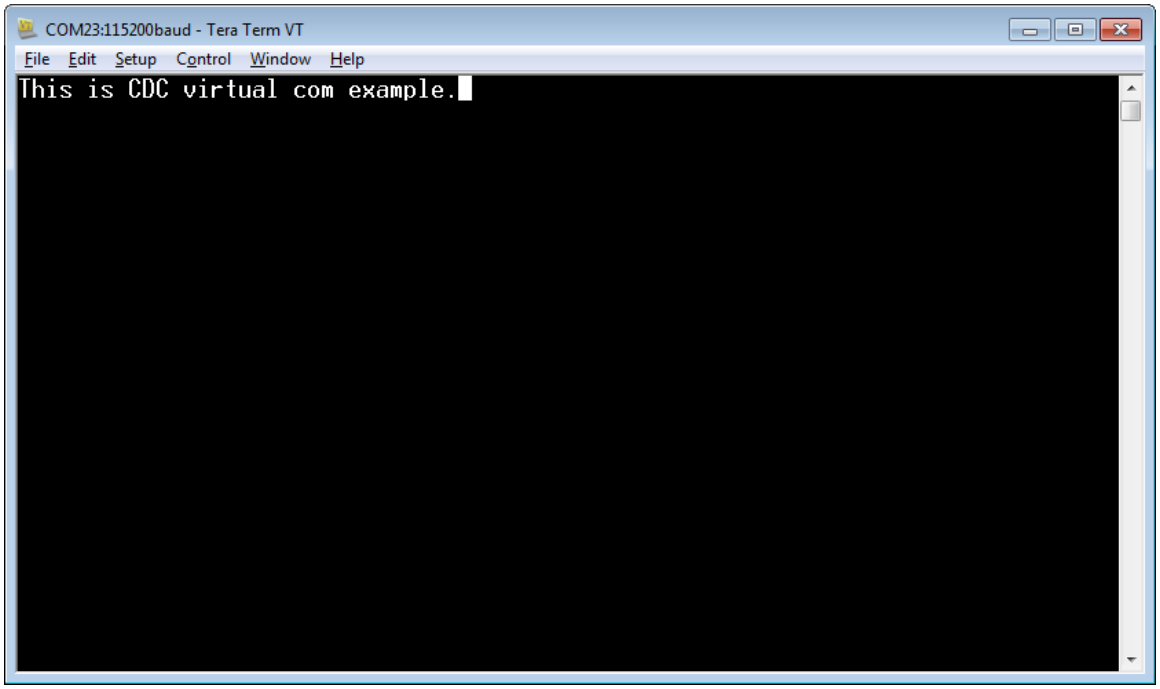
- *<install_dir>/usb/usb_core/device/build/<tool_chain>/usbd_sdk_<board>_ucosiii*
- *<install_dir>/lib/ksdk_ucosiii_lib/<tool_chain>/<platform>*

Refer to **Integration of the USB Stack and Kinetis SDK_review.pdf(***<install_dir>/doc***)** on how to build the corresponding libraries.

Run CDC virtual com demo in Windows

Follow the steps to run the CDC Virtual Com demo.

1. Plug-in the CDC device which is running dev_cdc_virtual_com example into PC. You will see a COM port enumerated in Device Manager. If it prompts for CDC driver installation. Refer to the next section to see how to install CDC driver.
2. Open the COM port in a terminal tool, i.e. Tera Term.
3. Type some characters and you can see them echoed back from the COM port.



Note:

- Since there is no dynamic detection between host and device, the COM port must be closed from the terminal tool prior to plug-out the CDC device. Or the CDC device won't get recognized next time you plug-in with the COM port still opened.
- If no HW FLOW CONTROL is needed, you can let the variable **start_transactions** always be TRUE.

Run CDC virtual com demo in Linux/Android

Ubuntu X86 Linux PC

Steps:

a. Connect CDC device to PC
b. In PC
   # ls /dev/tty*
   Then /dev/ttyACM0 will be found
c. In PC
   # minicom -s
   To configure ttyACM0 as the default console and other configurations
d. In PC
   # minicom
   The ttyACM0 can be opened successfully and user can input characters by minicom

i.mx6DQ board with yactor rootfs

Steps:

a. enable ACM feature and rebuild kernel

| Symbol: USB_ACM
[=y]
|
| Type :
tristate
|
| Prompt: USB Modem (CDC ACM)
support |
| Location:
|
| -> Device
Drivers
|
| -> USB support (USB_SUPPORT
[=y]) |
| (1) -> Support for Host-side USB (USB [=y])

b. bring up i.mx board with rebuilt kernel
c. plugin CDC device to i.mx board
d. in i.mx board
   # ls /dev/tty*
   The /dev/ttyACM0 will be found
e. in i.mx board, we use pipe to read and write to ttyACM0 because minicom is not available for yactor rootfs.
   # cat /dev/ttyACM0 >> read1 &
   # echo “Hello World” > /dev/ttyACM0
   # fg
   Ctrl+c to interrupt the progress
   # vi read1
   Result: “Hello world” can be found in read1

Keep alive feature demo

If the board supports this feature, users can enable and check this feature as below. Take frdmkl27z48m as example.

For frdmkl27z48m, due to the limited ram size and the keep alive feature will use additional ram, This example using freertos will encounter build error.

1. Set the macros in *usb/usb_core/device/include/frdmkl27z48m/usb_device_config.h* and build the usbd_sdk_frdmkl27z48m:

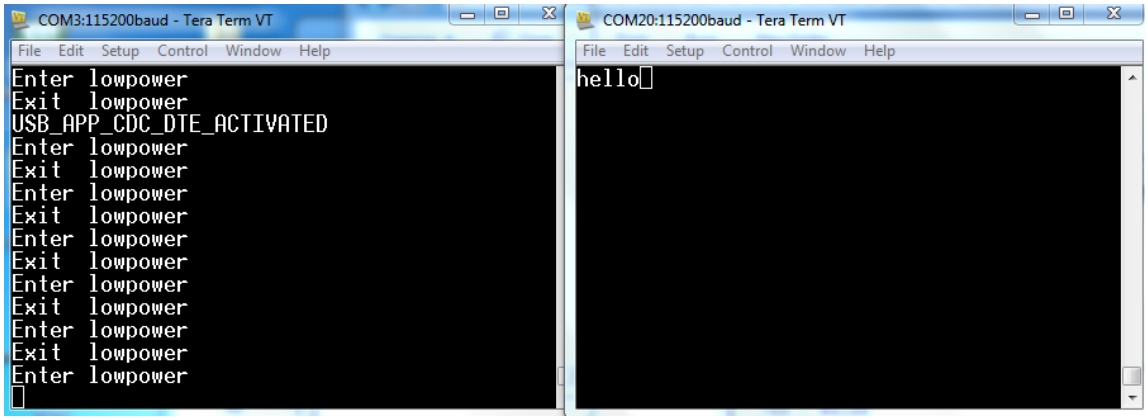
   #define USBCFG_DEV_USE_USBRAM 1

   #define USBCFG_DEV_KEEP_ALIVE_MODE 1

2. Build the dev_cdc_virtual_com_frdmkl27z48m demo and download the image to the board.

3. Open the COM ports listed in Device Manager. One is enumerated as the virtual com and the other is the debug console port.

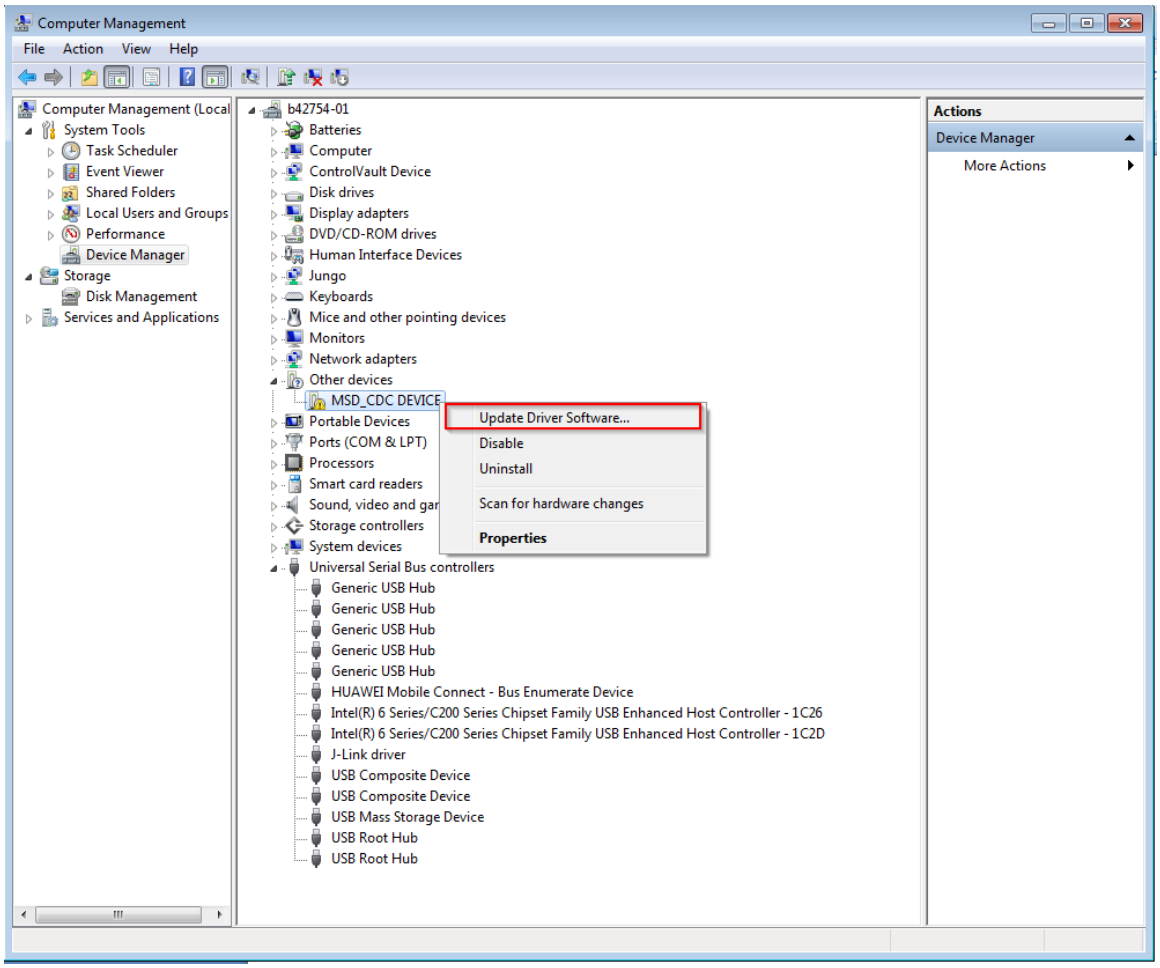
4. Type some characters and you can see them echoed back from the COM port. At the same time the “Enter lowpower” “Exit lowpower” message from the debug console indicates the keep alive feature.



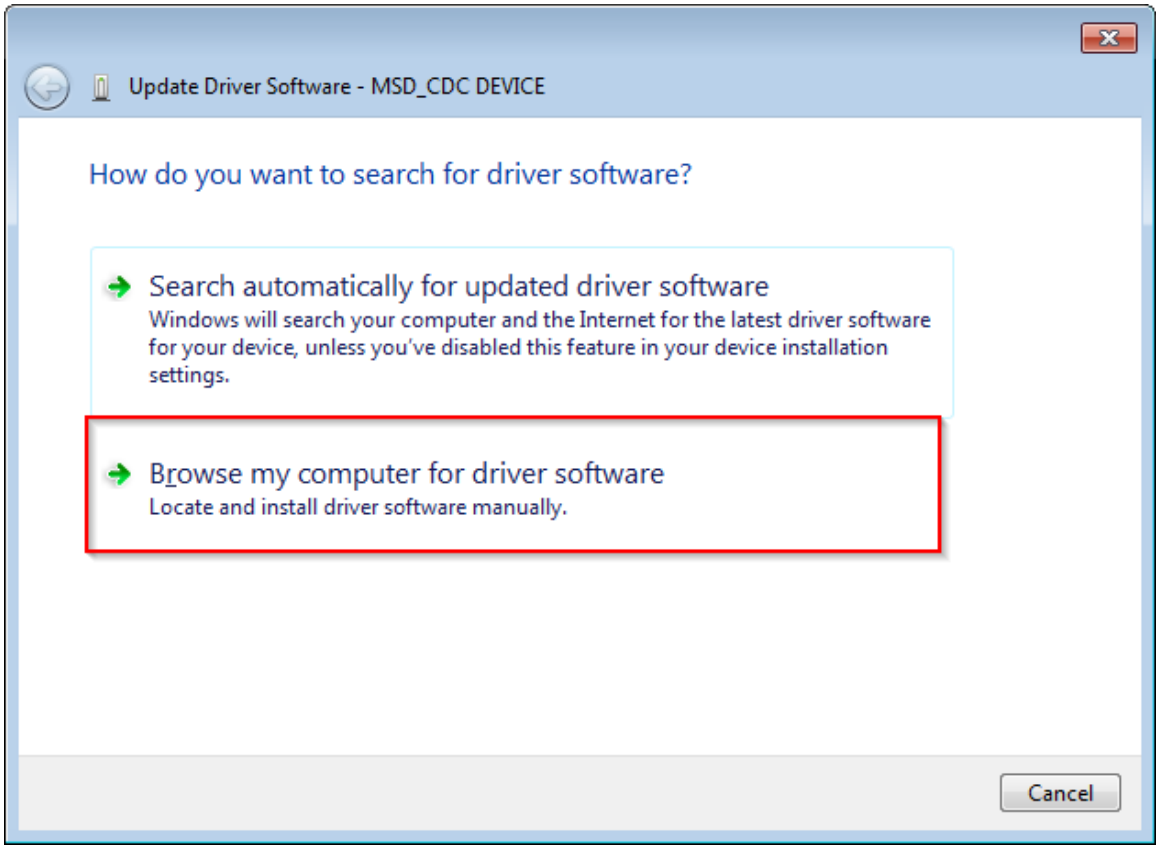
How to install CDC driver for virtual_com and msd_cdc composite example

Below are the steps to install CDC driver on Windows 7, while on Windows XP the similar way apply.

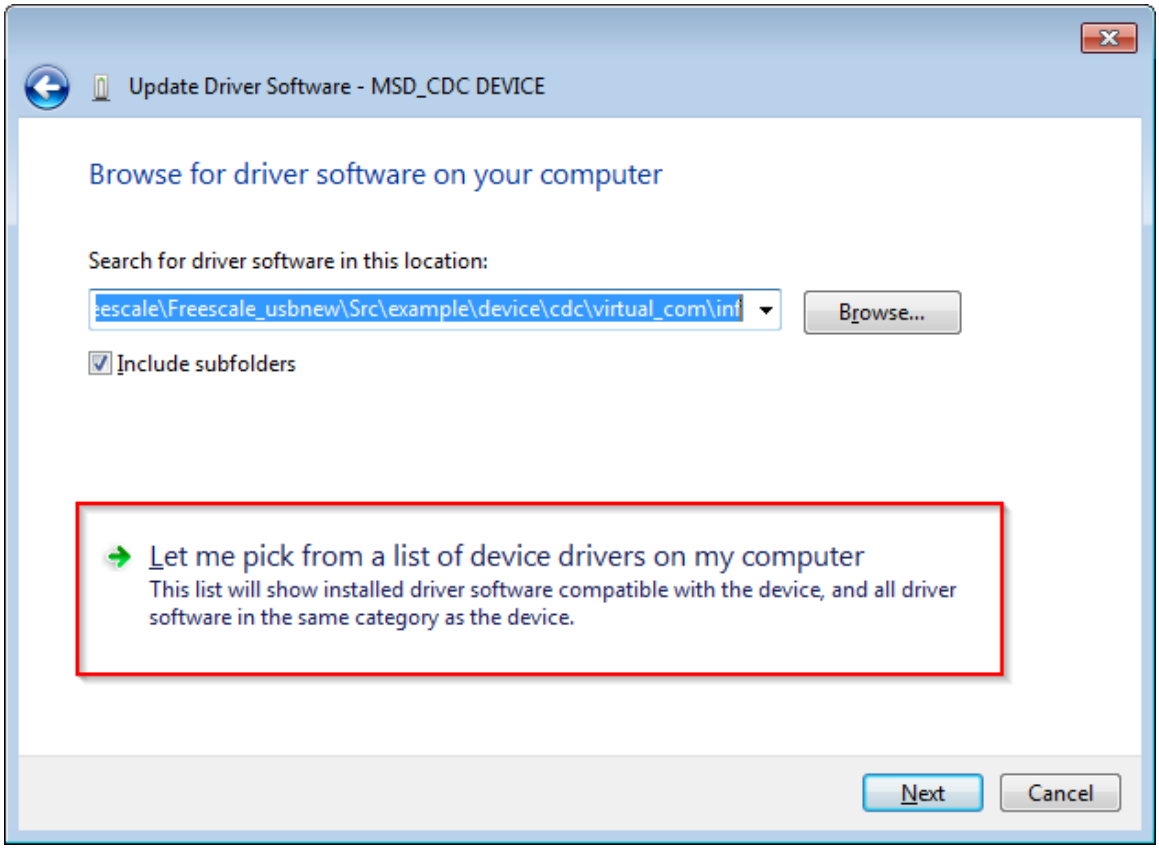
Step 1. Click "Update Driver Software…"



Step 2. Choose “Browse…”

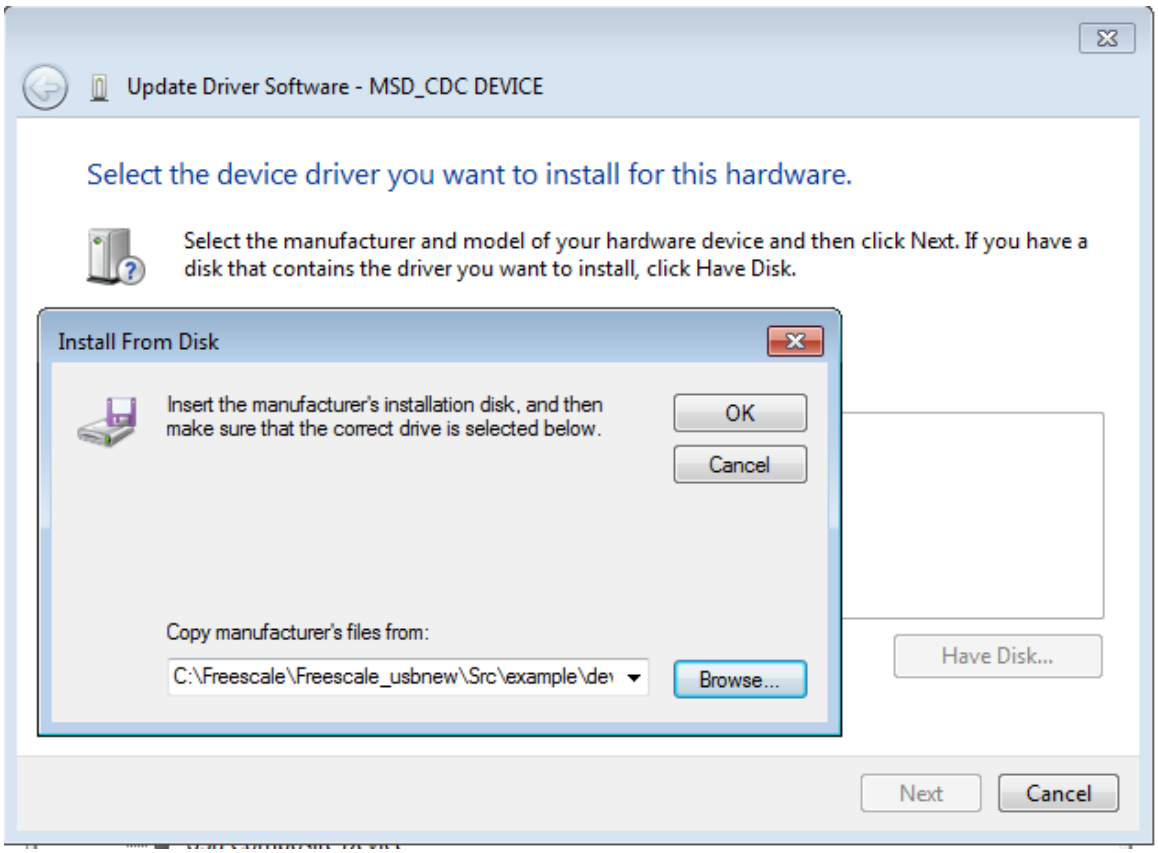


Step 3. Select “Let me pick…”

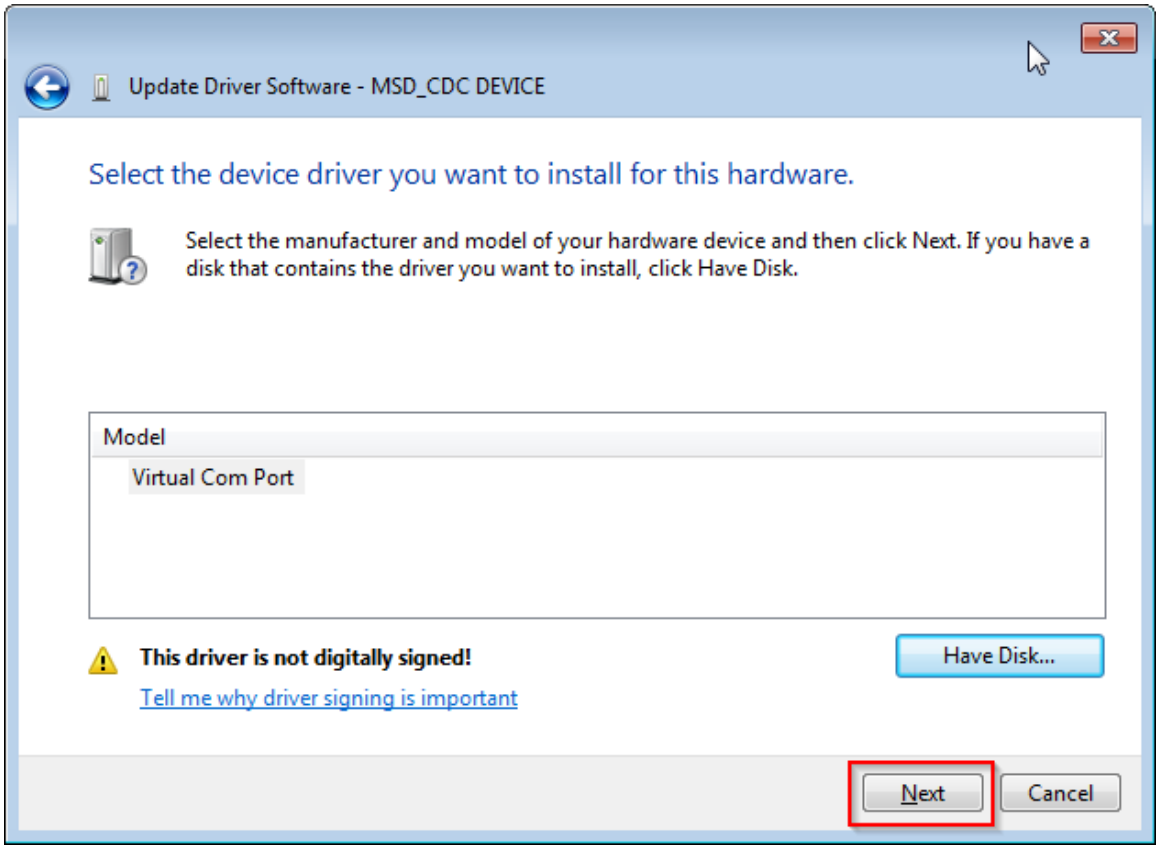


Step 4. Navigate to your CDC driver location.

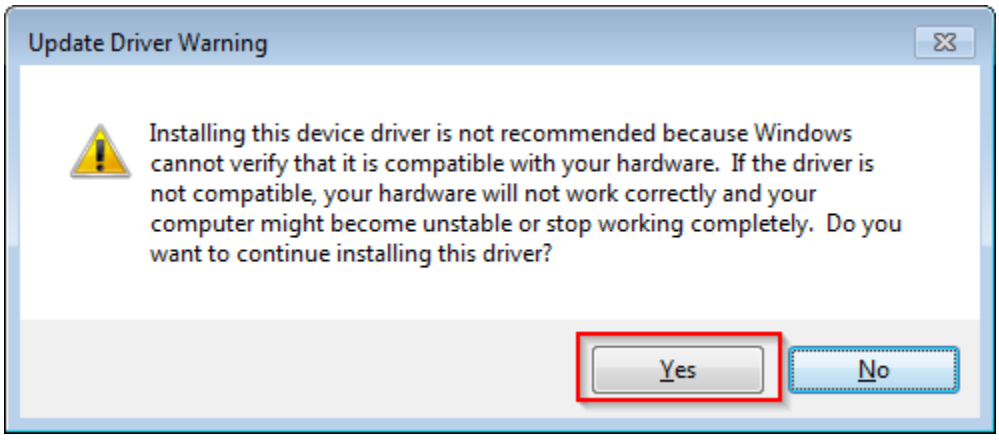
<install_dir>\<usb_root_dir>\example\device\cdc\virtual_com\inf


Update Driver Software - MSD_CDC DEVICE
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Install From Disk
Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.
OK
Cancel
Copy manufacturer's files from:
C:\Freescale\Freescale_usbnew\Src\example\de
Browse...
Have Disk...
Next
Cancel

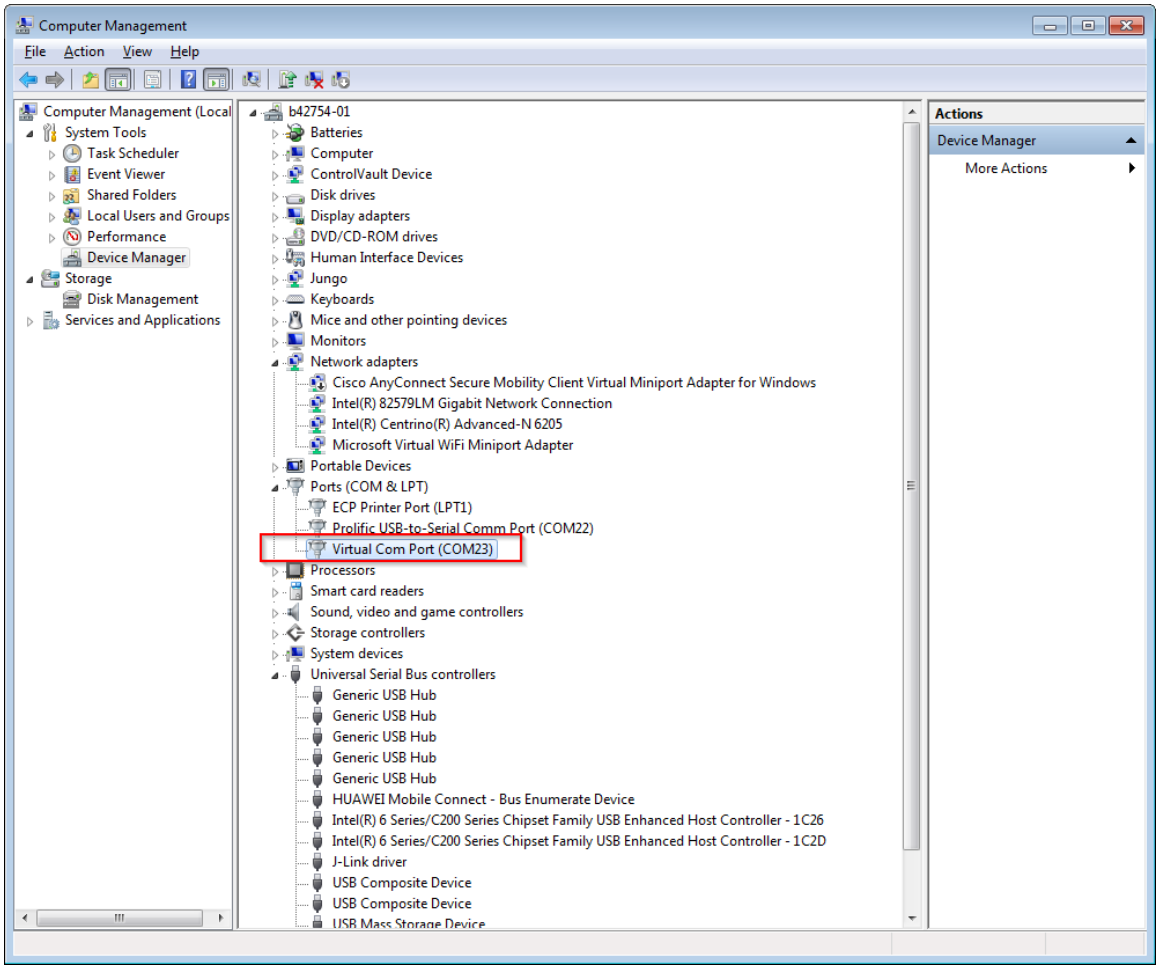
Step 5. Press “Next”.



Step 6. Ignore the warning and press “Yes”.



Step 7. Now the CDC driver should has been installed successfully.



If you run into driver signature issue on Windows 8, please refer to the link as follow,

https://learn.sparkfun.com/tutorials/disabling-driver-signature-on-windows-8/disabling-signed-driver-enforcement-on-windows-8

If you want to do driver signing on Windows, please refer to the link as follow,

https://msdn.microsoft.com/en-us/library/windows/hardware/ff544865(v=vs.85).aspx

http://www.davidegrayson.com/signing/#howto