Overview

The Composite CDC_MSC project is a simple demonstration program based on the MCUXpresso SDK. It is enumerated as a COM port and a RAM disk, which can be opened using terminal tools, such as TeraTerm. The demo echoes back any character it receives. The RAM disk can be formatted. The purpose of this demo is to show how to build a composite USB device and to provide a simple example for further development.

System Requirement

Hardware requirements

- Mini/micro USB cable
- USB A to micro AB cable
- Hardware (Tower module/base board, and so on) for a specific device
- Personal Computer

Software requirements

- The project files are in:
 - $<\!\!MCUX presso_SDK_Install\!>\!\!/boards\!/\!<\!\!board\!>\!\!usb_examples\!/usb_device_composite_cdc_msc/\!<\!\!rtos\!>\!/\!<\!\!toolchain\!>.$

For a lite version, the project files are in:

 $<\!\!MCUX presso_SDK_Install\!\!>\!\!/boards\!/\!<\!\!board\!\!>\!\!/usb_examples\!/usb_device_composite_cdc_msc_lite/\!<\!\!rtos\!\!>\!\!/\!<\!\!toolchain\!\!>.$

Note

The <rtos> is Bare Metal or FreeRTOS OS.

Getting Started

Hardware Settings

Note

Set the hardware jumpers (Tower system/base module) to default settings.

Prepare the example

- 1. Download the program to the target board.
- 2. Connect the target board to the external power source (the example is self-powered).
- 3. Either press the reset button on your board or launch the debugger in your IDE to begin running the demo.
- 4. Connect a USB cable between the PC host and the USB device port on the board.

Note

For detailed instructions, see the appropriate board User's Guide.

Run the example in Windows OS

- 1. A COM port and a USB Mass Storage Device is enumerated in the Device Manager. If it prompts for CDC driver installation, see the next chapter to install the CDC driver.
- 2. Open the COM port in a terminal tool, such as the Tera Term.

3. Type some characters, which are echoed back from the COM port.



Figure 1: Run virtual com example

4. The Windows OS prompts to format the U disk.



Figure 2: Format disk prompt

When the format is completed, the computer displays the capacity of 4 KB removable disk.



Figure 3: Disk present on Windows

Note

- Because there is no dynamic detection between the host and the device, the COM port must be closed from the terminal tool prior to unplugging the CDC device. Otherwise, the CDC device won't get recognized next time that it is plugged in with the COM port still opened.
- If no hardware FLOW CONTROL is needed, set the variable start_transactions to TRUE.
- The RAM disk and SD disk function can't be enabled at the same time.
- The Mac OS system default creates the .fseventsd , a trash folder, and some other files if the disk is formatted on Mac OS. The total files size is about 8 K. If the USB mass storage example is running on Mac OS, increase the RAM size to 32 K. Change the MACRO TOTAL_LOGICAL_ADDRESS_BLOCKS_NORMAL in disk.h from 48 to 64.

Installing the CDC driver for virtual_com and msd_cdc composite example

Below are the steps to install the CDC driver on Windows 7 OS. Similar process applies to Windows XP OS. Step 1. Click "Update Driver Software..."



Step 2. Choose "Browse..."

G I Update Driver Software - MSD_CDC DEVICE	×
How do you want to search for driver software?	
Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.	
Browse my computer for driver software Locate and install driver software manually.	
	Cancel

Step 3. Select "Let me pick..."

	×
Update Driver Software - MSD_CDC DEVICE	
Browse for driver software on your computer	
Search for driver software in this location:	
escale\Freescale_usbnew\Src\example\device\cdc\virtual_com\inf	
Include subfolders	
Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.	
Next Car	icel

Step 4. Navigate to your CDC driver location. <install_dir>\boards\<board>\usb_examples\usb_device_composite_cdc_msc\inf or

<install_dir>\boards\<board>\usb_examples\usb_device_composite_cdc_msc_lite\inf

🕒 🛽 Up	odate Driver Software - MSD_CDC DEVICE		83
Selec	t the device driver you want to install for Select the manufacturer and model of your have disk that contains the driver you want to install,	for this hardware. Indware device and then click Next. If you have a click Have Disk.	
4	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\dev 👻	Browse	
		Next Cance	

Step 5. Press "Next".

0	Update Driver Software - MSD_CDC DEVICE
	Select the device driver you want to install for this hardware.
	disk that contains the driver you want to install, click Have Disk.
	Model Virtual Com Port
	Image: This driver is not digitally signed! Have Disk Tell me why driver signing is important Have Disk
	<u>N</u> ext Cancel

Step 6. Ignore the warning and press "Yes".



Step 7. Now the CDC driver should be installed successfully.



• If the driver signature issue occurs on Windows 8 OS, see the link,

Disabling Driver Signature on Windows 8

- To enable driver signing on Windows OS, see the link,
 - Driver Signing
 - Practical Windows Code and Driver Signing