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# CRITICAL LINK MITYARM-335X BSP ADAPTATION

## WINDOWS EMBEDDED COMPACT 2013 USER GUIDE

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## COMPANION DOCUMENTS

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- CRITICALLINK\_MITYARM335X\_BSP\_RN\_V1.0.0.pdf

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## REFERENCES

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These documents were used as a reference in creation of this documentation.

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- AM335x StarterKit User Guide
  - AM335x Starter Kit WEC2013 BSP V2.00 Release Notes

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## CHAPTER 1: USER GUIDE

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This document is a user's guide for the Critical Link MityARM-335x Compact 2013 board support package (BSP). It describes how to install the BSP and use the Microsoft Platform Builder IDE for Windows Embedded Compact 2013 to build and program your device.

This document, its companion documents, and the BSP source/binaries are located in the zip archive: **CRITICALLINK\_AM335X\_MITYARM\_WEC2013\_V1\_0\_0.zip**

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### 1.1: RELEASE BINARIES

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The following binaries are packaged in the release:

- Binary Test Images:
  - \Images\Retail\MLO
  - \Images\Retail\EBOOTSD.nb0
  - \Images\Retail\NK.bin
  - \Images\Debug\NK.bin

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### 1.2: RELEASE SOURCE

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The following source code is packaged in the release:

- Source Code
  - \Sources\OSDesigns\AM335X\_MITYARM\_WEC2013
  - \Sources\PLATFORM\AM335X\_MITYARM
  - \Sources\PLATFORM\COMMON\SRC\SOC\COMMON\_TI\_V1

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## CHAPTER 2: SYSTEM REQUIREMENTS

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### 2.1: WINDOWS EMBEDDED COMPACT 2013

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To create a Windows Embedded Compact 2013 development environment for this BSP requires the following software:

- Visual Studio 2012 Professional Edition
- Windows Embedded Compact 2013 RTM Drop

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## 2.2: HARDWARE USED

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- Critical Link MityARM-335x Development Board
- HDMI to DVI display cable
- DVI-D monitor
- Mouse

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## CHAPTER 3: BSP INSTALLATION

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To install the BSP, follow the instructions below:

1. Extract the source code from the CRITICALLINK\_AM335X\_MITYARM\_WEC2013\_V1\_0\_0.zip package.
2. Create a folder named “OSDesigns” at C:\WINCE800\
3. Copy the \source\OSDesign\AM335X\_MITYARM\_WEC2013 folder to C:\WINCE800\OSDesigns.
4. Copy the \source\PLATFORM\AM335X\_MITYARM folder to C:\WINCE800\PLATFORM\
5. Copy the \source\PLATFORM\COMMON\SRC\SOC\COMMON\_TI\_V1 folder to C:\WINCE800\PLATFORM\COMMON\SRC\SOC\
  - a. Ensure that there are no other folders with the same name. Delete them or back them up to a folder outside of the Windows CE build tree if there is.
6. Open the *dirs* file located at C:\WINCE800\PLATFORM\COMMON\SRC\SOC\
7. Modify the DIRS= instruction to be: DIRS=COMMON\_TI\_V1
8. Save the *dirs* file.

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## CHAPTER 4: BUILDING THE SAMPLE SOLUTION

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This chapter discusses how to build the BSP sources included in this BSP release.

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### 4.1: LOADING THE SAMPLE OSDESIGN SOLUTION

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The BSP provides a sample OSDesign solution that can be used to build your first runtime image for this target.

1. Launch Visual Studio 2012
2. Select **File > Open > Project/Solution**
3. Browse to the C:\WINCE800\OSDesigns\AM335X\_MITYARM\_WEC2013 folder and select the AM335X\_MITYARM\_WEC2013.sln file.

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### 4.2: BUILDING THE SAMPLE OSDESIGN SOLUTION

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With the sample solution open, these instructions will allow you to compile the BSP sources.

1. Select the build type **AM335X\_MITYARM\_BSP\_ARMV7 Release**
2. Select **Build > Advanced Build Commands > Sysgen** to start the build process.

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3. Once the build has finished (can take up to 30 minutes), navigate to the C:\WINCE800\OSDesigns\AM335X\_MITYARM\_WEC2013\AM335X\_MITYARM\_WEC2013\ReleaseDir\AM335X\_MITYARM\_BSP\_ARMV7\_Release folder.
  4. The following files are the final generated bootloader and OS images: *MLO*, *EBOOTSD.nb0*, *NK.bin*.

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## CHAPTER 5: HOW TO BOOT USING AN SD CARD

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### 4.1: DOWNLOAD SECTEDIT

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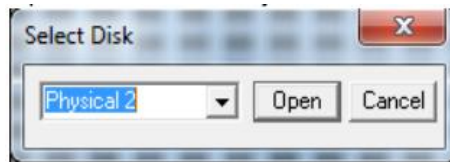
Sectedit is freeware which allows you to view the hexadecimal content stored on an SD card on the volume or the raw disk. Download this application from <http://www.roadkil.net/program.php?ProgramID=24>

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### 4.2: PREPARING THE SD CARD

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1. Format the SD card from Windows Explorer
2. Open sectedit.exe as administrator (right click)
3. Open the physical disk corresponding to the SD card (do not select your hard drive's physical disk!)



4. In sector 0, write a 0x80 into byte 0x1BE offset (see figure below, don't worry if the other data in the sector does not match yours)

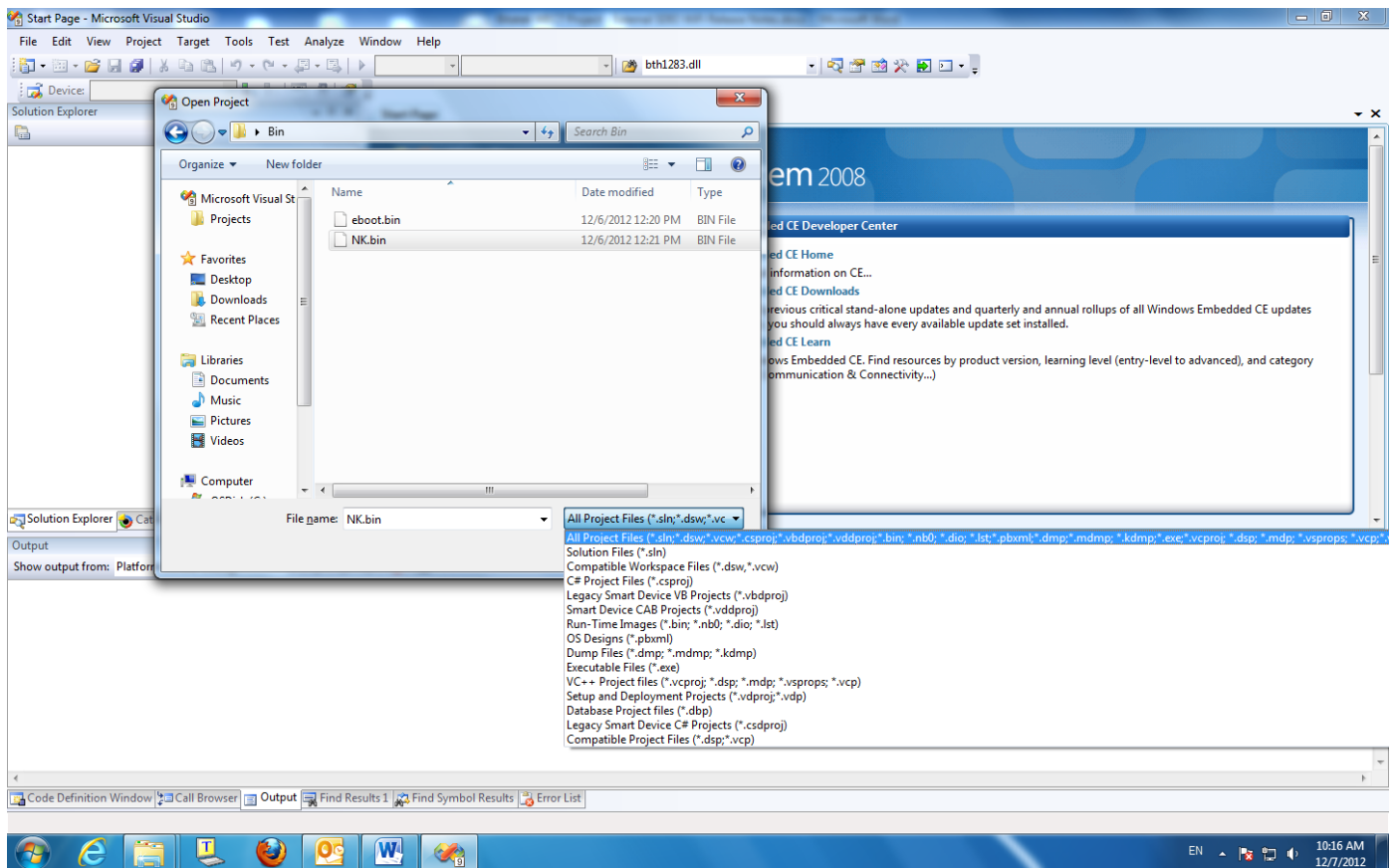


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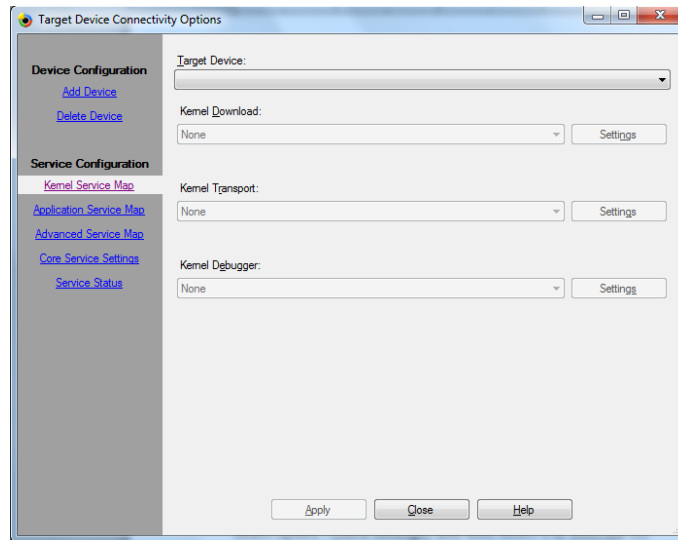
## CHAPTER 6: HOW TO DOWNLOAD AN IMAGE FROM PLATFORM BUILDER

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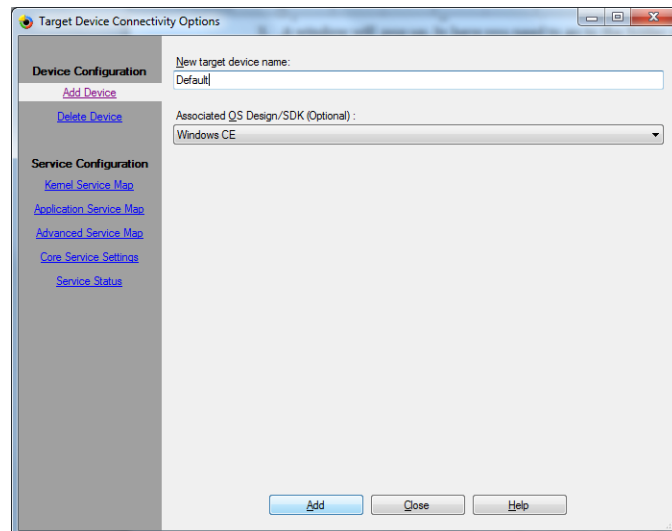
1. First make sure to copy the binaries included in the zip package to a new empty folder in the PC. The binary files are in the following path: **\Images\Debug\**
2. Open Visual Studio and go to File menu, select Open and then select Project/Solution.
3. A window will pop up. In here you need to go to the folder created in the PC for the binaries and select the NK.bin file. Click Open. If it is not possible to see the NK.bin, change the type of files to *All Project Files*, as shown in the following image



4. Go to the Target menu and select Connectivity Options.
5. The next window will pop up

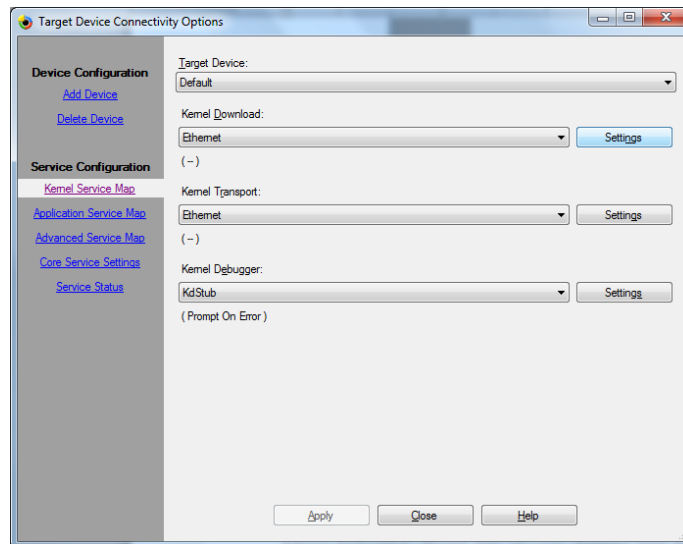


6. Select Add Device. Write *Default* as the target device name and select *Windows CE* as the associated OS Design/SDK, then click Add.

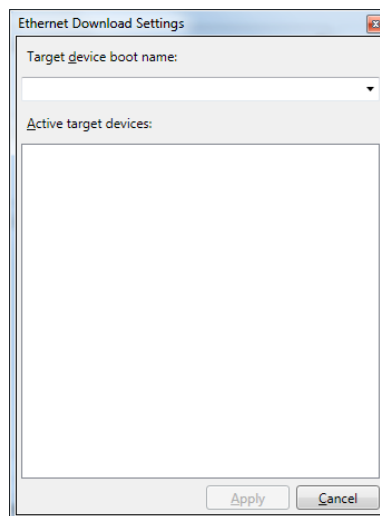




7. Now for the Kernel Download option click on Settings

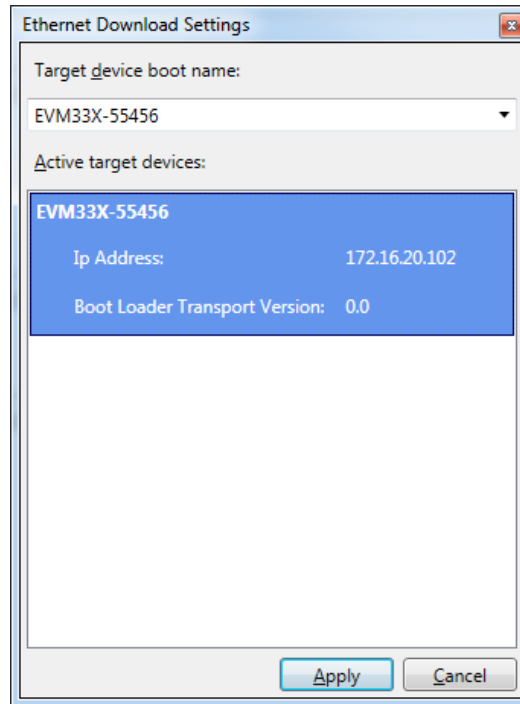


8. The following window will appear. Leave it open.

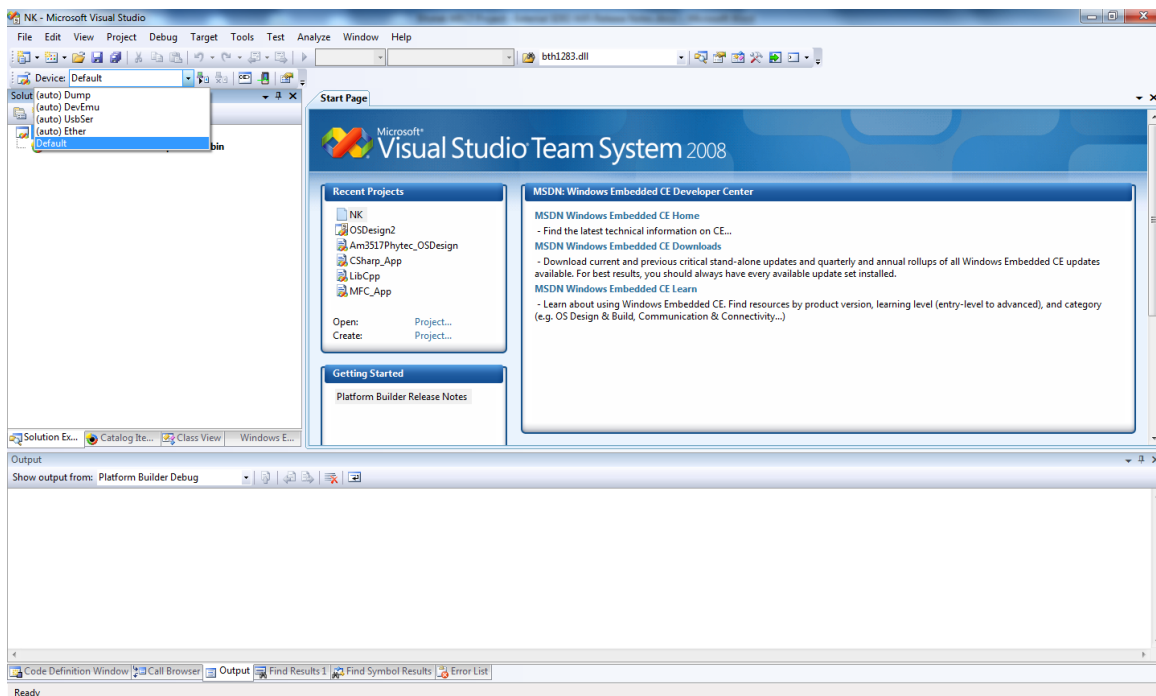


9. Plug an Ethernet cable from the MityARM-335x board to your network which supports DHCP. (a router between your computer and the device will also work)
10. Follow the steps from Chapter 5 to prepare and SD card that you can boot the device with.
11. Power the device on with the SD card inserted and press the space bar to break into the Eboot menu.
12. From the boot menu, press [2] to enter the boot device menu and then select [1] to select the Internal EMAC as our boot source.
13. Press [0] to go back.
14. Press [4] to enter the network settings and then press [2] and enable KITL if it is disabled.
15. Press [5] and enable DHCP if it is already disabled.
16. Press [0] to return to the main menu.
17. Select option [7](Save Settings), save your settings, and then select [0] to boot the OS.

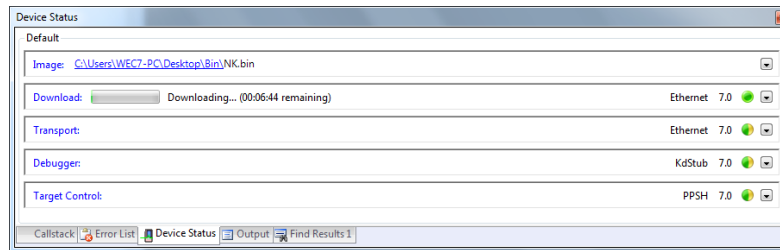
18. The bootloader will initialize the Ethernet PHY and obtain an IP address from the DHCP server.
19. Now go back to the Ethernet Download Settings window and select the active target device being displayed



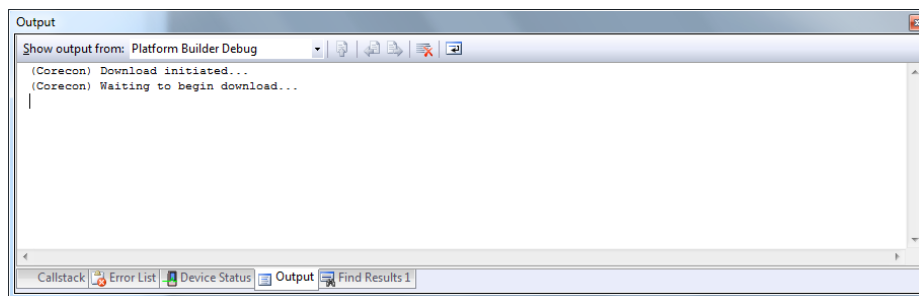
20. Click Apply. Now close the Target Device Connectivity Options window.
21. Make sure to select *Default* in the Device drop menu showed in the picture.



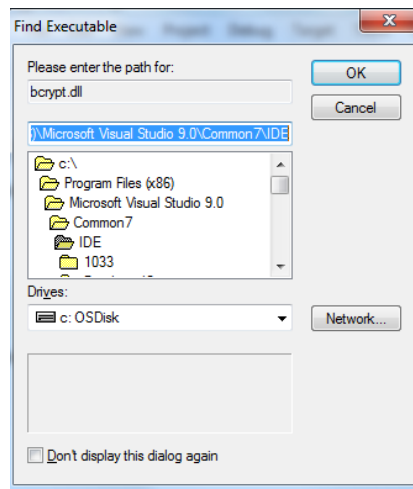
22. Now go to Target menu and select Attach Device. The following window will appear



23. Once the download finishes it will be possible to see messages coming to the Output window



24. When the OS is booting it could be possible to see some messages like this



25. Just click cancel every time one of those appears. This happens because there is no release folder containing all those dlls. Right now is just the folder with the binaries delivered in this package.

Once all this is done the Window Desktop will be displayed on the screen of the device.