

# **BSP for Windows\* Embedded Compact 7 and 2013 for Intel® 4<sup>th</sup> Generation Core™ Processors and Intel® 8 Series Chipsets**

**User Guide**

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*February 2015*

*Software Release version: Gold Release*



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# Contents

1	Introduction .....	5
1.1	Scope of the Document .....	5
1.2	System Requirements .....	5
1.3	Acronyms and Terminology .....	6
2	User Guide.....	7
2.1	Building WEC7*/ WEC2013* Image.....	7
2.1.1	Installing the .MSI package on Platform Builder.....	7
2.1.2	Creating a Project.....	8
2.1.3	Catalog Item Selection .....	9
2.1.4	Build Option Configuration .....	12
2.1.5	Enabling the Intel® Ethernet Driver in WEC7* (Not required for WEC2013*) .....	12
2.1.6	Build the WEC7*/WEC2013* Image in Release Mode .....	13
2.2	Bootting WEC7*/WEC2013* on Intel Platform.....	14
2.2.1	Setting up the BIOS .....	14
2.2.2	Boot the WEC7*/WEC2013* Image.....	15
2.2.3	Loading the Image on BIOS through the KITL connection .....	18
2.2.4	Loading nk.bin via eboot.bin over KITL connection.....	18

## Figures

Figure 1	HP USB Disk Storage Format Tool.....	15
Figure 2	SATA Hard Disk Files.....	16
Figure 3	WinImage .....	16
Figure 4	Extract with Path Name .....	17
Figure 5	Files in SATA Drive.....	17
Figure 6	Target Device Connectivity Options.....	19
Figure 7	Attach Device.....	19

## Tables

Table 1	Acronyms and Terminology.....	6
Table 2	WEC7* Catalog Item Selection.....	9
Table 3	WEC2013* Catalog Item Selection .....	10
Table 4	Build Option Configuration .....	12



## Revision History

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Date	Revision	Description
February 2015	1.0	Initial Release. Corresponds to Gold Software Version

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# 1 Introduction

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## 1.1 Scope of the Document

This document is a User Guide for enabling Intel's I/O Board Support Package (BSP) on the Windows\* Embedded Compact 7(WEC7\*) and Windows Embedded Compact 2013\* (WEC2013\*).

## 1.2 System Requirements

The following are required to build the WEC7\* and WEC2013\* I/O BSP for the Walnut Canyon platform.

1. For WEC7\*: Install WEC7\* Platform Builder with the August 2014 QFE Update (v7.1.2843). This creates a WINCE700 base directory on the default hard drive (for example, the following path should exist: "C:\WINCE700". If a WINCE700 base directory does not exist, the installation will fail.
2. When using WEC2013\*: Install WEC2013\* Platform Builder with update August 2014 (WEC2013-v8.0.6204.0). This creates a WINCE800 base directory on the default hard drive (for example, the following path should exist on C: drive: "C:\WINCE800". If a WINCE 800 base directory does not exist, the installation will fail.
3. Haswell Walnut Canyon fabB, Rev 02, platform and C0 (i5) processor.
4. Intel BIOS Version: Walnut Canyon 2 BIOS 94.1
5. Intel WEC IO Board Support Package (BSP) version: Intel® Processor WEC IO BSP.msi.



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## 1.3 Acronyms and Terminology

Table 1 Acronyms and Terminology

Term	Description
API	Application Programming Interface
ATAPI	ATA Packet Interface
BSP	Board Support Package
CRB	Customer Reference Board
DMA	Direct Memory Access
GPIO	General Purpose Input/Output
HS-UART	High Speed Universal Asynchronous Receiver/Transmitter
I <sup>2</sup> C	Inter-Integrated Circuit
IO	Input Output
IOCTL	Input Output Control
KITL	Kernel Independent Transport Layer
LAN	Local Area Network
MSDN	Microsoft* Developer Network
OS	Operating System
PCI	Peripheral Component Interconnect
SATA	Serial ATA
SPI	Serial Peripheral Interface
USB	Universal Serial Bus



## 2 User Guide

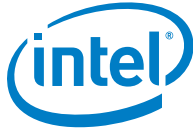
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### 2.1 Building WEC7\*/ WEC2013\* Image

#### 2.1.1 Installing the .MSI package on Platform Builder

**Note:** WEC7\* path is “[Primary disk]\WINCE700\PLATFORM” and WEC2013\* path is “[Primary disk]\WINCE800\PLATFORM”

1. Double click the **Intel® Processor WEC IO BSP.msi** to install the BSP. Press **‘Next’** button to proceed with the installation. This installs to the “[Primary disk]\WINCE700\PLATFORM” and creates a new directory called “INTEL\_CS” along with its subdirectories.
2. To confirm the WEC7\* installation is complete; verify the existence of the “INTEL\_CS” directory on the path [Primary disk]\WINCE700\PLATFORM \INTEL\_CS and the directory structure below exist:
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\BOOTLOADER\EBOOT
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\BOOTLOADER\EBOOT\E100EBOOT\BIN
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\INC
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\IO
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\IOCTL
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\KITL
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\MPSUPPORT
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\MEMORY
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\POWER
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\STARTUP
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\ICHHDA
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\GPIO
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\I2C
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\SPI
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\HSUART
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\USB30
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\BLOCK\ATAPI
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\DRIVERS\DMA
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\KITL
  - C:\WINCE700\PLATFORM\INTEL\_CS\SRC\OAL\



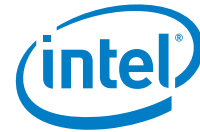
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3. To confirm that the WEC2013\* installation is complete, verify the existence of the "INTEL\_CS" directory on the path [Primary disk]\WINCE800\PLATFORM\INTEL\_CS" and the directory structure below exist:
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\BOOTLOADER\EBOOT
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\BOOTLOADER\EBOOT\E100EBOOT\BIN
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\INC
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\IO
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\IOCTL
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\KITL
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\MPSUPPORT
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\MEMORY
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\POWER
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\COMMON\PDQOAL\STARTUP
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\ICHHDA
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\GPIO
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\I2C
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\SPI
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\HSUART
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\USB30
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\BLOCK\ATAPI
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\DRIVERS\DMA
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\KITL
  - C:\WINCE800\PLATFORM\INTEL\_CS\SRC\OAL\

## 2.1.2 Creating a Project

1. Run Microsoft\* Visual Studio\* 2012 for WEC2013\*, or Microsoft\* Visual Studio\* 2008 for WEC7\*.
2. Go to File **New Project**
3. Select project type '**Platform Builder**'
4. Select '**OS Design**', under 'Visual Studio Installed templates'.  
By default OSDesign1 will be assigned as the project name.
5. Select **OK**
6. After the design wizard pops up, select **Next**.  
This will navigate you to the 'Board Support Packages' selection window.
7. Select '**INTEL\_CS: x86**', then **Next**
8. At 'Design Templates', select **Next**
9. At 'Applications and Media', select **Next**





10. At 'Networking and Communications', select **Next**
11. At 'OS Design Project Wizard Complete', select **Finish**.
12. The platform builder will generate project files for your project. Acknowledge any warnings that may pop-up from Visual Studio.
13. The default project name for your generated project will be 'OSDesign1' under C:\WINCE700\OSDesigns\OSDesign1 (C:\WINCE800\OSDesigns\OSDesigns1 for WEC2013).

### 2.1.3 Catalog Item Selection

Select the following catalog items in Visual Studio\* Catalog Items View before you build the project image.

**Table 2 WEC7\* Catalog Item Selection**

Feature	Catalog Item Path
Active Sync	Core OS\Windows Embedded Compact\Applications - End User\ActiveSync
Word Pad	Core OS\Windows Embedded Compact\Applications – End User\WordPad
.NET Compact Framework 3.5	Core OS\Windows Embedded Compact\Applications and Services Development\.NET Compact Framework 3.5\.NET Compact Framework 3.5
C Libraries and Runtimes	Core OS\Windows Embedded Compact\Applications and Services Development\C Libraries and Runtimes\C++ Runtime Support for Exception Handling and Runtime Type Information
Networking	Core OS\Windows Embedded Compact\Communication Services and Networking\Networking – General\Network Utilities (IpConfig, Ping, Route)
Wireless LAN	Core OS\Windows Embedded Compact\Communication Services and Networking\Networking – Local Area Network (LAN)\Wireless LAN (802.11) Headless STA Core OS\Windows Embedded Compact\Communication Services and Networking\Networking – Local Area Network (LAN)\ Wireless LAN
ATAPI (SATA and PATA)	Core OS\Windows Embedded Compact\Device Drivers\Storage Devices\ATAPI PCI Support Core OS\Windows Embedded Compact\Device Drivers\Storage Devices\ATAPI PCI Support\Basic ATAPI PCI CD/DVD-ROM Support
USB Host	Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Audio Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Printer Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB RNDIS Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Host Support
USB Mass Storage	Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Storage Class Driver



Feature	Catalog Item Path
USB Keyboard and Mouse	Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Human Input Device (HID) Class Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Human Input Device (HID) Class\USB HID Keyboard and Mouse

**Table 3 WEC2013\* Catalog Item Selection**

Feature	Catalog Item Path
.NET Compact Framework	Core OS\Windows Embedded Compact\Applications and Services Development\.NET Compact Framework\.NET Compact Framework – Windows Forms Support
C Runtime Library	Core OS\Windows Embedded Compact\Applications and Services Development\C Runtime Library
Networking	Core OS\Windows Embedded Compact\Communication Services and Networking\Networking – General\Network Utilities (IpConfig, Ipv6, Ping, Route)
Wireless LAN	Core OS\Windows Embedded Compact\Communication Services and Networking\Networking – Local Area Network (LAN)\Wireless LAN (802.11) STA - Automatic Configuration and 802.1x
KITL	Core OS\Windows Embedded Compact\Core OS Services\Debugging Tools\Target Control Support (Shell.exe)
8042 PS/2 Keyboard and Mouse	Core OS\Windows Embedded Compact\Device Drivers\Input Devices\Keyboard/Mouse\8042 PS/2 Keyboard and Mouse Driver
ATAPI (SATA and PATA)	Core OS\Windows Embedded Compact\Device Drivers\Storage Devices\ATAPI PCI Support Core OS\Windows Embedded Compact\Device Drivers\Storage Devices\ATAPI PCI Support\Basic ATAPI PCI CD/DVD-ROM Support
USB Host	Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Audio Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Human Input Device (HID) Class Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Human Input Device (HID) Class\USB HID Keyboard and Mouse Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Modem Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Printer Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Remote NDIS Class Driver Core OS\Windows Embedded Compact\Device Drivers\USB\USB Host\USB Class Drivers\USB Storage Class Driver
DirectDraw	Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Graphics\DirectDraw



Feature	Catalog Item Path
Media	Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Audio Codecs and Renderers\MPEG-1 Layer 3 (MP3) Audio Codec Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Audio Codecs and Renderers\Windows Media Audio (WMA) Codec Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Media Formats\Audio-Video Interleaved Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Media Formats\MPEG-4 Demultiplexer Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Media Formats\Wave/AIFF/au/snd Parser Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Streaming Media Playback Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Video Codecs and Renderers\DirectShow Video Mixing Renderer Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Video Codecs and Renderers\MPEG-1 Video Codec Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Video Codecs and Renderers\Windows Media Video (WMV) and MPEG-4 Video Codec Core OS\Windows Embedded Compact\Graphics and Multimedia Technologies\Media\Windows Media Audio (WMA) and MPEG-3 (MP3) Local Playback
Shell	Core OS\Windows Embedded Compact\Shell and User Interface\Command Shell\Command Processor Core OS\Windows Embedded Compact\Shell and User Interface\Command Shell\Console Window
Graphical Shell	Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Control Panels\Date Time Settings Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Control Panels\Display Settings Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Control Panels\Network Connection Settings Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Control Panels\Regional Settings Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Control Panels\Sound Settings Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Control Panels\Wi-Fi Settings
Minimal Shell	Core OS\Windows Embedded Compact\Shell and User Interface\Graphical Shell\Minimal Shell
Shell API	Core OS\Windows Embedded Compact\Shell and User Interface\Shell API
User Interface	Core OS\Windows Embedded Compact\Shell and User Interface\User Interface\Mouse



Feature	Catalog Item Path
	Core OS\Windows Embedded Compact\Shell and User Interface\User Interface\Network User Interface
Feature	Catalog Item Path
.NET Compact Framework	Core OS\Windows Embedded Compact\Applications and Services Development\.NET Compact Framework\.NET Compact Framework – Windows Forms Support

### 2.1.4 Build Option Configuration

From the Solution Explorer Tab, right click on the OSDesign project and click on 'Properties'. Then, choose 'Configuration Properties\Build Options'.

Table 4 Build Option Configuration

Build Options	Description
Enable KITL (IMGNOKITL)	Please check if the system requires KITL transport connection to be established when image is downloaded through eboot.bin.  Recommended to disable KITL if using local storage (nk.bin) for boot process.  Caution: If KITL is enabled and image is booted from local storage, the image may seem to hang or take much longer to boot.
Enable SMP Support in the kernel [IMGMPENABLE for WEC7* and IMGNOSMP for WEC2013*]	Please enable this build option for the Haswell Walnut Canyon fab2 RevB platform because they support hyper-threading and multi-core.

### 2.1.5 Enabling the Intel® Ethernet Driver in WEC7\* (Not required for WEC2013\*)

This section lists the steps for enabling the Intel® Ethernet Driver for Walnut Canyon fab2 RevB platform with C0 (i5) processor:

1. Download the "Intel® Ethernet Drivers for Microsoft\* Embedded Operating Systems - PROEmbSW11.zip" from <http://edc.intel.com/>.
2. Extract the "PROEmbSW11.zip" file and double click on "PROEmbSW11.zip" to start installation. Click "Next" until installation is completed. This installs the Ethernet driver at "C:\PROEmbSW11".
3. Go to "C:\PROEmbSW11\PRO1000\WINCE 6.0\PCIe", copy "e1e51ce6.dll" and "e1e51ce6.rel" to C:\WINCE700\platform\INTEL\_CS\FILES" directory.

**Note:** These are the Ethernet driver binary files for Ethernet via PCIe\* INTEL® PRO/1000 PT SERVER ADAPTER card for Haswell platform.

4. Go to "C:\WINCE700\PLATFORM\INTEL\_CS" directory. Open the "INTEL\_CS.bat" file and append the following flag at the end of the file before the line ":not\_nm10":



```
set CEPB_INTELE1E_PCIE=1
set STATIC_IP=1
```

5. Go to "C:\WINCE700\PLATFORM\INTEL\_CS\FILES" directory. Open the "platform.reg" file and append the registry entry (NOTE: Copy the registry entry from "C:\PROEmbSW11\PRO1000\WINCE 6.0\PCIe\1e51ce6.reg" file) at the end of the file.
6. Go to "C:\WINCE700\PLATFORM\INTEL\_CS\FILES" directory. Open the "platform.bib" file and append the following at the end of the file:

```
IF CEPB_INTELE1E_PCIE
    E1E51CE6.dll      $(_FLATRELEASEDIR)\E1E51CE6.dll    NK    SHK
ENDIF CEPB_INTELE1E_PCIE
```

7. Make sure the following catalog items are enabled: Core OS-> Windows Embedded Compact-> Applications-End User-> ActiveSync

## 2.1.6 Build the WEC7\*/WEC2013\* Image in Release Mode

1. Complete all the steps listed in 'Creating a Project'.
2. Under the Solution Explorer tab, right click on the project name (default name is OSDesign1) and select 'Properties'.
3. Change the 'Configuration' to 'INTEL\_CS x86 Release'.
4. Click on Configuration Manager.
5. Make sure 'Intel\_CS x86 Release' is selected in the 'Active solution configuration' field.
6. Make sure 'Intel\_CS x86 Release' is the selected under 'Project contexts'. Ensure the check box under the 'Build' column is checked.
7. Close the project configuration windows.
8. The project is now ready to commence the build. From Microsoft Visual Studio 2008/2012, go to the 'Build' Menu and click 'Build Solution'. The build process typically takes 1 hour to complete. The actual duration of the build completion depends on the specific hardware of the build machine, software and platform configurations chosen. Different stages of building and their progress can be viewed in the 'Output' window.
9. The build process completes with a sequence of messages shown in "Output" window similar to the following:

```
MAKEIMG: BUILDMSG: Calling
C:\WINCE700\OSDesigns\OSDESIGN1\OSDESIGN1\RelDir\INTEL_CS_x86_Release\PostRomImage.bat
MAKEIMG: BUILDMSG: Calling
C:\WINCE700\OSDesigns\OSDESIGN1\OSDESIGN1\RelDir\INTEL_CS_x86_Release\PostMakeImg.bat
MAKEIMG: BUILDMSG: Calling
C:\WINCE700\public\common\oak\misc\pbpostmakeimg.bat
MAKEIMG: BUILDMSG: Make Image process completed successfully
BLDDemo: BUILDMSG: OS image exists at
C:\WINCE700\OSDesigns\OSDESIGN1\OSDESIGN1\RelDir\INTEL_CS_x86_Release\nk.bin
BLDDemo: BUILDMSG: Volume in drive C is OSDisk
BLDDemo: BUILDMSG: Volume Serial Number is B820-910F
```



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```
BLDDemo: BUILDMSG: Directory of
C:\WINCE700\OSDesigns\OSDESIGN1\OSDESIGN1\RelDir\INTEL_CS_x86_Release
BLDDemo: BUILDMSG: 02/14/2011 04:28 PM 37,686,963 NK.bin
BLDDemo: BUILDMSG: 1 File(s) 37,686,963 bytes
BLDDemo: BUILDMSG: 0 Dir(s) 52,106,936,320 bytes free
BLDDemo: BUILDMSG: cebase build complete.
BLDDemo: BUILDMSG: BldDemo ended at 16:29:01.69 on Mon 02/14/2011
(exit code 0)
BuildLogs: BUILDMSG: Exiting: BldDemo1.bat -c -qbsp (result code 0).
BuildLogs: BUILDMSG: C:\WINCE700\build.log
BuildLogs: BUILDMSG: C:\WINCE700\build.out
BuildLogs: BUILDMSG: C:\WINCE700\build.wrn
```

**Note:** You will see some warnings during the build process and in the eventual output, but these can be considered harmless.

Once the build is successful, the kernel image nk.bin can be found in the following path:

WEC\*7:

C:\WINCE700\OSDesigns\OSDesign1\OSDesign1\RelDir\INTEL\_CS\_x86\_Release

WEC\*2013:

C:\WINCE700\OSDesigns\OSDesign1\OSDesign1\RelDir\INTEL\_CS\_x86\_Release

## 2.2 Booting WEC7\*/WEC2013\* on Intel Platform

### 2.2.1 Setting up the BIOS

The BOOT settings also need to be configured appropriately to boot up the hardware platform through the relevant boot device. After entering the BIOS, follow the instructions below to configure:

Go to Intel advanced menu and set below configuration:

- PCH-IO Configuration— SATA Configuration  
SATA Mode Selection = "IDE"
- PCH-IO Configuration— Audio Configuration  
Azalia = "Enabled"
- PCH-IO Configuration— USB Configuration  
XHCI Mode = "Enabled"
- System Agent (SA) Configuration  
Cpu Audio Device (B0:D3:F0)="Disabled"



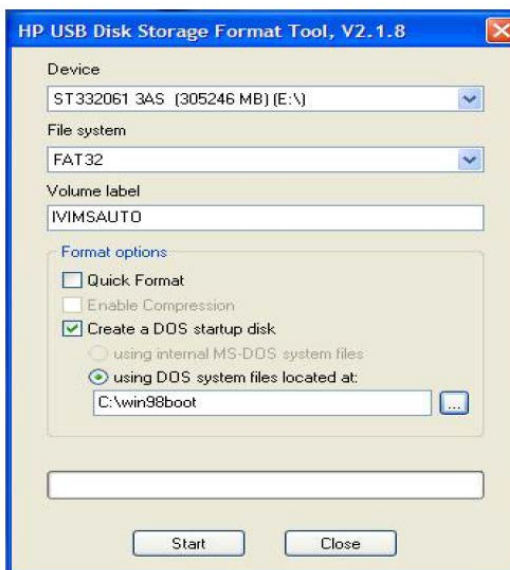
## 2.2.2 Boot the WEC7\* /WEC2013\* Image

The following instructions need to be followed in order to ensure that your booting device is enabled properly to boot up the hardware platform.

**Note:** This example assumes you are using a SATA Hard Disk as your booting device.

1. Install HP USB Disk Storage Format Tool (can be downloaded from the Internet) and Winimage on your pc/platform builder.
2. Extract **win98boot.zip** to any folder.
3. Plug in the SATA hard disk to the pc/platform builder via SATA-USB converter.
4. Run the HP USB Disk Storage Format Tool.
5. Select the USB drive that you want to make bootable from “Device”.
6. Select **FAT32** for the “File System”.
7. Enter the volume label and tick “**Quick Format**” for faster format time. (Optional)
8. Tick “Create a DOS startup disk” and select “**using DOS system files located at:**”
9. Browse to the extracted win98boot folder by selecting the “...” button.

Figure 1 HP USB Disk Storage Format Tool



10. Select “**Start**”.
11. The newly formatted SATA hddisk should contain “command.com, io.sys, and msdos.sys”.

**Note:** They might be hidden in Windows Explorer. Enable hidden Files viewing option if you cannot find these files.

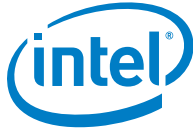
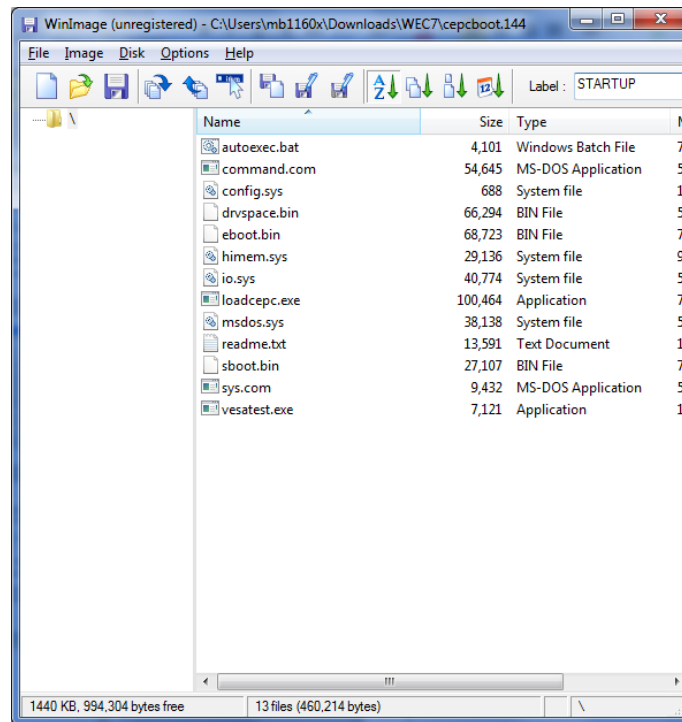


Figure 2 SATA Hard Disk Files

System Volume Information	File Folder	8/25/2010 11:20 AM
COMMAND	92 KB MS-DOS Application	5/11/1998 7:01 PM
IO	218 KB System file	5/11/1998 7:01 PM
MSDOS	0 KB System file	5/11/1998 7:01 PM

12. Open WinImage, click "File" and select "Open".
13. Search for the cepcboot.144 files from the platform builder and click "Open"  
(WEC7: C:\WINCE700\platform\CEPC\src\bootloader\dos\bootdisk\diskimage\cepcboot.144)  
  
(WEC2013: C:\WINCE800\platform\CEPC\src\retired\bootloader\retired\dos\bootdisk\diskimage\cepcboot.144)

Figure 3 WinImage



14. Select "Image" and select "extract".
15. Browse the path, select "Extract with Path Name" and select "OK" to extract the content of cepcboot.144.]



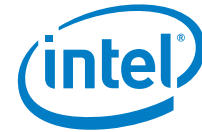
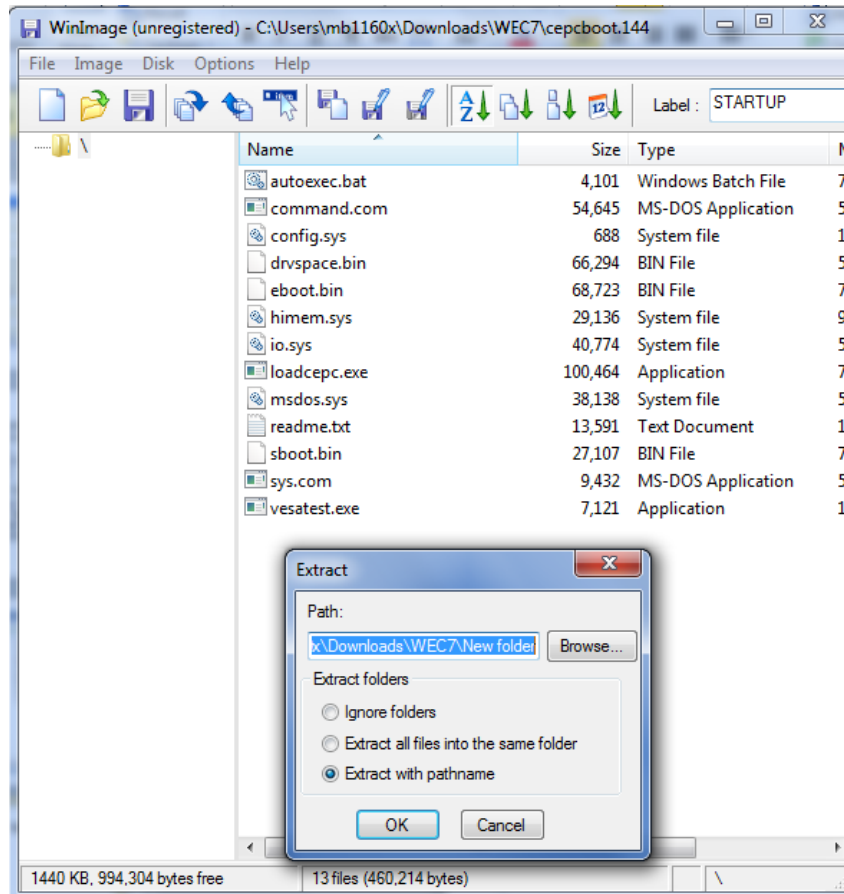
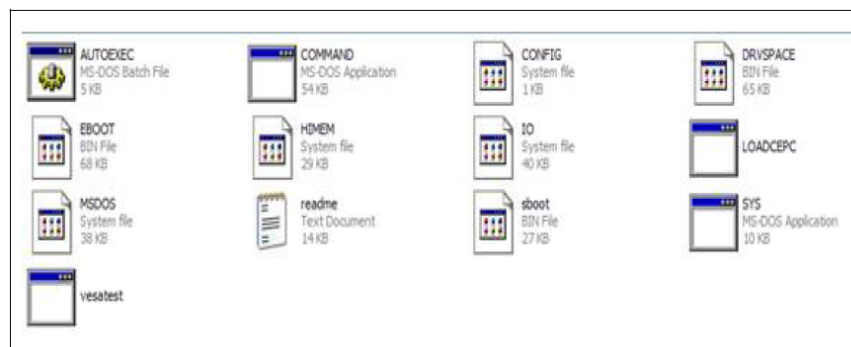


Figure 4 Extract with Path Name



16. Now copy all the file extracted from cepcboot.144 to the bootable SATA hard disk.
17. Select **"No"** when a message appear saying that it want to overwrite existing files.
18. Now you should see the following files inside your bootable SATA hard disk.

Figure 5 Files in SATA Drive





19. Now copy the nk.bin into the bootable SATA hard disk.
20. Edit the autoexec.bat by deleting all the data inside the autoexec.bat and replace it with "loadcepc /L:800x600x16 nk.bin". Save and close it.
21. Now plug in the SATA hard disk to the CRB and it will be able to boot the WEC7\* (or WEC2013\*) image (nk.bin) that has been created.

### 2.2.3 Loading the Image on BIOS through the KITL connection

This section describes the process for loading the image on the BIOS through the KITL connection on Haswell Walnut Canyon fab2 revB platform and C0 processor.

During the development stage, the nk.bin can be transferred between Microsoft Platform Builder and the target platform via the Ethernet-based KITL connection. There are two options in Haswell Walnut Canyon fab2 revB platform and C0 processor for Ethernet-based KITL:

- Intel® Pro/1000 PT Server Adapter

[Not required for WEC2013\*] To build an eboot.bin image that can support the Intel Pro/1000 PT Server Adapter, make sure the following build setting is enabled in the INTEL\_CS.bat file:

```
set BSP_KITL_POLL_MODE=1
set BSP_KITL_INTELGBE_E1000=1
```

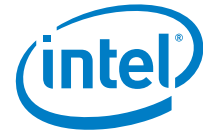
**Note:** The eboot.bin is available in C:\WINCE700\OSDesigns\OSDesign1\OSDesign1\ReIDir\INTEL\_CS\_x86\_Release\ for WEC7\* and C:\WINCE800\OSDesigns\OSDesign1\OSDesign1\ReIDir\INTEL\_CS\_x86\_Release\ for WEC2013\* when the BSP is built.

**Note:** Remember to enable KITL (IMGNOKITL=) on the BSP's project build option as explained above in order to build an nk.bin image that starts the KITL connection by default.

For details on loading image eboot, refer to: <http://msdn.microsoft.com/en-us/library/ms930104.aspx>

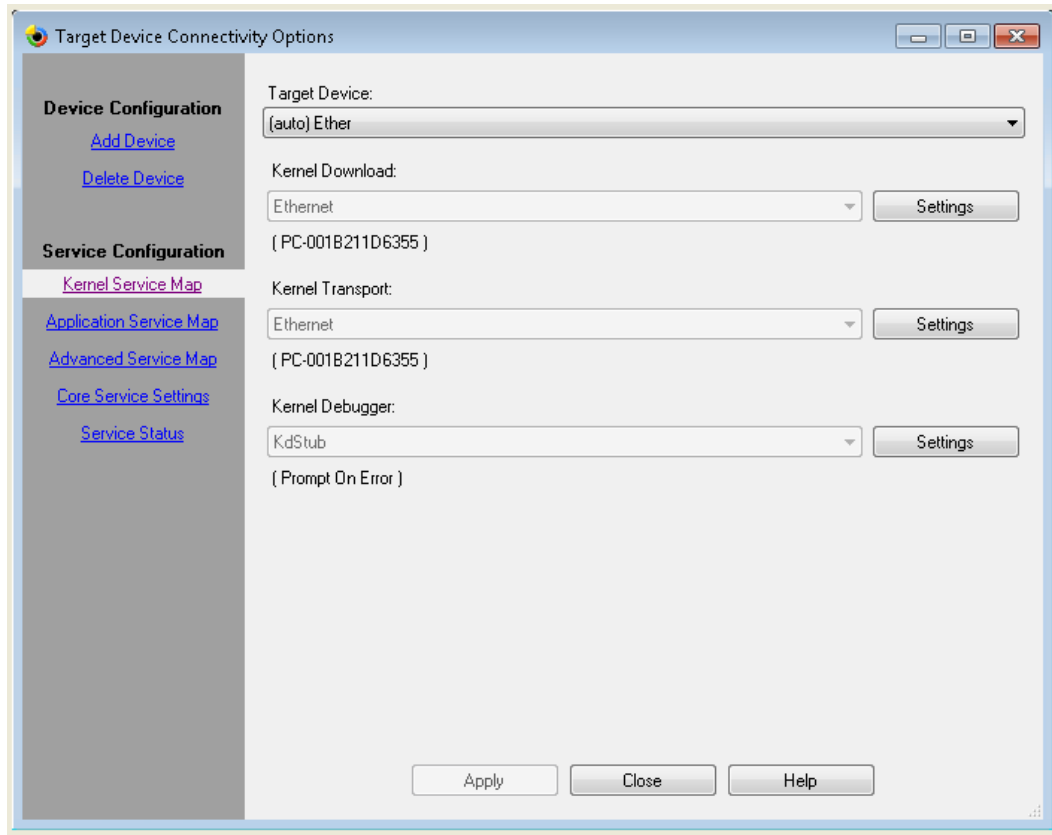
### 2.2.4 Loading nk.bin via eboot.bin over KITL connection

1. Copy eboot.bin onto the MS-DOS formatted USB mass storage with loadcepc.exe.
2. Connect the development PC to target platform via Ethernet cable over Gigabit switch.
3. Configure the development PC Ethernet card with local IP address & mask e.g. 172.30.179.1/255.255.255.0
4. On the command prompt of the target platform, type the following "C:\loadcepc /e:0:0:172.30.179.2 /L:800x600x16 eboot.bin" for the Intel® Atom™ Processor N2000 and D2000 Series Based Platform (formerly Cedar Trail).
5. Once the eboot.bin is loaded, the target platform will send a BOOTME message to Microsoft Platform Builder.



- From Microsoft Platform Builder\*, click the menu "Target\Connectivity Options" and make sure the configurations are as follows:

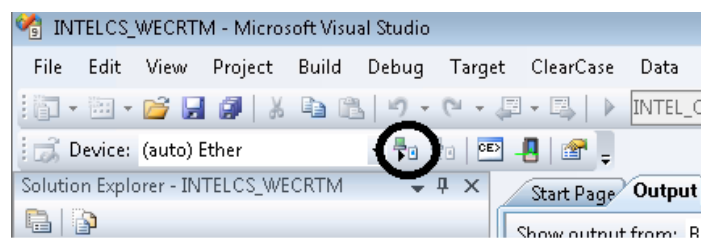
**Figure 6 Target Device Connectivity Options**



**Note:** The target platform is chosen from the "Settings" button next to "Kernel Download: Ethernet option".

- Once the "Target Device Connectivity Options" window is properly configured, click "Apply" or "Close".
- Next, to attach the target platform, click the "Attach Device" button as highlighted below.

**Figure 7 Attach Device**





*Error! No text of specified style in document.*

9. Finally, you will see the nk.bin image is downloaded over the Ethernet link and the platform is then booted up with KITL messages displayed at the "output" window of the Microsoft Visual Studio.

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