ICOP VSX-61XX Windows CE 5.0 BSP Note

2013-03-21

Install QFE

Visit http://www.microsoft.com/windowsembedded/en-us/downloads/download-windows-embedded-ce-5.aspx to get new QFE to install before building your CE image.

Install "**Windows CE 5.0 Cumulative Product Update Rollup Package (through 12/31/2012)**" from http://download.microsoft.com/download/D/5/0/D50964C6-19FA-4675-9DEC-B0F8153BF417/WinCEPB50-121231-Product-Update-Rollup-X86.msi first and find monthly update to keep your Platform Builder bugs fixed.

Debug Serial Port

Open "**\WINCE500\PLATFORM\COMMON\SRC\X86\COMMON\OTHER\debug.c**" to add one line to disable debug serial port:

```
void OEMInitDebugSerial(void)
{

    // Locate bootargs (this is the first opportunity the OAL has to initialize this global).
    //
    InitBootInfo ((BOOT_ARGS *) ((ULONG)(*(PBYTE *)BOOT_ARG_PTR_LOCATION) | 0x80000000));

    . . . .

    default:
        IoPortBase = 0;
        break;
    }

    IoPortBase = 0; //-- add this line

    if ( IoPortBase ) {
    . . . .
}
```

Set IDE to Native Mode

In order to ensure SD card or DOM, please set IDE as **native** mode in IDE configuration in BIOS.

Can not boot Windows CE with USB keyboard or mouse

If you can not boot Windows CE with USB keyboard or mouse, please disable "**BIOS EHCI Hand-OFF**" on VDX_63XX board or disable "**Legacy USB Support**" on VDX-63XX**D** board.

IRQ issue in BIOS

We are testing BSP on VDX-63XX (BIOS version is A51) and VDX-63XXD (BIOS version is A6). Please check serial ports setting in **BIOS -> Chipset -> South Bridge Configuration -> Serial/Parallel Port Configuration**. Set the IRQ used by serial/parallel ports as reserved in **BIOS -> PCI PnP -> IRQX**. This step can make BIOS not to assign

IRQ used by serial/parallel ports to PCI devices. PCI devices (USB controller and Ethernet controller) can share IRQ in Windows CE to work properly.

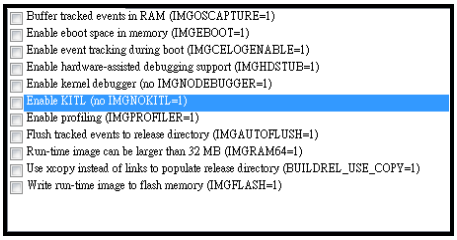
Using eboot.bin to Boot Windows CE

If you can not use eboot.bin to load Windows CE from Platform Builder in Visual Studio 2005, please check thise:

- Find eboot.bin at **\PLATFORM\<BSP_Name>\SRC \BOOTLoader\eboot\bin\eboot.bin**.
- Make sure “Enable eboot space in memory (IMGEBOOT)” in build option of your project is checked.
- Disable firewall in your Windows XP/Vista to make sure BOOTME message from eboot.bin can be received in connectivity setup.
- Debug serial port parameters can be assigned from loadcepc.exe arguments or boot.ini for x86 BIOS loader. You also can get message from serial port (default: 38400/N/8/1) to check eboot.bin running status.

Make Standalone Boot Image

To make standalone boot image, you have to disable KITL and CE target control (on Windows CE 5.0) in build option. Some developers do not disable KITL to boot CE image and get black screen. This is because CE image will try to connect to Platform Builder via KITL.



(Build Options)

Install Boot Loader

There are two boot loader for x86 architecture: LoadCEPC.exe and X86 BIOS loader. Before installing loader, you need to make primary partition, set it as “active” and format the partition with FAT16 file system. Those steps are basic and we assume you know that. Or, search it from Google for more detail.

Developers can make a bootable DOM/HDD to boot on target board and set your DOM as slave IDE device to install boot loader and copy Windows CE image. This method is more complexity that boot from USB. Refer to http://www.google.com/search?q=HP+USB+Boot+tool or “Demo Images” section in “Operating System Support” in http://www.dmp.com.tw/tech/vortex86sx.

LoadCEPC.exe

Locate **\WINCE500\PUBLIC\COMMON\OAK\CSP\X86\DOS\BOOTDISK**. Here are necessary files to load Windows CE from DOS via loadcepc.exe utility.

1. Copy **autoexec.bat, config.sys, himem.sys and loadcepc.exe** from USB pen drive onto DOM. Developer can run “format c: /s” to transfer DOS boot files. Or, you need to run “sys” command for that.
2. Also make sure the version himem.sys is the same as format/sys command. If your USB is boot from Windows 98 DOS, copy himem.sys from your Windows 98 system. If your USB or DOM is boot from MS-DOS 6.22, copy himem.sys from MS-DOS 6.22. As our test, the himem.sys in MS-DOS 5.0 will make

Windows CE report error after image is loaded onto memory to run.

3. This is optional step. You can modify config.sys as:

```
device=himem.sys /testmem:off
dos=high
```

4. This is optional step. You can modify autoexec.bat as:

```
@echo off
loadcepc.exe nk.bin
```

5. If step 3 and 4 are skipped, you have to select "**Boot CE/PC (local nk.bin)**" while DOM is booting.
6. Copy your nk.bin onto DOM

X86 BIOS Loader

Locate **\WINCE500\PUBLIC\COMMON\OAK\CSP\X86\BIOSLOADER\DISKIMAGES\SETUPDISK**. Here are necessary files to load Windows CE from X86 BIOS loader.

1. Run "**mkdisk c:**". It will install x86 BIOS loader onto DOM.
2. Modify the **boot.ini** on DOM. Find the "BinFile" in boot.ini. If it is not "**BinFile=nk.bin**", correct it.
3. Copy nk.bin from your pen drive onto DOM
4. Now, you DOM will boot without DOS and show splash BMX file to load Windows CE.

Refer to http://blogs.msdn.com/mikehall/archive/2007/07/11/splash-bmx-what-s-a-bmx-file.aspx to change boot logo for X86 BIOS loader.

Using KITL

Some developers can not boot Windows CE image and use a lot of time to guess cause or try error. Windows CE development provides KITL for developer to trace and debug O/S. If your Windows CE can not boot or get black screen, you can try to enable KITL with debug mode to boot CE via eboot.bin. Windows CE will send boot message via Ethernet to debug window in Visual Studio. It can help you to know the boot procedure and status of Windows CE. Here are debug message example:

```
PB Debugger The Kernel Debugger has been disconnected successfully.
PB Debugger The Kernel Debugger is waiting to connect with target.
4294767296 PID:0 TID:2 CEPC Firmware Init
4294767296 PID:0 TID:2 RTC - Status Reg B - 0x02
4294767296 PID:0 TID:2 g_dwCPUFeatures = 00000111
4294767296 PID:0 TID:2 Looking for rom chain
4294767296 PID:0 TID:2 Rom chain NOT found
PB Debugger Kernel debugger connected.
4294767296 PID:0 TID:2 Firmware Init Done.
4294767296 PID:0 TID:2 Setting up softlog at 0x87cfc000 for 0x800 entries
4294767296 PID:0 TID:2 Booting Windows CE version 6.00 for (x86)
4294767296 PID:0 TID:2 &pTOC = 80db9f10, pTOC = 80d60630, pTOC->ulRamFree = 80dc2000, MemForPT = 00043000
4294767296 PID:0 TID:2
Old or invalid version stamp in kernel structures - starting clean!
4294767296 PID:0 TID:2 Configuring: Primary pages: 28392, Secondary pages: 0, Filesystem pages = 14196
4294767296 PID:0 TID:2
Booting kernel with clean memory configuration:
4294767296 PID:0 TID:2 Memory Sections:
4294767296 PID:0 TID:2 [0] : start: 80e06000, extension: 0000e000, length: 06ee8000
4294767296 PID:0 TID:2 X86Init done, OEMAddressTable = 80226d30, RAM mapped = 08000000.
4294767296 PID:0 TID:2 Windows CE KernelInit
. . .
4294821245 PID:400002 TID:650002 This device has booted 2 times !!!
4294822745 PID:3b00002 TID:3b10002 DoImport Failed! Unable to import from Library 'ADVAPI32.dll'
```

```
4294822747 PID:3b00002 TID:3b10002 !! Process Import failed - Process 'explorer.exe' not started!!
4294822759 PID:3b70002 TID:3b80002 Initializating services for Services.exe
4294822761 PID:400002 TID:3b80002 DEVICE!RegReadActivationValues RegQueryValueEx(Services\Prefix) returned 2
4294822762 PID:400002 TID:3b80002 DEVICE!RegReadActivationValues RegQueryValueEx(Services\BusPrefix) returned 2
```

History

2013-03-21

- Fix DRAM boot issue.

2011-05-06

- BSP created.

Technical Support

For more technical support, please visit http://www.icop.com.tw or mail to info@icop.com.tw.