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Intel(R) Boot Loader Development Kit (Intel(R) BLDK) Core 2.3.5.6
[Based on the UEFI Development Kit 2010 (UDK2010)]
FoxBrook (Intel® Atom™ Processor E6x5C Series) Release Notes
September 14, 2011
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CONTENTS
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- =====
1. OVERVIEW
 2. RELEASE INFORMATION
 3. SUPPORTED FEATURES
 4. HARDWARE CONFIGURATION
 5. BUILD ENVIRONMENT OPERATING SYSTEM
 6. BUILD TOOLS REQUIRED ON HOST MACHINE
 7. FLASH IMAGE BUILD STEPS
 8. OPERATING SYSTEMS BOOT SUPPORT
 9. LIMITATIONS
 10. KNOWN ISSUES
 11. IMPLEMENTATION NOTES

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1. OVERVIEW

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This Intel(R) Boot Loader Development Kit (Intel(R) BLDK) is specifically produced for the Fox Brook platform. The components that make up the kit are:

- The Intel(R) BLDK Development Application.
- The Fox Brook platform code base.
- The Intel(R) UEFI Development Kit Debugger Tool.
- Documentation including the Getting Started Guide and the User's Guide.

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2. RELEASE INFORMATION

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This is the 2.3.5.6 release of the software for the Fox Brook platform. It is based on the Intel UEFI Development Kit (UDK) 2010 Update3 (UP3) which is open source posted on TianoCore.org plus platform specific code which has been added to this release package. All required product features have been implemented; however, optimization for boot time performance is left to customer's porting efforts.

For further information on UDK2010, refer to the UDK2010 Release Notes which are included in the code base.

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3. SUPPORTED FEATURES

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The following features are supported and have been validated.

- CPU, Memory, Basic I/O Initialization
- Boot from SATA, USB
- Feature configuration through the Intel(R) BLDK Development Application
- Windows Tool Chain
- UEFI Specification 2.3
- UEFI Shell 2.0
- Fast Boot in less than 3 seconds
- ACPI 3.0
- Intel(R) UDK Debugger Tool
- SPI Flash Update
- HD Audio
- Enhanced Intel SpeedStep(R) Technology
- Intel(R) Hyper-Threading Technology

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4. HARDWARE CONFIGURATION

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This release has booted to the operating system listed in Section 8 on a Fox Brook customer reference board using the following configuration:

- PS/2 keyboard and mouse
- Serial console and LVDS console
- SATA hard disk (AHCI mode)
- USB mouse and keyboard
- USB thumb drive

Fox Brook has memory down rather than DIMMs, therefore serial presence detect (SPD) is not utilized.

This release supports Intel(R) Atom(TM) Processor E6x5C series.

The latest Chipset Microcode (CMC) Rev. 2.1 (C0_22211.BIN) supports Intel(R) Atom(TM) Processor E6x5C series B0, and B1 steppings. If another version of the CMC is desired, place the .bin file in the TCMicrocode directory and change the .fdf file to include that CMC file in the build.

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5. BUILD ENVIRONMENT OPERATING SYSTEM
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All validation of the Intel(R) Boot Loader Development Kit was done on Windows XP 32-Bit with Microsoft Visual Studio 2005 and Windows 7 64-Bit with Microsoft Visual Studio 2008. These are the only supported combinations for Intel® BLDK.

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6. BUILD TOOLS REQUIRED on HOST MACHINE
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- Microsoft Visual Studio 2005 or 2008.
- Intel ACPI Source Language (IASL) Compiler, version 20070508
Note: Download "iasl-win-20070508.zip" from
"http://www.acpica.org/downloads/Version_20070508.php"
and extract file "iasl.exe" to C:\ASL
- Windows Driver Development Kit (WinDDK), version 3790.1830
Note: Download WinDDK.3790.1830 from:
"http://download.microsoft.com/download/9/0/f/
90f019ac-8243-48d3-91cf-81fc4093ecfd/1830_usa_ddk.iso"
Extract the DDK under "C:\1830_usa_ddk".
Run "C:\1830_usa_ddk\x86\KitSetup.exe".
This will install WinDDK.3790.1830 under "C:\WINDDK\3790.1830"
- Intel(R) BLDK Development Application, version 2.0.1
Note: Download from "http://edc.intel.com/Software/
Intel-Boot-Loader-Development-Kit/"
Double-click on the .exe file to install.

Refer to the Getting Started Guide and the User's Guide for further details.

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7. FLASH IMAGE BUILD STEPS
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- Double click the .exe file and then type in the destination directory.
- Open Intel(R) BLDK 2.0.1 Development Application tool.
- Create a new project. Refer to section 4.1 in the Getting Started Guide.
- In the Development Application, add a debug build to the build options.
 - File > Preferences > Build Tools.
 - Add a "New Item" and name it "Build & Debug"

- In the Application text box, enter "nmake"
- In the Parameters text box, enter "debugbuild"
- Click Save
- Under the Build menu, you will see "Build", "Build Debug", "Rebuild", "Clean" and "Clean All" options.
 - To generate a release build, click "Build".
 - To generate a debug build, click "Build Debug".
 - Click "Clean" to remove previous builds.
 - Click "Rebuild" to clean and generate a release build.
- After a successful build, FOXBROOK.FD is the filename of flash image which is located under the build directory.

Refer to the Getting Started Guide and the User's Guide for further details.

Note: Review the size of the Fox Brook SPI Part, 8MB (0x0000000 - 0x07FFFFFF).

For that, you have to adjust the starting address of the flash image:

- Debug image: Starting address (Hex): 0x0600000
- Release image: Starting address (Hex): 0x0700000

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8. OPERATING SYSTEMS BOOT SUPPORT

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Only "UEFI aware" target operating systems will boot using this version of BLDK. This means that operating systems and boot loaders that require BIOS INT calls will not boot. To boot with this version of BLDK, a modified version of elilo or grub2 will be required for the supported operating system (Timesys Fedora Remix 14) to boot.

For detailed instructions on making the required modifications and on getting supported operating system to boot, refer to the white paper titled "Setup OS environments using EDK-II based BLDK". You would be able to download the white paper from EDC.

Booting Timesys Fedora Remix 14 on the following media have been validated:

- SATA hard drive
- SATA solid state drive
- USB drive

Link to download:

- Timesys Fedora Remix 14: "<https://linuxlink.timesys.com/intel/linux/>"

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9. LIMITATIONS

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- Only "UEFI aware" operating systems will boot using this version of BLDK. Refer to Section 8.
- When release package is extracted to a folder, the full folder path is restricted to contain characters (a-zA-Z0-9_-.) only. Or user will see build failure.

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10. KNOWN ISSUES

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Reference: 3658279

Title: FirmwareVendor PCD is incorrectly converted from Unicode to ASCII

Description: In MdeModulePkg.dec, PcdFirmwareVendor is defined as a null-

terminated Unicode string. This PCD can be customized using Intel(R) Boot Loader Development Kit. Since, Intel(R) Boot Loader Development Kit updates this PCD as an ASCII string, this PCD is redefined as an ASCII string in the EDK-II based BLDK source code as well.

Implication: If an EFI application or a driver reads the PcdFirmwareVendor PCD directly, it should treat the PCD as a null terminated ASCII string.

Resolution: None

Workaround: 1. Convert the ASCII string to a Unicode string after reading the PCD.
2. Read the Firmware Vendor from the System Table and not from PCD.

Affected O/S: EFI Shell

Reference: 3658319

Title: EfiShellGetDevicePathFromFilePath() returns incomplete device path in UEFI Shell 2.0
Description: When an application is loaded under the UEFI Shell 2.0, the file device path information provided by LOADED_IMAGE_PROTOCOL is incomplete.

Implication: The failure may cause unexpected application behavior.

Resolution: Apply the bug fix and rebuild the shell image.

Workaround: This requires rebuilding the shell image and integrating it into the BLDK. Start by downloading the UEFI Shell 2.0 source code from tianocore.org and update line 591 of Application\Shell\ShellProtocol.c from
DevicePathForReturn = FileDevicePath(Handle, Path+StrLen(MapName) + 1);
To
DevicePathForReturn = FileDevicePath(Handle, Path+StrLen(MapName));
Rebuild the shell image, copy it to the BLDK source tree EdkShellBinPkg and rebuild the BLDK.

Affected O/S: UEFI Shell 2.0

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11. IMPLEMENTATION NOTES
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- The customer is responsible for implementing security safeguards prior to productizing the Intel(R) Boot Loader Development Kit.