

INTEL CORPORATION

Intel® Embedded University Program

LAB 3.2

InForce Computing* SYS9402 System: Flash BIOS onto
the Platform

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At the end of this lab, attendees will migrate at least one of their InForce Computing systems from the Intel® Boot Loader Development Kit II (Intel® BLDK II) bootloader to a Phoenix* BIOS.

Instructions:

Important: Updating the InForce Computing system to use a BIOS introduces the following restrictions:

- The InForce Computing system cannot be returned to Intel BLDK II using this method documented below.
- The InForce Computing system will no longer be able to boot from the Timesys Fedora image on the hard drive. A new OS will have to be installed.

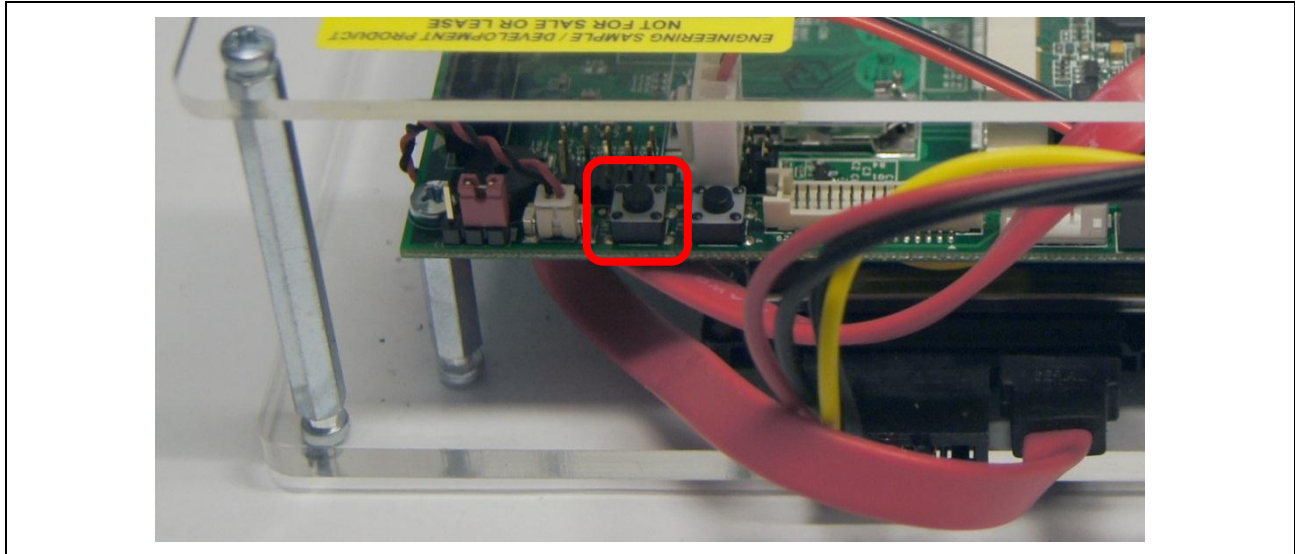
Prerequisites

- 1) *Intel® Embedded University Program LAB 3.1* is complete
- 2) A bootable USB flash drive is available for each system under test. The drive should be prepared as detailed in the *USB Flash Drive Preparation* presentation, which is available separately.
- 3) A Host PC system, with a RS-232 serial port, is available with appropriate peripherals and cables. The PC must be running a terminal emulator application, such as PuTTY.
- 4) The terminal emulator should be configured as follows:
 - a. Baud Rate: 115200
 - b. Data Bits: 8
 - c. Stop Bits: 1
 - d. Parity: None
 - e. Flow Control: None

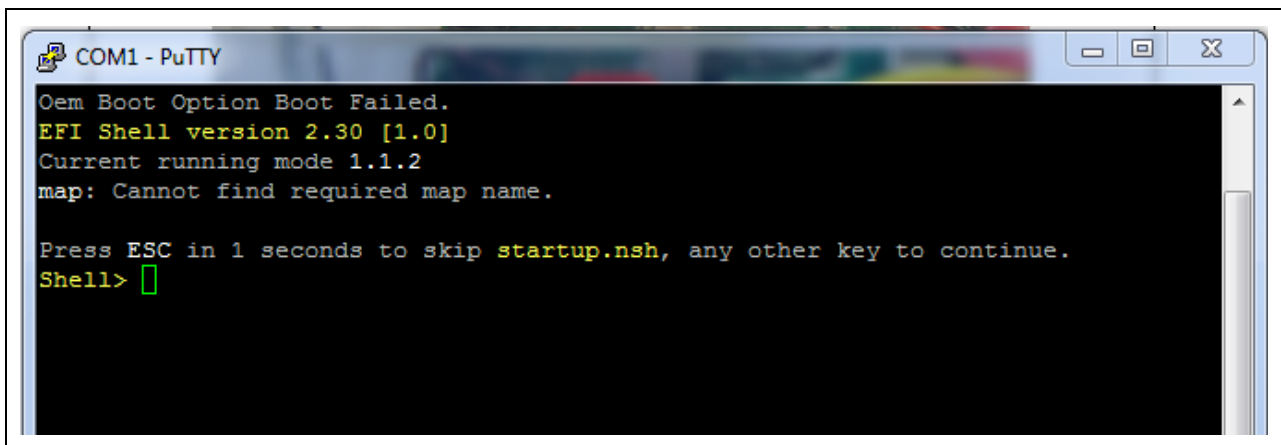
Installation steps:

- 1) If the InForce Computing system is currently powered on, proceed with powering it down
- 2) Detach the SATA data cable (red colored) from the hard drive in the InForce Computing system.
- 3) Insert the USB flash drive into one of the spare USB slots on the InForce Computing system. Do not power the system on yet!
- 4) Power on the host PC system, if it's not already powered, and run the terminal emulator application
- 5) Power on the InForce Computing system
- 6) The system should start powering up, as indicated by
 - a. An Intel logo splash screen on the monitor

- c. The system fan rotating
- 7) If the InForce Computing system does not start to power up, press the power switch on the system. The power switch is on the opposite side of the mainboard to the USB, RS-232, VGA and 12 V DC connectors.



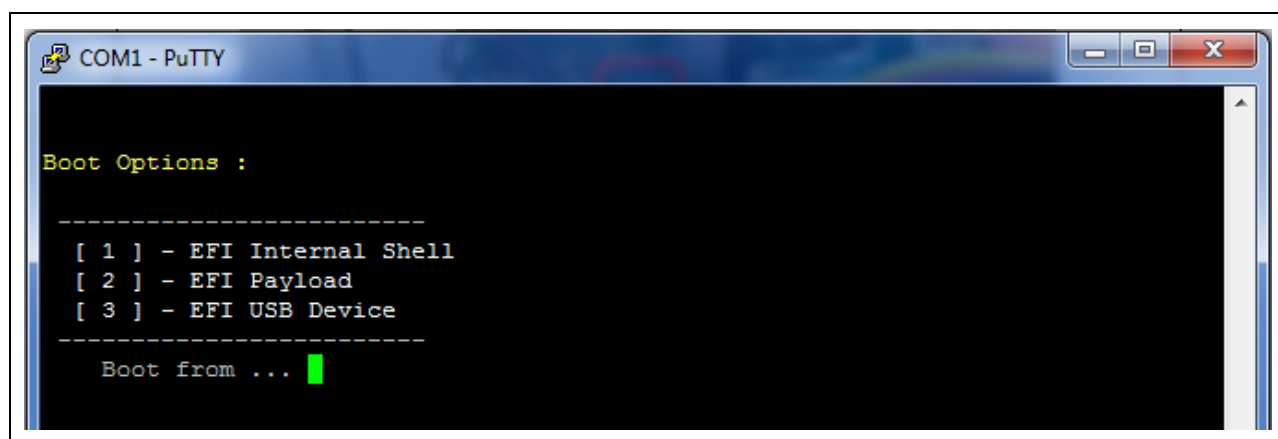
- 8) The first display output should be the Intel logo splash screen. This indicates that the Intel BLDK II (alpha build) bootloader is running
- 9) On the terminal emulator, there should be some debug text from the Intel BLDK II bootloader and a command prompt: *Shell >*



- 10) Type *exit* at the command prompt to allow the bootloader to enumerate all system boot devices. A message similar to *Enumerating boot devices ...* should be seen



11) Once enumeration is complete, a *Boot Options:* menu should be seen. Select the *EFI Internal Shell* option to return to the command prompt



12) At the *Shell >* command prompt, type *fs0:* and press *Enter* to enter the USB flash drive file system.

```
COM1 - PuTTY
[ 1 ] - EFI Internal Shell
[ 2 ] - EFI Payload
[ 3 ] - EFI USB Device
-----
Boot from ... 1

Booting from EFI Internal Shell [Fv(30D9ED01-38D2-418A-90D5-C561750BF80F)/FvFile
(C57AD6B7-0515-40A8-9D21-551652854E37)]
EFI Shell version 2.30 [1.0]
Current running mode 1.1.2
Device mapping table
  fs0      :Removable HardDisk - Alias hd24c0b blk0
             PciRoot(0x0)/Pci(0x17,0x0)/Pci(0x0,0x0)/Pci(0x8,0x3)/USB(0x2,0x0)/HD(
1,MBR,0x011A569D,0x3F,0x3D7FC1)
  blk0     :Removable HardDisk - Alias hd24c0b fs0
             PciRoot(0x0)/Pci(0x17,0x0)/Pci(0x0,0x0)/Pci(0x8,0x3)/USB(0x2,0x0)/HD(
1,MBR,0x011A569D,0x3F,0x3D7FC1)
  blk1     :Removable BlockDevice - Alias (null)
             PciRoot(0x0)/Pci(0x17,0x0)/Pci(0x0,0x0)/Pci(0x8,0x3)/USB(0x2,0x0)

Press ESC in 1 seconds to skip startup.nsh, any other key to continue.
Shell> fs0:

fs0:\> █
```

- 13) To start the Intel BLDK II to BIOS update process, type `spiupdate.efi IFC940X_revpl1.bin` and press *Enter*.

```
Shell> fs0:

fs0:\> spiupdate.efi IFC940X_revpl1.bin
SpiUpdate: 2010-12-01 <for TunnelCreek based platforms>
Updating Block at FFE08000: Writing █
```

- 14) The update process will end with a *Firmware update successful* message. 5 seconds after this point the InForce Computing system will reboot and BIOS debug text should be visible in the terminal emulator
- Note: The system takes longer to initialize with the BIOS than with Intel BLDK II.
 - Note: A splash screen may or may not be seen, depending on monitor & system behavior, but the configuration menu can be accessed by pressing the *F2* key. It is suggested to tap the *F2* until the menu appears, in the case where the splash screen is not visible
 - Note: The system will now boot off the USB flash drive into FreeDOS

```
Shell> fs0:

fs0:\> spiupdate.efi IFC940X_revpl1.bin
SpiUpdate: 2010-12-01 <for TunnelCreek based platforms>
Firmware update successful.   Reset system in 4 seconds ...
```

- 15) Power off the InForce Computing system, remove the USB flash drive and reattach the SATA data cable to the hard drive

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