



# Intel® Boot Loader Development Kit (Intel® BLDK) Configuration



# Legal Disclaimer

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. UNLESS OTHERWISE AGREED IN WRITING BY INTEL, THE INTEL PRODUCTS ARE NOT DESIGNED NOR INTENDED FOR ANY APPLICATION IN WHICH THE FAILURE OF THE INTEL PRODUCT COULD CREATE A SITUATION WHERE PERSONAL INJURY OR DEATH MAY OCCUR.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800- 548-4725, or by visiting <http://www.intel.com/>.

This document contains information on products in the design phase of development.

The Intel products referred to in this document is intended for standard commercial use only. Customer are solely responsible for assessing the suitability of the product for use in particular applications.

All products, computer systems, dates, and figures specified are preliminary based on current expectations, and are subject to change without notice.

Intel, the Intel logo, and Intel Atom are trademarks of Intel Corporation in the United States and/or other countries.

\* Other names and brands may be claimed as the property of others.

Code Names are for use by Intel to identify products, platforms, programs, services, etc. ("products") in development by Intel that have not been made commercially available to the public, i.e., announced, launched or shipped. They are never to be used as "commercial" names for products or intended to function as trademarks.

Other vendors are listed by Intel as a convenience to Intel's general customer base, but Intel does not make any representations or warranties whatsoever regarding quality, reliability, functionality, or compatibility of these products. This list and/or these products may be subject to change without notice.

Intel® High Definition Audio (Intel® HD Audio) requires a system with an appropriate Intel chipset and a motherboard with an appropriate codec and the necessary drivers installed. System sound quality will vary depending on actual implementation, controller, codec, drivers and speakers. For more information about Intel HD audio, refer to <http://www.intel.com/>.

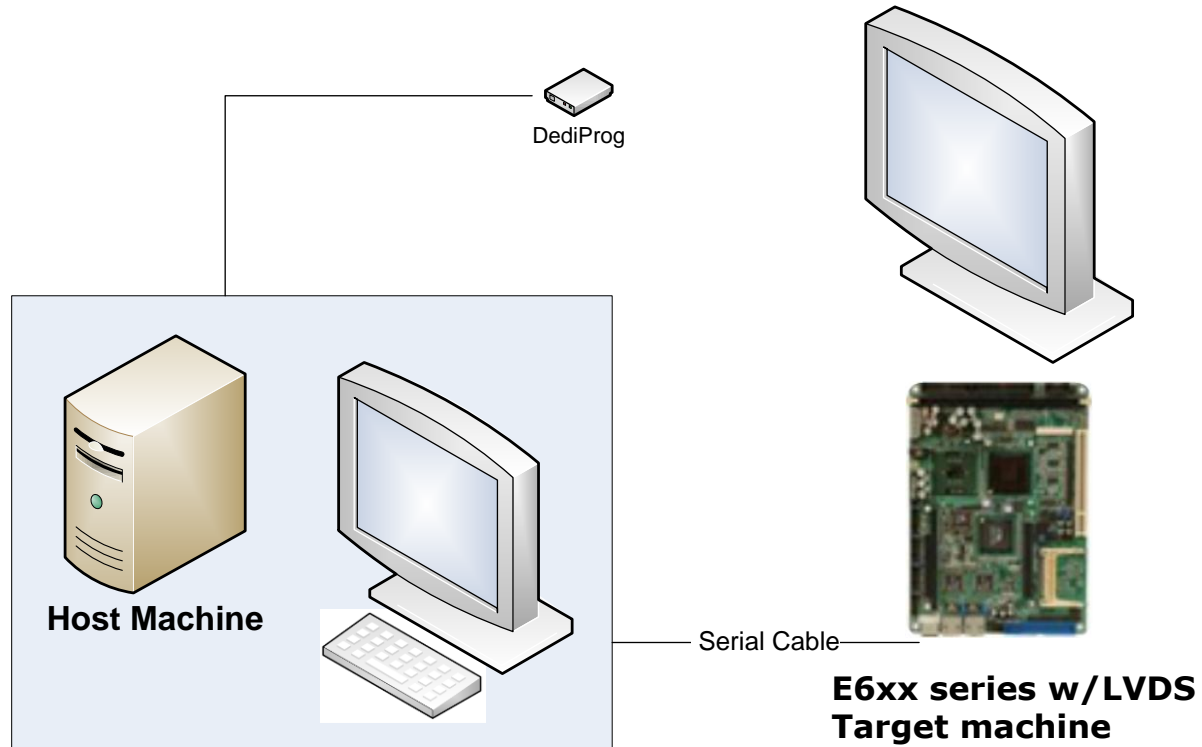
I2C\* is a two-wire communications bus/protocol developed by Philips. SMBus is a subset of the I2C bus/protocol and was developed by Intel. Implementations of the I2C bus/protocol may require licenses from various entities, including Philips Electronics N.V. and North American Philips Corporation.

Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain computer system software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

# Agenda

- **Download & Install Intel® Boot Loader Development Kit (Intel® BLDK)**
- **Setup Host Machine with Build Tools**
- **Create an Intel BLDK Project**
- **Build & Program Firmware Image**
- **Enable Fast Boot**
- **Update Firmware from UEFI Shell**

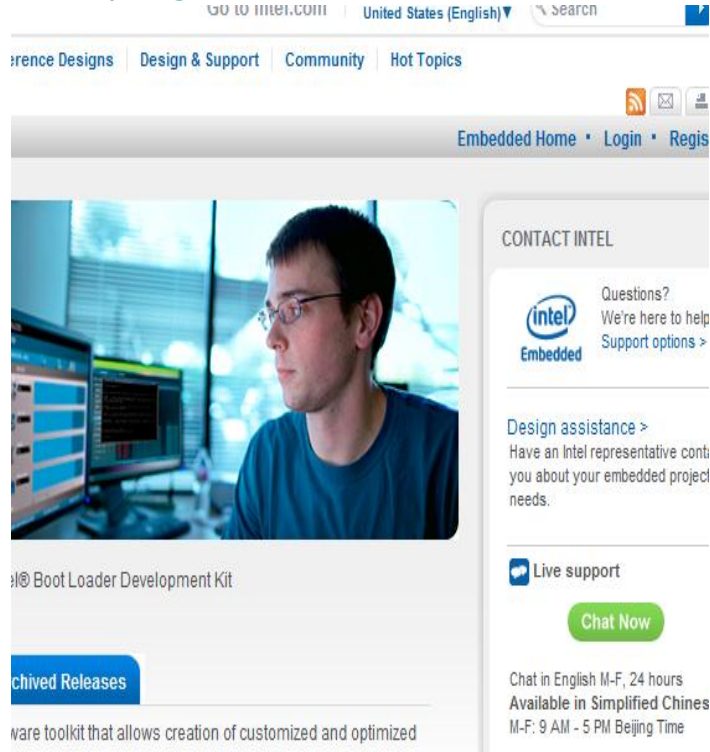
# Setup



# Download & Install Intel® Boot Loader Development Kit

- Download Intel® Boot Loader Development Kit (Intel® BLDK) from EDC website to *c:\bldk* folder
  - ❖ Intel BLDK Development Application
  - ❖ Intel BLDK Core Code & Release Notes for Crown Bay
  - ❖ Intel BLDK Documentation: Getting Started Guide and User Guide

<http://goto.intel.com/bldk>



[Overview](#)[Documentation](#)[Download Now](#)[Archived Releases](#)

The Intel® Boot Loader Development Kit (Intel® BLDK) components are:

- The Intel® BLDK Development Application.
- The Platform code base (Reference Firmware Package).
- Documentation including the release notes, the Getting Started Guide and the Us

## Intel® BLDK – Development Application

The development application toolkit includes object libraries, sample source and m... firmware binary boot images.

- [Intel® BLDK Development Application \(Windows\\*\) Version 2.0.1](#)
- [Release Note: Intel® BLDK Development Application \(Windows\\*\) Version 2.0.1](#)
- [Intel® BLDK Development Application \(Linux\\*\) Version 2.0.0](#)
- [Release Note: Intel® BLDK Development Application \(Linux\\*\) Version 2.0.0](#)

## Intel® BLDK – Code Bases (Reference Firmware Packages)

**Intel® Atom™ Processor E6xx Series with Intel® Platform Controller Hub EG20T**

Formerly Queens Bay (Tunnel Creek + Topcliff)

- [Intel® BLDK Core for Crown Bay—Windows\\*](#)
- [Intel® BLDK Core for Crown Bay—Linux\\*](#)
- [Release Note: Intel® BLDK Core for Crown Bay—Windows\\* & Linux\\*](#)



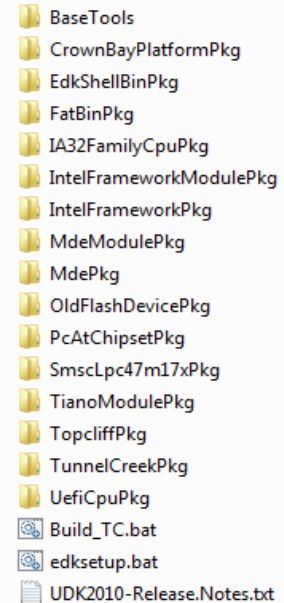
# Download & Install Intel® Boot Loader Development Kit

- **To install Intel® Boot Loader Development Kit (Intel® BLDK) Core Code**

1) Double click *c:\bldk\CB-EDKII-PostGold-2.3.6.8.exe*

**NOTE:** This extracts the source code to *c:\bldk\src*

c:\bldk\src



- **To install the Intel BLDK Development Application**

1) Extract *c:\bldk\Intel\_BLDK\_Application\_v2.0.1-win.zip* to *c:\bldk\tool*

2) Run the Windows\* installation and follow instructions

*c:\bldk\tool\Intel(R)\_Boot\_Loader\_Development\_Kit.exe*

**NOTE:** we use the Windows version as example

\*Other names and brands may be claimed as the property of others.



# Setup Host Machine with Build Tools

Install Windows\* DDK ver 3790.1830 to default directory *c:\winddk\3790.1830*

[http://download.microsoft.com/download/9/0/f/90f019ac-8243-48d3-91cf-81fc4093ecfd/1830\\_usa\\_ddk.iso](http://download.microsoft.com/download/9/0/f/90f019ac-8243-48d3-91cf-81fc4093ecfd/1830_usa_ddk.iso)

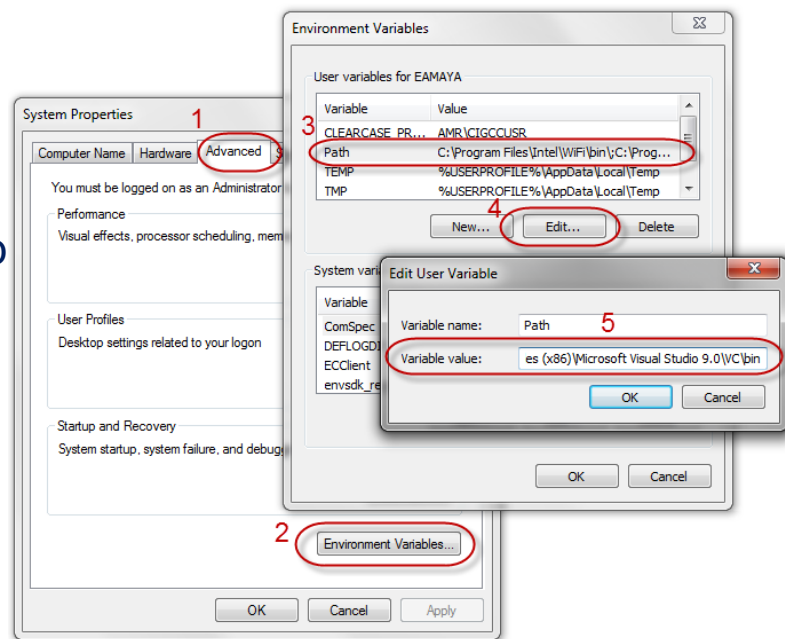
Install ACPIA\* iASL ver 20070508

Download iasl-win-20070508.zip file and extract files to c:\ASL

[http://www.acpica.org/downloads/Version\\_20070508.php](http://www.acpica.org/downloads/Version_20070508.php)

Install Microsoft Visual Studio 2008\*

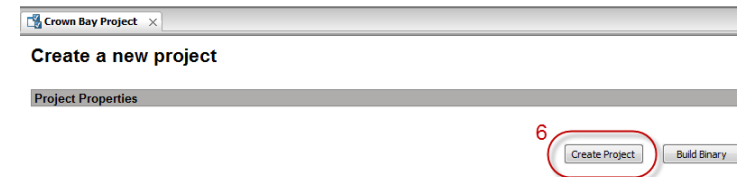
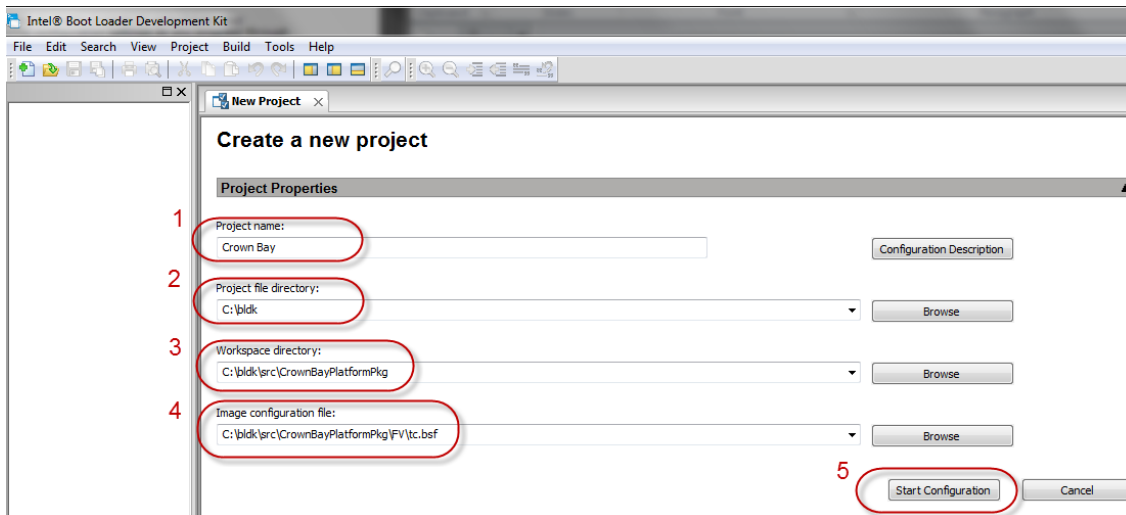
**NOTE:** You must add Visual Studio's path to the system environment variable *Path* to build from the Development Application:  
*C:\Program Files (x86)\Microsoft Visual Studio 9.0\VC\bin*



\*Other names and brands may be claimed as the property of others.

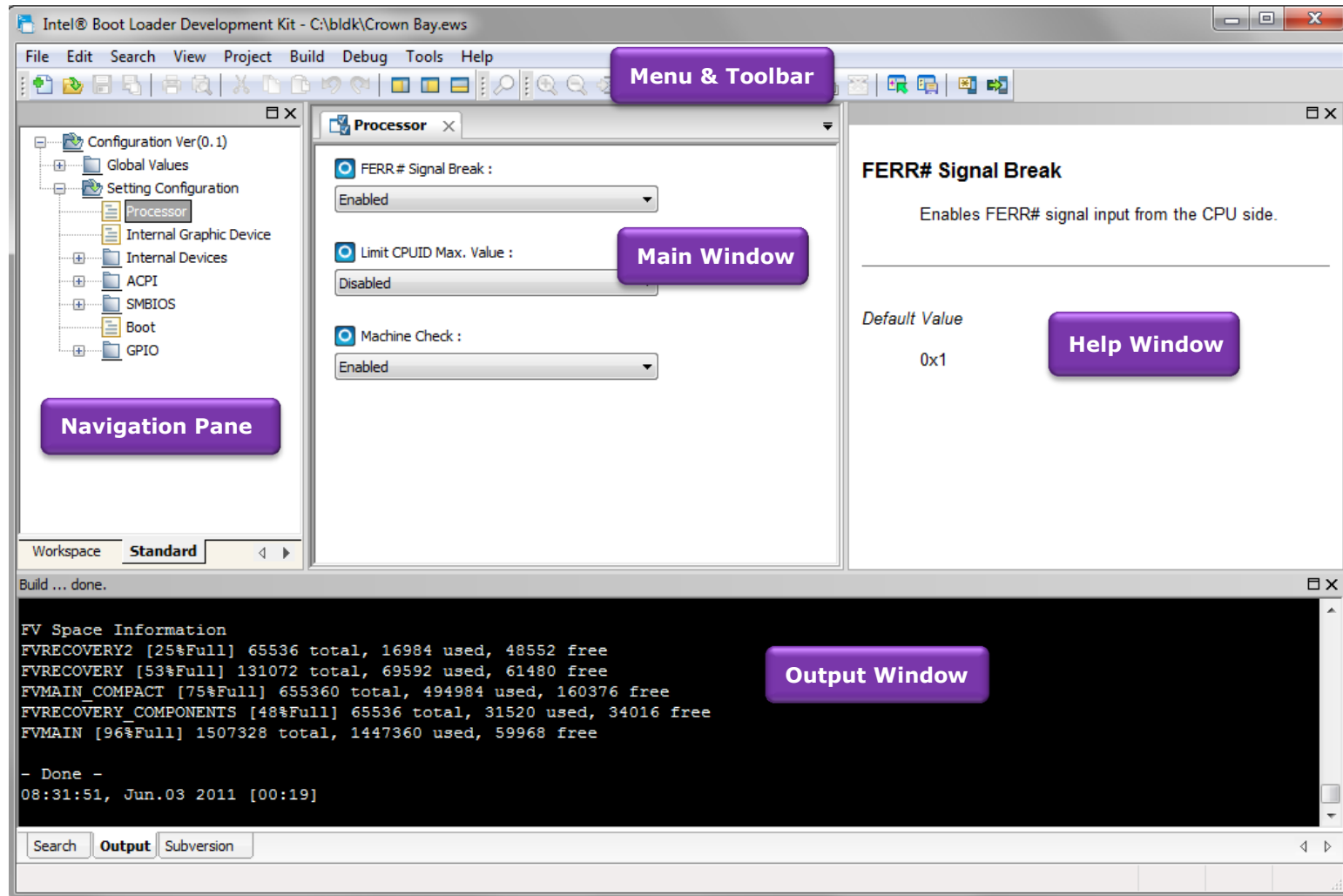
# Create an Intel® Boot Loader Development Kit Project

- 1) Start the Intel® Boot Loader Development Kit (Intel® BLDK) Development Application
  - a. Start > All Programs > Intel(R) Boot Loader Development Kit > Intel(R) Boot Loader Development Kit
- 2) To create a new project, from the Development Application
  - a. From the main menu, click **Project** > **New Project**  
On the **New Project** screen, enter the project info:
  - b. Project Name: **Crown Bay** [1]  
[This is the Intel BLDK project name]
  - c. Project file directory: **c:\bldk** [2]  
[Directory where the Intel BLDK project file will be saved; that is, c:\bldk\Crown Bay.ews]
  - d. Workspace directory: **C:\bldk\src\CrownBayPlatformPkg** [3]  
[Location of the Crown Bay platform package]
  - e. Image configuration file: **C:\bldk\src\CrownBayPlatformPkg\FV\tc.bsf** [4]  
[Select the Boot Setting File (BSF) "tc.bsf", under the FV folder]
  - f. click **Start Configuration** button [5]
  - g. On the **Create a new Project** screen, click **Create Project** button [6]



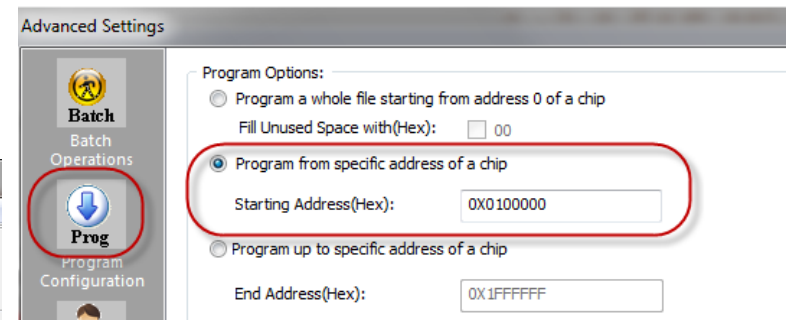
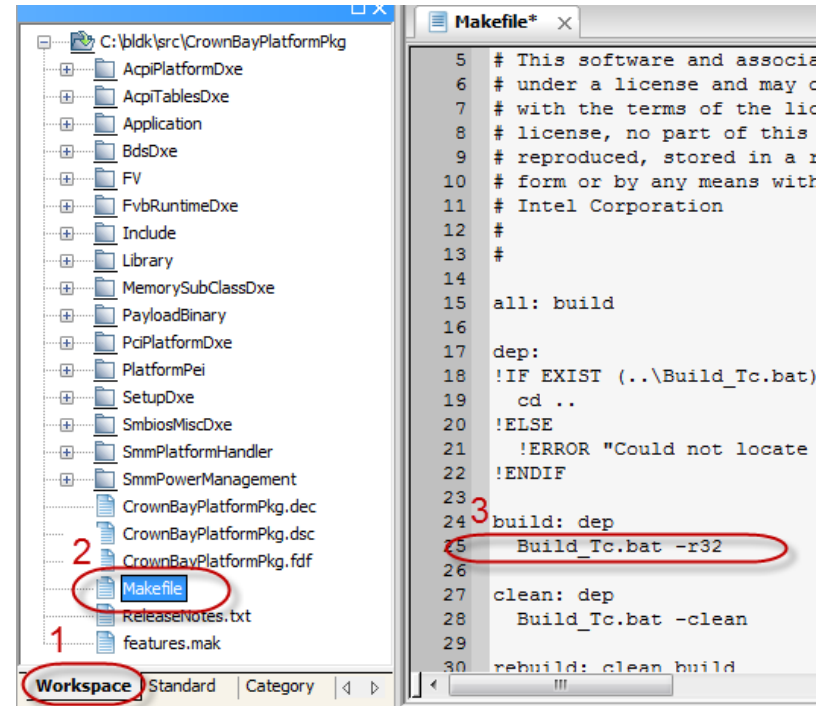


# Create an Intel® Boot Loader Development Kit Project



# Build & Program Firmware Image

- 1) Change the build from "debug build" to "release build"
  - a. Select **Workspace** [1] and double click **Makefile** [2] on tree view to open and edit the file.
  - b. Change the build from "-d32" to "-r32" [3]
  - c. From the main menu, select **File > Save**
- 2) To build the firmware image
  - a. From the main menu, select **Build > Build**  
[The build process starts and it's displayed in the output window]
  - b. The binary image is generated in the output folder  
C:\bldk\src\Build\CrownBayPlatform\RELEASE\_VS2008x86\FV\CROWNBAY.fd
- 3) To program firmware image on the target
  - a. Remove power from the target and connect the DediProg to the target.
  - b. Start the DediProg software (select 25VF016B device)
  - c. Click **Config** button from toolbar
  - d. On the **Advanced Settings** dialog box, click the **Prog** button
  - e. Enter **0X0100000** for the Starting Address
  - f. Click **OK** button



# Enable Fast Boot

## 1) Enable fast boot

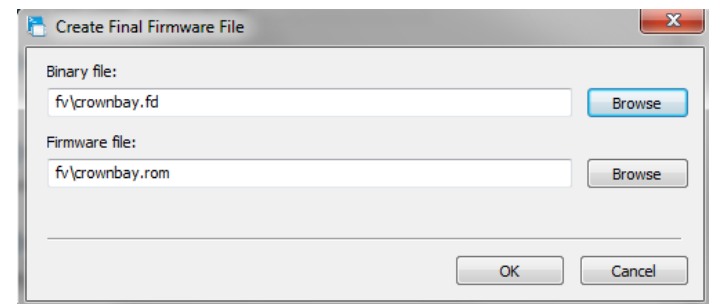
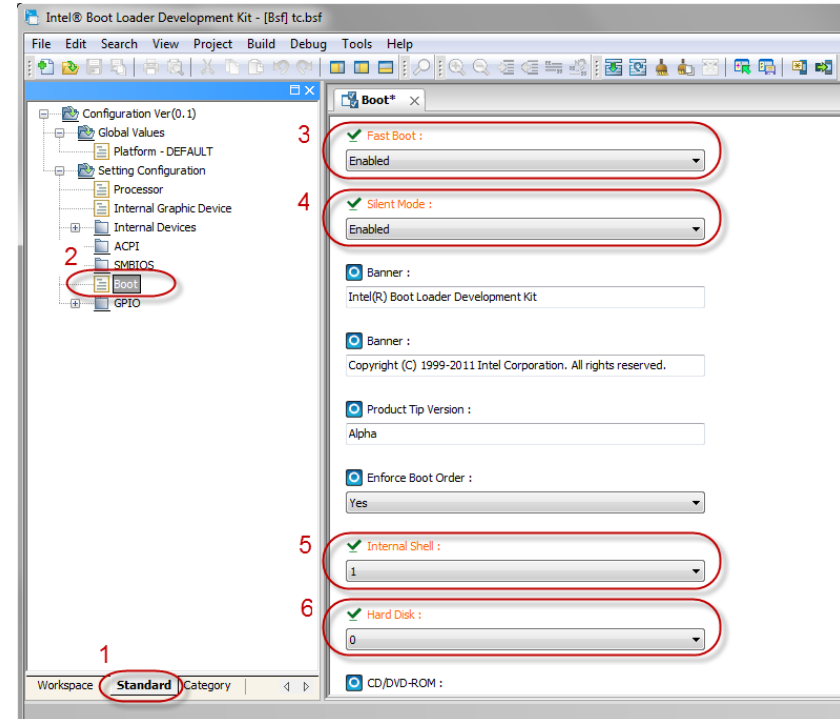
- Select **Standard** and double click **Boot** on tree view to open the **Boot** dialog box.
- Enable **Fast Boot** and **Silent Mode** options on the main window.
- Change **Internal Shell** boot option to **1** and **Hard Disk** as **0**. This changes the boot order to boot from the hard disk first.
- From the main menu, select **Project > Save Configuration**

## 2) Generate the firmware image

- From the main menu, select **Build > Create Final Firmware Image**

**NOTE:** There seems to be a bug since the tool is expecting the input file in the folder `src\CrownBayPlatformPkg\FV` yet the build generates the output file under the `src\Build\CrownBayPlatform\RELEASE_VS2008x86\FV\CROWNBay.fd`. Therefore, you must copy the .fd file to `src\CrownBayPlatformPkg\FV` before going to the next step.

- The dialog box **Create Final Firmware file** is displayed as shown in the figure. The **Binary file** edit box allows you to select the input image file (built in Lab4). Use the **Browse** button and select the file `crownbay.fd`. The **Firmware file** is the output file that will be generated by the tool with `.rom` filename extension.
- Click **OK** button to generate the image file.



# Update Firmware from UEFI Shell

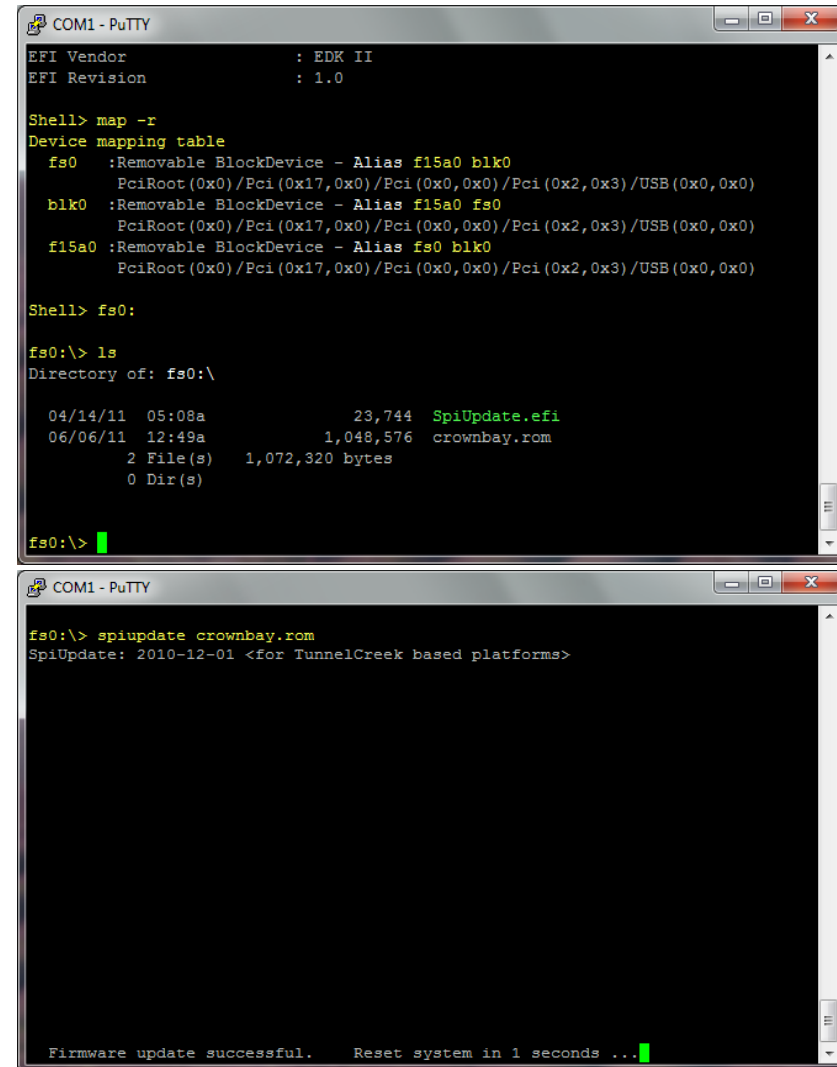
- 1) Copy firmware image and firmware update tool into a USB device:
  - a. `C:\bldk\src\CrownBayPlatformPkg\FV\crownbay.rom`
  - b. `C:\bldk\src\CrownBayPlatformPkg\Application\SpiUpdate\SpiUpdate.efi`

- 2) Follow these steps to update the firmware

- a. Remove USB device from host machine and insert it in a USB port of the target board.
- b. At the UEFI Shell prompt, enter the following commands

```
map -r
fs0:
ls
spiupdate crownbay.rom
```

The tool updates the firmware and resets the system.



The image shows two screenshots of a PuTTY terminal window titled 'COM1 - PuTTY'. The top screenshot shows the UEFI Shell environment. It displays the EFI Vendor as 'EDK II' and the EFI Revision as '1.0'. The user enters the command 'map -r', which shows a device mapping table for 'fs0' (Removable BlockDevice - Alias f15a0 blk0) and 'blk0' (Removable BlockDevice - Alias f15a0 fs0). The user then enters 'fs0:' and 'ls', which shows a directory listing of 'fs0:\'. The listing includes two files: 'SpiUpdate.efi' (23,744 bytes) and 'crownbay.rom' (1,048,576 bytes). The bottom screenshot shows the user entering the command 'spiupdate crownbay.rom'. The output indicates the update is for '2010-12-01 <for TunnelCreek based platforms>'. At the bottom of the terminal, a status bar shows 'Firmware update successful. Reset system in 1 seconds ...'.

```
COM1 - PuTTY
EFI Vendor      : EDK II
EFI Revision    : 1.0

Shell> map -r
Device mapping table
  fs0  :Removable BlockDevice - Alias f15a0 blk0
        PciRoot(0x0)/Pci(0x17,0x0)/Pci(0x0,0x0)/Pci(0x2,0x3)/USB(0x0,0x0)
  blk0 :Removable BlockDevice - Alias f15a0 fs0
        PciRoot(0x0)/Pci(0x17,0x0)/Pci(0x0,0x0)/Pci(0x2,0x3)/USB(0x0,0x0)
  f15a0 :Removable BlockDevice - Alias fs0 blk0
        PciRoot(0x0)/Pci(0x17,0x0)/Pci(0x0,0x0)/Pci(0x2,0x3)/USB(0x0,0x0)

Shell> fs0:
fs0:\> ls
Directory of: fs0:\

04/14/11  05:08a           23,744  SpiUpdate.efi
06/06/11  12:49a       1,048,576  crownbay.rom
         2 File(s)      1,072,320 bytes
         0 Dir(s)

fs0:\>

COM1 - PuTTY
fs0:\> spiupdate crownbay.rom
SpiUpdate: 2010-12-01 <for TunnelCreek based platforms>

Firmware update successful.  Reset system in 1 seconds ...
```

# Q&A