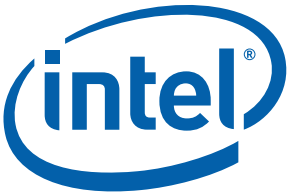


Intel® Boot Loader Development Kit (Intel® BLDK)

Version 2.0 — UEFI Standard Based

Getting Started Guide

January 2012

Document Number: 325925-003

Contents

Figures

Tables

Revision History

Date	Revision	Description
July 2011	001	Initial draft of this document for Gold release.
October 2011	002	Updates include: • Chapter 3.0: Added support for Linux* operating system (see changebars). • Section 4.1.5.1: Updated step 6 on page 19. • Section 4.2.6.1: Updated step 4 on page 28. • Other changes noted with changebars.
January 2012	003	Updates include: • Chapter 4.0: Updated screen shots in Figure 2, Figure 3, Figure 4, and Figure 5. • Other text changes noted with changebars.

§ §

1.0 About this Manual

The Intel® Boot Loader Development Kit (Intel® BLDK) is a software toolkit that allows creation of customized and optimized initialization firmware solutions for embedded Intel® processor-based platforms. The Intel® BLDK enables rapid development of firmware for fixed-function embedded designs—those requiring basic initialization and functionality rather than the full capabilities delivered with a traditional BIOS.

The foundation of the Intel® BLDK is Intel's latest implementation of the UEFI Specification Version 2.3, known as the Intel® UEFI Development Kit 2010 (Intel® UDK2010). Consequently, the Intel® BLDK is fully compliant with the latest UEFI standards and compatible for use with the Intel® UEFI Development Kit Debugger Tool and UEFI 2.0 Shell.

Components of the Intel® BLDK toolkit are:

- Development application: provides editing capabilities, configuration changes and build capabilities
- Code base: based on the Unified Extensible Firmware Interface (UEFI)
- Documentation: Getting Started Guide (this manual) and User Guide

This manual, the Intel® Boot Loader Development Kit Version 2.0 — UEFI Standard Based Getting Started Guide, provides information for installing the development application and the code base onto the host machine. It also provides the general process for building and customizing the code base using the development application. When the build is completed, you will be able to flash the created binary to your target platform.

Note: This manual is not platform-specific but does use the Intel® Atom™ Processor E6xx Series with Intel® Platform Controller Hub EG20T solution as a reference. Also, for convenience the Intel® Atom™ Processor E6xx Series with Intel® Platform Controller Hub EG20T is referred to as *Crown Bay* in this manual.

1.1 Audience

This manual is intended for firmware and software engineers who are using the Intel® BLDK to develop embedded devices. The Intel® BLDK solution uses a Host and Target Development Environment. The Host is a development machine that has the Intel® BLDK development application and the build tools. The Target is the platform on which the Intel® BLDK firmware will run, which in turn will launch your operating system.

1.2 Related Documents and Tools

The documents listed in Table 1 contain additional information useful in designing systems that incorporate the Intel® BLDK. To get copies of these documents, or other Intel literature, call 1-800-548-4725 or visit the Intel web site at http://developer.intel.com.

Table 1. Related Documents and Tools

Title	Reference Number / Location
Intel® Boot Loader Development Kit Version 2.0 — UEFI Standard Based User Guide	474049
Minimal Intel® Architecture Boot Loader White Paper	http://download.intel.com/design/intarch/papers/323246.pdf
Intel® Embedded Graphics Drivers documentation Website contains links to download the latest software and documentation, including Intel® Embedded Graphics Drivers, EFI Video Driver, and Video BIOS User's Guide	http://www.intel.com/go/iegd
Intel® 64 and IA-32 Architectures Software Developer's Manuals	http://www.intel.com/products/processor/manuals/index.htm
• Volume 1: Basic Architecture	253665
• Volume 2A: Instruction Set Reference, A-M	253666
• Volume 2B: Instruction Set Reference, N-Z	253667
• Volume 3A: System Programming Guide Part 1	253668
• Volume 3B: System Programming Guide Part 2	253669
Intel® MultiProcessor Specification	242016
Current hardware documents available at http://developer.intel.com and may be accessed by clicking the associated reference number listed below.	
Intel® Atom™ Processor E6xx Series Datasheet	324208
White Paper: The Power Management IC for the Intel® Atom™ Processor E6xx Series and Intel® Platform Controller Hub EG20T	324989
Nettop Platform for 2008 System Design White Paper	319980
ENERGY STAR* Version 5.0 System Implementation	321556
Advanced Configuration and Power Interface (ACPI) Specification, Revision 3.0a	http://www.acpi.info/DOWNLOADS/ACPIspec30a.pdf
ACPI Component Architecture Windows Binary Tools (includes iASL compiler and Windows ACPI tools)	http://www.acpica.org/downloads/binary_tools.php
7-Zip File Archiver	http://www.7-zip.org/
Microsoft* Windows Driver Development Kit version 3790.1830	http://download.microsoft.com/download/9/0/f/90f019ac-8243-48d3-91cf-81fc4093ecfd/1830_usa_ddk.iso
SPI Programming Device, such as DediProg* SF100 or similar	For example: www.siliconbluetech.com/products/programming_hardware/DediprogSF100.aspx

1.3 Notational Conventions and Terminology

Table 2. Conventions

Type	Description
Numeric Constants	Represented as follows: • Hexadecimal numbers are represented by a string of hexadecimal digits either beginning with "0x" or ending with the letter "h." • Decimal and binary numbers are represented by their customary notation, that is, 255 is a decimal number and 11111111b is a binary number. Binary numbers are identified by a prefix of "0b" or ending with the letter "b."
Units of Measure	The following abbreviations are used to represent units of measure • KB - kilobytes (1024 bytes) • MB - megabytes (1048576 bytes) • MHz - megahertz • ms - milliseconds • ns - nanoseconds
Typographic Conventions	The following conventions are used in this manual: • `Courier font` - code examples and command line entries • *Italic text* - filenames, API names, and parameters • **Bold text** - graphical user interface entries and buttons

Table 3. Terminology

Term	Description
ACPI	Advanced Configuration and Power Interface
ATA	Advanced Technology Attachment
BSF	Boot Setting File
BSP	Board Support Package
CRB	Customer Reference Board
DMA	Direct Memory Access
EFI	Extensible Firmware Interface
FWH	Firmware Hub
gdb	GNU* Debugger
GUI	Graphical User Interface
ICH	Input/output Controller Hub
IDE	Integrated Development Environment
Intel® BLDK	Intel® Boot Loader Development Kit
PCI	Peripheral Component Interface
RPM	RPM Package Manager
RTOS	Real-Time Operating System
SATA	Serial Advanced Technology Attachment
UDK	Unified Extensible Firmware Interface Development Kit
UEFI	Unified Extensible Firmware Interface
WinDDK	Windows* Driver Development Kit

2.0 Intel® BLDK Distribution

2.1 Package Naming Convention

The package naming scheme uses the following convention:

```
<CRB>-<EDKII>-<Release>-<a.b.c.d>.<extension>
```

where:

- CRB indicates the supported Customer Reference Board
- EDKII indicates the package supports the UEFI standard
- Release indicates the type of release (alpha, beta, gold)
- a.b.c.d indicates the version details
- extension indicates the file type (.exe for the Windows* environment and .tar.gz for Linux*)

For example, `CB-EDKII-Alpha-2.3.6.2.exe` means that the package is for a Windows environment, the resulting firmware runs on the Crown Bay (CB) Customer Reference Board (CRB), and it is an alpha release of the Intel® BLDK.

3.0 Installing, Running and Uninstalling the Intel® BLDK Software

Note: The examples in this document are for the Intel® Atom™ Processor E6xx Series with Intel® Platform Controller Hub EG20T, which is referred to as *Crown Bay*.

3.1 Unpacking the Intel® BLDK Software

3.1.1 Before You Begin

You need access to the Intel EDC website [http://goto.intel.com/bldk] to download the development application. Contact your Intel representative for details.

The Intel® BLDK supports both the Microsoft* Windows and Linux* operating systems. For detailed information about supported host operating system versions and tool chain versions required for a specific Intel® BLDK release, refer to the Release Notes associated with the Intel® BLDK code base.

A sample set of required tools for Microsoft* Windows is listed in Table 4. Required tools for the Linux* environment are listed in Table 5. The host development environment is required before you can use the Intel® BLDK software.

Table 4. Required Tools for Microsoft* Windows Host Environment

Tool	Location
Microsoft* Windows Driver Development Kit version 3790.1830	http://download.microsoft.com/download/9/0/f/90f019ac-8243-48d3-91cf-81fc4093ecfd/1830_usa_ddk.iso
Microsoft* Visual Studio 2005 for Windows* XP 32-Bit Microsoft* Visual Studio 2008 for Windows* 7 64-Bit	http://www.microsoft.com/visualstudio/en-us/products/2005-editions http://www.microsoft.com/visualstudio/en-us/products/2008-editions
ACPI Component Architecture tools for Windows (includes the iASL compiler)	http://www.acpica.org/downloads/Version_20070508.php filename = `iasl-win-20070508.zip`

Table 5. Required Tools for Linux* Host Environment

Tool	Location
Fedora* 14 operating system	http://download.fedoraproject.org/pub/fedora/linux/releases/14/Live/i686/Fedora-14-i686-Live-Desktop.iso
GCC* development tools	`yum groupinstall development-tools`
ACPI compiler	`yum install iasl`
Other build tools	`yum install libuuid-devel`

3.1.2 Unpacking the Code Base Package

1. Create a working directory to use for your development.

   Note: Intel recommends that you place the package at or near the root of your file system and use a directory name with 8 or fewer alphanumeric characters (no spaces or special characters are allowed), such as `C:\bldk` (Windows) or `/bldk` (Linux).

2. Download the code base package from:
   http://edc.intel.com/Software/Intel-Boot-Loader-Development-Kit/
   Select the **Download Now** tab, select the appropriate code base release for your system, and save it to the working directory.

3. Expand the code base package on your local host machine.
   a. For a Windows host environment, double-click the file and select **Extract**.
   b. For a Linux host environment, open a terminal window and change to the directory where you saved the archive. Extract the files using the command:
   `tar xzvf CB-EDKII-Gold-2.3.6.7.tar.gz`

4. Once you have expanded the code base, the packages listed in Table 6 will be in the directory you specified.

Table 6. Code Base Package Contents (Sheet 1 of 2)

Package / Directory	Category	Purpose
BaseTools	Tools	UDK2010 build tools.
Build	Output	Directory for files generated by the build process.
Build_TC.bat / build_tc.sh	Tools	Batch or script file used to build the image from the command line.
CrownBayPlatformPkg	Platform†	Reference implementation for Crown Bay platform. Includes source, binary and build files used to generate the firmware image.
edksetup.bat / edksetup.sh	Tools	Batch or script file used to configure the build environment.
EdkShellBinPkg	UDK2010	UEFI shell binary.
FatBinPkg	UDK2010	UEFI driver binary that implements the FAT file system.
IA32FamilyCpuPkg	CPU	Multiprocessor and SMM initialization drivers.
IntelFrameworkModulePkg	UDK2010	Drivers and libraries implementing Intel EFI Framework specification.
IntelFrameworkPkg	UDK2010	Header files and libraries conforming to the Intel EFI Framework specification.
MdeModulePkg	UDK2010	Modules conforming to UEFI/PI and other industry specifications.
MdePkg	UDK2010	Header files and libraries implementing UEFI/PI and other industry specifications.
OldFlashDevicePkg	Platform†	Libraries supporting various flash devices.
PcAtChipsetPkg	UDK2010	Drivers providing support for standard PC-AT devices, such as 8254 and 8259.
SmscLpc47m17xPkg	Platform†	Driver providing support for SMSC LPC 47M17x device.
SourceLevelDebugPkg	UDK2010	Debug agent
TianoModulePkg	Generic	Drivers implementing Tiano specific services.

† Platform packages vary for different reference implementations. The examples above are for the Intel® Atom™ Processor E6xx Series with Intel® Platform Controller Hub EG20T, referred to as *Crown Bay*.

Table 6. Code Base Package Contents (Sheet 2 of 2)

Package / Directory	Category	Purpose
TopcliffPkg	Platform†	Drivers responsible for initialization of devices on TopCliff IOH.
TunnelCreekPkg	Platform†	Drivers responsible for initialization of the Intel® Atom™ E6xx Series Processor.
UefiCpuPkg	CPU	UEFI compatible CPU modules and libraries.
† Platform packages vary for different reference implementations. The examples above are for the Intel® Atom™ Processor E6xx Series with Intel® Platform Controller Hub EG20T, referred to as *Crown Bay*.		

3.1.2.1 Build Environment Setup on Windows*

Note: This is a sample tool configuration for the Crown Bay reference implementation. See the release notes included with the reference implementation for any required updates to the tool configuration.

Configure the host machine as follows to set up the build environment used for building the code base.

1. Microsoft* Visual Studio 2005 or 2008 must be installed to your host machine and can be downloaded from the following:
   - Microsoft* Visual Studio 2005 for Windows* XP 32-Bit: http://www.microsoft.com/visualstudio/en-us/products/2005-editions
   - Microsoft* Visual Studio 2008 for Windows* 7 64-Bit: http://www.microsoft.com/visualstudio/en-us/products/2008-editions

   Note: Ensure that the path to Microsoft* Visual Studio is included in the system environment variable called `Path`.
2. Microsoft* Windows Driver Development Kit (WinDDK) must also be installed. It can be downloaded from the Microsoft website: http://download.microsoft.com/download/9/0/f/90f019ac-8243-48d3-91cf-81fc4093ecfd/1830_usa_ddk.iso
   a. Extract the WinDDK to `C:\1830_usa_ddk`
   b. Run `C:\1830_usa_ddk\x86\KitSetup.exe`
   c. This installs WinDDK.3790.1830 under `C:\WINDDK\3790.1830`
   d. Verify the correct version of the WinDDK by checking `c:\winddk\3790.1830\bin\bin16\link16.exe` for version 5.0.2195.1.
3. Download the ACPI Component Architecture tools (`iasl-win-20070508.zip` includes the iASL compiler) for Windows from: http://www.acpica.org/downloads/Version_20070508.php

   Note: A specific version of the ACPICA tools must be used. For Crown Bay, the version is v20070508. Refer to the Release Notes for version details.
4. After downloading iASL, you need to extract the zip file into a directory on the host machine:
   `c:\ASL`

3.1.2.2 Build Environment Setup on Linux*

Note: This is a sample tool configuration for the Crown Bay reference implementation. See the release notes included with the reference implementation for any required updates to the tool configuration.

Use the following steps to configure your host machine to build the Intel® BLDK using Fedora* 14:

1. Install Fedora 14 using the image from:
   http://download.fedoraproject.org/pub/fedora/linux/releases/14/Live/i686/Fedora-14-i686-Live-Desktop.iso

   Note: Later steps require that you have access to the internet, so ensure network configuration is completed as part of the operating installation process.
2. Open a terminal window.
3. Switch to `root` user using the command:
   `su root`
4. Use `yum` to install the build tool packages using the following commands:
   ```
   yum install iasl libuuid-devel
   yum groupinstall development-tools
   ```
5. Close the terminal window.

3.2 Unpacking and Installing the Intel® BLDK Development Application

Download the development application for your host environment from:
http://edc.intel.com/Software/Intel-Boot-Loader-Development-Kit/

Select the **Download Now** tab, select the appropriate release for your system, and save it to a temporary directory.

3.2.1 Unpacking and Installing on Windows*

To complete the installation for the Windows host environment, perform the following:

1. Browse to the temporary directory and extract the zip file contents.
2. Launch the installer, `Intel(R)_Boot_Loader_Development_Kit.exe`, in the Windows subdirectory using the default options.

3.2.2 Unpacking and Installing on Linux*

To complete the installation for the Linux host environment, perform the following:

1. Open a terminal window and navigate to the temporary directory where you saved the archive.
2. Extract the installation files using: `tar xzvf bldk_tools_2_0_0.tar.gz`
3. Switch to root user using: `su root`
4. Update installation script attributes: `chmod u+x install.sh`
5. Run the installation script: `./install.sh`
6. Close the terminal window.

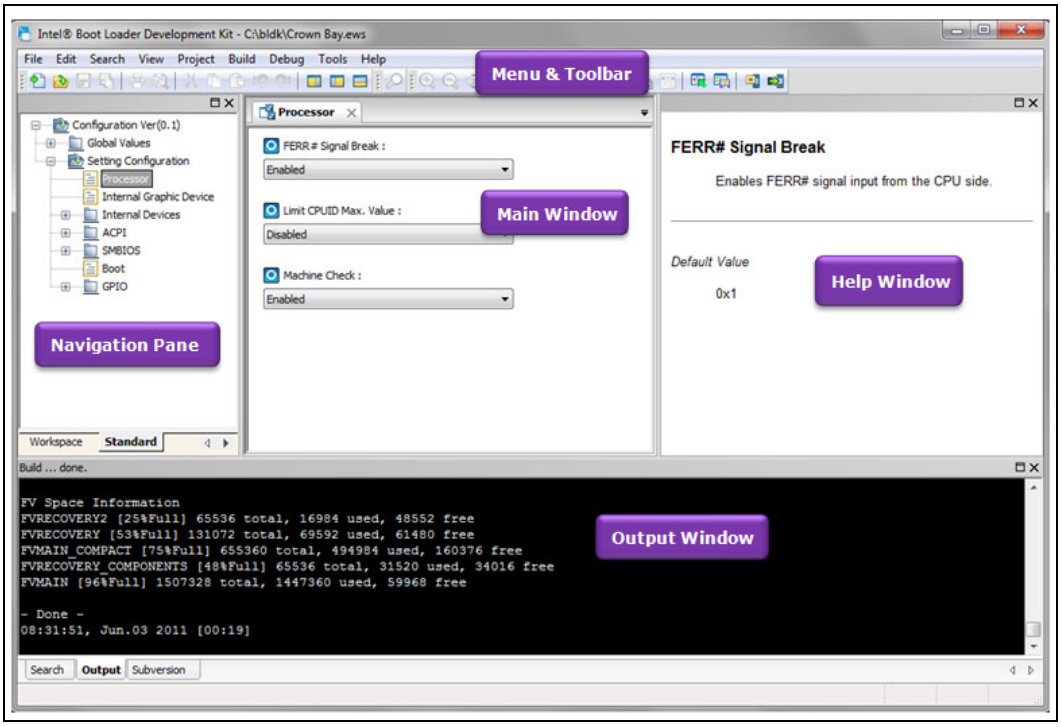
3.3 Running the Intel® BLDK Development Application

When the installation is complete, you can run the development application as follows:

- Windows: click **Start > All Programs > Intel Boot Loader Development Kit > Intel Boot Loader Development Kit**
- Linux: open a terminal window in Linux and enter `/opt/intel/bldk/bin/bldk`

The first time you run the development application, you will be asked to accept the software license agreement. After the splash screen loads, the development application GUI appears (Figure 1) and you can perform the tasks outlined in this manual.

Figure 1. Intel® BLDK Development Application GUI



3.4 Uninstalling the Intel® BLDK Development Application

Before uninstalling the Intel® BLDK development application, ensure that all running instances of the development application have been stopped. Once the application has been stopped, use the instructions for your host operating systems described below to complete the uninstall.

Note: If the Intel® BLDK development application is running, you will be prompted to end the program before it can be uninstalled.

3.4.1 Uninstalling on Windows*

Use the Windows* Add/Remove Programs mechanism to uninstall the Intel® BLDK development application.

- For Windows* XP, click **Start > Control Panel > Add or Remove Programs**. Browse to find Intel® Boot Loader Development Kit, click it, then click **Remove**. Click **Yes** in the confirmation window.
- For Windows* 7, click **Control Panel > Programs and Features**. Browse to find Intel® Boot Loader Development Kit, click it, then click **Uninstall**. Click **Yes** in the confirmation window.

3.4.2 Uninstalling on Linux*

For Linux*, execute the following commands from a terminal window:

```
su
rpm -e bldk
```

4.0 Getting Started with the Intel® BLDK

4.1 Creating a Firmware Image

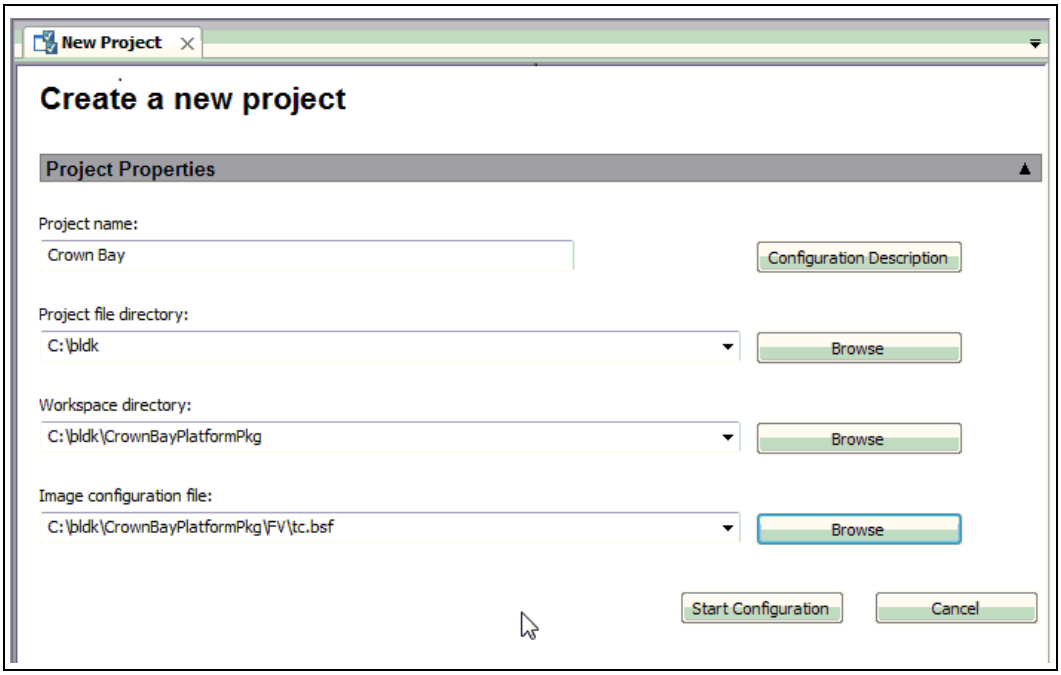
This section describes the required steps to create a firmware image. Each new firmware image created using the Intel® BLDK is referred to as a new project.

4.1.1 Creating a New Project

After launching the Intel® BLDK Development Application on the host machine, click **Project > New Project** on the menu bar. The main window requests your project name and all the project components as shown in Figure 2. Required project settings are as follows:

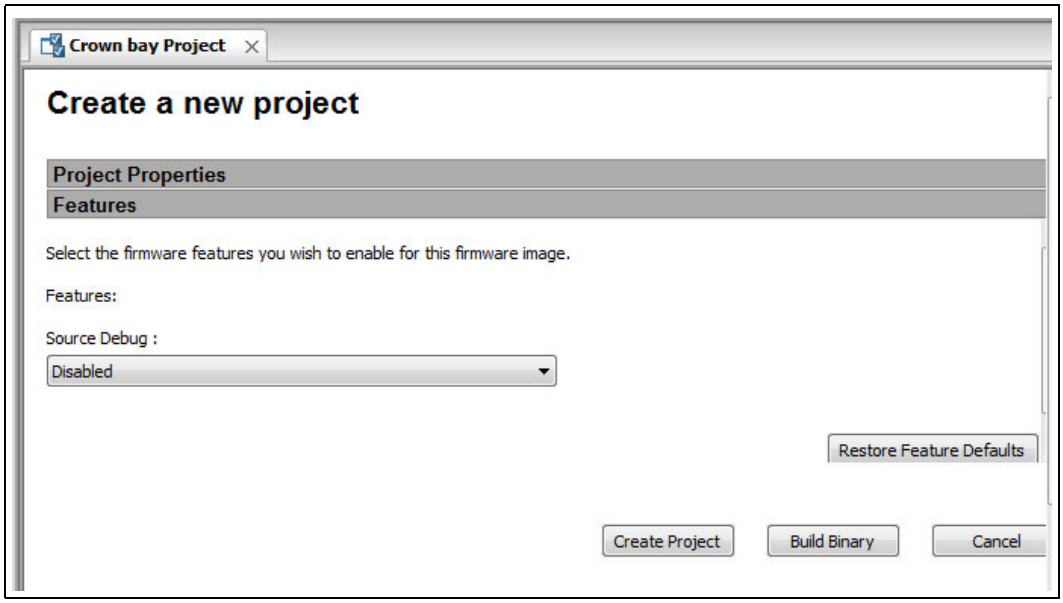
- Project name - Name of your project
- Project file directory - Location of the project file being created. This example uses `C:\bldk`
- Workspace directory - Location of the source and binary files used to generate the firmware image. This example uses: `C:\bldk\CrownBayPlatformPkg`
- Image configuration file - Location of the Boot Setting File (BSF). In this example the BSF is located at `C:\bldk\CrownBayPlatformPkg\Fv\tc.bsf`

Figure 2. New Project: Start Configuration



When you have completed entering your parameters, click **Start Configuration**. Next, the **Create a new project** screen is displayed, as shown in Figure 3.

Figure 3. New Project: Create Project



To create the project, click the **Create Project** button. When that completes, the project is created and a list of files will be displayed in the Navigation pane, on the Standard tab. Also, the **Processor Properties** window will be displayed, as shown in Figure 4.

Note: The **Source Debug** option shown in Figure 3 is used to determine whether or not the software debug agent will be included in the firmware. This option can only be enabled for Debug mode (see Section 4.1.3). For details on how to use the Software Source Level Debugger, refer to the User Guide.

Figure 4. New Project: Processor Properties

4.1.2 Configuring the Firmware Image Features

Once you have created the project, you can click on the project components in the Navigation pane and change the parameters that appear in the main window. As an example, in Figure 7 on page 21, a change was made to the **Fast Boot** parameter by clicking the drop-down button and selecting **Disabled**.

4.1.3 Selecting Build Mode

After you have created your project, you can select the build mode. Two different build modes are available:

- Release: standard build mode with full compiler optimizations enabled. (Default)
- Debug: special debug version of the firmware that enables output of debug messages via serial cable and also builds symbol information required for source level debugging.

To build the debug version of the firmware, you first need to add a new command to the **Build** menu as described in Section 4.2.6.1. After the **Debug Build** command is added, you can use it to create a debug version of the firmware.

4.1.4 Creating the Final Firmware Image

You have two options for creating the final firmware image. If you have made changes to source files or want to build the firmware image from source, select **Build** > **Build** from the menu bar to create the image.

The firmware image generated by the **Build** command (`crownbay.fd`) will be in the directory `C:\bldk\build\CrownBayPlatform\<RELEASE_nnn>\FV`, where `<RELEASE_nnn>` varies depending on the tool chain, the OS, and whether you built a release or debug version. In this example, Visual Studio 2008 was used, so the directory is: `C:\bldk\build\CrownBayPlatform\RELEASE_VS2008\FV`

Alternatively, you can also create an image based on an existing binary without rebuilding the entire project. To do this, click **Build** > **Create Final Firmware Image**. A window will appear asking for your binary file and the firmware file, as shown in Figure 5.

In this example, the binary file is:

`C:\bldk\build\crownbayplatform\release_vs2008\fv\crownbay.fd`

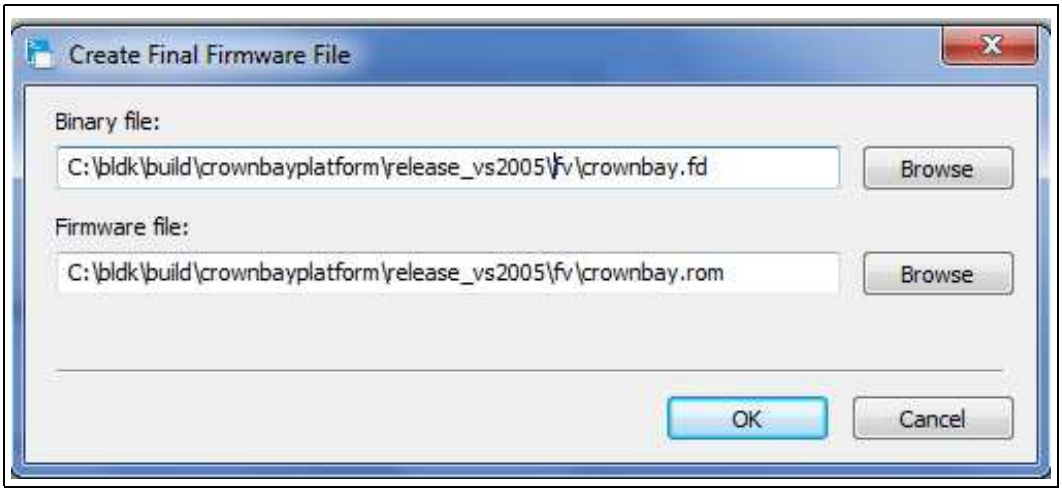
Note: The `.fd` file is the binary file used to burn the final image.

The default firmware file is:

`C:\bldk\build\crownbayplatform\release_vs2008\fv\crownbay.rom`

Note: The `.rom` file is the final image used to burn the image to a chip.

Figure 5. Create Final Firmware File



4.1.5 Updating Firmware

After completing the steps in Section 4.1.4, you will have a firmware image that you can program on your target system. Two methods can be used to program the firmware image in the target; both are described in the following sections.

4.1.5.1 Using Hardware SPI Programmer

To update the target using a hardware SPI programmer, you will need a DediProg* SF100 (or similar device). This may be obtained at: www.siliconbluetech.com/products/programming_hardware/DediprogSF100.aspx

The steps required to update the firmware with an SPI programmer are as follows:

1. Remove power from the target.
2. Attach the SPI programmer to the header on the target system. In this example, the SPI programmer header is J1A2.
3. Attach the SPI programmer to the host system via USB.
4. Start the SPI programmer software on the host system.
5. Select the target flash device, which is 25VF016B in this example.
6. Configure the SPI programmer software such that the firmware image is written to the top of the flash device.
   For example, if the firmware image is 1 MB, the starting address to program should be Top of Flash - 1 MB. For a 2 MB firmware image, the starting address should be Top of Flash - 2 MB.
7. Load the firmware image to be programmed. In this example, the image is:
   `C:\bldk\build\CrownBayPlatform\RELEASE_VS2008\FV\crownbay.fd`
8. Erase the flash device using the SPI programmer software **Erase** command.
9. Program the image using the SPI programmer software **Program** command.
10. Verify the image using the SPI programmer software **Verify** command.
11. Remove the SPI programmer.
12. Reattach power and boot the system.

4.1.5.2 Using UEFI Shell Application

Once the Intel® BLDK firmware is successfully programmed on the target, you may use the flash update tool, (`spiupdate.efi`, which is provided with the Intel® BLDK code base) for subsequent updates of the Intel® BLDK firmware. The `spiupdate.efi` tool is a UEFI Shell application that runs under the UEFI Shell environment.

This tool is located in the `Application` folder, under the platform package directory of the Intel® BLDK code base source tree. For Crown Bay, for instance, the tool is located in this folder:

`C:\bldk\CrownBayPlatformPkg\Application\`

Follow these steps to program an Intel® BLDK firmware image using the `spiupdate.efi` tool:

1. Copy the firmware image to be programmed to the root directory of a USB device with a formatted FAT partition. In this example, the image is:
   `C:\bldk\build\CrownBayPlatform\RELEASE_VS2008\FV\crownbay.rom`
2. Copy the `SpiUpdate.efi` application to the root directory of the same USB device.
3. Boot the target system to the UEFI shell.
4. Insert the USB device with firmware image to be programmed into the USB port on the target system.
5. At the shell prompt, type the following commands in sequence:

```
map -r
fs0: [Mapped drive for the USB device]
SpiUpdate crownbay.rom
```

   Note: The above commands assume that the USB device is the only media attached to the target system. If your system has other media attached (for example, a hard drive), the USB device mapping may change. In this

case, replace the `fs0:` command in step 5 with the correct file system device for your configuration.

Once the firmware update in step 5 is completed, the system will automatically reset.

Figure 6. Mapping the Drives under EFI Shell Environment

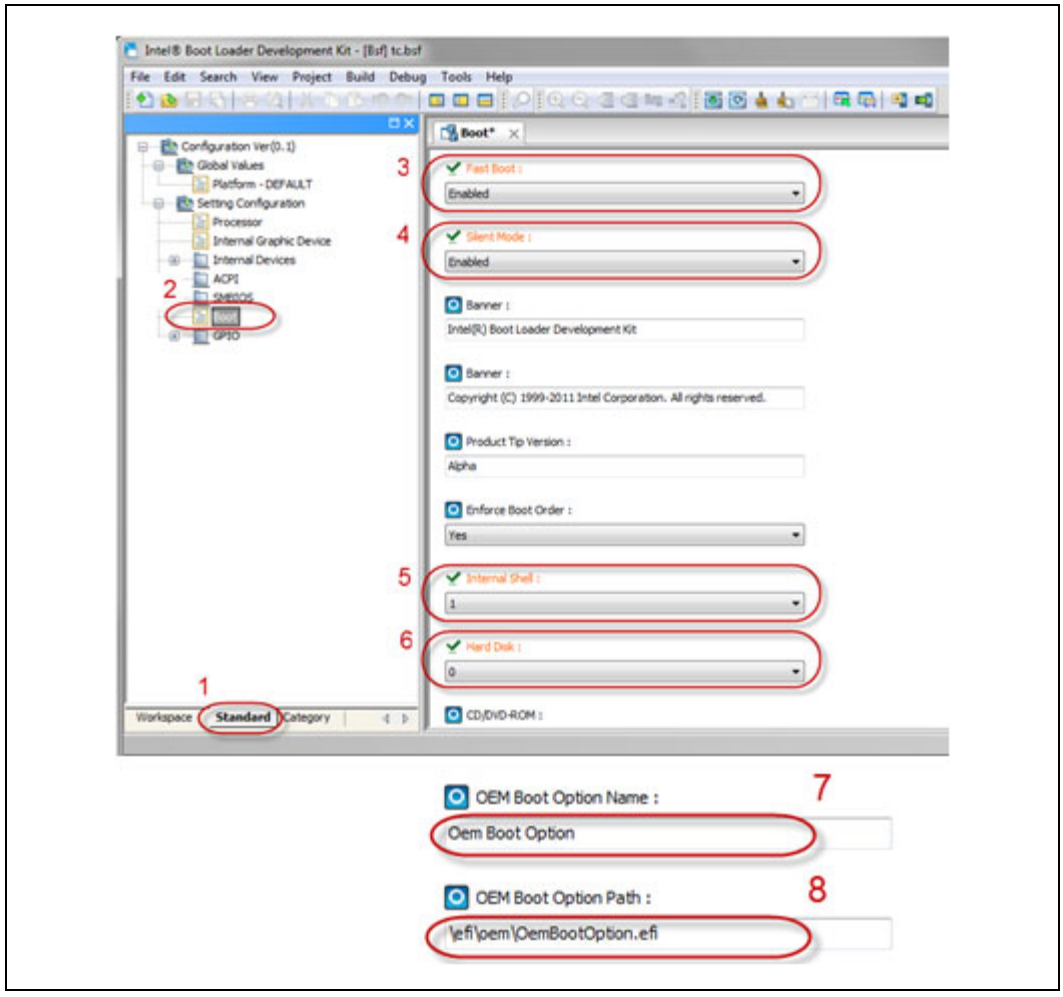
4.1.6 Enabling Fast Boot

Perform the following steps to enable Fast Boot. (The step numbers below correspond to the numbers in Figure 7.)

1. Select **Standard** tab in the tree view.
2. Double-click **Boot** to open the Boot dialog box in the main window.
3. Enable the **Fast Boot** option in the main window.
4. Enable the **Silent Mode** option in the main window.
5. Change **Internal Shell** boot option to 1.
6. Change **Hard Disk** to 0. This changes the boot order to boot from the hard disk first.
7. Set the **OEM Boot Option Name** to: `Oem Boot Option`
8. Set the **Path** to: `\efi\oem\OemBootOption.efi`

From the main menu, select **Project > Save Configuration**

Figure 7. Enabling Fast Boot



4.2 Configuring the Intel® BLDK Development Application

The development application has the ability to launch several external applications and tools of your choosing, which allows you to use standard and familiar tools for certain processes. The tools and other environment settings can be modified using the **Preferences** settings found under the **File > Preferences** menu.

4.2.1 Setting Up the Web Browser and General Settings

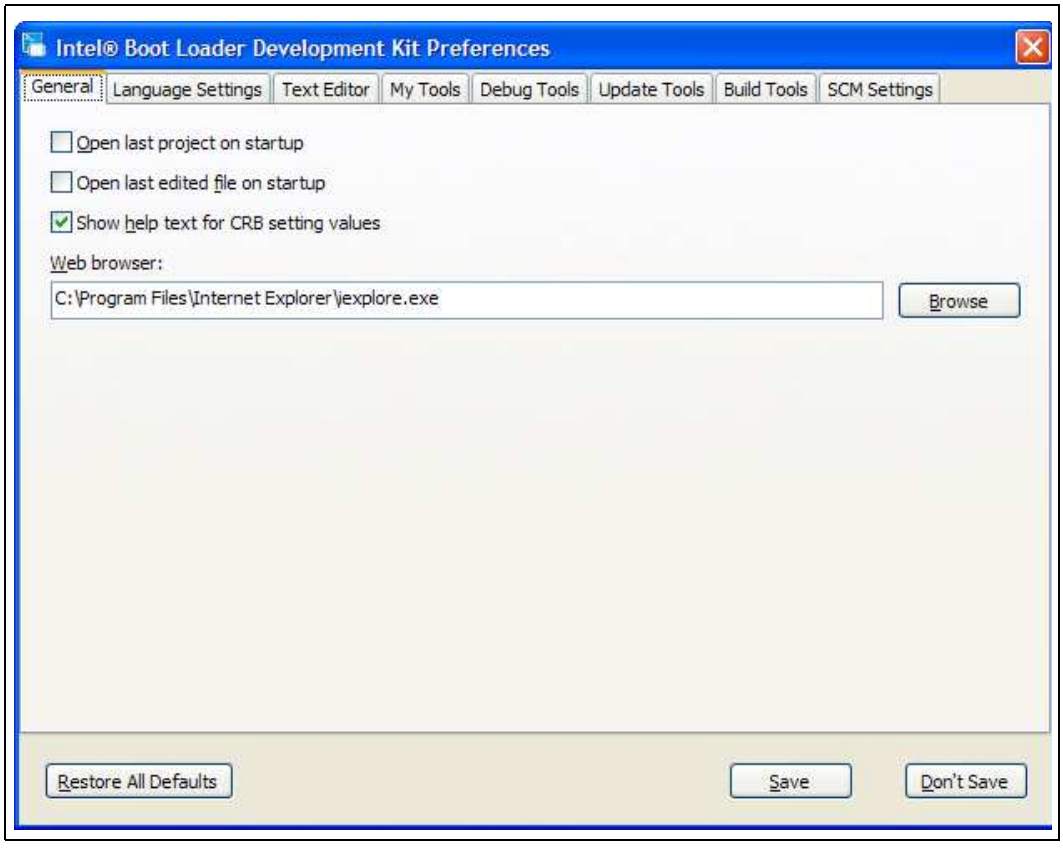
The development application can be configured to open the last project and the last edited files on start up. To select this option, click **File > Preferences**. On the **General** tab, select the check boxes for the options you wish to turn off, then click **Save**.

The default web browser can be changed by typing or browsing to the browser application location and then clicking **Save**.

To restore all options to factory settings, click **Restore All Defaults**, then click **Save**.

Note: This option restores defaults for all the preference settings across all the tabs.

Figure 8. Application Preferences

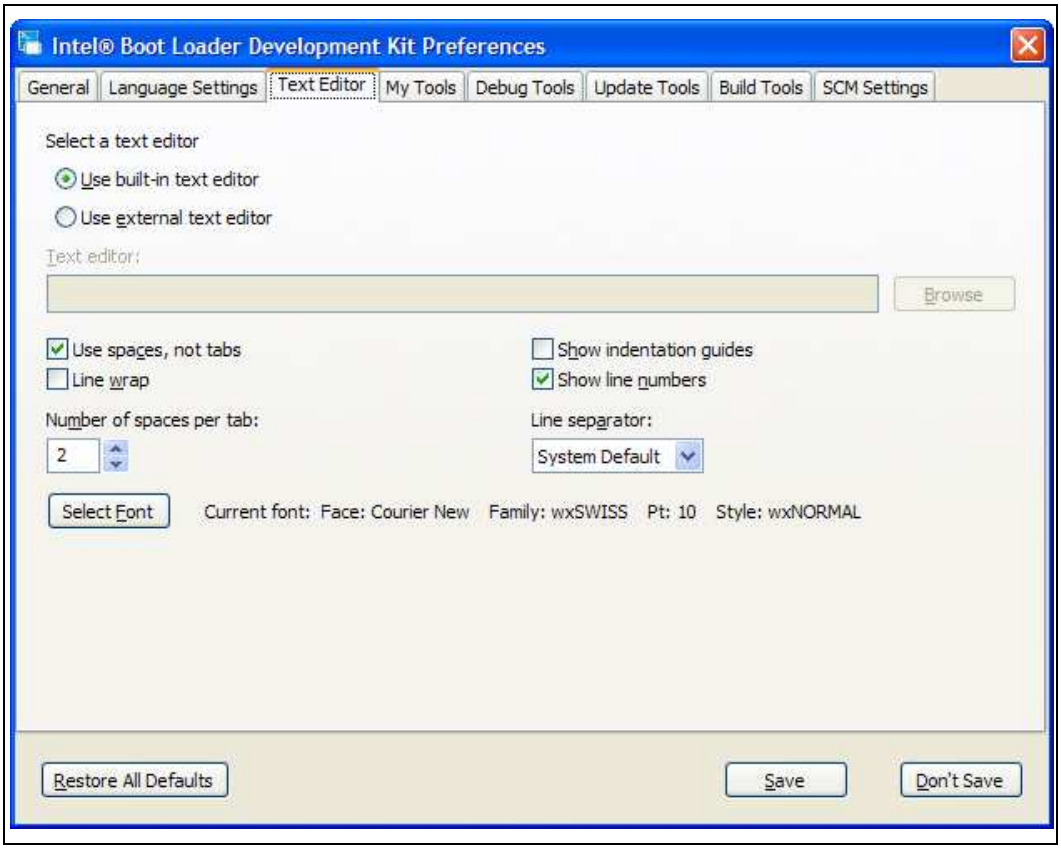


4.2.2 Setting Up the Text Editor

The development application contains a built-in text editor, which is configured by clicking **File > Preferences** and then the **Text Editor** tab. Default settings for the built-in text editor are shown in Figure 9. To change the default settings, deselect the check box or button next to the feature you wish to change, and then click **Save**.

To use your current text editor, select **Use external text editor**, locate the application using **Browse**, and then click **Save**.

Figure 9. Text Editor Preferences



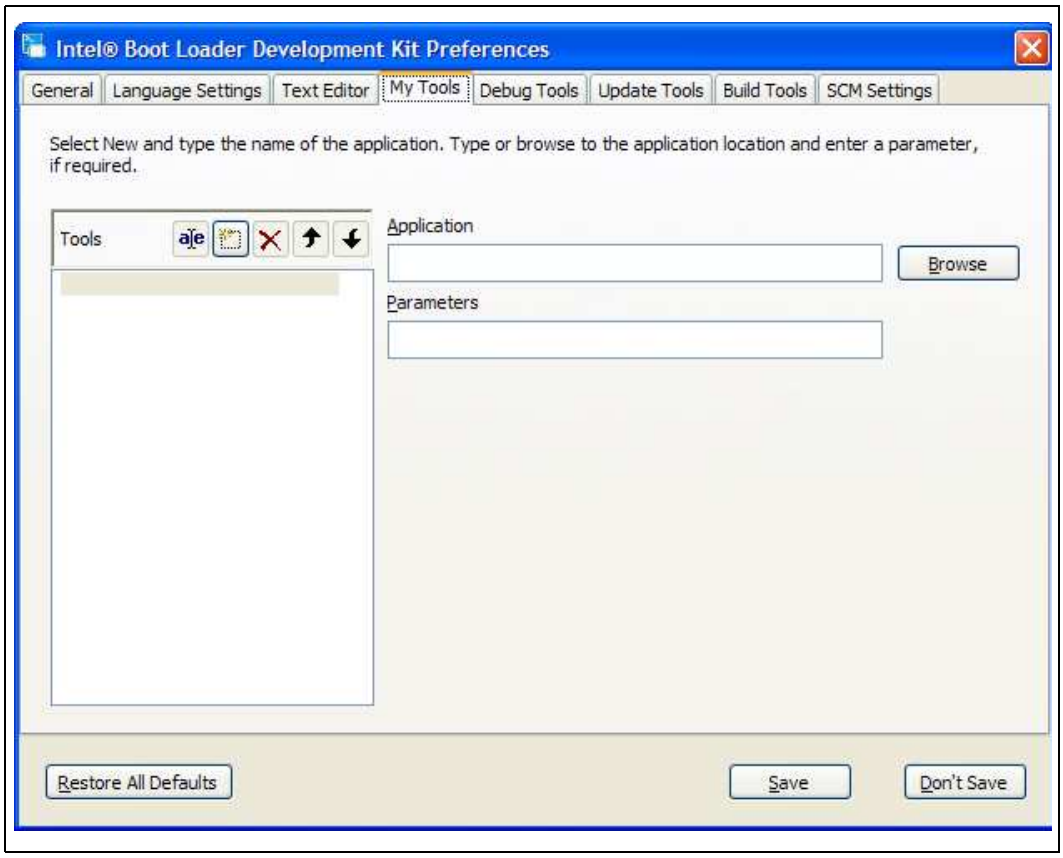
4.2.3 Adding Your Tools

The development application provides you with the ability to add your own tools to the development environment. To add tools, click **File > Preferences** and then the **My Tools** tab.

To add a tool to the list, click **New** and type the name of the application you want to appear in the Tools menu in the text box. Then type or browse to the file path of the application to select the application. To add commands used with the tool when it is launched, type the command in the **Parameters** field.

Click **Save** to save your settings.

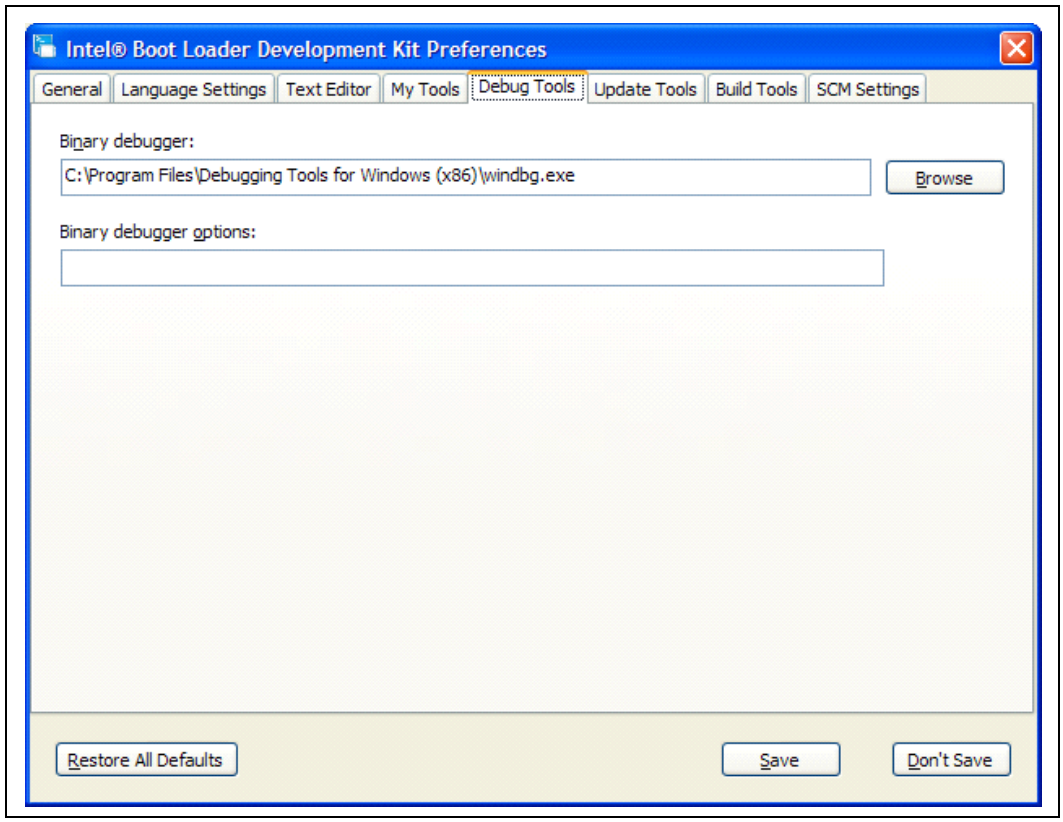
Figure 10. My Tools



4.2.4 Setting Up the Debug Tools

The default debug tool for Windows* is WinDbg*. To set up your own debug tools, select **File > Preferences** and then the **Debug Tools** tab. Type or browse to the location of your debug application and then click **Save**.

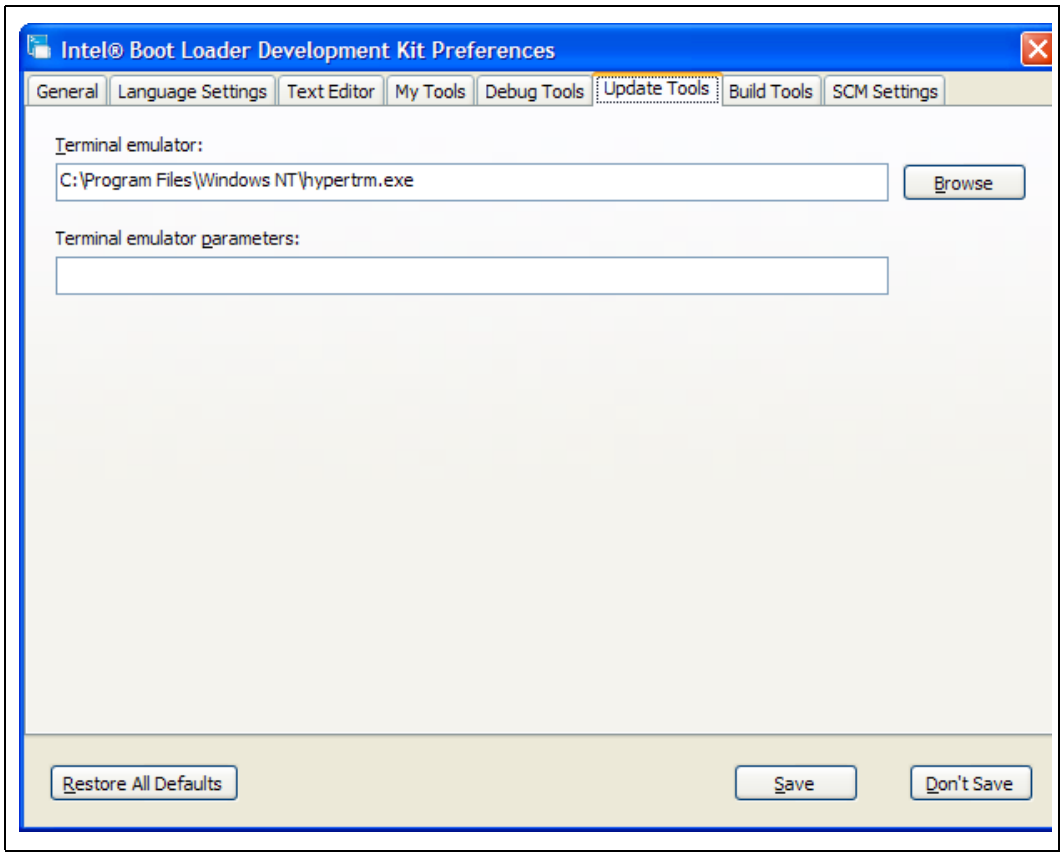
Figure 11. Debug Tools



4.2.5 Setting Up the Update Tools

The default terminal emulator for Windows* is HyperTerminal. To change to a different terminal emulator, click **File > Preferences** and then the **Update Tools** tab. Type or browse to the location of your terminal emulator and then click **Save**.

Figure 12. Update Tools



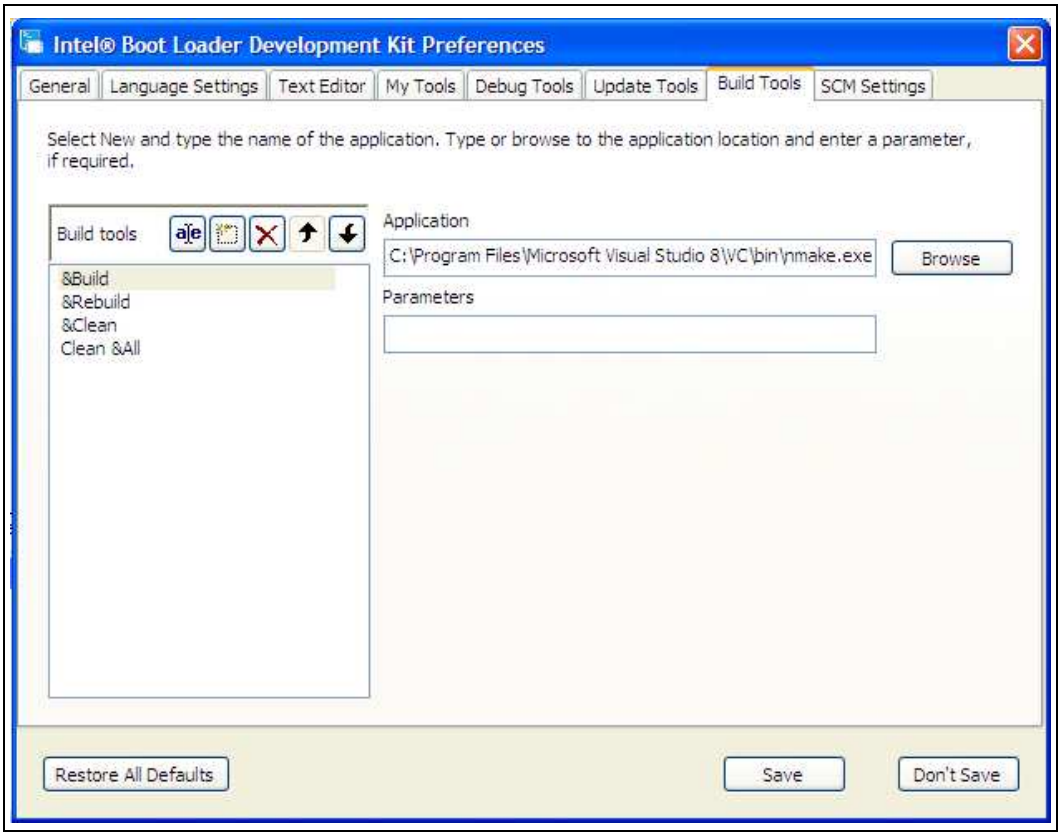
4.2.6 Setting Up the Build Tools

To set up build tools and select commands for the build operation, click **File > Preferences**, then select the **Build Tools** tab.

To add a tool to the list, click **New** and type the name of the tool in the text box. The name you enter will appear in the **Build** menu. Then type or browse to the application file path to select the application. To enter commands that are passed to the tool when launched, type the command in the **Parameters** field.

Click **Save** to save your settings.

Figure 13. Build Tools

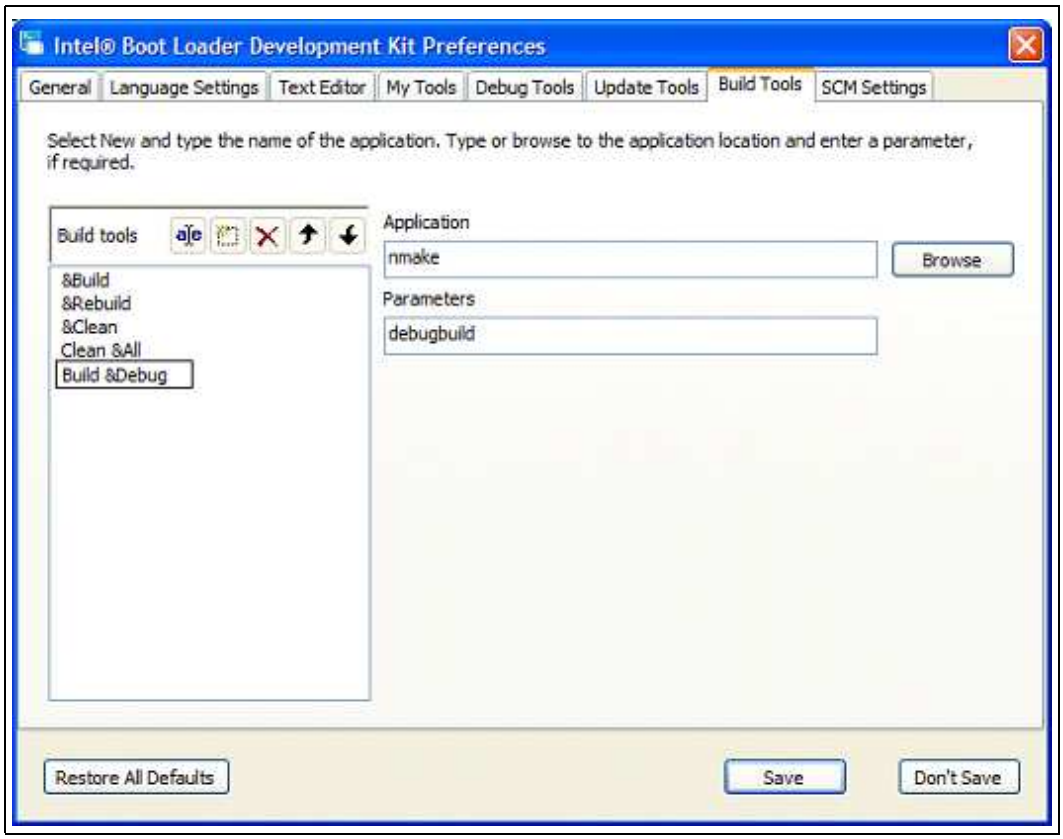


4.2.6.1 Adding a Debug Build Option

To easily build both release and debug versions of the firmware, you can add a debug build command to the **Build** menu using the steps below:

1. Open the **Build Tools** tab as described in Section 4.2.6.
2. Select the **New item** icon.
3. Type `Build &Debug` in the text box and press **Enter**.
4. Type `nmake` (Windows*) or `make` (Linux*) in the **Application** field.
5. Type `debugbuild` in the **Parameters** field.
6. Click **Save**.

Figure 14. Adding a Debug Build Option



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