

Intel[®] C Compiler for EFI Byte Code

Release Notes

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Overview

This product provides tools to enable development of Extensible Firmware Interface (EFI) Byte Code (EBC) executables. It contains the Intel[®] C Compiler for EFI Byte Code for Windows* (hereafter referred to as the Intel[®] EBC Compiler).

The Intel[®] EBC Compiler product is used to build images in EFI Byte Code (EBC). The image can be executed by systems that implement the EFI 1.10 specification (or later). These systems include an EBC interpreter that loads and interprets the EBC image, allowing an EBC image to be executed on systems that use either Intel[®] Itanium[®] or IA-32 processors.

Prior to using this compiler, it is recommended that a working native EFI image should already be developed. For compatibility, the EFI sample implementation driver development tools can be downloaded from the EFI website at: <http://developer.intel.com/technology/efi/>. Download the latest 1.10 "EFI Sample Implementation" from this website. Instructions for developing EFI 1.10 device drivers are in the release notes.

The Intel® EBC Compiler and EBC interpreter in the EFI 1.10 sample implementations are a matched pair. Running a driver compiled on a different version of the compiler will result in unpredictable behavior. Beta versions of the Intel® EBC Compilers are not supported and should not be used in production. This version of the Intel® EBC Compiler is compatible with the EBC driver in EFI 1.10 versions 1.10.14.57 and higher. If you have a system with an older EBC.efi interpreter in it you can over load the driver by simply typing "load EBC.EFI" with the newer driver (use the drivers shell command to check the rev level) at the shell.

Package Contents

This product contains the following components:

- Intel® 32-bit C Compiler for EFI Byte Code, Version 1.2
- EBC driver library
- User's Guide
- Release Notes (this document)
- Support.txt document that describes the package identification
- End user license agreement

The following are the linker options that are available when building EBC images. This is not a comprehensive list in that other options are available though not necessarily unique to creating EBC images.

`/MACHINE:EBC`

This required option sets the Machine type in the COFF file header to `IMAGE_FILE_MACHINE_EBC` (0xEBC), indicating that the binary image requires an EBC interpreter for execution. All object files and libraries specified to the linker must be EBC object files.

`/SUBSYSTEM:EFI_BOOT_SERVICE_DRIVER`

This required option sets the Subsystem in the COFF optional header to `IMAGE_SUBSYSTEM_EFI_BOOT_SERVICE_DRIVER` (11), indicating that the image is an EFI boot service driver.

`/ENTRY:EfiStart`

This option is used to define the execution entry point of the EBC driver. This function is defined in the `EbcLib.lib` library provided with the compiler. `EfiStart()` performs EBC and compiler-specific initializations prior to calling `EfiMain()`, which is the entry point to the driver

from a developer's perspective.

Note that dumping of EBC disassembly using "LINK /dump /disasm" is not currently supported.

Known Limitations

This section contains information on known limitations that are not confined specifically within the Intel® EBC Compiler.

1. Administrative privileges are needed in order for the Intel® EBC Compiler to install and uninstall correctly.
2. The Intel® EBC Compiler requires a Macrovision* FLEXlm* license that is not included in the installation package. You get this license after purchasing and registering your product. For more information, go to <http://www.intel.com/software/products/compilers/efibc/pricelist.htm> and click Registration center.
3. After installation from an electronic download, an unpacked copy of the installation files remains in a temporary directory, by default "C:\Documents and Settings\username\Local Settings\Temp\Intel(R) C Compiler for EFI Byte Code 1.2". If desired, these installation files may be deleted.
4. Most linkers default to the .EXE filename extension. To change the filename extension, use the /out:YourFileName.EFI linker argument. You may also pass this option through the EBC compiler. Example : `iec YourFileName.c /link /out:YourFileName.EFI`. To run an EBC image in the EFI environment, the executable must have an extension of *.EFI.
5. Because of the limitation of architecture, arithmetic calculation between following types should be avoided:

"signed natural integer" and "unsigned normal integer (shorter than 64 bits)";
"unsigned natural integer" and "signed 64-bit integer".

If this kind of usage is unavoidable, adding corresponding type conversion to make them consistent is highly recommended.

System Requirements

Minimum Hardware Requirements to use the Intel® EBC Compiler

- A system based on a Pentium® processor or a subsequent IA-32 architecture processor
- 128 MB of RAM
- 100 MB of disk space. During installation only, allow an additional 100 MB for the download and temporary intermediate files.
- 100 MB of hard disk space for the virtual memory paging file. Be sure to use at least the minimum amount of virtual memory recommended by Microsoft* Windows*.

Software Requirements to use the Intel® EBC Compiler

- Microsoft® Windows® 2000 with SP3 or higher, Windows® XP Professional
- Microsoft® Linker supporting EBC and Linker Support Files. These are included in Microsoft® Visual Studio® .NET 2003, Microsoft® Windows® Server 2003 Driver Development Kit (DDK), or Microsoft® .NET Framework 1.1 Software Development Kit (SDK). Note that linker usage is subject to the Microsoft* end user license agreement.
- EFI Sample Implementation Version 1.10.14.57 (or later)

Installation Notes

Installation

NOTE: If you are using an earlier version of the Intel® EBC Compiler, you must uninstall it prior to installing this product. Uninstalling the compiler does not delete the corresponding license.

The Intel® EBC Compiler uses Macrovision Corporation's FLEXlm* electronic licensing technology. License management is transparent. The installation program of the Intel® EBC Compiler checks for a valid license before installing any component of the product. Also, the license must remain in place on the system in order to use the Intel® EBC Compiler to compile and build programs.

Here is how to setup the license file before installation.

If you have an electronically downloaded version of the Intel® EBC Compiler, the license will be sent to you via email. Please follow the instructions in the email to install the license file.

Before installing any component, the installation program of Intel® EBC Compiler checks for a valid license. It searches for a valid license file at folders pointed by "INTEL_LICENSE_FILE" first. If there's no valid license, you will be prompted to enter a valid license file. After the

license checking, simply follow the setup program to complete the installation.

The Intel® EBC Compiler requires the linker (link.exe) and its dependency .dlls (mspdb71.dll and msucr71.dll) to be located in the same directory as the compiler. The installation program will prompt you, offering to automatically copy the linker and dependency .dlls to the <ebc\bin> directory at install time. Should you choose not to specify the linker's source location at installation time, you may manually copy the three required files (link.exe, mspdb71.dll, and msucr71.dll) to the <...ebc\bin> directory anytime prior to use of the product.

Resolved Issues

Important issues resolved in this product:

- The compiler generated wrong code for some forced type casting when source or target of the conversion is natural sized data type.
- If some binary operations have two sizeof() expressions as operands, and these sizeof() operate on natural sized data type, the compiler may generate incorrect result.
- "NOT" operation on natural sized data type may fail when running on Itanium®-based systems.

Technical Support and Feedback

Your feedback on Intel software is very important to us. We strive to provide you with answers and solutions to difficulties that you might encounter with the software. To receive timely technical support for the tools provided in this product, you must be registered for an Intel® Premier Support account. If you currently have an Intel® Premier Support account for any other product, or do not have an Intel® Premier Support account at all, you must register for access to support for this product.

The following are guidelines for getting access to and using Intel® Premier Support:

- You must first register for a Intel® Premier Support account at:
- <http://www.intel.com/software/products/support/register.htm>
- Each person who uses this product must register in order to obtain technical support. See the license for additional terms and condition on using this product.
- If you have forgotten your password, please email a request to: quadsupport@mailbox.intel.com
- If you are unable to access your Intel® Premier Support account, contact pto.quad@intel.com. Please do not email your technical issue to pto.quad@intel.com as it is not a secure medium. Please only use this email address to inform us of issues with

your Intel® Premier Support account.

To submit an issue via the Intel® Premier Support website, please perform the following steps:

1. Go to <https://premier.intel.com/>.
2. Type in your Login and Password. Both are case-sensitive.
3. Select the [Submit] button.
4. Read the Confidentiality Statement and select the [I Accept] button.
5. Select the [Go] button next to the "Product" drop-down list.
6. Select the [Submit Issue] link in the left navigation bar.
7. Select [Initiatives, technologies & tools] from the "Product Type" drop-down list.
8. If this is a software or license-related issue select [Intel® C Compiler for EFI Byte Code] from the "Product Name" drop-down list.
9. Enter your question and complete the fields in the windows that follow to successfully submit the issue.

Please follow these guidelines when forming your problem report or product suggestion:

1. Describe your difficulty or suggestion.
For problem reports please be as specific as possible, so that we may reproduce the problem. For compiler or linker problem reports, please include the compiler or linker options and a small test case if possible.
2. Describe your system configuration information.
Run the **package identification tool** from the Start menu, and cut and paste the output into your report. This will identify the compiler version and environment to Intel customer support. Copy the "package id" into the corresponding Intel® Premier Support field. Please include any other specific information that may be relevant to helping us to reproduce and address your concern.
3. If you were not able to install the compiler or cannot run the package identification tool to determine the package ID, enter the filename you downloaded as the package ID.

Contact us with your suggestions or problem reports using your Intel® Premier Support account. A technical support engineer will respond within one (1) Intel business day.

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