

MATLAB[®] Compiler[™] Release Notes

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MATLAB® Compiler™ Release Notes

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Summary by Version

This table provides quick access to what's new in each version. For clarification, see “Using Release Notes” on page 2.

| Version (Release) | New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--|---------------------------------|---|--------------------------------------|
| Latest Version V4.16 (R2011b) | Yes Details | Yes Summary | Bug Reports Includes fixes |
| V4.15 (R2011a) | Yes Details | Yes Summary | Bug Reports Includes fixes |
| V4.14.1 (R2010bSP1) | No | No | Bug Reports Includes fixes |
| V4.14 (R2010b) | Yes Details | Yes Summary | Bug Reports Includes fixes |
| V4.13 (R2010a) | Yes Details | No | Bug Reports Includes fixes |
| V4.12 (R2009bSP1) | No | No | Bug Reports Includes fixes |
| V4.11 (R2009b) | Yes Details | Yes Summary | Bug Reports Includes fixes |
| V4.10 (R2009a) | Yes Details | No | Bug Reports Includes fixes |
| V4.9 (R2008b) | Yes Details | Yes Summary | Bug Reports Includes fixes |
| V4.8 (R2008a) | Yes Details | Yes Summary | Bug Reports Includes fixes |
| V4.7 (R2007b) | Yes Details | Yes Summary | Bug Reports Includes fixes |

| Version (Release) | New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|---------------------------------|---|--------------------------------------|
| V4.6 (R2007a) | Yes Details | No | Bug Reports Includes fixes |
| V4.5 (R2006b) | Yes Details | No | Bug Reports Includes fixes |
| V4.4 (R2006a) | Yes Details | No | Bug Reports Includes fixes |
| V4.3 (R14SP3) | Yes Details | No | Bug Reports Includes fixes |
| V4.2 (R14SP2) | Yes Details | No | No |
| V4.1.1 (R14SP1+) | No | No | Fixed bugs |
| V4.1 (R14SP1) | Yes Details | No | Fixed bugs |
| V4.0.1 (R14+) | No | No | Fixed bugs |
| V4.0 (R14) | Yes Details | Yes Summary | No |

Using Release Notes

Use release notes when upgrading to a newer version to learn about:

- New features
- Changes
- Potential impact on your existing files and practices

Review the release notes for other MathWorks® products required for this product (for example, MATLAB® or Simulink®). Determine if enhancements, bugs, or compatibility considerations in other products impact you.

If you are upgrading from a software version other than the most recent one, review the current release notes and all interim versions. For example, when you upgrade from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

What Is in the Release Notes

New Features and Changes

- New functionality
- Changes to existing functionality

Version Compatibility Considerations

When a new feature or change introduces a reported incompatibility between versions, the **Compatibility Considerations** subsection explains the impact.

Compatibility issues reported after the product release appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so review the fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

MathWorks offers a user-searchable Bug Reports database so you can view Bug Reports. The development team updates this database at release time and as more information becomes available. Bug Reports include provisions for any known workarounds or file replacements. Information is available for bugs existing in or fixed in Release 14SP2 or later. Information is not available for all bugs in earlier releases.

Access Bug Reports using your MathWorks Account.

Documentation on the MathWorks Web Site

Related documentation is available on mathworks.com for the latest release and for previous releases:

- Latest product documentation

- [Archived documentation](#)

Version 4.16 (R2011b) MATLAB Compiler Software

This table summarizes what's new in Version 4.16 (R2011b):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

Faster Installation of MATLAB Compiler Runtime (MCR) with Improved MCR Installer

The Application Deployment products now feature faster installation of the MATLAB Compiler Runtime (MCR) through improved MCR Installer technology. In addition to improved performance, the new installer provides a common interface for all platforms.

Support for Graphics Processing Unit (GPU) in Parallel Computing Toolbox Applications

MATLAB® Compiler™ generated executables and components now benefit from better performance when used with Parallel Computing Toolbox™ applications. The improvement is due to support of the Graphics Processing Unit (GPU) feature.

For more information, see “GPU Computing” in the *Parallel Computing Toolbox User's Guide*, as well as the Parallel Computing Toolbox examples in the deployment user's guides for additional information about compiling your deployable application with GPU.

Functions and Function Elements Being Removed

| Function or Function Element Name | What Happens When You Use the Function or Element | Do This Instead | Compatibility Considerations |
|-----------------------------------|---|---|---|
| <code> %#external</code> | Errors | Rewrite the C or C++ function as a MEX-file and call it from your application. | For additional information, see “Interfacing MATLAB Code to C/C++ Code” in the User’s Guide and “Creating C/C++ Language MEX-Files” in the <i>MATLAB External Interfaces User’s Guide</i> . |
| <code>libraryGetMcrID</code> | Warnings | Use one of the following functions without specifying an MCR ID: <ul style="list-style-type: none"> • <code>getmcruserdata</code> • <code>setmcruserdata</code> | For complete information about changes in function implementation, see “External C Functions” and “Function Reference” in the User’s Guide. |
| <code>mclGetMcrUserData</code> | Warnings | Use <code>getmcruserdata</code> . | For complete information about changes in function implementation, see “External C Functions” and “Function Reference” in the User’s Guide. |

| Function or Function Element Name | What Happens When You Use the Function or Element | Do This Instead | Compatibility Considerations |
|--|--|-----------------------------------|---|
| mc1SetMcrUserData | Warnings | Use <code>setmcruserdata</code> . | For complete information about changes in function implementation, see “External C Functions” and “Function Reference” in the User’s Guide. |
| mc1SetCmdLineUserData | Warnings | No replacement | For complete information about changes in function implementation, see “External C Functions” and “Function Reference” in the User’s Guide. |
| Control System Toolbox™ prescale GUI | Errors | No replacement | The Control System Toolbox prescale GUI is no longer compatible with MATLAB Compiler and cannot be deployed. |

Version 4.15 (R2011a) MATLAB Compiler Software

This table summarizes what's new in Version 4.15 (R2011a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

Local Worker Support for Parallel Computing Toolbox Applications

MATLAB Compiler and the builders now support local workers in Parallel Computing Toolbox applications.

For information about this feature, see “Use a Local Scheduler” for general information on Local Workers. Also, see “Exporting and Importing Configurations” for information on working with compilable PCT applications, in the *Parallel Computing Toolbox User's Guide*.

Error Reporting for Graphical Applications

MATLAB Compiler now provides error messages in pop-up windows for Windows® and Macintosh® graphical applications. You do not need to run a console in order to view these messages.

Microsoft Visual Studio Express 2010 Compilers Supported

Effective with this release, Microsoft® Visual Studio® Express 2010 compilers (32- and 64-bit versions) are now supported. Microsoft Visual Studio Express 2008 compilers (32- and 64-bit versions), which have been dropped from support. See “Installation and Configuration” in the *MATLAB Compiler User's Guide* for information about installing and configuring them. See

http://www.mathworks.com/support/compilers/current_release/ for an up-to-date list of supported compilers.

Functions and Function Elements Being Removed

| Function or Function Element Name | What Happens When you use the Function or Element | Use This Instead | Compatibility Considerations |
|-----------------------------------|---|----------------------------|---|
| <code>mcc -F</code> | Errors | <code>deploytool -n</code> | For information about using the command-line version of the Deployment Tool, see “Using the Deployment Tool from the Command Line”. |

Version 4.14.1 (R2010bSP1) MATLAB Compiler Software

This table summarizes what's new in Version 4.14.1 (R2010bSP1):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|---------------------------------|---|--------------------------------------|
| No | No | Bug Reports Includes fixes |

Version 4.14 (R2010b) MATLAB Compiler Software

This table summarizes what's new in Version 4.14 (R2010b):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

Support for Microsoft Visual Studio 2010 Added

This release adds support for Microsoft Visual Studio software on both 32-bit and 64-bit systems. See the “Installation and Configuration” chapter in the *MATLAB Compiler User's Guide* for more information.

Include the MCR Installer from a Link on Your Local Network

This feature lets you add a link to an MCR Installer residing on a local area network. Adding this link allows you to invoke the installer over the network, as opposed to copying the installer physically into each deployable package.

See “Packaging (Optional)” in the *MATLAB Compiler User's Guide*, or in your respective Builder product User's Guide, for more details.

mbuild -setup No Longer Needed Before Compiling Standalone Targets

You no longer need to specify a third-party compiler with `mbuild -setup` when building a standalone target. This is the case for both standalones and Windows standalones (standalone applications that suppress the DOS command window when running). For more information about when `mbuild -setup` is not needed, see “When Not to Use `mbuild -setup`”.

mcc Caching Automatically Managed for Linux Systems

In previous releases, you could manually manage cache for `mcc` on Linux systems.

As of R2010b, caching for `mcc` is automatically managed and tuned. No user intervention is required.

Mixing MATLAB Files and C or C++ Files Workflow Deprecated for Alternate Workflow

In previous releases, the workflow described in the procedure “Mixing MATLAB Files and C or C++ Files” detailed how to mix MATLAB and C or C++ source files. This workflow has been replaced with a more straight-forward approach for release R2010b.

Compatibility Considerations

Running the obsolete workflow (documented prior to R2010b) now results in a warning.

See “Combining Your MATLAB and C/C++ Code” for details on the recommended replacement workflow.

mcc -F Option Deprecated with Warning

As of R2011a, the `mcc -F` option will no longer process Deploytool Tool project files passed in or generate project files when invoked with command line arguments.

Compatibility Considerations

In R2010b, a warning will appear when the `mcc -F` command is issued. In R2011a, the command will generate an error.

Instead of using `mcc -F`, see “Using the Deployment Tool from the Command Line” in the User’s Guide for replacement functionality.

%#EXTERNAL Pragma Deprecated For Standalones

Use of the `%#external` pragma to combine C/C++ code with a MATLAB application has been deprecated for standalone targets in release R2010b.

Compatibility Considerations

Using the `%#external` pragma in release R2010b results in a warning. In a future release, usage will result in an error.

See “Interfacing MATLAB Code to C/C++ Code” for details of the replacement workflow.

New Deployment Tool Project Format

Beginning in release R2010b, the Deployment Tool will store projects in a new format.

Compatibility Considerations

If you open a supported legacy project file with `deploytool`, you will automatically be prompted to save it in the new format.

If your legacy project files are in a nonuser-customized format, there is no action you need to take beyond converting your projects to the new format, when prompted.

Intel Macintosh 32-Bit Systems (Maci) No Longer Supported

Intel Macintosh 32-Bit systems, also known as Maci, are no longer supported as of release R2010b.

The software still supports Intel Macintosh 64-Bit systems, also known as Maci 64.

Compatibility Considerations

All MacIntosh bundles produced by deployment products are designed to run on 64-bit architectures and specific releases of the Apple operating system. Incompatibilities will result in an error from the Apple operating system.

Version 4.13 (R2010a) MATLAB Compiler Software

This table summarizes what's new in Version 4.13 (R2010a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | Bug Reports Includes fixes |

New features and changes introduced in this version are:

Desktop Icon Available for Launching 64-Bit Mac Applications

Macintosh 64-bit applications can now be launched conveniently from the desktop. See “Using MATLAB Compiler on UNIX®” for details about the Mac Application Launcher and other guidelines for UNIX, Linux, and Mac users.

New Video Demo Available

Watch a video about deploying applications using MATLAB Compiler.

Support for MATLAB Sparse Matrices

This release provides support for MATLAB sparse matrices via a C++ API. See “Static Factory Methods for Sparse Arrays” for a listing of capable classes and methods.

Deployment Tool Now Available from Command Line

You can now invoke the Deployment Tool GUI from the command line. See “Using the Deployment Tool from the Command Line” for more information.

linkdata on Not Supported in Deployed Standalones

In MATLAB, setting `linkdata on` can be used to link data between multiple plots in the same figure. This feature is not available for standalone applications run in deployed mode.

Version 4.12 (R2009bSP1) MATLAB Compiler Software

This table summarizes what's new in Version 4.12 (R2009bSP1):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|---------------------------------|---|--------------------------------------|
| No | No | Bug Reports Includes fixes |

As described in the MATLAB Release Notes, the version number of the MATLAB® Compiler Runtime (MCR) in release R2009bSP1 is different from the MCR version number in release R2009b.

For details about MCR version numbers and corresponding MATLAB releases, see <http://www.mathworks.com/support/solutions/en/data/1-4GSNCF/?solution=1-4GSNCF>.

Version 4.11 (R2009b) MATLAB Compiler Software

This table summarizes what's new in Version 4.11 (R2009b):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Redesigned Deployment Tool GUI” on page 17
- “Customizable MCR Start-Up Message” on page 17
- “MATLAB Memory Shielding Available” on page 18
- “Mac 64-Bit Support Available” on page 18
- “New Format for Deployment Tool Projects” on page 18
- “Change in Windows Library Path” on page 18
- “INLINE Option to MEX Function Deprecated” on page 18

Redesigned Deployment Tool GUI

The new Deployment Tool (`deploytool`) interface features intuitive task-based navigation, a cancellable progress dialog, fast loading of previously-created projects, and ability to add supporting files as folders. The GUI also features new context sensitive help.

Customizable MCR Start-Up Message

Console applications can now display a user-customizable message indicating that the MATLAB Compiler Runtime (MCR) is in the process of starting up. See “Displaying MCR Initialization Start-Up and Completion Messages For Users” for more information.

MATLAB Memory Shielding Available

The same memory shielding process available in MATLAB is now available for deployed applications. The process reserves memory to ensure resource-intensive applications are allocated proper run-time resources. See “Reserving Memory for Deployed Applications with MATLAB Memory Shielding” for more information.

Mac 64-Bit Support Available

Support for Macintosh 64-bit processors is now available.

New Format for Deployment Tool Projects

If you have projects that were created with the Deployment Tool prior to R2009b, those projects will continue to work. However, projects created or changed in R2009b cannot be opened in previous versions of Deployment Tool (deploytool).

Change in Windows Library Path

The path `matlab/bin/arch` has been removed for Windows and replaced by `matlabroot/runtime/win32|win64`. You may be required to reconfigure your deployment target computers. See “Directories Required for Development and Testing” and “Directories Required for Run-Time Deployment” for more information.

INLINE Option to MEX Function Deprecated

For more information on this change in support that will occur in R2010a, see “Functionality Being Removed” in the *MATLAB Release Notes*.

Version 4.10 (R2009a) MATLAB Compiler Software

This table summarizes what's new in Version 4.10 (R2009a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Reduced MCR Size Saves on Transfer Time” on page 19
- “MATLAB Pcode Files Can Now Be Compiled” on page 19
- “New Functions Return Information About MCR State” on page 19
- “Microsoft® Visual Studio Express 2008 Compilers Supported” on page 20
- “Customized readme.txt Produced with Each Compilation” on page 20

Reduced MCR Size Saves on Transfer Time

MCR copying and transfer time has been improved by 50% following a reduction in the file's contents. The change will not reduce processor time or memory consumption since the deleted files were not loaded into RAM.

MATLAB Pcode Files Can Now Be Compiled

You can now compile protected MATLAB files (Pcode files or "P-files"). For more information about Pcode and P-files, see the pcode function reference page in the *MATLAB Function Reference*.

New Functions Return Information About MCR State

New functions have been introduced that return data about MCR state, such as whether the MCR has been properly initialized or whether the MCR was launched with a JVM instance enabled. For more information, see “Retrieving MCR Attributes” in the user guide.

Microsoft Visual Studio Express 2008 Compilers Supported

Microsoft Visual Studio Express 2008 compilers (32- and 64-bit versions) are now supported instead of Microsoft Visual Studio Express 2005 compilers (32- and 64-bit versions), which have been dropped from support. See “Installation and Configuration” in the MATLAB Compiler User’s Guide for a complete list of supported compilers and information about installing and configuring them.

Customized readme.txt Produced with Each Compilation

An enhanced version of the `readme.txt` file, which is generated with each successful compilation, is now customized to include specific instructions about MATLAB Compiler deployment requirements.

Version 4.9 (R2008b) MATLAB Compiler Software

This table summarizes what's new in Version 4.9 (R2008b):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Applications Created with Parallel Computing Toolbox Can Be Compiled” on page 21
- “Data Sharing Between MATLAB Code, MCR Instance, and Wrapper Code Available” on page 22
- “64-Bit Addressing of mxArray Is New Default, 32-Bit Addressing No Longer Supported” on page 22
- “Microsoft® Visual Studio 2008, 32-Bit and 64-Bit Editions, Now Supported” on page 22
- “Warning Results When Running Figure-Generating Applications or Printing with -nojvm Flag” on page 22
- “Same Name Class Objects Shared Between MCR Instances Will Not Work Correctly ” on page 23

Applications Created with Parallel Computing Toolbox Can Be Compiled

You can now compile MATLAB applications that use the Parallel Computing Toolbox. Resulting executables and components can scale to multicore and multiprocessing environments using the MATLAB Distributed Computing Server. For more information, see “Improving Data Access Using the MCR User Data Interface” in the MATLAB Compiler User’s Guide for more information.

Data Sharing Between MATLAB Code, MCR Instance, and Wrapper Code Available

It is now possible to share data between an MCR instance, the MATLAB code running on that MCR, and the wrapper code that created the MCR, by implementing two MATLAB functions and four external C functions in a new API that may be called from within deployed application wrapper code. Using these functions may potentially improve performance and promote efficient use of computing resources. See “Improving Data Access Using the MCR User Data Interface” in the MATLAB Compiler User’s Guide for more information.

64-Bit Addressing of mwArrays Is New Default, 32-Bit Addressing No Longer Supported

The `MX_COMPAT_32_OFF` variable, which allowed 32-bit addressing of `mwArrays`, is no longer supported. As in R2008a, the default is 64-bit (large array support). See “Addressing `mwArrays` Above the 2 GB Limit” in the MATLAB Compiler User’s Guide for more information.

Microsoft Visual Studio 2008, 32-Bit and 64-Bit Editions, Now Supported

Support is now available for Microsoft Visual Studio 2008, 32-bit and 64-bit editions.

Warning Results When Running Figure-Generating Applications or Printing with `-nojvm` Flag

As of R2008b, running a figure-generating application or printing with the `-nojvm` option results in a warning message. In some cases, figure rendering may succeed, and in other cases it may not. Similarly, various MATLAB graphics functions dependent on Java, such as graphics passed with `-R -nojvm`, will not result in displayable graphics. In a future release, the `-nojvm` option will no longer support figure-generating or printing and will be removed.

Same Name Class Objects Shared Between MCR Instances Will Not Work Correctly

If the same class name is used in two or more separate MCR instances within the same process, the object will not work correctly. This bug impacts all component based targets: C/C++ shared libraries, COM/.NET targets, and Java targets. This bug does not affect standalone executables. This is due to a bug in the MATLAB Object System and is being addressed.

Version 4.8 (R2008a) MATLAB Compiler Software

This table summarizes what's new in Version 4.8 (R2008a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “C++ API Now Supports 64-Bit Default” on page 24
- “CTF Archives Now Embedded in a Single Binary Executable for Convenient Deployment” on page 25
- “Support Added for Microsoft® Visual Studio 2008 Compiler” on page 25
- “Replacement of the mclmcr Header File” on page 25
- “Run-Time Libraries Required for Applications Built with Microsoft® Visual Studio 2008 Compiler” on page 25
- “Large Array Support Now Default for C and C++ Code” on page 26
- “Support Dropped for Borland Compilers” on page 26
- “MATLAB Component Runtime Renamed” on page 26
- “MATLAB Application Deployment Web Example Guide Available” on page 26
- “Enforcement of Proper Return Types For C/C++ Methods” on page 27
- “Changes in mclmcr.h and mclmcr.h Include Order” on page 27

C++ API Now Supports 64-Bit Default

In R2007b, the `MX_COMPAT_32_OFF` variable allowed for 64-bit support. In this release, 64-bit is the default setting. If you still require explicit 32-bit execution, see ““Addressing mxArray Above the 2 GB Limit”” in the MATLAB Compiler User’s Guide for more information.

CTF Archives Now Embedded in a Single Binary Executable for Convenient Deployment

As of R2008a, CTF data is now automatically embedded directly in the C/C++, main and Winmain, shared libraries and standalones by default for convenient deployment of applications. In order to override this default functionality, you must compile with the `-C` option. See ““MCR Component Cache and CTF Archive Embedding”” in the MATLAB Compiler User’s Guide for more information.

Support Added for Microsoft Visual Studio 2008 Compiler

Support has been added for the compiler included with Microsoft Visual Studio 2008. See “System Requirements ” in the MATLAB Compiler User’s Guide for more details.

Replacement of the `mclmcr` Header File

Starting with R2008a, replace all occurrences of `#include mclmcr.h` with `#include mclmcrct.h`.

If the library header created by MATLAB Compiler software is included in the external code, neither of these files need to be included, since the library header includes the correct file.

Run-Time Libraries Required for Applications Built with Microsoft Visual Studio 2008 Compiler

If you distribute a MEX-file, an engine application, or a MAT-file application built with the Visual Studio® 2008 compiler, you must provide the Visual C++® run-time libraries. These files are required to run applications developed with Visual C++ on a computer that does not have Visual C++ 2008 installed. For information on locating the Microsoft® Visual C++® 2008 Redistributable Package (x86), containing `vc redistrib_x86.exe` and `vc redistrib_x64.exe`, consult your Microsoft® documentation.

Large Array Support Now Default for C and C++ Code

In R2008a, the default definition of `MX_COMPAT_32` has been removed, and large array support is now the default for both C and C++ code. This new default may, in some cases, cause compiler warnings and errors. You can define `MX_COMPAT_32` in your `mbuild` step to return to the previous default behavior.

Code compiled with `MX_COMPAT_32` is *not* 64-bit aware. In addition, `MX_COMPAT_32` controls the behavior of some type definitions. For instance, when `MX_COMPAT_32` is defined, `mwSize` and `mwIndex` are defined to `ints`. When `MX_COMPAT_32` is not defined, `mwSize` and `mwIndex` are defined to `size_t`. This can lead to compiler warnings and errors with respect to signed and unsigned mismatches.

For information about expected behavior of this feature in R2007b, see ““Addressing mwArrays Above the 2 GB Limit”” in the MATLAB Compiler User’s Guide for more information..

This feature changes how the `MWArray` C++ Library functions are implemented. For more details, see ““Addressing mwArrays Above the 2 GB Limit”” in the MATLAB Compiler User’s Guide.

Support Dropped for Borland Compilers

Borland compilers are no longer supported as of this release.

MATLAB Component Runtime Renamed

The MATLAB Component Runtime has been renamed to the MATLAB Compiler Runtime.

MATLAB Application Deployment Web Example Guide Available

A new publication, the *MATLAB Application Deployment Web Example Guide*, is now available from the MATLAB Compiler, MATLAB® Builder™ NE, and MATLAB Builder JA roadmap pages.

The guide provides full examples of common tasks performed by the MATLAB programmer, IT specialist, and others who play significant roles in deploying MATLAB applications to the Web.

Enforcement of Proper Return Types For C/C++ Methods

As of R2008a, the LCC compiler is more strict in enforcing `bool` return types from C and `void` returns from C++. For more information, see “Code Proper Return Types From C and C++ Methods” in the MATLAB Compiler User’s Guide.

Changes in `mclmcr.h` and `mclmcr.h` Include Order

Changes introduced in this release now require that the header file `mclmcr.h` always be included after `mclmcr.h` in the preprocessing stage.

This change introduces a potential compatibility problem in subsequent releases of MATLAB Compiler. See the MathWorks support Web site for further information.

Version 4.7 (R2007b) MATLAB Compiler Software

This table summarizes what's new in Version 4.7 (R2007b):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | Yes Summary | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Support Added for the Microsoft® Platform SDK” on page 28
- “Project Files Use Relative Paths and Can Be Shared” on page 28
- “Replacement of MCRInstaller.zip and BUILDMCR Functionality” on page 29
- “Addressing MWArrays Above the 2 GB Limit” on page 29
- “New Compiler Option `-e`” on page 29
- “Support for Borland Compilers Being Phased Out” on page 30
- “Functions Being Removed” on page 30

Support Added for the Microsoft® Platform SDK

Support has been added for the Microsoft Platform SDK Compiler. See System Requirements in the MATLAB® Compiler User's Guide documentation for more details.

Project Files Use Relative Paths and Can Be Shared

Project files can now be enabled for use with other computers since project files now use relative paths. See “Using Relative Paths with Project Files” in the MATLAB Compiler User's Guide documentation for more details.

Replacement of MCRInstaller.zip and BUILDMCR Functionality

In past releases, you needed to include `MCRInstaller.zip` in your packaged application (created by running the `buildmcr` command). Now you must run the following files, which trigger self-extracting archives, that replace the functionality previously provided by `MCRInstaller.zip`. These files ship with MATLAB Compiler:

| Platform | File Replacing MCRInstaller.zip |
|-----------------------|---------------------------------|
| Windows | <code>MCRInstaller.exe</code> |
| UNIX (Except for Mac) | <code>MCRInstaller.bin</code> |
| Mac | <code>MCRInstaller.dmg</code> |

Since there is no longer a need to create `MCRInstaller.zip`, `buildmcr` is no longer supported.

Type `mcr` or `mcrinstaller` at the MATLAB command prompt for a list of all available MCR installers, compatible platforms, version numbers, and other information. In addition, typing `help mcr` or `help mcrinstaller` at the command prompt will provide further details and assistance.

See “Installing the MATLAB Compiler Runtime (MCR)” for more information.

Addressing MWArrays Above the 2 GB Limit

As of R2007b, you can address `MWArrays` above the 2 GB limit. This is enabled by defining `MX_COMPAT_32_OFF` in your `mbuild` step. This feature will be the default as of R2008a.

This feature changes how the `MWArray C++ Library` functions are implemented. For more details, see “Addressing `mwArrays` Above the 2 GB Limit” in the MATLAB Compiler User’s Guide documentation.

New Compiler Option `-e`

This new `mcc` option suppresses the appearance of the MS-DOS command window when generating a standalone application. Use `-e` in place of the

-m option. See “-e Suppress MS-DOS Command Window” in the MATLAB Compiler User’s Guide documentation.

Support for Borland Compilers Being Phased Out

Borland compilers are supported in Version 7.5 (R2007b), but will not be supported in a future version of MATLAB. Please prepare and plan accordingly.

Functions Being Removed

The following functions were removed in R2007b:

| Function Being Removed | What Happens When You Run the Function? | Use This Instead | Compatibility Considerations |
|------------------------|---|---|---|
| buildmcr | Errors | MCRInstaller.exe (Windows), MCRInstaller.bin (UNIX), MCRInstaller.dmg (Mac) | See “Installing the MATLAB Compiler Runtime (MCR)” in the MATLAB Compiler User’s Guide documentation. |
| comtool | Undefined Function Error | deploytool | Migrate to deploytool. |
| dotnettool | Undefined Function Error | deploytool | Migrate to deploytool. |
| mxltool | Undefined Function Error | deploytool | Migrate to deploytool. |
| opennbl | Undefined Function Error | deploytool | Migrate to deploytool. |
| openmxl | Undefined Function Error | deploytool | Migrate to deploytool. |
| opencbl | Undefined Function Error | deploytool | Migrate to deploytool. |

Version 4.6 (R2007a) MATLAB Compiler Software

This table summarizes what's new in Version 4.6 (R2007a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Support Added for Intel Mac and Solaris 64” on page 31
- “Support Dropped for Solaris 2” on page 31
- “Readme File Added” on page 31
- “Warning About Future Borland Compiler Support” on page 32
- “New Compiler Option –F” on page 32
- “Issues with the Microsoft Windows Vista Operating System” on page 32

Support Added for Intel Mac and Solaris 64

Support has been added for the following operating systems:

- Intel Mac
- Solaris 64-bit

Support Dropped for Solaris 2

Support has been dropped for the Solaris 2 operating system. It has been replaced by support for Solaris 64.

Readme File Added

A readme file containing a customized checklist of deployment prerequisites is now generated in the output folder with each compiled application.

Warning About Future Borland Compiler Support

While still supported in this release, customers should prepare for discontinuance of support for the following Borland compilers:

- Borland C++Builder version 6.0
- Borland C++Builder version 5.0
- Borland C/C++ (free command-line tools) version 5.5

New Compiler Option -F

MATLAB Compiler 4.6 includes the -F option for both `mcc` and `deploytool`. Use this option to feed back a specific project file's settings to MATLAB Compiler. For more information, see the MATLAB Compiler User's Guide documentation.

Issues with the Microsoft Windows Vista Operating System

The following are known issues with Windows Vista™ as of this release. To resolve these issues, ensure you are logged in as Administrator.

- With User Account Control (UAC) enabled, a standard user is not able to write to a folder in the `c:\Program Files` folder. See the *MATLAB Release Notes* for more details regarding this issue.
- With User Account Control (UAC) enabled, a standard user is not able to register DLLs. When `mbuild -setup` attempts to register `mwcomutil.dll`, the following errors are displayed:

```
Trying to update options file:
  C:\Users\qe\AppData\Roaming\MathWorks\MATLAB\R2007a\compopts.bat
From template:
  C:\PROGRA-1\MATLAB\R2007a\bin\win64\mbuildopts\msvc80compp.bat

Done . . .

--> "C:\PROGRA-1\MATLAB\R2007a\bin\win64\mwregsvr C:\PROGRA-1\MATLAB\R2007a\bin\
win64\mwcomutil.dll"

Error: DllRegisterServer in C:\PROGRA-1\MATLAB\R2007a\bin\win64\mwcomutil.dll
```

```

failed
Undefined subroutine &mexsetup::expire called at C:\PROGRA-1\MATLAB\R2007a\bin\
mexsetup.pm line 839.

```

This is also the case when MATLAB Builder for Excel invokes `mbuild` in an attempt to register DLLs after a compilation completes.

- The following message is displayed when MATLAB Builder for .NET, attempts to install a DLL into the Global Assembly Cache from a network location:

```

Unhandled Exception: System.IO.FileLoadException: could not load file or assembly
'GACInstaller, Version=1.0.2568.30711, Culture=neutral, PublicKeyToken=null' or
one of its dependencies. Failed to grant permission to execute. (Exception from
HRESULT: 0x80131418)
File name: 'GACInstaller, Version=1.0.2568.30711, Culture=neutral,
PublicKeyToken=null' ---> System.Security.Policy.PolicyException: Execution
permission cannot be acquired.
    at System.Security.SecurityManager.ResolvePolicy(Evidence evidence,
PermissionSet reqdPset, PermissionSet optPset, PermissionSet denyPset,
PermissionSet& denied, Boolean checkExecutionPermission)
    at System.Security.SecurityManager.ResolvePolicy(Evidence evidence,
PermissionSet reqdPset, PermissionSet optPset, PermissionSet denyPset,
PermissionSet& denied, Int32& securitySpecialFlags, Boolean
checkExecutionPermission)

```

- Printing from a compiled application is not currently available with Microsoft Windows Vista. The following message is displayed if you attempt to print on systems with the Microsoft Windows Vista 32-bit operating system installed:

```

PrintImage Error
StartPage failed with error 6: The handle is invalid.

```

Printing with Vista 64-bit installed results in an error message that lists a manifest as missing. Please check <http://www.mathworks.com/support/> for updates on these issues.

Version 4.5 (R2006b) MATLAB Compiler Software

This table summarizes what's new in Version 4.5 (R2006b):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Support for Java Components” on page 34
- “Deployment Tool Graphical User Interface” on page 34

Support for Java Components

MATLAB Compiler, in conjunction with the optional MATLAB Builder for Java™, lets you convert MATLAB files into Java components.

Deployment Tool Graphical User Interface

As an alternative to the `mcc` command to invoke MATLAB Compiler, you can invoke the graphical user interface for MATLAB Compiler by issuing the following command at the MATLAB prompt:

```
deploytool
```

Use the Deployment Tool to perform the tasks shown in the following conceptual illustration:



Version 4.4 (R2006a) MATLAB Compiler Software

This table summarizes what's new in Version 4.4 (R2006a):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | Bug Reports Includes fixes |

New features and changes introduced in this version are:

- “Support for .NET Components” on page 35
- “Support for Microsoft® Visual C++ Version 8.0” on page 35
- “HP-UX No Longer Supported” on page 36

This release provides support for a new target, .NET components. With the optional MATLAB Builder for .NET product, you can create both COM components that can be used in native code applications and .NET components that can be used in managed code applications.

Support for .NET Components

MATLAB Compiler, in conjunction with the optional MATLAB Builder for .NET, lets you convert MATLAB files into .NET components that are accessible from any Common Language Specification (CLS)-compliant client code. In addition, you can build Common Object Model (COM) components that are accessible from Visual Basic, C/C++, Microsoft Excel, or any other COM client.

Support for Microsoft Visual C++ Version 8.0

MATLAB Compiler supports Microsoft Visual C++ Version 8.0 as a third-party compiler. However, if you use Microsoft Visual C/C++ Version 8.0 to generate applications/components, you must have the Microsoft Visual Studio 2005 run-time libraries available on the computer used for deployment. If you distribute your applications/components, you must make sure that any

machine used for deployment has these run-time libraries installed. For more information, see solution 1-2223MW.

HP-UX No Longer Supported

MATLAB Compiler 4.4 (R2006a) does not support HP-UX. MATLAB Compiler 4.3 (R14SP3) was the last release to support HP-UX.

Version 4.3 (R14SP3) MATLAB Compiler Software

This table summarizes what's new in Version 4.3 (R14SP3):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | Bug Reports Includes fixes |

Platform Support

You can use MATLAB Compiler 4.3 on the following supported systems to create redistributable, standalone applications or software components. These applications or components can then be deployed to other systems with the same operating system.

Supported Platforms

MATLAB Compiler 4.3 is supported on these platforms:

- Windows
- Linux®
- Solaris™
- HP-UX®
- Linux x86-64
- Mac OS® X

The MATLAB Compiler documentation has been updated to include configuration information for all the supported platforms.

Version 4.2 (R14SP2) MATLAB Compiler Software

This table summarizes what's new in Version 4.2 (R14SP2):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | No bug fixes |

Platform Support

You can use MATLAB Compiler 4.2 on the following supported systems to create redistributable, standalone applications or software components. These applications or components can then be deployed to other systems with the same operating system.

Supported Platforms

MATLAB Compiler 4.2 is supported on these platforms:

- Windows
- Linux
- Solaris
- HP-UX
- Linux x86-64

The MATLAB Compiler documentation has been updated to include configuration information for all the supported platforms.

Version 4.1.1 (R14SP1+) MATLAB Compiler

This table summarizes what's new in Version 4.1.1 (R14SP1+):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| No | No | Fixed bugs |

Fixed Bugs

MATLAB Compiler 4.1.1 includes bug fixes incorporated since Version 4.1 (Release 14SP1). These bug fixes include the following.

buildmcr Function Supports Use of ~ in the File Name on UNIX

With this release, you can use the ~ character as part of the destination file name or folder on UNIX systems. For example:

```
zipfile = buildmcr('~ /mcr')
```

Before this release, using the ~ character as part of the destination file name or folder on UNIX systems caused the error:

```
Error opening '~ /mcr/MCRInstaller.zip'
```

C++ Shared Libraries Fully Supported with Borland Compilers

With this release, you can use supported versions of the Borland Compiler (see the Supported Compilers list) to build C++ shared libraries. In previous releases, Borland compilers can build C shared libraries, but building C++ shared libraries resulted in link-time errors. These errors have been resolved.

Excluded Functions List Stored in a Log File

If you use the -v option to generate the verbose output of the compilation steps, MATLAB Compiler creates a log file called `mccExcludedFiles.log`. This file contains, if any, the list of functions that have been excluded from the compiled application. This list does not include the core MATLAB functions

that are unsupported. See “Unsupported Functions” in the MATLAB Compiler User’s Guide documentation.

loadlibrary Function Works in Compiled Mode

The `loadlibrary` function did not work in certain cases in compiled mode. This problem has been resolved with this release of MATLAB Compiler. Note that the libraries created using MATLAB Compiler cannot be loaded into MATLAB workspace using the `loadlibrary` function.

mclcppMlfEval No Longer Multiply Defined

In R14, before Service Pack 1, C++ applications that linked against two or more MATLAB Compiler generated C++ shared libraries would get a link-time error indicating that `mclcppMlfEval` was multiply defined. In R14 Service Pack 1, this function, which is found in `extern/include/mclcppclass.h`, has been declared `inline`; this resolves the problem.

MCR Started by MATLAB Compiler Returns true for isdeployed

You can use the `isdeployed` function to determine if an MCR was started by MATLAB Compiler. The `mcc` command starts a new MCR. The `isdeployed` function will return `true` for this MCR, thus replicating the deployed environment.

Misleading -e Error Is Resolved

On Windows, when `mbuild` (which is called by `mcc`) fails, you will no longer get the misleading error about `-e` not being an internal or an external command.

Reduced Compilation Time and Size of the CTF File

In certain scenarios, the compilation time is reduced and the size of the CTF file is smaller.

Translation Files for Various Toolboxes Included in the CTF File

When various toolboxes are compiled, the translation files are now included in the CTF archive. This will let Japanese users see the translated output for certain toolbox messages.

web Function Compiles Successfully

In MATLAB Compiler 4.0 (R14), MATLAB files that used the `web` function would compile (apparently without error), but fail to execute at run time. This occurred because a function that the `web` command depends on, `ibrowse`, was not being shipped. `ibrowse` is now shipped with the MCR.

Version 4.1 (R14SP1) MATLAB Compiler Software

This table summarizes what's new in Version 4.1 (R14SP1):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| Yes Details below | No | Fixed bugs |

New features and changes introduced in this version are:

- “Solaris Support” on page 42
- “Installing a New Version of the MCR on Windows” on page 44
- “Fixed Bugs” on page 44

Solaris Support

You can use MATLAB Compiler 4.1 on supported Solaris systems to create redistributable, standalone applications or software components. These applications or components can then be deployed to other Solaris systems.

We encourage you to use this beta version for Solaris and we appreciate your feedback. We expect to release a fully qualified version of MATLAB Compiler for Solaris as soon as possible.

buildmcr on Solaris

The `buildmcr` command that ships with MATLAB Compiler 4.1 may fail on some Solaris systems. You must upgrade your `buildmcr` command if you see the error message:

```
"Could not redirect CTFARCHIVER output to the MATLAB Desktop"
```

All Solaris users are advised to upgrade their `buildmcr` command. For instructions on how to upgrade, see our Support site and search for “Solaris BUILDMCR.” This upgrade is not necessary for Windows or Linux users.

Modifying the Dynamic Library Path on Solaris

Development Machine. To run a MATLAB Compiler generated application on your development machine, add the following folders to your dynamic library path.

Note For readability, the following command appears on separate lines, but you must enter it all on one line.

```
setenv LD_LIBRARY_PATH
  /usr/lib/lwp:
  matlabroot/bin/sol2:
  matlabroot/sys/os/sol2:
  matlabroot/sys/java/jre/sol2/jre1.4.2/lib/
      sparc/native_threads:
  matlabroot/sys/java/jre/sol2/jre1.4.2/lib/sparc/client:
  matlabroot/sys/java/jre/sol2/jre1.4.2/lib/sparc:
  matlabroot/sys/opengl/lib/sol2:${LD_LIBRARY_PATH}
setenv XAPPLRESDIR <matlabroot>/X11/app-defaults
```

Target Machine. To run a MATLAB Compiler generated application on a target machine (a machine without MATLAB that has the MCR installed), add the following folders to your dynamic library path.

Note For readability, the following command appears on separate lines, but you must enter it all on one line.

```
setenv LD_LIBRARY_PATH
  /usr/lib/lwp:
  mcr_root/runtime/sol2:
  mcr_root/sys/os/sol2:
  mcr_root/sys/java/jre/sol2/jre1.4.2/lib/sparc/native_threads:
  mcr_root/sys/java/jre/sol2/jre1.4.2/lib/sparc/client:
  mcr_root/sys/java/jre/sol2/jre1.4.2/lib/sparc:
  mcr_root/sys/opengl/lib/sol2:${LD_LIBRARY_PATH}
setenv XAPPLRESDIR <mcr_root>/X11/app-defaults
```

<mcr_root> is the folder where the MCR is installed.

Redistribution of the Sun sunperf Library

On Solaris, the only compiler that MATLAB Compiler supports is the Sun compiler. If you are a Solaris user who is licensed to use the Sun compiler, you can redistribute the Sun sunperf and dependent libraries, including BLAS, to your end users. For more information, consult your Sun license agreement.

Installing a New Version of the MCR on Windows

The MCRInstaller now supports the installation of multiple versions of the MCR on a target machine. This allows applications compiled with different versions of the MCR to execute side by side on the same machine.

If multiple versions of the MCR are not desired on the target machine, you can run **Add or Remove Programs** from the Control Panel to remove any of the previous versions. This can be done either before or after installation of a more recent version of the MCR, as versions can be installed or removed in any order.

MCR Version 7.0 Restriction

The only caveat to installing a new version of the MCR is that you cannot automatically install version 7.0 in the same folder as a previously installed version of the MCR. This restriction applies only to version 7.0 of the MCRInstaller. If you must install version 7.0 in the same folder as a previous version, you should first run the version 7.0 MCRInstaller and select that folder. After the installation completes, you should manually add the MCR run-time folder <TargetDir>\v70\runtime\win32 to the system path.

Fixed Bugs

MATLAB Compiler 4.1 includes bug fixes incorporated since Version 4.0.1, which was released via the Web in July 2004. These bug fixes include the following.

Calls to Java Code Work in Deployed Applications

In MATLAB Compiler 4.0 (Release 14), users were not able to deploy MATLAB applications that used certain Java files. For example, they could not deploy the Database Toolbox functions. This bug has been fixed in this release.

Deploying Applications to Non-U.S. Locale Systems

The SET_PARAM error that was generated when an application was deployed to a non-U.S. locale system has been fixed.

Printing Figure Windows

On Windows, the problem of printing figure windows has been resolved and should work as expected.

Using pause in Applications Generated by MATLAB Compiler Software

In Release 14 on Windows, MATLAB Compiler generated applications that used the `pause` command would occasionally hang. This was more likely to happen if you called `pause` frequently or you used very small time-out values. This problem has been resolved.

Version 4.0.1 (R14+) MATLAB Compiler Software

This table summarizes what's new in Version 4.0.1 (R14+):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|--------------------------------------|-------------------------------|
| No | No | Fixed bugs |

Fixed Bugs

MATLAB Compiler 4.0.1 includes bug fixes incorporated since Version 4.0. These bug fixes include the following.

buildmcr Utility Works on Linux

You can use the `buildmcr` utility to create an MCR Installer on Linux. For more information on `buildmcr`, see the MATLAB Compiler User's Guide documentation.

extractCTF Utility Works on Linux

The `extractCTF` utility has been moved to the `matlabroot/toolbox/compiler/deploy/glnx86` folder on Linux. You can use this utility to extract the CTF archive into the current working folder.

Files Added Using `addpath` Are Found

MATLAB Compiler can locate the files that are in folders that have been added to the MATLAB path using the `addpath` command.

genpath Function Works in Deployed Applications

You can now compile and deploy a MATLAB file that calls the `genpath` function.

input Function Works in Deployed Applications

The `input` function works properly in deployed applications. It no longer waits for the input first and then displays the input prompt.

loadlibrary Function Works in Deployed Applications

MATLAB Compiler supports the compilation of the `loadlibrary` function.

Note MATLAB Compiler generated libraries cannot be loaded into the MATLAB workspace using the `loadlibrary` function.

MCRInstaller Works on Windows NT

The MCRInstaller works properly on Windows NT.

Private Folders Work Properly

Private folders deploy properly and work as expected in this release of MATLAB Compiler.

-V2.0 Option Removed

The `-V2.0` option that was available in previous releases of MATLAB Compiler has been obsoleted and is no longer available. Using this option will give an error message.

-w (Warning) Requires Option

You must specify an option (`list`, `disable`, `enable`, or `error`) when using the `-w` option to display warnings. This table shows the valid forms.

| Syntax | Description |
|----------------------------------|---|
| <code>-w list</code> | Generates a table that maps <i>string</i> to warning message for use with <code>enable</code> , <code>disable</code> , and <code>error</code> . |
| <code>-w enable</code> | Enables complete warnings. |
| <code>-w disable[:string]</code> | Disables specific warning associated with <i>string</i> . Leave off the optional <i>:string</i> to apply the <code>disable</code> action to all warnings. |

| Syntax | Description |
|--------------------|---|
| -w enable[:string] | Enables specific warning associated with <i>string</i> . Leave off the optional <i>:string</i> to apply the <code>enable</code> action to all warnings. |
| -w error[:string] | Treats specific warning associated with <i>string</i> as error. Leave off the optional <i>:string</i> to apply the <code>error</code> action to all warnings. |

Warning About `set_param` Removed

You no longer get a warning/error message regarding `SET_PARAM` not being found when using MATLAB Compiler software.

Version 4.0 (R14) MATLAB Compiler Software

This table summarizes what's new in Version 4.0 (R14):

| New Features and Changes | Version Compatibility Considerations | Fixed Bugs and Known Problems |
|--------------------------|---|-------------------------------|
| Yes Details below | Yes—Details labeled as Compatibility Considerations , below. See also Summary. | No bug fixes |

New features and changes introduced in this version are:

- “Targets” on page 49
- “Language Support” on page 49
- “Improved C++ Interface” on page 50
- “MATLAB Compiler Runtime” on page 50
- “Component Technology File” on page 50
- “Compatibility Considerations” on page 50

Targets

MATLAB Compiler can generate the following kinds of applications or components. None of these requires MATLAB on the end user's system.

- Standalone applications
- C and C++ shared libraries (dynamically linked libraries, or DLLs, on Microsoft Windows)
- Excel add-ins; requires MATLAB Builder for Excel
- COM objects; requires MATLAB Builder for COM

Language Support

MATLAB Compiler supports all the functionality of MATLAB, including objects. In addition, no special considerations are necessary for private and method functions; they are handled by MATLAB Compiler.

Improved C++ Interface

The C++ interface for MATLAB Compiler generated wrapper functions has been improved.

Note MATLAB Compiler 4 will not compile every toolbox, consequently, some MathWorks toolboxes will not be deployable. Portions of toolboxes may be nondeployable due to licensing restrictions (in general, compilation of toolbox graphical user interfaces will be restricted). MATLAB Compiler will not compile Simulink®, Stateflow®, or products that require them. For more information regarding the compilability of toolboxes, see the MATLAB Compiler product page on the Web.

MATLAB Compiler Runtime

MATLAB Compiler 4 uses the new MATLAB Compiler Runtime (MCR), which is a standalone set of shared libraries that enable the execution of compiled MATLAB files, instead of the MATLAB C/C++ Math and Graphics Libraries. The MCR provides complete support for all features of the MATLAB language.

Component Technology File

MATLAB Compiler 4 also uses a Component Technology File (CTF) archive to house the deployable package. All MATLAB files are encrypted in the CTF archive using the Advanced Encryption Standard (AES) cryptosystem, where symmetric keys are protected by 1024-bit RSA keys.

Compatibility Considerations

MATLAB Compiler 4 is compatible with previous releases of MATLAB Compiler. MATLAB files that you compiled with a previous version of MATLAB Compiler should compile with this version if your MATLAB files contain only compilable Release 14 functions. There are no restrictions on the contents of your MATLAB files other than compatibility with Release 14.

Compiling MATLAB and Toolboxes

MATLAB Compiler supports the full MATLAB language and almost all MATLAB based toolboxes. However, some limited MATLAB and toolbox functionality is not licensed for compilation:

- Functionality that cannot be called directly from the command line will not compile.
- Most of the prebuilt graphical user interfaces included in MATLAB and its companion toolboxes will not compile, for example, `sptool` from Signal Processing Toolbox™.
- Some toolboxes, such as Symbolic Math Toolbox™, will not compile.

The code generated by MATLAB Compiler is not suitable for embedded applications.

To see an up-to-date list of non-compilable toolboxes and functionality, visit the MATLAB Compiler product page on the Web.

Differences Between Release 14 and Previous Versions of MATLAB Compiler

This section highlights significant differences between Compiler 4 and previous versions of MATLAB Compiler.

MATLAB Compiler 4 is a deployment tool for creating software components and complete applications that can be distributed to other users. This version of MATLAB Compiler fully supports all features of the MATLAB language including objects:

- Compiler 4 uses the new MATLAB Compiler Runtime (MCR), which is a standalone set of shared libraries that enable the execution of compiled MATLAB files, instead of the MATLAB C/C++ Math and Graphics Libraries.
- Compiler 4 does not support the creation of MEX-files and Simulink S-functions from MATLAB functions because features in MATLAB 7 make this functionality redundant. The MATLAB JIT makes compilation for speed obsolete, and the MATLAB `pcode` (pre-parsed code) function enables you to hide your proprietary algorithms.

- Compiler 4 is supported on Microsoft Windows and Linux only. Support is planned for additional platforms in a future release.
- Compiler 4 does not include the MATLAB Add-in for Visual Studio.
- Compiler 4 does not speed up applications. There is no speed difference between a compiled application and running it in MATLAB. The compiled application will run as fast as MATLAB with the JIT Accelerator.
- MATLAB does not support the loading of MATLAB Compiler generated libraries via the `loadlibrary` function.
- Compiler 4 does not support the set of imputed functions including `mbchar`, `mbcharscalar`, `mbcharvector`, `mbint`, `mbintscalar`, `mbintvector`, `mbreal`, `mbrealscalar`, `mbrealvector`, `mbscalar`, and `mbvector`. Compiler 4 makes the need for these functions obsolete.
- Compiler 4 eliminates the need to use `mccsavepath` to invoke MATLAB Compiler from a shell (DOS or UNIX) prompt. Consequently, `mccsavepath` is no longer available with Compiler 4.

Wrapper Differences.

- Compiler 4 only generates code for interface functions (wrappers), whereas previous versions generated code for the entire MATLAB file. There are several differences to be aware of when calling Release 14 Compiler functions from C or C++:
 - Since Compiler 4 does not use the MATLAB C/C++ Math and Graphics Libraries, the various `m1f` functions previously available with the libraries are no longer available. Some of the Release 13 `m1f` functions have Release 14 equivalents in the MATLAB External Interface functions. For example, you can replace calls to `m1fScalar` with calls to `mxCreatDoubleScalar`.
 - The interface to the `m1f` functions generated by MATLAB Compiler from your MATLAB file routines has changed. Unlike previous versions of MATLAB Compiler, all the return values are passed as input to the function. The return value of these functions is `void`. See the MATLAB Compiler documentation for additional details.
 - The `initialize` routine now returns a status flag that can be used to test if the library was initialized properly.

Note These wrapper file differences only affect users who build libraries; they do not affect users who build executables.

Deprecated Compiler Options.

- Compiler 4 has deprecated options that involve code generation and formatting. The following options are no longer supported and will produce errors if used.

| Option | Description |
|---------|---|
| A | Code annotation |
| B pcode | Generate P-code |
| F | Format parameters |
| h | Helper functions |
| i | Include specified MATLAB files |
| l | Line/file numbers (This option has changed and now means “library”.) |
| L | Target language |
| O | Optimized code |
| p | Generate C++ code (This option has changed and now means “add folder to compilation path in an order-sensitive context.”) |
| S | Macro to generate Simulink S-function |
| t | Translate MATLAB code to C/C++ code |
| u | Specifies number of inputs for Simulink S-function |
| x | Macro to generate MEX-function |
| y | Specifies number of outputs for Simulink S-function |

- Compiler 4 has deprecated some wrapper options and their associated bundle files. The following wrapper options and their associated bundle files are deprecated and are replaced by the new ones.

| Wrapper Option/Bundle File | Replaced By |
|----------------------------|--------------|
| B csglcom | B ccom |
| B csglexcel | B cexcel |
| B csglsharedlib | B csharedlib |
| B cppsglcom | B cppcom |
| B cppsglexcel | B cppexcel |
| W comhg | W com |
| W excelhg | W excel |
| W libhg | W lib |
| W mainhg | W main |

- You no longer need to use `-B sgl` and `-B sglcpp` to access Handle Graphics® functions. All compiled applications have access to graphics by default.

New Compiler Options. Compiler 4 includes several new options.

| Option | Description |
|--|---|
| a <i>filename</i> | Add <i>filename</i> to archive; specifies files to be directly added to the CTF archive. |
| l | Macro that generates a function library. (The meaning of this option has changed since Release 13.) |
| N | Clears the path of all but a minimal, required set of folders. |
| p <i>directory</i> | Add <i>directory</i> to compilation path in an order-sensitive context; requires <code>-N</code> option. |
| R <code>-nojvm</code> R <code>-nojit</code> | Runtime; provides MCR options; same as MATLAB startup options of the same name; only used with executable target. |

Compatibility Summary for MATLAB Compiler Software

This table summarizes new features and changes that might cause incompatibilities when you upgrade from an earlier version, or when you use files on multiple versions. Details are provided in the description of the new feature or change.

| Version (Release) | New Features and Changes with Version Compatibility Impact |
|--|--|
| Latest Version V4.16 (R2011b) | See “Functions and Function Elements Being Removed ” on page 6 |
| V4.15 (R2011a) | See “Functions and Function Elements Being Removed ” on page 9 |
| V4.14.1 (R2010bSP1) | None |
| V4.14 (R2010b) | See “Mixing MATLAB Files and C or C++ Files Workflow Deprecated for Alternate Workflow” on page 12 See “mcc -F Option Deprecated with Warning” on page 12 See “%#EXTERNAL Pragma Deprecated For Standalones” on page 13 See “New Deployment Tool Project Format” on page 13 See “Intel Macintosh 32-Bit Systems (Maci) No Longer Supported” on page 13 |
| V4.13 (R2010a) | None |
| V4.12 (R2009bSP1) | None |
| V4.11 (R2009b) | See “New Format for Deployment Tool Projects” on page 18 |
| V4.10 (R2009a) | None |
| V4.9 (R2008b) | See “C++ API Now Supports 64-Bit Default” on page 24. See “Warning Results When Running Figure-Generating Applications or Printing with -nojvm Flag” on page 22. |
| V4.8 (R2008a) | See “C++ API Now Supports 64-Bit Default” on page 24. See “Replacement of the mclmcr Header File” on page 25. See “Changes in mclmcrct.h and mclmcr.h Include Order” on page 27 |
| V4.7 (R2007b) | See “Functions Being Removed” on page 30. |
| V4.6 (R2007a) | None |

| Version (Release) | New Features and Changes with Version Compatibility Impact |
|--------------------------|---|
| V4.5 (R2006b) | None |
| V4.4 (R2006a) | None |
| V4.3 (R14SP3) | None |
| V4.2 (R14SP2) | None |
| V4.1.1 (R14SP1+) | None |
| V4.1 (R14SP1) | None |
| V4.0.1 (R14+) | None |
| V4.0 (R14) | <p>See the Compatibility Considerations subheading for each of these new features and changes:</p> <ul style="list-style-type: none">• “Compiling MATLAB and Toolboxes” on page 51• “Differences Between Release 14 and Previous Versions of MATLAB® Compiler” on page 51 |