Code Generation from MATLAB® Release Notes

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Summary by Release

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

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Latest Release R2012a	Yes Details	Yes Summary	Search bug reports for the products that support code generation from MATLAB®: • MATLAB Coder™ • Fixed-Point Toolbox™ • Simulink® Coder • Simulink • Stateflow® • SimEvents®
R2011b	Yes Details	No	Search bug reports for the products that support code generation from MATLAB: • MATLAB Coder • Fixed-Point Toolbox • Simulink Coder • Simulink • Stateflow • SimEvents

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
R2011a	Yes Details	No	Search bug reports for the products that support code generation from MATLAB: • MATLAB Coder • Fixed-Point Toolbox • Simulink Coder • Simulink • Stateflow • SimEvents

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

Release 2012a Code Generation from MATLAB

This table summarizes what's new in R2012a:

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.	Search bug reports for the products that support code generation from MATLAB: • MATLAB Coder • Fixed-Point Toolbox • Simulink Coder • Simulink • Stateflow • SimEvents

New features and changes introduced in this release are:

• "Code Generation for MATLAB Classes" on page 4

• "Dynamic Memory Allocation Based on Size" on page 5

• "New Toolbox Functions Supported for Code Generation" on page 5

• "New System Objects Supported for Code Generation" on page 5

Code Generation for MATLAB Classes

In R2012a, there is preliminary support for code generation for MATLAB classes targeted at supporting System objects defined by users. For more information about generating code for MATLAB classes, see "Code Generation for MATLAB Classes". For more information about generating code for System objects, see the DSP System Toolbox™, Computer Vision System Toolbox™ or the Communications System Toolbox™ documentation.

Dynamic Memory Allocation Based on Size

By default, dynamic memory allocation is now enabled for variable-size arrays whose size exceeds a configurable threshold. This behavior allows for finer control over stack memory usage. Also, you can generate code automatically for more MATLAB algorithms without modifying the original MATLAB code.

This capability is not available for the MATLAB Function block in Simulink.

Compatibility Consideration

If you use scripts to generate code and you do not want to use dynamic memory allocation, you must disable dynamic memory allocation. For more information, see "Controlling Dynamic Memory Allocation".

New Toolbox Functions Supported for Code Generation

To view implementation details, see "Functions Supported for Code Generation — Alphabetical List".

Matrix and Array Functions

- blkdiag
- isequaln
- randi
- rng

String Functions

- dec2bin
- dec2hex

New System Objects Supported for Code Generation

The following System objects are now supported for code generation. To see all System objects supported for code generation, see "System Objects Supported for Code Generation".

Communications System Toolbox

- `comm.BCHEncoder`
- `comm.HDLCRCGenerator`
- `comm.RSEncoder`
- `comm.ThermalNoise`

Computer Vision System Toolbox

- `vision.CornerDetector`
- `vision.HistogramBasedTracker`

DSP System Toolbox

- `dsp.FIRDecimator`
- `dsp.FIRFilter`

Release 2011b Code Generation from MATLAB

This table summarizes what's new in R2011b:

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Search bug reports for the products that support code generation from MATLAB: • MATLAB Coder • Fixed-Point Toolbox • Simulink Coder • Simulink • Stateflow • SimEvents

New features and changes introduced in this release are:

• "Support for Deletion of Rows and Columns from Matrices" on page 7

• "New Toolbox Functions Supported for Code Generation" on page 8

• "New System Objects Supported for Code Generation" on page 8

Support for Deletion of Rows and Columns from Matrices

You can now generate C/C++ code from MATLAB code that deletes rows or columns from matrices. For example, the following code deletes the second column of matrix X:

```
X(:,2) = [];
```

For more information, see "Diminishing the Size of a Matrix" in the MATLAB documentation.

New Toolbox Functions Supported for Code Generation

To view implementation details, see "Functions Supported for Code Generation — Alphabetical List".

Data Type Functions

- `deal`
- `structfun`

Linear Algebra

- Addition of Hessenberg and Hermitian positive definite solvers to `linsolve`

Fixed-Point Toolbox Functions

- `cordicabs`
- `cordicangle`
- `cordicatan2`
- `cordiccart2pol`

New System Objects Supported for Code Generation

The following System objects are now supported for code generation. To see all System objects supported for code generation, see "System Objects Supported for Code Generation".

Communications System Toolbox

- `comm.BarkerCode`
- `comm.DifferentialDecoder`
- `comm.DifferentialEncoder`
- `comm.DiscreteTimeVCO`
- `comm.HadamardCode`
- `comm.OVSFCode`

- `comm.WalshCode`

Computer Vision System Toolbox

- `vision.IFFT`

Release 2011a Code Generation from MATLAB

This table summarizes what's new in R2011a:

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Search bug reports for the products that support code generation from MATLAB: • MATLAB Coder • Fixed-Point Toolbox • Simulink Coder • Simulink • Stateflow • SimEvents

New features and changes introduced in this release are:

- "Embedded MATLAB Now Called Code Generation from MATLAB" on page 10

- "New Toolbox Functions Supported for Code Generation" on page 11

- "Function Being Removed in a Future Release" on page 12

- "Function Elements Being Removed in a Future Release" on page 12

Embedded MATLAB Now Called Code Generation from MATLAB

MathWorks is no longer using the term *Embedded MATLAB*® to refer to the language subset that supports code generation from MATLAB algorithms. This nomenclature incorrectly implies that the generated code is used in embedded systems only.

The new term is *code generation from MATLAB*. This terminology better reflects the full extent of the capability for translating MATLAB algorithms

into readable, efficient, and compact MEX and C/C++ code for deployment to both desktop and embedded systems.

New Toolbox Functions Supported for Code Generation

To view implementation details, see "Functions Supported for Code Generation — Alphabetical List".

Bitwise Operation Functions

- swapbytes

Data Type Functions

- str2func

Derivative and Integral Functions

- del2
- gradient

Discrete Math Functions

- factor
- isprime
- primes

Filtering and Convolution Functions

- convn

Fixed Point Toolbox Functions

- cordicrotate
- cordicpol2cart

Linear Algebra Functions

- null
- orth

MATLAB Compiler Functions

- isdeployed
- ismcc

Matrix and Array Functions

- hadamard

Signal Processing Functions in MATLAB

- fftn
- ifftn

Function Being Removed in a Future Release

Function Name	What Happens When You Use This Function?	Use This Function Instead
emlmex	Still runs with a warning in R2011a	codegen (requires MATLAB Coder license)

Function Elements Being Removed in a Future Release

Function or Element Name	What Happens When You Use the Function or Element?	Use This Element Instead
%#eml	Still runs	%#codegen
eml.allowpcode	Still runs	coder.allowpcode

Function or Element Name	What Happens When You Use the Function or Element?	Use This Element Instead
`eml.ceval`	Still runs	`coder.ceval`
`eml.cstructname`	Still runs	`coder.cstructname`
`eml.extrinsic`	Still runs	`coder.extrinsic`
`eml.inline`	Still runs	`coder.inline`
`eml.nullcopy`	Still runs	`coder.nullcopy`
`eml.opaque`	Still runs	`coder.opaque`
`eml.ref`	Still runs	`coder.ref`
`eml.rref`	Still runs	`coder.rref`
`eml.target`	Still runs	`coder.target`
`eml.unroll`	Still runs	`coder.unroll`
`eml.varsize`	Still runs	`coder.varsize`
`eml.wref`	Still runs	`coder.wref`

Compatibility Summary for Code Generation from MATLAB

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.

Release	New Features and Changes with Version Compatibility Impact
Latest Version (R2012a)	See the **Compatibility Considerations** subheading for this new feature or change: • "Dynamic Memory Allocation Based on Size" on page 5
R2011b	None
R2011a	None