MATLAB® & Simulink®
Release Notes for R2009b

MATLAB®
&SIMULINK®

The MathWorks™
Accelerating the pace of engineering and science
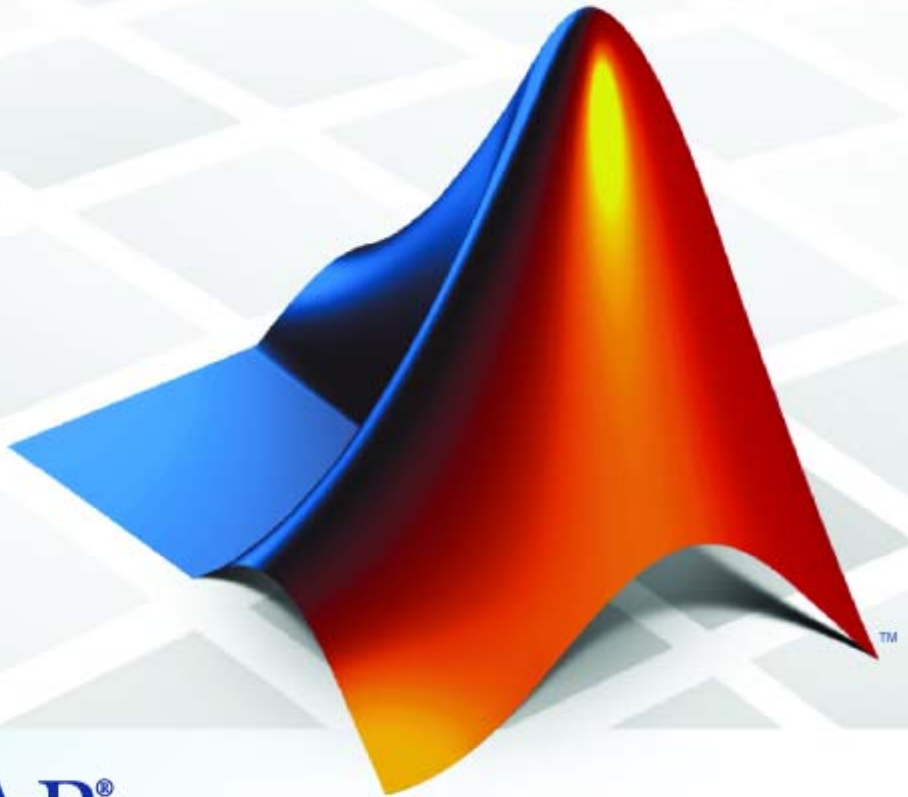
How to Contact The MathWorks

www.mathworks.com	Web
comp.soft-sys.matlab	Newsgroup
www.mathworks.com/contact_TS.html	Technical Support

suggest@mathworks.com	Product enhancement suggestions
bugs@mathworks.com	Bug reports
doc@mathworks.com	Documentation error reports
service@mathworks.com	Order status, license renewals, passcodes
info@mathworks.com	Sales, pricing, and general information

508-647-7000 (Phone)

508-647-7001 (Fax)

The MathWorks, Inc.
3 Apple Hill Drive
Natick, MA 01760-2098

For contact information about worldwide offices, see the MathWorks Web site.

Release Notes for R2009b

Trademarks

MATLAB and Simulink are registered trademarks of The MathWorks, Inc. See www.mathworks.com/trademarks for a list of additional trademarks. Other product or brand names may be trademarks or registered trademarks of their respective holders.

Patents

The MathWorks products are protected by one or more U.S. patents. Please see www.mathworks.com/patents for more information.

Revision History

September 2009   Online only   New for Release 2009b

Contents

Release Notes for R2009b

1

1

Release Notes for R2009b

Highlights of R2009b

In this section...
"What's New in Release 2009b" on page 1-2
"New Capabilities for the MATLAB Product Family" on page 1-2
"New Capabilities for the Simulink Product Family" on page 1-3
"R2009b Products with License-Related Changes" on page 1-3
"Installation and Activation" on page 1-3
"Summary of Changes to Each Product" on page 1-3

What's New in Release 2009b

R2009b includes new features in MATLAB® and Simulink®, and updates and bug fixes to 83 other products. R2009b adds support for the 64-bit Mac platform. Subscribers to MathWorks™ Software Maintenance Service can download product updates. R2009b also includes enhancements to the License Center, the online tool for activating software and managing license and user information. Since R2008a, the MATLAB and Simulink product families require activation.

New Capabilities for the MATLAB Product Family

- Redesigned Help browser, access to the MATLAB Central File Exchange directly from MATLAB, and other desktop enhancements

- Expanded multicore support for functions in MATLAB and Image Processing Toolbox™, and parallel support for functions in Statistics Toolbox™

- New interface in Parallel Computing Toolbox™ for accessing and manipulating distributed arrays on a cluster

- Support for processing arbitrarily large image files in Image Processing Toolbox

- Support for search and retrieval of geographic datasets from Web Map Service (WMS) servers in Mapping Toolbox™

- Global settings to simplify arithmetic with fixed-point variables in Fixed-Point Toolbox™

New Capabilities for the Simulink Product Family

- Variable size signals and data in Simulink, Signal Processing Blockset™, and Embedded MATLAB™ code for simulation and code generation

- Model variants for managing design alternatives for Simulink and Real-Time Workshop®

- Turnkey PID controller blocks in Simulink and automated tuning with Simulink® Control Design™

- Reduced data copies with Real-Time Workshop and customizable matrix operations for embedded signal processing code generation

- Model Advisor Configuration Editor to manage and deploy configurations and custom checks in Simulink® Verification and Validation™

- New interactive compilation report for analyzing array sizes and other Embedded MATLAB code characteristics

R2009b Products with License-Related Changes

Several products have license-related changes in R2009b.

For details, see "R2009b Products with License-Related Changes" on page 1-33.

Installation and Activation

See "Installation and Activation" on page 1-35 for information about changes to the folder name checking performed by the Macintosh®, Linux®, and Solaris™ installers.

Summary of Changes to Each Product

See "Release Summary" on page 1-39 for a summary of what has changed for each product for R2009b, including whether the product has new features, bug fixes, and compatibility issues.

Summary of New Features

Note For information about potential issues for upgrading from R2009a, see "Compatibility Considerations" on page 1-36.

This section summarizes the major new features and enhancements introduced in R2009b for the following products:

"MATLAB 7.9" on page 1-6	"Simulink 7.4" on page 1-7
"Aerospace Blockset 3.4" on page 1-10	"Aerospace Toolbox 2.4" on page 1-10
"Bioinformatics Toolbox 3.4" on page 1-10	"Communications Blockset 4.3" on page 1-11
"Communications Toolbox 4.4" on page 1-11	"Control System Toolbox 8.4" on page 1-12
"Curve Fitting Toolbox 2.1" on page 1-12	"Data Acquisition Toolbox 2.15" on page 1-12
"Datafeed Toolbox 3.4" on page 1-12	"Econometrics Toolbox 1.2" on page 1-13
"Embedded IDE Link 4.0" on page 1-13	"Filter Design HDL Coder 2.5" on page 1-13
"Filter Design Toolbox 4.6" on page 1-14	"Financial Derivatives Toolbox 5.5" on page 1-14
"Financial Toolbox 3.7" on page 1-14	"Fixed-Income Toolbox 1.8" on page 1-15
"Fixed-Point Toolbox 3.0" on page 1-15	"Image Acquisition Toolbox 3.4" on page 1-15
"Image Processing Toolbox 6.4" on page 1-15	"Instrument Control Toolbox 2.9" on page 1-16
"Mapping Toolbox 3.0" on page 1-16	"MATLAB® Builder EX 1.2.13 (for Microsoft Excel)" on page 1-17

"Spreadsheet Link EX 3.1" on page 1-29	"Stateflow 7.4" on page 1-29
"Stateflow® Coder 7.4" on page 1-30	"Statistics Toolbox 7.2" on page 1-30
"Symbolic Math Toolbox 5.3" on page 1-30	"SystemTest 2.4" on page 1-31
"Target Support Package 4.0" on page 1-31	"Vehicle Network Toolbox 1.1" on page 1-31
"Video and Image Processing Blockset 2.8" on page 1-32	"xPC Target 4.2" on page 1-32

MATLAB 7.9

Development Environment

- New File Exchange desktop tool, providing direct access to user-contributed files on MATLAB Central

- Enhanced Plot Selector in the Workspace browser, providing access to additional plot types and customization of plot favorites

- Enhanced Current Folder browser, providing improved navigation, display, and searching for files

- Customizable keyboard shortcuts, including consistent defaults for the MATLAB Editor and Command Window

- Enhanced Help browser, providing more detailed search results with grouping by product and result type

- Expanded MATLAB file publishing, providing support for PDF as an output file format

Language and Programming

- Ability to specify unused input and output arguments to a function with the tilde (~) character

File I/O and External Interfacing

- `mmreader` function expanded to support Motion JPEG 2000 files

- New `Tiff` object to write tiled images and a broad set of metadata within TIFF files

- Expanded low-level HDF5 file access to support H5L, H5O, and H5DS interfaces

- Support for MATLAB scalar indexing into Microsoft .NET Framework arrays

Performance and Large Data Set Handling

- Ability to perform FFTs on vectors larger than 2 GB

- Multithreaded computation support for `sort`, `filter`, `bsxfun`, sparse matrix QR decomposition, gamma functions, and error functions

- Sparse matrix performance improvements for basic math, binary, and relational operators and exponential functions

For details, see the product-specific release notes.

Simulink 7.4

Component-Based Modeling

- Ability to configure model variants for efficiently managing design alternatives

- Enhanced library link management, making it easier to visualize and restore edited library links

- Model reference protected mode, enabling the sharing of models for simulation without exposing contents (requires Real-Time Workshop)

- Enhanced Simulink Manifest Tools to discover and analyze model variants, protected models, and Simscape files

- Enhanced S-Function Builder that supports bus signals for managing complex signal interfaces

Variable-Size Signals

- New ability to change signal sizes during execution, facilitating modeling of systems with varying environments, resources, and constraints

- Support for variable-size inputs and outputs in over 40 Simulink blocks, including many blocks from the Math Operations library

Data Management

- Enhanced `sim` command that saves all simulation results to a single object for easier management of simulation results

- New `Simulink.saveVars` function to save workspace variables to a MATLAB file

- Enhanced simulation restart capability with SimState feature, supporting common model configuration changes

Block Enhancements

- New turnkey PID Controller blocks with expanded simulation capabilities and automated tuning (requires Simulink Control Design)

- New EnumeratedConstant block and enhanced Switch-Case block that support enumerated variables

- Enhanced Relational Operator block that efficiently detects infinite, `NaN`, or finite signals for floating-point arithmetic

- Enhanced Lookup Table (n-D) block, supporting parameter data types that are different from signal data types

- Reduced parameter memory use for evenly spaced breakpoints in Prelookup and Lookup Table (n-D) blocks

- Enhanced Math Function block that directly supports reciprocal square root, `1/sqrt(u)`, for efficient computation

Embedded MATLAB

- Ability to create dynamically sized data in Embedded MATLAB Function blocks

- New report for analyzing compilation errors, array sizes, and target hardware compatibility of compiled data types in Embedded MATLAB Function blocks

- Ability to eliminate run-time checks from simulation code for faster simulation of Embedded MATLAB Function blocks and Stateflow charts

Simulation Performance

- Enhanced `sim` command improves compatibility with `parfor`-loops

- Enhanced timing resolution of fixed-step simulations by applying integer arithmetic to sample hit computations

- Enhanced Simulink Accelerator mode to support SimState feature for continuing simulations from a saved state

- Expanded Rapid Accelerator mode support for enumerations for root inputs and all fixed-point word lengths for parameters

User Interface Enhancements

- Enhanced Mask Editor that supports tabs and specification of data type, `min` and `max` parameters

- New Frequently Used Blocks tab in Library Browser and context menu item for adding commonly used blocks to models
- New Model Advisor Configuration Editor to manage and deploy Model Advisor configurations and custom checks (requires Simulink Verification and Validation)

For details, see the product-specific release notes.

Aerospace Blockset 3.4

- New Zonal Harmonic Gravity Model block for implementing zonal harmonic gravity model
- Support for FlightGear 1.9.1

For details, see the product-specific release notes.

Aerospace Toolbox 2.4

- New `gravityzonal` function for implementing zonal harmonic gravity model
- Support for FlightGear 1.9.1

For details, see the product-specific release notes.

Bioinformatics Toolbox 3.4

- Expanded next-generation sequencing support, including optimized short-read sequence alignment and the reading and writing of common file formats, such as FASTQ and SFF files
- New objects for storing microarray experimental results and annotations
- New heatmap visualization object with annotation support
- Enhanced visualizations for unrooted phylogenetic trees and clustergrams

- New method for cluster validation of phylogenetic trees

- New function for calculating high-resolution isotopic mass distribution

For details, see the product-specific release notes.

Communications Blockset 4.3

- New Error Vector Magnitude (EVM) measurement block that computes Root-Mean-Square, Maximum, and Percentile EVM measurements

- EVM measurement block normalization options, supporting popular communications standards

- New Modulation Error Ratio (MER) measurement block that computes Mean-Square, Minimum, and Percentile MER measurements

For details, see the product-specific release notes.

Communications Toolbox 4.4

- Expanded Error Vector Magnitude (EVM) measurement normalization options: average reference signal power, average constellation power, and peak constellation power

- New Adjacent Channel Power Ratio (ACPR) measurement for characterizing spectral regrowth in systems that use current and future wireless standards

- ACPR measurement that supports user-defined resolution bandwidth, window sidelobe attenuation, and arbitrary measurement filter

- New (bit, symbol, frame) error rate test console that accelerates communications system testing and design trade-off studies

- Option to use Parallel Computing Toolbox with Error Rate Test Console for simulation acceleration without code changes

For details, see the product-specific release notes.

Control System Toolbox 8.4

- Support for plant models containing delays or specified as frequency-response data (FRD) in the SISO Design Tool

- New automated PID tuning method in the SISO Design Tool

For details, see the product-specific release notes.

Curve Fitting Toolbox 2.1

- Ability to compute the first and second derivatives of a fitted surface

- Ability to compute the volume under a fitted surface

For details, see the product-specific release notes.

Data Acquisition Toolbox 2.15

- Support for National Instruments® data acquisition devices: USB-9263, USB-9264, WLS-9421, WLS-9472, WLS-9481, ENET-9421, ENET-9472, and ENET-9481

- Support for the following Measurement Computing™ Corporation devices: USB-3101FS, USB-1208HS, USB-1208HS-2AO, and USB-1208HS-4AO

For details, see the product-specific release notes.

Datafeed Toolbox 3.4

- Support for retrieving data from Reuters® Times Series One

- Support for retrieving data from Bloomberg® via ActiveX

For details, see the product-specific release notes.

Econometrics Toolbox 1.2

- Variance-ratio test for random walk

- KPSS stationarity test

- Enhanced Dickey-Fuller and Phillips-Perron unit root tests

For details, see the product-specific release notes.

Embedded IDE Link 4.0

- Enhanced Target Preference block with a more responsive user interface

- Support for Analog Devices™ Blackfin® 52x family

- Unified Idle Task, Memory Allocate, and Memory Copy blocks across IDEs

- Support for Update 5 of VisualDSP++® (VisualDSP++ 5.0.5)

- Support for ARM® processors in Green Hills® MULTI® IDE using free-running mode

- Support for Green Hills MULTI 5.0.5 and 5.1.2

For details, see the product-specific release notes.

Filter Design HDL Coder 2.5

- Support for RAM-based programmable coefficients for single-rate FIR filters

- Expanded support for complex input data and coefficients, including all IIR SOS filters and FIR filters

- Generation of a Simulink model for cosimulation of generated HDL code

For details, see the product-specific release notes.

Filter Design Toolbox 4.6

- Single-rate and multirate fixed-point FIR filter optimization with noise shaping to minimize or constrain coefficient wordlength and maximize stopband attenuation
- Support in `fdesign` and `filterbuilder` for parametric equalizer filter designs based on the quality factor or shelving slope parameter
- Support in `fdesign` and `filterbuilder` for multirate pulse shaping filters and zero-phase Nyquist equiripple filters
- Pulse shaping filter and comb filter support in the Simulink `dspfdesign` library
- Support in `filterbuilder` for peaking and notching IIR comb filters

For details, see the product-specific release notes.

Financial Derivatives Toolbox 5.5

- Support for basket options using Monte Carlo methods
- Business/252 day-count convention

For details, see the product-specific release notes.

Financial Toolbox 3.7

- Business/252 day-count convention
- Upgrade to bond price and yield functionality
- Upgrade to NYSE holidays

For details, see the product-specific release notes.

Fixed-Income Toolbox 1.8

- Business/252 day-count convention
- New functionality for bond futures price, yield, and duration calculations

For details, see the product-specific release notes.

Fixed-Point Toolbox 3.0

- New global `fimath` state that simplifies arithmetic with `fi` objects
- New `sfi` and `ufi` constructors for creating signed and unsigned `fi` objects
- Fixed-point support for MATLAB `conv` function
- Extended support for bit-shifting operations, including support for built-in integers
- Fixed-point Embedded MATLAB support for variable-sized signals

For details, see the product-specific release notes.

Image Acquisition Toolbox 3.4

- Support for custom `get` functions for hardware property values using the adaptor kit

For details, see the product-specific release notes.

Image Processing Toolbox 6.4

- New `blockproc` function that supports processing of arbitrarily large images
- Multithreaded implementations of `applylut`, `bwpack`, `bwunpack`, `imdilate`, `imerode`, and `imreconstruct` functions

- Performance improvements for `bwdist`, `imcomplement`, `imdilate`, `imerode`, `imfilter`, `improfile`, and `imrotate` functions

- Efficient display and navigation of very large NITF-files in the Image Tool

- Expanded `hough` function that enables specification of arbitrary theta search space, yielding faster results for narrower theta ranges

For details, see the product-specific release notes.

Instrument Control Toolbox 2.9

- Enhanced capabilities for interfacing with IVI-COM class compliant drivers

For details, see the product-specific release notes.

Mapping Toolbox 3.0

- Ability to retrieve customized geographic data sets and related metadata from Web Map Service (WMS) servers

- Built-in database of prequalified WMS servers and map layers for geographic and text-based search and selection

- New MATLAB objects encapsulating WMS servers, data layers, metadata, and map requests

- Expanded support for geographically referenced raster data

- Expanded support for GSHHS global coastline data, covering versions 1.4 and later

- Performance improvements for vector-to-raster data conversion

For details, see the product-specific release notes.

MATLAB Builder EX 1.2.13 (for Microsoft Excel)

- Redesigned Deployment Tool that facilitates navigation with cancellable progress dialog, fast loading of projects, and ability to add supporting files as folders

For details, see the product-specific release notes.

MATLAB Builder JA 2.0.4 (for Java language)

- Redesigned Deployment Tool that facilitates navigation with cancellable progress dialog, fast loading of projects, and ability to add supporting files as folders
- JRE™ autodetection expanded to include Web application servers for Microsoft® Windows
- Alternate graphics renderers, Z-buffer and OpenGL

For details, see the product-specific release notes.

MATLAB Builder NE 3.0.2 (for Microsoft .NET Framework)

- Redesigned Deployment Tool that facilitates navigation with cancellable progress dialog, fast loading of projects, and ability to add supporting files as folders
- Enhanced autogenerated documentation, including interface information for developers
- Enhanced reliability and performance of memory management in hosted applications such as ASP.NET and Microsoft Windows services
- Alternate graphics renderers, Z-buffer and OpenGL

For details, see the product-specific release notes.

MATLAB Compiler 4.11

- Redesigned Deployment Tool that facilitates navigation with cancellable progress dialog, fast loading of projects, and ability to add supporting files as folders

- Customizable MATLAB Component Runtime (MCR) startup message for console applications

- MATLAB Memory Shielding available for deployed applications, ensuring efficiently satisfied memory requests

For details, see the product-specific release notes.

MATLAB Distributed Computing Server 4.2

- New interface for accessing and manipulating distributed arrays on a pool of MATLAB workers

- Upgraded algorithms and enhanced visualization support for distributed arrays

- Enhanced MATLAB pool API, allowing dynamic adding or updating of the `FileDependencies` property while the MATLAB client is connected to a pool of workers

- Support for job templates in Windows® HPC Server 2008, enabling easier implementation and compliance with cluster-use policies for MATLAB jobs

For details, see the product-specific release notes.

MATLAB Report Generator 3.7

- Enhanced XML comparison report with new layout and controls to step through differences

For details, see the product-specific release notes.

Model-Based Calibration Toolbox 3.7

- New wizards to automate creating an optimization, tables, and tradeoffs from a model

- New API for creating and evaluating boundary models for constraining online Design of Experiments (DOE)

- Support for difficult diesel calibration problems by evaluating optimization objectives and constraints over different drive cycles

- Enhanced tools for analyzing and exporting multiobjective optimization results

- Ability to duplicate optimization constraints

For details, see the product-specific release notes.

Optimization Toolbox 4.3

- Enhanced `fmincon` interior-point algorithm recovery from evaluation failures in user-defined objective and constraint functions

- Clearer exit messages with links for more information for `fsolve`, `lsqnonlin`, and `lsqcurvefit` functions

For details, see the product-specific release notes.

Parallel Computing Toolbox 4.2

- New interface for accessing and manipulating distributed arrays on a pool of MATLAB workers

- Upgraded algorithms and enhanced visualization support for distributed arrays

- Enhanced MATLAB pool API, allowing dynamic adding or updating of the `FileDependencies` property while the MATLAB client is connected to a pool of workers
- Support for job templates in Windows HPC Server 2008, enabling easier implementation and compliance with cluster-use policies for MATLAB jobs

For details, see the product-specific release notes.

PolySpace Client for C/C++ 7.1, PolySpace Server for C/C++ 7.1

- New Report Generator that presents PolySpace results in PDF, HTML, and other output formats
- Enhanced Viewer that displays results with ToolTips containing the values of variables, operands, function parameters, and return values
- New Graphs (similar to concurrent access graphs) available for all global data

For details, see the product-specific release notes.

PolySpace Client for Ada 5.4, PolySpace Server for Ada 5.4

- Enhanced main-generator that considers the scope of a procedure and variable, improving error detection at the package level
- New Report Generator that presents PolySpace results in PDF, HTML, and other output formats
- New Graphs (similar to concurrent access graphs) available for all global data

For details, see the product-specific release notes.

Real-Time Windows Target 3.4

- Support for file I/O using packet and stream I/O blocks

- Support for pulse-width measurement mode for Counter Input block

- Support for Open Watcom 1.8

For details, see the product-specific release notes.

Real-Time Workshop 7.4

- Support for variable-size signals

- ASAP2 calibration file support for Model blocks and Two-Dimensional Lookup Table blocks

- Ability of Embedded MATLAB generated code to pass top-level arguments that are both inputs and outputs by reference without a copy

- Optimized Rate Transition block code

- Enhanced user guide to address typical code generation usage and workflows

For details, see the product-specific release notes.

Real-Time Workshop Embedded Coder 5.4

- Significantly reduced data copies

- Support for code variants by generating preprocessor directives from Model blocks with design variants

- Support for AUTOSAR client/server communication in the AUTOSAR target

- Expanded software- and processor-in-the-loop (SIL and PIL) code verification support for top model simulation, buses, and global data stores, and a Code Generation Verification API for equivalence testing

- Optimized target function library support for nonscalar operators, data conversion, shift left, and additional math functions

- Enhanced C++ encapsulation interface, providing more control over class definitions

- New modeling patterns documentation for generating popular C code constructs

For details, see the product-specific release notes.

RF Blockset 2.5

- Enhanced physical amplifier and physical mixer blocks, capturing frequency-dependent noise and broadening implementation of nonlinear distortion parameters

- New demo showing how to analyze radar systems that include RF and signal processing subsystems

For details, see the product-specific release notes.

RF Toolbox 2.6

- New `ispassive` function for testing passivity of S-parameters

- Expanded port-ordering schemes for S-parameter conversion functions, enabling more intuitive analysis of multi-port networks

- Enhanced `s2tf` function, allowing for calculation of power-wave gain for transfer functions

For details, see the product-specific release notes.

Robust Control Toolbox 3.4

- New `ulinearize` command to extract an uncertain linearization (USS model) from Simulink models with uncertain blocks

- New `dksyn` option to improve robust performance by accounting for real parameter uncertainty (mixed-mu synthesis)

- New `ucover` command to fit multiple LTI responses with one uncertain system

For details, see the product-specific release notes.

Signal Processing Blockset 6.10

- Support for variable sizing of signals for several Signal Processing Blockset blocks

- Enhanced Vorbis Decoder demo `dspvorbisdec` that illustrates variable sizing of signals

- Enhanced Spectrum Scope block that computes one-sided PSD in addition to two-sided PSD

- Enhanced Spectrum Scope and Periodogram blocks that support mean-square spectrum

- Context-sensitive help for block parameters available product-wide

For details, see the product-specific release notes.

Signal Processing Toolbox 6.12

- Embedded MATLAB support for select filter design and window-generation functions

- Enhanced `realizemdl` method that allows exportation of filter coefficients as variables, enabling tunability of filters in code generation

For details, see the product-specific release notes.

SimBiology 3.1

- Performance increase when repeatedly simulating a model with unchanged topology

- Enhanced desktop support for scanning, using Monte Carlo methods

- Support for copy and paste throughout the desktop

- Usability improvements for model building and debugging, including additional support for dynamically updated error indicators, M-lint indicators, and help for user-identified MATLAB code

- New functionality for reporting the status of a parameter fit when using nonlinear mixed effects

For details, see the product-specific release notes.

SimElectronics 1.3

- New generic rotary and linear actuator components that allow modeling of any load-speed characteristics

- Improved Servomotor block to allow better modeling of electrical losses

- New abstracted timer component for behavioral modeling of timer chips, such as the NE555

- Additional demos, including a behavioral model of a brushless motor and a model of an ARINC 429 data bus

For details, see the product-specific release notes.

SimEvents 3.0

- New support for conducting batch simulations of SimEvents models using the Rapid Simulation target of Real-Time Workshop

For details, see the product-specific release notes.

SimHydraulics 1.6

- Ten new blocks in the Directional Valves library that enable additional 4-way and 6-way valve configurations
- New Ball Valve with Conical Seat block in the Flow Control Valves library
- New Variable Head Two-Arm Tank and Variable Head Three-Arm Tank blocks in the Low-Pressure Blocks library

For details, see the product-specific release notes.

SimPowerSystems 5.2

- Enhanced Fuel Cell block to better represent cell dynamics
- Graphical user interface and standard cable parameters available for the `power_cableparam` function

For details, see the product-specific release notes.

Simscape 3.2

- Local solver support for each Physical Network
- New Pneumatic libraries for simulating pneumatic systems based on ideal gas laws
- Enhanced Simscape language, enabling the definition of intermediate terms in equations
- Full support for Accelerator mode and code generation for referenced models
- Model reference protected mode, enabling sharing of models for simulation without exposing contents (requires Real-Time Workshop)

For details, see the product-specific release notes.

Simulink 3D Animation 5.1

- Alternate mode of virtual scene viewer integrated with MATLAB figures as default on all platforms, except Linux

- Recognition of VRML files in MATLAB Current Folder browser, enabling convenient opening, editing, and playing of VRML files

- Enhanced performance of Orbisnap viewer in remote configuration

- New object for creating a new virtual reality figure

For details, see the product-specific release notes.

Simulink Control Design 3.0

- New GUI for automatic and interactive tuning of the new PID Controller blocks from the Simulink library

- New automated PID tuning method in the Simulink Compensator Design Task pane

- Ability to compute the frequency response of Simulink models using simulation

- Ability to specify the linearization of Simulink blocks as LTI models or Robust Control Toolbox uncertain models

- Support for plant models containing delays in the Simulink Compensator Design Task pane

- New `linlft` and `linlftfold` commands to more efficiently compute multiple linearizations of a large model under certain conditions

For details, see the product-specific release notes.

Simulink Design Optimization 1.1

- Support for optimization-based compensator design for plant models that contain delays or are specified as frequency-response data (FRD) in the SISO Design Tool

For details, see the product-specific release notes.

Simulink Design Verifier 1.5

- New Stateflow and Embedded MATLAB syntax for test and proof objectives, test constraints, and proof assumptions
- Support for enumerated signals and parameters
- Support for integer and fixed-point data types for Lookup Table and Lookup Table (2-D) blocks
- New option to stop simulation on proof violation

For details, see the product-specific release notes.

Simulink Fixed Point 6.2

- Discrete Transfer Function block and new PID block that intrinsically support fixed-point
- Enhanced Rapid Accelerator mode that supports parameters up to 128 bits
- Enhanced Lookup Table (n-D) block, supporting parameter data types that are different from signal data types
- Reduced memory use for evenly spaced breakpoints in Prelookup and Lookup Table (n-D) blocks
- Integer division option to handle net slopes that are reciprocals of integers, with corresponding Model Advisor check to improve code efficiency
- Enhanced Fixed-Point Advisor workflow
- New diagnostics to detect precision loss in fixed-point constants

For details, see the product-specific release notes.

Simulink HDL Coder 1.6

- Generation of a Simulink model for cosimulation of generated HDL code

- Additional Simulink blocks that support HDL code generation, including Radix-2 DIF Streaming FFT, Lookup Table (n-D), Triggered Subsystem, and Discrete FIR block

- Support for complex input data and coefficients in Biquad Filter and Digital Filter blocks

- Support for oversampling clock that runs at integer multiples of Simulink base rate

- Generation of multicycle path constraint information for use with synthesis tools

- HTML Code Generation Report that provides linkage from generated HDL code to requirement documents

- VHDL and Verilog syntax highlighting in MATLAB editor

For details, see the product-specific release notes.

Simulink Report Generator 3.7

- New System Design Description report from Simulink File menu for detailed documentation of models

- Enhanced XML comparison report with new layout, controls to step through differences, and ability to filter out nonfunctional differences

- Enhanced XML comparison algorithm with reduced memory consumption and improved matching for Simulink blocks and Stateflow objects

For details, see the product-specific release notes.

Simulink Verification and Validation 2.6

- Enhanced requirements highlighting and reporting
- New Model Advisor Configuration Editor to manage and deploy Model Advisor configurations and custom checks
- New and enhanced modeling standards checks for IEC 61508 and DO-178B
- New coverage for Simulink Design Verifier blocks: Test Objective, Proof Objective, Proof Assumption, and Test Condition
- New coverage reporting for variable-size signals

For details, see the product-specific release notes.

Spreadsheet Link EX 3.1

- Ribbon integration of Excel® 2007
- Cell context-sensitive menu support

For details, see the product-specific release notes.

Stateflow 7.4

- Ability to copy and paste Simulink function-call subsystems between Stateflow and Simulink
- New switch-case design pattern in Pattern Wizard
- Stateflow compilation status added to Simulink status bar progress indicator
- Ability to use more than 254 events in a chart
- Enhanced panning and selection of states and transitions when using Stateflow debugger

For details, see the product-specific release notes.

Stateflow Coder 7.4

- Ability to generate switch-case code statements from Stateflow flow graphs and Embedded MATLAB functions

For details, see the product-specific release notes.

Statistics Toolbox 7.2

- New parallel execution support for the `bootstrp`, `bootci`, `crossval`, and `jackknife` functions, and the `TreeBagger` class
- Conversion between tall and wide dataset arrays
- New capability in `nlmefit` function for monitoring or cancelling calculations
- New ability to read and write SAS® Transport (`.xpt`) files

For details, see the product-specific release notes.

Symbolic Math Toolbox 5.3

- Support for 64-bit Windows platform
- Enhanced solvers for second-order homogeneous linear ordinary differential equations, improving performance and handling of more equation types
- Support for incomplete Gamma function and exponential integral function in limit functions
- Enhanced simplification routines for `hypergeom`, `meijerG`, and `bessel` special functions

For details, see the product-specific release notes.

SystemTest 2.4

- Ability to view Probability Distribution test vector values before running tests
- Ability to use relative location and naming of generated results and report files
- Ability to stop simulations using test signal end time

For details, see the product-specific release notes.

Target Support Package 4.0

- Support for TI C6747 Starter Kit
- Support for TI Piccolo series of processors (C2802x)
- New device driver blocks for Analog Devices BF537 EZ-Kit Lite, including UART and ADC
- New device driver blocks for TI C5510DSK, including UART, ADC, and DAC

For details, see the product-specific release notes.

Vehicle Network Toolbox 1.1

- Support for Vector CANCardXLe

For details, see the product-specific release notes.

Video and Image Processing Blockset 2.8

- Expanded From Multimedia File block that supports additional video codecs

- New Template Matching Block with support for several match metrics and region-of-interest processing

- Support for variable sizing of signals for several Video and Image Processing Blockset™ blocks

For details, see the product-specific release notes.

xPC Target 4.2

- Enhanced file scopes that create files with dynamic names

- New .NET API that enables users to create user interfaces within the .NET environment

- Leveraging of multicore processors for background tasks

- Enhanced J1939 library that supports address claiming

- Enhanced UDP Send and Receive blocks that enable sending of variable sized packets

For details, see the product-specific release notes.

R2009b Products with License-Related Changes

The following products have license-related changes in R2009b. To use the latest version of each product, you must have a subscription to MathWorks Software Maintenance Service (SMS) as of R2009b.

- Econometrics Toolbox™
- EDA Simulator Link™ DS (for Synopsys® Discovery™)
- EDA Simulator Link IN (for Cadence Incisive®)
- EDA Simulator Link MQ (for Mentor Graphics® ModelSim®)
- Embedded IDE Link™ CC (for TI's Code Composer Studio™)
- Embedded IDE Link MU (for Green Hills MULTI)
- Embedded IDE Link TS (for Altium® Tasking)
- Embedded IDE Link VS (for Analog Devices™ VisualDSP++®)
- Target Support Package™ FM5 (for Freescale™ MPC5xx)
- Target Support Package IC1 (for Infineon® C166®)
- Target Support Package TC2 (for TI's C2000™DSP)
- Target Support Package TC6 (for TI's C6000™DSP)

Note Beginning with R2009a, new release DVDs no longer ship automatically with your MathWorks Software Maintenance Service subscription. You have two options to access product updates:

- Download from the MathWorks Web site
- Submit a DVD shipment request using the License Center

Econometrics Toolbox

As of R2009b, Econometrics Toolbox requires Financial Toolbox™.

EDA Simulator Link DS, EDA Simulator Link IN, EDA Simulator Link MQ

As of R2009b, EDA Simulator Link DS, EDA Simulator Link IN, and EDA Simulator Link MQ products have been merged into a new product, EDA Simulator Link, and will no longer be available for purchase separately.

Embedded IDE Link CC, Embedded IDE Link MU, Embedded IDE Link TS, Embedded IDE Link VS

As of R2009b, Embedded IDE Link CC, Embedded IDE Link MU, Embedded IDE Link TS, and Embedded IDE Link VS products have been merged into a new product, Embedded IDE Link, and will no longer be available for purchase separately.

Target Support Package FM5, Target Support Package IC1, Target Support Package TC2, Target Support Package TC6

As of R2009b, Target Support Package FM5, Target Support Package IC1, Target Support Package TC2, and Target Support Package TC6 products have been merged into a new product, Target Support Package, and will no longer be available for purchase separately. Target Support Package requires Embedded IDE Link.

Installation and Activation

In this section...

"New Installation Folder Name Checking on Macintosh, Linux, and Solaris Systems " on page 1-35

"FLEXnet License Manager Upgraded to Version 11.6.1" on page 1-35

New Installation Folder Name Checking on Macintosh, Linux, and Solaris Systems

The installer on the Macintosh, Linux, and Solaris systems now checks that the name you specify for the installation folder contains only supported characters.

Previously, the installer checked if the folder name contained any of a set of illegal characters; however, this set was not complete. In past releases, you could successfully install into a folder whose name contained illegal characters, but your installation would not run.

FLEXnet License Manager Upgraded to Version 11.6.1

The FLEXnet license manager software that is installed with the MathWorks products has been upgraded from version 11.6 to 11.6.1 with this release.

For customers with standalone licenses, this change requires no action. This information is provided for administrators of network licenses.

Compatibility Considerations

These topics summarize potential compatibility considerations when upgrading from R2009a to R2009b.

In this section...
"R2009b Compatibility" on page 1-36
"Compatibility for Each Product" on page 1-36
"Compatibility Considerations for New Functions and Models" on page 1-36

R2009b Compatibility

Refer to product-specific release notes for details on product-specific compatibility considerations when upgrading from R2009a to R2009b.

Compatibility issues that are reported after the product has been released are added to Bug Reports at the MathWorks Web site. Because bug fixes can sometimes result in incompatibilities, also review fixed bugs in Bug Reports for any compatibility impact.

Compatibility for Each Product

To see if any reported compatibility considerations exist for your product, see "Release Summary" on page 1-39. If the table shows that there are reported compatibility considerations for any of your products, follow the link to the product's release notes and refer to the summary table of compatibility considerations. From this table you can link to details. If you are upgrading from a release before R2009a, also see the entries in the table for earlier versions.

Compatibility Considerations for New Functions and Models

The introduction of new functions and models could cause a conflict with any of your own M-files, models, and variables having the same names. To identify and address name conflicts, see these topics in the MATLAB Programming Fundamentals documentation:

- Don't Use Function Names for Variables
- Naming a Function Uniquely

System Requirements

The major system requirements changes for R2009b follow.

In this section...
"New Platform Support" on page 1-38
"Support for Sun Java SE Update 12" on page 1-38

New Platform Support

R2009b adds support for these platforms:

- 64-bit Apple® Mac OS® X 10.5 on Intel® processors

Support for Sun Java SE Update 12

As of R2009b, the Sun™ Java™ Runtime Environment (JRE) has been updated to Java 6 Update 12 on Windows and Linux platforms. On Apple Macintosh platforms, the JRE is provided by OS X.

For more information on system requirements, visit Platforms & Requirements.

Release Summary

An asterisk (*) after a product name indicates the product has had a Web release since R2009a.

Product (Links to Release Notes)	New Features	Bug Fixes	Compatibility Considerations
MATLAB	Yes	Yes	Yes
Simulink	Yes	Yes	Yes
Aerospace Blockset™	Yes	No	No
Aerospace Toolbox	Yes	No	No
Bioinformatics Toolbox™	Yes	Yes	Yes
Communications Blockset™	Yes	Yes	No
Communications Toolbox™	Yes	Yes	Yes
Control System Toolbox™	Yes	No	No
Curve Fitting Toolbox™	Yes	Yes	No
Data Acquisition Toolbox™	Yes	Yes	No
Database Toolbox™	No	Yes	No
Datafeed Toolbox™	Yes	No	No
Econometrics Toolbox	Yes	No	Yes
EDA Simulator Link	Yes	Yes	No
EDA Simulator Link DS (transitioned to EDA Simulator Link)	N/A	N/A	N/A
EDA Simulator Link IN (transitioned to EDA Simulator Link)	N/A	N/A	N/A
EDA Simulator Link MQ (transitioned to EDA Simulator Link)	N/A	N/A	N/A
Embedded IDE Link	Yes	Yes	Yes

Product (Links to Release Notes)	New Features	Bug Fixes	Compatibility Considerations
Embedded IDE Link CC (transitioned to Embedded IDE Link)	N/A	N/A	N/A
Embedded IDE Link™ MU (transitioned to Embedded IDE Link)	N/A	N/A	N/A
Embedded IDE Link TS (transitioned to Embedded IDE Link)	N/A	N/A	N/A
Embedded IDE Link VS (transitioned to Embedded IDE Link)	N/A	N/A	N/A
Filter Design HDL Coder™	Yes	No	Yes
Filter Design Toolbox™	Yes	No	No
Financial Derivatives Toolbox™	Yes	Yes	No
Financial Toolbox	Yes	Yes	No
Fixed-Income Toolbox™	Yes	Yes	No
Fixed-Point Toolbox	Yes	Yes	Yes
Fuzzy Logic Toolbox™	No	Yes	No
Gauges Blockset™	No	No	No
Genetic Algorithm and Direct Search Toolbox™	No	No	No
Image Acquisition Toolbox™	Yes	Yes	No
Image Processing Toolbox	Yes	Yes	Yes
Instrument Control Toolbox™	Yes	Yes	No
Mapping Toolbox	Yes	Yes	Yes
MATLAB® Builder™ EX	Yes	Yes	Yes
MATLAB Builder JA	Yes	Yes	Yes
MATLAB Builder NE	Yes	Yes	Yes

Product (Links to Release Notes)	New Features	Bug Fixes	Compatibility Considerations
MATLAB® Compiler™	Yes	Yes	Yes
MATLAB® Distributed Computing Server™	Yes	Yes	Yes
MATLAB® Report Generator™	Yes	Yes	Yes
Model-Based Calibration Toolbox™	Yes	No	No
Model Predictive Control Toolbox™	No	Yes	No
Neural Network Toolbox™	No	Yes	No
OPC Toolbox™	No	No	No
Optimization Toolbox™	Yes	Yes	Yes
Parallel Computing Toolbox	Yes	Yes	Yes
Partial Differential Equation Toolbox™ (no release notes)	No	No	No
PolySpace® Client™ for C/C++ *	Yes	Yes	No
PolySpace® Server™ for C/C++ *	Yes	Yes	No
PolySpace Client for Ada	Yes	No	No
PolySpace Server for Ada	Yes	Yes	No
PolySpace® Model Link™ SL	Yes	Yes	No
PolySpace Model Link TL	Yes	Yes	No
PolySpace UML Link RH	Yes	No	No
Real-Time Windows Target™	Yes	Yes	No
Real-Time Workshop	Yes	Yes	No
Real-Time Workshop® Embedded Coder™	Yes	Yes	Yes
RF Blockset™	Yes	Yes	Yes
RF Toolbox™	Yes	Yes	No
Robust Control Toolbox™	Yes	Yes	Yes
Signal Processing Blockset	Yes	Yes	Yes

Product (Links to Release Notes)	New Features	Bug Fixes	Compatibility Considerations
Signal Processing Toolbox™	Yes	Yes	No
SimBiology®	Yes	Yes	Yes
SimDriveline™	No	No	No
SimElectronics®	Yes	No	No
SimEvents®	Yes	Yes	No
SimHydraulics®	Yes	Yes	No
SimMechanics™	No	Yes	No
SimPowerSystems™	Yes	Yes	Yes
Simscape™	Yes	Yes	Yes
Simulink® 3D Animation™	Yes	Yes	No
Simulink Control Design	Yes	Yes	No
Simulink® Design Optimization™	Yes	Yes	Yes
Simulink® Design Verifier™	Yes	No	No
Simulink® Fixed Point™	Yes	Yes	No
Simulink® HDL Coder™	Yes	Yes	Yes
Simulink® Report Generator™	Yes	Yes	Yes
Simulink Verification and Validation	Yes	Yes	Yes
Spline Toolbox™	No	No	No
Spreadsheet Link™ EX	Yes	No	No
Stateflow® and Stateflow® Coder™	Yes	Yes	Yes
Statistics Toolbox	Yes	Yes	No
Symbolic Math Toolbox™	Yes	Yes	Yes
System Identification Toolbox™	No	No	No
SystemTest™	Yes	Yes	Yes
Target Support Package	Yes	Yes	Yes

Release Summary

Product (Links to Release Notes)	New Features	Bug Fixes	Compatibility Considerations
Target Support Package FM5 (transitioned to Target Support Package)	N/A	N/A	N/A
Target Support Package IC1 (transitioned to Target Support Package)	N/A	N/A	N/A
Target Support Package™ TC2 (transitioned to Target Support Package)	N/A	N/A	N/A
Target Support Package TC6 (transitioned to Target Support Package)	N/A	N/A	N/A
Vehicle Network Toolbox™	Yes	Yes	No
Video and Image Processing Blockset	Yes	Yes	No
Wavelet Toolbox™	No	No	No
xPC Target™	Yes	Yes	Yes

1-43