Simulink® Control Design™ Release Notes

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Simulink® Control Design™ Release Notes

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Contents

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	Related Documentation at Web Site
Latest Version V3.1 (R2010a)	Yes Details	No	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation
V3.0 (R2009b)	Yes Details	No	Bug Reports Includes fixes	No
V2.5 (R2009a)	Yes Details	No	Bug Reports Includes fixes	No
V2.4 (R2008b)	Yes Details	No	Bug Reports Includes fixes	No
V2.3 (R2008a)	Yes Details	No	Bug Reports Includes fixes	No
V2.2 (R2007b)	Yes Details	No	Bug Reports Includes fixes	No
V2.1 (R2007a)	Yes Details	No	Bug Reports Includes fixes	No
V2.0.1 (R2006b)	Yes Details	No	Bug Reports Includes fixes	No
V2.0 (R2006a)	Yes Details	No	Bug Reports Includes fixes	No
V1.3 (R14SP3)	Yes Details	No	Bug Reports Includes fixes	No
V1.2 (R14SP2)	Yes Details	No	Bug Reports Includes fixes	No

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
V1.1 (R14SP1)	No	No	Fixed bugs	No
V1.0 (R14)	Yes Details	No	No bug fixes	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

The 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.

Version 3.1 (R2010a) Simulink Control Design Software

This table summarizes what's new in Version 3.1 (R2010a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation

New features and changes introduced in this version are

- "New Parallel Computing Support For Frequency Response Estimation" on page 4

- "New Commands Support Recomputing Frequency Response Estimation Results at Specific Frequencies" on page 5

- "New frest.simcompare Output Argument Returns Simulation Output Data From Linear System" on page 5

- "New Options in Simulink Results Viewer GUI for Viewing Frequency Response Estimation Results" on page 5

- "New Option for Labeling Bus Signal I/O Names in the SISO Design Task" on page 5

- "Existing Simulink Blocks Now Have Analytic Jacobians" on page 6

New Parallel Computing Support For Frequency Response Estimation

If you have the Parallel Computing Toolbox™ software installed, you can use parallel computing to speed up frequency response estimation.

For more information, see "Speeding Up Estimation Using Parallel Computing" in the Simulink® Control Design™ documentation.

New Commands Support Recomputing Frequency Response Estimation Results at Specific Frequencies

If you use the sinestream input signal for estimation, you can now recompute your frequency response estimation for only those specific frequencies that do not reach steady state. Previously, you had to redo the entire estimation if a few frequencies needed recomputing.

For more information, see "Time Response Not at Steady State".

New frest.simcompare Output Argument Returns Simulation Output Data From Linear System

This release provides enhanced `frest.simCompare` functionality, which allows the return of simulated output data. If your linear model uses state-space representation, you can also return the state vector.

For more information, see the `frest.simCompare` reference page.

New Options in Simulink Results Viewer GUI for Viewing Frequency Response Estimation Results

The Simulation Results Viewer GUI, which you display using `frest.simView`, now provides additional options for analyzing your frequency response estimation:

- You can now enable phase unwrapping in the frequency response plot. To unwrap phase, right-click the Bode plot, and select **Unwrap Phase**.

- You can also import frequency response estimation results into an open Simulation Results Viewer, which replaces the existing results. Previously, you had to open a new Viewer each time you viewed estimation results. To import results, select **File > Import** in the Simulation Results Viewer.

New Option for Labeling Bus Signal I/O Names in the SISO Design Task

You can now configure the SISO Design Task to automatically label model I/Os using bus signal names. Model I/O labels describe available loops in the Graphical Tuning tab and label response plots in the Analysis Plots tab of the

SISO Design Task GUI. Previously, labels for bus signals were based on the block and port path, or the Simulink signal name.

To use this option, select **Tools > Options** in the SISO Design Task GUI, and enable **Use bus signal names to label model I/O**.

Existing Simulink Blocks Now Have Analytic Jacobians

The following Simulink blocks now have Analytic Jacobians, which are optimized for memory consumption in large-scale models:

- Switch
- Multiport Switch
- Math Function (Transpose and Hermitian Transpose)

For more information on each block, see the block reference pages.

Version 3.0 (R2009b) Simulink Control Design Software

This table summarizes what's new in Version 3.0 (R2009b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation

New features and changes introduced in this version are

- "New GUI for Tuning New PID Controller Blocks" on page 7

- "New Automated PID Tuning Algorithm" on page 8

- "Ability to Compute Frequency Response of Simulink Models" on page 8

- "Ability to Specify the Linearization of Simulink Blocks" on page 8

- "Ability to Design Compensators for Plant Models With Time Delays" on page 8

- "New Commands to More Efficiently Compute Multiple Linearizations" on page 9

- "Ability to Set Default Plot Type for Linear Analysis Results from GUI" on page 9

New GUI for Tuning New PID Controller Blocks

You can automatically tune the new Simulink PID Controller blocks in the PID Tuner GUI R2009b introduces. You launch the PID Tuner directly from the PID block dialogs boxes. These blocks are available in the Continuous and Discrete Simulink libraries.

For more information on tuning PID Controller using the PID Tuner, see "Automatic PID Tuning".

New Automated PID Tuning Algorithm

You can now tune compensators using a new automated PID tuning algorithm called Robust Response Time, which is available in the SISO Design Task. You specify the open-loop bandwidth and phase margin, and the software computes PID parameters to robustly stabilize your system.

For information on tuning compensators using automated tuning methods, see "Completing the Design".

Ability to Compute Frequency Response of Simulink Models

You can now compute the frequency response of a Simulink model using simulation. You use new commands to easily create input signals and simultaneously simulate and estimate the frequency response without changing your model. You can also use this capability to validate the accuracy of exact linearizations.

For more information on computing the frequency response of Simulink models, see "Frequency Response Estimation of Simulink Models".

Ability to Specify the Linearization of Simulink Blocks

You can now specify the linearization of Simulink blocks, subsystems, and model references without having to replace any block in your model. You can specify the linearizations as LTI models or Robust Control Toolbox uncertain models.

For more information on specifying linearization results, see "Configuring the Linearization of Specific Blocks and Subsystems".

Ability to Design Compensators for Plant Models With Time Delays

You can now design compensators for plants with exact time delay representations. Previously, you had to specify a Padé approximation before designing compensators.

For more information on designing compensators for plants with time delays, see "Designing Compensators for Plants with Time Delays".

New Commands to More Efficiently Compute Multiple Linearizations

You can now more efficiently compute multiple linearizations for large models when only a few blocks or model references change per linearization. You linearize the fixed portion of the model once using `linlft` and linearize the varying portion multiple times. Then, you combine the results using `linlftfold` to obtain linearizations equal to those you would receive if you linearized the entire model multiple times.

For more information, see the `linlft` and `linlftfold` reference pages.

Ability to Set Default Plot Type for Linear Analysis Results from GUI

You can now set the default plot type for viewing linear analysis results computed in the Control and Estimation Tools Manager. This setting applies to all future Control and Estimation Tools Manager sessions.

To set this option in the Simulink Control Design Preferences, select **File > Preferences** in the Control and Estimation Tools Manager.

Version 2.5 (R2009a) Simulink Control Design Software

This table summarizes what's new in Version 2.5 (R2009a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "Ability to Generate MATLAB Code from the GUI for Creating Operating Points and Linearizing Models" on page 10
- "Ability to Tune Additional Blocks" on page 10
- "New Option for Labeling Bus Signal I/O Names in Linearization Results" on page 11

Ability to Generate MATLAB Code from the GUI for Creating Operating Points and Linearizing Models

You can now generate MATLAB code reflecting the configuration in the GUI when creating operating points and linearizing models.

For information on how to generate code, see the following sections in the Simulink Control Design documentation:

- "Creating Operating Points"
- "Linearizing at an Operating Point"

Ability to Tune Additional Blocks

You can now tune the following blocks:

- Blocks that you discretized using the Simulink Model Discretizer
- Blocks in the Simulink Extras library that specify initial states or outputs

For information about how to tune these blocks, see "Selecting Blocks to Tune" in the Simulink Control Design documentation.

New Option for Labeling Bus Signal I/O Names in Linearization Results

You can now compute linear models that show the bus signal names for linearization I/O points located on buses. You can select this option using the following:

- Linearization Options GUI

  See "Choosing Linearization Settings and Algorithms" in the *Simulink Control Design User's Guide*.

- `linoptions` command

  See the `linoptions` reference page.

Version 2.4 (R2008b) Simulink Control Design Software

This table summarizes what's new in Version 2.4 (R2008b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "New Upsampling Option for Rate Conversion When Linearizing Simulink Models" on page 12

- "Ability to Specify State Order of Linearized Models from the Command Line" on page 13

- "Ability to Filter the Linearization Inspector to Show Blocks in the Linearization Path" on page 13

- "Ability to Disable the Calculation of Linearization Diagnostics and Inspector Data in the GUI" on page 13

New Upsampling Option for Rate Conversion When Linearizing Simulink Models

Version 2.4 includes an upsampling rate conversion method for linearization. This method upsamples discrete-time LTI systems at any sampling rate that is an integer-value-times faster than the sampling rate of the original system. You can select the upsampling rate conversion method in the following ways:

- Using the linearization options GUI

- From the command line using `linoptions`

For more information on the upsampling rate conversion method, see "Choosing Linearization Settings and Algorithms" and the `linoptions` reference page.

Ability to Specify State Order of Linearized Models from the Command Line

You can now specify the order of the states in your linearized model directly from the command line using the `linearize` command. Previously, you could only specify state order using the GUI.

For more information on specifying state order from the command line, see the `linearize` reference page.

Ability to Filter the Linearization Inspector to Show Blocks in the Linearization Path

You can now filter the list of blocks in the Linearization Inspector to show only the blocks in the linearization path. This filtering makes it easier for you to find blocks in the linearization path that you want to inspect.

For information using the Linearization Inspector to inspect blocks in the linearization path, see "Inspecting the Linearization Results Block by Block".

Ability to Disable the Calculation of Linearization Diagnostics and Inspector Data in the GUI

You can now disable the calculation of the linearization inspector and diagnostics information when you linearize using the GUI. This capability allow you to choose when you want to calculate diagnostic information.

For more information on disabling the linearization inspector, see "Choosing Linearization Settings and Algorithms".

Version 2.3 (R2008a) Simulink Control Design Software

This table summarizes what's new in Version 2.3 (R2008a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "New Diagnostic Messages Help You Troubleshoot Linearization Results" on page 14

- "Ability to Find Operating Points for Simscape Models" on page 15

- "Updated Error and Warning Message System" on page 15

New Diagnostic Messages Help You Troubleshoot Linearization Results

You can now view diagnostic messages for your linearized model that help you diagnose and troubleshoot linearization results. These messages identify blocks in your model that encounter the following block issues during linearization:

- Blocks that have been marked as not supported for linearization

- Blocks with linearization configuration warning messages

- Blocks without pre-programmed exact Jacobian that linearize using numerical approximation

For more information on diagnostic messages, see "Diagnosing Blocks" in the *Simulink Control Design User's Guide*.

Ability to Find Operating Points for Simscape Models

You can now find operating points for models that include Simscape™ and SimHydraulics® blocks using the Simulink Control Design `findop` command.

For more information on finding operating point for Simscape Models, see the Simscape documentation.

Updated Error and Warning Message System

The Simulink Control Design error and warning IDs and messages have been updated. If you use error and warning IDs in your code, you must update your code to reflect the new IDs.

Version 2.2 (R2007b) Simulink Control Design Software

This table summarizes what's new in Version 2.2 (R2007b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "Ability to Linearize Models with Model-Reference Blocks by Any Linearization Method" on page 16
- "Ability to Design Compensators for Models Containing Model-Reference Blocks" on page 17
- "Ability to Generate Linearized Models with Exact Time-Delay Representations" on page 17
- "Ability to Linearize Periodic Function-Call Subsystems" on page 17

Ability to Linearize Models with Model-Reference Blocks by Any Linearization Method

You can now perform any type of linearization for models containing Model blocks that reference other Simulink models.

Previously, you could only perform numerical perturbation linearization for models containing Model blocks. Now, you can also perform block-by-block linearization for such models when you set the simulation mode of the Model blocks to Normal.

For more information on linearizing models containing model-reference blocks, see "Model Reference Blocks" in the *Simulink Control Design User's Guide*.

Ability to Design Compensators for Models Containing Model-Reference Blocks

You can now design compensators for tunable blocks inside external models referenced by your model. Your model references such external models by using Model blocks. You can also update the tunable blocks in the external model with the new compensator designs.

To view and select tunable blocks for compensator design from the referenced model, set the simulation mode of the Model block to Normal.

For more information about the types of blocks that you can tune, see "Selecting Blocks to Tune" in the Simulink Control Design documentation.

Ability to Generate Linearized Models with Exact Time-Delay Representations

You can now use the Simulink Control Design software to compute linearized models with exact time-delay representations. Time delays in the original nonlinear model can result from any of the following blocks:

- Transport Delay
- Variable Time Delay
- Variable Transport Delay
- Unit Delay
- Integer Delay

Previously, you could only achieve approximate linearizations of models with continuous time delays using a Padé approximation.

For more information on linearizing models with time delays, see "Linearizing Models with Time Delays" in the *Simulink Control Design User's Guide*.

Ability to Linearize Periodic Function-Call Subsystems

You can now linearize periodic function-call subsystems with a constant sample time as discrete subsystems. You must set the sample time of the

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function-call trigger block to equal the sample time of the function-call generator block.

For more information on function-call subsystems, see "Function-Call Subsystems" in the Simulink documentation.

Version 2.1 (R2007a) Simulink Control Design Software

This table summarizes what's new in Version 2.1 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "Ability to Linearize Using an Operating Point Specified Directly in a Model" on page 19
- "Ability to Capture Linearization Snapshots in GUI" on page 20
- "Ability to Perform Control Design at Snapshots in GUI" on page 20
- "Ability to Retrieve Stored Compensator Designs" on page 20

Ability to Linearize Using an Operating Point Specified Directly in a Model

You can use the Simulink Control Design software to linearize around any operating point that you specify directly in a Simulink model. This capability allows you to make changes to a model and then perform a linearization around the newly specified operating point with the click of a single button. Previously, this same task required two steps: creating a new operating point and then linearizing around this operating point.

There are two ways to linearize around an operating point specified directly in the model:

- From the Control and Estimation Tools Manager, as described in "Linearizing at a Simulink Model Operating Point" in the *Simulink Control Design User's Guide*.
- Using `linearize`. For more information, see `linearize` in the reference pages.

Ability to Capture Linearization Snapshots in GUI

You can use the Control and Estimation Tools Manager to linearize at snapshots of your model operating point at the following simulation points:

- Specified simulation times, such as when the simulation reaches a steady state solution, as described in "Linearizing at Specified Simulation Times" in the *Simulink Control Design User's Guide*.

- Events during a specified simulation interval, as described in "Linearizing at Simulation Events" in the *Simulink Control Design User's Guide*.

As in prior releases, you can use `linearize` to perform linearization at snapshots in your model operating point, as described in `linearize` in the reference pages.

Ability to Perform Control Design at Snapshots in GUI

You can use the Control and Estimation Tools Manager to perform control design at snapshots of your model operating point at the following simulation points:

- Specified simulation times, such as when the simulation reaches a steady state solution, as described in "Creating Operating Points at Specified Simulations Times" in the Simulink Control Design documentation.

- Events during a specified simulation interval, as described in "Creating Operating Points at Simulation Events" in the Simulink Control Design documentation.

Ability to Retrieve Stored Compensator Designs

When you design a compensator using the SISO design tool, you can store the current design and then continue making changes to this design. A new button called **Retrieve Design** lets you retrieve the stored design at any time by undoing the design changes you made since you last stored the design. For more information on retrieving stored compensator designs, see "Storing and Retrieving Designs" in the Simulink Control Design documentation.

Version 2.0.1 (R2006b) Simulink Control Design Software

This table summarizes what's new in Version 2.0.1 (R2006b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	No	Bug Reports Includes fixes	No

Version 2.0 (R2006a) Simulink Control Design Software

This table summarizes what's new in Version 2.0 (R2006a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

Compensator Design in Simulink Is Now Supported

This release provides new tools to streamline the workflow for designing Single-Input Single-Output (SISO) control loops directly in Simulink. In previous releases, designing a compensator was a multistep process that involved several tools.

The new tools support any linearizable control architecture, such as single loops, multiple loops, and cascaded loops. With the new tools, you simply select the blocks you want to tune. Then, the Simulink Control Design software automatically analyzes your model to identify the relevant control loops and opens a preconfigured session of the SISO Design Tool (in the Control System Toolbox™ software). For more information, see "Designing Compensators" in the Simulink Control Design documentation.

Supported tunable SISO Simulink blocks include Gain, Transfer Function, Zero-Pole-Gain, State-Space, and PID blocks.

In the SISO Design Tool you can

• Graphically tune multiple SISO loops in a single GUI.

• Gain visual insight into loop interactions and coupling effects.

• Focus the analysis on a specific loop in a multiloop design by removing the effect of other feedback loops.

- Generate first-cut compensator designs using systematic design algorithms, such as Ziegler-Nichols PID tuning, IMC design, or LQG design.

- Optimize linear responses to meet time and frequency-based design constraints (requires the Simulink® Response Optimization™ software).

- Directly tune Simulink block parameters, such as PID gains, zero-pole-gain representations, and masked blocks.

- Tune continuous or discrete control loops.

- Examine the closed-loop response of any portion of a model.

After a design is completed, you can write the tuned parameter values back to your model for verification with the full nonlinear system.

Version 1.3 (R14SP3) Simulink Control Design Software

This table summarizes what's new in Version 1.3 (R14SP3):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "Control and Estimation Tools Manager Enhanced" on page 24

- "Support for Operating Point Search and Linearization of Models with Model Reference Blocks" on page 24

Control and Estimation Tools Manager Enhanced

You can copy and edit operating points within the Control and Estimation Tools Manager. For more information on this feature, see "Copying Operating Points" in the *Simulink Control Design User's Guide*.

You can initialize a model for simulation using operating points from within the Control and Estimation Tools Manager. For more information on this feature, see the example in "Validating Exact Linearization Results" in the *Simulink Control Design User's Guide*.

Support for Operating Point Search and Linearization of Models with Model Reference Blocks

You can linearize and compute operating points for models that reference other models using the Model block. Linearization of model reference models must use the numerical perturbation linearization algorithm. This algorithm accepts state and input perturbation values in the form of an operating point object. For more information on this feature, see the examples in "Example: Linearizing a Model Using Numerical-Perturbation at the MATLAB Command Line" and "Example: Linearizing a Model Using

Numerical-Perturbation in the GUI" in the *Simulink Control Design User's Guide*.

Version 1.2 (R14SP2) Simulink Control Design Software

This table summarizes what's new in Version 1.2 (R14SP2):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports Includes fixes	No

New features and changes introduced in this version are

- "Context-Sensitive Help Added" on page 26
- "View Linearizations in the Control and Estimation Tools Manager" on page 26
- "Discretization Methods Added" on page 27
- "List of Blocks with Preprogrammed Analytic Jacobians Added" on page 27
- "Block Name Readability Improved" on page 27

Context-Sensitive Help Added

Access context-sensitive help for the Linearization, Operating Point Search, and Linearization State Ordering Options window of the Control and Estimation Tools Manager. To access help on a field within the options window, right-click the option's label and select **What's this?** from the context menu. Help for the option will appear in this window.

View Linearizations in the Control and Estimation Tools Manager

You can view state space, transfer function, and zero-pole gain representations of linearized models within the Control and Estimation Tools Manager without exporting to the workspace. These linearized models appear in the linearization summary pane of the Control and Estimation Tools Manager.

Discretization Methods Added

You can select from three different discretization methods for linearization of multirate and hybrid models.

List of Blocks with Preprogrammed Analytic Jacobians Added

You can view a complete list of blocks indicating which blocks have preprogrammed analytic Jacobians for use with the block-by-block analytic linearization algorithm. This list is in the "Linearizing Individual Blocks Using Analytic Linearization" section of the Simulink Control Design documentation.

Block Name Readability Improved

You can use either truncated block names or full block names in the state space matrices of a linearized model, and within the LTI Viewer, to improve readability.

Version 1.1 (R14SP1) Simulink Control Design Software

This table summarizes what's new in Version 1.1 (R14SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	No	Fixed bugs	No

Version 1.0 (R14) Simulink Control Design Software

This table summarizes what's new in Version 1.0 (R14):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	No bug fixes	No

New features and changes introduced in this version are

About the Simulink Control Design Software

The Simulink Control Design software provides tools for the linearization of control systems and models. A graphical user interface (GUI) simplifies the tasks of specifying operating conditions, linearizing the model, and analyzing the results. Linearized models often facilitate system analysis and compensator design. This is useful in many industries and applications, including

- Aerospace: flight control, guidance, navigation

- Automotive: cruise control, emissions control, transmission

- Equipment manufacturing: motors, disk drives, servos

The Simulink Control Design software improves upon previous Simulink linearization tools by providing more options for computing operating conditions, allowing open loop analysis without the removal of feedback loops, and including a linearization inspector and debugger. Linearization projects are easier to manage with the new Control and Estimation Tools Manager. Furthermore, the Control System Toolbox software features, such as the LTI Viewer, are integrated with the Control Designer software to improve control system analysis and design.

Key Features Introduced

Key features of the Simulink Control Design software include the ability to

- Specify linearization input, output, and open loop analysis points using right-click menus

- Perform open loop analysis without deleting feedback loops

- Extract operating conditions from a simulation

- Compute operating conditions by optimization (trimming)

- Create output constraints for trim analysis

- Linearize individual blocks using context menus

- Inspect and debug results of the linearization

- Identify blocks in a model that contribute to a linearization

- Export results to the MATLAB workspace

- Manage linearization projects, compute operating conditions, and perform linearization with a graphical user interface (GUI)

- Use improved functions at the command line for linearization and trim analysis

Compatibility Summary for Simulink Control Design 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 **V3.1 (R2010a)**	None
V3.0 (R2009b)	None
V2.5 (R2009a)	None
V2.4 (R2008b)	None
V2.3 (R2008a)	None
V2.2 (R2007b)	None
V2.1 (R2007a)	None
V2.0.1 (R2006b)	None
V2.0 (R2006a)	None
V1.3 (R14SP3)	None
V1.2 (R14SP2)	None
V1.1 (R14SP1)	None
V1.0 (R14)	None