



Release Notes

Version 2.5

March 2009

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acsIX Release Notes

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Chapter 1 Introduction

These release notes refer to the acsIX family of products Version 2.5 released in March 2009.

Prior to the current release, these products consisted of:

acsIXtreme - Software application providing model development, execution, and analysis of computer simulations of continuous dynamic systems and processes.

acsIXpress - Software application providing execution and analysis of computer simulations of continuous dynamic systems and processes. Models developed using acsIXtreme can be executed and analyzed with acsIXpress.

acsIXtreme Optimum - An enhanced version of acsIXtreme that includes analysis functions for parameter estimation, min/max optimization, sensitivity analysis, and Monte Carlo simulation.

acsIXpress Optimum - An enhanced version of acsIXpress that includes analysis functions for parameter estimation, min/max optimization, sensitivity analysis, and Monte Carlo simulation.

As of present version, the acsIXtreme, acsIXpress, and OPTIMUM products have been consolidated into a single product, now called acsIX.

In addition to the consolidation of products, new features and bug fixes have been introduced in this version as described in the following sections.

Chapter 2 acsIX Help and Documentation

acsIX incorporates an extensive electronic Help facility. acsIX Help is accessed through the Help menu or by clicking the Help toolbar icon.

The following is a brief description of each manual included in the acsIX Help facility:

acsIX Getting Started Guide

This manual provides basic information on the installation and registration of the software. Included basic examples are designed to verify installation and functionality of the software while introducing fundamental steps such as creating Workspaces, Projects, and Block Diagrams, compiling models, and basic analysis such as plotting.

User's Guide - Introduces the user to the acsIX Integrated Design Environment (IDE), presents an overview of simulation workflow using both CSL and Block Diagram modeling, describes analysis functions associated with plotting, exporting, and printing data, and introduces advanced topics such as debugging, managing block libraries of PowerBlocks, and external C and Fortran code with models. Several appendices are provided which include an overview of the Simulation API, mathematical background, file types, error messages, and details on editing plots.

Model Development Example Projects - Introduces the user to the acsIX development environment through numerous example projects aimed specifically at developing the user's ability to develop useful models.

Model Analysis Example Projects - Introduces the user to acsIX's analysis capabilities through numerous example projects aimed specifically at the analysis of models.

Language Reference Manual - Provides a detailed overview of the Continuous Simulation Language (CSL), syntactical information, the programming elements which comprise the CSL modeling language, the use of macros, and acsIX system symbols.

Command Reference Manual - Presents detailed syntactical information on commands for control of a simulation and analysis of simulation data using functions, M-Files, and scripts.

The full text of the acsIX Getting Started Guide, User Guide, Language Reference Manual, and Command Reference Manual are available through the acsIX help facility. In addition, PDF files are available in the Documentation folder under the acsIX installation directory.

MC Modeler User's Guide – Introduces the user to the MC Modeler application, which is used to create statistical models for performing Bayesian inference studies using MCMC sampling techniques.

Optimum User's Guide – Introduces the user to acsIX OPTIMUM features, which include Parameter Estimation, Min/Max analysis, Sensitivity studies and Monte-Carlo analysis.

ACSL 11.8 Migration Guide - Presents the procedures for migrating legacy ACSL 11.8 model source code and supporting files for use within acsIX.

Release Notes – Provides information specific to the current release, including overview of improvements, documentation information, installation information, known issues and technical support information.

2.1 Installation

Chapter 2 of either Getting Started Guide contains detailed instructions on the installation of both Single User Licenses (SUL) and Floating Network Licenses (FNL) of acsIX. The first time acsIX is installed a 30 day demonstration license is provided. By installing acsIX, the Licensee agrees to all terms of the End User License Agreement (EULA). For license information or questions send email to sales@acslx.com.

For installation support contact support@acslx.com or to purchase the acsIX software contact sales@acslx.com. For more information on acsIX and appropriate contact information go to www.acslx.com.

Chapter 3 New Features for acsIX

Version 2.5

The following section describes new features introduced since the last release.

3.1 MC Modeler Statistical Modeling Tool

A new modeling language is available in acsIX which extends the M language with operators for designating models based on statistical distributions. These statistical models are sampled using the acsIX MCMC functions. Newly added MCMC samplers in acsIX include Adaptive Metropolis, Delayed Rejection, and Differential Evolution Monte Carlo.

Global Sensitivity Analysis

3.2 Global Sensitivity Analysis

A collection of M functions is now included with the acsIX Optimum suite of tools which implements Global Sensitivity Analysis (GSA) using the Fourier Amplitude Sensitivity Test (FAST) and Extended Fourier Amplitude Sensitivity Test (EFAST) techniques. These algorithms estimate model output variability arising from variation in model inputs over the entire parameter space, and account for second and higher-order interaction effects between the parameters. The GSA functions complement the local sensitivity analysis features which have been part of acsIX Optimum since the initial release.

3.3 Upgrade of all User Interface Components to .Net 3.0

All user interface components of acsIX have been upgraded to work with the Microsoft .Net Framework 3.0, including the IDE, code editors and plotting utilities. .Net 3.0 include numerous stability and performance improvements over .Net 1.1.

3.4 Linear Analysis

M functions for linearization and analysis of models developed in acsIX are now available, including functions for the following:

- Computation of Jacobian elements (model state space) using numerical differentiation
- Conversion to/from multiple model representations: state space, transfer function, zero-pole-gain
- Generation of Bode, Nichols and Nyquist plots
- Conversion between various units: gain/decibels, radians/degrees
- Performing trim of system (i.e., adjust states to drive derivatives to zero)

Fixed Issues

- The following sections describe known issues that have been fixed for this release.
- Fixed bug in Nelder-Mead opt alg which was causing more iterations than necessary
- Fixed bug in file browser which caused sporadic crash when exiting program
- Fixed bug in plot control which was causing many temporary files to get created, but not deleted
- Upgraded to latest versions of Syncfusion and TeeChart components
- Upgraded to .Net framework v 3.5
- Changed various labels on UI from acsIXtreme to acsIX
- MC Modeler properties window should show settings for active MC document
- Fix to mhratio: check for NaN current parm value
- Added a "debug output" flag to MC Modeler... use flag to dump info on each iteration
- Made change to wishart distributions to force symmetry
- Made change to wishpdf to check for positive definite X
- Made fix to mvnormlpdf to check for inputs which needed to be transposed
- Fixed crash caused by loading time histories from RRR file when at breakpoint in a debug run
- Added GSA functions to put titles on plots
- Added code to GSA function to use time as x-axis var on plots
- Updated icon on main form of MC Modeler
- Added various MC Modeler semantic checks:
 - var used > 1 time on LHS in stochastic statement (except observed vars)
 - subscripted var on LHS not dimensioned
 - more informative output for sorting errors

- no interval on unbounded distributions
- warning on unrecognized distribution
- warning if no likelihood specified
- Cosmetic changes to report views after opt runs: made background white; turned off word wrap on RTF boxes
- Fixed parser error in MC Modeler: wasn't parsing negative sign on certain literals
- Fixed certain M functions which had problems with complex values
- Fixed MC Modeler problem with code gen for unary minus
- MC Modeler: added element-wise ops: ./ and .*
- Fixed problems with watch variable window: button removes 2 entries; get <simulation not loaded...> when opening a project with breakpoints, even if sim has been built
- Fixed problems with MC Modeler Windows 2003 was not finding syntax.xml and intellisense.xml
- Fixed bug in mcmc.m: line 88, "globa" typo
- Fixed problem when starting interconsole from toolbar, it can't find toolbox entries because it starts in wrong folder
- Fixed MC Modeler crash on certain clean machine installs
- Added M functions to show and close UI windows: use uiremove() and uicontrol("", 0) (empty "type" string)
- Fixed broken help link in beta installer
- Remove axoptions.cfg that was in the beta installer by mistake
- Fixed crash on close of app on certain systems
- Fixed crash when starting acsIX on 64-bit Vista
- Fixed problems with the title and sertitle M functions
- Add showplot, closeplot M functions
- Fixed MC Modeler problem: getPreds is included in evalPriors and samplePriors even when pred are only used in likelihood calculations

- Fixed MC Modeler problem: need to have pchains as input to runmcmc() when using alg 2 (mvnorm proposal)
- Fixed some MCMC functions: unintended debugging info is printed when using alg 2 (mvnorm proposal with prev chains)
- Added Delayed Rejection flag to MC Modeler sampler properties
- Added logic to MC Modeler to save translation settings into <filename>.mcx
- Changed MC Modeler to create empty model when starting
- Fixed mvnorm: Cholesky factorize S when used as input

Chapter 4 Known Issues

The following sections describe known issues. Please submit any additional Issues and Change Requests (CR) to Technical Support via email to support@AEgisTG.com.

4.1 Quote-delimited Comments

Quote-delimited comments in CSL code cannot be put inside of parenthesized expressions, else the translator will assume that it might be an argument to a macro and will leave it in place.

4.2 Cut, Copy and Paste in Block Diagram

The Block diagram Window does not currently support the ability to Cut, Copy and Paste (Ctrl-X, C, and V).

Work Around:

- (1) A user defined block library can be created. The block that is desired to be copied can be drag and dropped into the Block Diagram. or
- (2) A new block can be created and the CSL/GSL code can be cut and pasted from the code editor window.

4.3 Using Watch Window for Array Data Types

The watch window does not support the ability to watch individual array element values. If an array variable is specified in the watch window, the value of the first element of the array is displayed.

4.4 Use of Large Fonts

On Windows 2000 Operating System if a computer has the Display Font Size set to “**Large Fonts**”, the user may experience screens with words that appear to be cutoff.

Work Around:

- Change the “Large Fonts” setting to “**Small Fonts**”. This is located at **Start > Settings > Control Panel > Display > Settings > Advanced**.

4.5 Watch Variable Inconsistency

Watch window variables are displayed anytime the simulation stops. The three stop conditions that generally occur are break points set in debug mode, manual intervention (e.g. stop button pressed), or a normal termination of the simulation (e.g. **TERMT** condition is met). The variables values displayed in the watch window are sometimes different than the values shown using the **DISPLAY** command upon termination of a simulation.

Work Around:

- The watch window is normally used to view variable values when a debug break point occurs. In this instance, the watch window values and the **DISPLAY** values are consistent and correct. If termination occurs through manual intervention or normal simulation termination, the watch window and **DISPLAY** values may differ. In these instances, the Watch window value is not being updated to show the final value. The **DISPLAY** value is correct. See **DISPLAY** in the Command Reference Manual for more information.

4.6 Plotting Vectors on Runtime Plots

When mapping an array variable (entry) to a plot block, the resulting output values are not displayed for runtime plots.

Work Around:

- (1) Manually edit the array variable name as a scalar element so that it can be plotted using runtime plots (e.g. the plot wizard lists the array variable "foo" - manually edit it to read "foo(1)) or
- (2) Create the plot in the analysis mode (after a simulation run) using any of the variety of means to create a plot (e.g. a plot block in block diagram mode, through command line, etc.)

4.7 CSL Utility Routines not implemented

The following CSL utility routines are not implemented: **AGET, APUT, DEBUG, LISTD, SETI, and SETR**. In addition, the routine to add a customer integration algorithm has not been implemented.

- Work Around:
 - These CSL utility routines are not implemented in this version of acsIX.

4.8 Direct Pass through of Data in a Compound Block

When connecting an input port directly to an output port within a compound block, the data may become inaccessible (e.g. cannot plot or list).

Work Around:

- Insert a Gain PowerBlock from the Linear Operations Block Library between the input and output ports - use the default constant value of 1.

4.9 Debugging with models that INCLUDE Macros

When running in Debug Mode, breakpoints may not be recognized.

Work Around:

- This is not currently implemented in this release of acsIX.

4.10 DASSL Algorithm not supported

When setting the integration algorithm to DASSL (IALG=10), the state variables are not updated.

Work Around:

- This is not currently implemented in this release of acsIX

Chapter 5 Technical Support

For detailed information on using acslX refer to the on-line acslX User's Guide. Extensive examples are provided in the Model Analysis and Development Example Projects Manuals which covers a wide variety of topics. If the problem is about using acslX product family, please consult the manuals provided online or in .pdf format with the installation of the software. If additional help is required, acslX technical support can be contacted through the following means.

Website

The acslX website at www.acslX.com provides a variety of resources for technical support.

E-Mail

Questions can be sent directly via e-mail to the technical support team. Technical Support business hours are Monday through Friday, 8:00 AM to 5:00 PM, Central Time (US & Canada). For Technical Support questions and trouble reports about acslX, send email to: support@acslx.com.

Telephone

For telephone support, call AEgis Technologies during normal business hours Monday through Friday, 8:00 AM to 5:00 PM, Central Time (US & Canada) at: (256) 922-0802.

FAX

You can also fax questions directly to the acslX technical support teams. For technical support issues, be sure to list "acslX Support" as the recipient on the cover page. Fax questions to the following number: (256) 922-0904.