
RELEASE NOTES

SIMETRIX 5.5

NOTES

This document describes the new features and changes for SIMetrix version 5.5

LICENSING

If you have current maintenance, you should already have been issued with a license file that will support version 5.5. If you haven't installed this license, you should do so now. If you were not issued with the license or have mislaid it, please contact sales@catena.uk.com to receive the new license.

NEW PLATFORM - 64 BIT WINDOWS

A version that runs natively with 64 bit Windows is now available. This version is able to address memory beyond the 4GByte limit that applies to 32bit software. This is especially useful for plotting results from very long runs.

Initial tests show that the 64 bit version runs slightly faster than the 32 bit version running in emulation on a 64 bit OS. We therefore recommend that you install the 64 bit version on 64Bit operating systems even if you are unlikely to need the higher memory capability. (Unless you use SIMPLIS, see below).

For further information on 64 bit applications see "64 Bits - What Does it Mean?" on page 3

IMPORTANT NOTE FOR SIMPLIS USERS

SIMPLIS is not currently supplied with the 64 bit version. If you use SIMPLIS, you will need to install the 32 bit version. This is fully supported on both 32 and 64 bit operating systems.

SIMPLIS versions will be updated to support 64 bit systems at a later time. Initially the SIMPLIS simulator itself will remain a 32 bit application. But as SIMPLIS sends its data to SIMetrix, SIMPLIS users will be able to enjoy the same memory benefits.

LINUX AND 64 BITS

A 64 bit Linux version is not yet available. We will update this at some future time driven by customer demand, but we will not be able to support 32 and 64 bit versions simultaneously. That is, when we do release a 64 bit Linux version, the 32 bit version will be discontinued.

PERFORMANCE ENHANCEMENTS

DATA HANDLING

The data handling system within SIMetrix has been substantially reworked. As well as general efficiency improvements, the system now exploits the ability of the majority of systems to write data to disk in parallel with processor execution.

The performance improvement resulting from these developments varies from zero to up to about 30% and maybe more.

.PARAM IMPROVEMENTS

As well as the improvements to data handling, the system that handles simulation parameters using .PARAM has also received some development. This benefits circuits that have very large numbers of parameters as is often the case with large integrated circuit designs using highly parameterised process models. The benefit applies to the read in and setup times as well as memory consumption.

GRAPH MEASUREMENTS

The system for taking measurements from graphs has been revamped. The GUI has been streamlined and a custom measurement feature added. Although it was possible to add custom measurements in earlier versions, the process was complicated. There is now GUI support for this.

“ADD CURVE...” DIALOG IMPROVEMENTS

PLOTTING FROM EXISTING CURVES

A feature allowing plots to be created from existing curves is now available through the GUI. Although this has always been possible using the GetCurveVector() script function, the procedure is awkward. Its now possible to access the data from an existing curve by simply clicking on it in the “Add Curve...” dialog. There are also three menus providing the ability to add, subtract and multiply two curves using a simple dialog.

RETRIEVING Y-EXPRESSIONS AND ASSOCIATED CURVE LABELS

If you retrieve a y-expression from the drop down box, the curve label that was originally used with that expression (if any) will also be retrieved.

CURSORS

You can move both cursors together along the x-axis by holding down the shift key

SCHEMATIC PARTS

Some new parts have been added to the schematic editor:

1. Infinite Inductor. See menu Place | Magnetics | Infinite Inductor. This part is built from a sub-circuit containing an infinite capacitor and two controlled sources.
2. Parameterised opto-isolator. See menu Place | Analog Functions | Parameterised Opto-coupler
3. Parameterised comparator. See menu Place | Analog Functions | Parameterised comparator
4. Three phase transformer. See menu Place | Magnetics | Three phase transformer

SIMULATOR MODELS

Some improvements to existing models:

1. JFET model incorporates the Hspice noise enhancements using NLEV=3 and the GDSNOI parameter.
2. BJT noise model corrected. In standard SGP, the base shot noise and 1/f noise are calculated from the arithmetic sum of the collector and emitter components of the base current. This is physically incorrect. In SIMetrix 5.5, the emitter and collector components of the base current are given their own noise sources. For backward compatibility the original SGP behaviour can be restored by setting the BJT parameter NOISMOD to zero. The default value is 1, that is the correction is enabled by default.
3. Polynomial sources have been extended to support Hspice syntax found in some foundry models. In particular the VCR type is now supported and the polynomial coefficients may be expressed as parameterised expressions.

SIMPLIS MODELS

The diode and MOSFET SPICE-SIMPLIS conversion routines have been redesigned to improve the quality of the models.

LINUX VERSION

A 32 bit Linux version is now available. We now only fully support Redhat Enterprise Linux version 3, 4 and 5. You can use other distributions but if you run into a problem, we will only be able to assist you if we can reproduce that problem on a supported platform.

POSSIBLE INCOMPATIBILITIES

HIERARCHY PATHS

All hierarchy paths are now stored in UNIX format, even on Windows. That is the forward slash separator is used instead of backslash. This is to allow Windows and Linux users to share hierarchical schematics. In general Windows does not distinguish between forward and backward slashes whereas in Linux/UNIX, a back slash is treated as a regular character.

We can't think of any reason why this should cause any user a problem, but just in case, there is an option setting that will revert this behaviour back to previous versions. Contact support for details.

64 BITS - WHAT DOES IT MEAN?

The bit length of a processor (e.g. 32, 64 etc) can mean many things but it usually refers to the size of the internal registers and thus the maximum range of addressable memory. Up until recently all personal computers and workstations used 32 bit processors and so the maximum memory range was 2^{32} or 4GBytes. This is no longer the unimaginably large amount of memory that it once was. In order to access more memory than this we need more than 32 bits and the usual choice is to increase it to 64.

The memory range is the chief benefit of using a 64 bit processor and you should not expect substantial performance improvements. With SIMetrix, the main area where 4GBytes of memory may not be enough is graph plotting. If you run simulations with tens of millions of time points, you should seriously consider using the 64 bit version of SIMetrix. Note that all 64 bit applications require a 64 bit operating system as well as a 64 bit processor. You cannot install or run the 64 bit version of SIMetrix on a 32 bit operating system even if the processor is 64bit.

Although major performance benefits should not be expected, a 64 bit application will usually run faster with a 64 bit OS compared to a 32 bit version of the same application running with a 64 bit OS.

SUPPORTED 64 BIT OPERATING SYSTEMS

1. Windows XP Professional 64 bit edition
2. Windows Vista 64 bit editions. (There are 5 variants - Home, Home Premium, Ultimate, Business and Enterprise)