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Python

A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

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Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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bzip2/libbzip2 version 1.0.5 of 10 December 2007

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Mersenne Twister
The _random module includes code based on a download from http://www.math.keio.ac.jp/ matumoto /MT2002/emt19937ar.html. The following are the verbatim comments from the original code:

A C-program for MT19937, with initialization improved 2002/1/26. Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using init_genrand(seed) or init_by_array(init_key, key_length).

Any feedback is very welcome. http://www.math.keio.ac.jp/matumoto/emt.html
email: matumoto@math.keio.ac.jp

Sockets
The socket module uses the functions, getaddrinfo(), and getnameinfo(), which are coded in separate source files from the WIDE Project, http://www.wide.ad.jp/.

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MD5 message digest algorithm

The source code for the md5 module contains the following notice:

L. Peter Deutsch
ghost@aladdin.com

Independent implementation of MD5 (RFC 1321).

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The original and principal author of md5.h is L. Peter Deutsch <ghost@aladdin.com>. Other authors are noted in the change history that follows (in reverse chronological order):

2002-04-13 lpd Removed support for non-ANSI compilers; removed
references to Ghostscript; clarified derivation from RFC 1321;
now handles byte order either statically or dynamically.
1999-11-04 lpd Edited comments slightly for automatic TOC extraction.
1999-10-18 lpd Fixed typo in header comment (ansi2knr rather than md5);
added conditionalization for C++ compilation from Martin
Purschke <purschke@bnl.gov>.
1999-05-03 lpd Original version.

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Modified by Jack Jansen, CWI, July 1995:

- Use binascii module to do the actual line-by-line conversion between ascii and binary. This results in a 1000-fold speedup. The C version is still 5 times faster, though.
- Arguments more compliant with Python standard

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pywin32

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---
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Glenn Randers-Pehrson
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April 25, 2013

Table of Contents

The IC-CAP Release Notes describes new features, functionality, known issues, and workarounds in IC-CAP 2014.04 HF4.

- IC-CAP 2014 HF4 Release Notes

Release Notes

The Integrated Circuit Characterization and Analysis Program (IC-CAP) is the industry standard platform for DC and High Frequency measurement and modeling of semiconductor devices. For general information about IC-CAP, refer to the Keysight EEsof product page at http://www.keysight.com/find/eesof-products.

This document describes new features, functionality, fixed issues and known issues in IC-CAP 2014.04. It also includes documentation changes and provides workarounds for defects wherever possible. For more information on known issues in IC-CAP 2014.04, or to report a new issue, refer to the Keysight EEsof Knowledge Center at: https://edasupportweb.software.keysight.com/.

To download IC-CAP 2014.04 HF4, visit the Keysight EEsof Knowledge Center website: http://www.keysight.com/find/eesof-iccap-latest-downloads .

- To install IC-CAP 2014.04 HF4 in minimal steps, refer to IC-CAP Quick Install and License Setup.
- To install licenses for IC-CAP 2014.04 HF4 through IC-CAP 2014.04 HF4 License Tools, refer to IC-CAP Licensing.

What's New

New features in HF4 release

- Added boolean system variable, `HP415X_ENABLE_SPEEDUP`, which allows the driver for 4155 and 4156 to perform measurements faster when only one current is being measured. By default, the variable is set to False. To enable (T, 1, Y, True, Yes, etc.) change the value to True.
- Added a system variable, `ICCAP_USE_CONDENSED_TUNER`, which allows additional tuners to be visible at once when invoked from 'Tune Fast' or 'Tune Slow' in a transform optimizer or plot optimizer. By default, the value is set to False. When the value is set to True (T, 1, Y, True Yes, etc.), the tuner elements appear in a single line in the order: parameter, slider, value, min, max.
- Added six functions that return specialized data, which plots recognize as range traces. Range traces visualize a minimum and maximum range for each point. For more information on ranges, see rangeplot . You can also access this information from IC-CAP application via Tools > Functions.
- Added E4990 driver.
- High Frequency Noise simulations are available for both the ADS Simulator and HSPICE.
- Multiport simulations now work for both the ADS Simulator and HSPICE.
- Instruments in the E5270 and B1500 families can now measure substantially faster when using MEASURE_FAST system variable. If unexpected problems arise (often possible due to cable length, firmware versions, or other environmental factors), a new system variable `MEASURE_FAST_LEVEL` may be used to choose a less aggressive speedup. IC-CAP 2014.04 HF3 and earlier is equivalent to `MEASURE_FAST_LEVEL 1`, while HF4 uses `MEASURE_FAST_LEVEL 4` by default.
- B1500 pulsed log sweeps no longer requires user mode and is fast now.
- N5235A PNA-L Network Analyzer is now supported.

Enhancements in HF4 release

- Resolved issue for optimization ranges with both Min and Max negative and more than 3 orders of magnitude difference. No longer Fatal Optimization Errors.
- Resolved issue with 4155/4156 not measuring more than 1 current.
- Issue with calling SaveImage and CreateImage on plots is resolved. The saved image now correctly reflects the autoscale/manual scale state without opening the plot first.
- Fixed `ICCAP_MAX_VIS_TUNERS` issue, so setting the value greater than 8 will have a visible effect. Enhanced `ICCAP_MAX_VIS_TUNERS` to adjust to the screen height by setting to a large value (e. 100).

  WARNING This might not work in all environments, as the screen height detection presumes a particular font size. If used and the tuners appear taller than the screen it may be impossible to press the OK/Cancel buttons. In this case, set the value of `ICCAP_MAX_VIS_TUNERS` to a number that works for your environment.

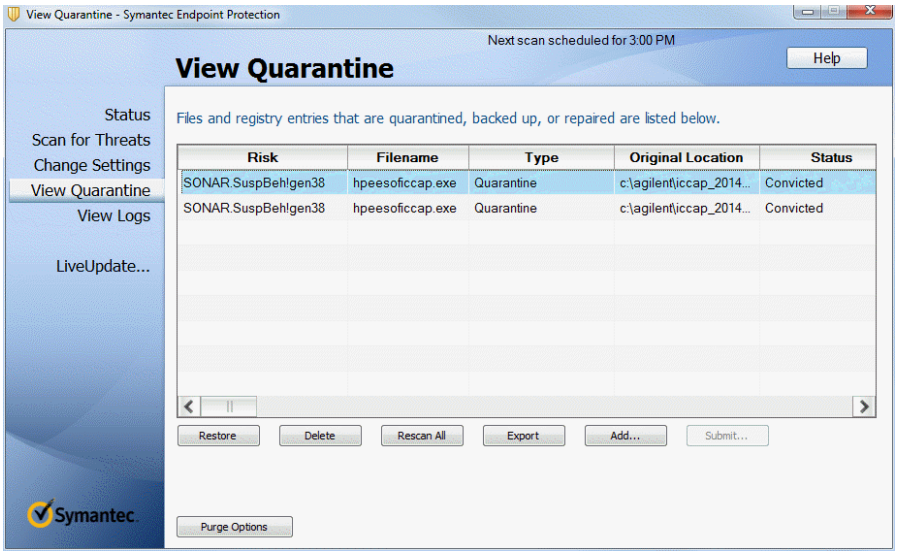
- Introduced `ICCAP_MAX_VIS_CONDENSED_TUNERS` equivalent to `ICCAP_MAX_VIS_TUNERS`, for use when System Variable `ICCAP_USE_CONDENSED_TUNER` value is set as True. The overall height of a condensed tuner is much less than a standard tuner, the same value cannot be applied equally to both styles. Note, this is a configuration variable to be placed in your iccap.cfg file. For more information, refer Customization and Configuration.
- The '`# depend:`' directive in Python now work for capitalized IC-CAP Inputs/outputs/transforms.
- Fixed problem when `$var` statements in circuit pages not evaluating the correct value when calling **File > Export > Extracted Deck**.
- Measurements with a negative bias step will now work properly with Keithley 4200 SCS.

Known Issues in HF4 release

- IC-CAP HF4 crashes on launch if Symantec Anti-virus is installed.
  Workaround:

a. Launch **Symantec Endpoint Protection**.

b. Click **View Quarantine** from the left panel. This displays a list of files and registry entries that are quarantined, as depicted below:



c. Right-click on the entry for `hpeesoficcap.exe` file.

d. Click **Restore**, then launch IC-CAP HF4 build.

A successful execution of the above steps, launch the IC-CAP application without issues.

- B1500 pulse measurement without user sweep gives error with default unit range.

  Workaround:

  Change the default pulse unit range from 0/11 to 0/0.

  For example, if SMU1 is used as a pulse unit, you need to change the unit range to 0/0, as depicted below.

SMU1 A/D converter	R	SMU1 A/D converter	R
SMU1 In/Out Range	0/11	SMU1 In/Out Range	0/0
SMU1 Base Value	0.000	SMU1 Base Value	0.000
Enable SMU2 Range Manager	No	Enable SMU2 Range Manager	No
SMU2 A/D converter	R	SMU2 A/D converter	R
SMU2 In/Out Range	0/11	SMU2 In/Out Range	0/11
SMU2 Base Value	0.000	SMU2 Base Value	0.000
Enable SMU3 Range Manager	No	Enable SMU3 Range Manager	No
SMU3 A/D converter	R	SMU3 A/D converter	R
SMU3 In/Out Range	0/11	SMU3 In/Out Range	0/11
SMU3 Base Value	0.000	SMU3 Base Value	0.000
Enable SMU4 Range Manager	No	Enable SMU4 Range Manager	No
SMU4 A/D converter	R	SMU4 A/D converter	R
SMU4 In/Out Range	0/11	SMU4 In/Out Range	0/11
SMU4 Base Value	0.000	SMU4 Base Value	0.000
Enable SMU5 Range Manager	No	Enable SMU5 Range Manager	No
SMU5 A/D converter	R	SMU5 A/D converter	R
SMU5 In/Out Range	0/11	SMU5 In/Out Range	0/11
SMU5 Base Value	0.000	SMU5 Base Value	0.000
Pulse Unit	SMU1	Pulse Unit	SMU1
Pulse Base	0.000	Pulse Base	0.000
Pulse Width	1.000m	Pulse Width	1.000m
Pulse Period (common)	10.00m	Pulse Period (common)	10.00m

Enhancements in HF3 release

- DynaFET modules are fully functional and verified. For more information, see DynaFET Modeling.

NOTE

ALC software is a part of DynaFEt flow that controls the acquisition of large signal data with the Keysight Non-Linear Vector Analyzer, a special version of the PNA-X. ALC works in conjunction with the DynaFET extraction package in IC-CAP, therefore, it is available only as a component of the Keysight DynaFET Measurement and Modeling System.

Known Issues in HF3 release

General Platform and UI

- DynaFET model require changes to the schematic component.
  Workaround:
  - Install ADS2015.01. You can download the installation file from the Keysight EEsof EDA website.
  - Navigate to `$HPEESOF_DIR/oalibs/rf/ads_rflib/%Dyna%Fet%Model` directory.

    NOTE

    For Windows platform, navigate to `C:\Program Files\Keysight\ADS2015_01\oalibs\rf\ads_rflib\%Dyna%Fet%Model` directory.
  - Locate the file, `itemdef.ael` and rename as `itemdef.bak`.
  - Delete `itemdef.atf` file (if exists).
  - Move the file, `itemdef.ael` , located at `<ICCAP_Project_Dir>/config/ADS2015_01/itemdef.ael` path to `$HPEESOF_DIR/oalibs/rf/ads_rflib/%Dyna%Fet%Model` directory.
- It is recommended to use **Stop Meas** instead of **Stop** button (while being in Data Acquisition module), else you will be navigated back to the native model to reset the SMUs.

New features and enhancements in HF2 release

- Levenberg optimizer now works better when parameters are near zero and range crosses zero.
- Binary Search capability added to 407x/408x.
- New System variable PLOTOPT_AUTORAISE_PLOTS can be set to false to stop default behavior of raising plots during optimization fromthe plot optimizer.
- New Right-click menu in new test plan run controller now allows selection of only devices with NOK or No (N/A) Result. Also any measurement with Warnings may be selected.

Issues fixed in HF2 release

- B29XX pulsed measurement limits corrected.
- Allowed current range for 407x/408x updated.
- 407x/408x handles higher order LIST, LIN and LOG sweeps properly now
- PSPICE CV simulations with bias sweeps work correctly now.
- PSPICE can now handle many outputs
- PSPICE rawfile reader enhanced to handle time differing inner sweeps with external time sweep.

- Fixed crash when deleting setup that was simulated with a circuit $var() and then resimulating with a new setup.
- Fixed problem where ICCAP_ERROR_CALLBACK intermittantly reports incorrect line number.
- HP4155 no longer takes too many current measurements on certain setups.
- Improved handling of CSV files in Waferpro.

New features and enhancements in HF1 release

- PSPICE is now supported internally without the need for an OSI module. The new link provides substantial simulation speed improvement over the OSI module. See PSPICE Simulator documenation.
- DataPro now offers correlation scatter plots for PT Data. Select 'Correlation' tab on outlier selection Plot when PT output is selected.
- Spaces now allowed in option and notes columns for Waferpro subsites
- Results column now visible in new Test Plan Run Controller for easier selection.
- Characterization Step field of Sequence control now provides dropdown list of possible options.
- Binary Search input available in IC-CAP. Currently works wtih B1500.
- Support for E5061B Network Analyzer
- B1511B modules now recognized by B1500

Issues fixed in HF1 release

- Temperature sweeps for Eldo and HSPICE now work properly again.
- Changing Program to Program2 or Python folowed by a click into the editor window no longer crashes IC-CAP.
- Pausing Waferpro run and restarting no longer request an additional license.

New features and capabilities supported in the IC-CAP 2014.04 release

DynaFET Extraction Package

IC-CAP 2014.04 is equipped with extraction package for Keysight's DynaFET model, an advanced neural network model for III-V FETs (GaAs and GaN), to accurately model the effects of trapping, de-trapping, and self-heating.

For more information, see DynaFET Modeling.

MOS Modeling Packages Enhancements

The following extraction packages are designed to extract BSIM6 and BSIM-CMG RF models.

- BSIM6 RF Extraction Package
- BSIM-CMG RF Extraction Package

WaferPro Enhancements

- Test Plan Run Page
  - New Test Plan Run Controller tab allows customization of the executed test plan by allowing you to select the individual test plan steps to execute. This feature assists in debugging any sub-set of steps in the full test plan quickly.
  - New View Test Plan Progress During Execution check box displays the remaining steps to be executed.

PEL/Python Editor Enhancements

Added following functionalities to the PEL/Python editor:

- Auto code completion
- Line numbering
- Syntax highlighting
- Capable of commenting on multiple lines
- Capable of indenting/unindenting multiple lines
- <Insert> key on keyboard toggles between replace and insert mode

For details, see Working with Program Editor.

Licensing

- IC-CAP requires: a) **version 2014.01** of the EEsof EDA licensing software, b) version **3.1** codewords to run, and c) **the licensing server software, lmgrd and agileesofd, to be upgraded to at least the same versions as what are included in EEsof EDA Licensing software 2014.01**. IC-CAP will not start if any of these requirements is not met. Refer to the License Codeword Version Compatibility Table.
- In the EEsof EDA License Tools version 2014.01, licensing vendor daemon (***agileesofd***) is upgraded to sync up with FlexNet FNP **11.11.1.2** version of FLEX license manager (***lmgrd***). IC-CAP installer for the Windows platform will automatically set up these two new license server daemons by default for the local node-locked license users; for Linux, you need to follow the Linux/Solaris Licensing Setup instruction to complete the licensing configuration process. For more details, refer to Licensing (For Administrators).
- A real-time and systematic license setup troubleshooting utility, **Diagnose**, is added to the **License Manager** tool. This utility produces a detailed health report of a user's currently configured licensing environment.
- A **My Support ID** utility is added to the **License manager** tool to allow a user to retrieve his/her Support ID required to contact Agilent EEsof Tech Support.

Enhancements and Improvements

- For simplified and robust licensing, PJC (Per Job Control) licenses are no longer checked out by IC-CAP .
- The **License Setup Wizard** no longer requires Administrator privilege on Windows to setup license files. Administrator privilege is only required to setup the windows service that will automatically start the license server upon system restart rather than on EEsof application startup.

Issues Addressed

Licensing

- On windows, a possible Administrator privilege issue preventing the automatic restarting of the FlexFNP license server program, **lmgrd** after the PC comes out of the hibernation mode has been fixed. The License Setup Wizard will automatically restart the server without any user intervention.

General Platform

- Allow different fore/background colors in cells within GUI SpreadSheet. See Main Area Foreground Colors and Main Area Background Colors for Spreadsheet Tables and `examples/new_features/2014_04/2014_SpreadsheetEnhancements.mdl`
- Any parameter in the parameter table, or in an optimizer parameter table will turn red if it is at or beyond the Min /Max or Opt Min/Opt Max limits
- Added new function iccap_set_parameter_value_background_color
- More efficient netlisting with HSPICE. Any setup in IC-CAP now requires only one netlist.
- Increase speed simulation of external Eldo simulator. Any setup in IC-CAP now requires only one netlist.
- Provided wafer mapping capability
- Support for plotting of up to 150 traces per plot
- Created callbacks in GUI spreadsheet to notify edits and navigation. See new callbacks 'Cell Entered', 'Cell Lost Focus', and 'Cell Modified' for the Spreadsheet Table Widget and `examples/new_features/2014_04/2014_SpreadsheetEhnancements.mdl`
- LOG, LIST, CON freq. sweep type measurements were losing calibration during measurement when using a cal. State file
- Sorting feature available on the Organize Tool.
- Added System Variable ICCAP_ERROR_CALLBACK to define a callback that may be called whenever PEL generates an error. See `examples/new_features/2014_04/2014_ErrorCallback.mdl`
- Calibration will be turned off for sweeping in CON or LOG modes while performing measurement with PNA.

Known Issues

- IC-CAP runs child processes named `cygpath.exe` and `sh.exe`. On Windows 7, these processes appear as minimized console windows (similar to cmd prompt) in your task bar. If you restore these windows, a black window may appear. We recommend you to ignore these windows and keep them minimized as they are required for proper functioning of IC-CAP. If you close these windows, IC-CAP will open these windows again at a later time.
- On Linux, the **Save Image** option may fail for JPG and some other graphics file formats.
  Workaround: The solution is to replace the convert found under *$ICCAP_ROOT/ImageMagick/bin* folder with the convert from */usr/bin* folder. An example command is `cp /usr/bin/convert $ICCAP_ROOT/ImageMagick/bin/convert`.

- Optimizer check buttons column often appear too wide when viewing Optimizer Parameter Tables saved from earlier versions of IC-CAP.
- When passing variable table values to another transform/macro using GET_INT, it is better to pass val(varname) rather than varname as there is a problem properly dereferencing the variable. It is dereferenced in the context of the get_int() call, not the iccap_func call. This problem will be repaired in a future release.
- If you use DYNAMIC_MULTIPLOT_MODE in multiplots, autoscale behavior may be affected. Normally all plots within a multiplot have a separate scaling setting from one multiplot to another or when viewed as a single plot. This allows you to place the same plot twice in a multiplot with different manual scaling settings or have the same plot in 2 multiplots, one autoscaled and the other manual scaled or any such combination. The DYNAMIC_MULTIPLOT_MODE causes the scaling presented in a multiplot to be identical to that displayed in the single plot. If you change the scaling in the multiplot, it will change the default scaling also for when viewing the single plot. But there is currently a problem when changing the the scaling properties from the multiplot. The scaling saved to the single plot becomes incorrect leading to unpredictable results. A workaround is to open the single plot and set the scaling as desired, once this is done, the plots will open as expected in the multiplot.
- It was found that opening/closing thousands of plots in an session may cause the IC-CAP process to grow and ultimately crash.
- When using WaferPro, selecting "Display Plot During Execution" to "Yes" may result into a blank plot window when trying to resize the plot. This will not affect the data collection. The workaround is to set the setting to "No" and view the results by clicking on the device measurement lines in the log window.
- When viewing plots on multiplot, sometimes symbol size is not consistent. This may affect the quality of the plot for documentation/publishing purposes.
- When displaying to a remote display from Linux (Specifically Cygwin Xwin or Exceed onDemand) you may observe substantial performance problems on the Model window when selecting setups.
  Solution: Setting environment variable `QT_GRAPHICSSYSTEM=native` before launching IC-CAP should improve the performance. Some systems may see further improvement by setting `EESOF_REMOTE_DISPLAY_DEFAULT_OVERRIDE=1`.
- You may observe performance issue during WaferPro Test Plan Run on Windows platform, as compared to IC-CAP 2013.01 release.

  Workaround: If IC-CAP 2013.01 is installed on your machine, set `ICCAP_CPP_PATH=c:\agilent\iccap_2013_01\bin\icpp` in the *$HOME\ICCONFIG* file.

Documentation

If IC-CAP help does not show any content, throws an error, or does not display any search results.
Workaround: Close the help and delete the contents of the following directory:

On Windows 7: `C:\Users\<Windows_Login_ID>\AppData\Local\Keysight\Help`

Simulation

- Segment Sweep with Noise analysis is not creating the correct netlist for the ADS simulator
- Only IC-CAP 2014.04 and later can work with ADS 2014.01 and later. IC-CAP 2014.04 can still work with prior versions of ADS.

- When performing ADS simulations with Verilog-A references using ADS 2014 and IC-CAP 2014.04 on linux, ensure to set the environment variable, `ADS_LICESNE_FILE`, to reference your IC-CAP license file before launching IC-CAP. Without this setting, ADS will be unable to properly compile **.va* files for simulation.

Installation

- On Windows systems, if you have installed a pre-released version of IC-CAP and then try to install the current version or a newer version of the IC-CAP release, you can get the warning stating 'Previous Version Detected' even through you have uninstall the current version properly.
  Workaround: To get past the 'Previous Version Detected' message while installing, you need to delete the .com. zerog.registry file.
  - On 64 bit systems the file is at *C:\Program Files (x86)\Zero G Registry\ .com.zerog.registry*.
  - On 32-bit systems, the path to this file is *C:\Program Files\Zero G Registry\ .com.zerog.registry*.
    (The directory Zero G Registry is a hidden folder so you need to turn on *Show hidden files...*. On Windows 7, you can get to this setting under Control Panel\Appearance and Personalization\Show hidden files and folder.)
- IC-CAP ships with an installation of ImageMagick 'convert' for the **Save Image** feature in plots. Without a working 'convert' call, the Save Image option can only save JPG, BMP, PNG, PPM, XBM, and XPM formats. The version of convert shipped with IC-CAP does not work on Red Hat version 5, though most default installations of Red Hat version 5 will have a working ImageMagick tool in */usr/bin/convert* folder. IC-CAP tests for a workable 'convert' program during launch. Initially at *$MAGICK_HOME/bin/convert*, then within IC-CAP installation, and finally within the path. A warning about the limited save options is issued at launch if no working version of 'convert' is found. To avoid this warning, you can install a current version of ImageMagick on your system or set the `MAGICK_HOME` environment variable to a working installation.

Licensing

- The new license server software packaged in the EEsof EDA License Tools version 2014.01 does not work on SuSE 10 platform. Use SuSE 11 or RHEL 5 or 6 instead as your Linux license server machine.
- Unable to install Flex-10 driver if Flex-9 dongle is already plugged into a machine.
  Workaround: Before installing a Flex-10 driver for the first time, unplug the Flex-9 dongle.
- There is a known Flexera FNP issue, whereby mixing node-locked codewords and floating codewords in one license file can result in: a) Remote simulations not working or b) A second local simulation not working in case the license is node-locked and also has incorrect version.
  Workaround: It is strongly recommended that you do not mix node-locked codewords and floating codewords in one license file nor in *any* configuration that ends up with node-locked codewords and floating codewords both available on the same server. In other words, put the node-locked license and the floating license on different servers, and point to the respective one based on what you need to run.
  Additionally, we also recommend you to remove expired codewords, to separate out the new and the old versions of codewords into different files and different servers, and to point to the respective one based on what you need to run.
- On the Linux platform, IC-CAP_LICENSE_FILE needs to be correctly specified before starting IC-CAP. Without that being set correctly, IC-CAP would not start.

- Not specifying the TCP/IP port for the license server during license setup may lead to unexpected behavior and/or license checkout failure on the Windows platform. We strongly recommend you to always explicitly specify the TCP/IP port associated with each license server.
- A node-locked and floating bundle operating on Linux cannot be shared between products using EDA License Tools version 2014.01 and 11.9.0.0 or earlier when run at the same time.
- The "Check-in failed" message occurs in the license activity log occasionally can be ignored; the license mentioned in this message is actually properly returned.
- License Setup Wizard does not remove any previous user-configured FLEX Windows License Service installed using FlexNet's lmtools.
  Workaround: You must remove the previous user-configured Windows License Service via lmtools.
  - Run the lmtools.exe from `C:\Program Files\Agilent\EEsof_License_Tools\bin` to invoke the lmtools utility. The lmtools utility window is displayed.
  - In the **Service/License File** tab, check the **Configuration using Services** option. All user-configured FLEX Windows License Services will be listed.
  - Select the service you wish to remove.
  - Select the **Config Services** tab and click the **Remove Service** button to remove the service.
    To ensure that the license service or ***lmgrd*** is running, click **View Log**. A log window appears that confirms whether ***agileesofd*** and ***lmgrd*** are up and running.
- While running multiple versions of prior IC-CAP releases together, set IC-CAP_MAXIMUM_BUNDLE_USAGE=ON in your environment so that all of them will use the same method to check out licenses. Otherwise, you might receive an error message, "Licensed number of users already reached".
- On some Windows 7 machines, when more than one definition of an Ethernet adapter exists (duplicates), license checkouts may appear to hang up.
  Workaround: Disable the duplicate network card definitions in your network settings: **Control Panel** > **Network and Internet** > **Network Connections**. This issue has been acknowledged by Flexera and they have created a bug report (SIOC-000103097).
- If a license server is configured with two license versions, that is, version 2.8 and 2.9 node-locked license files, the license server may crash.
  Workaround: You should combine the two license files into one file, instead of using them separately.
- For LSF style distributed simulations, in case of windows, ensure that the PATH points to the $HPEESOF_DIR /EEsof_License_Tools/${architecture} directory that corresponds to the EEsof release being used. This needs to be done in order to ensure that the proper version of the Flexera utilities (like ***lmutil***) gets picked up in the path before any older in-compatible versions (that may also be installed on a users' system.)
- **License Setup Wizard** (***aglmwizard.exe***), which is used to set up and record the license path would not work if you already have an environment variable set for IC-CAP_LICENSE_FILE.
  Workaround: You can use ***IC-CAP_LICENSE_FILE*** variable to point to license file or refer to Licensing (For Administrators).
- The License Setup Wizard will exit or not properly configure a license server, if the server has all of its licenses currently in use.
  Workaround: Wait for a license on the server to become available as you normally would before launching the product.

- If IC-CAP does not start after you reboot your 64-bit Windows computer, and a license denial message is displayed, then it might be caused by a spurious registry entry. Check to see if registry entry *HKEY_LOCAL_MACHINE\SOFTWARE\FLEXlm License Manager\EEsof EDA License Server* exists; if it does, remove it and restart IC-CAP.
- Unable to set license in case unicode characters are used either in path or license file name because the Flex License Service does not support these characters.
- The Product Selector tool will be unable to display the license server status properly when connected to older license server.
  Workaround: Upgrade your license server to the latest version.
- When the same user is running similar simulations from multiple sessions of IC-CAP on the same computer and display—that is, the same User-Display-Host— and if simulations are rerun an extra license may be pulled.
  Workaround: Click **Stop** from the Status window of all the IC-CAP sessions to release all the simulator licenses, then rerun the simulations.

Range Plot Functions

Ranges relative to Nominal data

- **rel_range** (nominal, lowOffset, highOffset)

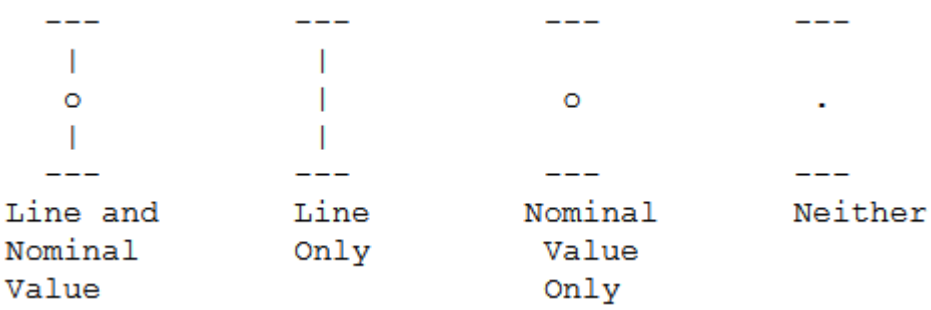
Creates a set of data that when plotted displays a minimum and maximum value connected using a dashed line. Use `custom_rel_range`, to control the appearance of the range markers and lines/markers. `rel_range` sets a relative offset that is applied to each nominal point. The data set can be used directly in a plot expression or can be calculated as a transform (useful to display `USE_PLOT_LOOKUP` plots).

The following table describes the `rel_range` parameters:

Parameters	Denotes a...
`nominal`	set of nominal data points around which the range markers are placed.
`lowOffset`	real number. The low number is calculated as low=nominal - |lowOffset*nominal|.
`highOffset`	real number. The high number is calculated as high=nominal + |highOffset*nominal|.

- **custom_rel_range** (nominal, lowOffset, highOffset, lineType)

Creates a set of data that when plotted displays a minimum and maximum value optionally connected using a line and optionally displaying a nominal value.



`custom_rel_range` sets a relative offset that is applied to each nominal point provided. The data set can be used directly in a plot expression or can be calculated as a transform (useful to display `USE_PLOT_LOOKUP` plots).

NOTE

When using custom range functions directly in plots, use single quote (') instead of double quotes (") to define the lineType, . Using double quotes results in truncation when saved to a file. The nominal value is shown with a marker. To choose symbol type, use Plot options. Selecting **SymOnly** with the blank symbol results in a single dot at the nominal point. A line without a symbol is achieved by setting the symbol to the last blank field and using any other lineType.

Parameters	Denotes a...
`nominal`	set of nominal data points around which the range markers are placed.
`lowOffset`	real number. The low number is calculated as low=nominal - |lowOffset*nominal|.
`highOffset`	real number. The high number is calculated as high=nominal + |highOffset*nominal|.
`lineType`	string specifying the line connection between the maximum and minimum marker. The valid values are, `Solid`, `DotLine`, `DotDotLine` , `Dashed`, `DashedDot` , `LongDashed` , `LongDashedDot` , `SymOnly`.

Ranges with arbitrary deltas from nominal data

- **man_range** (nominal, lowValues, highValues)

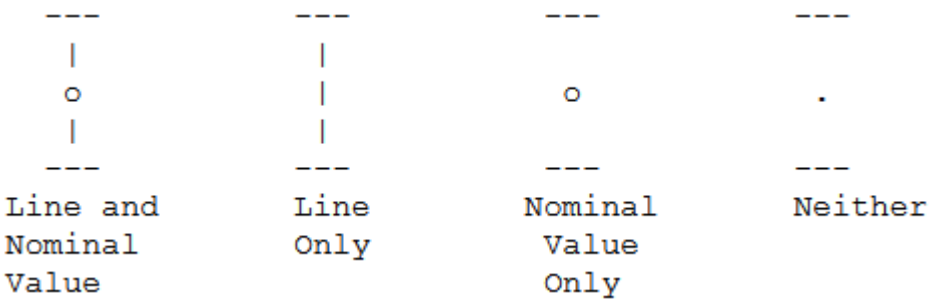
Creates a set of data that when plotted displays a minimum and maximum value connected using a dashed line. Use `custom_man_range`, to control the appearance of the range markers and lines/markers. `man_range` sets a completely customized range by providing 3 data sets with the same number of points. The data set can be used directly in a plot expression or can be calculated as a transform (useful to display `USE_PLOT_LOOKUP` plots).

Parameters	Denotes a...
`nominal`	

Parameters	Denotes a...
	set of nominal data points around which the range markers are placed.
`lowValues`	set of data points (same size as nominal) defining the low markers of the range.
`highValues`	set of data points (same size as nominal) defining the high markers of the range.

- **custom_man_range** (nominal, lowValues, highValues, lineType)

Creates a set of data that when plotted displays a minimum and maximum value optionally connected using a line and optionally displaying a nominal value. `custom_man_range` sets a completely customized range by providing 3 data sets with the same number of points. The data set can be used directly in a plot expression or can be calculated as a transform (useful to display USE_PLOT_LOOKUP plots).



Parameters	Denotes a...
`nominal`	set of nominal data points around which the range markers are placed.
`lowValues`	set of data points (same size as nominal) defining the low markers of the range.
`highValues`	set of data points (same size as nominal) defining the high markers of the range.
`lineType`	string specifying the line connection between the maximum and minimum marker. The valid values are, `Solid`, `DotLine`, `DotDotLine` , `Dashed`, `DashedDot` , `LongDashed` , `LongDashedDot` , `SymOnly`.

NOTE

When using custom range functions directly in plots, use single quote (') instead of double quotes (") to define the lineType. Using double quotes results in truncation when saved to a file. The nominal value is shown with a marker. To choose symbol type, use Plot options. Selecting **SymOnly** with the blank symbol results in a single dot at the nominal point. A line without a symbol is achieved by setting the symbol to the last blank field and using any other lineType.