

IC-CAP 2018 Update 0.1

Release Notes 2018 Update 0.1

Notices

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ICCAP 2018 Update 0.1 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 2018. It also includes documentation changes and provides workarounds for defects wherever possible. For more information on known issues in IC-CAP 2018, or to report a new issue, refer to the Keysight EEsof Knowledge Center at: <https://edasupportweb.software.keysight.com/>.

To download IC-CAP 2018, visit the Keysight EEsof Knowledge Center website: <http://www.keysight.com/find/eesof-iccap-latest-downloads>.

- To install IC-CAP 2018 in minimal steps, refer to [IC-CAP Quick Install and License Setup](#).
- To install licenses for IC-CAP 2018 through IC-CAP 2018 License Tools, refer to [IC-CAP Licensing](#).

What's New

Enhancements

- BSIMCMG model package major update including improvements in usability, GUI and documentation.
 - ADS circuits for BSIMCMG introduced
 - New feature allowing loading of complete Folder with MDM files
 - MDM file import customisation options, warning and error handlers added
 - Model file | parameter manual and auto tuner | optimizer triggered saving feature added
 - Scaling Method feature improved
 - Optimizers added for parameter extraction
- Plots remember their size in physical dimensions (mm) of the monitor on which they were last closed. This can cause plots to want to open larger than the current desktop. IC-CAP will now automatically scale plots to a maximum of 90% of the primary desktop height or 95% of the primary desktop width. Note, some multiplots with GUI widgets around the actual plot may have a minimum size based on the dimensions of the widgets which might exceed the dimensions of the desktop and in this case it will be the minimal size possible given the widgets used.

Issues Fixed

- Fixed crash at startup on Linux Platforms when the environment variable `EESOF_REMOTE_DISPLAY_DEFAULT_OVERRIDE=1` is set.
- All IC-CAP Variable values that are saved to files in IC-CAP 2018 Update 0.1 will preserve any end of line, carriage return, or double quote characters in the value string, when the file is reopened into IC-CAP 2018 Update 0.1 and all future releases. This fixes an IC-CAP issue with loading an IC-CAP model file with variables that have double quotes in their value string when saved will have the value truncated to the contents found before the first double quote character read in from the model file.

- Fixed issue with the PNA and PNA-X IC-CAP instrument drivers disabling the Low Frequency Extension option in certain instrument models. In IC-CAP 2018 Update 0.1, the PNA/PNA-X IC-CAP drivers have been updated to enable the optional Low Frequency Extension in the PNA/PNA-X when a new IC-CAP PNA/PNA-X Instrument Option is set. The new IC-CAP instrument option is named: **Use PNA Low Frequency Extension** and if the option is set to **Yes** in the IC-CAP Setup's instrument options, then IC-CAP will ensure that the LFE option in the PNA/PNA-X instrument is kept enabled during IC-CAP calibration and measurement.
- In PEMG, fixed the issue that system resistance values read from MDM files were not applied to simulation.
- In PEMG, fixed the issue that different system resistance values were not allowed for simulation in transfer characteristic setup and output characteristic setup.
- In PEMG, fixed the issue that Device Model Setting values in the Project window and in the option window are not in sync.
- In PEMG, fixed the issue for project files clean-up and update.
- When viewing wafer map distribution data in Data Viewer, correct data is now displayed if data set spans multiple wafers, temperatures, blocks, or polarities.
- Fixed issues starting a new BSIMSOI4 project in the Mosfet toolkits.
- Fixed issues with Import Wizard of Mosfet toolkits.
- Added initializing before calibration for B2200 switch matrix in Mosfet toolkit measurement modules.
- Improved export to WaferPro from Mosfet toolkits.
- All Data Viewer example projects now open properly using File > Examples menu pick.
- Keithley 70xx drivers in WaferPro have been improved with respect to GPIB device handling and documentation.
- When saving S-Parameters to Touchstone format from Waferpro, multiport data is now saved with '.sNp' suffix rather than always using .s2p for arbitrary N port data. If automations exist that expect the files to always be .s2p, one can set variable USE_S2P_FILE_SUFFIX in IC-CAP variable table to restore old behavior.
- IC-CAP 2018 Update 0.1 can now identify and properly measure E5063A, E5072A ENA's, and the N5251A PNA.
- Module selector instrument options for B1505A + B1513C (High Voltage SMU) now works as expected.
- Multi bias point (internal sweep) measurement is now supported in PNA-X NF measurements.
- In WaferPro, MDS_MEASURE_FAST variable was removed from wproRoutine.mdl to fix the frequency range errors from PNA.

Issues Fixed for Licensing

- The issue related to the vendor daemon **agileesofd** could sometimes crash while the License Manager and the Product Selector was running on a remote Windows 8 machine has now been fixed with the newer FlexNET publisher 2015 (also known as version 11.13.1) that is automatically installed by the IC-CAP installer.

Known Issues

Problem	Solution
The BSIMCMG Package is not supported for simulation with the ADS simulator (hpeesofsim) for the 32-bit platforms.	The 64-bit versions of ADS and IC-CAP work fine.

Documentation

- On Windows, Printing directly from Qt Help generates non-readable output.
Workaround: Use PDF version of the document for printing purpose.
- In IC-CAP help when you open a page using the "Open a link in new tab" option the help does not opens a page in different tab by default. You need to set the preferences to open any link in a new tab. To set the preferences:
 - a. From the IC-CAP Help, Click **Edit > Preferences**. The Preferences Dialog box is displayed.
 - b. Select the **Options** tab.
 - c. Under Appearance, select the **Show tabs for each individual page** option.This is one time setting for a particular release of a product.
- Unable to open online help, any external link, or Embedded Survey link in Linux on Mozilla Firefox browser.
Workaround: Use Mozilla Firefox version 39 or above or keep the Firefox window open and then try to open online help.
- IC-CAP online help is not supported on the Google Chrome browser.
Workaround: Use Internet Explorer or Firefox version 39 or above to view ADS documentation.
- If the 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
 - On Linux: \$HOME/.local/share/Keysight/Help
- IC-CAP Qt search does not support [] or {} or any other text using these combinations.

Simulation

- Segment Sweep with Noise analysis is not creating the correct netlist for the ADS simulator.
- Simulating to ADS 2014.01 or later requires IC-CAP 2014.04 or newer version. Older versions of IC-CAP cannot work with ADS 2014.01 and beyond.
- 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_LICENSE_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.
- ADS simulations to IC-CAP 2016.01 are now performed in the \$HOME/hpeesof/iccap_ads/data directory and not in the current working directory. Although it does not affect most simulations, if you direct ADS to load a file relative to the current working directory with the assumption that current working directory will be the same as IC-CAP, this will no longer work for simulations to ADS 2016.01. Please modify such netlists to refer to the full path of the file that ADS must access.

Installation

Problem	Solution
<p>On Windows systems, if you have installed a pre-release 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 though you have uninstalled the current version properly.</p> <p>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 <code>/usr/bin/convert</code> folder. IC-CAP tests for a workable 'convert' program during launch. Initially at <code>\$MAGICK_HOME/bin/convert</code>, then within IC-CAP installation, and finally within the path. A warning about the limited save options are issued at launch if no working version of 'convert' is found.</p>	<p>To get past the 'Previous Version Detected' message while installing, you need to delete the <code>.com.zerog.registry</code> file.</p> <ul style="list-style-type: none"> On 64 bit systems the file is at <code>C:\Program Files (x86)\Zero G Registry\.com.zerog.registry</code>. On 32-bit systems, the path to this file is <code>C:\Program Files\Zero G Registry\.com.zerog.registry</code>. (The directory Zero G Registry is a hidden folder so you need to turn on <i>Show hidden files</i>.... On Windows 7, you can get to this setting under Control Panel\Appearance and Personalization>Show hidden files and folder.) <p>To avoid this warning, you can install a current version of ImageMagick on your system or set the <code>MAGICK_HOME</code> environment variable to a working installation.</p>

Problem	Solution
IC-CAP 2018 crashes while launching the 32-bit installer on some 64-bit machine.	<p>A possible workaround is to install the following libraries:</p> <ul style="list-style-type: none"> ▪ dbus-libs.i686 ▪ libstdc++.i686 ▪ zlib.i686 ▪ libXrender.i686 ▪ libICE.i686 ▪ libSM.i686 ▪ libXext.i686 ▪ libX11.i686 ▪ xcb-util.i686 ▪ libXi.i686 ▪ compat-libxcb.i686 ▪ libxcb-devel.i686 ▪ xcb-util-devel.i686 ▪ xcb-util-image-devel.i686 ▪ xcb-util-renderutil.i686 ▪ xcb-util-renderutil-devel.i686 ▪ xcb-util-wm.i686 ▪ xcb-util-wm-devel.i686 ▪ libX11-devel.i686 ▪ libICE-devel.i686 ▪ fontconfig.i686 <p>On RHEL 7.1 Workstation.x86_64, install the following libraries:</p> <ul style="list-style-type: none"> ▪ compat-libcap1-1.10-7.el7.i686 ▪ libXrender-0.9.8-2.1.el7.i686 ▪ dbus-libs-1.6.12-11.el7.i686 ▪ libstdc++-4.8.3-9.el7.i686 ▪ fontconfig-2.10.95-7.el7.i686 ▪ libxcb-devel-1.9-5.el7.i686 ▪ libICE-1.0.8-7.el7.i686 ▪ readline-6.2-9.el7.i686 ▪ libICE-devel-1.0.8-7.el7.i686 ▪ sqlite-3.7.17-4.el7.i686 ▪ libSM-1.2.1-7.el7.i686 ▪ xcb-util-0.3.9-4.el7.i686 ▪ libX11-1.6.0-2.1.el7.i686 ▪ xcb-util-image-0.3.9-4.el7.i686 ▪ libX11-devel-1.6.0-2.1.el7.i686 ▪ xcb-util-wm-0.3.9-5.el7.i686 ▪ libXext-1.3.2-2.1.el7.i686 ▪ zlib-1.2.7-13.el7.i686 ▪ libXi-1.7.2-2.1.el7.i686
If McAfee antivirus is running, it may pause the installation.	<p>On disabling the Security firewall option in McAfee antivirus settings, the installation works fine. After the installation is complete, enable the Security firewall option in the McAfee antivirus settings.</p>

Licensing

- License Setup wizard may not be able to start license server with many license files. During setup, it may lead to a situation where a command prompt window appears/disappears incessantly. This is due to the fact that License Setup wizard is not able to start Imgrd with a long command line and may get stuck in a loop.

Workaround:

- a. It is recommended to combine all license code words tied to same MAC ID into single license file to avoid setting large number of license files.
 - b. Try to use a shorter path to place license files.
 - c. If #1 and/or #2 does not help, start the license server (*Imgrd.exe*) from the command line (e.g. *Imgrd.exe -c <lic-file-path> -l <license_server_log.txt>*) and then set *<PRODUCT>_LICENSE_FILE=<PORT-NUMBER>@localhost* for product you want to use on same PC.
- Dongle drivers for Flex-10 dongles on Linux are release specific. Installing the latest dongle drivers on Linux will function properly only for the most recent EEsof releases.

Workaround: Install and use dongle drivers as needed. If you need to run the most recent EEsof releases, use the latest Flex-10 dongle driver. If you need to use older releases, uninstall the latest dongle driver and re-install the older dongle driver

- FLO and EEsof License setup are writing server logs at different locations. However, the EEsof server log file location is updated in the License Manager > Environment tab.
- When multiple **same-named** INCREMENT lines **of different version** exist on the license server, few advanced FlexNet options to reserve/limit licenses may not work properly.
- Product Selector "Check Availability" generates incorrect results (which leads to license failure) for older releases when multiple date base versions of like-named bundles exist in the license pool.
- In Linux, Product Selector **OK** and **Cancel** Buttons locations are reserved.
- Starting from FlexNet Publisher 2015 (also known as version 11.13.1), the adoption of the best practice of the least-privilege security therein results in the License Server related Windows Service to run with the LocalService Account privilege (instead of the LocalSystem privilege as before.) Running with the LocalService Account privilege, an executable can no longer access any files located in the per-user specific type of folders. As a result, any license file placed in those folders can no longer be accessed by the License Server when the License Server is automatically started via the Windows Service upon each PC reboot. For the local node-locked license, this would not result in any disruption to the usage of EEsof applications; however, for the license installed on a network PC that is accessed by multiple client PCs, this may cause EEsof applications not to start after the network PC reboots

Workaround: Store your license files in the Windows folders that are accessible by the LocalService Account privilege. For example, C:\ProgramData or C:\users\public are both qualified choices. In general, any folder that has the "Users" group listed in its Properties > Security page and this "Users" group has the *read* permission enabled should work.

- Using the default port to connect to a license server may cause a delay when checking out licenses. If no port is given in the license file, Flexera scans ports 27000 to 27009 to find the port. Starting from FlexNet Publisher 2015 (aka version 11.13.1), the default timeout for the response from each port increased from .1 seconds to 3 seconds.

To avoid the delay, KSM now issues licenses with port 27009 instead of leaving this blank. The EEsof License Setup Wizard (from Licensing 2017.01 onwards) handles some common situations such as: where it detects license file(s) without port, when users get a new license file with port 27009, or when all license files for a vendor daemon does not have same port.

NOTE

You will not be able to start the license server if all license files for a vendor daemon on a server does not have same port.

Users who manually setup a license server or using EESof License Setup Wizard with older licensing bits may need to manually edit license files to comply with the following rules:

- a. All license files for a vendor daemon on a server must use the same port (or all be blank).
- b. Using the default port (blank) is allowed but may result in longer checkout times.
- c. If setting up a network server, select an unused port that is not blocked by a firewall.

Workaround: If the user cannot change the port, or wants to use the default Flexera ports, the environment variable FLEXLM_TIMEOUT can be set to .2 seconds (200000), to minimize the performance degradation. However, if the network latency is an issue in your environment, you may need to fine-tune this setting to minimize the general performance degradation while still accommodating the network latency.

- Installation of EESof EDA tools (such as, SystemVue 2016.08, Genesys 2017.XX, or ADS 2017.XX) may hang at 4% (percentage vary based on the products) for few hours or even more on some specific machines.

Workarounds:

- Disable Firewall setting in Anti-Virus Software installed on the PC.
or
- Download and unzip process explorer from the below link and then invoke *procexp.exe*.
<https://technet.microsoft.com/en-us/sysinternals/processexplorer.aspx>
Right click on the *wusa.exe* process under <Product installer exe> and select KillProcess. Now it will continue the product installation.
- After installing EESof EDA tools (such as, SystemVue 2016.08, Genesys 2017.XX, or ADS 2017.XX) successfully and try to invoke the software or License wizard, you may encounter “api-ms-win-crt-runtime-l1-1-0.dll” missing error.

Workaround: Install the Update for Universal C Runtime in Windows . On Windows 64-bit system systems, the file to install is x64 version of the Microsoft hotfix KB2999226. A copy of the Windows6.1-KB2999226-x64.msu Microsoft 64-bit hotfix installer can be found under the C:\Program Files\Keysight\EESof_License_Tools\bin directory. The Microsoft hotfix KB2999226 can be found under the Update for Universal C Runtime in Windows page at <https://support.microsoft.com/en-us/help/2999226/update-for-universal-c-runtime-in-windows> as well.

- On a newly formatted RHEL system, the EESof Licensing tools may fail to boot. This is because the FlexNet Publisher 2015 requires a certain rpm

Workaround: Under the EESof product installation directory, there exists a utility script named “*Linux_sys_check.sh*” under the *bin* directory. Run this script to find out whether any rpm is missing; run this script with a “-y” command-line option to also have all the missing rpms automatically installed if you have the *sudo* or *root* privilege.

- License server may stop recognizing Flex-10 dongle on some systems within a few hours after starting

Workaround: If you experience this problem, install the latest WibuKey drivers from [Wibu Systems](#).

- 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 FlexNet Publisher 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.

- If a user simultaneously runs two instances of a product and has mixed different versions of the same codeword on one license server, extra licenses may be pulled and result in unexpected "Licensed number of users already reached for this feature" errors.

Workaround: We recommend you 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.

- 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 older than 2014.01 when run at the same time.
- License Setup Wizard does not remove any previous user-configured FLEX Windows License Service manually set up by a user 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.

CAUTION

If you have installed an EEsof product released before 1st August, 2014 on your system prior to installing an EEsof product released after 1st August, 2014 then the default EEsof Licensing tools path will remain C:\Program Files\Agilent\EEsof_License_Tools. On the systems that only have EEsof products released after 1st August, 2014 installed then the default EEsof Licensing tools path will be C:\Program Files\Keysight\EEsof_License_Tools.

- 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).
- For LSF style distributed simulations, ensure that the PATH on the client computer 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.

- 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.

- EEsos Licensing Tools installer can hang on systems with McAfee LiveSafe installed and running the default firewall settings.

Workaround: Prior to installing EEsos Licensing Tools, temporarily turn off the McAfee LiveSafe firewall.

- Licensing setup steps on systems with McAfee LiveSafe installed can fail.

Workaround: Under the McAfee LiveSafe firewall settings, under Port and Settings, allow the use of port 27001 for lmgrd.exe under the EEsos Licensing Tools installation bin directory. Under Internet Connections for Programs, enable lmgrd.exe, aglmmgr.exe and aglmwizard.exe for all devices and turn off monitoring.

- On Windows, EEsos product releases prior to 2014 can have boot time issues with licensing if a newer EEsos product is installed prior to installing the older product. For example, if a user installs Advanced Design System 2017 and then installs Advanced Design systems 2014.01, the user can have boot time errors with ADS 2014.01.

Workaround: For Advanced Design System users, set a system environmental variable named ADS_LICENSE_FILE under the Control Panel/ System, and Security / System / Advanced system settings and under the "environmental variables". Add a System variable named ADS_LICENSESE_FILE and the value will be the path to your local license file or the **port@host** setting for your site.

Licensing Information

- IC-CAP requires: a) the **version 2018.04** of the EEsos EDA licensing software, b) a minimum code-word version **2018.04 or above**, and c) the licensing server software, **lmgrd** and **agileesofd**, to be upgraded to at least the same versions as what are included in EEsos EDA Licensing software **2018.04**. IC-CAP will not start if any of these requirements is not met. Refer to the [License Codeword Version Compatibility Table](#).
- In the EEsos EDA License Tools version 2018.04, licensing vendor daemon (**agileesofd**) is integrated with FlexNet FNP **11.13.1.4** version (Windows) and FlexNet FNP **11.13.1.3** version (Linux) of FlexNet license manager daemon (**lmgrd**). For the Windows platform, IC-CAP installer will automatically set up these two new license server daemons by default for the local node-locked license users; for the Linux platform, you need to follow the [Linux/Solaris Licensing Setup](#) instruction to complete the licensing configuration process. For more details, refer to [Licensing \(For Administrators\)](#).

