

PathWave WaferPro
2020 Update 1

PathWave WaferPro 2020 Update 1.1 Release Notes

Notices

© Keysight Technologies Incorporated, 2002-2020

1400 Fountaingrove Pkwy., Santa Rosa, CA 95403-1738, United States All rights reserved.

No part of this documentation may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Keysight Technologies, Inc. as governed by United States and international copyright laws.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause.

Use, duplication or disclosure of Software is subject to Keysight Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Portions of this software are licensed by third parties including open source terms and conditions.

For detailed information on third party licenses, see [Notice](#).

Contents

PathWave WaferPro 2020 Update 1.1 Release Notes.....	4
What's New.....	4
Other WPE Enhancements	4
Changes.....	5
Issues Fixed	5
Installation.....	5
Documentation.....	6
Known Issues.....	6
Documentation.....	8
Licensing	8
Licensing Information.....	12

PathWave WaferPro 2020 Update 1.1 Release Notes

PathWave WaferPro is fully integrated with Keysight EEs of device modeling products. The tests developed in the IC-CAP environment can easily be executed in PathWave WaferPro, while data measured with PathWave WaferPro can be easily loaded into IC-CAP, Model Builder Program (MBP), and Model Quality Assurance (MQA).

PathWave WaferPro is a new, easy-to-use, yet flexible and powerful software for wafer-level measurements of devices, and circuit components. It is designed for device modeling and characterization engineers. For general information about IC-CAP, refer to the Keysight EEs of product page at <http://www.keysight.com/find/eesof-products>.

This document describes new features, functionality, fixed issues and known issues in PathWave WaferPro 2020 Update 1.0. It also includes documentation changes and provides workarounds for defects wherever possible. For more information on known issues in PathWave WaferPro 2020 Update 1.0, or to report a new issue, refer to the Keysight EEs of Knowledge Center at: <https://www.keysight.com/main/support.jsp?cc=IN&lc=eng>.

To download PathWave WaferPro 2020 Update 1.0, visit the Keysight EEs of Knowledge Center website: [PathWave WaferPro Software Download](#)

- To install PathWave WaferPro 2020 Update 1.0 in minimal steps, refer [Quick Install and License Setup](#).
- To install licenses for PathWave WaferPro 2020 Update 1.0 through PathWave WaferPro 2020 Update 1.0 License Tools, refer to [Licensing](#).

What's New

MEA Format (MBP) Saving

PathWave WaferPro added support for saving MEA files:

- A new set of turn-key routines for various device types are provided to export data in MEA format.
- The directory path and the name of the MEA files can be customized.
- Custom MEA-enabled routines can be added by the user via the UI or through the new Python module `wprombp.py`

For more details, refer [Saving MEA Files \(MBP Format\)](#).

Other WPE Enhancements

The limitation of the maximum number of points in PNA/PNA-X in LOG sweeps has been removed. The `maximum` number of points is now determined by the PNA Firmware version. To revert to the old behavior, define the `PNA_USE_OLD_MAX_SEGMENT_LIMIT` system variable.

Changes

Issues Fixed

- Fixed the Swept IMD Power issue. It is now working correctly when system variable UNIT_ORDER_ON is set

Installation

- If Keysight IO Library is installed by super user/root on Linux and other users on that machine want to use the IO Library, the following steps should be done:
 - Change permission of files under /dev/pcigpib
 - Add user to kt-iols, usbtmc and dialout groups

NOTE

For more details, refer Keysight IO library documentation.

- During installation of any product, if you get a warning message related to previous version detected and that release is already uninstalled, go to the .com.zerog.registry.xml file in the C:\Program Files | (x86)\Zero G Registry\.com.zerog.registry.xml (hidden file folder) and remove the old entry manually.
- On Linux platforms: If using National Instrument IO Libraries, Keysight IO Libraries, or TAMS IO Libraries that support VISA interface and instrument connections, these are the default locations that PathWave WaferPro will search on startup for the appropriate libvisa.so shared VISA IO shared library file with executable permission
 - The Linux PathWave WaferPro startup script will look for a VISA Shared IO library file named libvisa.so on the Linux system in the following methods in order:
 - If the optional environment variable **VISA_IO_LIBRARY_PATH** is set in the current user's environment to have the full file path location to the libvisa.so file, PathWave WaferPro will try to use that libvisa.so specified file path and no other.
 - If the **VISA_IO_LIBRARY_PATH** environment variable is not set, then PathWave WaferPro will search for a compatible VISA IO Library shared library in the following locations:
 - (Red Hat Enterprise 7 Only) PathWave WaferPro will search for Keysight IO Libraries VISA IO shared library files with executable permissions
 - Linux 64-bit OS (Red Hat Enterprise 7) only: /usr/local/lib64/libvivisa.so and /opt/keysight/iolibs/libktvisa32.so
 - If not found, then PathWave WaferPro will search for a NI IO VISA Libraries libvisa.so shared library file with executable permissions at the following location:
 - Linux 64-bit OS: /usr/local/lib64/libvisa.so or /usr/lib/x86_64-linux-gnu/libvisa.so
 - Linux 32-bit OS: /usr/local/lib/libvisa.so
 - If not found in the previous location, then PathWave WaferPro will search for a TAMS IO Libraries libvisa.so shared library file with executable permissions at the following location:
 - Linux 64-bit OS: /usr/lib64/libvisa.so
 - Linux 32-bit OS: /usr/lib/libvisa.so
 - If not found in the previous location, then PathWave WaferPro will search for the IVI Foundation libvivisa.so shared library file with executable permissions at the following location:
 - Linux 64-bit OS only: /usr/lib64/libvivisa.so

NOTE

The IVI foundation's VISA IO libivivisa.so will only be able to communicate via VISA IO with instruments if there is a vendor IO Library installed (i.e. Keysight IO Libraries or another vendor) and registered with the IVI foundation's libivivisa.so as an available vendor VISA IO library installed on the system.

Documentation

Starting with the 2020 release, the online help gets a new user interface. The new UI improves overall online help usability by providing the following key benefits in addition to several other minor benefits:

- **Table of Contents Sidebar:** Displays collapsible Table of Contents for the entire documentation. The left-double-arrow icon collapses the sidebar, and the right-double-arrow icon displays the sidebar back again.
- **PDF Button:** Allows you to instantly generate PDFs of the latest documentation anytime, including current page's children pages. Currently, the PDF generation option is available only for 2020 release. For other releases, you can switch to their Printing Manuals page and download the existing PDFs like earlier.
- **Product Release Switcher:** Allows you to view the current page in other supported releases listed in the drop-down menu. Once you select a release from the drop-down menu, the current page is updated to show the content applicable to the selected release. The Table of Contents is updated as well. With this, you bookmark URL of only one release and then switch to other releases from this drop-down menu.
- **Latest Documentation:** The documentation available in the new UI is always kept updated for all supported releases. These updates are available to you as soon as they happen at our end. This provides you 24x7 access to the most recent and technically accurate documentation.

For more details, see [How to Use Online Help](#).

Known Issues

Problem	Solution
When installing PathWave WaferPro Update 1.1, the MBP_DIODE example routines, WPro_MBP_DIODE_DC and WPro_MBP_DIODE_CV do not work out-of-the-box.	Manually copy the wproMBPDIODE.deck file from the installation directory \$WAFERPRO_ROOT/waferpro/simulation to the the local \$HOME/waferpro_2020/simulation. When installing an update, the deck files are not automatically copied from the installation to the local, so this needs to be done manually.

Problem	Solution
It takes longer time for PathWave WaferPro to launch.	<p>Here is the list of possible causes and workarounds:</p> <ul style="list-style-type: none"> ▪ Network condition to the license server(s) can affect the launch time. ▪ If a LAN-GPIB interface or a TCPIP instrument had been connected last time and if the connection is offline at the next start of PathWave WaferPro, it could be no response until it is timeout (default is 120s). Workaround: If this is the case, get the connection back online. Another workaround is before launching PathWave WaferPro, open <UserHOME>/.wxconfig_<version> file in a text editor, search for 'LINK HDWR "Hardware"', and at the dev_file_list section change the interface/connection name to "dummy". ▪ Cleaning up the temporary folder, which is normally '<UserHOME>\AppData\Local\Temp' on Windows, that PathWave WaferPro uses could be a potential solution for the longer time to launch.
<p>When you use HPIB_open() in a Transform:</p> <ul style="list-style-type: none"> ▪ Make sure to match the HPIB_open() and HPIB_close() within a Transform, otherwise it can end up consuming too many EID numbers to cause failure of the instrument connections. ▪ Using HPIB_open() with a VISA Instrument-type connection can cause a problem: Instrument state may not be preserved between Transforms. 	NA
System variable WAFERPRO_HIDE_S2_STATUS does not work on Linux.	NA
B1500A: Invalid Pulse Width setting in the Instrument Options table results in Error-120: Incorrect parameter value.	<p>Set valid Pulse Width:</p> <p>HPSMU/MPSMU/HRSMU: >= 500us</p> <p>MCSMU: >=50us / 2us resolution</p>
Instrument option settings is not correctly handled in measurements if WPRO_INIT transform is added and it does not have the call to load instrument options.	Insert a line to call WPro_LoadInstrOptions(RoutineName, SetupName) function in the WPRO_INIT transform of the user-defined Routine/Setups.
E4991B is not supported.	NA
In B1500, the measurement fails with NI IO Library in the old instrument mode.	Close the Nucleus software and restart the computer.
LSYNC is not supported in PathWave WaferPro.	NA

Problem	Solution
Timeout failure on non-VISA connection with B1500A in long-time measurement such as Sampling measurement.	Use VISA connection with the System Variable 'USE_STB_OPC_FOR_DATA' = Yes, which was introduced in this release.
If you try to install PathWave WaferPro 2020 Update 1.1 after installing a higher version of the product, a warning is displayed that you have already have a version installed. To continue the installation you will have to uninstall the previous version.	Workaround: Delete the <code>.com.zerog.registry.xml</code> file located in the <code>C:\Program Files\Zero G Registry</code> directory.

Documentation

- On Windows, Printing directly from Qt Help generates non-readable output. **Workaround:** Use PDF version of the document for printing purpose.
- In the online 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 PathWave WaferPro 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.
- In the 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 Qt 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`
- The Qt search does not support `[]` or `{}` or any other text using these combinations.

Licensing

- Unable to install Licensing Hardware Key Drivers on Windows. **Workaround:** Turn off UEFI Secure Boot (BIOS) and use the default 6.3 version of the Wibu key driver delivered with the EEsof Licensing tools.
- Licensing may not support a license file path that is too long. This will likely occur when you have too many license files. **Workaround:** Remove some license files, move the license files to a shorter directory path or to combine license files into a single file.
- 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 `lmgrd` 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 (*lmgrd.exe*) from the command line (e.g. *lmgrd.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 *Imgrd* is running, click **View Log**. A log window appears that confirms whether *agileesofd* and *Imgrd* are up and running.
- While running multiple versions of prior WaferPro releases together, set `WaferPro_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 `WaferPro_LICENSE_FILE`. **Workaround:** You can use `WaferPro_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.
- EEsof Licensing Tools installer can hang on systems with McAfee LiveSafe installed and running the default firewall settings. **Workaround:** Prior to installing EEsof 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 *Imgrd.exe* under the EEsof Licensing Tools installation bin directory. Under Internet Connections for Programs, enable *Imgrd.exe*, *aglmmgr.exe* and *aglmwizard.exe* for all devices and turn off monitoring.
- On Windows, EEsof product releases prior to 2014 can have boot time issues with licensing if a newer EEsof product is installed prior to installing the older product. For example, if a users 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 an System variable named ADS_LICENSE_FILE and the value will be the path to your local license file or the port@host setting for your site.

Licensing Information

- PathWave WaferPro requires: a) the **version 2019.02** of the EEsof EDA licensing software, b) a minimum code-word version **2019.02 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 EEsof EDA Licensing software **2019.02**. WaferPro 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 2019.02, 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, PathWave WaferPro 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 Licensing Setup](#) instruction to complete the licensing configuration process. For more details, refer to [Licensing \(For Administrators\)](#).

