WaferPro Express
2015_01 Release Notes

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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.

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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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Julian Seward, jseward@bzip.org
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).

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

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L. Peter Deutsch
ghost@aladdin.com

Independent implementation of MD5 (RFC 1321).

This code implements the MD5 Algorithm defined in RFC 1321, whose text is available at
http://www.ietf.org/rfc/rfc1321.txt
The code is derived from the text of the RFC, including the test suite (section A.5) but excluding the rest of
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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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adodbapi

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adodbapi - A python DB API 2.0 (PEP 249) interface to Microsoft ADO

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Contents

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

WaferPro Express 2015.01 HF1 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.

Version

702.HF1

What's New in WaferPro Express 2015.01 HF1

- New prober support of Cascade Microtech Velox 2.0 with WaferSync interface - A new software architecture for wafer-level measurement systems

- Full wafer map synchronization with Velox 2.0 - Streamlines the process of setting up test plans

- Automated RF calibration verification with Velox 2.0 and WinCal XE - Increased efficiency in S-parameter measurements

- Support of WMS verification with Keysight Verification Substrate (KVS) - Wafer-level Measurement Solution (WMS) system level verification at installation

- Noise Figure measurements with PNA-X - Expanding measurement capabilities beyond S-parameters

- Easy import of test routines from IC-CAP *.dut* and *.mdl* files - Leverage existing work, including test programs

- Enhanced instrument and prober settings - Increased efficiency in saving /reading setting files

- Saving of .s2p files - Providing wider flexibility to data saving

- New Email notification - Helps improving overall measurement flow efficiency

- Improved Routines and Measurement Groups editing and programming environment - UI and Functionality enhancements

Supported Operating Systems

WaferPro Express 2015.01 HF1 is supported on the following operating systems:

- Windows 7
- Red Hat Enterprise Linux 5/6

Installing WaferPro Express 2015.01 HF1

To install WaferPro Express 2015.01 HF1:

1. Back up your user file: `$HOME/.wxconfig_2015_01.`

2. Back up your user folder: `$HOME/hpeesof/waferpro_2015_01.`

   > **NOTE** If you need a clean installation, remove the file and the folder. If you need a clean backup of the user settings for the older version, copy the file and the folder with a different name.

   > **NOTE** To update the Simulation Deck files in the user folder, remove `$HOME /hpeesof/waferpro_2015_01/simulation` folder before starting the application. (recommended)

3. Uninstall the earlier version of WaferPro Express (and reboot the PC on Windows). Ensure that no installation folder of the removed version resides on your system.

4. Clear the cache to get the updated documentation if the earlier version of **WaferPro Express 2015.01**was installed.

   a. **For Windows**: Delete $HOME/AppData/Local/Keysight/Help /waferproxp201501 folder

   b. **For Linux**: Delete $HOME/.local/share/data/Keysight/Help /waferproxp201501 folder.

5. Download WaferPro Express 2015.01 HF1 (navigate to the page and click **Details and Download** from **Trials and Licenses** tab and click the Hotfix link), and install it.

6. Verify the license. See also EEsof EDA Licensing software.

7. Start the application. The system starts using the user file and the user folder.

   > **NOTE** Measurement Routines, Device Types, Measurement Types, Hardware Connections settings and System Hardware Drivers are saved to the user file or the user folder as Application settings, which are separate from Project settings.

For more information, see Installation and License Setup.

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- WaferPro Express 2015.01 runs with: a) **version 2014.01** of the EEsof EDA licensing software, b) version **3.1**, **3.2** codewords, 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**. WaferPro Express 2015.01 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*). WaferPro Express 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 Keysight EEsof Tech Support.

Issues Fixed in WaferPro Express 2015.01 HF1

- Many usability improvements done.
- Incorrect manual measurement setting when auto-saving the project has been fixed.
- Get/Set Wafer Map was improved for Velox.
- Bug fixes on ProberBench drivers.
- Improved the speed of creating a wafer map comprising a large number of dies.
- Hang-up in Target Die selection has been fixed.
- Test Plan Run Controller was introduced for re-run / partial run of a Test Plan.
- GPIB issues have been fixed.
- Error in reading a log sweep mdm file has been fixed.
- Default/Master instrument options and system hardware option settings in the Hardware Connection window can now be saved to / recalled from a . hdw file.
- File Open/Save of the master instrument options table is now available.
- Bug fix on handling hardware settings and test bench.
- Fixed Unit Alias control issue to retain user-defined measurements.
- Error with Time Mode Input has been fixed.
- Fixed applied for handling device parameter values when a device is included multiple times in Meas Device table.
- Save To File button in manual measurement window now saves a set of mdm data files.
- View data in text is available both in Routine Editor window and Meas Group window.
- For Routine customization, new waferpro functions were added for more simple code in WPRO_INIT and WPRO_EXECUTE transform.

- New PEL/Python factory routines added. For more information, see Factory Routine Library.

  - In PEL:

    - Routine~WPro_MOSFET_DC_basic3.dut

    - Routine~WPro_2PORT_SystemR_P1.dut

    - Routine~WPro_2PORT_SystemR_P2.dut

    - Routine~WPro_MESFET_DC_SP.dut

    - Routine~WPro_HEMT_DC_SP.dut

  - In Python:

    - Routine~WPro_MOSFET_DC_basic_py.dut

    - Routine~WPro_MOSFET_DC_basic2_py.dut

- PEL/Python examples were added.

- KVS version 1.0 was supported for system verification.

- B1500 measurement speed issue with SCUU has been fixed.

- Set Instrument button was added for capacitance meter calibration.

- UI of Wafer Data Mapping Viewer was improved.

- Total Device Count in Test Plan Start window now shows the correct total number.

- Saving a project does no more clear the Measurement Result Log window.

- Documentation updated.

Issues Fixed in WaferPro Express 2015.01

- WaferPro Express no longer crash if you uncheck sequence checkbox in Test Plan tree and perform manual measurement under the items.

- The bug that caused WaferPro Express crash when deleting a routine tied to a measurement group and renaming an existing routine with the same name has been fixed.

- You can view input data for MeasGroups linked to Factory Routine

- Fixes have been applied to read and set data storage path information on opening a project

- Matrix **Connect** button is available.

- Fixed made to perform check for Home Die.

- Open/Save Transform (Python/PEL program) from file is available.

- Copy and paste a routine to different device type works as expected.

- A fix has been made to allow considering deactivated dies during Manual /Single Measurement.

- Instrument Options table (default) in Measurement Groups window does not remain null after Run manual measurement or start test plan.

- Fixed applied to update measurement group setup check boxes while loading the cvs file for measurement condition variables.

- Fixed applied to refresh the check box in the Measurement Group window when you add a routine control variable and click refresh.

Issues Fixed in WaferPro Express 2015.01 Beta 1

- 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.

- Several application crash / hang-up cases fixed.

- Factory routines and user-defined routines are separately treated more clearly

- Prober Coordinates in WaferPro Express is now same as Prober 'Machine' Coordinates (fixed for each probe station).

- Move up/down available for Routine Control Variables and Setups.

- Open/Save buttons for Instrument Option table in MeasGroup window now uses .iot file.

- For Power Input, Watts/dBm can be selected now.

- View (data) button is available in Transform editor window.

- View (data) function is available for Inputs in MeasGroup window.

- While running a test plan, if a simulation is not runnable, an error message is displayed.

- Fixed Routine Editor window bugs.

- Checkbox for MeasGroup setup is now working for selection.

- License error while opening plot when test plan is running

- Fixed bugs in Set VNA (NWA) window.

- UI/Bug fixes in Hardware Connection window

- Fixed mismatch/sync issues around MeasGroup.

- Fixed bug on SMUs selection during measurements.

- Fixed issue with K70x driver in Driver mdl.

- Factory routines issue resolved.

- Example projects issue resolved.

- PA300 driver in Driver mdl should not require other prober license.

- Fixed tmp files issues on Linux.

- Resolved PT data CSV file writing.

- Fixed Device Type dialog issue.

- Bug fixes in Add Target Dies window.

- Resolved sync issues among wafer map views.

- Need to skip temperature changing / stabilization procedure for 'None' driver.

- Bug fixes in Wafer Data Mapping viewer.

- Set Temperature was not working with Nucleus.

- Measurement Log view cleared when saving project.

- Die state in a wafer map was not correctly saved to/read from a project file.

- Double number for [um] values should not be in "x.xxxK" format.

Known Issues

- There is a limitation to the size of the Routine Library. Because WaferPro Express is a 32 bit application, the process size can only grow to ~3GB even on a 64-bit system with more memory than that. Routine definitions are used for measurement and simulation and occupy memory based on the number of inputs/outputs and number of points. Because of this, there is a practical limit to the size of the Routine Library (typically larger than 100 routines). By using Routine Control Variable to control the number of points in setups, the size of the Routine Library can be minimized by giving such variables small default values.

- When copying WaferPro Express files (*.wxconfig_[version]*, *(project).wpx*) from Unix operating system to Windows, you need to execute `unix2dos` command.

- The vendor daemon *agileesofd* sometimes crashes when running on remote Windows 8 machine. This crash occurs in the License Manager and Product Selector dialog boxes. WaferPro Express can still run. Keysight is working with Flexera to resolve this issue.

  Workaround: Use a different operating system for remote license server. If you must use Windows 8, the vendor daemon may crash when viewing licenses with the License Manager or when requesting license availability from the Product Selector dialog box. The license server, *lmgrd*, automatically restarts the vendor daemon and license checkout can proceed normally.

- You need to manually set the Origin die and Home die after executing the Get Prober Wafer Map for Nucleus/Proberbench feature.

- After changing the Origin die, set the Home die after that.

- Reopen the Manual run dialog box, to get the updates on MeasGroup.

- Cut/Copy/Paste operation is inconsistent across tables.

- For Nucleus / Proberbench driver, Get/Set Wafer Map works only when you click **Initialize Setup** button available in HW Connections window.

- For Nucleus / Proberbench driver, Get/Set Wafer Map works very slow.

- The "Delete" key in the keyboard does not functioning correctly in some cases.

- While connecting to Velox with multiple WaferPro Express sessions may cause a crash.

- Two GPIB interfaces and Rebuild provides wrong interface selection to a connected instrument.

- Add Measurement Device window content is not saved in the project.

- Unit column is missing in the MeasCond variable table available in the MeasGroup window.

- An error is displayed when you import the subsites from velox including "[DieOrigin]" and save the test plan.
- Connection issue with Velox server on multiple machines.
- `MdmList_xxx.csv` will not update when in locked state.
- Routine editor window is not automatically displayed on top of Linux but you can bring this manually. (may not be fixed).

GUI/Functionality

Problem	Solution
Previous test plan status window does not close automatically.	To close it manually, select **File > Exit** from the **Status** window.
An empty field in the **Device Type Editor** does not allow to close the dialog box.	NA
You might face an issue with **Ctrl+C**, **Ctrl+X**, **Ctrl+V** shortcut keys.	Select and right-click on the text to be copied, then select "**Copy**" from the context menu.
Device Type and Meas Group are not completely synchronized with Meas Groups. For example, after modifying Device Type, the corresponding Meas Group is not updated.	NA
Undo/Redo feature is not fully functional for WaferPro Express.	NA
An absence of "`Name`" variable in **Routine Control Variable** table displays an error during test plan execution.	NA
Meas Group Summary is not updated immediately.	To update it, click the white space in the table or other item to deselect or reselect the item.

Database

Problem	Solution
Save To File option in Manual measurement is currently not working with Database.	NA
Opening a plot for "`Routine_WPro_BJT_DC`" routine, when storage mode is set to database displays an error prompt.	NA

Licensing

Problem	Solution
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.	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: - Remote simulations not working or - Second local simulation not working in case the license is node-locked and also has incorrect version.	It is recommended to 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. That means, store the node-locked license and floating license on different servers and point the respective license based on what needs to be executed. In addition, it is recommend to remove the expired codewords to separate out the new and the old versions of codewords into different files and different servers.
WaferPro Express not starting on Linux platform.	Set `WAFERPRO_LICENSE_FILE` on the linux platform.
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.	It is recommend to 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.	NA

Problem	Solution
The "Check-in failed" message occurs in the license activity log and can be ignored; the license mentioned in this message is actually properly returned.	NA
License Setup Wizard does not remove any previous user-configured FLEX Windows License Service installed using FlexNet's lmtools.	You must remove the previous user-configured Windows License Service via lmtools. **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`.** − Run the lmtools.exe from `C:\Program Files\Agilent\EEsof_License_Tools\bin` or `C:\Program Files\Keysight\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.
Receiving an error message, "Licensed number of users already reached" on running multiple versions of WaferPro Express releases together.	Set `WAFERPRO_MAXIMUM_BUNDLE_USAGE=ON` in your environment, so all versions uses the same method to check out the licenses.

Problem	Solution
On some Windows 7 machines, when more than one definition of an Ethernet adapter exists (duplicates), license checkouts may appear to hang up.	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.	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.)	NA
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` .	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.	Wait for a license on the server to become available as you normally would before launching the product.

Problem	Solution
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.	NA
Product Selector tool will be unable to display the license server status properly when connected to older license server.	Upgrade your license server to the latest version.
Product selector opens every time we invoke WaferPro Express even when we auto-start by selecting a particular product license.	Set the environment variables, `WaferPro-XP_PRODSEL_PREVIOUS` and `WaferPro-XP_PRODSEL_AUTOSTART` to the same values of what it is creating for `WAFERPRO_PRODSEL_PREVIOUS` and `WAFERPRO_PRODSEL_AUTOSTART` resolves the problem.
Unable to install/uninstall WaferPro Express on Windows OS.	Install the latest 64-bit version of Java from Oracle if your PC is on 64-bit version of Windows. NOTE: If a web browser is running on 32-bit mode then, by default, 32-bit version of Java is installed even if the OS is 64-bit version. Therefore, ensure that you have 64-bit version of Java installed.

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TECHNOLOGIES