PathWave System
Design (SystemVue)
2021

Licensing (For Administrators)

KEYSIGHT
TECHNOLOGIES

Notices

Restricted Rights Legend

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Contents

This document is intended for use by CAD administrators and end users (who perform advanced configuration tasks) as an aid in managing Keysight EEsof licensing, which utilizes the FlexNet licensing solution. For additional information on FlexNet, refer to the FlexNet Publisher's License Administration Guide. This document focuses on recommendations and information specific to the Keysight EEsof licensing scheme.

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Licensing Overview

Licensing Overview

Licensing governs the usage of a product. This section provides an overview of Keysight EEsof Licensing. It covers different types of supported licenses, information on how to recognize your license type, description of a typical license file (.lic extension), supported platforms for License Servers and license architecture that governs the licensing behavior.

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- License Server Supported Platforms
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License Server Supported Platforms

License Server Supported Platforms

The following table lists the supported platforms (Windows, Linux, and Solaris) for License Servers.

EEsof License Version	Windows XP	Windows 7 Enterprise		Windows 8 Enterprise		Windows 10	RedHat Linux RHEL 4	RedHat Linux RHEL 5	RedHat Linux RHEL 6	RedHat Linux RHEL 7	SuSe Linux SLES 10	SuSe Linux SLES 11	SuSe Linux SLES 12	Solaris 10
32/64 bit	32/64	32	64	32	64	64	64	64	64	64	64	64	64	64
2012.08	✓	✓	✓	✗	✗	✗	✓	✓	✓	✗	✓	✓	✗	✓
2013.01	✓	✓	✓	✗	✗	✗	✗	✓	✓	✗	✓	✓	✗	✓
2013.05	✓	✓	✓	✗	✗	✗	✗	✓	✓	✗	✓	✓	✗	✓
2013.09	✗	✓	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓	✗	✓
2014.01	✗	✓	✓	✓	✓	✗	✗	✓	✓	✗	✗	✓	✗	✓
2014.07	✗	✗	✓	✗	✓	✗	✗	✓	✓	✗	✗	✓	✗	✓

EEsof License Version	Windows XP	Windows 7 Enterprise	Windows 8 Enterprise	Windows 10	RedHat Linux RHEL 4	RedHat Linux RHEL 5	RedHat Linux RHEL 6	RedHat Linux RHEL 7	SuSe Linux SLES 10	SuSe Linux SLES 11	SuSe Linux SLES 12	Solaris 10
2015.05	✗	✗ ✓	✗ ✓	✗	✗	✓	✓	✗	✗	✓	✗	✓
2016.05	✗	✗ ✓	✗ ✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
2017.01	✗	✗ ✓	✗ ✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
2018.04	✗	✗ ✓	✗ ✗	✓	✗	✗	✓	✓	✗	✓	✓	✗
2019.02	✗	✗ ✓	✗ ✗	✓	✗	✗	✓	✓	✗	✓	✓	✗
2020.02	✗	✗ ✓	✗ ✗	✓	✗	✗	✓	✓	✗	✓	✓	✗

Legend	Description
✓	Supported
✗	Unsupported

License Types

License Types

Keysight EEsof licensing scheme supports only counted licenses that are either node-locked or floating .

| NOTE | For details on License File structure and syntax, refer to Understand Your License File. |

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- Floating Licenses
- Node-locked Licenses
- Recognize License Type

Floating Licenses

Floating Licenses

In case of a floating (network) license , the Keysight EEsof software application is installed on one or more client machines and uses the environment variable `<PRODUCT>_LICENSE_FILE` to point to the license server. Both license server manager (***lmgrd***) and vendor daemon (***agileesofd***) run on the license server system.

Figure: Floating License Setup
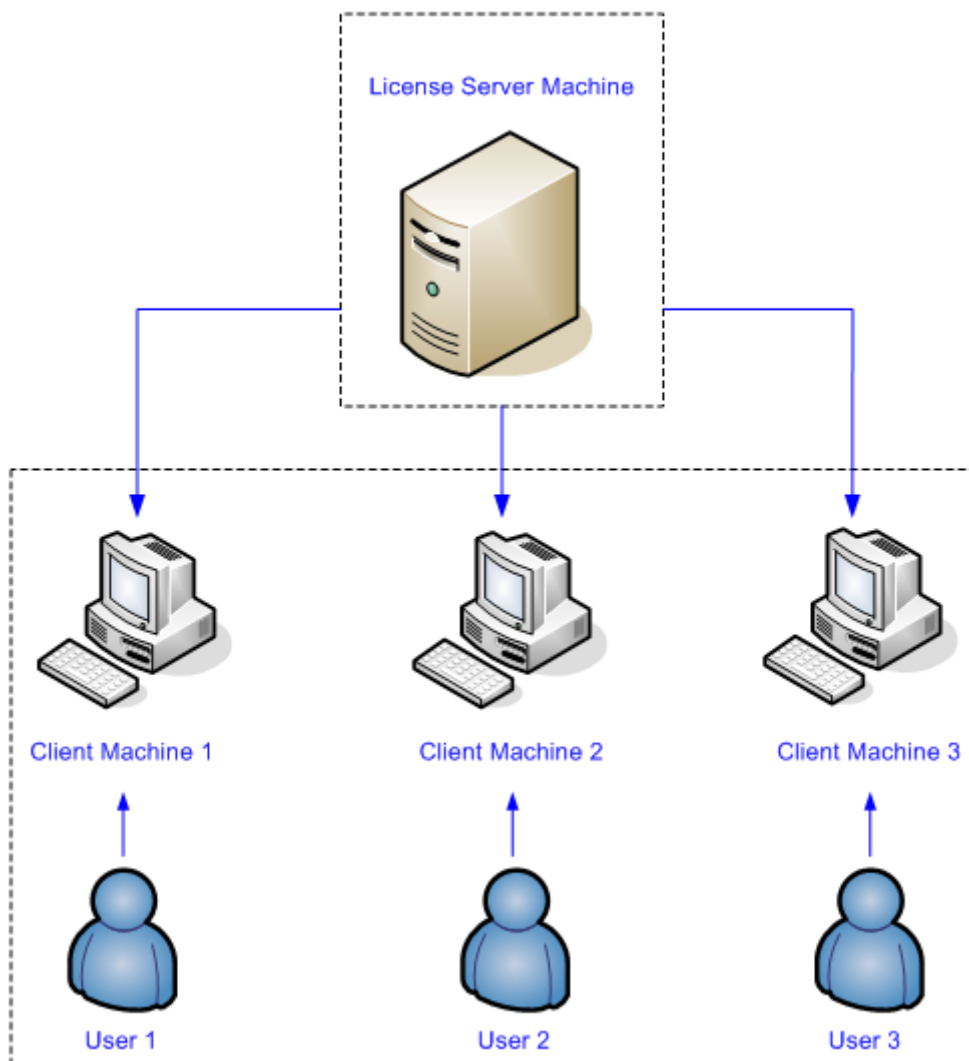
Node-locked Licenses

Node-locked License

A node-locked license permits the software to run on only one machine. Both license server manager (***lmgrd***) and vendor daemon (***agileesofd***) run on the local machine for which the license is issued.

Figure: Nodelocked License Setup
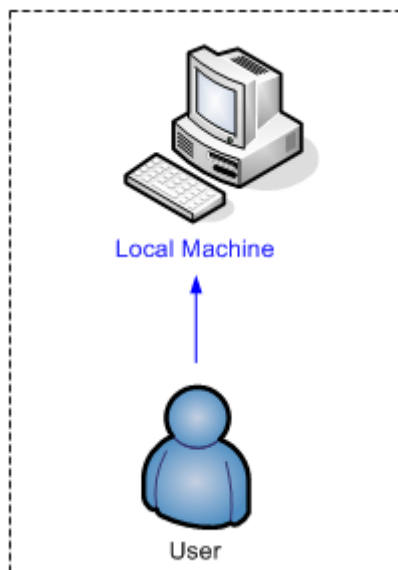
Recognize License Type

You can determine the license type to be node-locked or floating by looking at the INCREMENT lines in your license file.

Node-locked License

The INCREMENT line corresponding to a node-locked license embeds the CPU ID of the license server machine or the FlexNet ID of the dongle in the HOSTID= part of the statement.

Example 1: Node-locked license tied to a CPU ID

```
SERVER this_host D8D385997F8A
VENDOR agileesofd

INCREMENT b_core agileesofd 3.0 14-sep-2013 1
VENDOR_STRING="D8D385997F8AP=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,
156D=#W2200BP,ADS_Core;e_core :
MUFNCUI WQDZPFX QTBMCYE SW2TFGC OWKGNHJ UIB" <b><big>HOSTID=d8d385997f8a</big></b>
ISSUER=LICENSEID=1598592 START=19-Sep-2012
SIGN="033F C701 6926 5CB6 5505 F6EC D5EE E3FE F302 A765 9201 008B E71B FE5B 2308 EE8F
D5C0 9374 AE0F 2F68 24CD"
```

As shown above, presence of HOSTID=d8d385997f8a indicates that codeword b_core is tied to a CPU of the ID d8d385997f8a.

Example 2: Node-locked license tied to a USB dongle

```
SERVER this_host FLEXID=10-0BEBCD44
VENDOR agileesofd

INCREMENT b_core agileesofd 3.0 14-sep-2013 1
VENDOR_STRING="10-0BEBCD44P=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,
156D=#W2200BP,ADS_Core;e_core :
MUFNCUI WQDZPFX QTBMCYE SW2TFGC OWKGNHJ UIB" <b><big>HOSTID=FLEXID=10-0BEBCD44</
big></b> ISSUER=LICENSEID=1598593 START=19-Sep-2012
SIGN="002F CADB 63C8 0FCE DF16 BBA4 4AAB A335 B54F F121 3A02 79A9 D9A9 A701 F727 AAF8
791E 0615 BD0B D95F 87C5"
```

As shown above, presence of HOSTID=FLEXID=10-0BEBCD44 indicates that codeword b_core is tied to a dongle of the ID 10-0BEBCD44.

Floating License

An INCREMENT line that does not have the `HOSTID=` identifier embedded in it indicates the license to be a floating (network) license .

Example 1: Floating license tied to a CPU ID

```
SERVER delly 001EC940F06A 27001
VENDOR agileesofd

INCREMENT b_cct_layout_momentum agileesofd 3.0 07-feb-2014 10
    VENDOR_STRING="001EC940F06AP=#1,2,3,4,7,8,9,10,11,13,14,18,19,20,22,23,24,25,26,
27,55,62,63,65,66,67,68,105,106,107,108,109,110,111,115,116,131,132,133,135,154,155,
156,
1001007D=#W2214BT,ADS_Core+Layout+CircuitSim+MomentumG2;e_core,e_phys_layout,e_sim_en
velope,e_sim_harmonic,e_sim_momentum,e_sim_trans_conv
    : CNRHDNH JB1CQEZ RXYAGCK RXFTSLT KBJMBHA JIYPOUK DFYPRWE
    QGY1OEZ QGAUHJL U" START=10-aug-2012 SIGN="0118 C5B9 0443 57BB
    CE05 08DB 0539 D627 D41B C8BC 8C00 5000 EA38 3BF4 B1A5 9E8D
    06F3 E837 63C4 4B05 31DE"
```

As shown above, no `HOSTID` in the `INCREMENT` line indicates that codeword `b_cct_layout_momentum` is a floating license.

See Also

- Setting up Licenses on Windows
- Setting up Licenses on Linux

Licensing Architecture

Keysight EEsof licensing architecture comprises of three components to manage the licensing scheme:

- Keysight EEsof Vendor Daemon (*agileesofd*) to manage product licenses
- FlexNet Daemon (*lmgrd*) to manage servers
- Keysight EEsof Application Client to manage feature requests.

Figure: Keysight EEsof Licensing Architecture

Host/Server

EEsof Vendor Daemon (agileesofd)

Manages Keysight EEsof product licenses
- Manages bundle/element counting and stacking
- Manages job-controlled feature bit counting

FlexNet Daemon (lmgrd)

Manages what server(s) to pull licenses from
- Works with the license file
- Maintains which Keysight EEsof process has which license checked out

EEsof Application Client

Manages feature requests
- Maps feature requests to product Bundles and Elements
- Manages "product selection" logic – i.e., which element or bundle to try

Understand Your License File

The license file contain codewords that allow you to use specific features of an Keysight EEsof product.

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- License File Structure
- License File Syntax

License File Structure

License File Structure

A license file contains two major sections - License Summary Header and License Codewords.

License Summary Header

License summary header provides an overview of all the codewords included in the license file and setup instructions.

Sample License Summary Section

```
#=====================================================================
#                    SUPPORT
#=====================================================================
# If you are unable to set up your license file then please contact
# Keysight EEsof EDA Technical Support:

#  US - 800-473-3763 or eesof-usa_support@keysight.com

#  Asia - eesof-asia_support@keysight.com

#  Australia:   1800-629-485

#  China:       800-810-0189

#  Hong Kong:   800-938-693

#  India:       1800-11-2626

#  Malaysia:    1800-888-848

#  Singapore:   1800-375 8100

#  Taiwan:      0800-047-866

#  Thailand:    1800-375-8100

#  Korea:       080-769-0800

#  Europe:      1-800-473-EESOF (1-800-473-3673) or eesof-
europe_support@keysight.com

#  Japan:       81 (426) 60-8416 or eesof-japan_support@keysight.com
```

```
#    or visit: http://www.keysight.com/find/eesof-support

# THIS LICENSE HAS BEEN GENERATED FOR HOSTID 0005ccccaaaa

#=====================================================================
#                  LICENSE SUMMARY
#

# All "LICENSE pjc_XXX" lines are for EEsof license functionality only -
Please ignore

#=====================================================================

# This is a list of options contained in this license file

#License              Description
Expiration   Qty Version Hostid
#
#W2200BP-1FP        Node-locked license ADS Core
10-AUG-2014  1   3.1      0005ccccaaaa
#LICENSE NAME b_core
#
#
#=====================================================================
#                  LEGAL
#=====================================================================
# The Use of this license file is acceptance of Keysight EDA Licensing usage
terms and conditions.
#
#=====================================================================
#                  QUICK START INSTRUCTIONS
#=====================================================================
#
# LICENSE Server Setup for 2011+ version software:
#
# Windows Platforms:
#  1) Place this file on machine where file is intended:  For MAC address
tied licenses, ensure this file is placed on the machine whose MAC address
agrees with
#     the one appearing in the SERVER line of this file.  For dongle tied
license, ensure this file is placed on the machine where the dongle is
inserted.
#  2) If this is a dongle tied license, insert your Agilent or Keysight
supplied USB dongle
#  3) Start your Agilent EEsof or Keysight EEsof EDA product.  The License
Manager will open up.  Do the following:
#     A) In the center of the dialog box, select "I have a license file to
install" or "I want to add or replace a license file" and press "Next"
```

```
#     B) The License Setup Wizard appears.  Press the "Add" button and enter
the path to your license file.   Press "Next".  The wizard does the rest and
you are ready to go!
#
#
# Linux/UNIX
#
#  1) Place this file on the license server machine where file is intended:
For MAC address tied licenses, it is the machine whose MAC address
#     agrees with the one appearing in the SERVER line of this file.  For
dongle tied license, it is the machine where the dongle is inserted.
#  2) Acquire latest FLEXnet bits archive file from   http://
www.keysight.com/find/eesof-flexnet-downloads and then unarchive file
contents to a desired folder.
#     A) IF License server not previously installed: From FLEXnet folder,
run ./lmgrd .c <Path-To-License-File> -l <Path-To-Flex-Output-File>
#     B) IF License server previously installed and it is running the latest
licensing software: From FLEXnet folder, run ./lmutil lmreread .c <Path-To-
License-File>
#
#
#
# LICENSE Client Setup
#
# Windows:  No environment variable needed.  License Manager sets this up
through wizard interface. Appropriate system variables are entered into
Windows Registry.  Do not explicitly define License path environment
variable.
#
#
# Linux/Unix: Define {PRODUCT}_LICENSE_FILE in your license client
environment where PRODUCT=ADS, EMPRO, ICCAP, or GOLDENGATE.
#     Set value to port@<License-Server-Name>.  For example,
ADS_LICENSE_FILE = 27000@EDAToolsServer.somecompany.com
#
#
#
# LICENSE Setup for ADS Pre-2011 software with NO 2011+ Agilent EEsof or
Keysight EEsof EDA software installed
# Windows Platform:
#==================
#  1) If you have not already done so, download the latest Keysight EDA
Licensing software Installation executable from,
#     www.keysight.com/find/eesof-flexnet-downloads to temporary place on
local disk. Then install licensing software using "Run as Administrator".
#  2) Open a Windows command prompt as Administrator
#  3) Change directories to installation bin folder EEsof License Tools. For
example, C:\Program Files\keysight\EEsof_License_Tools\bin
```

```
#  4) Make note of the codeword version which appears at top of this license
file or can be found as in the INCREMENT lines below in the file.  It is the
fourth item on the line. For example, 3.1.
#  5) Run the following command:  aglmwizard.exe -v <codeword version>
EXAMPLE: aglmwizard.exe -v 3.1
#  6) A wizard interace appears.  You will be required to select a product
in the drop down that appears. Select the product that corresponds to the
licenses in this license file. Press "Next"
#  7) Select the appropriate Keysight EDA product you will be licensing in
the drop down menu and then proceed in the wizard.  Press "Next"
#  8) You will now be presented with a few different options. Select "I have
a license file to install" or "I want to add or replace a license file" and
press "Next".
#  9) You will now enter the path for your license file. Then press "Next".
# 10) In Windows System Properties, define AGILEESOFD_LICENSE_FILE to
@<machine-where-this-license-file-is-installed>
#
# Linux/UNIX:
#============
#  1) Define AGILEESOFD_LICENSE_FILE in your license client environment
#  2) Refer to instructions above for Linux License Server setup.
#


#
#
#
#=======================LICENSE KEYS START HERE=======================
#
SERVER this_host 0005ccccaaaa
VENDOR agileesofd
#
INCREMENT b_core agileesofd 3.1 10-aug-2014 1
VENDOR_STRING="0005ccccaaaaP=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,15
6D=#W2200BP,ADS_Core;e_core : QUAQRWX FSAQCOV DNLFVCD IFQVEZR XYAUEQE FZ"
HOSTID=0005ccccaaaa ISSUER=LICENSEID=3679917 START=11-Jul-2014 SIGN="02DB
54FA 1602 6455 96F9 2CD6 61E9 685E 8F42 36AE 8603 FC38 B354 B232 FAFB 844A
6828 DD4A C924 3253 857A"
INCREMENT pjc_b_core agileesofd 3.1 10-aug-2014 1
VENDOR_STRING="0005ccccaaaa : NFSAQCO VDNH1FU YUHLODI F1GSHFU WXJEZRX
YAUEQEF ZUAQRWX" HOSTID=0005ccccaaaa ISSUER=LICENSEID=3679917 START=11-
Jul-2014 SIGN="0037 C92D F4DE 7805 9AE2 A1BF C7AA 7704 F720 EE90 7B01 2305
0E56 668F A750 411E A2BD 701A 2F1F 9452 9BAA"
#
#=======================LICENSE END=================================
```

License Codewords

License codewords follow FlexNet format and contains the server, vendor, and increment lines.
Sample License Codewords Section

```
# sample license file
SERVER this_host D8D385997F8A
VENDOR agileesofd

INCREMENT b_core agileesofd 3.0 14-sep-2013 1
VENDOR_STRING="D8D385997F8AP=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,15
6D=#W2200BP,ADS_Core;e_core : MUFNCUI WQDZPFX QTBMCYE SW2TFGC OWKGNHJ UIB"
HOSTID=d8d385997f8a ISSUER=LICENSEID=1598592 START=19-Sep-2012 SIGN="033F
C701 6926 5CB6 5505 F6EC D5EE E3FE F302 A765 9201 008B E71B FE5B 2308 EE8F
D5C0 9374 AE0F 2F68 24CD"

INCREMENT pjc_b_core agileesofd 3.0 14-sep-2013 1
VENDOR_STRING="D8D385997F8A : RQHSXF2 AQCOVRN H1FUYQN LMDYFPG SHFUWXJ
EZRXYAU EQEFZHA" HOSTID=d8d385997f8a ISSUER=LICENSEID=1598592 START=19-
Sep-2012 SIGN="031A EA80 70C0 60D1 CAC4 B206 DD99 C63F DB63 9DB8 E901 B4E8
F500 45F4 25F1 0B27 0DD1 6919 3CEC 119F FD6F"
```

License File Syntax

License File Syntax

This section provides a brief overview of the syntax of the statements included in the License Codewords section of the license file. For further details, refer to the License File Syntax in FlexNet Publisher's License Administration Guide.

The License Codewords section, usually contains three pieces of information: the `SERVER` line, the `VENDOR` line, and all the `INCREMENT` lines representing the licensed codewords.

SERVER Line Syntax

Keysight supports both single server and redundant servers, as per FlexNet standard configurations. In case of single server, the `SERVER` line syntax is:

```
SERVER this_host   <hostid> [port]
```

In case of redundant servers, the `SERVER` line syntax is:

```
SERVER   <hostname1> <hostid1> <port>
SERVER   <hostname2> <hostid2> <port>
SERVER   <hostname3> <hostid3> <port>
```

where,

- hostname1, hostname2, hostname3 are the system host names or IP address. String returned by the hostname or *uname –n* command on UNIX; or by the *ipconfig /all* command on Windows. Note that redundant servers should all have the same OS, that is, you cannot have one server on Windows, and another on Linux.
- hostid, hostid1, hostid2, hostid2 are usually the string returned by the *lmhostid* command. This is specified in the issued license file by Keysight EEsof.
- Port is the TCP/IP port number to use. This is an optional field for single server configuration, but is a required field for redundant server configuration. A valid number is any unused port number between 0 and 64000. On UNIX, choose a port number greater than 1024, because anything less than or equal to 1024 are reserved. If no TCP/IP port number is specified, one of the default ports in the range of 27000 through 27009 is used.

> **NOTE** *this_host* is the generic host name for the computer for which the node-locked license is issued, and can be used as is without replacing it with the real computer host name in that case.

VENDOR Line Syntax

The `VENDOR` line specifies the vendor daemon information. The `VENDOR` line syntax is:

> ***VENDOR agileesofd*** [<path_to_agileesofd> ***agileesofd***] [***[OPTIONS=]***
> <options_file_path> agileesofd.opt] [***[PORT=]*** port]

Example 1

`VENDOR agileesofd`

Example 2

`VENDOR agileesofd C:\Program Files\Keysight\EEsof_License_Tools\bin\agileesofd C:`
`\Program Files\Keysight\EEsof_License_Tools\bin\licenses\agileesofd.opt PORT=5346`

where,

- `agileesofd` is the name of Keysight EEsof vendor daemon.
- `C:\Program Files\Keysight\EEsof_License_Tools\bin\agileesofd` is the full path-name to the vendor daemon executable.
- `C:\Program Files\Keysight\EEsof_License_Tools\bin\licenses\agileesofd.opt` is the full path-name to the FlexNet options file.
- `5346` is the specified TCP/IP port number for the vendor daemon.

INCREMENT Line Syntax

The `INCREMENT` line specifies information about a licensed codeword. Codeword name, vendor daemon name, license version, license expiration date, license count, and vendor string are some of the important information included. The `INCREMENT` line syntax is:

> ***INCREMENT*** <feature> ***agileesofd*** <license_version> <license_expiry_date>
> <license_count> ***VENDOR_STRING*** =<Keysight_eesof_vendor_string> [***HOSTID***
> =<hostid>] ***START*** =<license_start_date> ***SIGN*** =<encoded signature to authenticate
> this INCREMENT line>

Example

```
INCREMENT b_core agileesofd 3.0 06-feb-2013 1
VENDOR_STRING="D8D385997F8AP=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,
156D=#W2200BP,ADS_Core;e_core :
MUFNCUI WQDZPFX QTBMCYE SW2TFGC OWKGNHJ UIB" HOSTID=d8d385997f8a ISSUER=LICENSEID=159
8592
START=19-Sep-2012 SIGN="033F C701 6926 5CB6 5505 F6EC D5EE E3FE F302 A765 9201 008B
E71B FE5B 2308 EE8F D5C0 9374 AE0F 2F68 24CD"
```

where,

- `b_core` is the name of the feature being licensed.
- `agileesofd` is the name of Keysight EEsof vendor daemon.

- `3.0` is the license version.
- `06-feb-2013` is the expiration date of license.
- `1` is the number of license(s).

Licensing Attributes

Keysight EEsof Licensing Behavior is administered by the following attributes:

- User-Display-Host (UDH)
- License Security
- License Counting
- Job Control

User-Display-Host (UDH)

All Keysight EEsof licenses are counted, with User-Display-Host as the base of forming the license checkout identify. Each unique User-Display-Host consumes one count of a license. Additional licenses are required if user, display or host is changed. For example, the following cases would cause an additional count of license to be checked out:

- A second user logs on the same host. This is because `user` is changed.
- The user moves to another terminal and launches another session of the product. This is because display is changed.

License Security

All Keysight EEsof licenses are secured by codewords, which are tied to a CPU ID or a USB dongle .

- CPU ID: Specifies the unique ID of a computer. It uses the physical address (hostid) of your computer.
- USB Dongle: Uses the dongle ID (or the FlexNet ID) of your USB dongle.

Our licensing scheme supports counted node-locked licenses and floating licenses.

- Node-locked License: A node-locked license can be used on a specific computer to which the license is tied. It allows an Keysight EEsof Product to be used on a single computer with a single display by a single user. The user, license, and computer must physically co-locate.
- Floating (Network) License: A floating (network) license can be shared among multiple users across a computer network. Floating license support is provided for a single and multiple servers (including distributed product servers, peak servers, and redundant servers). With a floating license, an individual feature contained in a bundle or element can be run locally or remotely by a single user.

Keysight's Licensing, on a best effort basis, supports remote access via Windows Remote Desktop, VNC, Citrix, and Exceed. A floating license is required for remote access. This functionality is not supported with a node-locked license.

Example

A user starts an ADS session on Computer A. One core bundle with simulator license is checked out. If the same user tries to launch another ADS session using Remote Desktop, an additional license will be checked-out because the host has changed.

License Counting

Keysight EEsof licensing supports only counted licenses. The count associated with a license specifies the maximum concurrent use of that license. Each Keysight EEsof license comes in the form of a bundle or an element, which in turn contains one or more features.

Figure: Bundles and Elements Composition
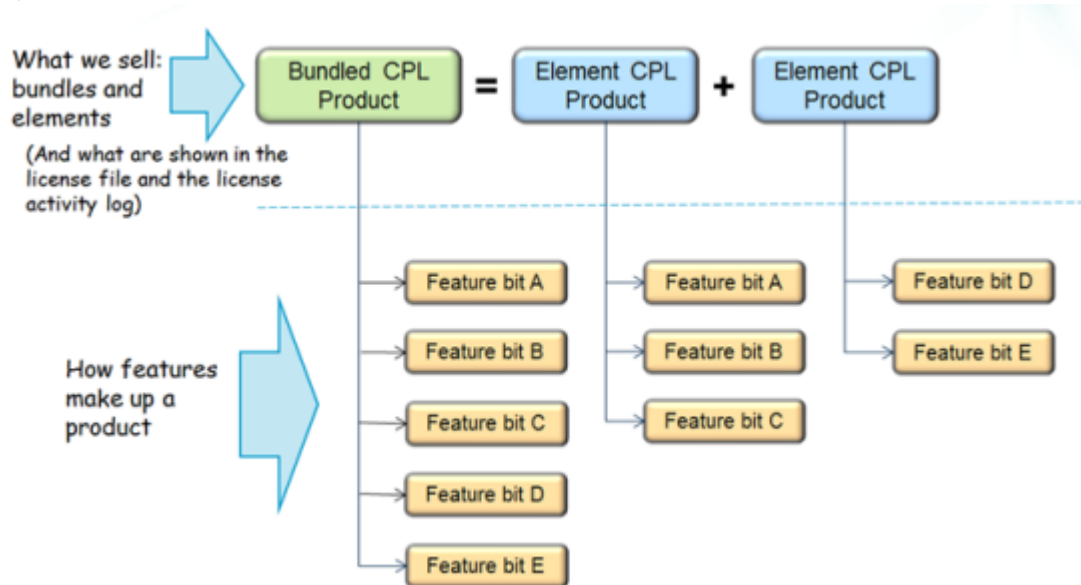
When a license count limit is reached, that license is no longer available for additional use.

Job Control

Some features contained in a bundle or an element, are job controlled. Job control limits the concurrent use of a feature. Simulators and models are typically job controlled features. Most job controlled features have a job-control limit of one—Harmonic Balance simulator, Momentum simulator, LTE wireless library are examples of this class—and some have greater than one limit to support parallel computing—Momentum turbo, 8-pack transient/convolution, quad-pack GoldenGate simulation are some of the examples of this type.

In Contrast to job controlled features, non job-controlled features entitle a single UDH to share one count of the license unlimited times. Environment GUI features are typically of this type.

Figure: Job Control of Features
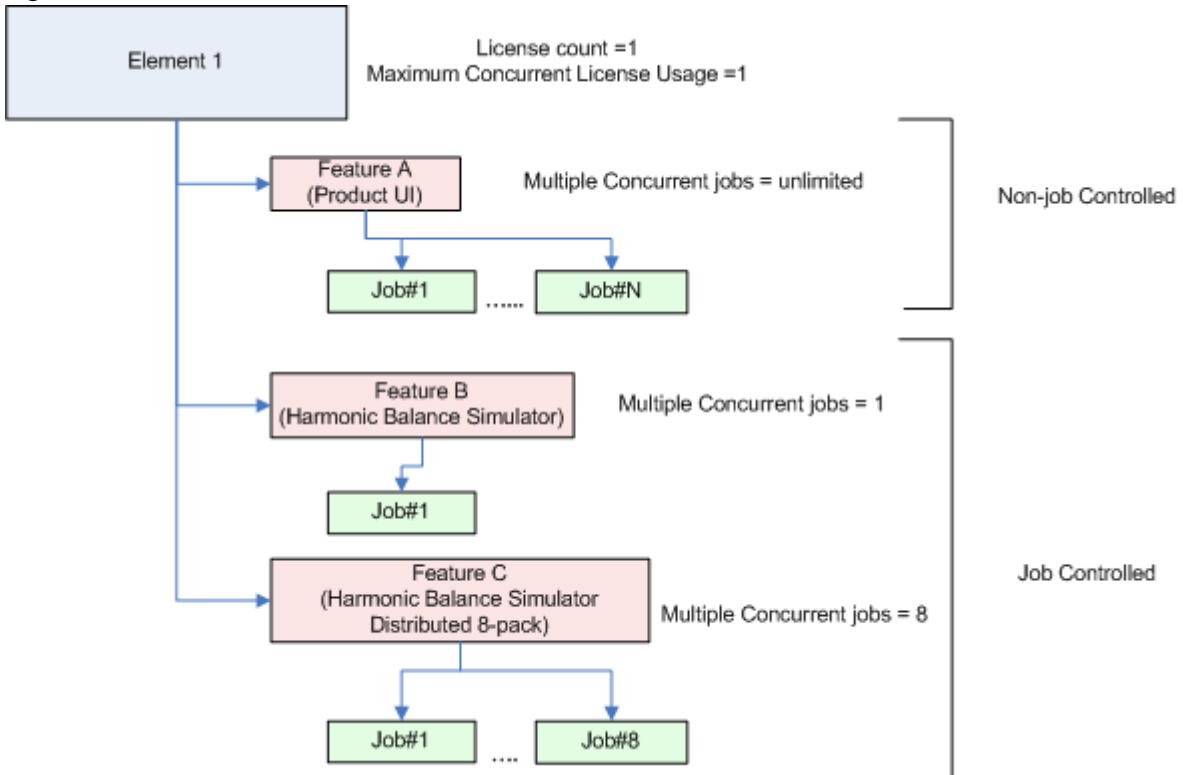
License Version Compatibility

License Version Compatibility

This section provides information on Keysight EEsof Licensing version Compatibility with various Product releases including FlexNet Version Compatibility information.

Contents

- FlexNet Version Compatibility
- License Codeword Version Compatibility

FlexNet Version Compatibility

FlexNet Version Compatibility

FlexNet has a strict version compatibility rule that must be followed to ensure proper licensing behavior. Following are the key basic compatibility rules:

1. *lmgrd* version must be greater than or equal to vendor daemon (*agileesofd*) version.
2. Vendor daemon (*agileesofd*) version must be greater than or equal to the software applications.

Starting from October 2013, Keysight EEsof's new releases can no longer start up, if the above rules are not followed. The following error message gets displayed instead:

The *License Server/Client Mismatch* warning message is displayed when the installed version of license server (*lmgrd*) and vendor daemon (*agileesofd*) appears to be older than the minimum required version. This warning message also displays the minimum required version.

Figure: Warning Message for Example
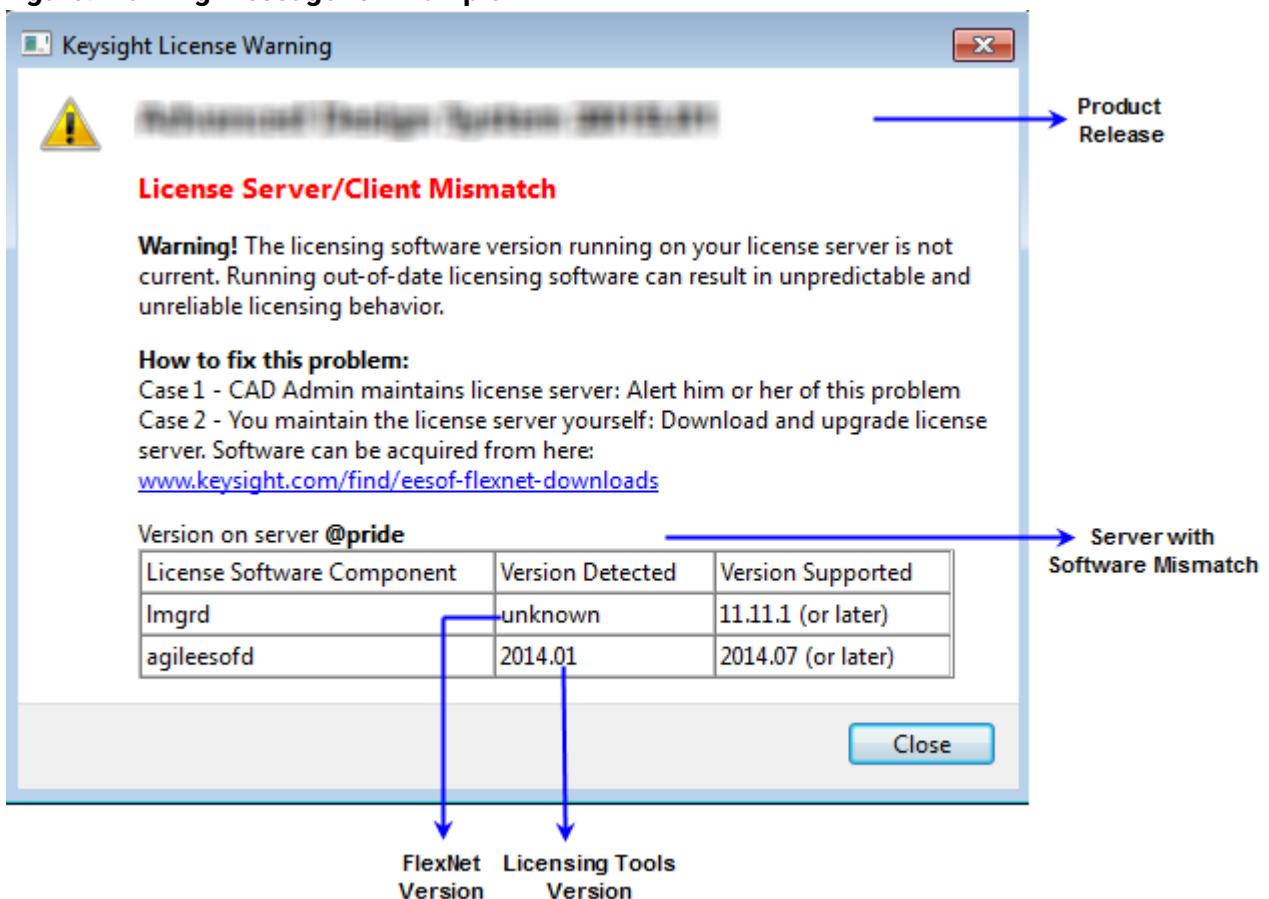
Refer to FlexNet Publisher's License Administration Guide for further details.

License Codeword Version Compatibility

License Codeword Version Compatibility

Each Keysight software release comes with a base license codeword version requirement. The base license codeword version is the minimum number that enables a release to run. Some versions of Keysight EDA software also have an upper limit of the codeword version that software release enforces. This upper limit is set for an additional two versions beyond the base version. The software cannot run if the codeword version exceeds that upper limit.

CAUTION	• When you mix codeword versions on a license server and a user runs different versions of a product that use different base license codeword versions, extra licenses may be pulled and result in unexpected `"Licensed number of users already reached for this feature"` errors. To avoid this either have all your licenses updated to use the latest codeword version, if possible, or separate the licenses by codeword version and put the two sets onto separate license servers.
	• When you mix codeword versions compatible for a given product release version with codeword versions that exceed the upper limit for that same product release version, that product release version would take a longer time to obtain a license due to the additional requests made to FlexNet server until a compatible license version is found. To avoid such a license checkout performance degradation, we strongly recommend you to separate out a compatible set of licenses from those exceeding the upper limit for a given product release version and put the two sets onto separate license servers.

For License version compatibility of older releases, see License Version Compatibility (Unsupported Releases).

Following chart summarizes the license codeword versions compatible to each Keysight EEsof software releases.

Product/Release											
ADS	2021 Update 1.0	2021	2020 Update 2.0	2020 Update 1.0	2020	2019 Update 1.0	2019		2017 Update 1.0	2017 Update 0.x	2017
License Codeword Version	>=2020.02	>=2020.02	>=2020.02	>=2019.02	>=2019.02	>=2019.02	>=2018.04		>=2018.04	>=2017.01	>=2017.01
License Codeword Version for ADS Thermo Analysis (Gradient)											>=2017.01
HeatWave					2020						
License Codeword Version					>=3.2						
EMPro	2021 Update 1.0	2021		2020 Update 1.0	2020		2019			2017 Update 0.x	2017
License Codeword Version	>=2020.02	>=2020.02		>=2019.02	>=2019.02		>=2018.04			>=2017.01	>=2017.01
GoldenGate				2020 Update 1.0	2020				2017 Update 0.2	2017 Update 0.1	2017

License Codeword Version			>=2019.02	>=2019.02			>=2018.04	>=2017.01	>=2016.05
SystemVue	**2021**		**2020 Update 1.0**	**2020**	**2018 Update 1.0**	**2018**			**2017**
License Codeword Version	>=2020.02		>=2020.02	>=2019.02	>=2018.04	>=2017.01			>=2017.01
Genesys				**2020**		**2018**			**2017**
License Codeword Version for new Product Structure, i.e. W132xBP/BT or W2362EP/ET				>=2019.02		>=2018.04			>=2017.01
License Codeword Version for old Product Structure, i.e. W14xxL, W15xxL, W16xxL				>=2019.02		>=2018.04			>=2017.01
IC-CAP		**2020 Update 2.0**	**2020 Update 1.0**			**2018**			**2017**
License Codeword Version		>=2019.02	>=2019.02			>=2017.01			>=2017.01
PEMG		**2020 Update 2.0**	**2020 Update 1.0**			**2018**			

License Codeword Version		>=2019.02	>=2019.02			>=2017.01
WaferPro Express			2020 Update 1.0	2019 Update 1.0		
License Codeword Version			>=2019.02	>=2018.04		
MBP		2020 Update 2.0	2020 Update 1.0	2020	2019	2017
License Codeword Version		>=2019.02	>=2019.02	>=2019.02	>=2018.04	>=2017.01
MQA		2020 Update 2.0	2020 Update 1.0	2020	2019	2017
License Codeword Version		>=2019.02	>=2019.02	>=2019.02	>=2018.04	>=2017.01

Legend	Description
vx.x	indicates the base codeword version for a release

Legend	Description
vx.x	indicates the codeword version that will be supported in future when available

Licensing Behavior

This section outlines the Keysight EEsof licensing search behavior at the start-up of a product session, as well as during an active session.

> **NOTE**   LicensingHot Swappingis not supported by Keysight EEsof Licensing scheme.

Figure: EEsof Licensing Behavior
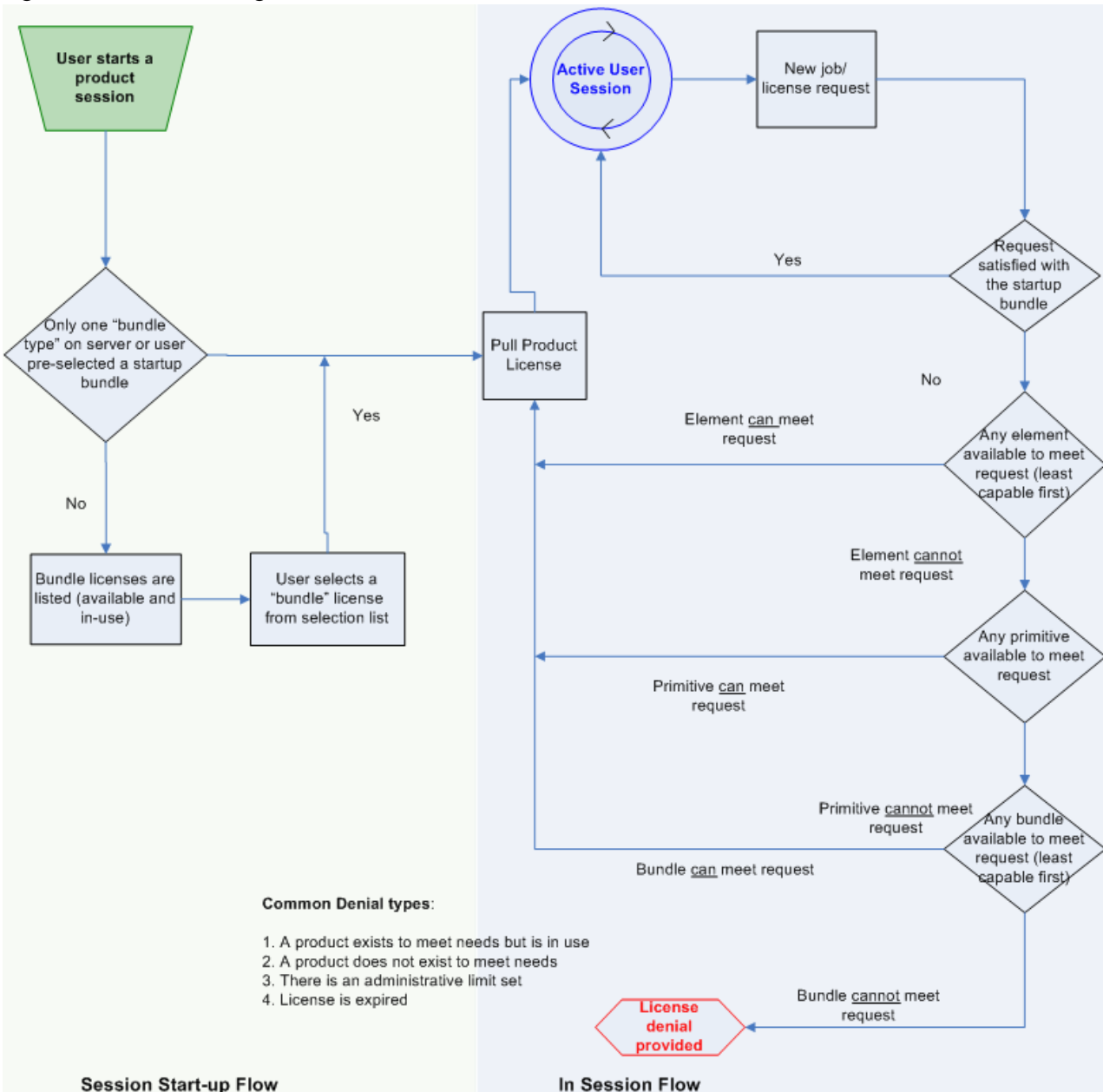
Session Start-up Flow

While initiating an Keysight EEsof product session, if only one type of a bundle license is available on the license server, it is checked out and the software session starts immediately. However, if there are multiple bundle types to choose from, the **Product Selector** window is displayed, which allows the user to choose the most appropriate license to start with. You can preselect a license as the default for future sessions. To do so, in the **Product Selector** dialog box, select the license and check **Always try to start with this selection** option. Once checked, new start-up will automatically attempt to check-out the preselected license without displaying **Product Selector** in subsequent sessions. If the pre-selected license is denied, and more than one license is available to start the software, then **Product Selector** dialog box will be displayed once again.

For more details on **Product Selector**, refer to the Product Selector section.

> **NOTE** CAD administrators can assign a startup bundle for a user and/or suppress the **Product Selector** from appearing by using the following environment variables:
> - `<PRODUCT>_PRODSEL_AUTOSTART`
> - `<PRODUCT>_PRODSEL_PREVIOUS`
>
> Refer tosection for more details.

Active or In-Session Flow

Once the start-up license is checked out, all subsequent license requests follow the logic depicted in the diagram above. In a nutshell, the start-up license is always attempted first; if fails, Elements , Primitives, and Bundles are attempted in that order; also, within each group, the least capable is attempted before the more capable ones.

> **NOTE** FlexNet provides addition controls, such as EXCLUDE, MAXIMUM, for the CAD Administrators to limit the license usage. For details, refer to the *FlexNet Publisher's License Administration Guide*.

Setting Up Licenses on Windows

This section describes how to set up a node-locked license or a floating (network) license on Windows.

> ⓘ Both node-locked and floating licenses require license server to get installed and started. For a node-locked license, license server and the client machine are the same machine (that is, your local machine). For a floating license, these can be separate machines.

Contents

- Setting Up Floating License on Windows
- Setting Up Nodelocked License on Windows

Setting Up Floating License on Windows

Setting up floating licenses on Windows is a two-step process where both server-side setup and client-side setup are needed.

Step 1: License Server Setup

> **NOTE** To setup a dedicated floating license server that has no Keysight EDA software installed, you will need to download and install the EEsof EDA License Server Software. This will install the license daemons and utilities needed to configure and start the license server.

Repeat the following steps for each license server you have.

- For licenses tied to a CPU ID , follow the steps 1 and 2 described in the Setting up Node-locked License on Windows section.
- For licenses tied to a USB Dongle, follow steps 1 through 3 described in the Setting up Node-locked License on Windows section.

Step 2: Client Setup

Once the license is configured successfully for all the license servers, configure each client computer to point to the network license server. **License Setup Wizard** offers the easiest method to get this done Alternatively, you can perform this step manually by following step 3 of Setting up Node-locked License on Windows section. Make sure to specify the network license server in the format of `port@host.domain` or if no static TCP port is used on the license server, use the format @host.domain.

Examples

`27001@myServer.myCompany.com`

`@myServer.myCompany.com`

> **CAUTION** In case a license server is down or is running slow, it is recommended to remove it from the server list using the **License Setup Wizard** to avoid any performance degradation caused by the dead/slow servers.

Setting Up Nodelocked License on Windows

On Windows, the License Setup Wizard offers the easiest way to set up your node-locked license . We strongly recommend you to use the **License Setup Wizard**, especially when you have multiple Keysight EEsof products installed on one computer. This section describes how to set up a node-locked license manually, should you decide not to use the **License Setup Wizard**.

> **NOTE** Do not perform manual setup steps with the **License Setup Wizard**. Choose one method or the other. **License Setup Wizard** may not be able to replace what you set up manually due to Administrator Privilege differences.

The following instructions assume that you have already installed Keysight EEsof Licensing Tools in *C:\Program Files\Keysight\EEsof_License_Tools* folder. In case you have not yet installed the tools, run the Keysight EEsof Licensing Tools installer on the machine to which the license is tied to.

> **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`.
> - Make sure to save the license file on the same machine where you install the Keysight software.

License tied to a CPU ID

The following 3-step process shows how to manually set up a counted license that is tied to a CPU ID .

Step 1: Start License Server Managers

Start the FlexNet license server managers (**lmgrd** and **agileesofd**) on the computer to which the license is tied as follows:

1. Open the MS-DOS command prompt and change directory to the following path: *C:\Program Files\Keysight\EEsof_License_Tools\bin*.
2. Specify the full path and location of the license file and the license log file, respectively, by typing the following command:
   ```
   lmgrd.exe -c  <license file path>  -l  <license log file path>
   ```
   where,
   - <license file path> specifies one or more full path-names to the license file(s).
   - <license log file path> is the full path-name to the debug log file.

> **NOTE** The spaces in path-names requires double quotes around the path-names.

Example

```
lmgrd.exe -c "C:\Program Files\Keysight\EEsof_License_Tools\licenses\license.lic"
-l "C:\Users\Public\my_server_log.txt"
```

Step 2: Create Windows Service

To automate the restart of the license server mangers upon PC reboot, configure a Windows Service as follows:

> **NOTE** You must have Administrator Privileges to configure a Windows Service. The service will run under the Local System account.

1. Run the **lmtools.exe** from *C:\Program Files\Keysight\EEsof_License_Tools\bin*. The **lmtools** utility window is displayed.
2. In the **Service/License File** tab, select the **Configuration using Services** option.
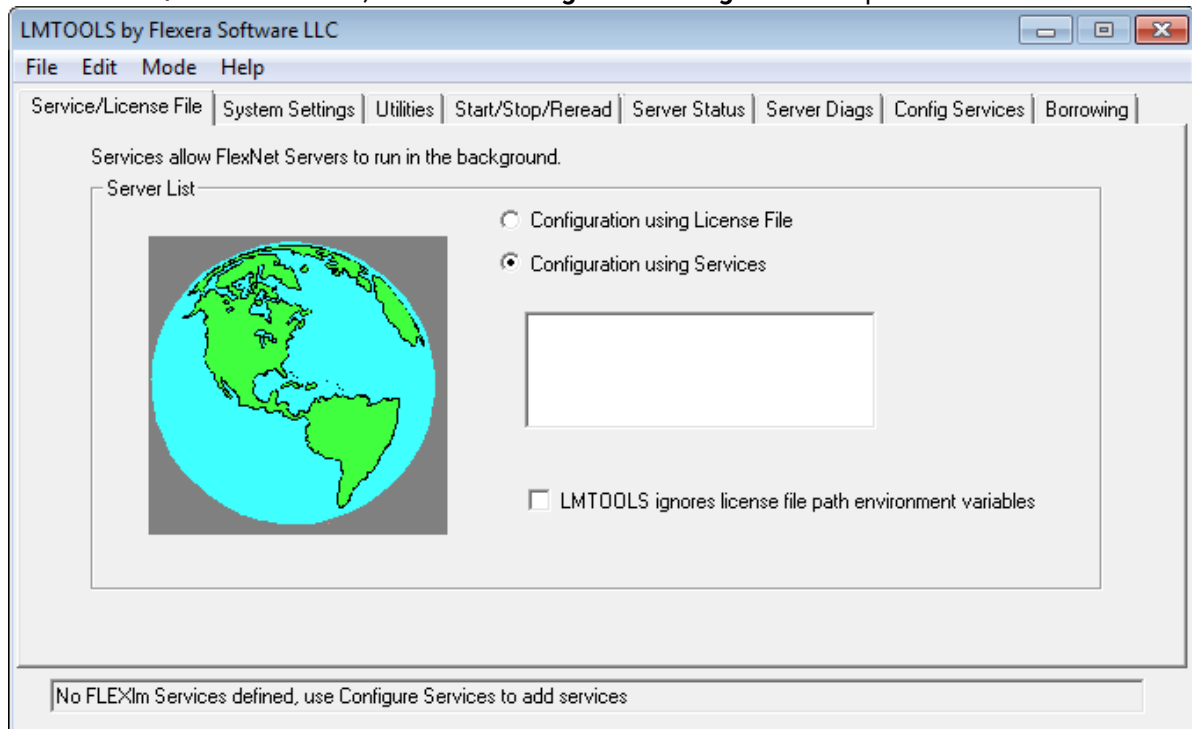
3. Click the **Config Services** tab and enter the following details:
    a. **Service Name**: Type the service name (for example, `EEsof EDA License Server`).
    b. **Path to the `lmgrd.exe` file**: Click **Browse** and specify the path to the `lmgrd.exe` file on the license server (for example, *C:\Program Files\Keysight\EEsof_License_Tools\bin\lmgrd.exe*).
    c. **Path to the license file**: Click **Browse** and specify the path to the license file on license server (for example, *C:\Program Files\Keysight\EEsof_License_Tools\licenses\license.lic*).
       If you have multiple license files for serving multiple Keysight EEsof products, you should include them all.
    d. **Path to the debug log file**: Click **Browse** and specify the path to the debug log file on license server (for example, *C:\Users\Public\my_server_log.txt*).
4. Select the **Use Services** option.
5. Select the **Start Server at Power Up** option.

6. Click **Save Service**. The following figure shows the configured services in the **lmtools** window.
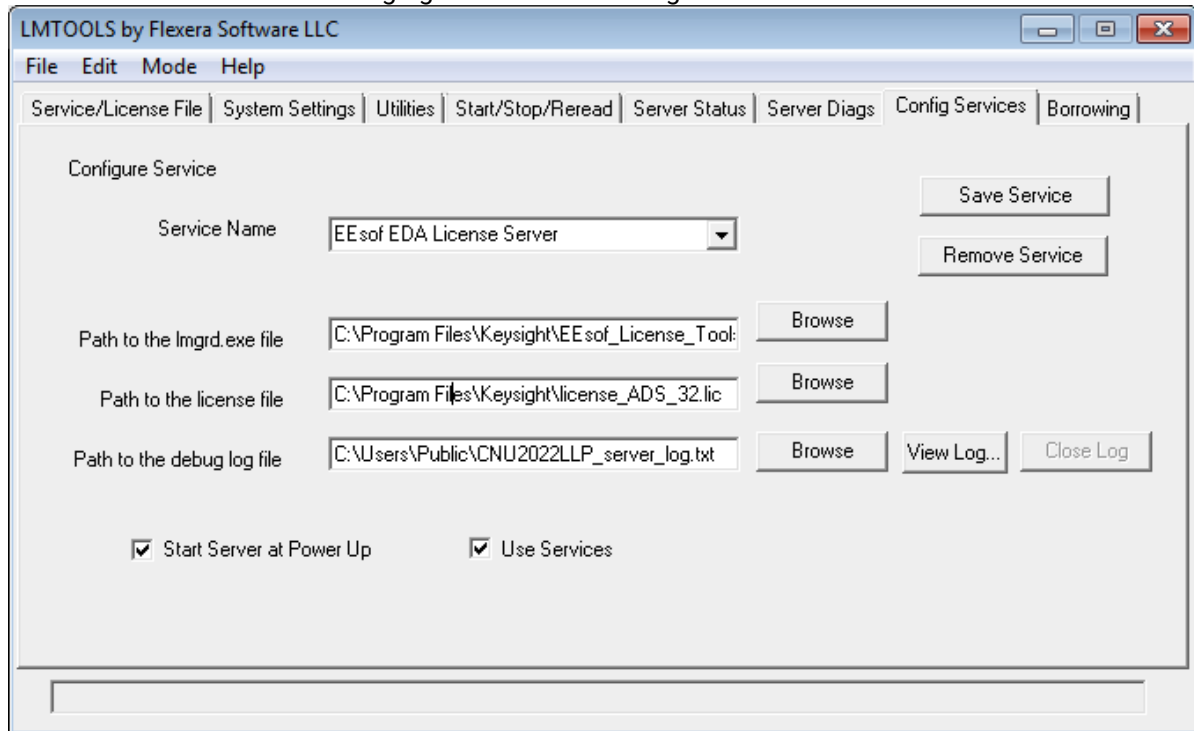
7. To verify that the service is created, click the **Start/Stop/Reread** tab and observe that your service shows up in the **FlexNet license services installed on this computer** list.

> NOTE   To verify if the license managers are running, click again on the **Config Services** tab later and click **View Log**. A log window appears that confirms whether *lmgrd* and *agileesofd* are up and running.

Step 3: Set Product Environment Variable

Set the environment variable `<PRODUCT>_LICENSE_FILE` to point the machine running the license server managers (**lmgrd** and **agileesofd**).

1. Select **Start** > **Control Panel** > **System**. Click **Advanced system settings**. The **System Properties** dialog box appears and the **Advanced** tab is selected by default).
2. Click **Environment Variables**.
3. In the **Environment Variables** dialog box, add the product specific environment variable `<PRODUCT>_LICENSE_FILE` as a new system variable. For example, for SystemVue, it is **SYSTEMVUE_LICENSE_FILE**, for ADS, it is **ADS_LICENSE_FILE**, for EMPro, it is **EMPRO_LICENSE_FILE** and so on. For details, refer to License Environment Variables section.
4. In the **New System Variable** dialog box, set the value to be the same as what you specified in the --c argument when you start *lmgrd* . To use the example illustrated in Step 1, second bullet, this value would be *C:\Program Files\Keysight\EEsof_License_Tools\licenses\license.lic*.
5. Repeat 3 and 4 for each Keysight EEsof product you have installed on your computer.

License tied to USB Dongle

The following 4-step process shows how to manually set up a counted license that is tied to a USB Dongle.

> NOTE   You can move a dongle between systems after performing this license setup process for each computer you intend to run Keysight EEsof product(s) using the dongle license(s). If multiple dongles are swapped from one computer to another, be sure to include all the licenses associated with those dongles during the setup process.

Step 1: Attach Dongle

Make sure that the dongle is securely attached to the USB port of your computer. Some systems may require up-to a few minutes to detect the dongle, therefore, make sure to keep sufficient time before the next step.

Step 2: Install USB Dongle Drivers

The USB Dongle drivers (FlexNet ID Dongle Device Drivers) need to be installed once on each computer that is intended to run Keysight EEsof product(s) with dongle license(s). The supported USB dongle is Wibu Key (aka FLEXid 10) dongle.

The USB dongle drivers can be found under the license installation tree. To install the drivers, run the **Setup64.exe** from *C:\Program Files\Keysight\EEsof_License_Tools\bin\FLEXID10_Windows_v6_30_x64*.

> NOTE   If you currently do not have a Wibu Key dongle, contact Keysight EEsof Business Support.

Step 3: Start License Server Manager and Create Windows Service

Follow the steps 1 and 2 described in the License tied to CPU ID section.

Step 4: Set Product Environment Variable

Follow the step 3 described in the License tied to CPU ID section.

Setting Up Licenses on Linux

This section describes how to set up a node-locked license or a floating (network) license on Linux.

| NOTE | Both node-locked and floating licenses require license server to get installed and started. For a node-locked license, license server and the client machine are the same machine (that is, your local machine). For a floating license, these can be separate machines. |

- Node-locked License
- Floating (Network) License

Setting Up Floating License on Linux

Setting up a floating license on Linux is a two-step process where both server-side setup and client-side setup are needed.

Step1: License Server Setup

Repeat the following steps for each license server you have.

- For licenses tied to a CPU ID , follow the steps 1 and 2 described in Setting Up Node-Locked License on Linux section.
- For licenses tied to a USB Dongle, follow steps 1 through 3 described in Setting Up Node-Locked License on Linux section.

Step 2: Client Setup

Once the license is configured successfully for all the license servers, configure each client computer to point to the network license server. **License Setup Wizard** offers the easiest method to get this done Alternatively, you can perform this step manually by following step 3 of Setting Up Node-Locked License on Linux section. Make sure to specify the network license server in the format of `port@host.domain`.

Example

`27001@myServer.myCompany.com`

CAUTION	In case a license server is down or is running slow, it is recommended to remove it from the server list using the **License Setup Wizard** to avoid any performance degradation caused by the dead/slow servers.

.

Setting Up Node-Locked License on Linux

This section describes how to set up a node-locked license on Linux.

The given instructions assume that you have already installed Keysight EEsof Licensing Tools either in the EEsof product installation tree, or in a dedicated location. The former happens automatically when you install Keysight EEsof product on the Linux platform; the latter happens when you separately download the Keysight EEsof Licensing Tools from Keysight download website and install the package to a dedicated location. In the former case, you can find all the licensing tools and binaries under *<PRODUCT_INSTALL_DIR>/Licensing/<license tools version>/ linux_x86_[32|64]/bin* directory. In the latter case, you can find all the licensing tools and binaries in the *<LIC_INSTALL_DIR>/bin* directory. For convenience, <LIC_PATH> is used in the rest of this chapter to represent the directory where the licensing libraries and executables are located.

> **CAUTION** Make sure to save the license file on the same machine where you install the Keysight software.

License tied to CPU ID

The following 3-step process shows how to manually set up a counted license that is tied to a CPU ID .

Step 1: Start License Server Managers (*lmgrd* and *agileesofd*)

Start the license server managers (*lmgrd* and *agileesofd*) on the machine to which the license is tied as follows:

1. Change the directory to the <LIC_PATH>
2. Run the following command to start `lmgrd`:
   ./lmgrd −c *<license file path>* ***−l*** *<license log file path>*
   where,
   ◦ <license file path> specifies one or more full path-names to the license file(s).
   ◦ <license log file path> is the full path-name to the debug log file.

Step 2: Automate FlexNet License Server Startup

To automate the License Server managers' startup upon system reboot, add something similar to the following sample script in the system boot services directory or ***/etc/rc.d/init.d*** .

```
#!/bin/sh
#
# Sample FlexNet startup script for restarting EEsof License Server
#
### BEGIN INIT INFO
# Provides: eesof license server
# Required-Start: $network
# Required-Stop:
# Default-Start:  3 4 5
# Default-Stop:
# Description:  Start EEsof License Server
### END INIT INFO

PATH=/bin:/usr/bin
export PATH
#
# Under the following example licensing invoking line, change /opt/ADS to the path of
your license installation directory
#
su  licadmin -c "/opt/ADS/Licensing/2013.01/linux_x86_64/lmgrd -c /opt/ADS/Licenses/
license.lic -l /opt/ADS/Licenses/ads_server_log.txt"
echo "Starting Keysight EEsof FlexNet license daemon......"
sleep 5
```

> **NOTE**   All the references to *opt/ADS/...* shown above should be replaced with the actual path of <LIC_PATH>.

Once you implement your version of the FlexNet startup script using the above sample, follow the steps below to complete the automation:

1. Change to the system boot services directory: ***/etc/rc.d/init.d***
2. Create a startup script in the system boot services directory: `EEsof_lmgrd_restart`
3. Insert your FlexNet startup script into this script.
4. Set the permissions for this script, as shown:

```
chmod 755 EEsof_lmgrd_restart
chown root EEsof_lmgrd_restart
chgrp sys EEsof_lmgrd_restart
```

5. For license servers, run the command: ***/sbin/chkconfig --add EEsof_lmgrd_restart***

Follow the steps below for RHEL 7 and Suse 12:

1. Perform Step 1 to 4 from above.
2. Create a system service (*EEsof_lmgrd.service*) file with below entries in the system boot services directory: ***/etc/systemd/system/EEsof_lmgrd.service***

```
[nit]
Description=EESOF License Service
After= multi-user.target

[Service]
Type=simple
ExecStart= /etc/rc.d/init.d/EEsof_lmgrd_restart.sh
TimeoutStartSec=0

[Install]
WantedBy=default.target
```

3. Execute the `systemctl enable EEsof_lmgrd.service` command from the terminal.
   The license server will be auto started at RHEL 7 and Suse 12 as soon as the system is restarted.

Step 3: Set Product Environment Variable

Set the product specific environment variable `<PRODUCT>_LICENSE_FILE` to point to the machine running the license server managers (*lmgrd* and *agileesofd*). For example, for ADS, it is *ADS_LICENSE_FILE* , for GoldenGate, it is *GOLDENGATE_LICENSE_FILE* and so on. For details, refer to License Environment Variables section.

This environment variable can be set in the user login startup file such as *.cshrc* (for C shell) or *.profile* (for Bourne shell) in the *$HOME* directory. Alternatively, these variables can be set using command-line as well.

csh, tcsh, cshrc command for setting <PRODUCT>_LICENSE_FILE

setenv `<PRODUCT>_LICENSE_FILE <license file pathname>`

Example Product=ADS

`setenv ADS_LICENSE_FILE $HOME/Keysight/Licenses/license.lic`

ksh, bash command for setting <PRODUCT>_LICENSE_FILE

export `<PRODUCT>_LICENSE_FILE=<license file pathname>`

Example Product=GoldenGate

`export GOLDENGATE_LICENSE_FILE=$HOME/Keysight/Licenses/license.lic`

Repeat this step for each Keysight EEsof product you have installed on your Linux computer.

> **NOTE** To use multiple Keysight EEsof Products at the same time, setup the license by merging license files for each product and starting up the License Server Managers as described in step 1.

License tied to USB Dongle

For the Linux platform, the following 4-step process shows how to manually set up a counted license tied to a USB dongle.

> **NOTE** You can move a dongle between systems after performing this license setup process for each computer you intend to run Keysight EEsof product(s) using the dongle license(s). If multiple dongles are swapped from one computer to another, make sure to include all the licenses associated with those dongles during the setup process.

Step 1: Attach Dongle

Make sure that the dongle is securely attached to the USB port of your computer. Some systems may require up-to a few minutes to detect the dongle, therefore, make sure to keep sufficient time before the next step.

> **NOTE** You can move a dongle between systems by placing a copy of its associated license file on each system and moving the USB dongle from one system to another. Each system must have the license(s) setup for use.

Step 2: Install USB Dongle Drivers

The USB Dongle drivers need to be installed once on each computer that is intended to run Keysight EEsof product(s) with dongle license(s). By default, the USB dongle drivers are bundled with the product installation files. They are available in the `dongle_sup` directory once you ***untar*** the installation image.

To install these drivers on your local machine, follow these steps with the appropriate drivers from the table below:

1. Disconnect the USB dongle from your local machine.
2. Change the directory to *<untar installation image>*/`dongle_sup`.
3. Use the Red Hat Package Manager (RPM) to install the drivers. For example, to install 64-bit Flex-10 Wibu dongle driver, execute the following command:
   ```
   rpm -i WkRt-Lin-6.32.1504-500.x86_64.rpm
   ```
   The following table shows all available dongle drivers being packaged in the installation image.

Operating System	Device Manufacturer	FLEXID	Driver Installation File
Red Hat® Linux 64-bit	Wibu Systems AG	10	WkRt-Lin-6.32.1504-500.x86_64.rpm
SUSE® Linux 64-bit	Wibu Systems AG	10	WkRt-Lin-6.32.1504-500.x86_64.rpm

4. Connect the USB dongle again to your local machine.

5. Open command prompt, change directory to <LIC_PATH>, and type these commands to check if the FlexNet ID of the USB dongle is correct.
   lmutil lmhostid -flexid

Step 3: Start License Server Manager and Automate License Server Manager Restart

Follow the steps 1 and 2 described in License tied to CPU ID section.

Step 4: Set Product Environment Variable

Follow the step 3 described in License tied to CPU ID section.

Licensing Tools

Keysight EEsof Licensing comes with several tools to help you manage EEsof licenses:

- License Manager
- Product Selector
- License Setup Wizard (Refer to Product GUI for more deatils on License Setup Wizard.)

License Manager

The **License Manager** has been introduced in all the Product releases starting October 2012. It is a one-stop shop for all licensing tools.

Figure: License Manager (sample window)
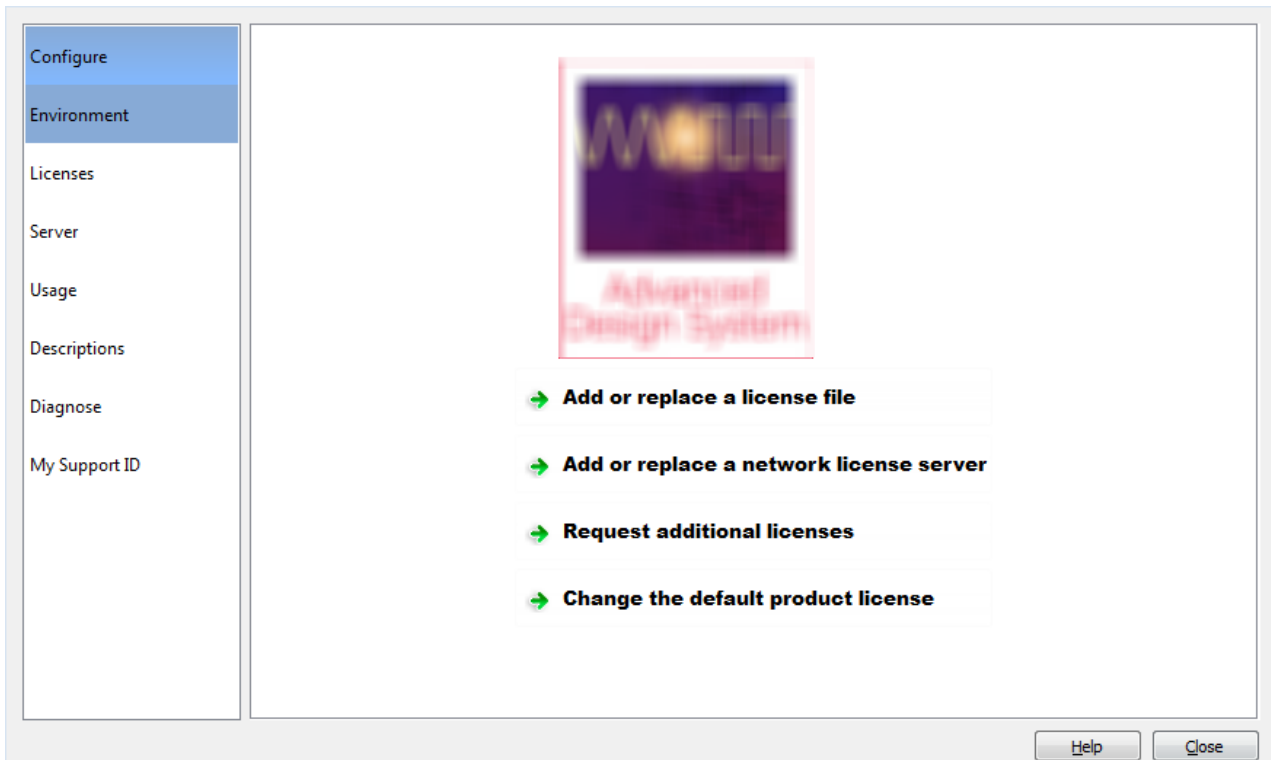
It provides an interface to:

- Configure Licenses, such as add or replace a license file, add or replace a network license server, request for additional licenses, and change the default product startup license.
- Show Environment Variables related to licensing. Your computer host name, IP address, FlexNet version are some of the examples.
- Identify all the license features found in your license setup. Codeword version, number of features used, expiration date are presented as well.
- List all the license servers set up in your configuration.
- Provide information about bundles and elements that are available or in use. You can sort the usage by the codewords or by Users.
- Describe what capabilities are enabled by each license in your licensing pool.
- Perform a real-time and systematic license setup trouble-shooting and produce a detail report on the health of the configuration.
- Retrieve your Keysight Support ID to sign in to out technical support website for technical assistance.

The **License Manager** can be accessed from the Product **Main Window** as follows:
Tools > License Manager.

Product Selector

The **Product Selector** displays a list of licenses that can be used to start an Keysight EEsof software. The **Product Selector** dialog box only appears if multiple licenses are available to start and Keysight EEsof software. It does not appear if there is only one license present, or if you have already preselected a startup license previously and that license is available. You can select a license from the list, as illustrated.

Figure: Product=SystemVue Product Selector for Example
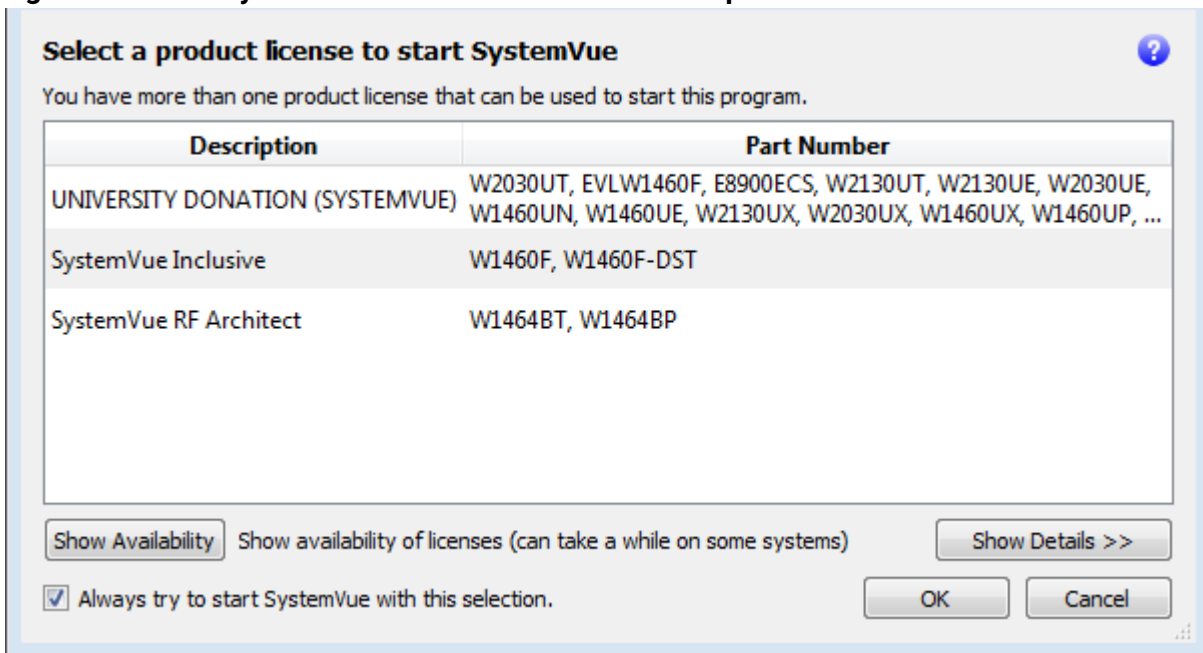
Using Product Selector

You can use **Product Selector** to perform the following tasks:

- View License Description and Part Number
- Check License Availability
- Select Product License
- Change Default Startup License

View License Description and Part Number

The **Product Selector** window displays all the licenses that can start the software of interest like ADS.

Check License Availability

To check if the selected license is available on the server, click **Show Availability**. The availability of each license is displayed with the following convention:

 denotes that the license is available for use, while shows that the license is unavailable. Unavailable licenses cannot be selected.

To view the details of the available license, select the license and click **Show Details**. The bottom pane appears and displays the following information: number of licenses, licenses used, license version, and license expiry date, .., and so on.

Figure: Product=SystemVue Product Selector for Example
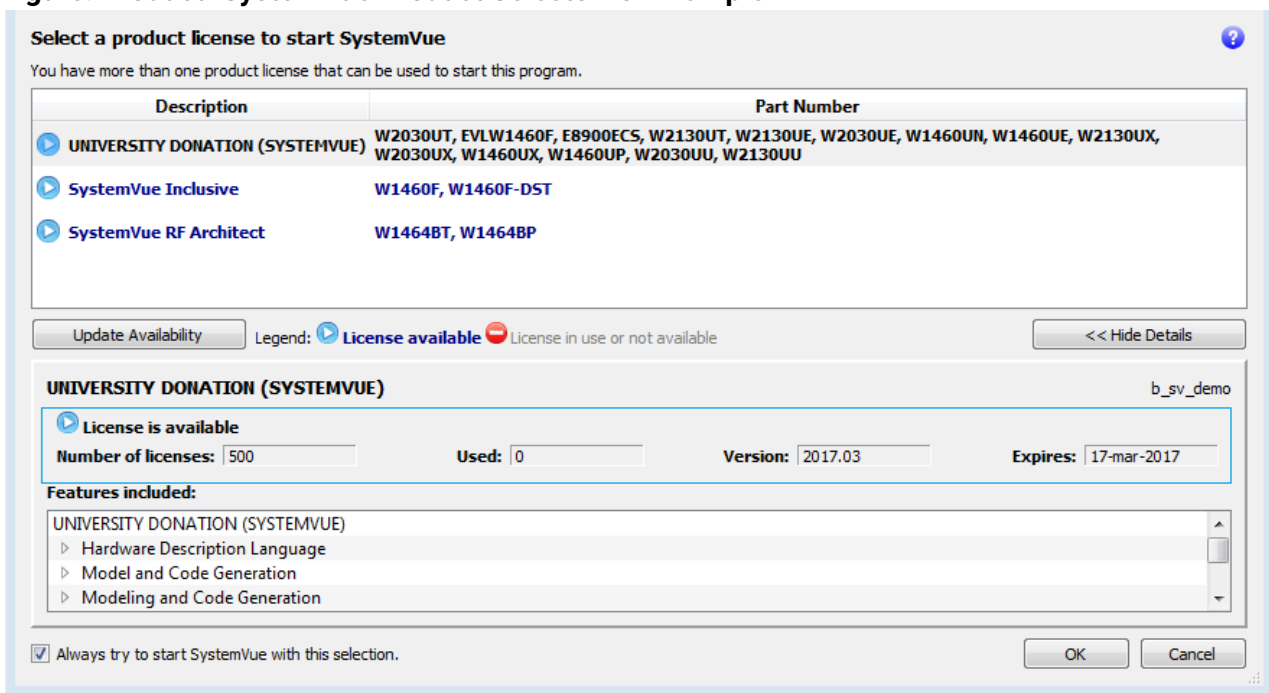
Select Product License

You can select an available license in **Product Selector** to start the software. Only one license can be selected at a given time.

You can assign pre-selected license as a default choice for future sessions. This license is used automatically whenever a new session invoked. To pre-select a startup license, select the pre-selected license and check **Always try to start with this selection**. Once checked, in subsequent sessions, software startup will automatically attempt to check out the pre-selected license without displaying **Product Selector**. If the pre-selected license is denied and more than one license are available to start the session, then the **Product Selector** dialog box will be displayed once again.

Change Default Startup License

You can change the default startup license by using the License Manager. Launch the **License Manager** tool and select **Change the default product license**. Upon which the **Product Selector** is displayed. Either uncheck the **Always try to start with this selection** option to reset the default to None, or simply select another license as the new default.

Advanced Licensing Configuration Options

This section provides information on various advanced licensing configuration options:

- Accessing Licenses through a Firewall
- Creating Options File
- License Environment Variables
- Multiple Server Configurations
- Remote and Distributed Simulation Licenses

Accessing Licenses through a Firewall

You can access (checkout) FlexNet licenses through a firewall (or router) as per your license agreement. To enable license checkout, configure your firewall to allow TCP/IP communication through the TCP ports used by the license manager daemon (*lmgrd*) or vendor daemon (*agileesofd*).

Step 1. Specify TCP Port Numbers

Specify a TCP port number for *lmgrd* on the SERVER line and for *agileesofd* on the VENDOR lines. Be sure to stop and restart the license servers after you modify the port numbers.

Example

```
SERVER myserver 00809AC7123F8 27000
VENDOR agileesofd c:\apps\flexnet\vendors\agileesofd port=1705
```

Step 2. Configure Firewall

Configure your firewall (or router) to allow TCP communication through the TCP ports you specified in Step 1.

Step 3. Set Environment Variable

At the client-side, set the <PRODUCT>_LICENSE_FILE environment variable to the port number assigned to the license server, as shown:

<PRODUCT>_LICENSE_FILE=27000@myserver.myDomain

After you set the environment variable, clients outside of the firewall will be able to access licenses from your server.

> **NOTE** Some clients may timeout before they can connect to a license server through a firewall setup on Windows. The default timeout period is 0.1 second. If you need a longer timeout period, you can modify FlexNet environment variable FLEXLM_TIMEOUT to a larger value. Refer to FlexNet Publisher's License Administrator Guide for details

Creating Options File

An **Options** file allows administrators to control the following licensing parameters of FlexNet:

- Retricts and/or reserves the use of features based on user, hostname, or display name.
- Controls the level of information logged about license usage.

NOTE
- You can create an **Options** file using any text editor.
- Ideally, you should keep this file in the same directory as your license file.

For details on how to create an Options file, refer to the FlexNet Publisher's License Administration Guide.

License Environment Variables

This section describes the environment variables specific to Keysight EEsof licensing scheme. At most two locations are used to resolve these environment variables, and in the order shown below:

1. System Environment for the user
2. Unified License Configuration Location:

Operating System	Key Name
Windows XP/7	HKEY_CURRENT_USER\Software\Keysight\EEsof License Configuration
Unix	$HOME/.eesoflic

Variable Name	Description
`<PRODUCT>_LICENSE_FILE`	Specifies the list of license files/servers to search when a license is requested by a given Keysight EEsof Software. Each Keysight EEsof software has a dedicated variable to serve this purpose: ▪ ADS_LICENSE_FILE ▪ ICCAP_LICENSE_FILE ▪ EMPRO_LICENSE_FILE ▪ GENESYS_LICENSE_FILE ▪ SYSTEMVUE_LICENSE_FILE ▪ GOLDENGATE_LICENSE_FILE ▪ AMA_LICENSE_FILE ▪ MBP_LICENSE_FILE ▪ MQA_LICENSE_FILE ▪ WAFERPRO_LICENSE_FILE It is automatically set by the **License Setup Wizard**. The license file path must not contain any special characters like `|`, `@` and semicolon(`;`) on Window or a colon(`:`) on Linux. These are used as separator characters. NOTE It is recommended to use the License Manager to set the `<PRODUCT>_LICENSE_FILE` variable. If the `<PRODUCT>_LICENSE_FILE` variable is set to a new license file (or if the contents of a license file are changed), then the license server managers (**lmgrd** and **agileeosfd**) must be restarted for the change to take effect. This will be done automatically by the License Manager. If the license server managers are not restarted, then the EEsof software may not be able to checkout a license. For information on starting the license server managers, refer to Setting Up Licenses on Windows or Setting Up Licenses on Linux.

Variable Name	Description
EESOF_INSTALL_SKIP_LICSETUP	This environmental variable gives the CAD administrators the ability to turn off the **License Setup Wizard** invocation at the end of Keysight EEsof product installation process. Set this variable to *on* or *1* to turn off the wizard invocation.
<PRODUCT>_PRODSEL_PREVIOUS	**Product Selector** automatically records the name of the license selected to start the software session in this variable. This variable can be used in conjunction with <PRODUCT>_PRODSEL_AUTOSTART variable to pre-select a license as the default startup license; when the pre-selected license is available at the startup of the next software session, the **Product Selector** dialog box does not get displayed. Each Keysight EEsof software has a dedicated variable to serve this purpose: • ADS_PRODSEL_PREVIOUS • ICCAP_PRODSEL_PREVIOUS • EMPRO_PRODSEL_PREVIOUS • GENESYS_PRODSEL_PREVIOUS • SYSTEMVUE_PRODSEL_PREVIOUS • GOLDENGATE_PRODSEL_PREVIOUS • AMA_PRODSEL_PREVIOUS • MBP_PRODSEL_PREVIOUS • MQA_PRODSEL_PREVIOUS • WAFERPRO_PRODSEL_PREVIOUS
<PRODUCT>_PRODSEL_AUTOSTART	It automatically records the state of the check-box "Always try to start with this selection. It is set to TRUE when check-box is checked. This variable can be used in conjunction with <PRODUCT>_PRODSEL_PREVIOUS variable to pre-select a license as the default startup license. When this variable is set to a value other than 0 or FALSE, the value recorded in <PRODUCT>_PRODSEL_PREVIOUS is used automatically when a new software session is started. In case, where there is only one license in the licensing pool qualified to start the new session, this variable has no effect; in all the other cases, if no <PRODUCT>_PRODSEL_PREVIOUS is specified or if the new session cannot be started with the specified license, the **Production Selector** dialog will be displayed. Each Keysight EEsof software has a dedicated variable to serve this purpose: ○ ADS_PRODSEL_AUTOSTART ○ ICCAP_PRODSEL_AUTOSTART ○ EMPRO_PRODSEL_AUTOSTART ○ GENESYS_PRODSEL_AUTOSTART ○ SYSTEMVUE_PRODSEL_AUTOSTART ○ GOLDENGATE_PRODSEL_AUTOSTART ○ AMA_PRODSEL_AUTOSTART ○ MBP_PRODSEL_AUTOSTART ○ MQA_PRODSEL_AUTOSTART ○ WAFERPRO_PRODSEL_AUTOSTART

Variable Name	Description
AGILEESOFD_DEBUG_MODE	Turns on the debug mode in vendor daemon when this variable is set to anything other than 0, **no** or **off**. Since this variable is only read at server startup, you need to stop and restart the license server to allow this setting to take effect. Alternatively, Vendor daemon debugging can also be turned on/off using aglmutil without having to stop and restart the license server. Follow the instruction below: 1. Find the licensing tools installation directory. One method is to invoke the License Manager tool, select the "Environment" tab, look for the path recorded in the environment variable "***HPEESOF_LIC_DIR***". 2. ***cd*** \<pathname recorded in HPEESOF_LIC_DIR> 3. ***aglmutil -c*** @myServer.myDomain \<cr> 4. ***ads_schematic*** \<cr> 5. ***-vdebug on*** \<cr> The server debug log will be recorded into the file denoted by the environment variable "***AGILEESOFD_SERVER_ LOGFILE***" that can also be found in the "Environment" tab of the License Manager tool.
HPEESOF_DEBUG_MODE	Controls the client-side licensing debug mode. Any value other than ***OFF*** turns on the client-level debugging. Debug messages are written to stderr unless AGLM_DEBUG_LOG is set. This value should be set before you start the Keysight EEsof software of interest.
AGLM_DEBUG_LOG	Sets the name of the client-side licensing debug log file. This should be used in conjunction with HPEESOF_DEBUG_MODE variable.
AGLMERR	Suppresses licensing related error and warning messages. The value of this variable is a list of keywords. When any of the keywords appear in the contents of the licensing message, that message is suppressed i.e. that message is not displayed. For example, if a user wants to suppress the license expiration warning message that gets displayed at the software startup time everyday during the first 30-day period before the license is about to expire, include the keyword "expiring" as a value in this variable.

Multiple Server Configurations

Keysight EEsof licensing scheme supports all the popular server configurations supported by FlexNet. This includes the redundant servers as well as the multiple servers. Refer to the FlexNet Publisher's License Administration Guide for details.

Remote and Distributed Simulation Licenses

Keysight EEsof supports remote and distributed simulations for Circuit and Momentum Simulators. Remote simulation requires a floating license in the licensing pool; the distributed simulations, usually run remotely, requires special distributed licenses.

Remote Simulation Licenses

Where supported by the product, a floating simulation license is used to run a single simulation on a remote machine.

For more details on Remote Simulations for:

- ADS Circuit Remote Simulation, see Circuit Remote Simulation
- ADS Momentum Remote Simulation, see Using the Job Manager
- GG Circuit Remote Simulation, see Remote Simulation

Distributed Simulation Licenses

Distributed simulation allows you to run multiple simulation jobs in parallel usually on multiple machines remotely. Simulation Manager is used to launch distributed simulations for Transient, Convolution, S-Parameters and Channel Simulators along with Batch Simulators in ADS and circuit Simulators in GoldenGate (GG). Job Manager is used to run distributed simulations for Momentum in ADS and GG.

Following types of Distributed Simulation licenses are offered:

- Distributed Computing N-pack Simulation License
- Quad-pack Simulation License (GoldenGate Only)

Distributed Computing N-pack Simulation License

Where supported, Keysight EEsof offers distributed N-pack (or Turbo) licenses to support a cost-effective method to accelerate simulation sweeps, where N is the number of concurrent parallel jobs supported (typically, N = 8). This is a reserve license up-front model in which simulation controller reserves simulation licenses up-front and only launches as many simulation jobs as granted.

A distributed N-pack license supports N parallel simulation jobs which perform a sweep of multiple parameters on a single circuit (like frequency, power, temperature, a variable, Monte Carlo, or corner analysis).

A standard simulation license is checked out first before an N-pack distributed license. The standard license acts as a controller. If you require more than N sweep points to be simulated, multiple count of N-pack licenses can be stacked to accommodate greater parallelism.

A distributed computing N-pack license is limited to the same simulation type (that is, Momentum, Transient, and so on).

A distributed computing N-pack license feature bits are bundled together and cannot be shared between users or different circuits.

In case of a Distributed Computing N-pack Simulation license, the N-pack license is checked out at the initiation of a distributed simulation (if available) and is released only once the sweep jobs are complete. As jobs are completed the license is still reserved to complete additional jobs, if needed on the existing sweep. This guarantees that the sweep is complete and also guarantees a reasonable rate of job acceleration. For example, you have only one count of 8-pack distributed license in the licensing pool and you want to distribute the sweep to 12 jobs. In this case, 8 jobs will start in parallel and as each job finishes, the remaining jobs (4) will start automatically using the same 8-pack license.

In case, when no N-pack license is available, Momentum uses the standard license obtained and run simulations using all the sweeps are completed sequentially. On the other hand, in case of transient, convolution and channel simulator, multiple jobs are launched as per request and each job pulls the standard simulation license.

For more details on distributed simulation on:

- ADS Circuit Distributed Simulation, see Distributed Simulation Using Simulation Manager
- ADS EM Simulation, see Using the Job Manager

Quad-pack Simulation License (GoldenGate Only)

Quad-pack Simulation Licenses support 4 simultaneous simulation jobs of multiple types (transient, harmonic balance, circuit envelope tied to the license) which can be used to sweep multiple parameters of one or more circuits. The Quad-pack Simulation licenses do not require standard simulation licenses to be pulled first. This is a first-come, first serve licensing model, with all jobs launched at the same time having equal opportunity to have the licenses granted.

In contrast to Distributed Computing N-pack Simulation license, when a user requests for, say, 20 jobs, but only two counts of the quad-pack licenses are available. In that case, all 20 jobs are launched at once, but only 8 are granted with the quad-pack licenses and able to perform the simulations; the other 12 jobs wait until quad-pack license is released by the first 8 jobs, and each will start its simulation once granted with the license.

For more details on Distributed Simulations in case of GG, refer to GG Circuit Distributed Simulation

License Retry

By default, the license auto-retry time is set at one hour for all simulations that are launched remotely. Within that period, the previously failed license checkout request is attempted again in every 2 minutes, until either the license is granted, or the retry period times out.

Licensing FAQs

Licensing - FAQs

The following table lists the Frequently Asked Questions (FAQs) on Licensing.

Question	Answer
Where can I find different licensing tools such as `lmgrd`, `lmutil`, etc.?	**Windows:** `C:\Program Files\Keysight\EEsof_License_Tools\bin` folder **Linux (64-bit):** `<PRODUCT_INSTALL_DIR>/Licensing/<license tools version>/linux_x86_64/bin` directory On the Linux platform, if you choose to install licensing tools to a dedicated location outside of any Keysight EEsof product installation tree, then you can find all the licensing tools and binaries in `<LIC_INSTALL_DIR>` directory.

How can I determine the *agileesofd* version before installing or running any EEsof product?	There are two versions associated with *agileesofd*: the Flexera Publisher version and the EEsof licensing tools version.
	
	To determine the Flexera version,
	
	`type: "agileesofd -v"`
	
	To determine the EEsof licensing tools version on Windows
	
	1. Right click on *agileesofd.exe* in Windows Explorer and select **Properties**.
	2. Select the **Detail** tab in the Properties.
	The Product version is the EEsof licensing tools version.
	
	To determine the EEsof licensing tools version on Linux:
	
	`type: "strings agileesofd | grep EESOF"`
	
	NOTE: The Flexera version of lmgrd must be greater or equal than the version of agileesofd and the Flexera version of agileesofd must be greater or equal to the Flexera version supported for the product (such as, ADS). *agileesofd* is not updated for every release of EEsof licensing tools, so it may have a lower version number. Refer to product release notes for details on minimum version of agileesofd required to run the product.

Where should I copy my license file?	On the Windows platform, Keysight recommends you to copy your license file to `C:\Program Files\Keysight\License\EEsof` folder.

Question	Answer
Can I change the port number in my license file?	You will not normally need to modify your local node-locked license file. Licenses provided by the Keysight Software Manager (KSM) will have a port number of 27009 on the SERVER line. If you do want to use a different port number, then you need to modify them all of your EEsof license files for a given license server to have the same port number in order for the license server to recognize them and start properly. The License Setup Wizard (beginning with Licensing version 2017.01) will check that all of the license files use the same port (or all have no port). Refer to *Accessing Licenses through a Firewall* section in the Advanced Licensing Configuration chapter.
Can I access the license activity log file?	For the local node-locked license set up by the License Setup Wizard, you can find out the location of the license activity log by either of the following method: 1. Start the License Setup Wizard and click Details. Click on the link shown for the license log file opens the log file in a text editor. 2. Start the License Manager, and go to the "Environment" tab. The entry for `AGILEESOFD_SERVER_LOGFILE` contains the clickable link that opens up the log file in a text editor. For the floating license set up on the network license server, consult your CAD Admin to find out where the log file is located.
I am using valid Combo License but I still get "License Denial" message.	The license checkout denials could be recorded in the license activity log when you use a combo license file that contains both version 2.8 and 3.0 licenses. You can ignore these messages as they don't have any impact on using the product.
Why do I need to set environment variable `<PRODUCT>_LICENSE_FILE`?	`<PRODUCT>_LICENSE_FILE` is used by each Keysight EEsof product to identify the licensing configuration for that product. Refer to *License Environment Variables* section in the Advanced Licensing Configuration chapter for more details.
Why am I getting "License Denial" message?	Occasionally you may receive a license denial message unexpectedly. When that happens, you should check to see if there are any "run-away" EEsof processes that need to be killed, because those run-away EEsof processes might be holding on to the license.
Why should I turn off FLEXLM_TIMEOUT?	FLEXLM_TIMEOUT is used by Flexera when connecting to a license server. The default value of 3 seconds (3000000 microseconds) is sufficient to allow remote connections with typical latencies. It generally will not need to be changed. This value is also used when scanning for port when no port is specified in the license file or in the server string. If you know that there are no latency issues with a server you can reduce the value of FLEXLM_TIMEOUT.Then minimum possible value is 200 milliseconds (200000 microseconds). Keysight recommends using a port number and not changing FLEXLM_TIMEOUT.

Question	Answer
Do I need to explicitly specify TCP/IP port?	Not specifying the TCP/IP port for the license server during license setup may lead to checkout delays, unexpected behavior, and/or license checkout failure on the Windows platform. Therefore, it is highly recommended to always explicitly specify the TCP/IP port associated with each license server.
What license version do I need?	Check Product Release Notes first. Refer to License Version to Software Release Compatibility Table for details on license version to use.
What do I do to clean my existing license setup?	When you suspect that your license setup is outdated or behaving weirdly, a quick way to clean up your existing license setup and force a reload and recreation of the license servers and service on the Windows platform is the following: • Start the License Setup Wizard. • Choose "I want to add or replace my license file" and click "Clear" followed by "Next" to clear your previous license file setup. • Choose "I want to add or replace my license server" and click "Clear" followed by "Next" to clear your previous license server setup. If your existing license setup is still not cleaned up completely, run `lmtools` located in the `<LIC_PATH>` folder to clear the Windows Service related to Keysight EEsof licensing: "EEsof EDA License Server", which can be found in the "Start/Stop/Reread" tab.

Question	Answer
How do I determine if I am using the latest agileesofd vendor daemon?	To determine the *agileesofd* vendor daemon, you must check the following:

- The startup information for the version string (*agileesofd*)EESOF 2016.05 (XXX), shown in the example below.
- Compare the date stamp with what is installed. It must be dated 03/30/2016.

```
12:15:27 (lmgrd)
------------------------------------------------
12:15:27 (lmgrd)    Please Note:
12:15:27 (lmgrd)
12:15:27 (lmgrd)    This log is intended for debug
purposes only.
12:15:27 (lmgrd)    In order to capture accurate
license
12:15:27 (lmgrd)    usage data into an organized
repository,
12:15:27 (lmgrd)    please enable report logging.
Use Flexera Software LLC's
12:15:27 (lmgrd)    software license
administration  solution,
12:15:27 (lmgrd)    FlexNet Manager, to  readily
gain visibility
12:15:27 (lmgrd)    into license usage data and to
create
12:15:27 (lmgrd)    insightful reports on critical
information like
12:15:27 (lmgrd)    license availability and
usage. FlexNet Manager
12:15:27 (lmgrd)    can be fully automated to run
these reports on
12:15:27 (lmgrd)    schedule and can be used to
track license
12:15:27 (lmgrd)    servers and usage across a
heterogeneous
12:15:27 (lmgrd)    network of servers including
Windows NT, Linux
12:15:27 (lmgrd)    and UNIX. Contact Flexera
Software LLC at
12:15:27 (lmgrd)    www.flexerasoftware.com for
 more details on how to
12:15:27 (lmgrd)    obtain an evaluation copy of
FlexNet Manager
12:15:27 (lmgrd)    for your enterprise.
12:15:27 (lmgrd)
12:15:27 (lmgrd)
------------------------------------------------
12:15:27 (lmgrd)
```

Question	Answer
|  | ```
12:15:27 (lmgrd)
12:15:27 (lmgrd) Server's System Date and Time:
Mon Nov 12 2018 12:15:27 India Standard Time
12:15:27 (lmgrd) pid 2060
12:15:27 (lmgrd) SLOG: Summary LOG statistics is
enabled.
12:15:27 (lmgrd) Done rereading
12:15:27 (lmgrd) FlexNet Licensing (v11.13.1.4
 build 179569 x64_n6) started on SGH612TFY0 (IBM
PC) (11/12/2018)
12:15:27 (lmgrd) Copyright (c) 1988-2015 Flexera
Software LLC. All Rights Reserved.
12:15:27 (lmgrd) World Wide Web:  http://
www.flexerasoftware.com
12:15:27 (lmgrd) License file(s): C:
\Users\Public\mom_dds.lic C:
\Users\Public\rfpro_otherbundles.lic
12:15:27 (lmgrd) lmgrd tcp-port 27009
12:15:27 (lmgrd) (@lmgrd-SLOG@)
============================================
12:15:27 (lmgrd) (@lmgrd-SLOG@) === LMGRD ===
12:15:27 (lmgrd) (@lmgrd-SLOG@) Start-Date: Mon
Nov 12 2018 12:15:27 India Standard Time
12:15:27 (lmgrd) (@lmgrd-SLOG@) PID: 2060
12:15:27 (lmgrd) (@lmgrd-SLOG@) LMGRD Version:
v11.13.1.4 build 179569 x64_n6 ( build 179569
 (ipv6))
12:15:27 (lmgrd) (@lmgrd-SLOG@)
12:15:27 (lmgrd) (@lmgrd-SLOG@) === Network Info
===
12:15:27 (lmgrd) (@lmgrd-SLOG@) Listening port:
27009
12:15:27 (lmgrd) (@lmgrd-SLOG@)
12:15:27 (lmgrd) (@lmgrd-SLOG@) === Startup Info
===
12:15:27 (lmgrd) (@lmgrd-SLOG@) Is LS run as a
service: No
12:15:27 (lmgrd) (@lmgrd-SLOG@) Server
Configuration: Single Server
12:15:27 (lmgrd) (@lmgrd-SLOG@) Command-line
options used at LS startup: -c C:
\Users\Public\mom_dds.lic;C:
\Users\Public\rfpro_otherbundles.lic -l C:
\Users\Public\SGH612TFY0_server_log.txt
12:15:27 (lmgrd) (@lmgrd-SLOG@) License file(s)
used:  C:\Users\Public\mom_dds.lic C:
\Users\Public\rfpro_otherbundles.lic
``` |

Question	Answer
| | ```
12:15:27 (lmgrd) (@lmgrd-SLOG@)
==============================================
12:15:27 (lmgrd) SLOG: FNPLS-INTERNAL-VL1-4096
12:15:27 (lmgrd) Starting vendor daemons ...
12:15:27 (lmgrd) Started agileesofd (pid 3428)
12:15:27 (agileesofd) SLOG: Summary LOG
statistics is enabled.
12:15:27 (agileesofd) SLOG: FNPLS-INTERNAL-CKPT1
12:15:28 (agileesofd) SLOG: VM Status: 0
12:15:28 (agileesofd) SLOG: FNPLS-INTERNAL-CKPT2
12:15:28 (agileesofd) Server started on
SGH612TFY0 for:          b_layout_momentum
12:15:28 (agileesofd) pjc_b_layout_momentum e_dds
b_hb_l_momentum_3dem
12:15:28 (agileesofd) pjc_b_hb_l_momentum_3dem
e_ads_rfpro
12:15:28 (agileesofd) EXTERNAL FILTERS are OFF
12:15:28 (lmgrd) agileesofd using TCP-port 56277
12:15:28 (agileesofd)          EESOF 2016.05 (03/
30/2016)
``` |
| **How do I Find Flex ID of Hardware Key?** | You need thenodelockedID of your hardware security key to get licenses from Keysight EEsof. It might also be useful to access this information when you place a call to Technical Support. There are two ways to check this:

▪ Before you install the hardware key on your PC, you can read the ID directly from the key.
▪ If you have installed the hardware key on your PC, and have also already installed your licenses and the FLEXnet software, enter the following command to check the nodelocked ID:
`lmutil lmhostid -flexid`
▪ Start **Tools › License Manager** and Select **Environment Tab** |

Troubleshooting License Problems

This section discusses a troubleshooting flow to diagnose license failures. The most important thing to understand is that licensing works with a server machine and client machine. A third party tool, FlexNet Publisher by Flexera software makes it possible. The server machine (that runs license server) offers licenses held in a pool. The client machine (that runs the Keysight EEsof application) communicates with and requests licenses from the license server machine. It should be noted that the license server and the license client can be the same machine.

License problems can be categorized into the following:

- One or more problems with the license server setup
- One or more problems with the license client setup
- A combination of first two types
- A communication problem between license server and license client

Prerequisites

FlexNet utilities, run from the command line, are a fundamental tool used in the license troubleshooting process. Further, many of the FlexNet utility commands make reference to the license server machine (and this is regardless if the license server is a local machine or remote one). Given this, to perform the troubleshooting process, one needs to know:

- Where to access the FlexNet utilities for command line use
- How to reference license server
- Product specific license settings

Where to Access the FlexNet utilities for Command Line Use

Windows

1. Invoke **License Manager** from Keysight EEsof Software's Main Windows' Tools menu.
2. Select the **Environment** tab.
3. In the **Environment** tab, look for the variable, `HPEESOF_LIC_DIR`. Make note of this path (for example, *C:\Program Files\Keysight\EEsof_License_Tools*)
4. Open up a command prompt window
5. Change directories as follows:
6. *cd* `<Path from step 3>\bin`

Linux

1. Assuming that you have installed 2012.xx version of an Keysight EEsof product onto <PRODUCT_INSTALL_DIR>, you can find FlexNet utilities under *<PRODUCT_INSTALL_DIR>/Licensing/ 2012.08/linux_x86[32|64]/bin* directory.
2. Alternatively, if you have installed Keysight EEsof Licensing package onto a dedicated directory, <LIC_INSTALL_DIR>, you can find FlexNet utilities under *<LIC_INSTALL_DIR>/bin* directory.

How to Reference License Server

For debugging use of FlexNet with Keysight EEsof Products, `port@license-server-machine` is typically used. This is a generic representation for the license server.

- `Port` is a TCP port number that is optionally assigned for the license server.
- `License-server-name` is the name of the license server machine. This can be a remote machine or local machine. However, it should be noted that this can also be the IP address of the machine.

Examples

```
@MyLocalPC
27001@RemoteLicenseServer.myDomain
@192.168.0.102
```

Product specific license settings

The steps that follow will reference `<Product>_LICENSE_FILE`. `<Product>_LICENSE_FILE` can be one of the following depending upon which Keysight EEsof product you are using:

- ADS_LICENSE_FILE
- EMPRO_LICENSE_FILE
- ICCAP_LICENSE_FILE
- GENESYS_LICENSE_FILE
- SYSTEMVUE_LICENSE_FILE
- GOLDENGATE_LICENSE_FILE
- MBP_LICENSE_FILE
- MQA_LICENSE_FILE
- AMA_LICENSE_FILE
- WAFERPRO_LICENSE_FILE

Troubleshooting Flow and Process

This section covers the suggested troubleshooting flow as follows:

Step 1: Verify license server machine is running, FlexNet daemon versions, license server communications.
Step 2: Verify client is able to access license server machine.
Step 3: Verify pool and accessibility of available licenses.

> **NOTE**
> - If your Keysight-EEsof application is unable to start, start with Step 1.
> - If your Keysight-EEsof application is able to run but you have a license problem during application runtime, start with Step 3.

Step 1: Verify license server machine is running, FlexNet daemon versions, license server communications

Run the following FlexNet lmutility:

lmutil lmstat -c   <port>@<license-server-machine>

```
C:\Program Files\Keysight\EEsof_License_Tools\bin>lmutil.exe lmstat -c 27001@apr
icot
lmutil - Copyright (c) 1989-2013 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Wed 7/9/2014 11:10

[Detecting lmgrd processes...]
License server status: 27001@apricot
    License file(s) on apricot: /hfs/d1/local/License_Server/apricot_server_lice
nse.lic:

    apricot: license server UP (MASTER) v11.11

Vendor daemon status (on apricot):

agileesofd: UP v11.11


C:\Program Files\Keysight\EEsof_License_Tools\bin>
```

In the above, a status query is performed on license server `27001@apricot` (`apricot` is the name of the license server machine). The following information is obtained:

1. License file for server is located on the license server machine at */hfs/d1/local/License_Server/ <License server machine>_server_license.lic.*.
2. `lmgrd` is `UP` meaning that it is running.
3. `agileesofd` is `UP` meaning that it is running.
4. Version number for both `lmgrd` and `agileesofd` is `v11.11` each.

As part of initial troubleshooting, you must ensure that the path to license file is correct, **lmgrd** and **agileesofd** are both `UP`, the version numbers for **lmgrd** and **agileesofd** are both `v11.11` for each. To use this troubleshooting flow, go through the list of conditions in the given sequence. Jump to different subsequent conditions as guided.

CONDITION 1: Running   **lmutil lmstat -c**   <port>@<license-server> displays something as following:

```
C:\Documents and Settings\mrubin>lmutil lmstat -c @myserver
lmutil - Copyright (c) 1989-2010 Flexera Software, Inc. All Rights Reserved.
Flexible License Manager status on Sat 5/5/2012 21:11

[Detecting lmgrd processes...]
Error getting status: License server machine is down or not responding. (-96,7:1
1001 "Comm. error")

C:\Documents and Settings\mrubin>
```

If the path to license file is not shown and information about **lmgrd** and **agileesofd** is not given, then one or more of the following possible problems may exist. If the above message is not seen or presented differently or license path is given with **lmgrd** and **agileesofd** being `UP`, move to the next condition.

1. USB dongle not plugged in: If license server uses a license file that is tied to a USB dongle, check to see if dongle is plugged in appropriately.
2. USB dongle driver not installed: If license server uses a license file that is tied to a USB dongle, check that the dongle driver is installed by running FlexNet command: `lmutil lmhostid --flexid`. If "missing dongle driver" is reported, follow the Dongle License Installation instruction to install it.
3. Wrong License Server Name is used in command: Ensure that you have the correct name of the license server. Depending upon your DNS configuration in place, it may be necessary to provide fully qualified domain name (for example, `@computername.companydomainname.com`) or the IP Address of the license server machine (for example, `@130.29.167.44`). If using a local license server, the local machine name may be replaced with `localhost` (for example, `lmutil lmstat -c @localhost`).
4. Network connectivity (Remote license servers): Ping remote license server to ensure it is on the network. Not getting a ping respond could mean the machine is physically disconnected from the network or turned off.
5. License server not running: There could be several causes for this. However, before investigating further, for Windows machine, it is advisable to restart the machine where **License Setup Wizard** was run.
   a. Check process on the license server for presence of *lmgrd* and *agileesofd* . If any of them is missing, follow the Install License Server instructions to start the same.
   b. Examine license file and ensure CPU ID in the installed license file matches with CPU ID of the machine. Run the FlexNet command: *lmutil lmhostid* to acquire the CPU ID of machine so that the CPU ID in the license file can be matched up with the CPU ID of the machine.
6. Only one *agileesofd* process may be running at a time on a license server machine. Check processes on the machine for presence of already running instance of *agileesofd* . This could be due to multiple services (Windows or Linux) previously set up on the same machine. If this applies, explore the services on the machine to ensure that only one exists for Keysight EEsof software.
   a. Running on unsupported platform: License servers are supported on the supported operating systems for our products. Ensure that the license server is on a supported operating system. It must be noted that Virtual machines (for example, VMWare, Windows virtual machine) and Linux distributions other than Red Hat Enterprise Linux or Novell SuSE are not supported (for example, Ubunto, Fedora).
   b. License Path problem:
      ▪ On Windows: Run **License Setup Wizard**: Verify if the wizard show that the correct license file is being pointed to.
      ▪ On Linux: Check if license file specified in `lmgrd` invocation been moved or deleted or the correct file is used in *lmgrd* command.
   c. FlexNet communications blocked: See special section on dealing with blocked FlexNet communications.

CONDITION 2: Running `lmutil lmstat -c <port>@<license-server>` reports `lmgrd` being UP, `agileesofd` being UP but does not report that both `lmgrd` and `agileesofd` versions are `v11.11`.

If `lmgrd` and `agileesofd` are reported UP with version `v11.11`, move to the next condition.

The FlexNet `lmgrd` and `agileesofd` daemons have to be upgraded to FlexNet `v11.11` for both `lmgrd` and `agileesofd` on the license server machine. The bits can be acquired at http://www.keysight.com/find/eesof-flexnet-downloads.

CONDITION 3: Running `lmutil lmstat -c <port>@<license-server>` reports `lmgrd` being

UP, `agileesofd` being UP, `lmgrd` and `agileesofd` versions are `v11.11`, but reports the wrong path and/or license file:

1. Determine the correct location of the license file.
2. On Windows: Re-run **License Setup Wizard** to re-configure for correct license file.
   On Linux: Stop and re-start license server with correct license file.

Step 2: Verify client is able to access license server

At this stage in the debugging process, the license server is presumed to be working correctly and focus is shifted to the client side. To remind again, both server and client can be the same machine. These are the items to check on the license client machine:

1. License Path specified for the Keysight EEsof application
2. Remote server only: Communications problem from client machine to remote server

License Path specified for the Keysight EEsof application

The Keysight EEsof software application obtains licenses from the license server machines that are specified in the license path. Each Keysight EEsof application has a dedicated variable for holding the license path information. This variable is written to the Windows registry on Windows or entered into one's environment on Linux. It takes on the format of `<PRODUCT>_LICENSE_FILE`.

> **NOTE** `<PRODUCT>_LICENSE_FILE` can be one of the following depending upon which product you are using:
>
> - ADS_LICENSE_FILE
> - EMPRO_LICENSE_FILE
> - ICCAP_LICENSE_FILE
> - GENESYS_LICENSE_FILE
> - SYSTEMVUE_LICENSE_FILE
> - GOLDENGATE_LICENSE_FILE
> - MBP_LICENSE_FILE
> - MQA_LICENSE_FILE
> - AMA_LICENSE_FILE
> - WAFERPRO_LICENSE_FILE

On Windows

1. Invoke **License Manager** from Keysight EEsof Software, **Main Window > Tools** menu.
2. Select the **Environment** tab.
3. In the **Environment** tab, look for the variable with the name resembling <PRODUCT>_LICENSE_FILE format.

Verify if `<PRODUCT>_LICENSE_FILE` either points to the correct remote license server (for example, `port@license-server-machine` or `@license-server-machine`), or the path is correct pointing to the correct local license file on the machine? If not, run **License Setup Wizard** to correct this.

> **NOTE** `<PRODUCT>_LICENSE_FILE` is not explicitly defined in the **Windows System Properties**. This was done for earlier versions of the software but should not be done with the current version. Doing so will interfere with **License Setup Wizard**.

On Linux

Find out what <PRODUCT>_LICENSE_FILE is set to by `echo $ADS_LICENSE_FILE` command for example.

Verify if `<PRODUCT>_LICENSE_FILE` either points to the correct remote license server (for example, `port@license-server-machine` or `@license-server-machine`), or the path is correct pointing to the correct local license file on the machine. On Linux, special care is needed because this variable may have been declared somewhere in the environment startup files such as .adsrc, .eesofpvmprofile, or .flexlmrc.

Communications problem from client machine to remote server (Remote Server Only)

This only needs to be checked if license server is a remote machine or if **lmutil lmstat** was not previously run as described in the section Verify license server machine is running, FlexNet daemon versions, license server communications.

Run **lmutil lmstat -c** `port@license-server-machine` or **lmutil lmstat -c** `@license-server-machine`. If the following output is seen,

```
C:\Program Files\Keysight\EEsof_License_Tools\bin>lmutil lmstat -c @remote-server
lmutil - Copyright (c) 1989-2010 Flexera Software, Inc. All Rights Reserved.
Flexible License Manager status on Sat 5/5/2012 16:00

[Detecting lmgrd processes...]
Error getting status: License server machine is down or not responding. (-96,7:11001 "Comm. error")

C:\Program Files\Keysight\EEsof_License_Tools\bin>
```

AND it has been verified that the remote license server is running, then FlexNet communications are blocked: See special section on dealing with blocked FLEXnet communications.

Step 3: Verify pool and accessibility of available licenses

In this stage of the troubleshooting flow, the license server is presumed to be running with correct **lmgrd** and **agileesofd** version `v11.9`, and the License path has been correctly set. However, license denials are preventing the access to software or access to features of the software. The following items are checked in this section:

1. The pool of available licenses has the correct features, license version number, expiration date.
2. Multiple end user license server only: The pool of available licenses has licenses available (for example, someone else might have checked out a license that is needed).
3. Remote server only: License file does not have floating licenses.

The pool of available licenses has the correct features, license version number, expiration date

This section checks the licenses in the license pool for correct features, correct license version number, and unexpired licenses. Wrong features, wrong license versions, and expired licenses can result in license denials.

On Windows

1. Invoke **License Manager** from Keysight EEsof Software **Main Windows > Tools** menu.
2. Select the **Licenses** tab. Example below has Product=ADS.

```
Configure   Environment   Licenses   Servers   Usage   Descriptions

  27001@cinnamon.ind.keysight.com

  Feature                   Version   Num   Expires       Vendor
  b_ads_inclusive           3.0       200   22-apr-2013   agileesofd
  b_core                    3.0       200   22-apr-2013   agileesofd
  b_iccap_inclusive         3.0       200   11-mar-2013   agileesofd
  b_mbp_inclusive           3.0       50    19-jul-2013   agileesofd
  b_mqa_inclusive           3.0       50    19-jul-2013   agileesofd
  e_phys_hi_capacity        3.0       200   12-aug-2013   agileesofd
  e_sim_electrothermal      3.0       200   18-feb-2014   agileesofd
  pjc_b_ads_inclusive       3.0       200   22-apr-2013   agileesofd
  pjc_b_core                3.0       200   22-apr-2013   agileesofd
  pjc_b_genesys_inclusive   2.8       200   11-mar-2013   agileesofd
  pjc_b_iccap_mod_platfor   3.0       200   11-mar-2013   agileesofd
  pjc_b_mbp_inclusive       3.0       50    19-jul-2013   agileesofd
  pjc_b_mqa_inclusive       3.0       50    19-jul-2013   agileesofd
  pjc_e_phys_hi_capacity    3.0       200   12-aug-2013   agileesofd
  pjc_e_sim_electrotherma   3.0       200   18-feb-2014   agileesofd

  ✓ Compact View

  Cancel                        Refresh                        Help
```

On Linux

Execute FlexNet utility to get to this information:

```
lmutil lmstat -c  <port>@<license-server>  -i
```

```
jujube 30: lmutil lmstat -c 27001@trident.scs -i
lmutil - Copyright (c) 1989-2010 Flexera Software, Inc. All Rights Reserved.
Flexible License Manager status on Sat 5/5/2012 16:31

NOTE: lmstat -i does not give information from the server,
      but only reads the license file.  For this reason,
      lmstat -a is recommended instead.

Feature                   Version    # licenses    Expires        Vendor
_____          _____    _____    _____        _____
b_ads_inclusive           3.0           200        13-sep-2013    agileesofd
b_empro_fem_fdtd_comp     3.0           200        13-sep-2013    agileesofd
b_genesys_inclusive       3.0           200        13-sep-2013    agileesofd
b_gg_inclusive            3.0           200        13-sep-2013    agileesofd
b_iccap_inclusive         3.0           100        13-sep-2013    agileesofd
b_sv_internal             3.0           100        13-sep-2013    agileesofd
e_sim_cct_accel           3.0           100        24-sep-2013    agileesofd
gg_qpdkv                  3.0           200        13-sep-2013    agileesofd
p_sim_momentum            3.0           200        21-oct-2013    agileesofd
pjc_b_ads_inclusive       3.0           200        13-sep-2013    agileesofd
pjc_b_empro_fem_fdtd_co   3.0           200        13-sep-2013    agileesofd
pjc_b_genesys_inclusive   3.0           200        13-sep-2013    agileesofd
pjc_b_gg_inclusive        3.0           200        13-sep-2013    agileesofd
pjc_b_iccap_inclusive     3.0           100        13-sep-2013    agileesofd
pjc_b_sv_internal         3.0           100        13-sep-2013    agileesofd
pjc_e_sim_cct_accel       3.0           100        24-sep-2013    agileesofd
pjc_p_sim_momentum        3.0           200        21-oct-2013    agileesofd
jujube 31:
```

In the above platform illustrations (Windows, Linux), a query is performed on license servers `27001@cinnamon.ind` and `27001@trident.scs`, respectively (where, `cinnamon.ind` and `trident.scs` are the name of the license server machines). The following information is obtained:

1. A listing of the features the license pool offers.
2. All features are version `3.0` licenses.
3. There are 200 licenses for each feature.
4. Licenses expire on `September 13, 2012`.
5. Features are those belonging to `agileesofd` vendor daemon.

Given the above, the following items should be confirmed:

1. a. **Features** - Do the features appearing agree with what you believe are the features you own?
   b. **Version number**- Ensure that the version number of software you are running or trying to run correlates to its associated license version number:

Software Version	License Version
2012 and 2 versions back	3.0
2011 and 2 versions back	2.9
2010 and 2 versions back	2.8

For example, if you are trying to run ADS 2012.08 on your machine but point to a license server with v2.9 codewords, a license denial will occur.

   c. **Number of Licenses** - Are the number of licenses 1 or greater for needed licenses?

   d. **License Expiration** - Are the licenses current and not expired?

Multiple end user license server only: The license pool has licenses available (for example, someone else has checked out a license that is needed)

This section covers problems where licenses needed are in the license pool but are in use by other users. Skip this, if you are the only user of the license server.

On Windows

1. Invoke **License Manager** from Keysight EEsof Software **Main Windows > Tools** menu.
2. Select the **Usage** tab. Example below has Product=ADS.

Licenses / Users	Available	In Use
b_ads_inclusive	188	12
b_core	196	4
b_iccap_inclusive	200	0
b_mbp_inclusive	50	0
b_mqa_inclusive	50	0
e_phys_hi_capacity	200	0
e_sim_electrothermal	200	0
pjc_b_ads_inclusive	194	6
pjc_b_core	200	0
pjc_b_genesys_inclusive	200	0
pjc_b_iccap_mod_platform	200	0
pjc_b_mbp_inclusive	50	0
pjc_b_mqa_inclusive	50	0
pjc_e_phys_hi_capacity	200	0
pjc_e_sim_electrothermal	200	0

Sort by: ⦿ Licenses ◯ Users   ☐ User Info   View: ⦿ All ◯ Available ◯ In Use

Cancel   Refresh   Help

On Linux

Execute FlexNet utility to get to this information:

```
lmutil lmstat -c  <port>@<license-server>  -a
```

```
Administrator: C:\windows\system32\cmd.exe                              [_][□][✕]
C:\Program Files\Keysight\EEsof_License_Tools\bin>
C:\Program Files\Keysight\EEsof_License_Tools\bin>lmutil.exe lmstat -c 27000@cnu
2022llp -a
lmutil - Copyright (c) 1989-2013 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Thu 7/24/2014 15:59

[Detecting lmgrd processes...]
License server status: 27000@cnu2022llp
    License file(s) on cnu2022llp: C:\Program Files\Keysight\license_ADS_32.lic:


cnu2022llp: license server UP v11.11

Vendor daemon status (on CNU2022LLP):

agileesofd: UP v11.11
Feature usage info:

Users of b_genesys_inclusive:  (Total of 1 license issued;  Total of 0 licenses
in use)

Users of pjc_b_genesys_inclusive:  (Total of 1 license issued;  Total of 0 licen
ses in use)

Users of b_sv_inclusive:  (Total of 1 license issued;  Total of 0 licenses in us
e)

Users of pjc_b_sv_inclusive:  (Total of 1 license issued;  Total of 0 licenses i
n use)

Users of b_gg_ads_ent:  (Total of 1 license issued;  Total of 0 licenses in use)

Users of pjc_b_gg_ads_ent:  (Total of 1 license issued;  Total of 0 licenses in
use)

Users of b_ads_inclusive:  (Total of 1 license issued;  Total of 0 licenses in u
se)

Users of pjc_b_ads_inclusive:  (Total of 1 license issued;  Total of 0 licenses
in use)

Users of e_sim_trans_conv_pk8:  (Total of 1 license issued;  Total of 0 licenses
 in use)

Users of pjc_e_sim_trans_conv_pk8:  (Total of 1 license issued;  Total of 0 lice
```

In the above platform dependent illustrations (Windows, Linux), a query is performed on license server a query is performed on license servers `27001@cinnamon.ind` and `27001@trident.scs`, respectively (where, `cinnamon.ind` and `trident.scs` are the name of the license server machines). The following information is obtained:

1. A listing of the features in the pool.
2. The users using the features.
3. For each feature, the total number of licenses per feature versus how many licenses in use.

Given the above, a determination should be made if the license that is needed is in use by other users.

Remote server only: License server has one or more node-locked licenses

In some instances, the license server is working, the client setup is correct, licenses are available for use (not in use by others), licenses version show correct version and are not expired, but a license still cannot be checked out. This can be caused by accidental installation of a node-locked license file tied to the CPU ID of the machine intended to be the network (floating) license server. To verify this, the following steps are performed:

1. Perform procedure described in MULTIPLE END USER LICENSE SERVER ONLY: The pool of available licenses has licenses available step to get a listing of licenses on server.

Licenses / Users	▲ Available	In Use
b_ads_inclusive	200	0
b_empro_fem_fdtd_comp	200	0
b_genesys_inclusive	200	0
b_gg_inclusive	191	9
b_iccap_inclusive	100	0
b_sv_internal	100	0
e_sim_cct_accel	100	0
gg_qpdkv	199	1
p_sim_momentum	200	0
pjc_b_ads_inclusive	200	0
pjc_b_empro_fem_fdtd_comp	200	0
pjc_b_genesys_inclusive	200	0
pjc_b_gg_inclusive	200	0
pjc_b_iccap_inclusive	100	0
pjc_b_sv_internal	100	0
pjc_e_sim_cct_accel	100	0
pjc_p_sim_momentum	200	0

2. Alternatively, run the FlexNet Utility, `lmutil lmdiag -c` @license-server <feature-name to be checked>

```
C:\Program Files\Keysight\EEsof_License_Tools\bin>lmutil lmdiag -c 27001@trident.scs b_ads_inclusive
lmutil - Copyright (c) 1989-2010 Flexera Software, Inc. All Rights Reserved.
FLEXnet diagnostics on Sat 5/5/2012 23:08
-----------------------------------------------------------------
License file: 27001@trident.scs
-----------------------------------------------------------------
"b_ads_inclusive" v3.0, vendor: agileesofd
  License server: trident.scs
  floating license   starts: 1-jan-1990,   expires: 13-sep-2013

This license can be checked out
-----------------------------------------------------------------
C:\Program Files\Keysight\EEsof_License_Tools\bin>
```

In case of node-locked licenses, you will see in the last line, "This license cannot be checked out". In the example above, it shows b_ads_inclusive can be checked out, inferring a correct network license file has been installed.

FlexNet Communications Problems

NOTE   This section should not be consulted unless it has been ascertained that the license server, local or remote, is running.

FlexNet communications can be blocked and/or interfered with by third party programs. This section addresses how to resolve these issues. FlexNet communication blockage and/or interference is most typically caused due to firewalls, and less often, with antivirus software, which is covered here. However, it can also be caused from VPN tunnel programs and/or other third party programs. Blockage/interference from those programs is beyond the scope of this.

Since, firewall and antivirus software is a typical cause for FlexNet communication problems, this should be investigated first. The quickest way to make this determination is to temporarily disable firewall and antivirus software.

> **NOTE** Ensure that disabling any security software (for example, firewall, antivirus) is done in such a manner that it does not cause harm to your system. Keysight cannot be held responsible for the harm caused. It is also recommended that you work with local IT support professional.

The test is performed by methodically running `lmutil lmstat -c` `@license-server` across different permutations of disabling firewall and antivirus software. When `lmstat` reports license path, `lmgrd` and `agileesofd` vendor daemons `UP` after a firewall or antivirus disablement. This is a positive test result. `lmstat` result shown when no communications blockage:

```
C:\Program Files\Keysight\EEsof_License_Tools\bin>lmutil.exe lmstat -c 27001@apr
icot
lmutil - Copyright (c) 1989-2013 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Wed 7/9/2014 11:10

[Detecting lmgrd processes...]
License server status: 27001@apricot
    License file(s) on apricot: /hfs/d1/local/License_Server/apricot_server_lice
nse.lic:

    apricot: license server UP (MASTER) v11.11

Vendor daemon status (on apricot):

agileesofd: UP v11.11


C:\Program Files\Keysight\EEsof_License_Tools\bin>
```

Below is an example test matrix. It is recommended to start with Firewall disabling first.

	Client Firewall	Server Firewall	Client Antivirus	Server Antivirus
Test 1	off	on	on	on
Test 2	on	off	on	on
Test 3	off	off	on	on
Test 4	off	off	off	on

	Client Firewall	Server Firewall	Client Antivirus	Server Antivirus
Test 5	off	off	off	off

If both firewall and antivirus, on server and client machines, are simultaneously disabled (in other words, all security software on license client and server turned off) and `lmstat` does not give a positive result, then some third party software might be causing the issue. Request your IT professional to check the same.

If after running the above tests, an interfering firewall and/or antivirus is determined; exceptions must be made into these tools so that the FlexNet software functions properly. The steps to do this are covered here. However, due to the wide variation in firewall and antivirus user interfaces and use models, only generic instructions are provided.

1. Edit the current license file on license server machine. A port number should be added for both the license manager daemon `lmgrd` and the `agileesofd` vendor daemon. These are shown below.

```
 SERVER this_host B8AC6F80C09D 27005
VENDOR agileesofd PORT=5346
#
INCREMENT b_hb_layout_momentum agileesofd 2.9 31-mar-2013 1
 VENDOR_STRING&hellip;..
```

Stop and re-start license server so that these changes can take effect.
2. Firewall and Antivirus exclusions:
   a. Firewall: Specify TCP port numbers 27005 and 5346 to be allowed through firewall for both License server and License client machines
   b. Firewall and/or Antivirus: Configure following executables as exclusions:
   C:\Program Files\Keysight\EEsof_License_Tools\bin\agileesofd.exe
   C:\Program Files\Keysight\EEsof_License_Files\bin\lmgrd.exe

Glossary and Abbreviations

The following table lists commonly used licensing terms and abbreviations in EEsof Licensing.

Term	Definition
Keysight Software Manager (KSM)	An interactive self-help license management system that allows you to redeem, transfer, request, and renew licenses.
Feature	A single capability that is used to construct an element or a bundle license (for example, ads_schematic, sim_linear, and so on).
Elements	An element includes one or more features. It is the lowest level of license sold. All the features therein are reserved when the element is checked out.
Bundle	A bundle includes all the features from the elements that make up the bundle. It is sold as a whole and all the features therein are reserved when the bundle is checked out.
CPU ID	CPU ID specifies the unique ID of a machine. It is also referred to as MAC address or the physical address or hostid of a computer system.
Distributed Simulation	A simulation divided into multiple jobs that runs concurrently on one or more computers.
FlexNet	FlexNet is the 3rd-party licensing technology Keysight EEsof licensing scheme is based on.
FlexNet ID Dongle	A license dongle is a serialized hardware key that can be attached to a USB port of a computer to limit or lock software access to whoever has the dongle attached to his/her system via the associated Keysight EEsof license file. A license dongle always has a unique ID called FlexNet ID.
FlexNet ID Dongle Device Drivers	FlexNet ID Dongle Device Drivers must be installed before the dongle device can serve as the locking device for license.
Floating (Network) License	A floating (network) license can be shared among multiple users across a network. It can be installed on a license server using a CPU ID or a dongle to fulfill the license requests from one or more client machines. License server and client machine are different machines. Floating license support is provided for single and multiple servers (including distributed product servers, peak servers, and redundant servers).
Hot Swapping	An automatic release of a pulled bundle or core/environment license and replace it with a different bundle type during run-time and check-out of another bundle license.

Term	Definition
Job Control	A means to enforce a license count for a feature per each job invocation. A feature has job control if each invocation of it consumes one count of its associated license. Job control is used to limit the amount of concurrent usage of a feature within one count of its encompassing element or bundle consumption. Job controlled features include simulators and model sets.
License File	The Keysight EEsof licenses are stored in a file. The license files are locked to the license server using an identity obtained from the machine. This identity is the CPU ID.
License Pool	A license pool is a collection of purchased licenses.
License Security	Licenses are secured by a codeword tied to a CPU ID or USB Dongle.
License Server Manager (*lmgrd*)	*lmgrd* is one of the component in FlexNet technology. It is the license daemon process running on the license server system to police the license usage.
License Setup Wizard	License Setup Wizard offers a guided tour to assist the user to set up his/her license. It is the recommended method for the Windows users who use node-lock counted licenses locked to his/her PC or a dongle device.
License Tools	Includes License Manager, License Setup Wizard, and Product Selector.
Load Sharing Facility (LSF)	Load Sharing Facility (LSF) is a general-purpose, distributed queuing system. Instead of submitting jobs to specific host machines, you can submit them to a centralized queue manager. LSF distributes jobs to available hosts based on the current load conditions and the resource requirements of the application. It supports sequential and parallel applications running as interactive and batch jobs. LSF is a third party software tool by Platform Computing that makes distributed simulation possible. Sun Grid Engine, a different third party tool that functions similar to LSF, is also supported.
Node-locked License	Node-locking means that the application can be used on a specific host. It allows a single instance of an Keysight EEsof product to be used on a single computer with a single display. The user, license, and computer must be physically co-located.
Primitives	Primitives are obsolete, legacy product features. These are now contained within new elements, mainly for migration purpose.

Term	Definition
Remote Simulation	A simulation launched on a remote computer.
UDH	UDH stands for User, Display, and Host. All Keysight EEsof licenses are tied to a single user, single display, and single host.
Vendor Daemon (*agileesofd*)	Keysight EEsof vendor daemon is called *agileesofd*. It partners with FlexNet license manager, *lmgrd*, to perform license usage policing for the license codewords issued by Keysight EEsof.