GoldenGate 2020
Update 1.1

Installation and License Setup

KEYSIGHT
TECHNOLOGIES

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Notices

Contents

Installation and License Setup

Quick Install and License Setup

Quick Install and License Setup

This document is intended for end users to enable them install GoldenGate to use with Virtuoso® or Advanced Design System (ADS).

This section provides instructions to install GoldenGate and set up licenses on Linux (Virtuoso® or ADS) and Windows (ADS) platform quickly.

- Quick Install and License Setup-Linux
- Quick Install and License Setup-Windows

Quick Install and License Setup-Linux

Quick Install and License Setup - Linux

GoldenGate can be installed on a Linux machine after downloading the installation file from the Keysight EEsof EDA Website, as illustrated.

Obtain GoldenGate License File

GoldenGate requires a license to run. You can either apply for an Evaluation or a Purchased license. Once the license request is approved, a license file (with `.lic` extension) is sent as an email attachment. Save this file on your computer.

Supported Platforms

For more details on Supported Platforms, refer to the Supported Platforms section.

| NOTE | You can use GoldenGate with ADS and GoldenGate Tools. For details on GoldenGate compatibility, refer to the GoldenGate Compatibility section. |

System Requirements

The following are Keysight recommended configurations:

64-bit Linux OS / Design Environment	▪ Redhat RHEL 6.x, 7.x ▪ Novell SUSE SLES 11.x, 12.x ▪ Cadence ADE Support 　○ IC 6.1.6, 6.1.7, 6.1.8 　○ ICADV 12.1, 12.2, 12.3 　○ ICADVM 18.1
RAM / Swap Space	The requirements specified for Cadence Analog Circuit Design Environment are sufficient for GoldenGate
Hard Disk Space	1.2 GB of free disk space

Download GoldenGate Software

Click http://www.keysight.com/find/eesof-goldengate-latest-downloads to download GoldenGate.

Install GoldenGate

To install GoldenGate, follow these steps.

1. Untar the installation file using the following commands:
   gunzip `GoldenGate-<version>.tar.gz`
   tar -xvf `GoldenGate-<version>.tar`
2. Go to `GoldenGate-<version>/aa` folder
3. Start the installation program using the following command:
   ./user_install.sh

GoldenGate License Setup

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

Node-locked License

To setup a counted license, follow the 3-step process:

| NOTE | In the case of a USB dongle, attach the dongle to the USB port and install dongle driver before you start License Server Managers (*lmgrd* and *agileesofd*). |

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 *$XPEDION/Licensing/ <license tools version> /linux_x86_[32|64]/bin*
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 pathnames to the license file(s).
    - ◦ <license log file path> is the full pathname to the debug log file.

Step 2: Automate FlexNet License Server Startup

To automate the License Server managers' startup upon system reboot, see Automate FlexNet License Server Startup in *Licensing (For Administrators)*.

Step 3: Set Product Environment Variable

To use a node-locked license on your machine, set the *GOLDENGATE_LICENSE_FILE* environment variable to point to the machine running the license server managers (*lmgrd* and *agileesofd*). For more information on product environment variables, see License Environment Variables in *Licensing (for Administrators)*.

To set the environment variable *GOLDENGATE_LICENSE_FILE* in a shell, type the following commands:

csh, tcsh

setenv GOLDENGATE_LICENSE_FILE $HOME/Keysight/Licenses/license.lic

ksh, bash

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

Floating License

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

Step 1: Server-side setup
Repeat the following steps for each license server you have.
For server-side license setup, follow the steps 1 and 2 described in Node-locked License section.

Step 2: Client-side 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 Setting Up Product Environment Variables. For details, refer to step 3 of Node-locked License Setup section.

Launch GoldenGate

From GoldenGate 2015.01 release onwards, GoldenGate can be used with Virtuoso® or Advanced Design System (ADS). This section describes the steps to launch GoldenGate either in the Virtuoso® or ADS environment.

Virtuoso®

Before starting GoldenGate, the `XPEDION` environment variable must point to the installation directory of GoldenGate and the `XPEDION_CADENCE_VERSION` environment variable must point to the Cadence installation directory. For more details, refer to Setting Environment Variables.

To run GoldenGate, open a terminal window and enter the following command:
`% icms` - if you set Cadence IC5 ADE
or
`% virtuoso` - if you set Cadence IC6 ADE

ADS

Before starting GoldenGate, you need to:

- Install ADS. For details, refer to the Installation (For Administrators) documentation in ADS .
- Enable the GoldenGate addon in ADS. For details, see Enabling GoldenGate in ADS.

Quick Install and License Setup-Windows

Quick Install and License Setup - Windows

GoldenGate can be installed on a Windows machine after downloading the installation file from the Keysight EEsof EDA Website, as illustrated.

```
  ╭─────────────────────────╮
  │    Obtain License File    │
  ╰────────────┬────────────╯
               │
               ▼
  ┌─────────────────────────┐
  │     Download Product     │
  └────────────┬────────────┘
               │
               ▼
  ┌─────────────────────────┐
  │      Install Product     │
  └────────────┬────────────┘
               │
               ▼
  ┌─────────────────────────┐
  │   Set Up Product License  │
  └────────────┬────────────┘
               │
               ▼
  ╭─────────────────────────╮
  │      Launch Product      │
  ╰─────────────────────────╯
```

Obtain GoldenGate License File

GoldenGate requires a license to run. You can either apply for an Evaluation or a Purchased license. Once the license request is approved, a license file (with `.lic` extension) is sent as an email attachment. Save this file on your computer.

Supported Platforms

For more details on Supported Platforms, refer to the Supported Platforms section.

> NOTE — You can use GoldenGate with ADS and GoldenGate Tools. For details on GoldenGate compatibility, refer to the GoldenGate Compatibility section.

System Requirements

The following are Keysight recommended configurations:

64-bit Windows OS / Design Environment	• Microsoft Windows 7 • Microsoft Windows 8 • ADS 2016.01 or later
RAM / Swap Space	The requirements specified for ADS are sufficient for GoldenGate
Hard Disk Space	1.2 GB of free disk space
Web Browser	Mozilla 1.7 or Firefox 1.5.0.4 or better are the recommended web browsers. To view the pdf files, Acrobat Reader 5.0 or higher is recommended.

Download GoldenGate Software

Click http://www.keysight.com/find/eesof-goldengate-latest-downloads to download GoldenGate.

Install GoldenGate

To install GoldenGate, you must have system administrator privileges. Run the downloaded installer `GoldenGate-<version>.win64.exe` (This may take a while). Follow the guided tour to complete the installation.

GoldenGate License Setup

At the end of the installation, the **License Setup Wizard** starts automatically after detecting that you do not have a valid license to start ADS. If you choose to skip the license setup, you can complete the process later by clicking **Start › Programs › GoldenGate** ‹release_number› **› GoldenGate Tools › GoldenGate** ‹release_number› **License Manager**.

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

Node-locked License

To setup a counted license, select the **Add or replace a license file** option and follow the guided tour to complete the license setup process. In case of a USB dongle, attach the dongle to the USB port and invoke the **License Manager** to complete the setup process.

> CAUTION   You must have system administrator privileges to setup node-locked licenses (Only) on Windows 7 machines.

Floating License

To setup a floating license, select the **Add or replace a network license server** option and follow the guided tour to complete the license setup process. Consult your license administrator for the network path of the license server. For more details on setting up floating license on a network server, see Setting Up Floating License on Windows in *Licensing (for Administrators)*.

Launch GoldenGate

Before starting GoldenGate, you need to:

- Install ADS. For details, refer to the Installation (For Administrators) documentation in ADS .
- Enable the GoldenGate addon in ADS. For details, see Enabling GoldenGate in ADS.

15

Supported Platforms

Supported Platforms

The following table lists the supported platforms for GoldenGate.

Operating System and Version	Windows 7	Windows 8	Windows 10	RedHat Linux RHEL4	RedHat Linux RHEL4	RedHat Linux RHEL5	RedHat Linux RHEL5	RedHat Linux RHEL6	RedHat Linux RHEL6	RedHat Linux RHEL7	Suse Linux SLES9	Suse Linux SLES10	Suse Linux SLES10	Suse Linux SLES11	Suse Linux SLES11	Suse Linux SLES12	Solaris 10
32/64 bit	64	64	64	32	64	32	64	32	64	64	32	32	64	32	64	64	
GoldenGate 2011.02 (4.5.x)	❌	❌	❌	✅	✅	✅	✅	❌	❌	❌	✅	✅	❌	❌	❌	❌	✅
GoldenGate 2011.10 (4.6.x)	❌	❌	❌	✅	✅	✅	✅	❌	❌	❌	✅	✅	❌	❌	❌	❌	❌
GoldenGate 2012.10 (4.7.x)	❌	❌	❌	1	✅	1	✅	1	✅	❌	❌	1	✅	1	✅	❌	❌
GoldenGate 2013.10 (4.8.x)	❌	❌	❌	❌	❌	❌	✅	❌	✅	❌	❌	❌	✅	❌	✅	❌	❌
GoldenGate 2015.01 (4.9.x)	✅	✅	❌	❌	❌	❌	✅	❌	✅	❌	❌	❌	❌	❌	✅	❌	❌

Operating System and Version	Windows 7	Windows 8	Windows 10	RedHat Linux RHEL4	RedHat Linux RHEL4	RedHat Linux RHEL5	RedHat Linux RHEL5	RedHat Linux RHEL6	RedHat Linux RHEL6	RedHat Linux RHEL7	Suse Linux SLES9	Suse Linux SLES10	Suse Linux SLES10	Suse Linux SLES11	Suse Linux SLES11	Suse Linux SLES12	Solaris 10
GoldenGate 2015.01 (4.10.x)	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗
GoldenGate 2017	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✓ [1]	✗
GoldenGate 2020/ GoldenGate 2020 Update 1.0	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✓	✗

[1] Suse Linux 12 is supported with GoldenGate 2017 Update 1.0 and later.

NOTE   Starting October 2014, support for Suse 10 platform has been discontinued.

Legend	Description
✅	Supported
❌	Unsupported
1	Supported on special request in 2012.10 (4.7.0) only.

GoldenGate Compatibility with ADS

GoldenGate Compatibility

The following table lists the GoldenGate compatibility with ADS versions. For more details, see the compatibility table.

	ADS 2016.01	ADS 2017	ADS 2017 Update 1.0	ADS 2019	ADS 2019 Update 1.0	ADS 2020	ADS 2020 Update 1.0	ADS 2020 Update 2.0*
GoldenGate 2020 Update 1	✗	✗	✗	✗	✗	✗	✓	✓
GoldenGate 2020	✗	✗	✗	✗	✓	✓	✗	✗
GoldenGate 2017 Update 2	✗	✗	✓	✗	✗	✗	✗	✗

GoldenGate 2017 Update 1	✗	✓	✗	✗	✗	✗	✗	✗
GoldenGate 2017	✓	✓	✗	✗	✗	✗	✗	✗

Legend	Description
✓	Compatible
✗	Incompatible

Note

Starting with GoldenGate 2017, GoldenGate in ADS flow is supported on linux platform only.

* Indicates the ADS 2020 Update 2.0 is scheduled for a release in March 2020.
When using GoldenGate 2020 Update 1 with ADS 2020 Update 2.0, you should upgrade the license server to use the new 2020.02 licensing scheme (running on Flexera Version **11.16.5.1**). Hosting on the current 2019.02 licensing scheme can cause an unexpected error with ADS data display from GoldenGate. For more details, see Licensing.

Installation Guide for Cadence Analog Design Environment

Installation Guide for Cadence Analog Design Environment

From GoldenGate 2015.01 release onwards, GoldenGate can be used either with Virtuoso® or Advanced Design System (ADS). For details on installing the GoldenGate simulation tool so that it works with the ADS, see GoldenGate and ADS Installation.

The following sections provide guidelines to help you install the GoldenGate simulation tool so that it works with the Cadence® Virtuoso® tool:

- Instructions for the System/CAD Administrator This section lists installation steps that are intended for the System or CAD Administrator.
- Instructions for the GoldenGate User The section lists the installation steps to be followed by you.
- Environment Variables This section explains the main shell environment variables that are used for directory locations.
- Licensing (For Administrators) This section describes the GoldenGate licensing.
- GoldenGate Configuration File This section explains the GoldenGate configuration file that defines a set of key-value pairs used to control certain configurable behaviors in the simulator.
- Use of Cache Directories This section covers GoldenGate and Verilog-A caching issues.
- Installation Troubleshooting Guide This section provides tips and work around installation and simulation problems that may occur. This part includes directions for using an installation test case.

Instructions for the System-CAD Administrator

Instructions for the System/CAD Administrator

The instructions in this section pertain to the Systems or CAD managers in your organization. To install Keysight's GoldenGate simulator, do the following:

1. Use the `gunzip` or `gtar` commands to unpack the `tar.gz` file that you have previously retrieved from the Keysight Knowledge Center site. This process creates a top-level installation directory whose name takes the form,
   `GoldenGate-<version>` referred to as `GG_INSTALL_DIR` in the steps below.
   The entire GoldenGate installation will be created under this directory.
2. Define the environment variable `XPEDION` as follows:
   - Users of `csh` or a variant of that program must type the following command at their prompt:
     `setenv XPEDION <path to GG_INSTALL_DIR>`
   - Users of `sh` or a variant of that program must type the following commands at their prompt:
     `XPEDION=<path to GG_INSTALL_DIR>`
     `export XPEDION`
3. Register GoldenGate with the Cadence Analog Design Environment™ (ADE), using the Cadence `setup.loc` scheme.

   > **NOTE** If your Cadence installation includes one or more of the following:
   > `tools/dfII/etc/tools/GoldenGate`
   > `tools/dfII/etc/tools/menus/GoldenGate.menus`
   > `tools/dfII/local/menus/GoldenGate.menus`
   >
   > remove them by running
   > `$XPEDION/aa/uninstall.sh`.

   To register GoldenGate, do the following:
   - Locate the following file inside your Cadence tree:
     `$CDS_INST_DIR/share/cdssetup/setup.loc`
   - Add the following line to this file:
     `$XPEDION/aa/$XPEDION_CADENCE_VERSION`
     The combination of the environment variables `XPEDION` and `XPEDION_CADENCE_VERSION` allows you to run any version of GoldenGate with any version of Cadence (ADE) with a single `setup.loc` file.
     If you have your customized files under
     `$CDS_INST_DIR/ tools/dfII/local`
     then you should add
     `$(compute:THIS_TOOL_INST_ROOT)/tools/dfII/local`
     above the following line:
     `$XPEDION/aa/$XPEDION_CADENCE_VERSION`

     > **NOTE** The `XPEDION_CADENCE_VERSION` environment variable is described in Setting Environment Variables.
     > For more information on the `setup.loc` scheme, refer to your Cadence documentation.

4. If you maintain:
   - a global `.cdsinit` file, then append the contents of `$XPEDION/aa/.cdsinit_home`, if you have not already done so.

- a global `.oceanrc` file, then append the contents of `$XPEDION/aa/.cdsinit_home`, if you have not already done so.

System Requirements

The hardware and software configuration requirements for Cadence Analog Design Environment are sufficient for the GoldenGate Environment in most areas. Be sure your hardware and software configurations meet the following minimum hardware and system requirements to install and run GoldenGate.

Requirements	Description
64-bit Linux OS / Design Environment	- Redhat RHEL 6.x, 7x - Novell SUSE SLES 11.x, 12.x - Cadence ADE Support - IC 6.1.6, 6.1.7, 6.1.8 - ICADV 12.1, 12.2, 12.3 - ICADVM 18.1
RAM / Swap Space	The requirements specified for Cadence Analog Circuit Design Environment are sufficient for GoldenGate
Hard Disk Space	1.2 GB of free disk space

Instructions for the GoldenGate User

Instructions for the GoldenGate User

1. Set the value of the environment variable, `CDS_LOAD_ENV`, to `CSF`.
   - Users of csh or a variant of this program must include the following line in their `.cshrc` or equivalent file:
     ```
     setenv CDS_LOAD_ENV CSF
     ```
   - Users of sh or a variant of this program must include the following line in their `.profile` or equivalent file:
     ```
     CDS_LOAD_ENV=CSF; export CDS_LOAD_ENV
     ```
2. If you are *NOT* using `icms`, set the value of the environment variable `CDS_Netlisting_Mode` to `Analog`.
   - Users of csh or a variant of this program must include the following line in their `.cshrc` or equivalent file:
     ```
     setenv CDS_Netlisting_Mode Analog
     ```
   - Users of sh or a variant of this program must include the following line in their `.profile` or equivalent file:
     ```
     CDS_Netlisting_Mode=Analog; export CDS_Netlisting_Mode
     ```
3. If your CAD manager has not installed GoldenGate in the Cadence hierarchy, you must do so using the Cadence `setup.loc` scheme, as follows:
   - Copy the following file that is inside your Cadence tree to your home directory:
     ```
     $CDS_INST_DIR/share/cdssetup/setup.loc
     ```
   - Add the following line to your copy of `setup.loc`:
     ```
     $XPEDION/aa/$XPEDION_CADENCE_VERSION
     ```
     The combination of the environment variables `XPEDION` and `XPEDION_CADENCE_VERSION` allows you to run any version of GoldenGate with any version of Cadence (ADE) with a single `setup.loc` file.
   - If you have your customized files under
     `$CDS_INST_DIR/ tools/dfII/local`
     then you should add
     ```
     $(compute:THIS_TOOL_INST_ROOT)/tools/dfII/local
     ```
     above the following line:
     ```
     $XPEDION/aa/$XPEDION_CADENCE_VERSION
     ```
     For more information on the `setup.loc` scheme, refer to your Cadence documentation.
4. If you have a `GoldenGate.menus` file in `$HOME/menus`, please ensure that the following line is the first line in this file:
   ```
   ggLoadDefaultMenusFile()
   ```
   Otherwise, skip this step.
5. Define the environment variables, `XPEDION` and `XPEDION_CADENCE_VERSION` as defined in Environment Variables.
   - Users of csh or a variant of that program must include the following line in their `.cshrc` or equivalent file:
     ```
     setenv XPEDION <path to GoldenGate_INSTALL_DIR directory>
     ```
   - Users of sh or a variant of that program must include the following lines in their `.profile` or equivalent file:
     ```
     XPEDION=<path to GoldenGate_INSTALL_DIR directory>
     export XPEDION
     ```
6. Every user who wants to run GoldenGate will need to run the user installation shell script. This script is interactive and will guide you through the various installation steps. Invoke the script as follows:
   ```
   $XPEDION/aa/user_install.sh
   ```
   This script adds settings to one or more of the following:

```
~/.cdsinit
~/.oceanrc
./.cdsinit
./.oceanrc
```

For instructions on setting up your license environment variable(s), refer to License Environment Variables in Licensing (For Administrators). If you need to, contact your CAD manager to determine which of these sections is relevant to your design environment.

Setting Environment Variables

Setting Environment Variables

GoldenGate uses four main shell environment variables:

- `XPEDION`
- `XPEDION_CADENCE_VERSION`
- `XPEDION_DOT_DIR`
- `XPEDION_REGISTRY_PATH`

`XPEDION` : Points to the installation directory, where GoldenGate binaries are located.

`XPEDION_CADENCE_VERSION`: This should be set to 616, 617, or 618. For ICADV 12.1 or 12.2, set this variable to 616. For ICADV 2.3, set this variable to 617. For ICADVM 18.1, set this variable to 618.

- Users of csh or a variant of this program must include one of the following line in their `.cshrc` or equivalent file:
  - `setenv XPEDION_CADENCE_VERSION 616`
  - `setenv XPEDION_CADENCE_VERSION 617`
  - `setenv XPEDION_CADENCE_VERSION 618`
- Users of sh or a variant of this program must include one of the following lines:
  - `XPEDION_CADENCE_VERSION=616`
  - `XPEDION_CADENCE_VERSION=617`
  - `XPEDION_CADENCE_VERSION=618`
    and the following line
  - `export XPEDION_CADENCE_VERSION`
    in their `.profile` or equivalent file.

`XPEDION_DOT_DIR` : Points to the location of the `.xpedion` directory. This directory stores user configuration files and the cache information. The default value is `$HOME/.xpedion` as mentioned earlier. It is recommended to use absolute path for `XPEDION_DOT_DIRECTORY` to store the Verilog-A compiled object (.o) files. If relative path is specified in `XPEDION_DOT_DIRECTORY`, then the Verilog-A compiled objects will be stored in `.ams_work` directory.

`XPEDION_REGISTRY_PATH` defines the list of directories that are used to locate the configuration file, `goldengate.conf`. Otherwise, the default search sequence is `$XPEDION/etc`, `$XPEDION_DOT_DIR` or the current directory.

> **NOTE** You must set the XPEDION and the XPEDION_CADENCE_VERSION environment variables; the other two are optional.

Configuring Location of Momentum Database

If you want to use a user-specified location for the Momentum substrate database, follow the steps in the procedure below.

NOTE   Keysight recommends that you specify this setting in Cadence environment variables instead of the shell's environment variables.

To configure user-specified location for Momentum substrate database

- Edit the `.cdsinit` file located in one of the following location based on your requirement:
  - The home directory, if you want the specified path to be used for each instance of Virtuoso.
  - The current working directory, if you want to use the specified path when Virtuoso is started from a specific directory.
- Add the following:
  `envSetVal("adsMom.envOpts" "siteGFdatabase" 'string "fullPathToDir")`

  where, `fullPathToDir` is the path to the user-specified location.

GoldenGate Configuration File

Using the GoldenGate Configuration File

GoldenGate uses a configuration file to define a set of key-value pairs. Those entries are used to turn on/off specific aspects of the behavior of the simulator. For example, you can use a registry key in the configuration file to set the `bsim3` compatibility model.

The main registry file is `$XPEDION/etc/goldengate.conf`

When GoldenGate is invoked, it sequentially reads the following registry files:

$XPEDION/etc/goldengate.conf

$HOME/goldengate.conf

$XPEDION_DOT_DIR/goldengate.conf

./goldengate.conf

If `$XPEDION_DOT_DIR` is not defined, then it defaults to `$HOME/.xpedion`

> **NOTE** In the ADE environment, "." indicates the location from which the GoldenGate ggsim script is launched. This is the netlist directory,
> `<simulationDirectory>/<cellName>/GoldenGate/schematic/netlist`

Because the contents of the simulation directory are often recreated both within and between sessions, be careful in using the netlist directory as the location of the `goldengate.conf` file, as it may be deleted. It may be preferable to use the environment variable `XPEDION_REGISTRY_PATH`. For more information about this, see Using the Registry File to Set Variables in the *GoldenGate User Guide*.

If a registry key is located in more than one file, the last definition overwrites the previous ones. All the registry files are preprocessed by the GNU-C++ preprocessor distributed with the GoldenGate installation.

Comments are enclosed by '/* ' and '*/ ' or by '//' and the new-line character.

The application `get_xpedion_registry` can be used to retrieve a particular key value. For example, use
`$XPEDION/bin/get_xpedion_registry  -key <keyValue>`

The Use of Cache Directories

The Use of Cache Directories

GoldenGate uses a cache directory to store information that can be used to speed up the simulation time. The cache directories can be defined on a per-user basis or for a group of users. Two registry keys controls the read and write cache directories.

- `/goldengate/cache/write`

This key points to a directory location where all the GoldenGate cache-specific files are written. It defaults to $XPEDION_DOT_DIR/cache.

- `/goldengate/cache/read`

This key points to a colon-separated list of directory locations from which all the GoldenGate cache-specific files are read.

This option is not defined by default.

This feature can be very useful when a master directory is used to accommodate the main cache information, which will be shared by many users.

By setting the `read` registry to (for example) `/usr/xpedion/global/cache:/home/joe/.xpedion/cache:<dir3>`

it is possible to construct a global read-only cache directory that can be maintained by the CAD group.

The script `$XPEDION/bin/rmcache.sh` allows the user to delete a particular write cache directory.

`$XPEDION/bin/rmcache.sh <cacheName>`

deletes a particular cache, and

`$XPEDION/bin/rmcache.sh -all`

delete all caches.

For more information about GoldenGate registry key, see Using the Registry File to Set Variables in the *Keysight GoldenGate RFIC Simulator User Guide*.

The Verilog-A Cache

GoldenGate compiles Verilog-A modules using the GNU C++ compiler distributed with GoldenGate installation. The compiled version of the modules is then stored in the cache directory.

The cache compiled information is written to the location pointed to by `registryValue("/goldengate/cache/write")/ahdl`

When reading the compiled cache, GoldenGate uses the path list given by `registryValue("/goldengate/cache/read")/ahdl`

The S-parameter Cache

The GoldenGate `SNPORT` device contains a cache mechanism to store the polynomial coefficients of the S-parameter fitting. This fit is part of a Padé decomposition used when performing *Transient* and *Envelope Transient Analyses*.

The S-parameter fit procedure will create entries within the following directories:
`registryValue("/goldengate/cache/write")/sfit RegistryValue("/goldengate/cache/read")/sfit`

It generates files containing the polynomial fit given by: `xpedion_md5_<md5Signature>.sfit`

where `md5Signature` is a signature computed from the original S-parameter file and other parameters like:

- Number of ports;
- Order of the fit;
- Frequency band of the fit.

To disable the cache mechanism, set the registry entry `/goldengate/cache/sfit 0`

An ascii file is also created in the write cache directory, named `xpedion_md5_<md5Signature>.sfit.ascii`.

This file contains the same information of the binary file, but is useful if you want to load the fitting polynomial into a math application like MatLab®.

Installation Troubleshooting Guide

Installation Troubleshooting Guide

If you are having trouble installing or running GoldenGate, first ensure that your CAD administrator has run

```
$XPEDION/aa/uninstall.sh
```

to remove all of the following files:

```
tools/dfII/etc/tools/GoldenGate
tools/dfII/etc/tools/menus/GoldenGate.menus
tools/dfII/local/menus/GoldenGate.menus
```

Then run the installation test case provided, as described in Section I. below. If this test case does not run successfully, refer to the other troubleshooting guidelines before contacting Keysight for help.

I. Using the Installation Test Case

A sample installation test case is included with the GoldenGate hierarchy that you can use to ensure that your installation is correct. After completing all of the steps required for installation and licensing, run this test before trying to run GoldenGate.

To run the test, do the following:

1. Navigate to the directory containing the test case:
   `cd $XPEDION/aa/install_test`
   This directory contains two files:
   - `install_test.tar.gz`
   - `README`
2. Follow the instructions in the `README` file that explain how to copy the `install_test.tar.gz` tar file into your local directory and how to simulate the installation test.

II. GoldenGate cannot be set as the current simulator

Symptom:

GoldenGate is not included in the list of simulator names that appear in the **Setup** › **Simulator/ Directory/Host** dialog in the **ADE Window.** You see, for example,

Simulator: cdsSpice

or

Simulator: spectre

but not

> ### *Simulator: GoldenGate*

Possible Reasons and Solutions:

- GoldenGate integration was not registered with the Cadence Analog Design Environment Graphical Interface.

> *Refer to either* Instructions for the System/CAD Administrator, *Step 3, or* Instructions for the GoldenGate User, *Step 3.*

- The XPEDION environment variable is not set or is pointing to the wrong directory.
    - To test this, type the following command:
      ```
      ls $XPEDION/aa
      ```
      If the XPEDION environment variable is not correctly set, you will not see the contents of the $XPEDION/aa directory.
    - In addition, you should see an error message in the icms log window or in the ~/CDS.log file.
      Solution : For more information about using this installation script, refer to Instructions for the GoldenGate User, Step 2 of this guide.
- The context file, goldengate<Cadence_version>.cxt did not load.

  This file contains compiled skill code for GoldenGate to perform a number of tasks. If this file is not loaded, the GoldenGate integration will not work. There should be an indication that this file was loaded in in your ~/CDS.logfile.

  > | NOTE | This file loads when your ~/.cdsinit file loads.

  Verify that your ~/.cdsinit file contains code to load

  ```
  $XPEDION/aa/.cdsinit
  ```
  Solution: Run the following command:
  ```
  $XPEDION/aa/user_install.sh
  ```
  To Debug:
    - Insert the printf() commands into your ~/.cdsinit file just above and below the lines that load $XPEDION/aa/.cdsinit.
    - Verify that these are executed by monitoring the icms log window and ~/CDS.log files.
    - If your current directory contains a .cdsinit file, this may prevent ~/.cdsinit from being loaded. To fix this issue, run the following command:
      ```
      $XPEDION/aa/user_install.sh -local
      ```

III. No GoldenGate license available

Symptoms:

- Cannot load state information.
- Cannot choose analysis.
- Cannot run simulation.
- The icms log window or ~/CDS.log file contains the following line:
  ```
  airwCheckLicense() failed!
  ```

Possible Reasons and Solutions:

- A license does not exist.
- The license file is not valid because:
  - The license is not valid for this machine
  - The license is already expired
- All (counted) licenses are already in use.
- The license server is not running.
- The license server cannot be contacted.

Solutions:

If you are having problems with licensing, also read the other parts of this *Troubleshooting* section, to assure that you have followed all the necessary steps. If you are still having problems after following those instructions, ask your CAD manager to help you. For additional troubleshooting steps, see Troubleshooting License Problems.

IV. A particular library is not available

You can find the names of available libraries through the `cds.lib` file located in the current directory. If this file is not available or does not contain a reference to the library you are missing, add a line into the `cds.lib` . For example, `DEFINE <library_name> <absolute_path_to_this_library>`.

V. Cannot change sample design or analysis data

You may not be able to change a design if the matching directories or files do not have write permission for the account you are using. Use the touch command to find out whether you are allowed to open a particular file for reading. For example:

```
touch <filename>
```

Use the touch command to find out whether you are allowed to create files in a particular directory:

```
cd <directory>
touch AmIAllowedToCreateFilesInTheCurrentDirectory
```

To find out where the design data is located, look in your `cds.lib` file.

For example, if you are trying to modify a design in the library called `examples`, type:

```
grep -i examples cds.lib
```

The directory for this library should contain another directory with a name matching the name of the design. To make certain that you have write permission for all files and directories of this design, type:

```
find <library_directory>/<design_name> -print|xargs touch
```

If you get an error message, it should contain the name of the file or path for which you do not have write permission.

Licensing (For Administrators)

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.

- Licensing Overview
- Licensing Attributes
- License Version Compatibility
- Licensing Behavior
- Setting Up Licenses on Windows
- Setting Up Licenses on Linux and Solaris
- Licensing Tools
- Advanced Licensing Configuration Options
- Licensing FAQs
- Troubleshooting License Problems

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.

Contents

- License Types
- Understand Your License File
- License Server Supported Platforms
- Licensing Architecture

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 tosection. |

Contents

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

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
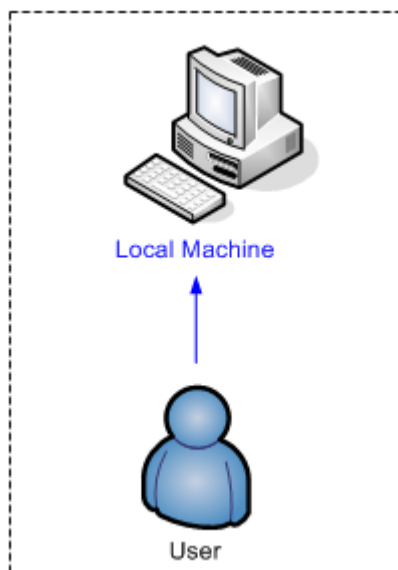
Floating Licenses

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
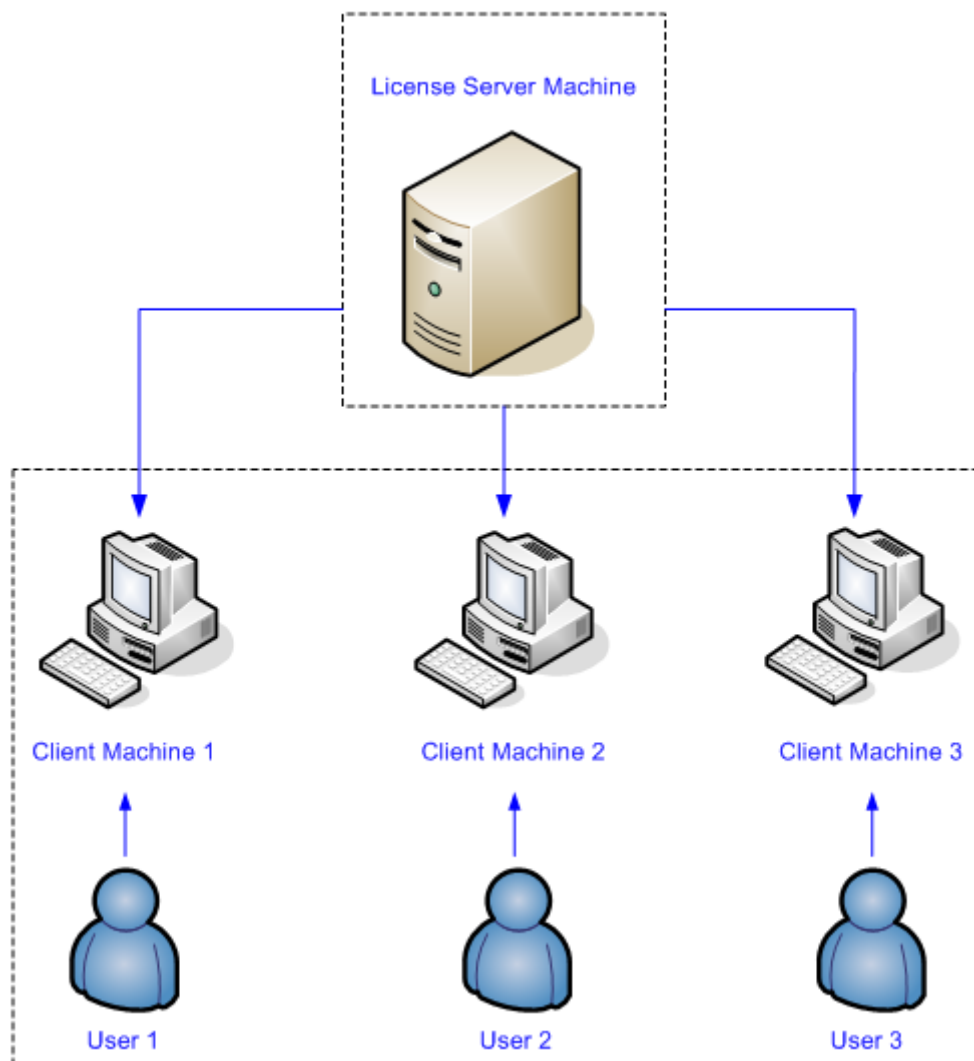
Recognize License Type

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=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,15
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"
```

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=#1,7,8,13,14,25,27,66,67,105,110,116,131,132,156
D=#W2200BP,ADS_Core;e_core :
MUFNCUI WQDZPFX QTBMCYE SW2TFGC OWKGNHJ UIB" HOSTID=FLEXID=10-0BEBCD44
 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.

Understand Your License File

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

Contents

- 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 0005ccccaaaaVENDOR
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 fileSERVER this_host D8D385997F8AVENDOR agileesofdINCREMENT
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.

On This Page

▪ License File Syntax

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 Solaris, 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).

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	✗	✗	✓	✗	✓	✗	✗	✓	✓	✗	✗	✓	✗	✓
2015.05	✗	✗	✓	✗	✓	✗	✗	✓	✓	✗	✗	✓	✗	✓

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
2016.05	❌	❌ ✅	❌ ✅	✅	❌	✅	✅	✅	❌	✅	✅	✅
2017.01	❌	❌ ✅	❌ ✅	✅	❌	✅	✅	✅	❌	✅	✅	✅
2018.04	❌	❌ ✅	❌ ❌	✅	❌	❌	✅	✅	❌	✅	✅	❌
2019.02	❌	❌ ✅	❌ ❌	✅	❌	❌	✅	✅	❌	✅	✅	❌
2020.02	❌	❌ ✅	❌ ❌	✅	❌	❌	✅	✅	❌	✅	✅	❌

Legend	Description
✅	Supported
❌	Unsupported

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
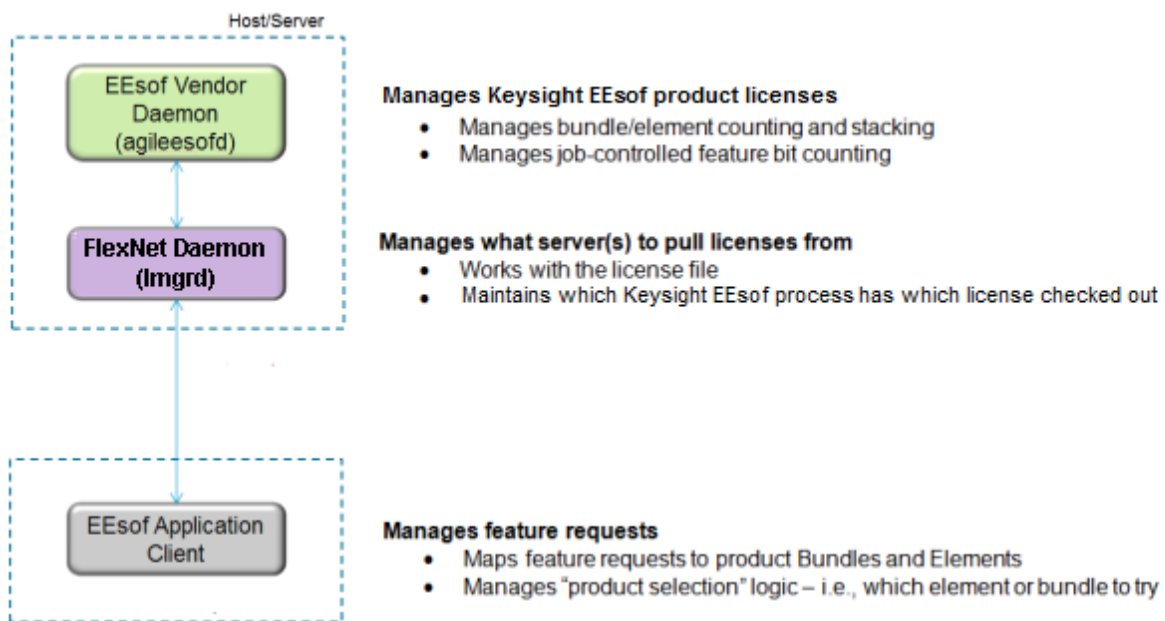
Licensing Attributes

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
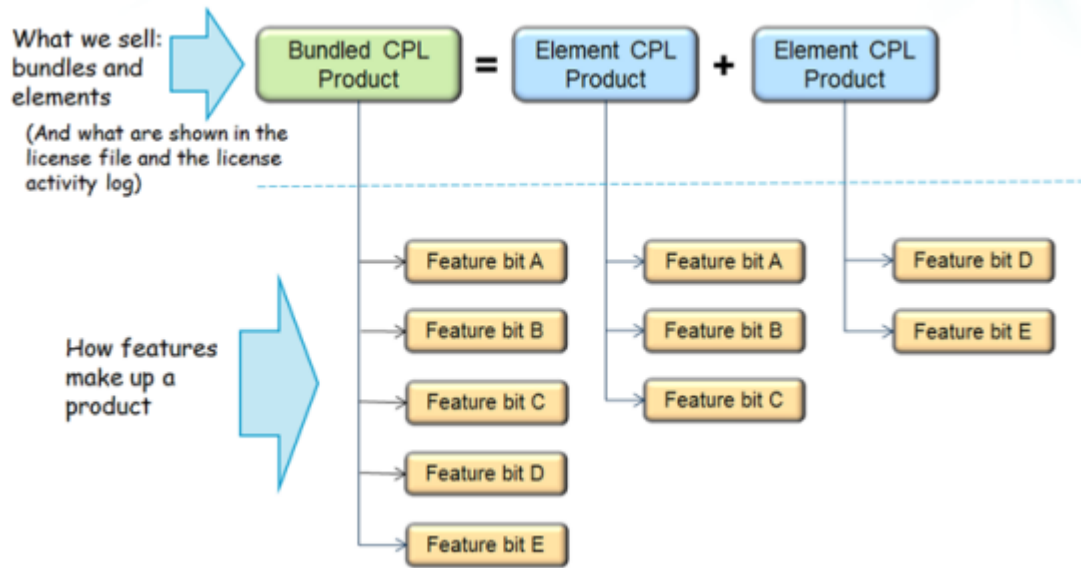
When a license count limit is reached, that license is no longer available for additional use.

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
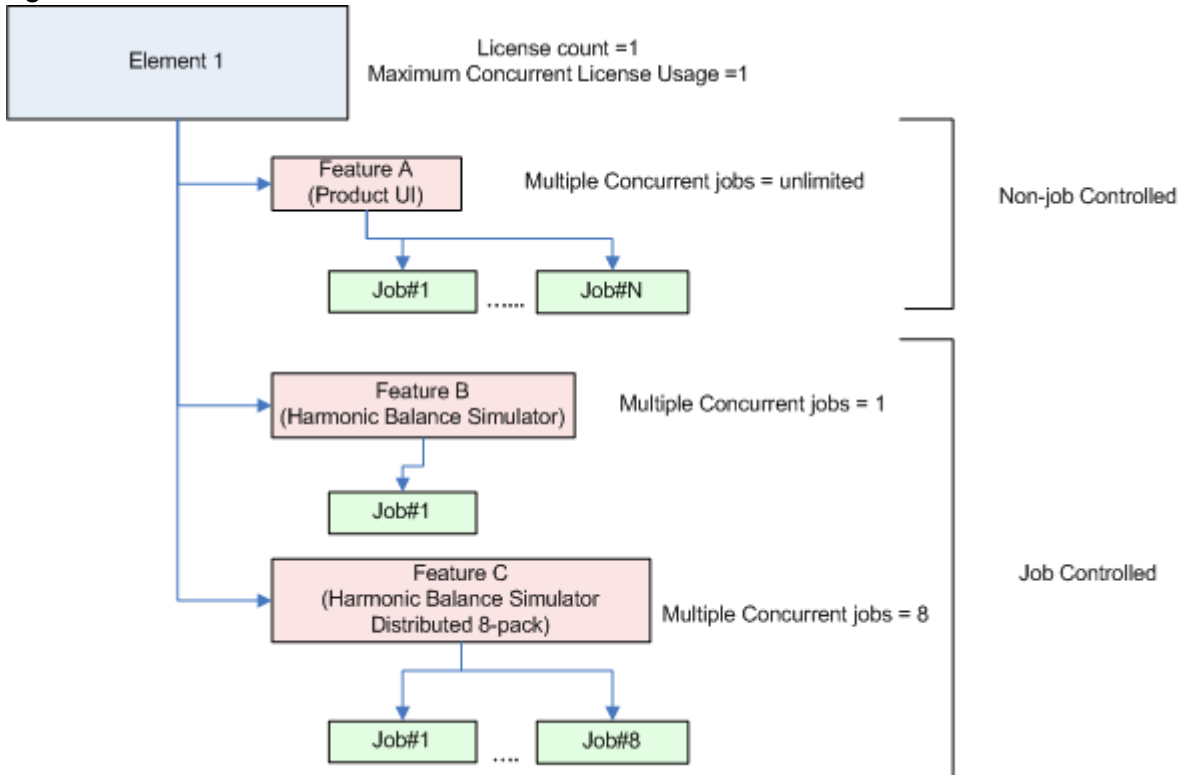
License Version Compatibility

License Version Compatibility

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

Contents

- License Codeword Version Compatibility
- FlexNet Version Compatibility

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	2020 Update 2.0	2020 Update 1.0	2020	2019 Update 1.0	2019		2017 Update 1.0	2017 Update 0.x	2017	2016.01
License Codeword Version	>=2020.02	>=2019.02	>=2019.02	>=2019.02	>=2018.04		>=2018.04	>=2017.01	>=2017.01	**v3.2** , >=2015.xx
License Codeword Version for ADS Thermo Analysis (Gradient)									>=2017.01	**v3.2** , >=2015.xx
HeatWave										**2016.09**
License Codeword Version										**v3.2** , >=2015.xx
EMPro		2020 Update 1.0	2020		2019			2017 Update 0.x	2017	2016.xx

License Codeword Version	>=2019.02	>=2019.02	>=2018.04			>=2017.01	>=2017.01	**v3.2** , >=2015.xx
GoldenGate	2020 Update 1.0	2020			2017 Update 0.2	2017 Update 0.1	2017	2015.01 (4.10.x)
License Codeword Version	>=2019.02	>=2019.02			>=2018.04	>=2017.01	>=2016.05	**v3.2** , >=2015.xx
SystemVue	2020 Update 1.0	2020		2018 Update 1.0	2018		2017	2016.08
License Codeword Version	>=2020.02	>=2019.02		>=2018.04	>=2017.01		>=2017.01	>=2016.05
Genesys		2020			2018		2017	2015.08
License Codeword Version for new Product Structure, i.e. W132xBP/BT or W2362EP/ET		>=2019.02			>=2018.04		>=2017.01	**v3.2** , >=2015.xx

License Codeword Version for old Product Structure, i.e. W14xxL, W15xxL, W16xxL			>=2019.02	>=2018.04	>=2017.01	**v3.2** , >=2015.xx
IC-CAP	**2020 Update 2.0**	**2020 Update 1.0**		**2018**	**2017**	**2016.01**
License Codeword Version	>=2019.02	>=2019.02		>=2017.01	>=2017.01	**v3.2** , >=2015.xx
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**			**2016.04**

License Codeword Version	>=2019.02		>=2018.04			>=2016.05
MBP	**2020 Update 1.0**	**2020**	**2019**		**2017**	**2016.01**
License Codeword Version	>=2019.02	>=2019.02	>=2018.04		>=2017.01	**v3.2** , >=2015.xx
MQA	**2020 Update 1.0**	**2020**	**2019**		**2017**	**2016.01**
License Codeword Version	>=2019.02	>=2019.02	>=2018.04		>=2017.01	**v3.2** , >=2015.xx

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

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
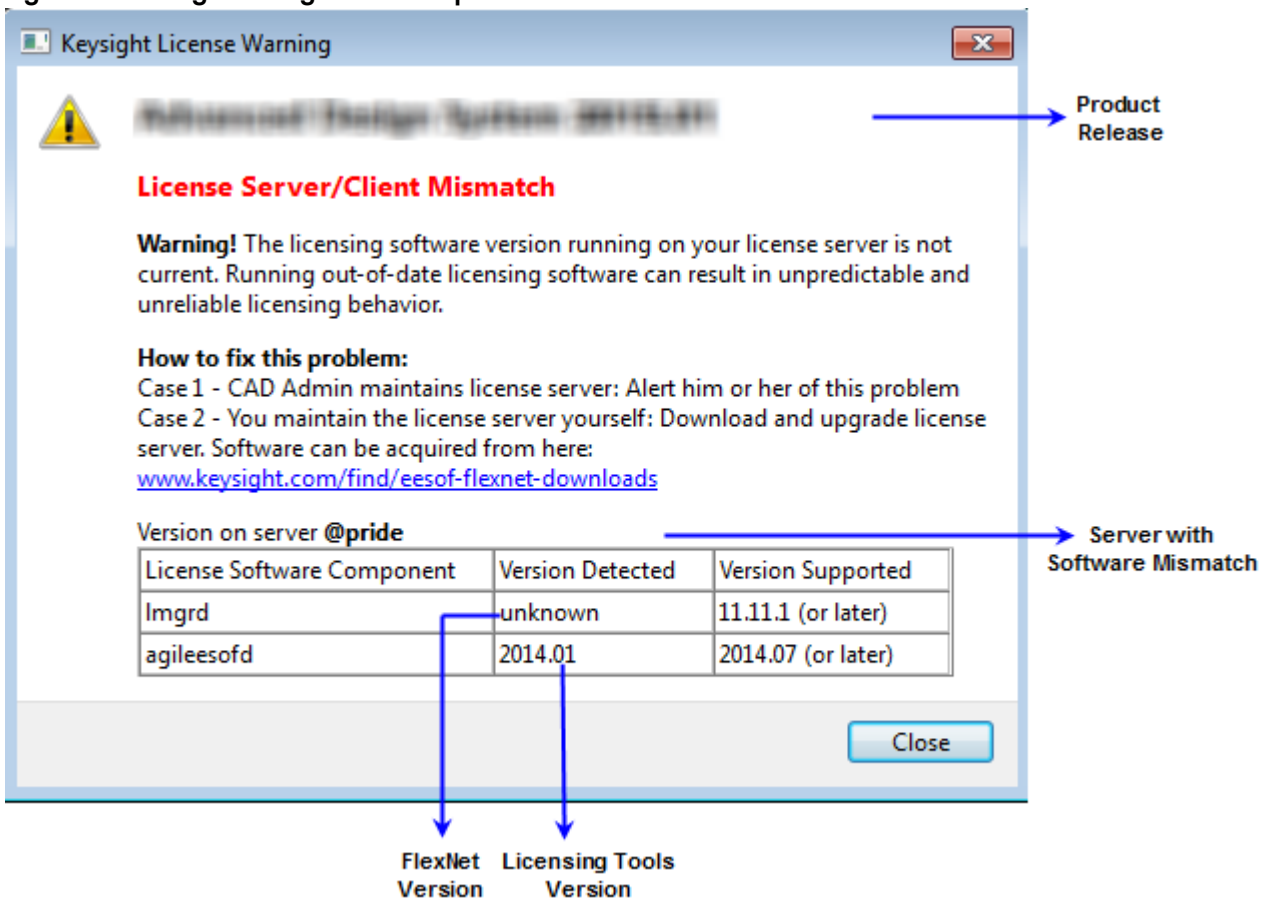
Refer to FlexNet Publisher's License Administration Guide for further details.

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
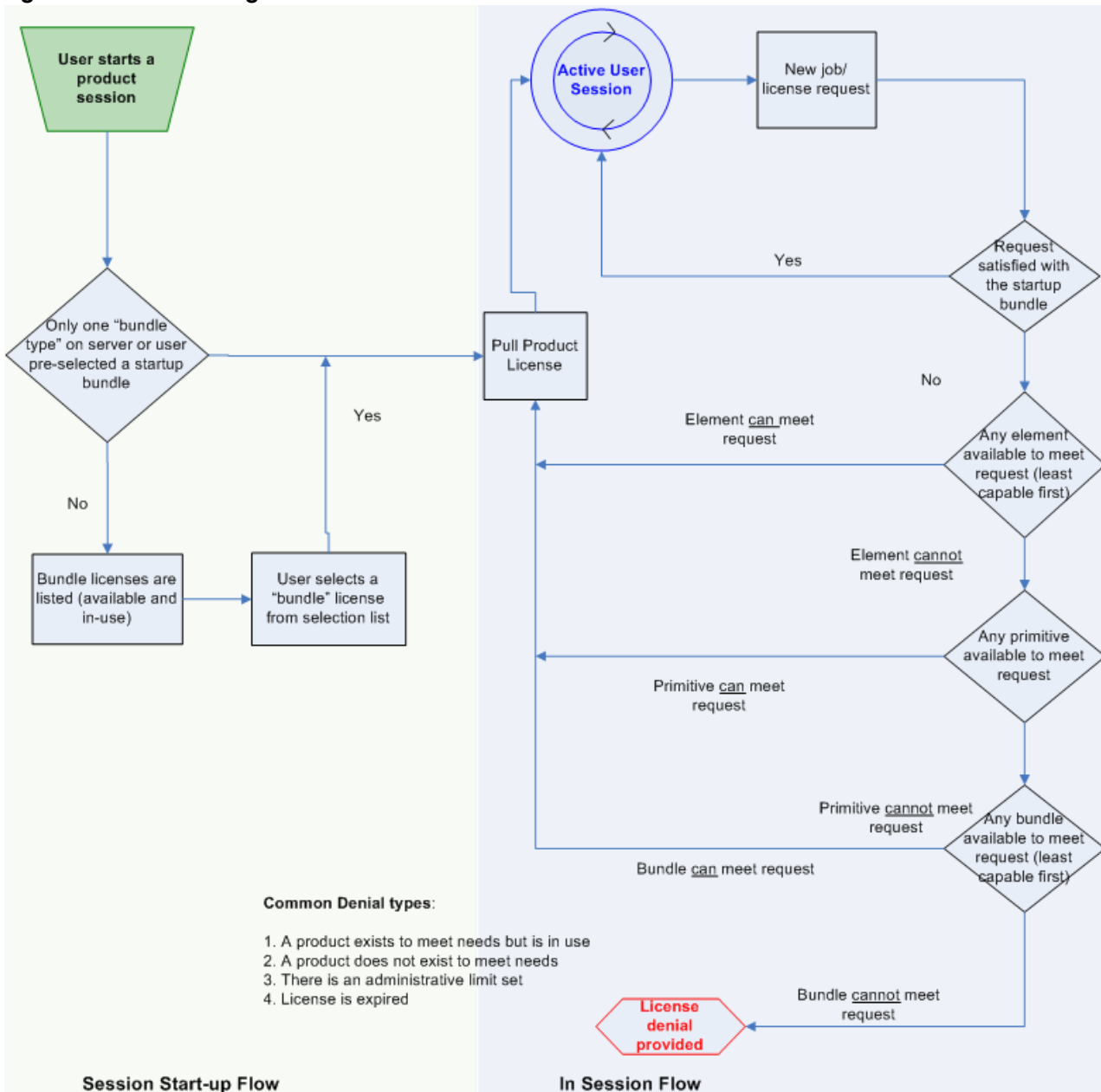
Session Start-up Flow

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 Nodelocked License on Windows
- Setting Up Floating License on Windows

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. For more information, refer to Quick Install-
Windows. 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.
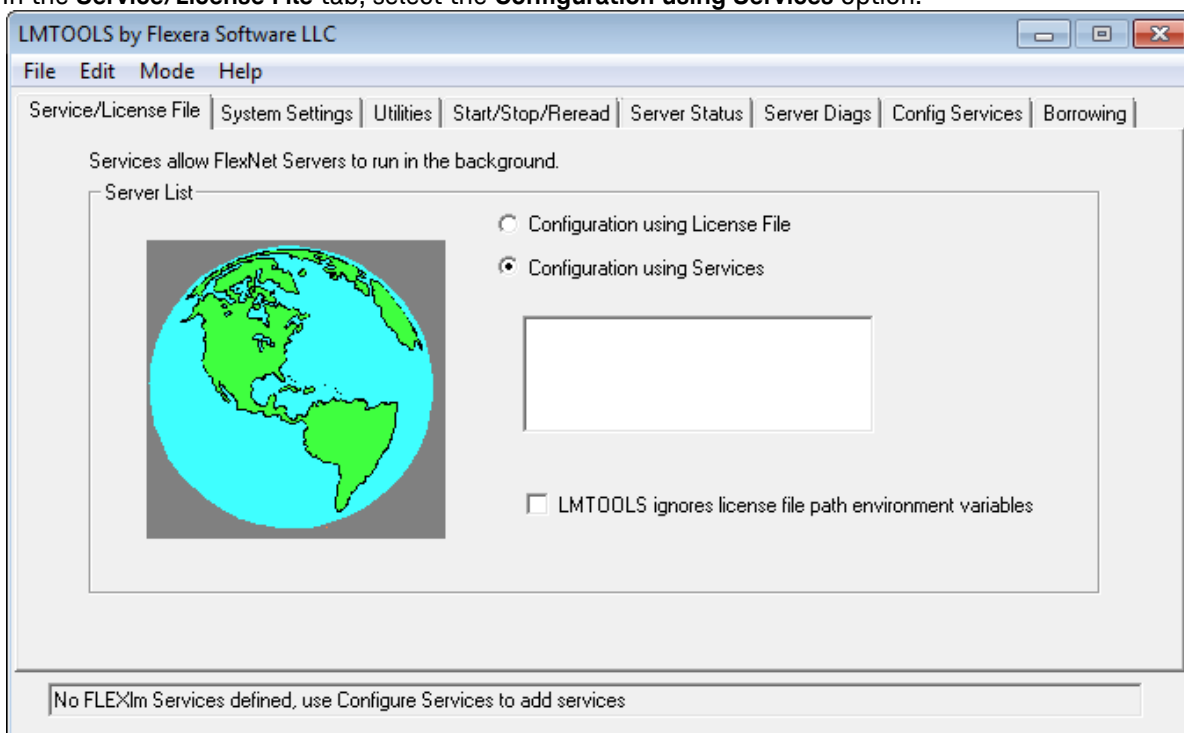
3. Click the **Config Services** tab and enter the following details:
   a. **Service Name**: Type the service name (for example, `EEsof EDA License Server`).
   b. **Path to the `lmgrd.exe` file**: Click **Browse** and specify the path to the `lmgrd.exe` file on the license server (for example, *C:\Program 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.
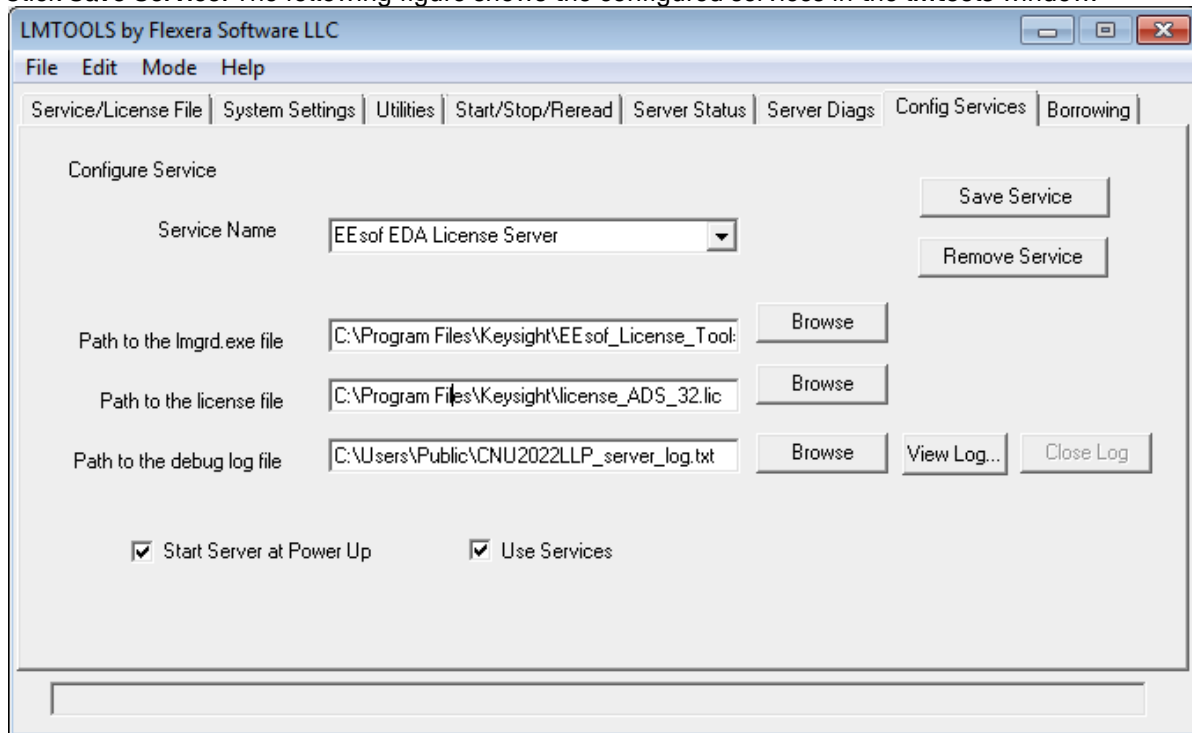
7. To verify that the service is created, click the **Start/Stop/Reread** tab and observe that your service shows up in the **FlexNet license services installed on this computer** list.

> **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 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 Licenses on Linux and Solaris

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

> **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 and Solaris

NOTE	Keysight EEsof products no longer run on the Solaris platform; however we still support Solaris as the license server system. For details on supported platforms, refer to License Server Supported Platforms.

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

On This Page

- Step1: License Server Setup

- Step 2: Client Setup

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 Licenses on Linux and Solaris section.
- For licenses tied to a USB Dongle, follow steps 1 through 3 described in Setting up Node-locked Licenses on Linux and Solaris 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 and Solaris 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.

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Setting Up Nodelocked License on Linux and Solaris

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

> **NOTE** Keysight EEsof products no longer run on the Solaris platform; however we still support Solaris as the license server system. For details on supported platforms, refer to License Server Supported Platforms.

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* .

```sh
#!/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

Dongles are only supported for the Linux platform; they are not supported on the Solaris platform. 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

NOTE   To install 64-bit Flex-10 Wibu dongle driver on the Red Hat 5 Linux 64-bit use the ***WkRt-Lin64-6.0.501-1.x86_64.rpm***. The driver installation file is available under *<untar installation image>/dongle_sup/rhel5*.

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)
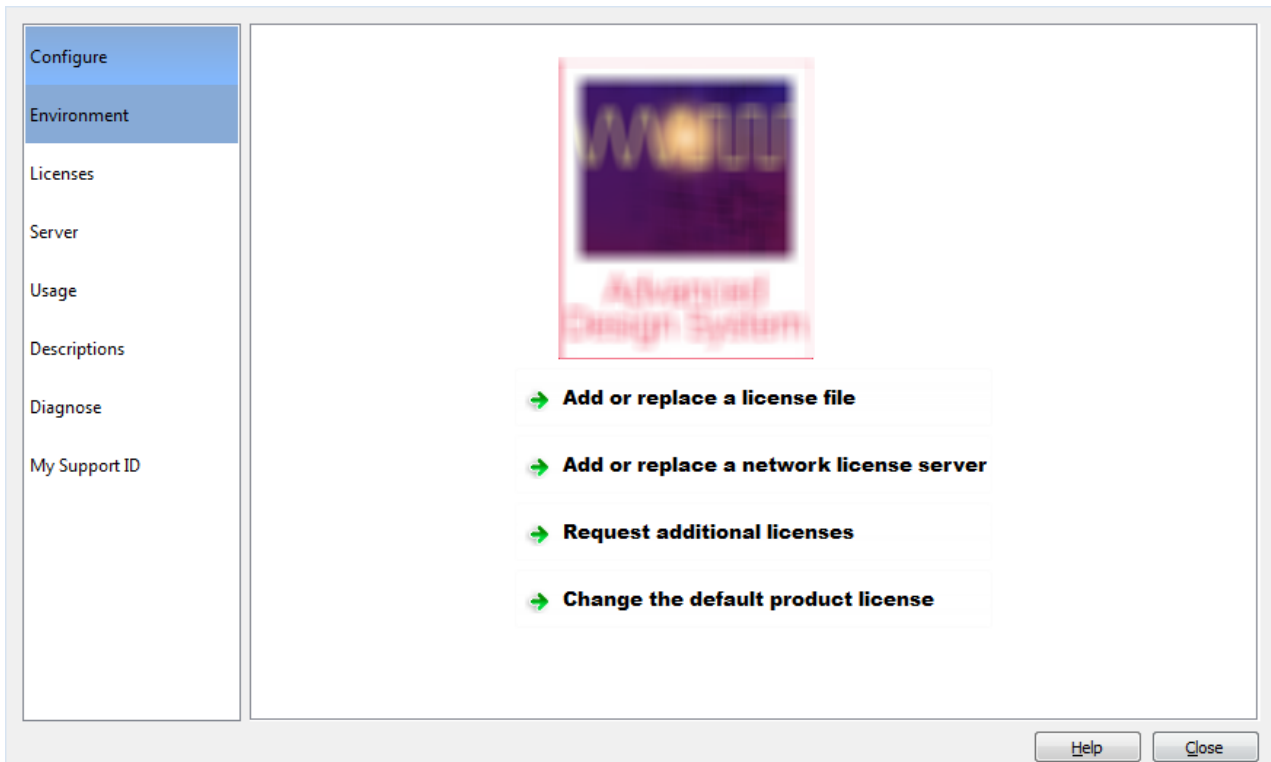
It provides an interface to:

- 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
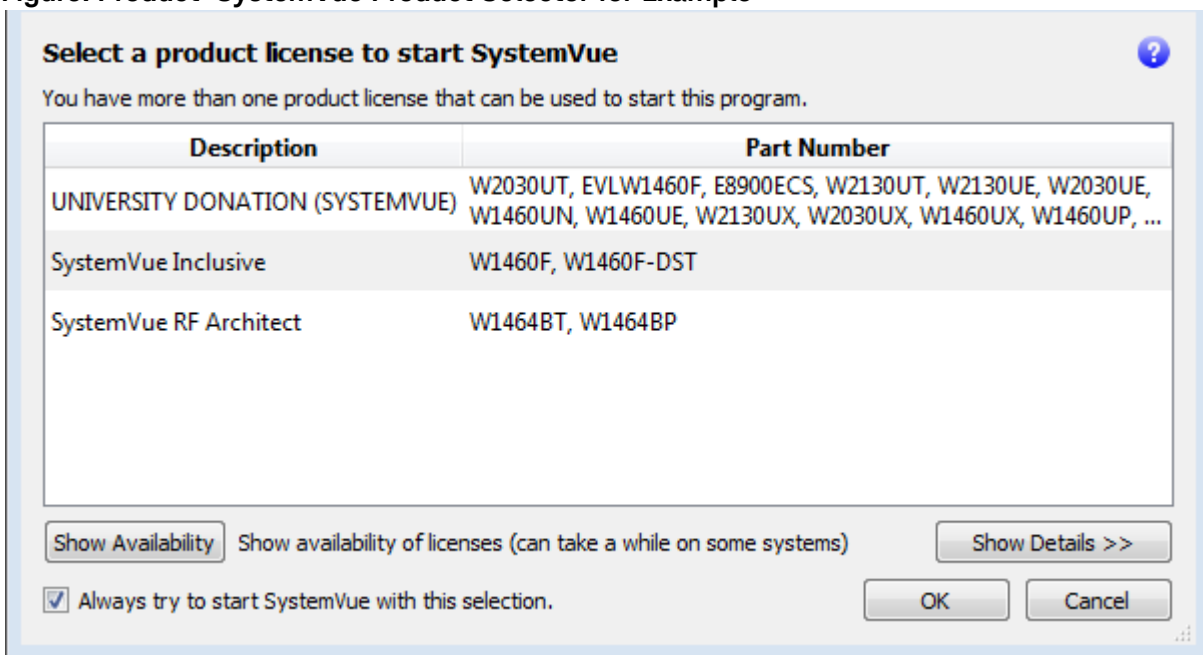
Using Product Selector

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
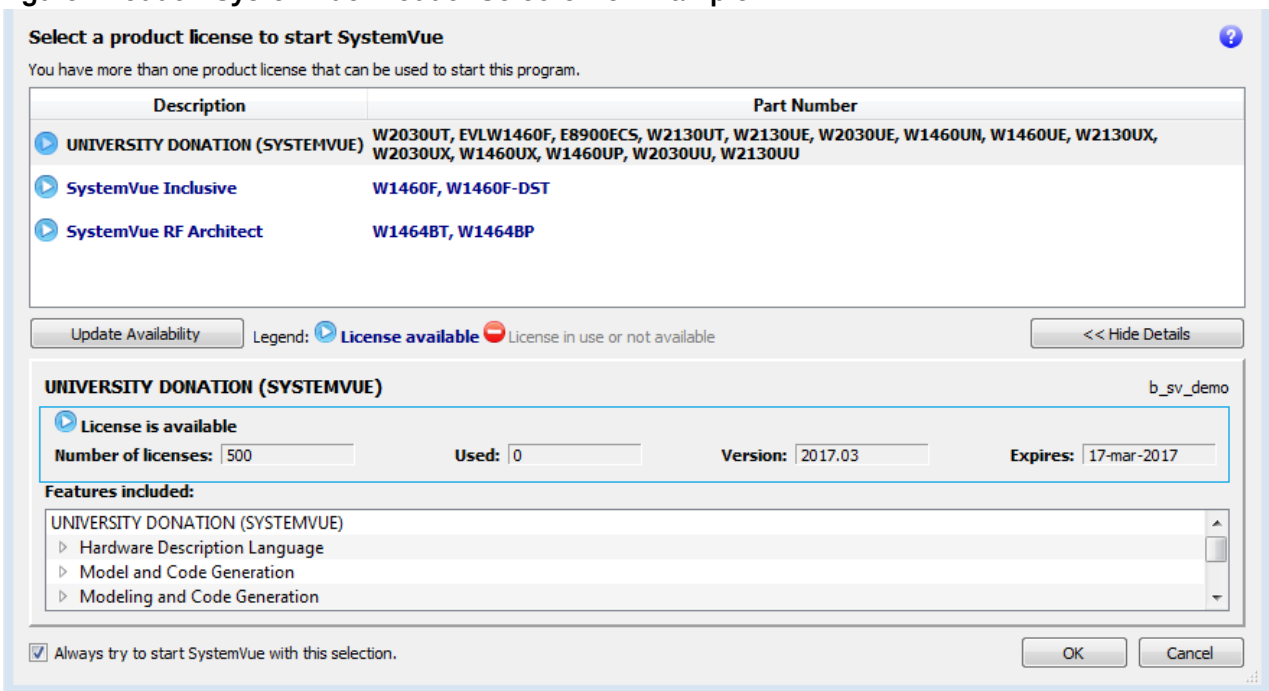
Select Product License

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

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 Transient, Convolution Simulation, see Transient and Convolution 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.

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 T*CP 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 and Solaris.

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.

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 (32-bit):** `<PRODUCT_INSTALL_DIR>/Licensing/<license tools version>/linux_x86_32/` directory **Linux (64-bit):** `<PRODUCT_INSTALL_DIR>/Licensing/<license tools version>/linux_x86_32_64/` directory On the Linux and Solaris 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>/bin/` 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 sever 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 2014.07 (XXX)`, shown in the example below. ▪ Compare the date stamp with what is installed. It must be dated 05/19/2014.

```
12:04:48 (lmgrd)
------------------------------------------------
12:04:48 (lmgrd)    Please Note:
12:04:48 (lmgrd)
12:04:48 (lmgrd)    This log is intended for
 debug purposes only.
12:04:48 (lmgrd)    In order to capture accurate
license
12:04:48 (lmgrd)    usage data into an organized
repository,
12:04:48 (lmgrd)    please enable report
logging. Use Flexera Software, Inc.'s
12:04:48 (lmgrd)    software license
administration   solution,
12:04:48 (lmgrd)    FLEXnet Manager, to  readily
gain visibility
12:04:48 (lmgrd)    into license usage data and
to create
12:04:48 (lmgrd)    insightful reports on
critical information like
12:04:48 (lmgrd)    license availability and
usage. FLEXnet Manager
12:04:48 (lmgrd)    can be fully automated to
run these reports on
12:04:48 (lmgrd)    schedule and can be used to
track license
12:04:48 (lmgrd)    servers and usage across a
heterogeneous
12:04:48 (lmgrd)    network of servers including
Windows NT, Linux
12:04:48 (lmgrd)    and UNIX. Contact Flexera
Software, Inc. at
12:04:48 (lmgrd)    www.flexerasoftware.com for
 more details on how to
12:04:48 (lmgrd)    obtain an evaluation copy of
FLEXnet Manager
12:04:48 (lmgrd)    for your enterprise.
12:04:48 (lmgrd)
12:04:48 (lmgrd)
------------------------------------------------
```

Question	Answer
| | ```
12:04:48 (lmgrd)
12:04:48 (lmgrd)
12:04:48 (lmgrd) pid 15608
12:04:48 (lmgrd) Detecting other license server
manager (lmgrd) processes...
12:04:49 (lmgrd) Done rereading
12:04:49 (lmgrd) FlexNet Licensing (v11.11.1.
2build 134011 x64_n6) started on CNU2022LLP
(IBM PC) (8/13/2014)
12:04:49 (lmgrd) Copyright (c)1988-2013 Flexera
Software LLC. All Rights Reserved.
12:04:49 (lmgrd) World Wide Web:  http://
www.flexerasoftware.com
12:04:49 (lmgrd) License file(s):C:
\Users\rajeduha\Desktop\Keysight\ADS_lics\licen
se_npack_gg.lic
12:04:49 (lmgrd) lmgrd tcp-port27000
12:04:49 (lmgrd) Starting vendor daemons ...
12:04:49 (lmgrd) Started agileesofd (pid 3440)
12:04:49 (agileesofd) FlexNet Licensing version
v11.11.1.2 build 134011 x64_n6
12:04:49 (agileesofd) Server started on
CNU2022LLP for:              b_core
12:04:49 (agileesofd) pjc_b_core
e_interop    pjc_e_interop
12:04:49 (agileesofd) e_rfic_cockpit
pjc_e_rfic_cockpit b_gg_ads_ent
12:04:49 (agileesofd) pjc_b_gg_ads_ent
12:04:49 (lmgrd) agileesofd using TCP-port
57901
12:04:49 (agileesofd)          EESOF 2014.07
(05/19/2014)
12:04:50 (agileesofd) TCP_NODELAY NOT enabled
``` |
| **How do I Find Flex ID of Hardware Key?** | You need the nodelocked ID 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.

Solaris

Assuming that 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>

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:

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,

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.

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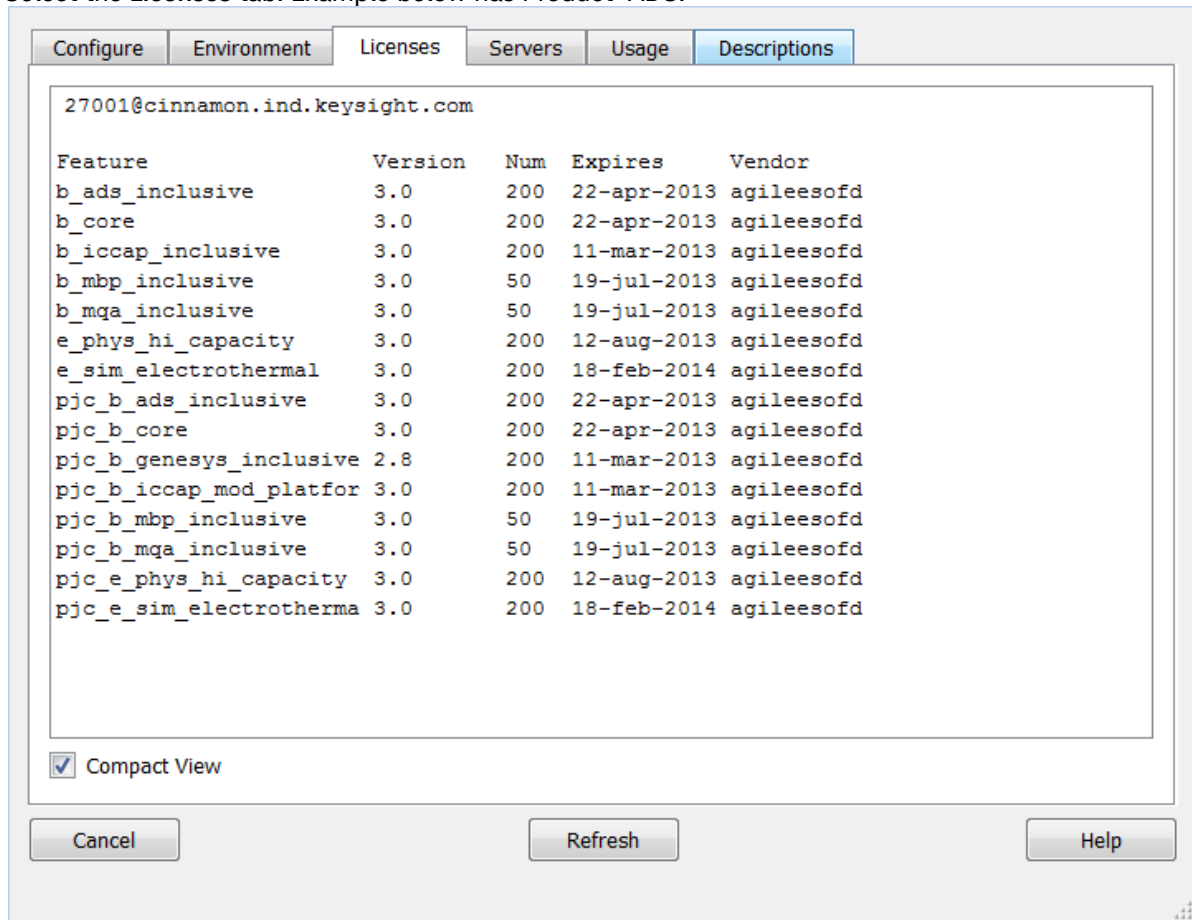
NOTE: lmstat -i does not give information from the server,
      but only reads the license file.  For this reason,
      lmstat -a is recommended instead.

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.

On Linux

Execute FlexNet utility to get to this information:

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


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
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