

LICENSE4J FLOATING LICENSE SERVER USER GUIDE

VERSION 4.6.3

LICENSE4J
www.license4j.com

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Getting Started

Floating licensing also known as concurrent licensing allows many users to share a limited number of licenses. All users may have software installed but only limited number of users can run software concurrently. Floating licensing requires a server application to handle license requests and control license usage.

License4J Floating License Server and Runtime Library has provides all requirements to implement floating licensing for software publishers.

Floating License Usage

License Manager GUI is has a wizard to generate licenses, and when floating license text type is selected, required steps are displayed for defining floating license features. There are two important steps for standard license features and floating license features.

The screenshot shows the 'Generate New License' wizard window. The title bar says 'Generate New License' with a close button. On the left, a 'Steps' list shows: 1. Load Template, 2. User Information, 3. License Type, 4. License Text Features (highlighted), 5. Floating License Features, 6. Custom Features, 7. Date and Time Check, 8. Finish Information. The main area is titled 'License Text Features' and contains the following fields: 'License Quantity' (1) with a range '(1 - 999999)', 'Valid Product Edition' (empty), 'Valid Product Version' (empty), 'License Validity Period' (0) with a range 'days (1 - 99999)', 'Maintenance Period' (0) with a range 'days (1 - 99999)', and 'Hardware ID' (empty). Below these is a checkbox 'Set Past or Future Generation Date and Time' which is unchecked. Below the checkbox is a date/time field showing '2014-01-13 08:12' with a dropdown arrow and the text '(format: yyyy-MM-dd HH:mm)'. At the bottom right are four buttons: '< Previous', 'Next >' (highlighted with a dashed border), 'Finish', and 'Cancel'.

As in the screenshot above, license quantity, product edition and version, license validity and maintenance periods can be defined. Hardware ID field is mandatory and target floating license server hardware ID must be specified. License generation time can be defined in the past or future for special requirements. If license generation time is defined in the future, license cannot be installed and invalid license error returns.

When license is expired after validity period, it is still leased to clients but expired license status is obtained after validation.

The screenshot shows a software window titled "Generate New License" with a close button (X) in the top right corner. On the left is a "Steps" sidebar with a list of steps: 1. Load Template, 2. User Information, 3. License Type & Tags, 4. License Text Features, 5. Floating License Features (highlighted), 6. Custom Features, 7. Date and Time Check, and 8. Finish Information. The main area is titled "Floating License Features" and contains several input fields and checkboxes. The fields are: "License Check Period:" with a value of 0 and unit "minutes (0 - 1440)", "License Server Connection Check Period:" with a value of 0 and unit "minutes (0 - 1440)", "Allowed OverUse Percentage:" with a value of 0 and unit "percent (0 - 10000)", "Superseded Floating License IDs:" with an empty text box and "(separated with space)" label, "Supersede All Older Floating Licenses:" with three checkboxes: "With Same Product ID", "With Same Edition", and "With Same Version", and "Allowed IP blocks (xxx.xxx.xxx.xxx/xx):" with an empty text box and "(separated with space)" label. At the bottom right are four buttons: "< Previous", "Next >" (highlighted with a dashed border), "Finish", and "Cancel".

The working internals for floating license is defined in the fifth step as in the screenshot above.

License Check Period defines time interval in minutes which Runtime Library will connect to floating license server to re-validate license to check for its expiration time, lease status and its existence.

License Server Connection Check Period defines time interval in minutes to acknowledge that client is still using the license and updates last connection time on server. If time interval between current time and client last connection time is more than defined value, then license lease is removed and license becomes free for other clients. This feature will be useful in client network connection problems or at unexpected power down. Default value for server connection check period is 1440 minutes if not defined in license generation. This setting also defines a timer task period on Floating License Server to check for inactivate clients.

These license and server check methods ensures that both license server and client is connected with a network and license usage is correctly controlled and monitored. As explained in License Manager GUI User Guide, *LicenseValidator.validate* method for a floating license has license valid/invalid handler and server connection error handler arguments, these handlers are run when license validity changes or server connection status goes down; so product may be blocked in runtime if required. Basic default handlers are available in Runtime Library and also interface classes is available and can be used to implement custom handlers to manage license.

Allow OverUse Percentage defines percentage of license quantity which are allowed to be used. So number of clients can exceed license quantity and it can be monitored on administration GUI, graphical reports and floating license server query runtime results. The clients which obtained overused licenses will get validation status of *FLOATING_LICENSE_OVERUSED* instead of *LICENSE_VALID*, therefore it is possible to notify user that license usage exceeds license quantity. Usually, developer allows software product to run when *FLOATING_LICENSE_OVERUSED* returned; and only notify users to buy more licenses.

Licenses can be superseded with some new licenses when required. License generation wizard has some options as seen on the screenshot. New license can

supersede licenses when license IDs are specified or all old licenses with matching product ID, edition or version.

With *Allowed IP Blocks* field, a license can be limited to specific IP blocks; if requesting client IP address matches, it gets the license; all other clients are rejected. This settings is saved into license text so that it cannot be modified by users.

Installation

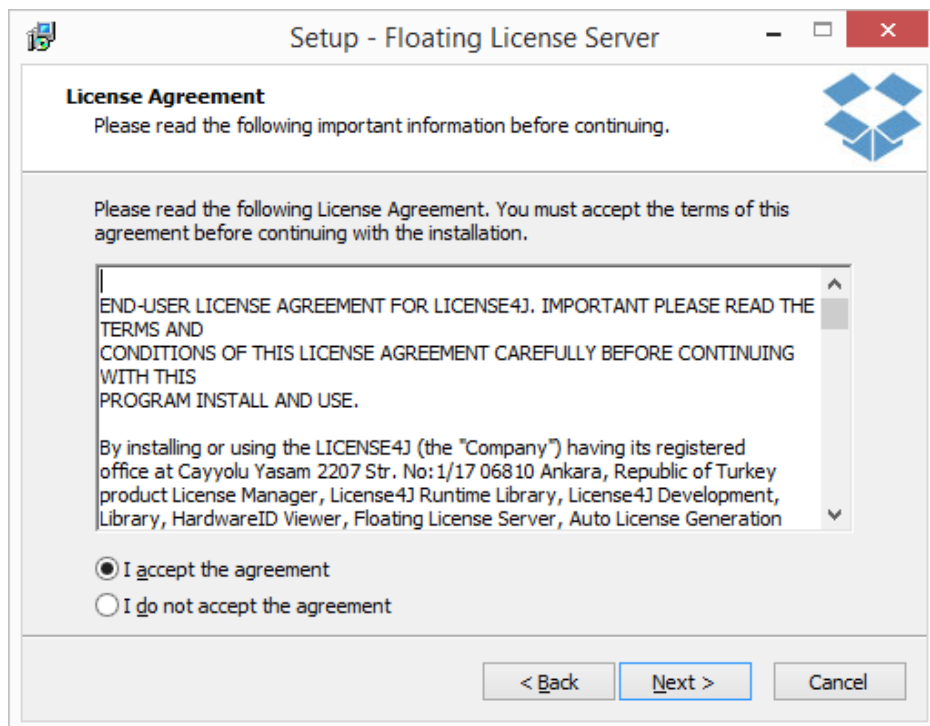
Floating License Server has an installer for Windows, Linux/UNIX version is a compressed package, it is enough to decompress and run a simple script on Linux/UNIX. It runs as a service on operating system. Windows installation includes required Java Runtime, so can be installed and used with a single installer.

Windows Installation

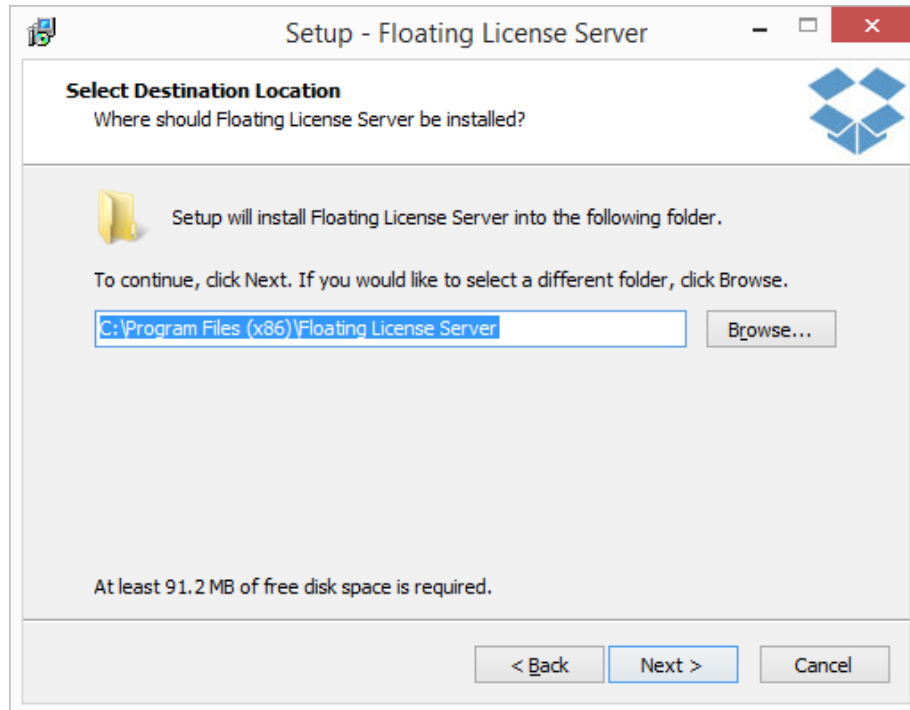
Standard windows setup file is provided for Floating License Server installation on windows. Run setup file and continue with instructions.



On this window license agreement must be accepted to continue.

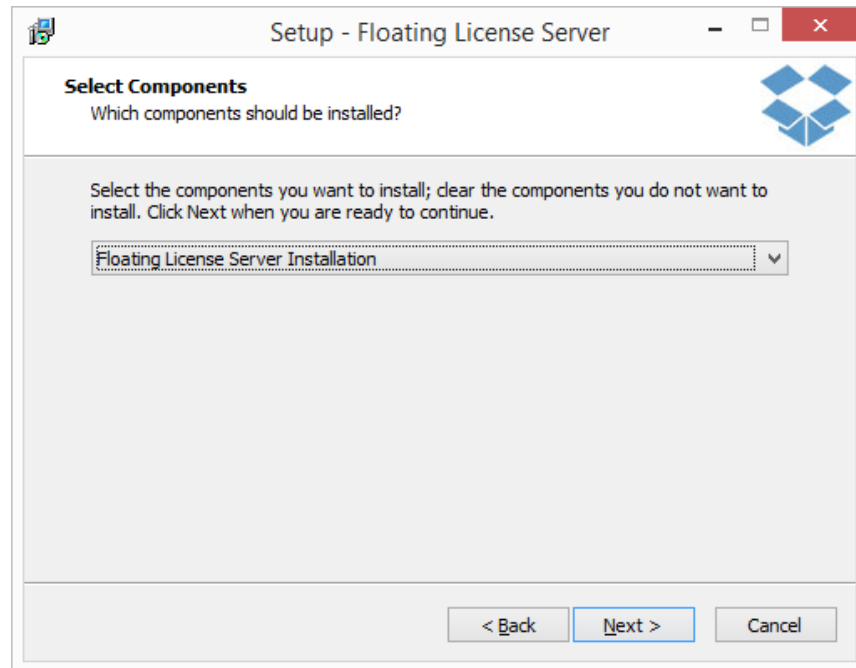


Select or accept the installation folder.

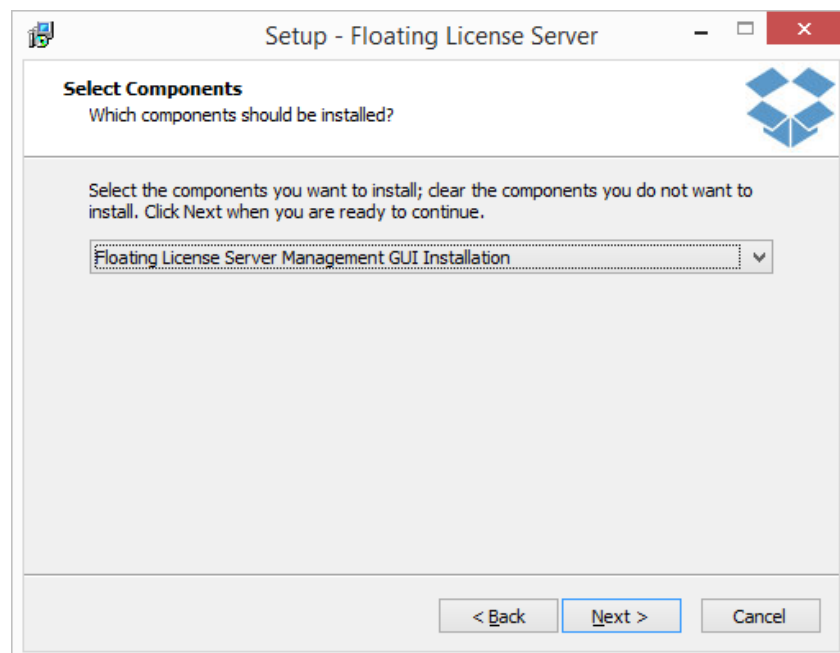


Setup includes two components; first one is Floating License Server Installation, which installs license server service and management GUI tool. The second one is management GUI tool installation which installs only the management GUI tool.

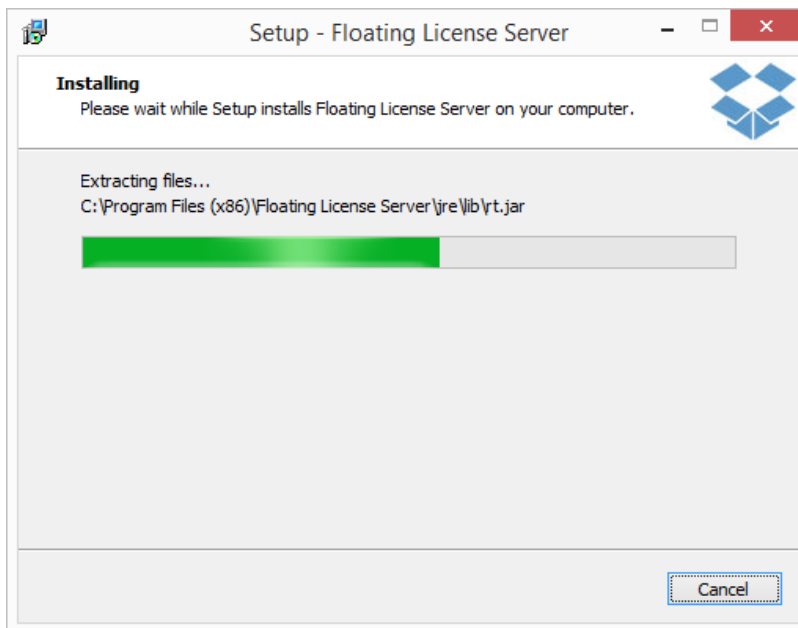
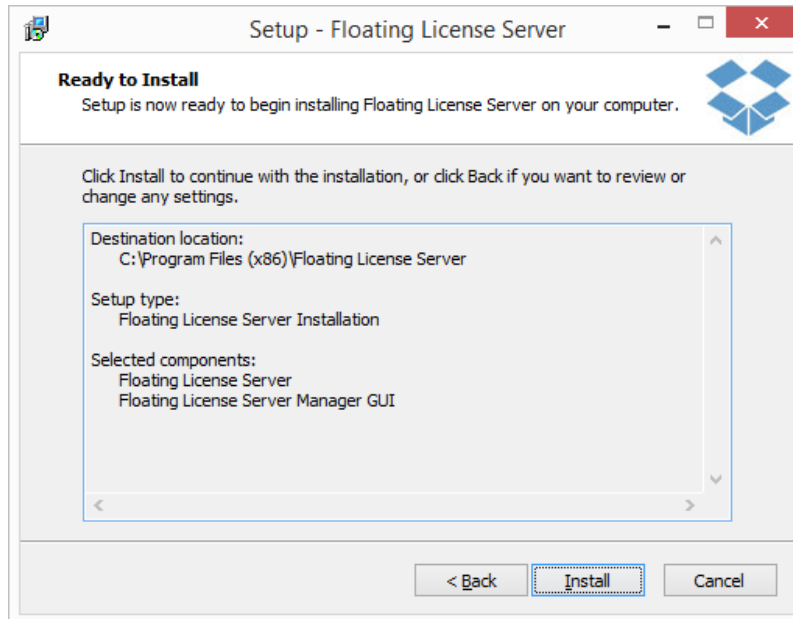
To install license server, select the Floating License Server Installation option as in the screenshot below.



Floating License Server management GUI tool can be installed on computers other than server to manage licenses. To install only management GUI on a management client computer select Floating License Server Management GUI Installation options as in the screenshot below. This option is generally installed for some users with administrator roles in the organization.



A screen giving a summary of installation appears, then installation begins.





After installation completed, all required files are copied and a windows service is installed. A program folder is created in start menu for license server administration GUI tool.

Linux Installation with the Installer

Floating License Server has an installer for Linux OS, and it includes a Java Runtime. Decompress *floatinglicenseserver-linux-installer.tgz* file and run the executable file *FloatingLiceseServer-Setup.run* for installation. Script will ask for installation path and complete, but it does not modify system startup files in any way to install the floating license server service. To start floating license server service on startup, put *service.sh* script in Linux startup files.

Linux and Mac OS Installation without the Installer

The download package without an installer can be used on both Linux and Mac OS. This download package does not include a Java Runtime. Installation process has two steps; first decompress *floatinglicenseserver-linuxmacos.tgz* file; second set Java path and execute the service script.

Use standard gzip and tar commands to extract contents:

```
gzip -d floatinglicenseserver-linuxmacos.tgz
```

```
tar -xvf floatinglicenseserver-linuxmacos.tar
```

After extracting the file will directory named as *floatinglicenseserver* will be created. Copy or move this directory to any place on Linux/UNIX server like */usr/local/floatinglicenseserver*.

NOTE: One important step is required for license server to run which is that ***service.sh*** and ***gui.sh*** files should be edited to set JAVA like below:

```
# SET YOUR JAVA PATH HERE
```

```
#
```

```
JAVA=/usr/local/jdk1.6.0_11
```

Then run the *service.sh* with arguments *start*, *stop* or *restart* on Linux.

```
./service.sh stop: to start the license server.
```

```
./service.sh start: to stop the license server.
```

```
./service.sh restart: to re-start the license server.
```

For Mac OS operating system there is no service configuration available, it should be run directory from Jar file.

Mac OS command: *java -jar FloatingLicenseServer.jar start*

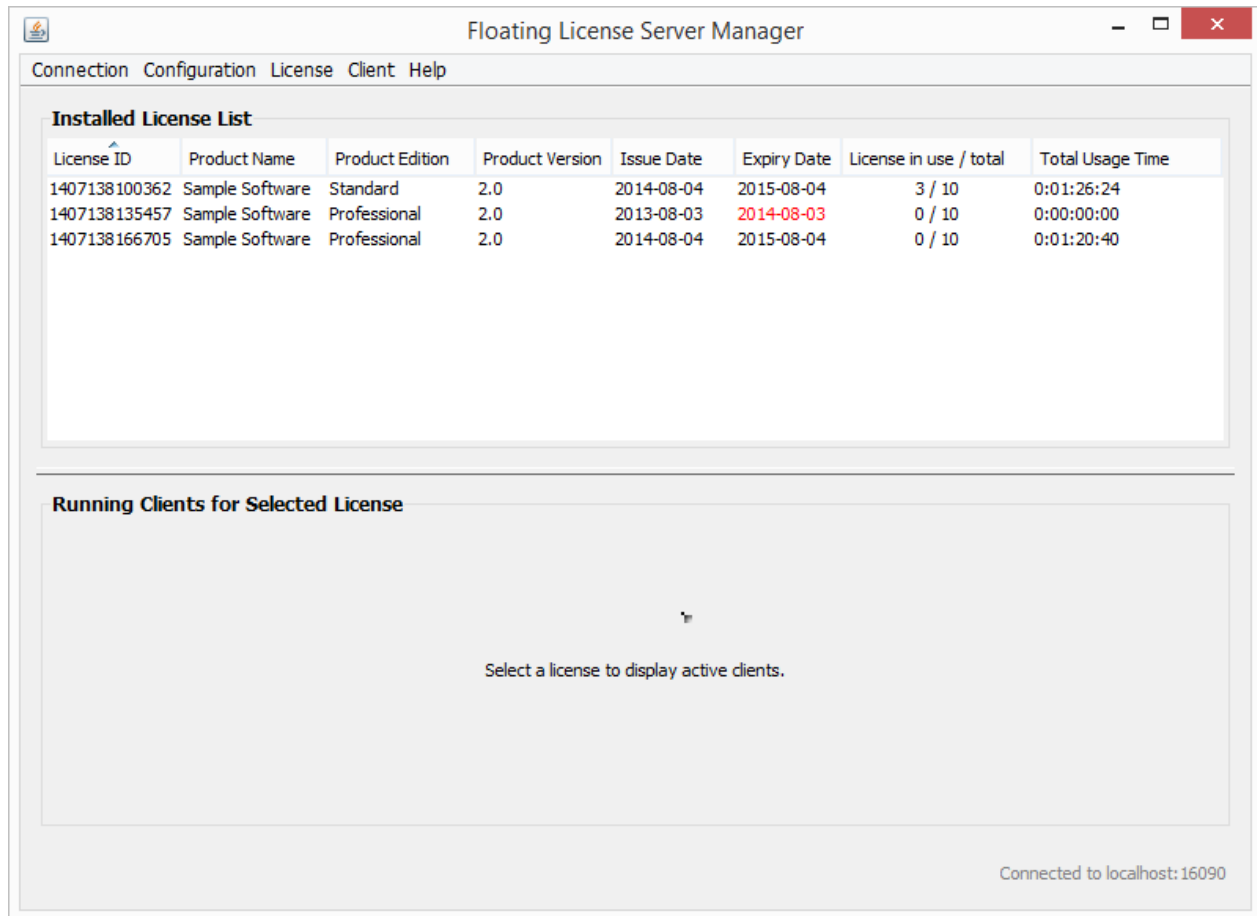
To start the management GUI tool, run the ***gui.sh*** script.

Floating License Server Manager

With Floating License Server Administration GUI tool, following tasks are performed:

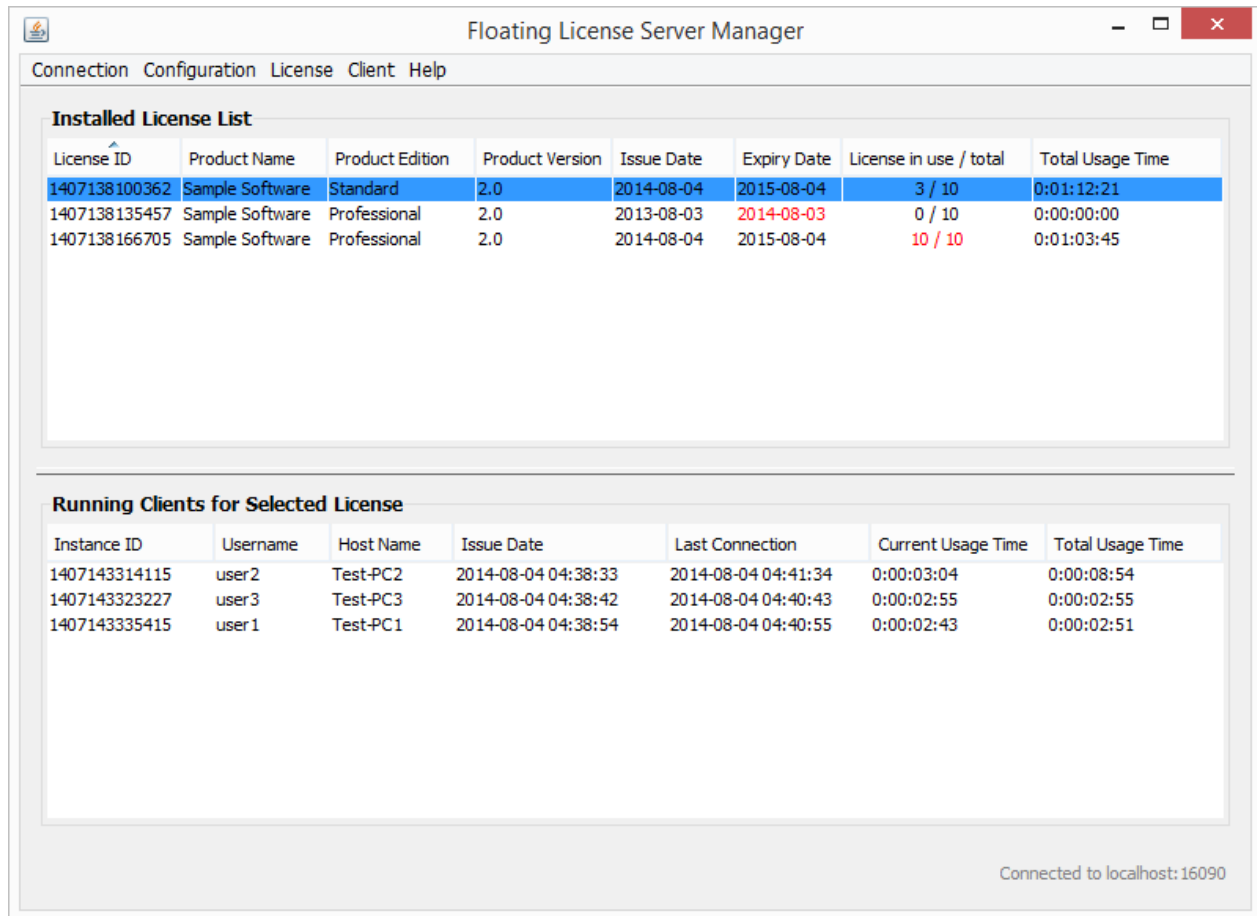
- Display installed licenses and active users obtained each license separately.
- Configure license server (only on local connections).
- Add and remove licenses.
- Display license details.
- Display floating license server hardware id.
- Get a basic license usage report.

After connecting to a license server main window as in the following screenshot is displayed.



The window includes two tables. Upper table displays installed licenses; the bottom table is enabled when a license selected on the license; and it displays active users obtained the selected license.

If generated floating license allows running multiple instances of application on same host by same user, only one license is consumed and all client instances are displayed in client table; otherwise one license is consumed for each instance of running application. This feature prevents users to exceed floating license count by using same computer with the same user id with a remote connection.

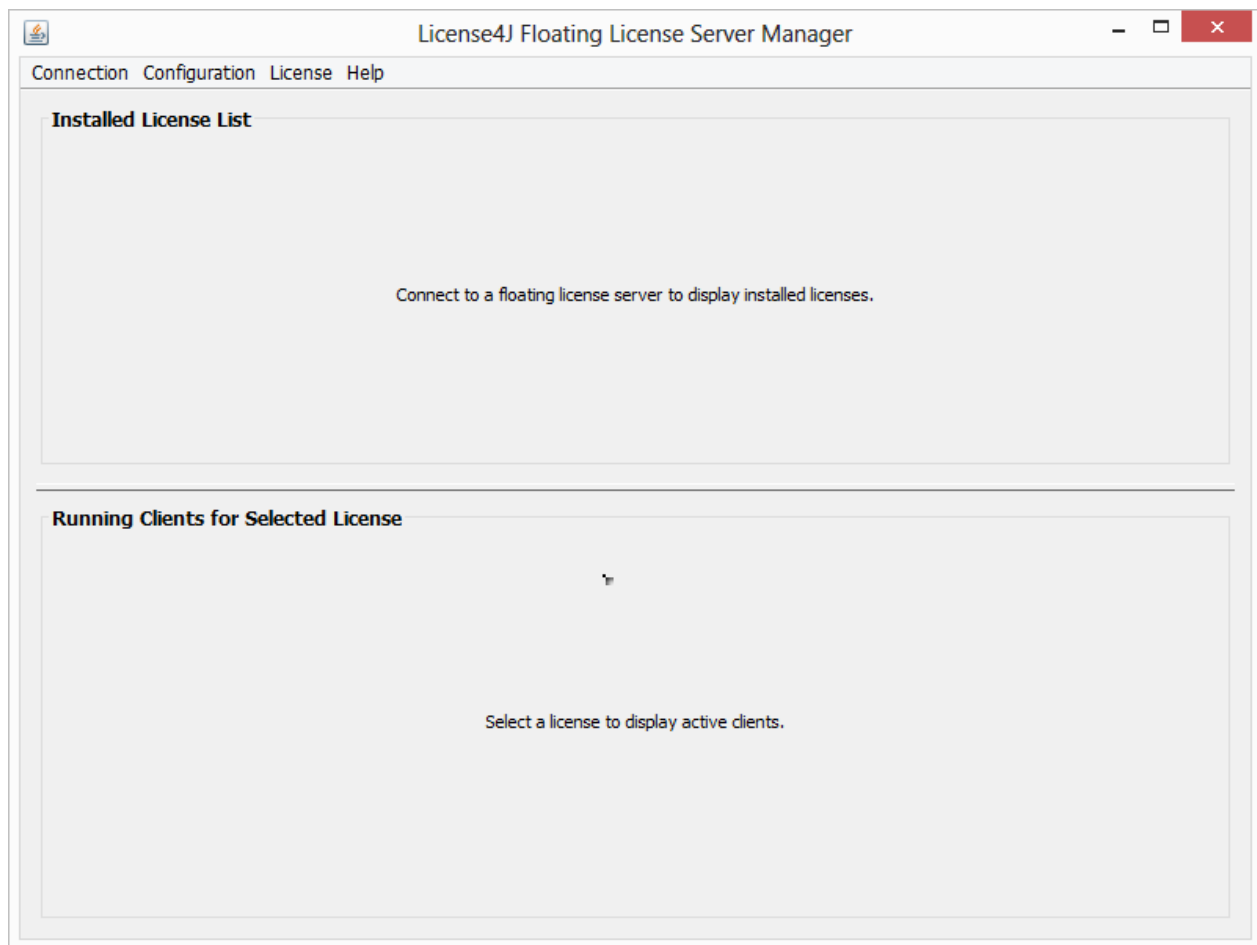


After version 4.4.0, floating licenses can be superseded by other floating licenses to replace or modify some license features. If license ID is displayed in red text color in installed license list table, it means that license is superseded by another license. Details are displayed in license view window.

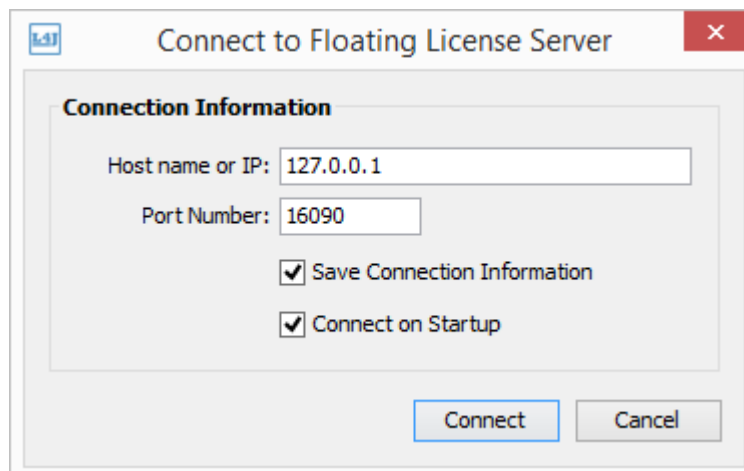
Both tables are refreshed on each 3 seconds, so changes are displayed at most 3 seconds later on tables.

License Server Connection

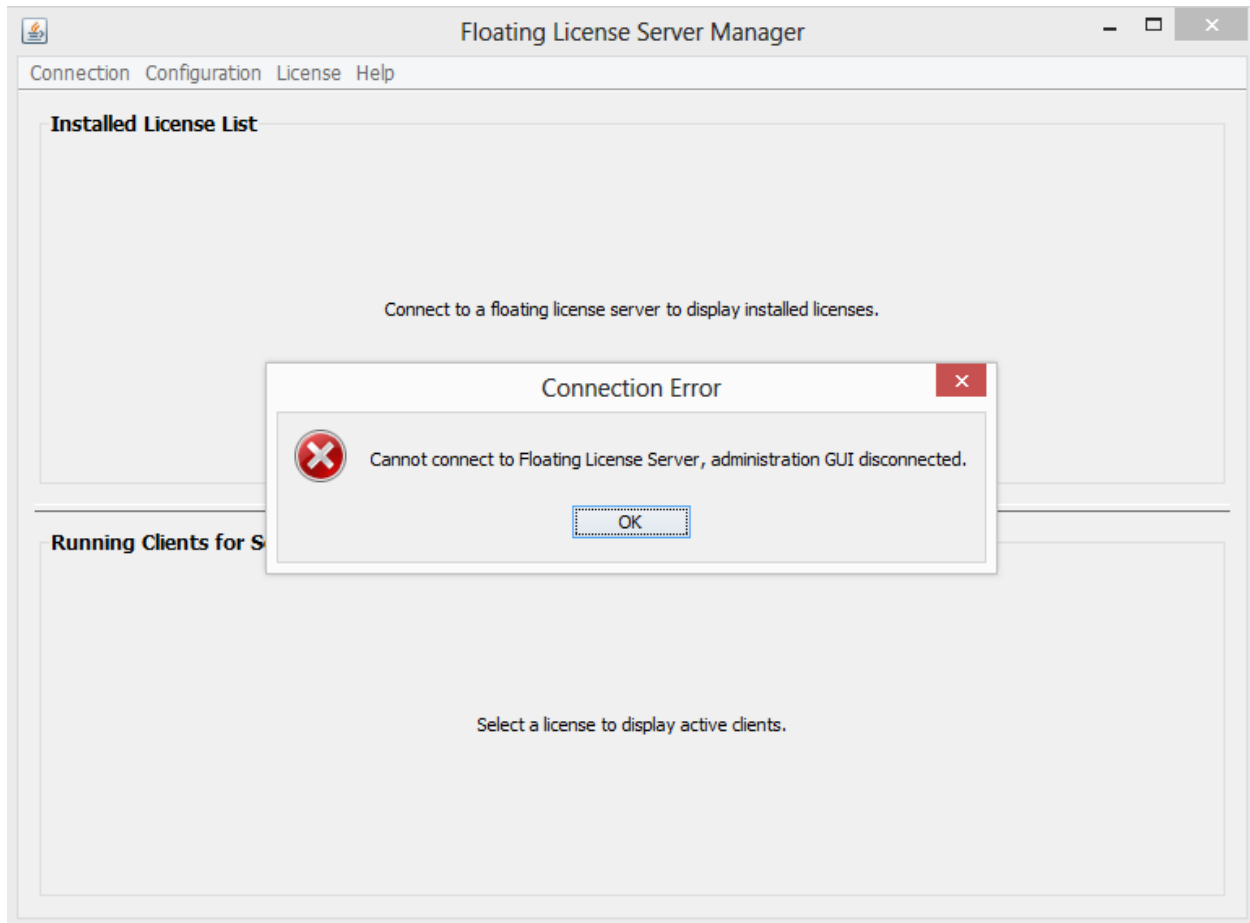
The main window as in the screenshot below is displayed when Floating License Server Manager GUI is run.



To connect to a floating license server *Connect* menu item should be used in *Connection* menu.



While administration GUI running and connected to the server, if server goes down or any network problem occurs administration GUI automatically disconnects and following screenshot displayed. It takes at most 10 seconds to detect a connection problem.



License Server Configuration

Floating License Server Manager GUI can be used to configure server if it is on the same computer with license server (connected through 127.0.0.1 or localhost).

The configuration window as in the screenshot below will be displayed when *Server Configuration* menu item is clicked.

The screenshot shows a window titled "Floating License Server Configuration" with a close button (X) in the top right corner. The window is divided into three main sections:

- Listen Interface:** Contains a "Listen on:" dropdown menu set to "All" and a text input field containing "16090".
- Administrator Hosts:** Contains a label "IP Addresses:" followed by a large empty text box. To the right of the text box is the instruction "Type one IP per line."
- Scheduled Current Usage Report:** Contains a checked checkbox "Enable Scheduled Report". Below this are two rows of configuration:
 - Text File Name: A checked checkbox followed by a text input field containing "C:\temp\logs\license-usage.txt" and a "Select File" button.
 - HTML File Name: A checked checkbox followed by a text input field containing "C:\temp\logs\license-usage.html" and a "Select File" button.At the bottom of this section is a "Schedule:" label followed by a dropdown menu set to "5" and the word "minutes".

At the bottom right of the window are two buttons: "Save" and "Close".

In this configuration window, interface for license server to listen on, and port number is defined. By default license server listens on all interfaces and port number 16090. Administrator Hosts are defined in the text area with their IP addresses. These hosts can use floating license server manager GUI and will have permission to install and delete licenses. Floating license server service should be restarted for changes to take effect.

When enabled server prepares license usage reports and saves on defined files; it can save both text file and html file in defined intervals.

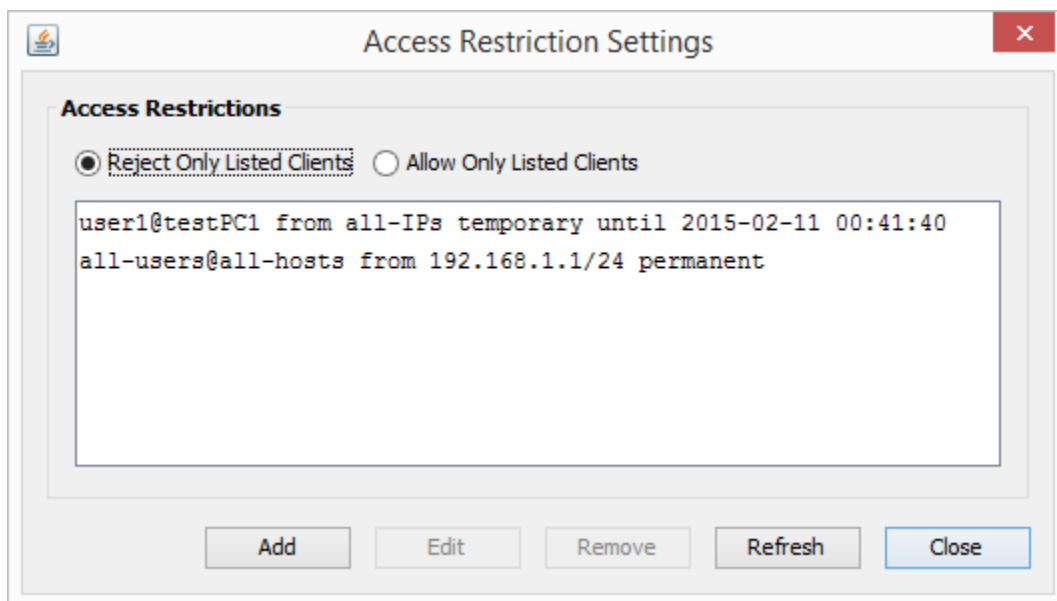
Adding and Removing Licenses

License file installation is performed with *Install New License* menu item in License menu. Selected license file is sent to server and validated, if license is valid then installed and a successful installation message is displayed.

Delete Selected License menu item is used to delete installed licenses. When a license is deleted, stored license file on disk is also deleted.

Access Restriction Settings

Some client connections based on defined username, hostname and IP block can be rejected or allowed to get a specific license. Each license has its own access restriction settings. License menu and context menu has a new menu item named *Access Control Restrictions*. When a license is selected on main GUI, menu item is enabled; when it is run, a dialog window is displayed to manage settings as in the following screenshot.

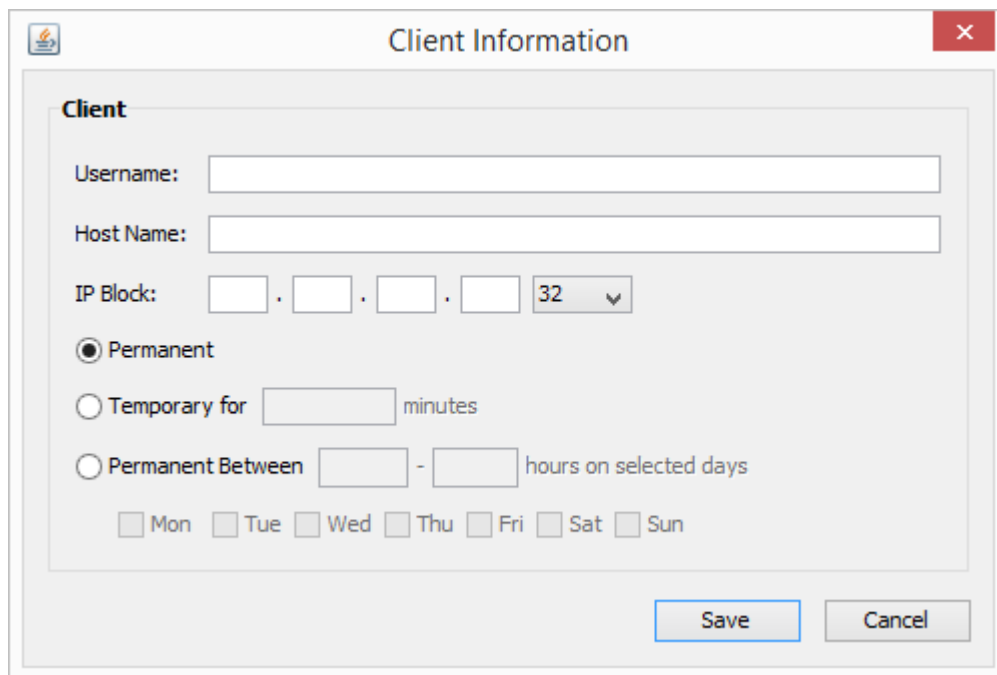


Client username, hostname and IP block is used to decide whether requesting client will be rejected or allowed. And operator is used to combine 3 variables; if username is not specified, it matches all users and “all-users” string is displayed on

the GUI. If hostname is not specified, it matches all hosts and “all-hosts” string is displayed; IP block definition is also same.

On the above sample screenshot, username “user1” will be rejected on computer with hostname “testPC1” temporarily until displayed time. On the second line, all users on all computers will be rejected connecting from 192.168.1.1 network (C class subnet).

Client access settings can be permanent or temporary. Temporary setting is displayed as “temporary until 2014-07-18 08:50:41”; access setting will be removed by server on the displayed date and time. Temporary setting is defined in minutes (minimum is 1 minutes, maximum is 999999 minutes). Floating License Server converts defined minutes to a final date/time by adding defined minutes to current time; server clock and time zone is used in calculations.



Client Information

Client

Username:

Host Name:

IP Block: . . . 32 ▼

☒ Permanent

☐ Temporary for minutes

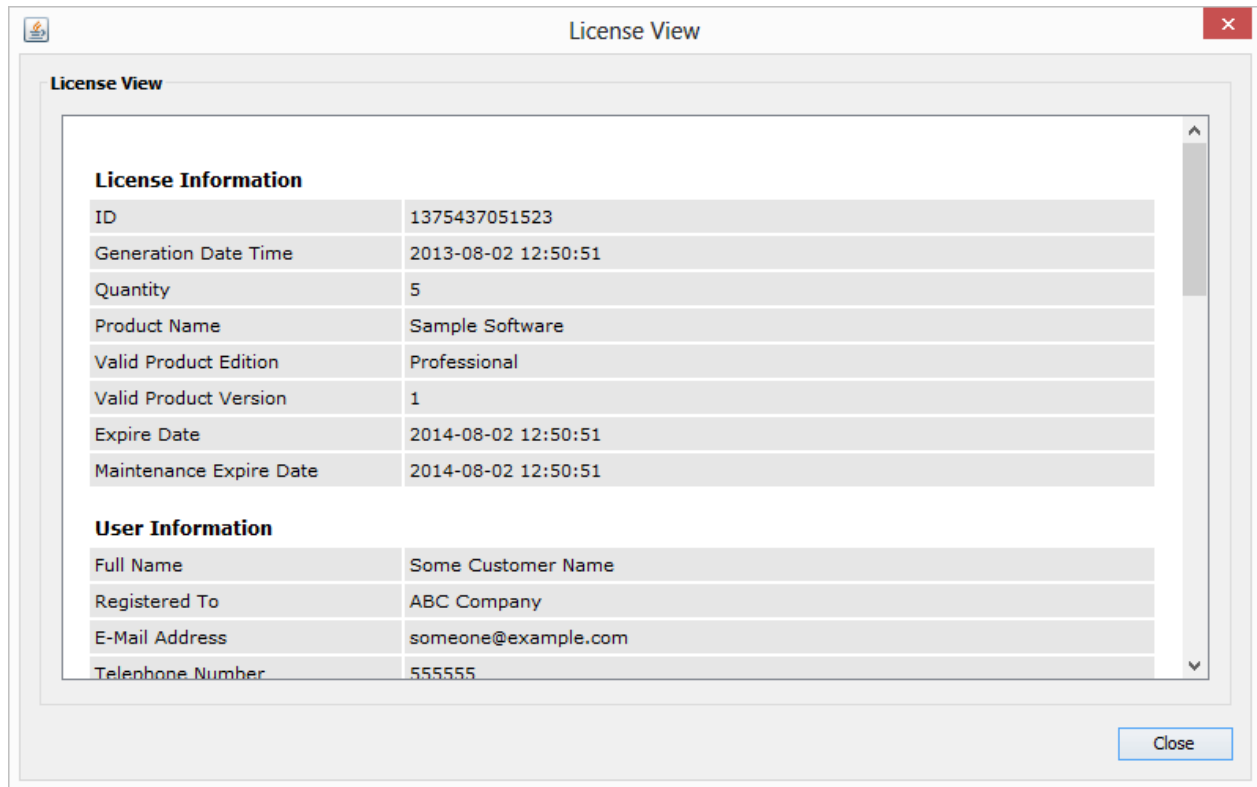
☐ Permanent Between - hours on selected days

☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☐ Sat ☐ Sun

Permanent access settings can be scheduled for defined week days and time period. Time period is between 00:00 and 23:59 inclusive; at least 1 day must be selected.

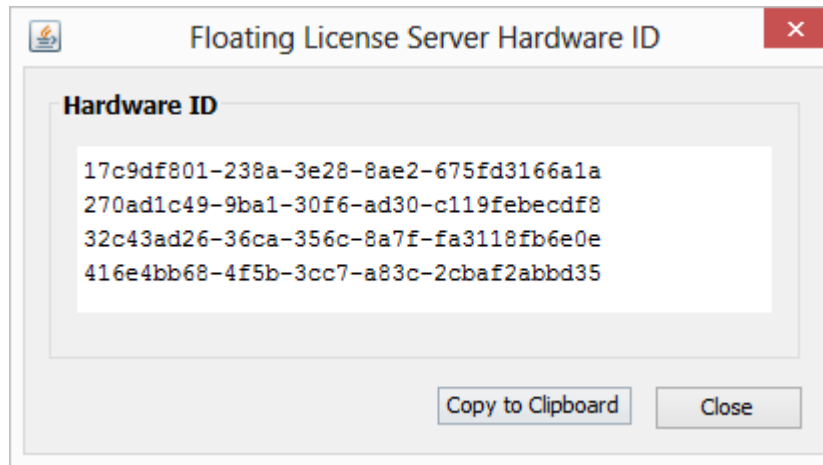
Displaying License Details

Installed license details can be displayed with *Display License* menu item, or with a double click on license. A window with license details will come up as below.



Displaying License Server Hardware IDs

Display Server Hardware ID menu item in License menu is used to get hardware IDs of floating license server. All available hardware ID types are displayed (hostname, Ethernet address, disk volume number, and disk serial number), any of them or a combination can be used to generate a license.



Basic License Usage Report

Save Current License Usage Report menu items in *License* menu save current license usage to text file and html file. Floating license server also saves usage report to a defined text or html file in selected periods if configured in server configuration window as in the screenshot below.

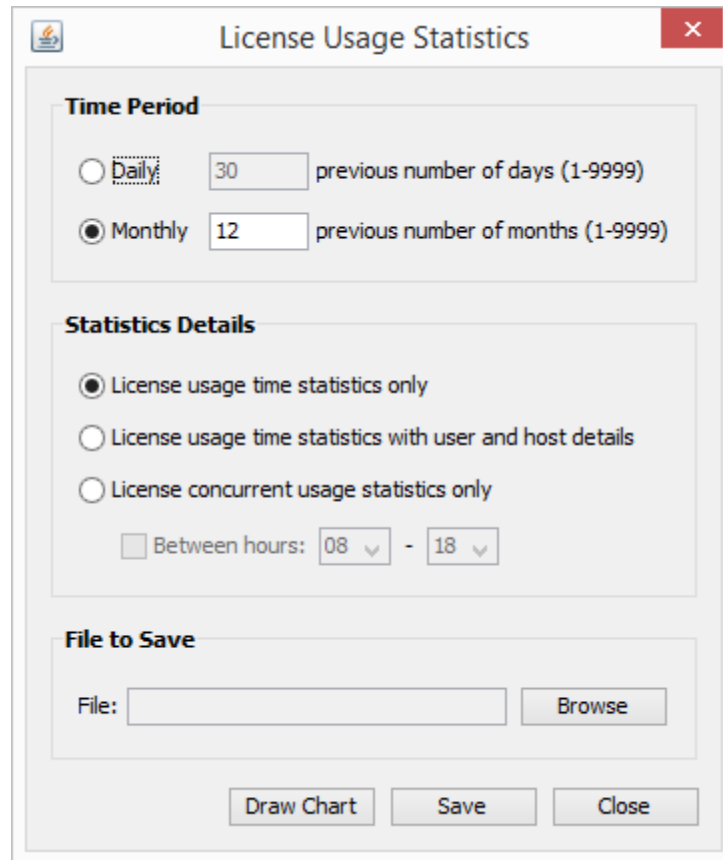
The screenshot shows a window titled "Floating License Server Configuration" with a standard Windows-style title bar (minimize, maximize, close buttons). The window is divided into three main sections:

- Listen Interface:** Contains a "Listen on:" label, a dropdown menu set to "All", and a text box containing "16090".
- Administrator Hosts:** Contains a label "IP Addresses:", a large empty text box, and the instruction "Type one IP per line."
- Scheduled Current Usage Report:** Contains a checked checkbox "Enable Scheduled Report". Below it are two rows, each with a checked checkbox, a text box, and a "Select File" button:
 - Text File Name: C:\temp\logs\license-usage.txt
 - HTML File Name: C:\temp\logs\license-usage.htmlAt the bottom of this section is a "Schedule:" label, a dropdown menu set to "60", and the word "minutes".

At the bottom right of the window are two buttons: "Save" and "Close".

Advanced License Usage Report

Version 4.4.1 and later stores all license usage time information in an embedded database, and it is possible to generate excel files and graphs. License menu has a new menu as *Usage Statistics*, and it has three menu items. With *Save Raw Data to CSV File* menu item, raw usage data is exported to a csv file. Floating License Server stores all license usage with lease time and remove time. *Clear Statistics* menu item deletes raw data older than defined number of days. *License Usage Statistics* menu item opens a window as in the following screenshot.



The dialog box is titled "License Usage Statistics" and contains three main sections: "Time Period", "Statistics Details", and "File to Save".

Time Period

- ☐ Daily: 30 previous number of days (1-9999)
- ☒ Monthly 12 previous number of months (1-9999)

Statistics Details

- ☒ License usage time statistics only
- ☐ License usage time statistics with user and host details
- ☐ License concurrent usage statistics only

☐ Between hours: 08 - 18

File to Save

File:

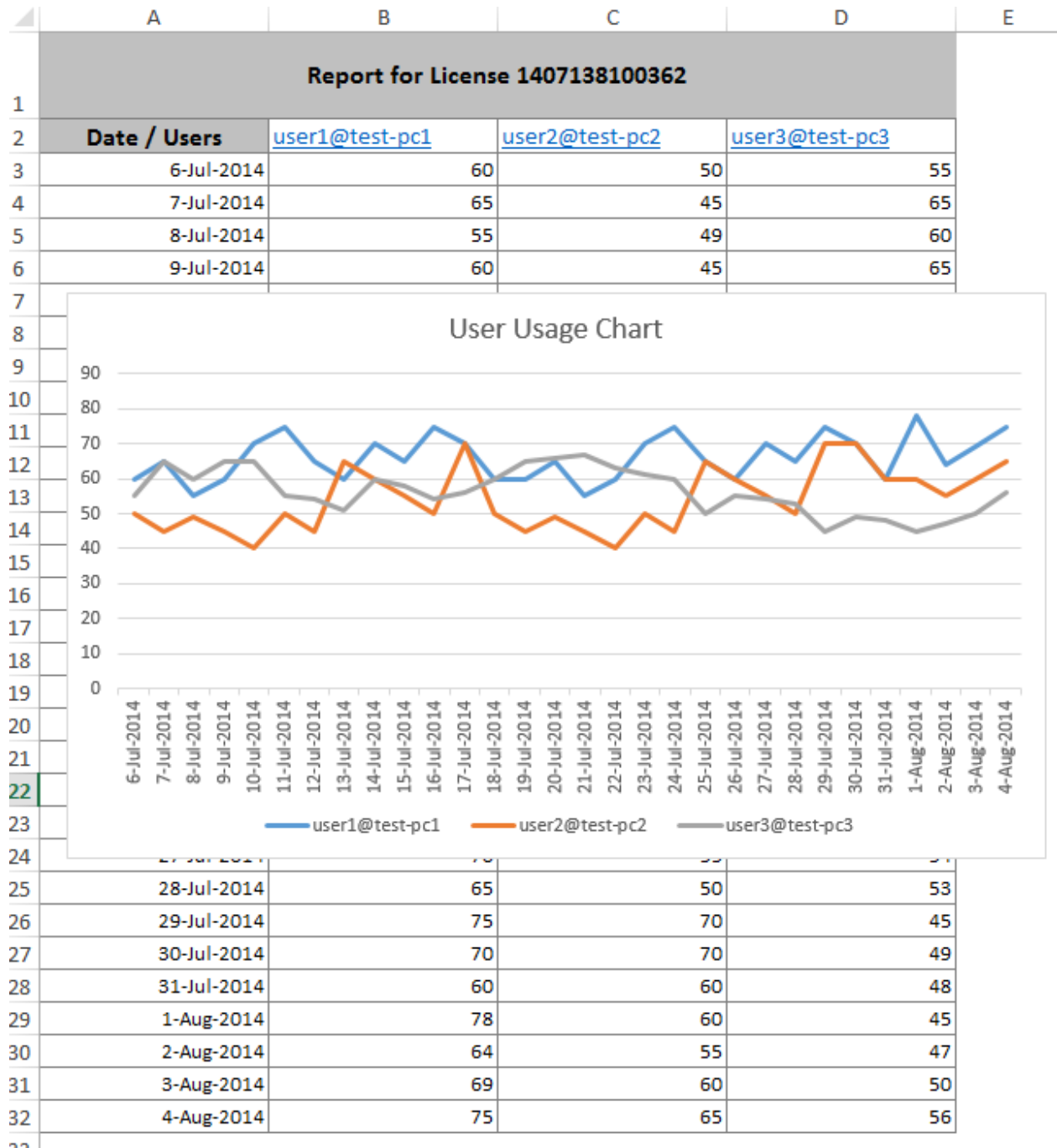
In this window, license usage time information with or without user information for either daily or monthly time period is exported to an excel file. It exports data in a tabular form to easily create a chart.

To get concurrent license usage count information "License concurrent usage statistics only" should be selected. If daily time period is selected, concurrent license usage information for each hour will be saved to excel file (24 lines if hours is not selected). To get work hours concurrent usage data, hour values should be selected. If monthly time period is selected, mathematical mean will be calculated from hourly data for each day and a single value for each day will be saved.

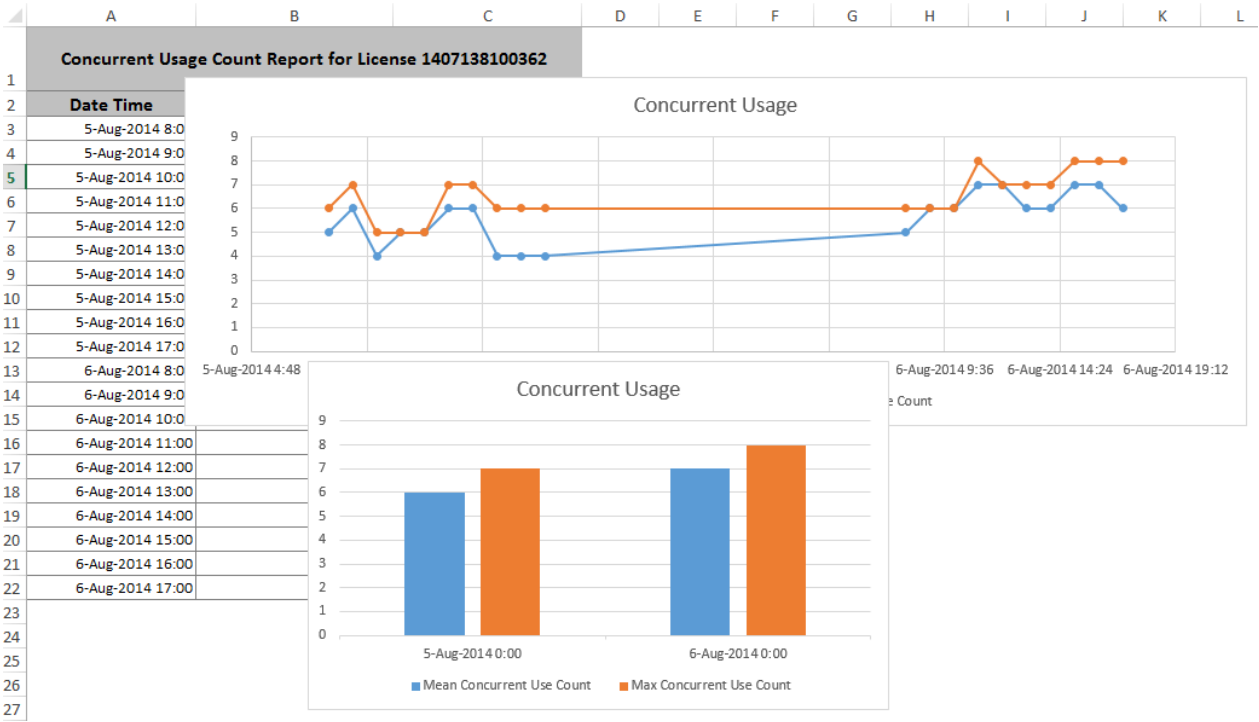
Concurrent license usage count is queried for each license every minute and temporarily saved; when clock minute value is 59 (end of hour) server calculates mathematical mean from 60 minute value and store single mean value for the current hour into database.

Example screenshot below includes license usage time data for 30 days with 3 users. To create a line chart in excel with this data, just select table and click on insert recommended chart button. Y-Axis displays license usage calculated in terms of minutes; X-Axis displays the date.

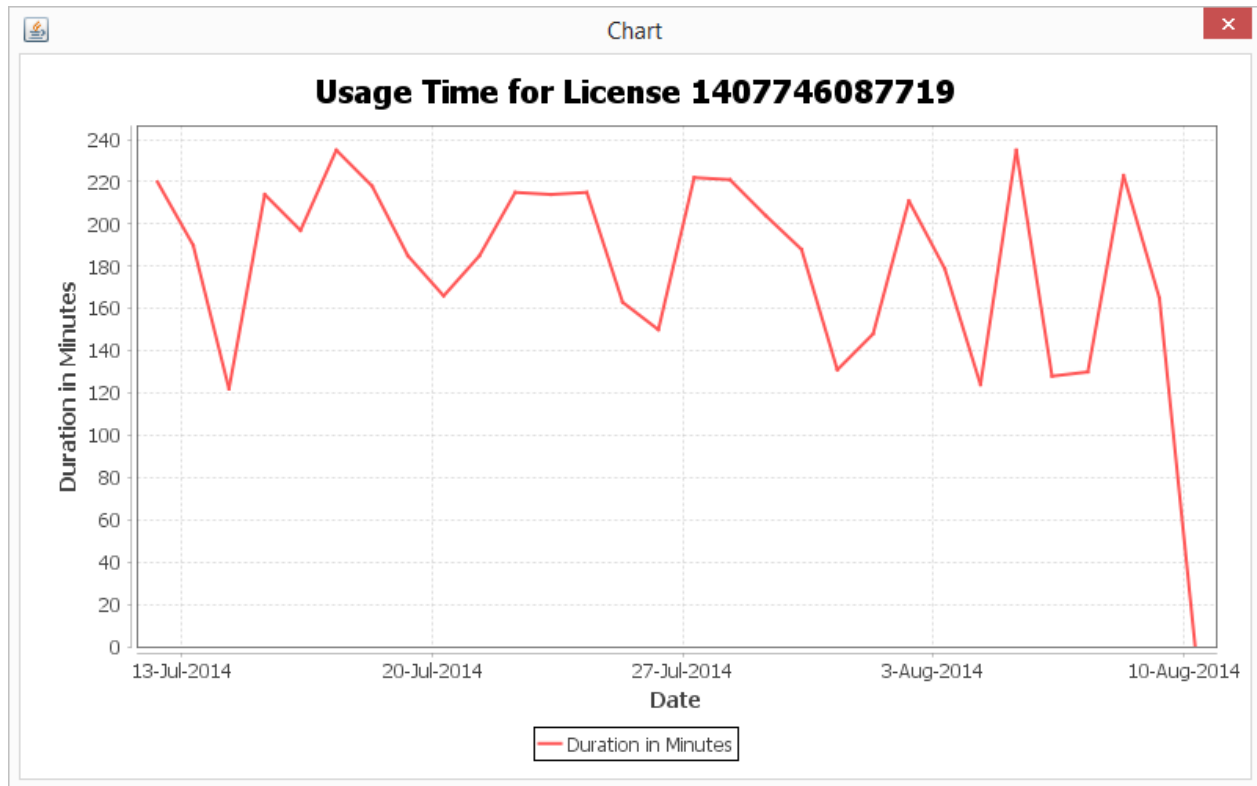
Similar reports and charts can be generated for only total license usage without user information; also time period can be defined in months.



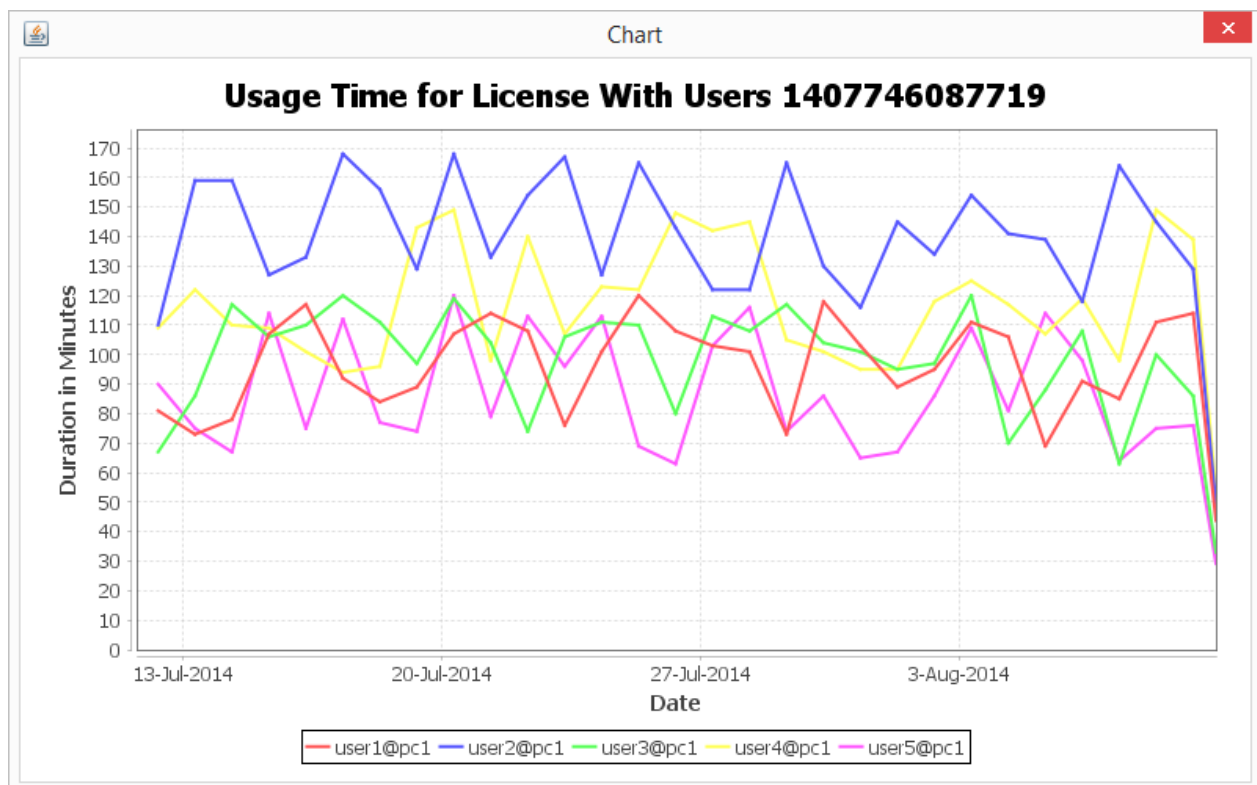
Following screenshot has concurrent license usage count information for 2 days. Excel scatter chart can be used to visualize concurrent license usage for desired time period. Column charts can be used to summarize daily concurrent usage.



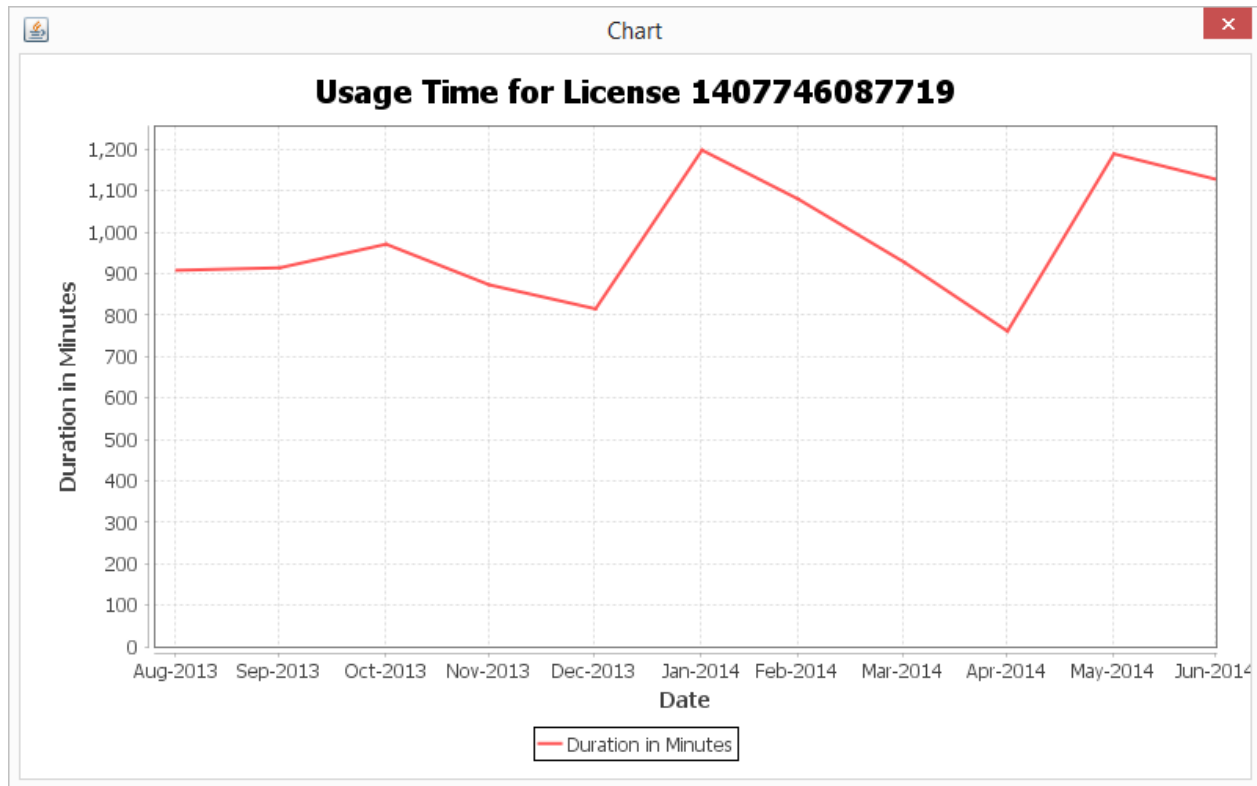
Draw Chart button on this screen directly draws and displays charts. The screenshots below are some sample charts.



This is sample chart displaying last 30 days of license usage times for a specific license.

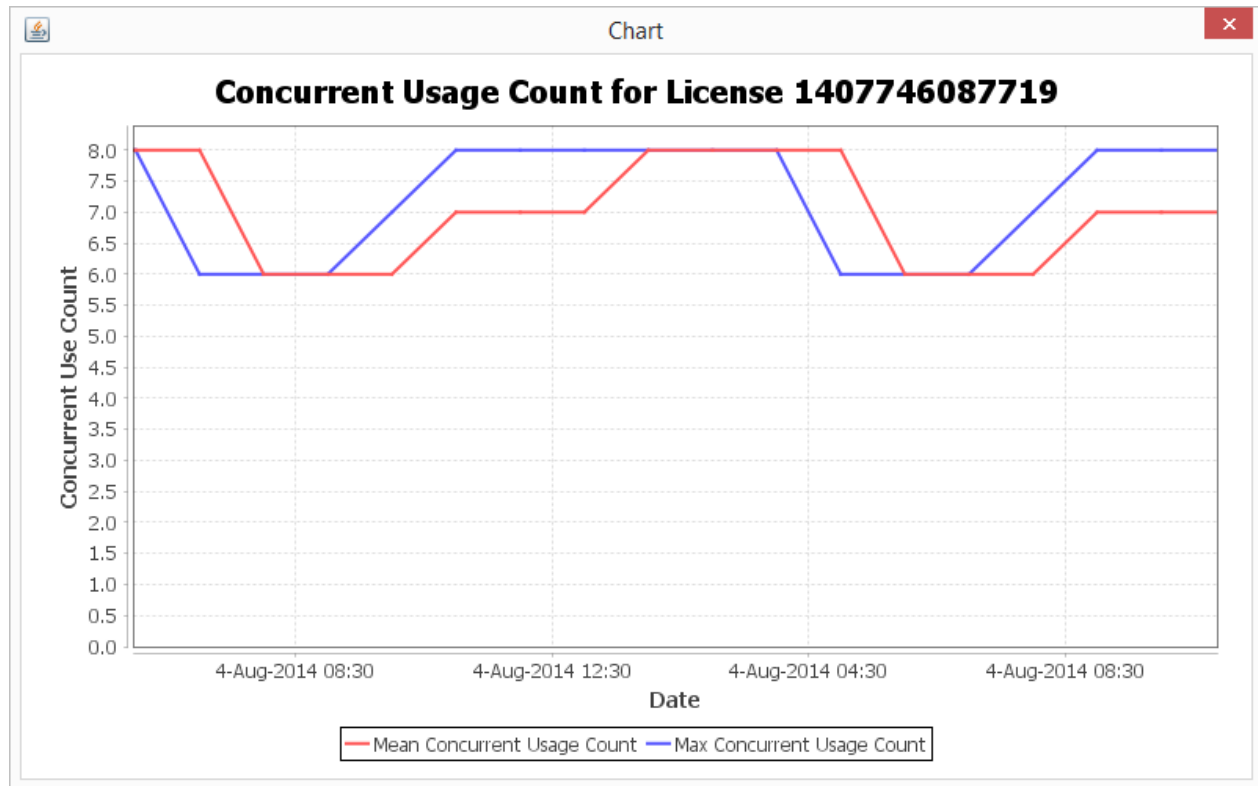


This is a sample chart with user information. It displays each users' license usage time separately.

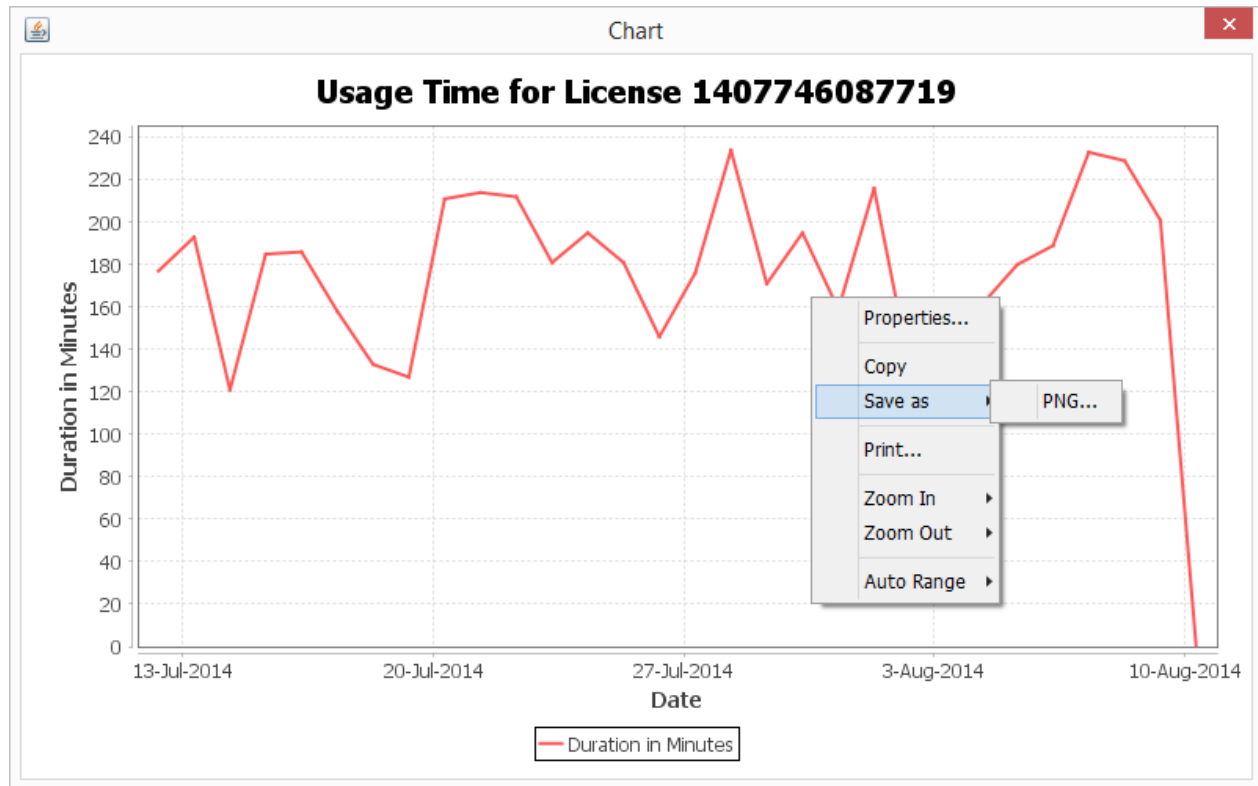


This is sample chart displaying last 12 months license usage times.

Finally, the following chart displays mean and maximum concurrent license usage count. Note: To get more accurate daily mean concurrent usage data, working hours should be defined; so non-working hours will not be used in mean calculation.



Displayed charts supports zoom in and zoom out with left mouse selection. Also there is a context menu displayed with right mouse click; on the context menu, chart can be copied and saved as an image file.



Floating License Server Customization (Windows)

Floating License Server can be fully customized, and localized to support languages other than English. Floating License Server Customization package is sent with e-mail when requested, and it is free of charge. Package includes InnoSetup script to create your own custom installer, a Launch4J configuration file to create an exe file for administration GUI, and sample customization files. All strings in server and administration GUI can be changed with simple properties files, about box image is also defined in property file for administration GUI.

There are two options to place custom properties files and about box image. The first option is to add custom properties files and about box image inside jar files (*FloatingLicenseServer.jar* and *FloatingLicenseServerAdmin.jar*); so they cannot be easily viewed by customers. The second option is to add files in the *config* directory.

Steps to customize are as follows.

1. Add *LocalizationAndCustomFile* keyword to *guiconfig.ini* and *serverconfig.ini* files and define custom properties files. *jar:* is a keyword to indicate that files are added inside jar file.

Option1 inside jar: *LocalizationAndCustomFile=jar:mycustom.properties*

Defined properties will be searched in

/com/license4j/floatinglicenseserver/gui/resources for administration GUI,

and in */com/license4j/floatinglicenseserver/server/resources* for license server.

Option 2 in config directory: *LocalizationAndCustomFile=mycustom.properties*

2. If you use option 1, use jar command with *uf* options to add your custom properties files and about box image inside jar files and update.
3. If you use option 2, add your files in your config directory and update InnoSetup script to include these new files.
4. (Optional) Update *installService.bat* and *uninstallService.bat* files if you want to change installed service name (default: Floating License Server)
5. Create setup file by running InnoSetup script.

Floating License Server Customization (Linux)

Floating License Server Linux download package use *makeself* to make a self-extracting installer. Linux customization package includes required information about running *makeself* software. The jar file and/or properties files customization is same with the Windows customization package.

Error and Access Logging

Floating License Server and Management GUI logs errors and access logs in system program data folder on Windows.

(e.g. *C:\ProgramData\Floating License Server\logs*)

On Linux and Mac OS log file is saved in the current path which Floating License Server and Management GUI is running.

Floating License Server generates two logs files names as *server-error.txt* and *server-access.txt*. Server access logs like license lease, license release, license install and delete can be found in access log file. If any error/exception occurs it is logged in error log file and includes error codes to easily identify problem. Administration GUI error log file name is *gu-error.txt* and includes exceptions caught while running.

Floating License Server License

LICENSE4J Floating License Server is free to use and distribute with your product. You may use and distribute floating license server setup files with your product for installation by your customers. You may also customize and white-label Floating License Server and distribute with or without your software product.

Details on licensing can be found in END-USER LICENSE AGREEMENT which is found in EULA.txt file.

End of document.