Protection!^{tm}

Licensing Server

v4.6

Administrator Guide

jProductivity LLC

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Applicability
This document applies to Protection! Licensing Server v4.6 software.

Contents

Chapter 1

Protection! Licensing Server Overview

Protection! Licensing Server consists of two major components to support the Licensing Server functionality – the Licensing Server itself and the Management Console.

1.1 Protection! Licensing Server

Licensing Server is responsible for distribution of licenses and for tracking of the concurrent use of licenses. The Licensing Server application is a turnkey solution that is deployed inside the customer's network. It can be run as a Windows service or as a UNIX/Linux daemon. The main features of the Licensing Server are:

- Support for Floating and Named User models by tracking licenses usage using the concept of license lock (acquire) and unlock (release).
- Ability to revoke license locks sessions to force client applications to unlock (release) licenses.
- License lock session's expiration to allow correctly releasing of the license lock when the client application is not responding or the network (connection to the Licensing Server) is down.
- Ability to host and to distribute an unlimited number of licenses for an unlimited number of products.
- Ability to allocate licenses for specified users and/or user groups.
- Ability to control access to the Licensing Server by using access control lists (whitelist and blacklist) for any types of operations.
- Ability to remotely monitor and manage the Licensing Server via supplied Management Console application.

1.2 Protection! Licensing Server Management Console

The Management Console is a GUI application intended for remote monitoring and management the Licensing Server(s). The main features of the Management Console are:

- Authentication and authorization per Licensing Server with the ability to maintain the Licensing Server users.
- Support for multiple Licensing Server connections.
- Ability to discover running instances of the Licensing Servers via network broadcast.
- Ability to maintain access control lists.
- Ability to view licensing statistics and server statistics.
- Ability to disable/enable any licensing activities.
- Ability to shut down the Licensing Server.
- Ability to visually monitor current license sessions.
- Ability to revoke specific license sessions.
- Ability to maintain licenses storage.
- Ability to maintain license users/groups
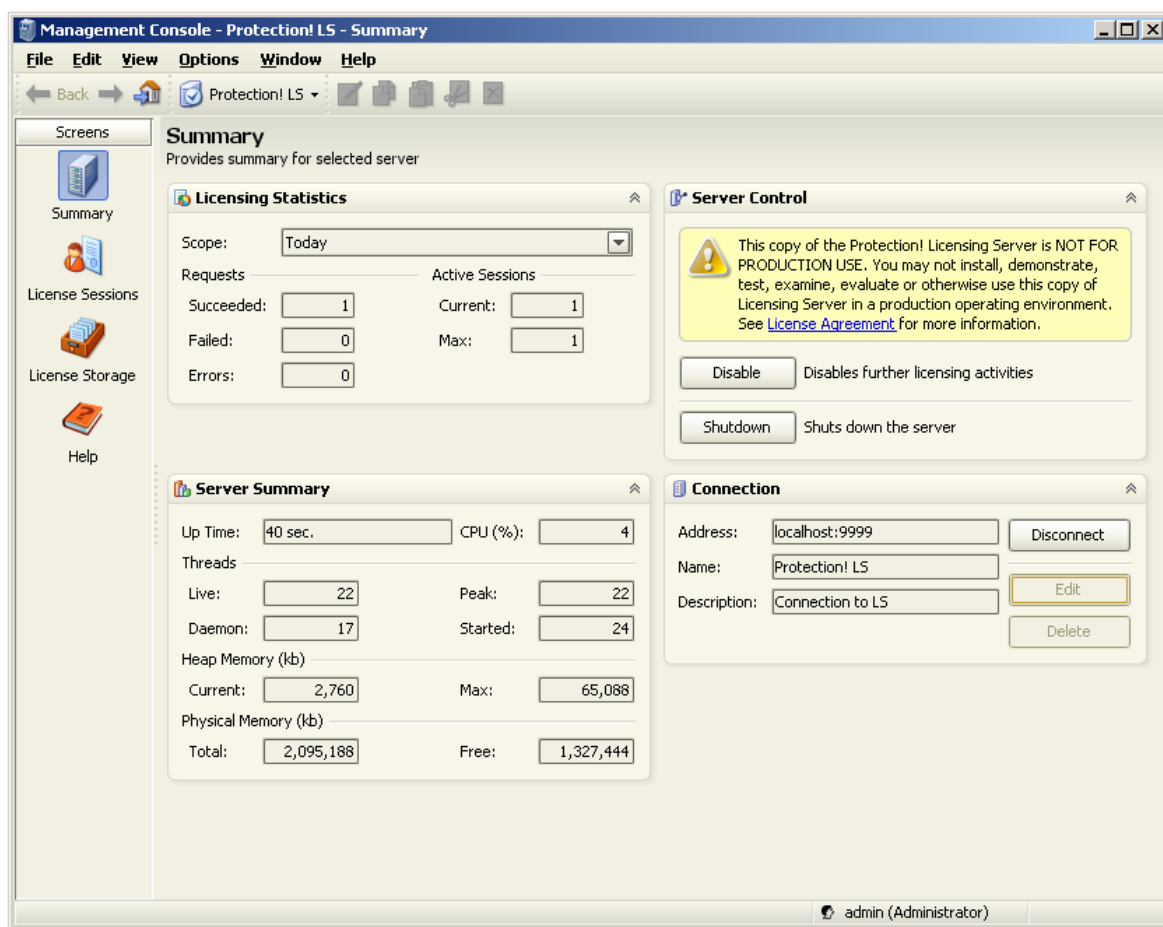- Ability to allocate licenses for specified users and/or user groups.

Figure 1: Licensing Server Management Console

Chapter 2

Working with the Protection! Licensing Server

This topic outlines how to work with the Licensing Server application running on the different platforms.

2.1 Configuring the Licensing Server

The Licensing Server configuration can be done by modifying the `bin/server.xml` file. The following attributes of the *<server>* element can be specified:

- *hostName* - represents the fully qualified host name or public IP address of the physical server the Licensing Server is running on. The *hostName* attribute must be explicitly specified when the server is running behind the firewall. Default value is "" which means that local IP of the server will be used.
- *port* - the port that is used by the Licensing Server to accept requests from the clients. Default value for the *port* attribute is *1099*. If a different value is specified for the *port* attribute then it must be explicitly specified for all of the Licensing Server connections.
- *exportPort* – represents the port number that is used by the Licensing Sever to receive calls from the clients. Default value for this attribute is *0* which means that the server's listening port is chosen arbitrarily at runtime. The *exportPort* attribute must be explicitly specified when the server is running behind the firewall.
- *mgmtPort* - the port that is used by the Licensing Server to accept requests from the Management Console to allow remote management of the Licensing Server. Default value for the *mgmtPort* attribute is *9999*. If a different value is specified for the *mgmtPort* attribute then it must be explicitly specified for all of the Management Console connections.
- *mgmtExportPort* – represents the port number that is used by the Licensing Sever to receive calls from the Management Console. Default value for this attribute is *0* which means that the server's listening port is chosen arbitrarily at runtime. The *mgmtExportPort* attribute must be explicitly specified when the server is running behind the firewall.

Example of the *<server>* element would be as following:

<server hostName="" port="1099" exportPort="10991" mgmtPort="9999" mgmtExportPort="9998" allowRestart="false">

Note	The *hostName, exportPort and mgmtExportPort* attributes must be explicitly specified when the server is running behind the firewall.
Note	The *port, exportPort, mgmtPort* and *mgmtExportPort* ports must be opened in the firewall configuration when the server is running behind the firewall but must be accessed from outside of the firewall.
Note	The Licensing Server must be restarted to apply changes in the configuration.

2.2 Running the Licensing Server

The Licensing Server application is a turnkey solution that is deployed inside the customer's network. It can be run as a Windows service or as a UNIX/Linux daemon. Licensing Server can also be started as an application via the command line:

```
java -jar ProtectionLS.jar
```

The following screenshot illustrates sample output when Licensing Server has been started via command line:

Figure 2: Starting the Licensing Server via command line

2.2.1 Microsoft Windows

The Licensing Server Windows service is registered by the Licensing Server installer. It is also possible to install services from the command line by passing `/install` to the `ProtectionLS.exe` service executable. If the Licensing Server service is installed via command line then the default start mode of the service can be determined as follows:

- Start on demand - In start on demand mode, the Licensing Server service must be manually started by the user in the Windows service manager. This start-up mode can be forced on the command line if the user passes `/install-demand` to the Licensing Server executable instead of `/install`.
- Auto start - In auto start mode, the Licensing Server service is always started when Windows is booted. This installation mode can be forced on the command line if the user passes `/install-auto` to the Licensing Server executable instead of `/install`.
- Windows services are always uninstalled by passing `/uninstall` to the Licensing Server service executable. All command line switches also work with a prefixed dash instead of a slash (like `-uninstall`) or two prefixed dashes (like `--uninstall`).

To start or stop the Licensing Server service, the `/start` and `/stop` options are available respectively. In addition, a `/status` argument shows if the service is already running. The exit code of the status command is `0` when the Licensing Server service is

running, `3` when it is not running and `1` when the state cannot be determined (for example when it is not installed on Windows).

As a second parameter after the `/install` parameter, you can optionally pass a service name. In that way you can install the Licensing Server service with a different service name than the default name. Protection! Licensing Server will allow only a single running service instance regardless if multiple services with different names were installed. You will not be able to use the same Licensing Server service executable to start multiple services with different names.

Note	If you install Licensing Server service with a different name then its default name then you also have to pass the same service name as the second parameter if you use the `/uninstall`, `/start` and `/stop` parameters.

2.2.2 Unix

For Unix service executables, the `start`, `stop` and `status` arguments are available for the Licensing Server start script (by default script is called `ProtectionLS` and it is located in the `/bin` directory). The `stop` command waits for the Licensing Server service to shut down. The exit code of the status command is `0` when the Licensing Server service is running and `3` when it is not running.

On Unix-like platforms, the Licensing Server start/stop script has to be integrated into the boot sequence by the administrator.

2.3 Shutting Down the Licensing Server

To shutdown the Licensing Server:
- If the Licensing Server is running as a Windows service or as a UNIX/Linux daemon - use an appropriate OS command to stop the service/daemon or by passing /stop to the Licensing Server service executable.
- If the Licensing Server started as an application via the command line then to shut down the server send an appropriate interrupt command (e.g., *Ctrl+C)*.
- You can also stop the Licensing Server service via the Licensing Server Management Console. In the Management Console click on Summary shortcut on the Shortcuts Side Bar and in the Server Control panel click the "Shutdown" button (see the topic "*Shutting Down the Licensing Server via Management Console*" later in this Guide).

2.4 Analyzing the Licensing Server Logs

All of the Licensing Server activities are written into the log files located in the *<Licensing_Server_Install_Folder>/logs* folder. The logs are rolled over daily by default where the older (rolled over) logs are automatically renamed using the following naming convention <log_name.log.yyyy-mm-dd>.

There are 2 (two) server logs – *access.log* and *error.log*. Access log contain all of the Licensing Server start/stop events, all licensing activities and errors (e.g., when a port is occupied by a different service). Error log just contains all of the Licensing Server errors.

It is possible to configure and fine tune the Licensing Server logging sub-system by modifying the *<Licensing_Server_Install_Folder>/conf/log4j.properties* file. Please

consult the log4j documentation (http://logging.apache.org/log4j/docs/) for more information.

Chapter 3

Working with the Licensing Server Management Console

This topic outlines how to use the Licensing Server Management Console to manage Licensing Servers.

3.1 Connecting to the Licensing Server(s)

The Licensing Server Management Console allows the administrator to connect to multiple running instances of the Licensing Server(s). If there is no connections setup then "New Connection" dialog would be launched automatically on the first run of the Licensing Server Management Console.

To set up a new connection the following steps needs to be performed:
1. Click the "New Connection" button on the Management Console toolbar or by selecting the *File|New Connection* menu item.
2. In the New/Edit Connection Dialog shown on the screen enter the following attributes:
   a. Name – Unique name for connection. This name will be shown in the connections drop-down on the Management Console toolbar;
   b. Description – detailed description of the connection;
   c. Host – specifies hostname or IP address of the Licensing Server;
   d. Port – specifies port of the Licensing Server;
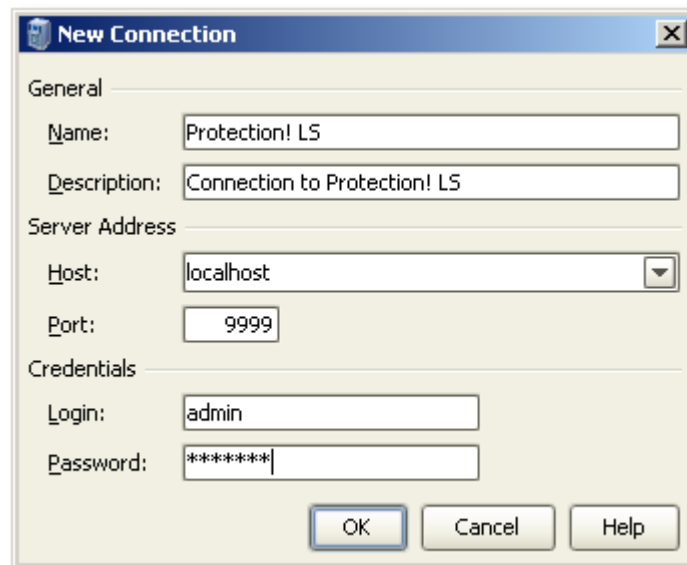   e. Login and Password required for authentication.

Figure 3: New Connection dialog

3. Press the OK button to close the dialog and to create a new connection.

For the fresh install, you can use one of the predefined users to specify login information (leave password blank):

a. **admin** – administrator with full access permissions.
b. **manager** – manager with full access permissions except ability to manage Licensing Server users.
c. **user** – with read-only access permissions.

When a new connection is created it will be shown in the Summary Screen | Connection dashboard outlining connection parameters.

Appropriate buttons on the application toolbar or in the Summary Screen | Connection dashboard allows the following actions:

1. Connect – connects to the specified Licensing Server;
2. Edit – Launches "Edit Connection" dialog for connection parameters modification;
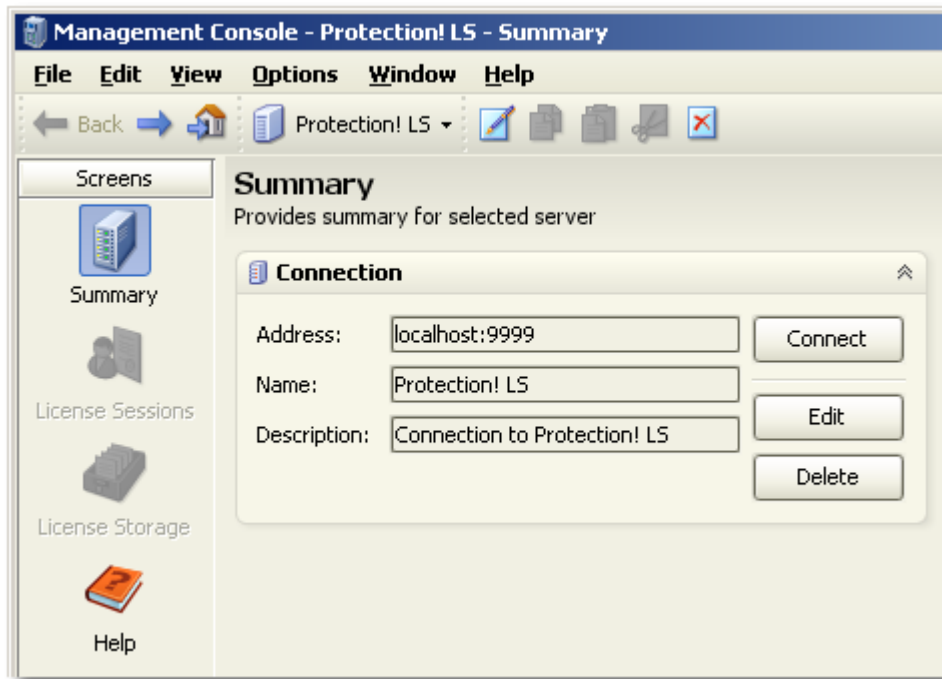3. Delete – Deletes selected connection.

Figure 4: Connection Summary

It is possible to change the current connection using the connections drop-down on the application toolbar or via the *View | Connection* menu.

3.2 Summary Screen

This screen provides the ability to view Connection information, Licensing Statistics and the Licensing Server summary and to perform certain actions via the set of dashboards.

To activate the Summary screen select the Summary icon on Shortcuts Side Bar or use the *View | Summary* menu item.

3.2.1 Connection Dashboard

This dashboard provides the summary for selection connection and provides the following actions via corresponding buttons:

1. Connect – connects to the specified Licensing Server;
2. Edit – Launches "Edit Connection" dialog for connection parameters modification;
3. Delete – Deletes the selected connection.

3.2.2 Licensing Statistics Dashboard

This dashboard provides the ability to view licensing statistics for the selected scope (e.g. for today or several days ago).

The Scope combo box allows choosing the desired scope to view.

The requests statistics shows:
a. Succeeded – number of succeeded requests;
b. Failed – number of failed requests;
c. Errors – number of errors that occurred during requests processing.

The active session's statistics shows:
a. Current – number of active license sessions;
b. Max – maximum number of active license sessions.

3.2.3 Server Control Dashboard

This dashboard optionally shows information about the status of the Licensing Server in the yellow message box on the top and provides the ability to shut down the Licensing Server and to disable/enable licensing activities.

Shutting Down the Licensing Server

The Shutdown button allows to remotely shutdown the Licensing Server. After clicking the Shutdown button the current connection will be closed and the Licensing Server shutdown will be initiated.
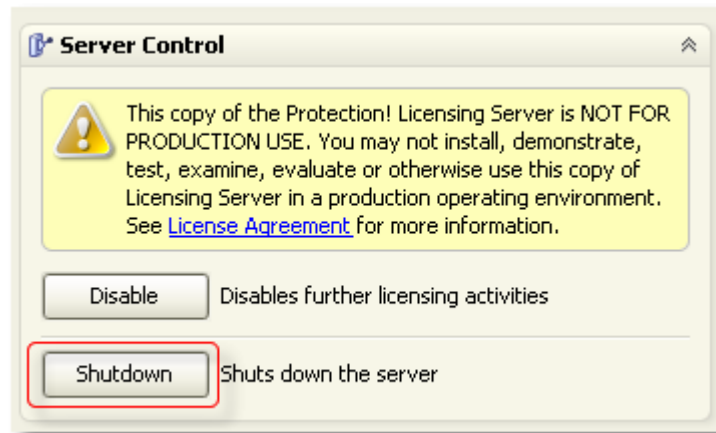

Figure 5: Shutting Down the Licensing Server Instance

Note

Current implementation has no ability to start/re-start the Licensing Server after the shutdown process has been initiated.

Disabling/Enabling Licensing Activities

In some cases the Administrator needs to temporarily disable all licensing activities without shutting down the Licensing Server. This is especially useful if the Licensing Server maintenance needs to be performed such as user and user group's management, access control list management, etc. The Disable button allows disabling all licensing activities.
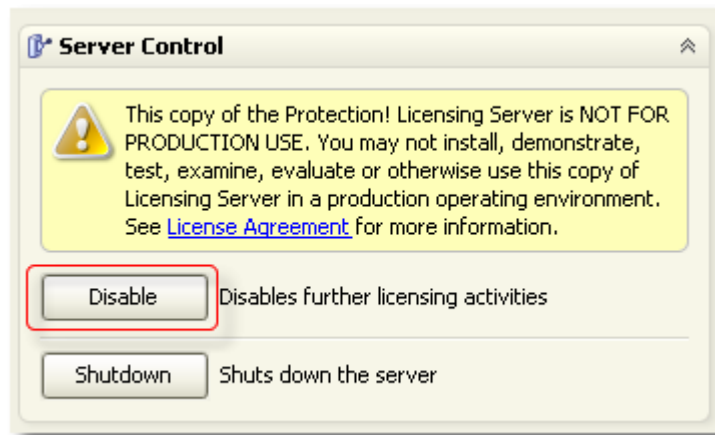

Figure 6: Disable all licensing activities

After pressing the Disable button the confirmation dialog will be shown on the screen providing optional reason why all licensing activities will be disabled.
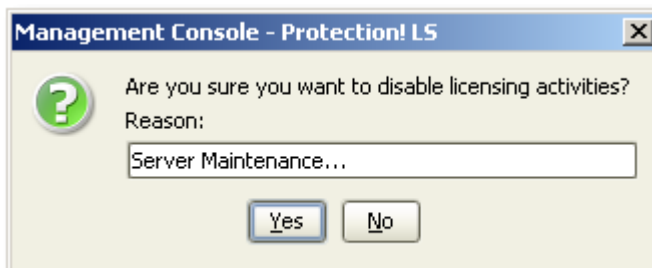

Figure 7: Confirmation dialog with optional reason

Any new license lock requests from the clients would not be fulfilled while the Licensing Server in the disabled state. Any client application trying to acquire license lock from the licensing server will see the following dialogs:
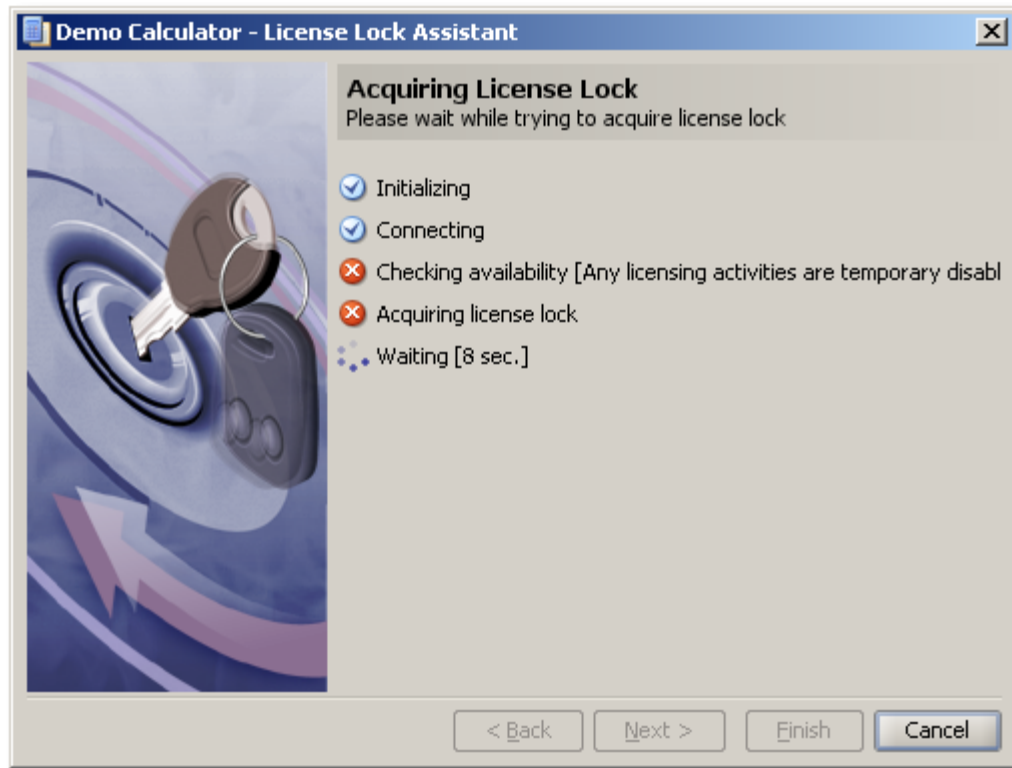
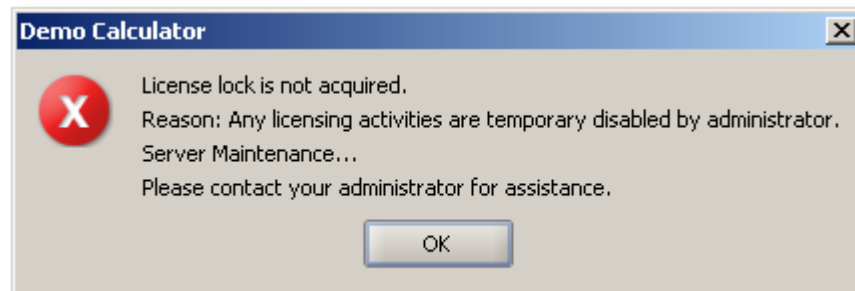**Figure 8: License Lock assistant – unable to acquire lock**

Figure 9: Client application message

| Note | The disabled state of the Licensing Server is not persisted and will be cleared during the Licensing Server re-start. |

When Licensing Server is in the disabled state the Enable button allows restoring licensing activities. After clicking the Enable button all licensing activities will be immediately enabled.
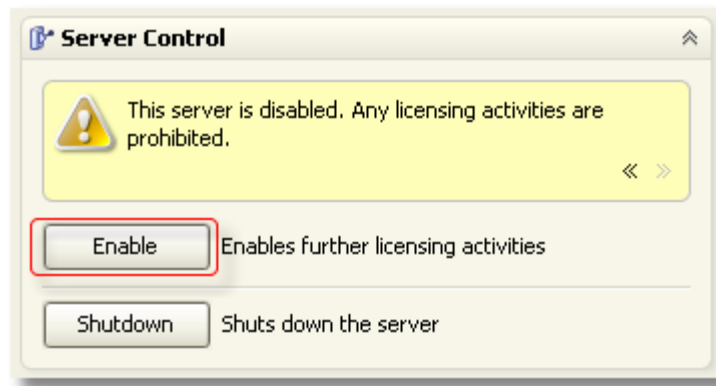
Figure 10: enable all licensing activities

3.2.4 Server Summary Dashboard

This dashboard shows information about resources used by the Licensing Server. This information includes:
1. Up time;
2. CPU usage;
3. Threads statistics;
4. Memory statistics;

3.3 License Storage Screen

The License Storage screen provides the ability to maintain licenses available for distribution and to allocate them to the users. To activate the screen select the License Storage icon on Shortcuts Side Bar or use the *View | License Storage* menu item.

3.3.1 Maintaining License Storage

The Licensing Server Management Console provides the ability to maintain the License Storage. License Storage is designed to store products and their licenses in one uniform location (container) and optionally allocate license users and/or license user groups with the license. The License Storage allows holding and storing an unlimited number of products and their licenses.

Note	Products must first be imported into the License Storage before the licenses for these products could be imported.

To import products:
1. Choose the *File | Import Product* menu item;
2. Navigate to the supplied by vendor product file (e.g. `DemoCalc.product`) and select it;
3. Press OK to import selected product.

Tip	Product (e.g. `DemoCalc.product`) is actually a Launcher for corresponding product. To get it - build a Launcher file (using Protection! Developer Control Center or Protection! Builder Utility) for a Launcher Builder Configuration with Encryption turned OFF.

To view imported products and their versions use the Products dialog that can be shown using the *View | Products* menu item.

To import licenses:
1. Choose the *File | Import Licenses* menu item;
2. Navigate to supplied by vendor license(s) and select it ('em);
3. Press OK to import selected license(s).

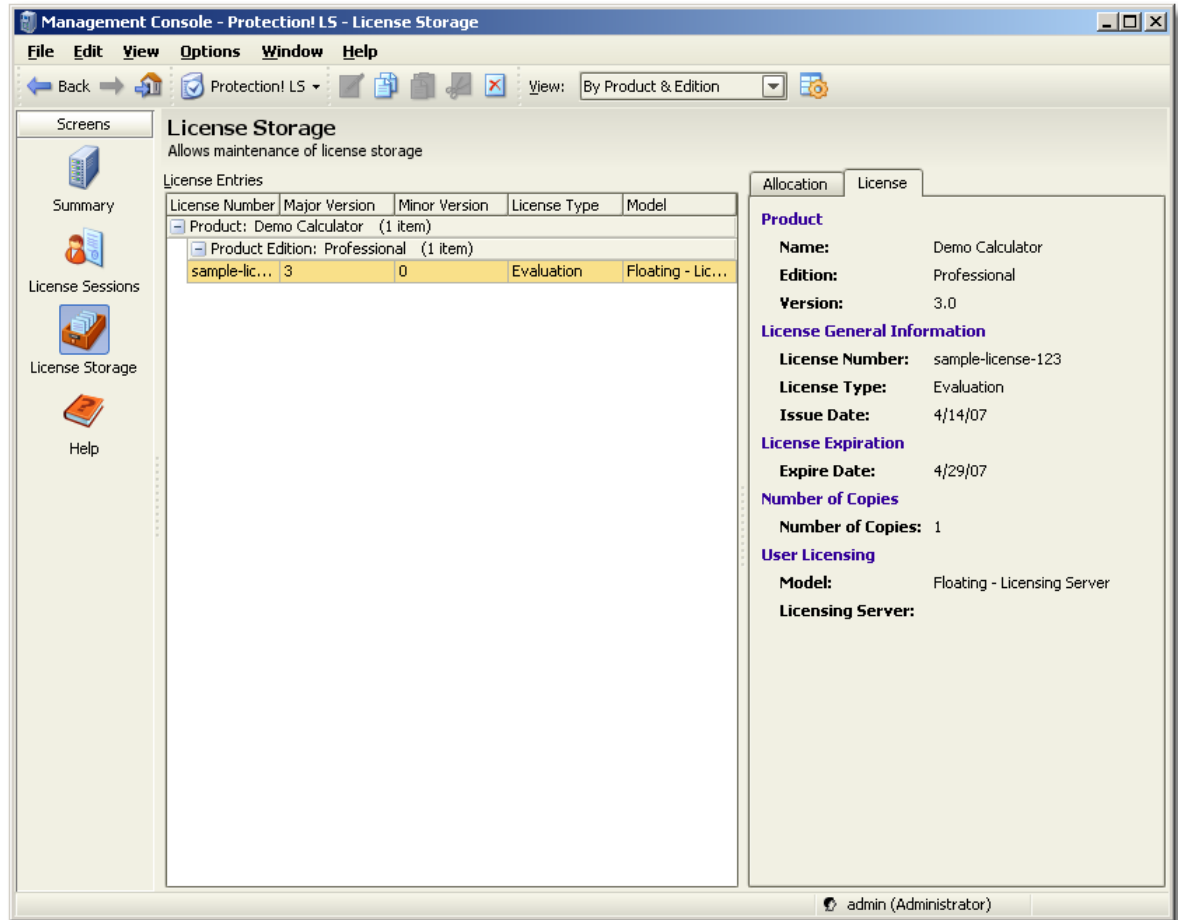Details for selected license could be seen on the License Tab at the right of the screen.

Figure 11: License Storage Screen – License Information

3.3.2 Maintaining License Users and License User Groups

The Licensing Server Management Console provides the ability to maintain list of license users and license user groups that could be associated with the licenses in the License Storage.

Maintaining License Users

1. Click the *Edit | License Users* menu item;
2. The License Users dialog will be shown on the screen displaying the list of available license users;
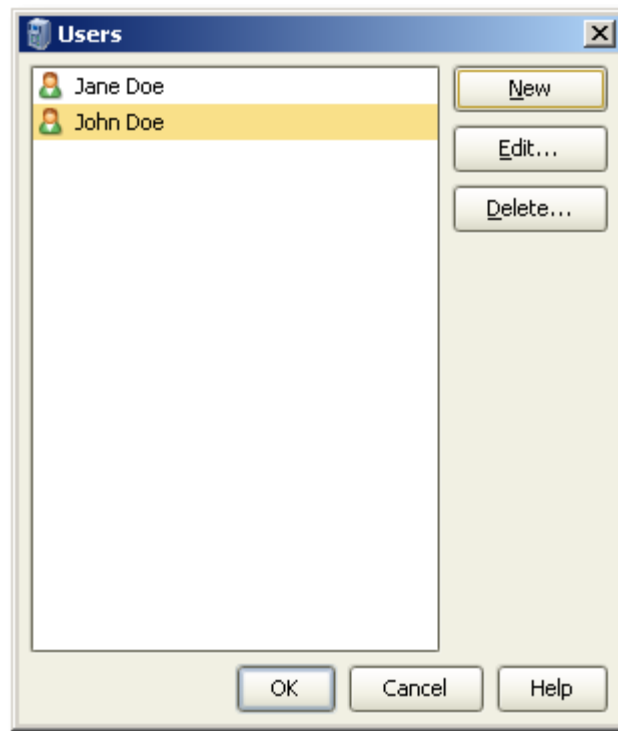
Figure 12: License Users Dialog

3. Choose the appropriate option from the License Users Dialog:
   a. New – to create new user;
   b. Edit – to modify parameters for selected user;
   c. Delete – to delete selected user.

There are several attributes that could be specified for the license user:
1. Name – specifies user descriptive name;
2. User Name – specifies user's system name. In general this would be the same name (sometimes referred to as "User Id") that is used by the user as identification and is required when logging on to a computer system;
3. Host – specifies user's computer name;
4. IP address – specifies user's private IP address. IP addresses are written in "dotted decimal" notation, which is four sets of numbers separated by periods; for example, 192.168.1.1. Currently only the traditional IP address (IPv4) is supported;
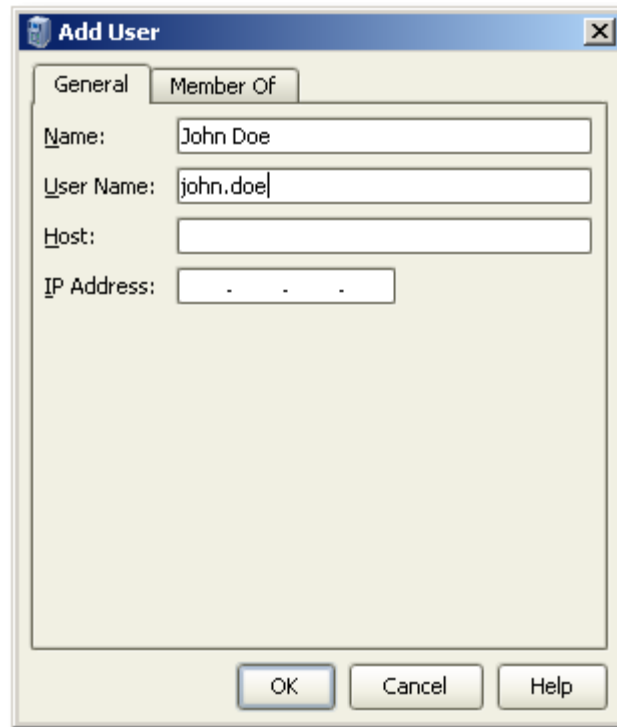5. Member Of Tab – provides ability to associate the user with the License User Group.

Figure 13: Add User Dialog

Maintaining License User Groups

1. Choose *Edit | License User Groups* menu item;
2. The License User Groups dialog will be shown on the screen displaying the list of available license user groups;
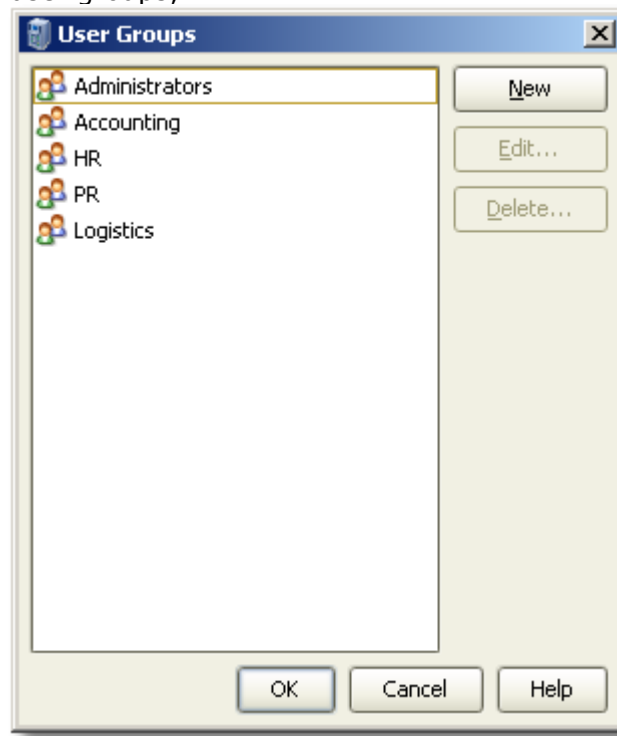

Figure 14: License User Groups Dialog

3. Choose the appropriate option from the License User Groups Dialog:
   a. New – to create new group
   b. Edit – to modify parameters for selected group
   c. Delete – to delete selected group

There are several attributes that could be specified for the license user group:
1. Name – specifies user group descriptive name;
2. Host – specifies range of user's computer names virtually belonging to the group; Usual * and ? wildcards can be used there. For example, specifying the * as host name allows defining the user group that virtually contains all users from any hosts;
3. IP address – specifies range of private IP address of users virtually belonging to the group. IP addresses are written in "dotted decimal" notation, which is four sets of numbers separated by periods; for example, 192.168.1.1. Currently only the traditional IP address (IPv4) is supported. Usual * and ? wildcards can be used there;
4. Members – provides the ability to associate users with the License User Group.

Figure 15: Add License User Group | General

Figure 16: Add License User Group | Members Page

3.3.3 Allocation of Licenses for Specific Users and/or User Groups

The Licensing Server Management Console provides the ability to allocate license users and license user groups to the licenses in the License Storage that allows defining which license(s) are available to which users.

To associate a license user and/or license user group with the license:
1. Select a specific license in the License Entries Grid;
2. Click the Add User button ;
3. Select appropriate license user(s) and/or license user group(s) from the Add Users / Groups dialog. Multiple selections could be done by either holding a *Control* or a *Shift* keyboard key.
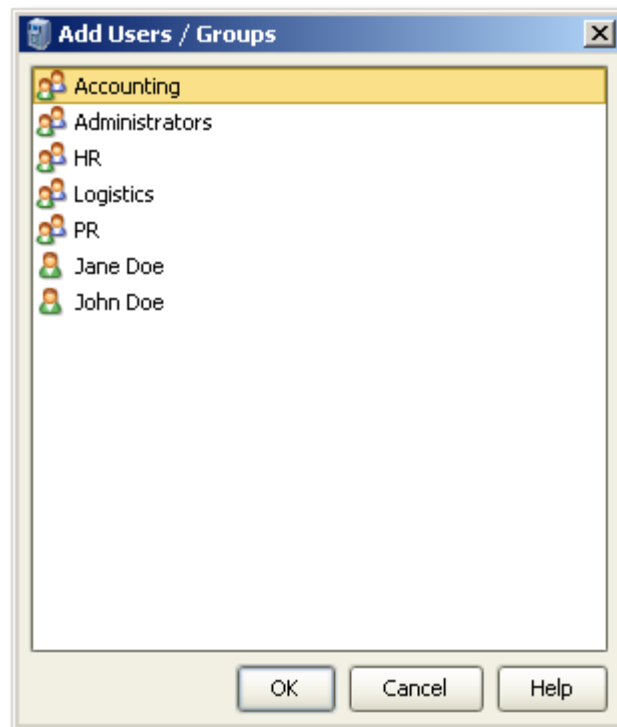
Figure 17: Associate License Users / Groups with the license

To remove the association between the license users/groups and the license select desired users/groups and press the button.
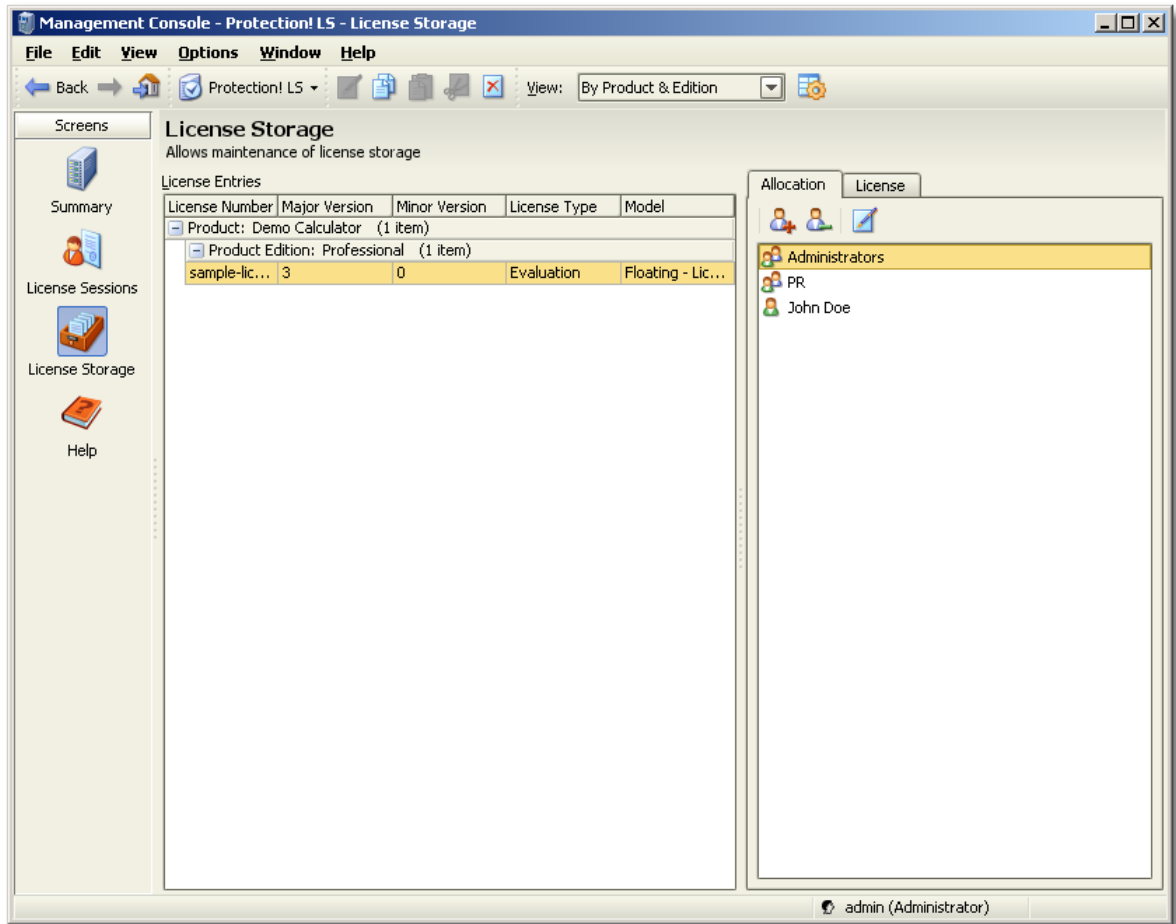
Figure 18: License User and User Group Allocation

3.4 License Sessions Screen

The Licensing Server Management Console provides the ability to visually monitor all currently running license sessions. To activate the screen select the License Sessions

icon on Shortcuts Side Bar or use the *View | License Sessions* menu item.

3.4.1 Monitoring License Sessions

The License Sessions Grid shows all the currently running License Sessions. It is possible to view details for a selected License Session using the Details Pane.
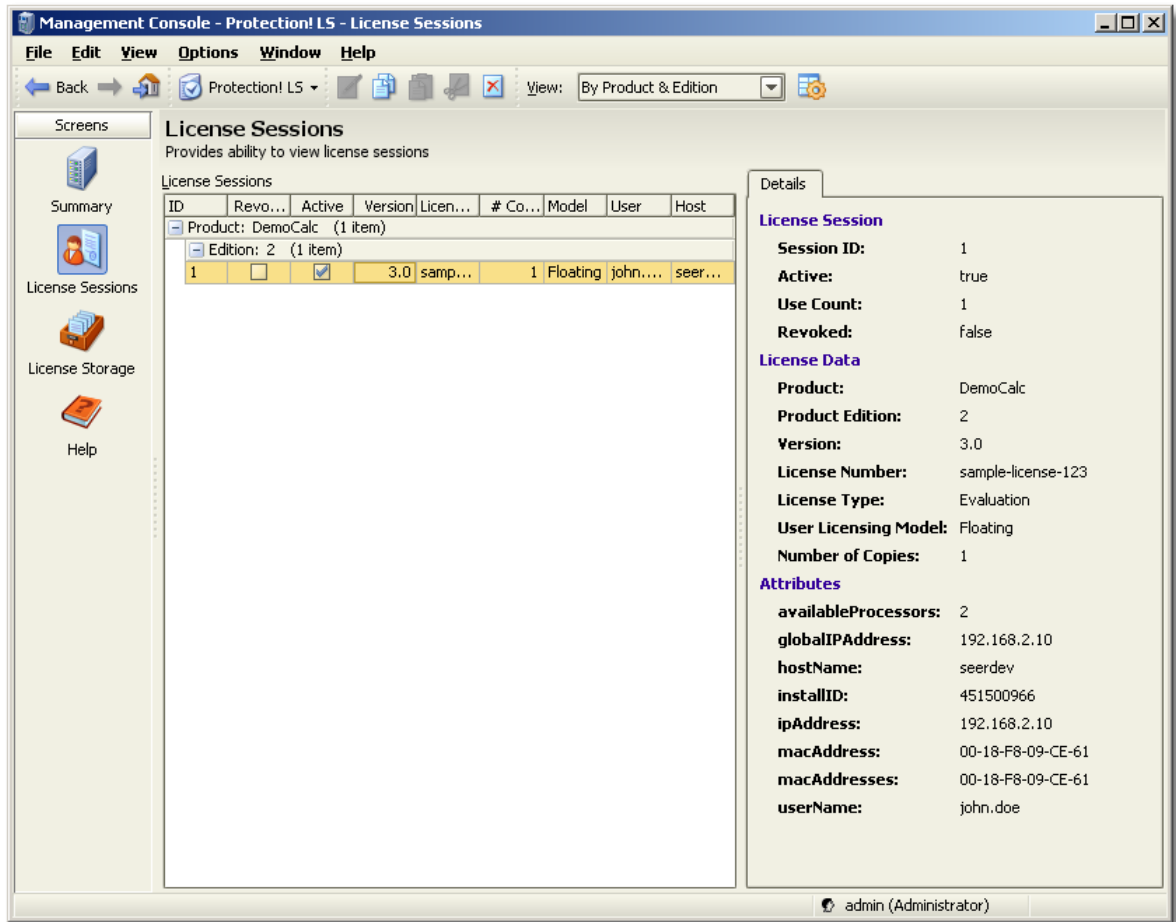
Figure 19: License Sessions Screen

3.4.2 Revoking License Sessions

The Licensing Server Management Console provides the ability to revoke any of the currently running license sessions.

Note	If the License Session to be revoked is in use – the actual revocation will be replaced by a corresponding revocation request. If revocation request was placed then the corresponding License Session will continue to run until request is handled by the client application. It is up to client application implementation how to handle such requests. They could be accepted (leading actual revocation) or simply ignored e.g. based on the users' input.

To revoke license sessions:
1. Navigate to the desired license session in the License Sessions Grid;
2. Click Delete Icon [X] on the Management Console toolbar
3. In the confirmation dialog provide optional reason why specific license session needs to be revoked.
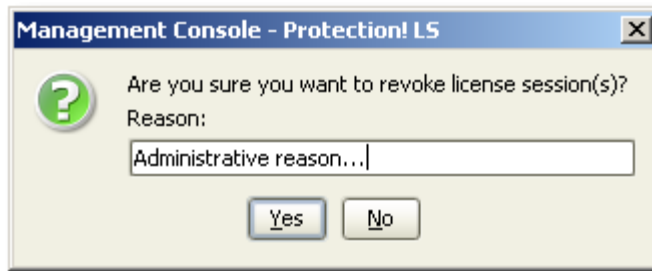
Figure 20: Revoke License Session Confirmation Dialog

The client application for which the license session has been revoked would receive the following notification:

Figure 21: License Sessions Screen

3.5 Managing Licensing Server Users

The Licensing Server Management Console provides the ability to manage Licensing Server system users. Only users with administrative privileges are able to maintain Licensing Server users. There are 3 (three) type of server users:

- *Administrator* – Has full Licensing Server and Management Console permissions;
- *Manager* – Same permission as *Administrator* user but can not manage Licensing Server Users;
- *User* – Can only view (read-only) Server activity and License Storage contents. Users with the *User* privileges can not disable Licensing Server licensing activities nor do they can shutdown the Licensing Server.

To maintain server users:
1. Choose the *Edit | Server Users* menu item
2. Choose appropriate option from the License Users Dialog:
   a. New – to create a new user;
   b. Edit – to modify parameters for the selected user;
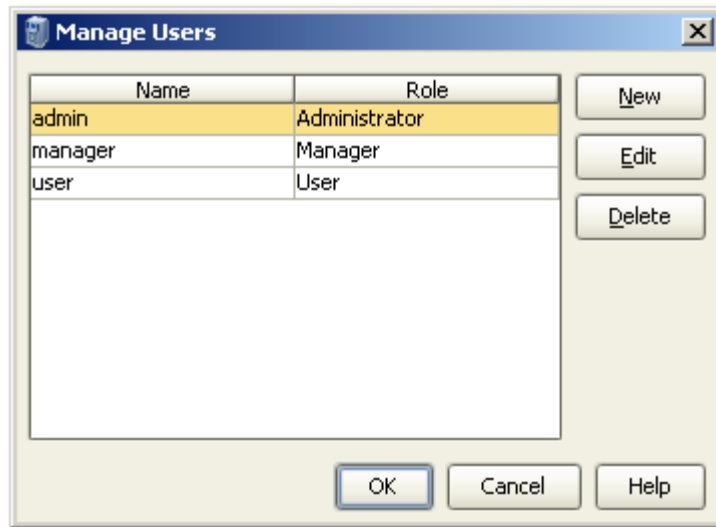   c. Delete – to delete the selected user.

Figure 22: Manage Server Users Dialog

There are several attributes that need to be specified for the Server user:
1. Name – specifies user login name;
2. Password – specifies user's password;
3. Confirm Password – confirms specified user's password;
4. Role – specifies user's role.

Figure 23: Manage Server Users Dialog

3.6 Maintaining Access Control List

Protection! Licensing Server provides functionality of the Access Control List (ACL) through the common concept of the white and black lists. An access control list is an access matrix, containing the access rights of various users, systems, etc to the Licensing Server processes. Licensing Server's white list is a list of users, systems, etc that the Licensing Server is configured to accept. All licensing activities from the entries in the white list are allowed. White list is a contrast with the blacklist where given users, systems, etc are considered off limits and no licensing activities are allowed to any entry in the blacklist.

Licensing Server Management Consol provides administrator with the ability to maintain several different access control lists:
1. *Global* – an access control list that is applicable to any licensing activity;

2. *Lock License – Named User* – an access control list that is applicable only to licensing activities that are associated with the requests to obtain license lock for the licenses with the Named User Licensing models only;
3. *Lock License – Floating User* – an access control list that is applicable only to licensing activities that are associated with the requests to obtain license lock for the licenses with the Floating User Licensing models only;
4. *Obtain License* - an access control list that is applicable only to licensing activities that are associated with the requests to obtain a license from the Licensing Server.

Each of the above access control lists has its respective white lists and black lists. To maintain either white list or black list:
1. Choose desired ACL using the *Edit | Access Control List* menu;
2. Choose the *White List Conditions* or *Black List Conditions* menu item;
3. In the "Conditions" dialog create either new condition or new complex condition. Complex conditions allow using Boolean AND/OR logic to build hierarchical condition tree.
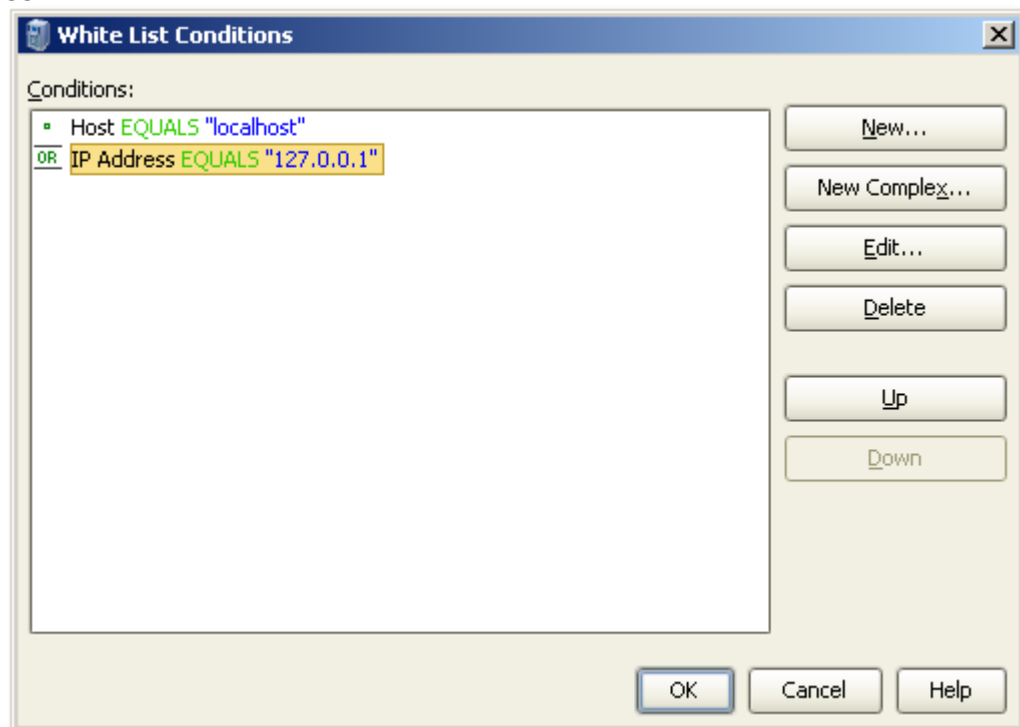

Figure 24: White List Conditions dialog

The New Condition dialog provides the following parameters to create condition:

1. Field – supports the following parameters:
    a. Host
    b. User Name
    c. Private IP Address
    d. Public IP Address
    e. MAC Address
    f. MAC Addresses
    g. Install ID
    h. Available Processors
2. Operation – supports the following parameters:
    a. Equals
    b. Not Equals
    c. Has Value
    d. Has No Value
    e. In List
    f. Not In List
    g. Like
    h. Not Like
    i. Starts With
    j. Not Starts With
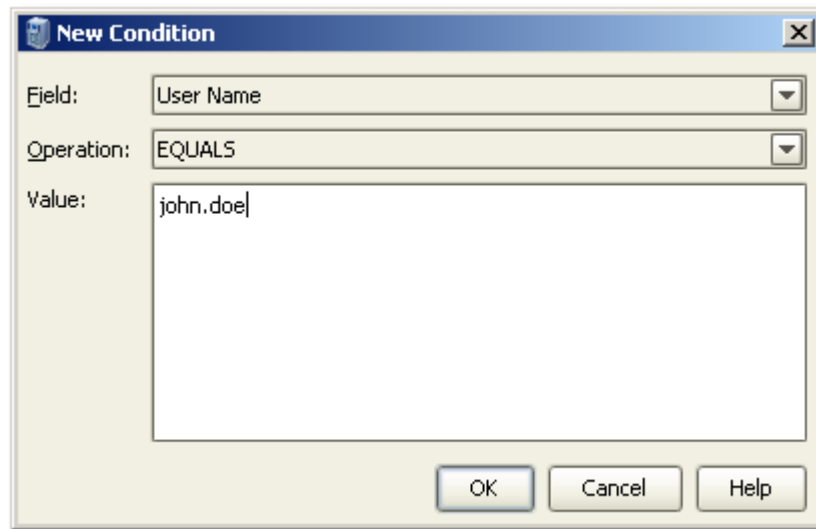3. Value – specifies value or a list of values that will be checked.
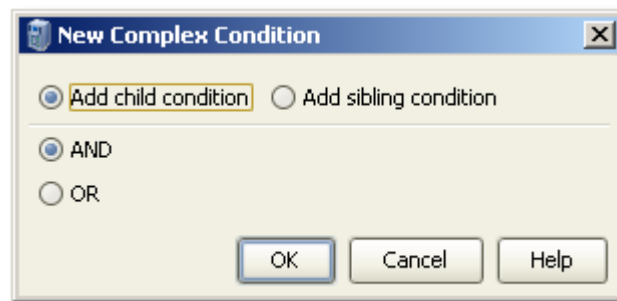

Figure 25: New Conditions Dialog

Figure 26: New Complex Conditions Dialog

As part of the continuing effort to improve our product, we welcome your comments, suggestions and general feedback regarding the product.

If you have questions about Protection!, please feel free to contact us for further information at protection@jproductivity.com, or visit our site at: http://www.jproductivity.com.

If you discover any issues or defects in Protection! please send the description of them to protection@jproductivity.com.