Infor Solution License Manager Administration Guide

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Contents

About this guide

This document is an Administration guide that describes the maintenance tasks for Solution License Manager (SLM) as well as giving more detailed information on the use of the SLM commands as well as manual installation and configuration.

Intended audience

This document is intended for system administrators.

Related documents

You can find the documents in the product documentation section of the Infor Xtreme Support portal, as described in "Contacting Infor".

- *Infor Solution License Manager - Installation and Configuration Guide (U9200)*

Contacting Infor

If you have questions about Infor products, go to the Infor Xtreme Support portal at http://www.infor.com/inforxtreme.

If we update this document after the product release, we will post the new version on this Web site. We recommend that you check this Web site periodically for updated documentation.

If you have comments about Infor documentation, contact documentation@infor.com.

Introduction

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The Solution License Manager (SLM) is the license manager for the majority of the Infor LN and Infor Baan products. SLM installation is mandatory.

Definitions, acronyms, and abbreviations

Term	Definition
API	Application Programming Interface
SLMHOME	Environment variable for SLM installation directory, which is `%SLMHOME%` for Windows and `$SLMHOME` for Linux and UNIX.
BCLM	The former name of the SLM.
Concurrent User License	A user license for use by a pool of users.
DNS	Domain Name Service
HAS	High Availability Support
Heavy User License	A named user license for users in the heavy user role. The adopting application specifies what this role implies.
License file	The XML data file that contains all license information of the license agreement with Infor, such as the version number, the activation key, the customer, the host IDs, and the various application licenses
Light User License	A named user license for users in the light user role. The adopting application specifies what this role implies.
Maintenance Mode	Status of an SLM Server when it's running but not active to validate license requests.
MMC	Microsoft Management Console
Named User License	A license type in which a product license is linked to specific users.
PROGRAMDATA	Windows user profile directory.

Term	Definition
SLM server	The SLM engine that handles license requests and management requests. An instance of an SLM server, is always part of an SLM Cluster. Each SLM server requires a unique installation and configuration and can be a master of a slave SLM server.
Server License	A license type in which a product license is linked to specific servers.
Servers File	The XML data file with all the servers of a Server License, including the name and identification number of the server machine.
SLM	Solution License Manager.
SLM Cluster	An SLM Cluster consists of one to four SLM servers and acts to the applications that require licensing as one license server, validating license requests against one license file and license key. The SLM Cluster contains one master SLM server and zero or more slave SLM servers. Having multiple SLM servers in an SLM Cluster helps enable high-availability and load-balancing.
SLM MMC snap-in	A graphical user interface that runs as a snap-in in Microsoft Management Console, in MMC and Windows only, to manage the SLM.
SLA	Software License Agreement: The contract between the customer and Infor in which is stated, among other things, the applications, the type of licensing, and the amount of licenses. Usually, you can find that information in Schedule A of the SLA.
UI	User Interface
Users File	The XML data file with all the users of a Named User License for a particular product, including the user name, the user type, and the number of licenses a user is permitted to use.
XML	Extensible Markup Language

Maintenance tasks

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There are some maintenance tasks you must perform on a regular basis.

License expiration

It is recommended that you regularly check the log files at the SLM server side for expiring product IDs as well as for product IDs that run out of licenses.

The SLM server checks each day for product IDs for which the license is due to expire within 30 days. If so, a warning message is written to the log.

On UNIX, the logs are stored in `$SLMHOME/log`.

On Microsoft Windows, you can access the logging via the event viewer.

Be aware that each SLM server in an SLM cluster has its own logging.

Maintenance license

Product-id 10365 “Infor365 maintenance contract” is a special license. Even if the end-date for this product id is passed you must keep this entry in your license file. Infor365 maintenance is used by Infor products to check if patches installed are within your maintenance contract.

Single point of maintenance

Do not adjust the license configuration of an SLM Cluster from two places at one time. SLM configuration is not equipped for parallel configuration management. It will detect it when parallel updates are taking place and give warnings on that, but you need to resolve the problems yourself in that case.

To prevent data inconsistency, SLM uses license version numbers as an implicit locking mechanism. Initially, the version number of the license file can be any number.

Each time you activate or modify and save a data file to the server, the version number increments by one. The server will be locked for all files with a version number that differs from the new version number. As a result, if more than one person modifies the license data from several points, and one submits changes to the server, the server is locked to all persons except the one who made the modification.

Backup and restore SLM configuration

The SLM server package stores license information in these folders:

- On UNIX:

  `$SLMHOME/license`

  If the environment variable SLMHOME is not set, the default path is used: `/usr/slm/license`.
- On Windows:

  `%PROGRAMDATA%\Infor\Slm\license`

  Note: The %SLM_RUNTIME% environment variable can be used to point to another location.

To back up the license information, simply tar or zip this directory and the directory's underlying files and directories.

In case of a hardware failure that corrupts the SLM installation, reinstall the SLM server and client packages so that all environment settings and registered shared libraries (NT) are as before the hardware failure. Restore the backed up directory after you installed the SLM server package and restart the SLM server process.

In addition, ensure the files are owned by the user who runs the SLM server process, before and after the crash.

The activation key of the license file is bound to the hardware. Therefore, if a change occurs in the hardware, the SLM server can refuse the former license file and stop running immediately. To check if you require a new activation code, run the program SlmId and compare the number the program returns with the ID number specified in the host part of the common record of the license file.

```
$ SlmId
Hostname: server1
Bclm ID: 123556
$ cat $SLMHOME/license/1/6005/license.xml
<?xml version="1.0"?>
<license
 layout="1"
 version="59">
 <common>
                 <activation
```

```
key="2ee028f5a2d15a1427645973224f8a0c"
frozen="No"
                          />
                           <customer
name="Customer Name."
code="230260"
number="910"
editState="active"
               />
               <option
HAS="No"
confirmTime="600"
clusterName="SLMCluster1"
clusterId="2437582664"
clientUpdate="Yes"
editState="active"
               />
               <host
name="server1"
id="123556"
port="6005"
editState="active"
               />
               ....
```

If both the ID numbers are equal, the SLM server process will run without modification. If the ID numbers differ, you must change the license file and reapply for a new activation code. Because the SLM server stops immediately after the `license.xml` file is read, you cannot use the MMC snap-in to change the host ID.

Changing the license file

When the SLM server refuses the former license file and stops running, you cannot use the MMC snap-in to change the host ID.

To change the file:

1. Create a backup of the `... /license/1/6005/license.xml`. If you used another port than 6005, substitute this number with the port number you use.
2. Open the `.../license/1/6005/license.xml` file with a text editor.
3. Replace the string behind the key attribute with an empty string:

   key="2ee028f5a2d15a1427645973224f8a0c"

   Change to:

   key=""

4 Substitute the host ID and name attributes with the numbers produced by `SlmId`:

```
<host
 name="server1"
 id="78990"
 port="6005"
 editState="active"
/>
```

5 Change all lines with:

`editState="active"`

to:

`editState="add"`

6 Save the changed file to `../license/1/6005/license.xml`.

7 Start the SLM server process. The process continue to run, but will not honor any license request.

8 Send the changed request file to http://www.infor.com/inforxtreme to request a new activation code.

9 Use the MMC snap-in to send the new activation code to the SLM server process.

Back up the `$SLMHOME` environment again if the SLM server accepts the new activation code. The SLM server process can now service license requests.

Monitoring an SLM Server

SLM provides tooling to monitor license usage. Keep in mind that this monitoring information is SLM Server related. If an SLM Cluster contains more SLM Servers you will need to combine the monitoring information of those servers to get insight in the actual license usage.

The syntax of the commands to retrieve monitoring information from the specified server: `SlmCmd -mon… <host> [-port <port number>]`

- -montts: Retrieve monitoring totals.
- -mondts: Retrieve monitoring details.
- -monsts: Retrieve monitoring statistics.

Monitoring a license server provides you information about which licenses, and how many licenses, are used by whom. The totals, argument -montts, only provides an idea of how many licenses are currently being used. The details, argument -mondts, provides license information about individual users and servers.

How to receive detailed statistics from the license server orbit is show in this example:

```
C:\>SlmCmd -mondts orbit
Retrieving monitoring data from license-server.
        License-server host     : orbit
```

```
        License-server port     : 6005
        Monitoring type         : Details
Result:
<?xml version="1.0"?>
<details
        date=" Fri Apr 06 16:34:28 2007"
        host="orbit"
        port="6005"
        mode="master">
        <desktopLicense
                count="0"
        />
        <concurrentLicense
                count="1">
                <product
                        id="6013"
                />
        </concurrentLicense>
        <userLicense
                count="1">
                <product
                        id="6017"
                />
        </userLicense>
        <serverLicense
                count="1">
                <product
                        id="6079"
                        count="1">
                        <user
                                user="d:/baan"
                                desktop="cnl08447vm"
                        />
                </product>
        </serverLicense>
</details>
```

SlmServer program (SLM Server)

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The `SlmServer` program is the SLM server.

On Microsoft Windows, `SlmServer` runs as a service process, while on other platforms SlmServer runs as a daemon process. The method to start an SLM server on a UNIX computer differs from that on a Windows computer.

On Windows

The license server runs on Windows as a service process. The service must be registered at the service manager before you can start this service. With the SlmServer command, you can install (register), start, stop, or remove (de-register) a license service at the Windows service manager:

Command	Description
-install	Install (register) license service into the service manager.
-start	Start (a registered) license service.
-stop	Stop a running license service.
-remove	Remove (deregister) license service from the service manager.
-noservice	Start license server as a foreground application.
-domain <domain> -user <user> -password <passwd>	The license service runs in the context of the given domain / user.
-s[lave]	Start as a slave server (default = master server).
-p[ort] <portNumber>	Listen on port <portNumber> (default = 6005).
-up[ort] <udpPort>	Listen on UDP port <udpPort> for broadcast message (default = 6005).
-?, -u[sage] or -h[elp	Display Help/usage information

Command	Description
-svrArgs	Display additional server arguments that can be issued during license service startup.

The server arguments are preceded by double hyphens (--).

The use of the server arguments is listed in this table:

Command	Description
-l(og) <file>	Switch on and send logging to <file>. Use "\\" for path separation, for example: c:\\temp\\logfile.
-a(ppend)	Append logging to existing log file.
-maxconn <num>	Set maximum number of connections that the server can handle to <num>.
-set <var>=<val>	Set environment variable <var> to <val>. You can use this to set SLMHOME.
-?, -u[sage] or -h[elp]	Display help/usage information.

By default, you can install and start a license service that:

- Runs as a master server.
- Listens on port 6005 for license-request messages.
- Listens on UDP port 6005 for broadcast messages.

You can use the -slave, -port and -uport parameters to deviate from the defaults.

An SLM server listens on an UDP port for broadcast messages. The SlmConfig utility and the Installation Wizard send a broadcast message to that port to get a list of all running SLM servers.

The SLM server listens on UDP port 6005. To set a different port, use the -uport parameter. Set a different UDP port if an SLM server is already running on that same system. In that case, the default UDP port is in use.

The command to install the default server:

```
SlmServer -install
```

In the Windows Service Manager, this default server has the service name BCLMD_M and the display name 'Solution License Server'.

To remove the default server:

```
SlmServer -remove
```

The start argument can be directly combined with the install argument to install and start the license service at one time. For example, to install and start a slave server that listens on port 6010 use this command:

```
SlmServer -s -p 6010 -install -start
```

This command creates a service that has the service name BCLMD_S_06010 and the display name "Solution License Server". To remove this service use the same slave and port parameters again:

```
SlmServer -s -p 6010 -stop -remove
```

Note that to register (install) the server, SlmServer -install, you must have administrator's rights.

On UNIX

The SlmServer command starts a license server that handles license requests. By default, the server runs as a daemon process.

During startup the SlmServer needs to know:

- The TCP/IP port it has to listen on [default 6005].
- The mode it has to start in; master or slave [default master].
- The UDP port to listen on for broadcast messages {default 6005].

This information can be specified as parameters with the SlmServer command, or through the configuration file. If this information is not specified the SlmServer falls back on the default behavior.

Parameters of SlmServer

SlmServer –p <port> -s|-m –uport <port>

-p <port> : TCP/IP port to listen on

-s: slave mode.

-m: master mode.

-uport (port): UDP port to listen on for broadcast messages.

SlmServer configuration file

When no parameters are specified during the start of SlmServer it will search for the configuration file ${SLMHOME}/etc/servercfg.xml.

For example with the content:

```
<?xml version="1.0"?>
<!-- Configuration for SLM -->
<servercfg
 mode="master"
```

```
 port="6005"
/>
```

A SlmServer listens on an UDP port for broadcast messages. The SlmConfig utility and the Installation Wizard send a broadcast message to that port to view a list of all running SLM servers. By default, the SLM server listens on UDP port 6005. To set a different port, you can use the -uport parameter. Infor advises you to use the default UDP port if possible, because the Installation Wizard always sends a broadcast message on UDP port 6005. You only must set a different UDP port if an SLM server is already running on that same system; in that case the default UDP port is in use.

Without argument, the server is a master server. With the s argument, you can indicate that the server must act as a slave.

SlmServer has an argument to specify that all debugging or error output should be sent to a log file, l <*log file name*>. You can use another argument to indicate that the process must run in the foreground (f).

In the SlmServer command you can specify these parameters:

Command	Description
-s[lave]	Start as a Slave server.
-p[ort] <port number>	Listen on port <port number>.
-up[ort] <port number>	Listen on UDP port <port number> for broadcast messages.
-f[ront]	Run as a foreground process.
-k[ill]	Stop server process.
-l[og] <log file>	Log stdout/stderr (debugging) output to <log file>.
-a[ppend]	Append logging to existing log file.
-maxconn <num>	Set maximum number of connection that the server can handle to <num>.
-set <var>=<val>	Set environment variable <var> to <val>. You can use this to set SLMHOME.
-?, -u[sage] or -h[elp]	Display help/usage information
-v	Version information

To start a master SLM server that listens on port 6006 use this command:

```
SlmServer -p 6006
```

To start a slave server that uses the default port 6005 use this command:

```
SlmServer -s
```

To stop the server, you can simply stop the daemon. If the server does not use the default port you must add the port number:

```
SlmServer-p 6006 -k
```

Note that if the server program is not installed in its default location, ensure that the SLMHOME environment variable is set before you start the server.

SLM files and directories

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SLM uses many files and directories. Here is described where to find those files and directories and were they are used for.

On Windows

Default install directory for Windows:

`%SystemDrive%\Program Files\SLM`

%SLMHOME% is the environment variable that points to the SLM installation directory, referred to in this document as SLMHOME.

Purpose	File (%SLMHOME%\)	Used by
SLM message library	bin\SlmMsg.dll	Both
Machine Identification tool	bin\SlmId.exe	Client
SLM client test utility	bin\SlmClientTest.exe	Client
SLM client configuration utility	bin\SlmConfig.exe	Client
COM API	bin\SlmCom.dll	Client
Infor License Manager Server	bin\SlmServer.exe	Server
Command line administration tool	bin\SlmCmd.exe	Server
Java interface	java\com_baan_bclm.jar	Client

%PROGRAMDATA% is the Windows user profile directory.

Purpose	File (%PROGRAMDATA%\Infor\Slm)	Used by:
List of client files (input for SlmClientTest)	etc\ClientFiles.txt	Client
Servers Configuration template	etc\servers_template.xml	Client
Servers Configuration	etc\servers.xml	Client

Purpose	File (%PROGRAMDATA%\Infor\Slm)	Used by:
Used by SlmClientTest	etc\ServerFiles.txt	Server
Used by SlmClientTest	etc\ClientFiles.txt	Client
Server configuration information set during installation	etc\servercfg.xml	Server
Template for a users xml file.	etc\usr_template.xml	Server
Template for a servers xml file.	etc\srv_template.xml	Server
Template for a license xml file.	etc\license_template.xml	Server
Template for a desktops xml file.	etc\dtp_template.xml	Server
Directory for log files	log	Both
Directory for temporary files	tmp	Both
Directory for SLM license configuration files	license	Server

MMC snap-in files and directories

Windows Files	Directories
SLM MMC snap-in	bin\SlmSnapin.dll
Preconfigured MMC snapin	bin\SLM.msc

On UNIX

Default install directory for UNIX:

Note: /usr/slm

$SLMHOME is the environment variable that points to the SLM installation directory, referred to in this document as SLMHOME.

Purpose	File ($SLMHOME\)	Used by:
Machine Identification tool	bin\SlmId	Client
SLM client test utility	bin\SlmClientTest	Client
SLM client configuration utility	bin\SlmConfig	Client
Infor SLM Server	bin\SlmServer	Server

Purpose	File ($SLMHOME\)	Used by:
Command line administration tool	bin\SlmCmd	Server
Uninstall SLM software while keeping config files	Bin\SlmUninstall	Server
Java interface	java\com_baan_bclm.jar	Client
List of client files (input for SlmClientTest)	etc\ClientFiles.txt	Client
List of client files (input for SlmClientTest)	etc\ServerFiles.txt	Server
Servers Configuration template	etc\servers_template.xml	Client
Servers Configuration	etc\servers.xml	Client
Server configuration information set during installation	etc\servercfg.xml	Server
Template for a user xml file.	etc\usr_template.xml	Server
Template for a server xml file.	etc\srv_template.xml	Server
Template for a license xml file.	etc\license_template.xml	Server
Template for a desktops xml file.	etc\dtp_template.xml	Server
Directory for log files	log	Both
Directory for temporary files	tmp	Both
Directory for SLM license configuration files	license	Server
SLMsupport library1	%SLMHOME%\bin\Bclm.dll	Client
SLM support library1	%SLMHOME%\bin\BclmCom.dll	Client
1) This file is a BCLM 1.1 file and is installed for backward compatibility.		

Troubleshooting

A

Issues that can occur during the installation and configuration of SLM.

SLM Installation Wizard

Issues that can occur with the Installation Wizard:

The Installation Wizard shows an error message and stops the installation. The log file is empty.

Set the environment variable `BSI_DEBUG` to 0xFFFFFFFF and rerun the installation. Be aware that for a remote installation, the password is also logged. In that case, delete the log file afterwards!

The Installation Wizard writes logging to `SLMClient.log` in your personal temp directory, for example: `C:\Documents and Settings\<your name>\Local Settings\Temp`

The Installation Wizard cannot start the SLM server: Failed to bind UDP port 6005.

The `SLMHOME/log/log.SlmServer` or the Windows Event Viewer displays this message "`Failed to bind UDP port 6005`."

In that case, an SLM server is already running on that system, or another application is bound to that UDP port. By default, an SLM server uses UDP port 6005 to listen to broadcast messages. The Installation Wizard always starts a `SlmServer` with -uport 6005.

If an SLM server is running, you must stop that server, and restart the Installation Wizard.

If another application is bound to UDP port 6005 you can try to reconfigure that application to use another port or start `SLMserver` to use another UDP port.

Not all running SLM servers are listed in the SLM server Configuration dialog box.

The Installation Wizard uses UDP port 6005 to send a broadcast message over the network. That broadcast is carried out on the machine on which the Installation Wizard runs, and not on the machine on which the SLM server is installed.

Usually, all SLM servers that are running reply with a message to the wizard. SLM servers do not respond, if:

- During startup of the SLM server a non-default UDP port is passed by using the `-uport` option.
- The SLM server is in a different segment and broadcast messages cannot pass segments, which is usually how the network is configured.
- The network contains routers and/or switches that block the broadcast message.

The installer reports an error when reinstalling server or client package.

One of the shared libraries that are reinstalled is in use and cannot be overwritten. Stop all client and server programs that could be locking the shared library and retry. Check the log file which can show processes that lock SLM files that prevent the upgrade process.

Installed client and server components are of different versions. Please perform uninstall.

This error occurs if the client and server components are already installed in the specified directory and the versions differ. Uninstall the current SLM client and server components and restart the SLM install.

Server installation without client. Please perform uninstall.

This error occurs if you install server components and current client components are missing. Uninstall the current SLM client and server components and restart the SLM install.

Both client and server components are already installed. Please select all components.

This error occurs if an SLM client only install is requested and both client and server components are already installed. Select both SLM client and SLM server and restart the SLM install.

Do you want to reinstall all components of version x ?

This error occurs if an SLM client + server install is requested and both client and server components of the same version are already installed. You can reply Yes or No to this question.

Do you want to reinstall version x of the client components?

This error occurs if an SLM client or client + server install is requested and only client components of the same version are already installed. You can reply Yes or No to this question.

Do you want to replace old components with version x?

This error occurs if an SLM client + server install is requested and the already installed client and server components are of an unrecognized version. You can reply Yes or No to this question.

Do you want to replace old client components with version x?

This error occurs if an SLM client install is requested and the already installed client components are of an unrecognized version. You can reply Yes or No to this question.

Do you want to replace old version x components with version y?

This error occurs if an SLM install is requested and the already installed components are of an older version. You can reply Yes or No to this question.

Installed components of version y are newer than version x. Please perform uninstall first or choose another directory.

This error occurs if an SLM install is requested and the already installed components are of a newer version.

Installation is ready and will continue to exist. Do you want to cancel client configuration?

This error occurs if you click Cancel during the client configuration step. If your reply is Yes, you receive the message: "`Please configure client manually.`" If your reply is No, the client configuration step continues.

Installation is ready and will continue to exist. Do you want to cancel server configuration?

This error occurs if you click Cancel during the server configuration step. If your reply is Yes, you receive the message: "`Please start or configure server manually.`" If your reply is No, the server configuration step continues.

Locked file(s) detected: Possible files: SLMHOME/bin/SlmServer.exe - SLMHOME/bin/BclmMsg.dll - SLMHOME/shlib/com_baan_bclm_BclmImpl.dll Installation cannot proceed.

This error occurs if you attempt to install SLM on a location where SLM is already installed and the SLM server is still running and/or a Java client is still active.

To resolve the problem, first retry the Install button since in most cases the installer will have stopped the involved program already. If unsuccessful, finish the installer and stop the SLM server and/or the SLM adopted application. Restart the SLM installer.

Uninstall

This section describes the issues that can occur during the uninstallation process

Locked programs detected: SlmServer.exe - BclmMsg.dll. Please stop SLM server

An SLM server is still active and cannot be deleted. Retry the Uninstall button first. If unsuccessful, stop the running SLM server and restart the uninstall. Files might also be locked by applications such as Internet Explorer that have integration with SLM or applications that lock the SLM jar files.

Failed to delete file C:\Program Files\SLM\bin\BclmMsg.dll Reported error: Access is denied. Please remove this file manually.

This error occurs if you attempt to uninstall SLM client while SLM server components are missing. Possible reasons for this error can include:

- Server components deleted during this uninstall.
- Server components deleted during a previous uninstall.
- Server components never installed.

Uninstallation of the SLM client continues.

To upgrade to SLM 7.3

This section describes the issues that can occur during the upgrade process.

Some SLM shared library or DLL is still locked by an adopting application during upgrading Client or Server to SLM x.x

Before you start to upgrade, you must stop all running adopting applications. In this way, you free the file locks.

SLM client

This section describes the issues that can occur with the SLM client.

Application does not start

The application cannot find, or bind to, the SLM shared library.

Possible solutions to this issue include:

- Check whether the SLM shared library is installed on the system.
- [WINDOWS] Check whether the Bclm.dll shared library can be found in the %PATH% environment.
- [UNIX] Check whether the libBclm.[sl|so|a] can be found in the Shared Library Path of your system (LD_LIBRARY_PATH, LIBPATH or SHLIB_PATH).

Adopting Application reports error regarding initialization of the SLM Application/Management API.

In this case, the error occurred during SLM client initialization. Most likely, this is the case:

- The SLM client shared library file could not be opened or read.
- The SLM client cannot open or read the SLM server location file, servers.xml.
- The SLM server is not running.

To resolve this issue:

1. Start SlmClientTest from your %SLMHOME%\bin\ directory. The output provides you with possible warnings and errors found in your configuration and the steps to take to avoid these issues.
2. [WINDOWS] Check the Application Event Log for errors from Source: Bclm for errors regarding the initialization of the Application or Management Client API.

   [WINDOWS] Check whether “c:\Program File\Baan\Shared\shlib\BclmAppl.dll” (installation in standard directory) or %SLMHOME%\shlib\BclmAppl.dll (installation in non-standard directory, SLMHOME environment variable is set) is available.
3. Check, if the client software is not installed in the default location, if the SLMHOME environment variable has been set.
4. Check if the servers.xml file is available and in the correct location.
5. Check whether the syntax of the servers.xml file is correct.
6. Check whether the SLM server is running.

Application reports error regarding Connecting to License Server.

The SLM client cannot contact the License Server. Most likely this is the case:

- No license servers are running.
- The client configuration is bad.

Solution:

1. Start SlmClientTest from your %SLMHOME%\bin\ directory. The output provides you with possible warnings and errors found in your configuration, and steps that you can take to avoid these problems.
2. [WINDOWS] Search the Application Event Log for errors from Source: Bclm. Check for errors regarding the connection setup to the license server.
3. Check whether the License Servers are up and running.
4. Check whether the right License Server hosts and port numbers are available in the servers.xml file.
5. Check, if the License Server is on a remote machine, by means of ping or telnet, whether the remote machine is reachable to the port where the SLM server must be running from the local host. For example, is a firewall blocking the remote machine?

Application reports error regarding no license available for product.

The SLM client could not receive a valid license. The reason is most likely:

- The License Server is in maintenance mode. In this case, the license server denies each license request.
- The product is not licensed at the License Servers.
- The License Servers are out of licenses for this product.
- The licenses are expired for the product. Check the validation period.
- The desktop, user, or server is unknown for this product at the License Servers.
- If the product has a Named User License, a user might be trying to run the product on too many desktops at the same time.

The solution is:

- If the Application Error message is not specific enough about the reason of not retrieving a license, check the logs of the application as well as the logs of the license server. For Windows that is the EventViewer, for UNIX <SLMInstalldir>/log/log.SlmServer. If you have multiple SLM servers defined, be sure to check the log files of all these servers.
- If the product is unknown/unlicensed at the License server, obtain a valid license for the product.
- If the license server is in maintenance mode, you are likely missing a license file with a valid activation key or the SlmId of the license server does not mach any of the IDs in the license file. The log file indicates for what reason the license server is in maintenance mode.

Connection errors on high-volume Windows application server.

Windows NT is running out of sockets.

1. Decrease the release of sockets delay time. For information on how to decrease the delay with the use of the TcpTimedWaitDelay parameter, see MSDN article 149532.
2. Increase the number of available sockets. See MSDN article 151418 to increase the number of sockets using the MaxFreeTcbs and MaxHashTableSize parameters.

SLM server

This section describes the issues that can occur on the SLM Server.

Windows Service Manager returns Internal Windows Error upon license server startup.

An error occurred during License Server startup. Check the Application Log in the Windows Event Viewer for Errors from Source: BCLM and Category: SlmServer, to find out what went wrong.

SlmServer -start reports that the SLM server is started, but when I look in the Windows Service Manager it shows that the server is not started.

An error occurred during License Server startup. Check the application log in the Windows Event Viewer for errors from the source: BCLM and Category: SlmServer to find out what went wrong.

License server doesn't run anymore. Message in the logging "System time tampered, restore to the original system time to restart the license service."

The license server has detected that the system time of the server is set to an earlier date.

Solution:

Restore the original system date and restart the license server. If this fails to resolve the problem contact Infor support and provide the following information: the license.xml file, host name, and bclm ID of the failing server.

On UNIX: SLM server startup does not report any error but the server is not running.

An error occurred during License Server startup. Check the log file of the SLM server, log.SlmServer, to find out what went wrong.

SLM server logs error TCP bind() to port failed.

The error message is: "TCP bind() to port #### failed, error ###. Failed to start TCP Listener."

The SLM server tries to use a socket port number that is already in use by another application or SLM server.

1. Check whether another application or SLM server is using that socket port number.
2. Start the SLM server on another port number if another application is running behind that socket port number. Note that this requires an update to the license file and a new activation key in case this server is part of a licensed environment.
3. Wait a few minutes, if no other application or SLM server is running on that socket port number, so the OS can release the socket port, and then try again.
4. Note that the OS only permits a process with root privileges to listen on port numbers less than 1024.

SLM server on Windows: "CreateService failed - The specified service has been marked for deletion"

Close the Services window and try again.

SLM server logs error: "Slave license-server waiting for notification from master license-server!"

Possible cause:

- A standalone SLM server is running in slave mode.
- No master license server is running in an SLM server group.

Solution:

- A standalone SLM server must always be started in master mode.
- In an SLM server group configuration, a slave license server must be notified by a master license server at startup before the slave starts to process license requests. This ensures that the slave license server is up to date with the latest license data available at the master license server.

On UNIX SLM serverlogs error: "Errno 24 (Too many open files)" and "SockAccept failed"

Most UNIX variants, for example, HPUX11, have a soft limit of 60 and a hard limit of 1024 file descriptors. If you place a high load on the license server, the soft limit is insufficient.

To resolve this issue, you can try to tune the UNIX kernel, or run the command: *ulimit -n 1024* to set the user limit to the maximum of 1024.

Not all licenses are available in an SLM server group with no high availability support.

One of the SLM servers in the group does not run for longer than 72 hours (grace period), which reduces the number of licenses.

Check whether all the SLM servers in the SLM server group are running. If not, restart the SLM servers.

SLM MMC snap-in

This section describes the issues that can occur on the SLM MMC snap-in.

When starting the SLM MMC snap-in, a message appears that states that the license data layout is incorrect.

The MMC snap-in of SLM 2.3 and later versions is not compatible with earlier version of SLM. The SLM MMC snap-in must always be of the same version as the SLM server.

When saving license file, a message appears stating an invalid file layout or a file does not exist.

Often, the cause of this problem is that a product ID is registered under more than one license type. For example, product ID 10056 is registered under both Concurrent User Licenses and Named User Licenses.

Remove one of the two entries and retry the save action.

After clicking Next on the component selection dialog, a question displays to remove already installed server components.

If the SLM server components are already present due to a previous installation that did not check for the Virtual Server environment, a message appears. If you select Yes, the installation proceeds and the old server components are removed.

Because the SLM server cannot run on a Virtual Server, you cannot install the SLM server. See also the actual text in the Reinstall Client/Server Component Selection dialog box.

Instead, install the SLM server components on a physical server.

To stop a running SLM server

B

There are several ways to stop a running SLM server.

On Windows

To stop a running SLM server service, you can stop the service in a Microsoft Windows environment by means of the Microsoft Services application:

1. Click Start on the Microsoft Windows taskbar.
2. Click Run and type services.msc \s
3. Click OK. The Services panel opens.
4. Select the Solution License Server from the list of services.
5. On the Action menu, click Stop to stop that service.

Alternately, to stop an SLM server from the command line, you can use the SlmServer command, which is available for all platforms supported by SLM.

On UNIX

Ensure the environment variable SLMHOME is set.

1. Stop the SLM server with this command:

   ```
   SlmServer -stop [-p portnumber]
   ```

2. Specify the port number if the number is not 6005, preferably by adjusting the etc/servercfg.xml file.

Changing Master Role

C

Because of disaster reasons or adjustments in the infrastructure it is possible that another SLM Server must become Master SLM Server.

Change the initial master SLM Server

Ensure that the existing Master SLM Server will not act anymore as Master SLM Server. Adjust the SLMServer configuration file, ${SLMHOME}/etc/servercfg.xml, of the existing master server.

Change the mode from “master” to “slave” and restart the SLM Server.

```
<?xml version="1.0"?>
<!-- Configuration for SLM -->
<servercfg
 mode="slave"
 port="6005"
/>
```

For a short while it is no problem if there is no master SLM Server in your environment. The Master role is only to act as owner of the configuration data, so as long as no license configuration changes are made the master role is not needed.

Promote a Slave SLM Server to Master

Adjust the SLMServer configuration file of that server ${SLMHOME}/etc/servercfg.xml file. Change the mode from "slave" to "master" and restart the SLM Server.

```
<?xml version="1.0"?>
<!-- Configuration for SLM -->
<servercfg
```

```
 mode="master"
 port="6005"
/>
```

On Windows

The installation consists of these steps:

1. Create the install directory for SLM. The default directory is:
   %SystemDrive%\Program Files\SLM
2. Create a global environment variable SLMHOME that directs to this directory:
   a. Click **Start > Control Panel > System > Advanced > Environment Variables**
   b. Insert the SLMHOME variable with the variable's unique value in the system variables
3. Transfer the SLM client files.
   Transfer the files from the ..\client\Windows_x86 (or Windows_x64) directory of the SLM installation software to the %SLMHOME% directory.
4. Set the PATH variable.
   To enable the operating system to find the SLM DLL files in %SLMHOME%\bin, you must extend the PATH environment variable. Add %SLMHOME%\bin to your PATH.
5. Set the CLASSPATH variable.
   Java programs can also use the SLM licensing scheme. For this purpose, the environment variable CLASSPATH must be extended with the com_baan_bclm.jar file. Add %SLMHOME%\java\com_baan_bclm.jar to the CLASSPATH variable.
6. Use slmconfig -c to create the servers.xml file or copy it from an already configured SLM client
7. Check the installation and configuration by running slmclienttest.

On UNIX

The installation consists of these steps:

1. Create the install directory for SLM. The default directory is:
   / usr/slm
2. Create a global environment variable SLMHOME that directs to the /usr/slm directory.
   On AIX, use the /etc/environment file. On other platforms, use /etc/profile file or any other file that permits you to set a system-wide environment variable.

Ensure the variable is exported. For example, the inetd/rexec daemon that the rexec protocol uses might have to be reinitialized, so that the new environment variable is exported to all the protocol's child processes.

3 Transfer the SLM client files.

Transfer the appropriate .tar file from the ..\client\<OS> installation software to the $SLMHOME directory and untar the file, according to the platform specifications.

You can find the correct .tar file under the …\client directory of the SLM installation software, for example:

```
…\client\HP-UX11.00\client_HP8000.tar
```

For example, the command to untar the file on a Solaris computer is:

$ cd $SLMHOME

$ tar xvf /tmp/client_SUN.tar

4 Set the PATH variable.

Adapt the environment variable that governs the search path to enable the OS to find the SLM shared libraries in $SLMHOME/shlib:

Variable	OS
SHLIB_PATH:	PA-RISC HPUX
PATH	Win32
LIBPATH	AIX
LD_LIBRARY_PATH:	Solaris, IA64 HPUX, SuSe, RedHat

For example, HP with db2 and java (in the korn shell):

```
export SHLIB_PATH=/opt/IBMdb2/V6.1/lib:/opt/java1.2/jre/lib/PA_RISC2.0/
classic:/usr/slm/shlib
```

Ensure this environment variable is exported to all processes.

Java programs can also use the SLM licensing scheme. For this purpose, the environment variable CLASSPATH must be extended with the com_baan_bclm.jar file (in the korn shell):

```
export CLASSPATH=${CLASSPATH:+${CLASSPATH}:}$SLMHOME/java/com_baan_bclm.
jar
```

Ensure this environment variable is exported to all processes.

5 Create the $SLMHOME/etc/servers.xml file

This file tells the client which SLM server must be contacted. Use slmconfig -c or by copying the file from an already configured SLM client (of the same version!).

6 Ensure that all SLM users can read these files and directories:

- $SLMHOME/shlib/*
- $SLMHOME/java/com_baan_bclm.jar

These directories must have write permissions for all.

- $SLMHOME/etc/servers.xml if you are using 'automatic client update'
- $SLMHOME/log

For example, set the directories and the files to 755 (drwxr-xr-x). You must set the log directory to 777 (drwxrwxrwx) because every user must be permitted to write a file in the log directory.

7 Ensure the variable SLM_API_SL is pointing to the file:

```
<SLM_install>/shlib/SLMClient.so
```

Dependent of platform the suffix is .a, .so or .sl

An alternative is to link the file:

```
ln -s SlmClient.so libBclmEx.so
```

If you use the 64bits client of SLM use:

```
ln -s SlmClient64.so libBclmEx.64.so
```

8 Check the installation and configuration via slmclienttest

Manual SLM server installation

D

It is strongly advised that you use the Installation Wizard to install SLM components but it might be the case that due to security restrictions it's not allowed to have rexec and ftp enabled. Therefore appendix describes how to install the SLM server without using the Installation Wizard.

The manual installation of Windows is not described here. Windows is a local installation.

On UNIX

SLM server consists of two programs: `SlmServer` and `SlmCmd`. The SlmServer is the stand-alone license server that is responsible for handing out the licenses to the SLM client programs. After installation and startup, the server runs as a daemon. The `SlmCmd` program requires SLM client. You can use this program to test the SLM installation. Therefore, we recommend that you carry out the SLM client installation first.

1. Ensure the directory for SLM files exist: `/usr/slm`, which is a default installation directory or the directory to which, the environment variable `$SLMHOME` points.
2. Create the global environment variable `$SLMHOME` if this variable does not yet exist, and make this variable point to the directory on which the SLM server is installed.
3. Copy the appropriate `.tar` file to the `$SLMHOME` directory and untar this file. You can find the correct file in the server directory of the SLM installation software.
4. Start the SLM server, including desired parameters

```
$ $SLMHOME/bin/SlmServer  -p <port> -m|s
```

You will see that the prompt returns almost immediately. The SLM server spawned itself and continues to run in the background as a daemon. You can check with the `ps` command if the `SlmServer` continues to run.

When installing a master server

Upon startup additional files are created. Especially the `${SLMHOME}/license/1/<port>/license.xml` is relevant. This file is only created when the server is started ad 'master' and will provide a basic license file.

The rest of the configuration can be performed via the mmc snapin from a Windows client

When installing a slave server

Assign this new SSLM Server (slave) to an existing cluster:

- By running this command:

```
$SLMHOME/bin/SlmConfig -h $SLMHOME -addHost <newSlave> -w –f <input
file> -o $SLMHOME/etc/servers.xml
```

  The inputfile must have 1 line with an indication of the SLM master for example: system1:6005

  The new Slave format is **<slave-host>:<slave-port>** for example: system2:6005

- Adding the slave server via the MMC snapin

Automatic startup

To start the `SlmServer` at startup, create an **rc** file that is read and executed by the `init` process. This file is platform-specific. For example, on AIX, you can use the extra run level a:

```
/etc/inittab:
 ...
 bclm:a:once:/usr/bin/su - SLM -c /usr/slm/bin/SlmServer > /dev/console
 2>&1
/etc/rc:
 ...
 dspmsg rc.cat 5 'Multi-user initialization completed\n'
 /usr/sbin/telinit a
 exit 0
```

Uninstalling SLM

E

To uninstall your SLM server, and to keep your SLM configuration:

- Back up the SLMHOME/bclm directory. Restore this directory after the installation of the new SLM version.
- Back up the SLMHOME/etc/servers.xml file. Restore this file after the installation of the new SLM version.

  The method to uninstall your SLM server, SLM client, and SLM MMC snap-in depends on the platform.

On Windows

To uninstall on Windows:

1. Stop the running SLM server.
2. Go to **Configuration Pane > Add/Remove Programs**
3. Select the entry Solution License Manager and click **Change/Remove**.

   The Solution License Manager Uninstall Wizard starts.

   After the Welcome screen, the Components to Uninstall dialog box appears, which lists all the installed components. Components that are not installed appear in grey.
4. Select in the **Components to Uninstall** dialog box the components that you want to uninstall, and click **Next** to continue the uninstallation. The **Ready to Remove** dialog box appears
5. Check the components you selected for removal, and if this selection is correct, click **Remove** to uninstall these components

   If the server components are selected, the uninstaller checks for other defined SLM services. If these types of SLM services still exist, confirmation is requested to remove the services. If granted, these services are stopped when necessary and removed. If no permission is given to remove these services, the uninstall process continues and does not change the other SLM service definitions. However, because the logic to install and remove SLM services is being uninstalled, removing these types of services in the future can be difficult.

   You can only uninstall the SLM client if you also uninstall the SLM server and the MMC snap-in.

On UNIX

To uninstall on UNIX:

1. Stop the running SLM server.
2. Ensure the environment variable SLMHOME is set correctly
3. Run the command.

   ```
   $SLMHOME/bin/SlmUninstall
   ```

   The SLM Uninstall script starts
4. Follow the directions provided in the script.
5. Remove the SLM part from the PATH environment variable
6. Remove $SLMHOME/shlib, if present, from the shared library search path. The shared library search path environment variable differs by UNIX variant:

Variable	OS
SHLIB_PATH:	PA-RISC and HPUX
LIBPATH	AIX
LD_LIBRARY_PATH:	Solaris and IA64/HPUX

7. Remove the SLM part from the CLASSPATH environment variable.

Manual License Configuration via SlmCmd Program

F

SlmCmd is the command line UI and can be used on all platforms that SLM supports. SLM keeps all license data in XML files. You can edit the XML files with any editor and use the Command Line UI to send the XML files to the SLM Cluster

The functionality of the command line interface includes options to:

- Save data files to the server.
- Retrieve data files from the server.
- Submit a new activation key.
- Retrieve server identification numbers.
- Monitor the license servers.
- Retrieve product license information.
- Add and remove desktops, users, and servers.

The interface consists of an executable file called SlmCmd, which is installed in the bin folder of your SLMHOME directory. You can use this executable file as a command, along with a number of arguments in a command window, such as the Command console or the Command prompt window. On UNIX, even a character-based shell suffices. The syntax and arguments of the command are described in the following sections.

The procedure to modify the License file:

- Retrieve the initial license file from the SLM Server (Cluster)
- Include new data as add or change elements of the License file.
- Submit the new License file to the server and send the file to Infor Validation through the http://www.infor.com/inforxtreme Web site.
- Infor Validation returns a new activation key if the request matches with the contract records.
- Submit the new key to the server.
- Activation of the new key implements the license modifications.

Editing the license file

The initial license file is created during the (manual) install of the SLM Server.

Some of the data fields in the License file have an <editState> attribute that can adopt the these values:

- Active
- Add
- Change
- Delete

The active fields must contain the values that are valid in the current configuration. The fields that are labeled as add, change, or delete contain modifications that Infor Validation must first approve before the modifications are implemented. To achieve implementation, you must submit a new activation key that is generated by Infor Validation to the master SLM server.

The first element in the License file is the <common> element. That element contains general information, such as the activation key, customer data, host data, and some options. In addition to the options, all of this data is mandatory.

A <common> element example:

```
<common>
  <activation key="" frozen="No"/>

<!-- the frozen attribute is not yet used -->

  <customer
    name="Customer name"
    code=""       # leave empty for now, provided by Infor
    number=""  # leave empty for now, provided by Infor
    editState="add"
    />
  <option
    HAS="No"    # High availaibility support
    confirmTime="900" # leave the default
 clusterName=”SLMCluster” # any logical name you like
 clusterId=”<number>”    # this is a unique cluster id,
        DO NOT CHANGE!
 clientUpdate=”Yes”   #clients automatically sync’d
    editState="add"
    />

  <host
    name="blue" # DNS name of the SLM Server
    id="59145922"  # slmid of that server
    port="6005"  # port it’s listening on
    editState="add"
    />
<host  # a maximum of 4 SLM Servers in one cluster
    name="red"
    id="185574564"
```

```
    port="6007"
    editState="add"
    />
</common>
```

Because the fields are all new, the fields must all receive the property editState="add".

The file must contain the license data of all the Infor products you want to use. Dependent on the license agreement, you must specify these elements:

- User license
- Concurrent license
- Server/Instance license

For the user license and the server license, you must indicate the number of licenses for each product.

A **<userLicense>** element example:

```
<userLicense>
  <product
    id="6017"
    name="OpenWorld Studio">
    <license
      lightUsers="0"
      heavyUsers="4"
      startDate="2004-03-01"
      endDate="2005-02-27"
      editState="add"
      />
    </product>
</userLicense>
```

Finally, each license file must contain a version number for the license deal.

```
<license layout="3" version="1">
   …
</license>
```

This version number is used to keep track of all the changes on the license file, and is additionally used as an implicit locking mechanism. Each time a data file is saved to the server, the version number is incremented. The server will be locked for all files with a version number that differs from the current version number plus one.

Note: Because of this locking mechanism, there must be one single point of maintenance. If more than one person modifies the license data from various points, and if one person submits changes to the server, the server is locked everyone except the person who made the modification.

If the license file is complete, you must submit the file to the server. If the server accepts the file, the file will be stored on the server in the directory SLMHOME/license/<*version*>/<*server port*>/license.xml.

Submit the license file to the SLM server. Run this command, in which LicenseFile.xml is the name of your license file:

```
SlmCmd -newlic YourOwnEditedLicenseFile.xml
```

Note 1: If you change in the XML files on the server the values of the active fields by hand, the activation key is no longer valid and the SLM engine becomes unavailable. If you adjust the files with the SLM Management UI, however, you can reach the active fields and the properties you modify get the Change, Add, or Delete status. These changes do not become active until a new activation key is submitted.

Note 2: The content of the XML files is case sensitive. Notice that the mandatory activation key field and the mandatory customer fields are left open, because the values are yet unknown. You will receive them with your final activation key from infor Validation.

Submitting a new file

Only a master license server can handle modification of the license data. The syntax of the commands to save new data files to the license server:

```
SlmCmd –new… <filename> [-product <product-id>]
```

- -newlic: Submit a license file.
- -newdtp: Submit a desktops file.
- -newusr : Submit a user file (product ID required).
- -newsrv: Submit a server file (product ID required).

The data files that are submitted to the server must be XML files. The files are either directly activated or become active when a new activation key is installed.

The following example shows how to submit a new license file to the server:

```
C:\>SlmCmd -newlic license.xml
Submitting file to license-server.
        Source file     : license.xml
        Filetype        : License file
        Filesize        : 915
OK
```

Note that if you submit user files or server files, you must always specify the product identification number.

Retrieving a file

The syntax of the commands to retrieve the current data files from the license server: `SlmCmd -get… <filename> [-product <product-id>]`

- -getlic: Retrieve a license file.
- -getdtp: Retrieve a desktop file.
- -getusr: Retrieve a user file (product ID required).
- -getsrv: Retrieve a server file (product ID required).

The retrieved file is one of the data files on the server and is copied as an XML file to the specified file. The following example shows how to read the users for product 88 into the file users.xml. The force parameter forces to overwrite an existing file:

```
C:\>SlmCmd -getusr users.xml -product 88 -force
Retrieving file from license-server.
        Destination file        : users.xml
        Filetype                : User file
        Product-ID              : 88
OK
```

Note that if you retrieve user files or server files, you must always specify a product identification number.

Submitting a new activation key

The syntax to submit a new activation key to the license server:

`SlmCmd –actkey <activation key>`

or

`SlmCmd –actfile <key file>`

The key is directly entered as text (argument **<activation key>**) or is read from an ASCII text file (argument **<key file>**).

To activate a License file:

```
C:\>SlmCmd -actkey 47388f86fcd99221e6e064398103702f
Submitting activation-key to license-server.
        Activation-key  : 47388f86fcd99221e6e064398103702f
        Key length      : 32
OK
```

When you submit the key and the requested license file becomes active, the license file changes: the change and add elements become active and the delete elements are removed. In addition, the version number increments by one.

Retrieving a host ID

To provides the identification number (the host ID) of the specified license server use this command:

Command
SlmCmd -hostid <host> [-port <port number>]

The License file must contain all license servers that are being used. If you write a new License file, include these server identification numbers.

How to get the host-ID of the server addie that listens on port 8062:

C:\>SlmCmd -hostid addie -port 8062

Retrieving Host-ID from license-server.

License-server host : addie

License-server port : 8062

Result: 88601312

OK

Retrieving product license information

Products can have desktop, named users, concurrent users, and servers licenses. To retrieve all license information for a specific product run this command:

```
SlmCmd -product <product-id>
```

The example shows how to retrieve license information for product ID 88:

```
C:\>SlmCmd -product 88
Retrieving license info from license-server.
        Product-ID      : 88
Result:
        Named User
        Number of light licenses: 10
        Number of heavy licenses: 20
OK
```

Retrieving customer information

The customer data in the License file must be activated before you can retrieve the data. To retrieve the customer information run this command:

```
SlmCmd –getcus
```

To retrieve customer information example:

```
C:\>SlmCmd -getcus
Retrieving customer data from license-server.
Result:
        custName  : easy software
        custCode  : 65
        custNumber: 26
OK
```

Add/remove desktops, users, or servers

To add or remove desktops, users, and/or servers from the corresponding license server data files, you can run these commands:

```
SlmCmd -adddtp <desktopName> [-r[ank] <ranking>]
SlmCmd -addusr <userName> -p[roduct] <Product-ID>
        [-heavy]][-c[ount] <userCount>][-r[ank] <ranking>]
SlmCmd -addsrv <serverId> -p[roduct] <Product-ID>
                [-n[ame] <serverName>][-r[ank] <ranking>]
SlmCmd -deldtp <desktopName>
SlmCmd -delusr <userName> -p[roduct] <Product-ID>
SlmCmd –delsrv <serverId> -p[roduct] <Product-ID>
```

To add 10 licenses for a heavy named user margarita for product 88 at position 2 in the XML file, run this command:

```
C:\>SlmCmd -addusr margarita -p 88 -heavy -c 10 -r 2
Adding UserName to license-server.
        Product-ID      : 88
        UserName        : margarita
        UserType        : Heavy-user
        UserCount       : 10
        Ranking         : 2
OK
```

Adjusting SLM server IP addresses

If a logical SLM cluster consists of more than one physical server, these servers communicate with each other after a connection is established to exchange relevant license information. As long as a connection is not established, a retry mechanism becomes periodically, for example, once every 20 minutes, active. In either case, the IP address once determined is used during connect setup between these SLM servers. If for some reason the known IP addresses have become invalid, the SlmCmd program can be used to instruct SLM servers to use other IP addresses or to determine an IP address as soon as the server needs to be accessed again.

To set or reset IP address of a specified server, you can use this command:

```
SlmCmd -setIP <SLM host> [-port <portNumber>]
   -server <name>[:<IP address]> [-force]
```

The command is sent to the SLM server specified by **<SLM host>** using the specified **<portNumber>**, default 6005, if not specified. The relevant SLM server searches its administration for the server specified by the **<name>** parameter. If this specified server is not present as one of the servers of the logical cluster, the command is silently ignored. If the specified server is found, the server's IP address is set to the value received.

The SlmCmd program handles the -server parameter as:

- If the colon separator character is present, an IP address value is expected as input. If an empty string is specified, or the value 0 or 0.0.0.0, the IP address is treated as empty and a reset IP address command is sent to the specified SLM server for this server. This command is only accepted if the -force flag is specified.
- If the optional parameter **<IP address>** is not specified, in other words, the colon character is missing; the relevant server name is translated into an IP address. Upon success, both the server name and the detected IP address are sent to the specified SLM server.
- If the colon separator character is present and the IP address parameter is not empty, the server name for this IP address is searched for. If found, the server name is matched against the server name specified as parameter. If unequal, the command is refused, in other words, no message is sent to the SLM server, unless the -force option is specified.

General arguments

The general arguments used in combination with the SlmCmd command are listed in this table:

SLMCmd command	Description
o <filename>	Output data to specified file.
-f	Overwrite an existing output file.
-set <var>=<val>	Set environment variable <var> to value <val>.

-u, -U, -h, -?	Display the usage/help information.
-v	Display version information.