



CLC Network License Manager

ADMINISTRATOR MANUAL

Administrator manual for CLC Network License Manager 5.0

Windows, macOS and Linux

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This software is for research purposes only.

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Chapter 1

Introduction

Welcome to the CLC Network License Manager 5.0 – software for hosting network licenses for QIAGEN Aarhus products.

This manual is written for system administrators and thus assumes some degree of familiarity with standard administration concepts on the platform being used.

This product was formerly known as the CLC License Server.

Please contact us at ts-bioinformatics@qiagen.com if you have any questions or comments about this product.

1.1 Overview

The CLC Network License Manager enables you to host licenses for QIAGEN Aarhus applications on a central server. These licenses can then be checked out by client software installed on computers with access to the license manager.

If users need to run a licensed application while offline, they can *borrow* a license for a certain period of time. In addition, access to and reserving of licenses for particular users or machines can be configured.

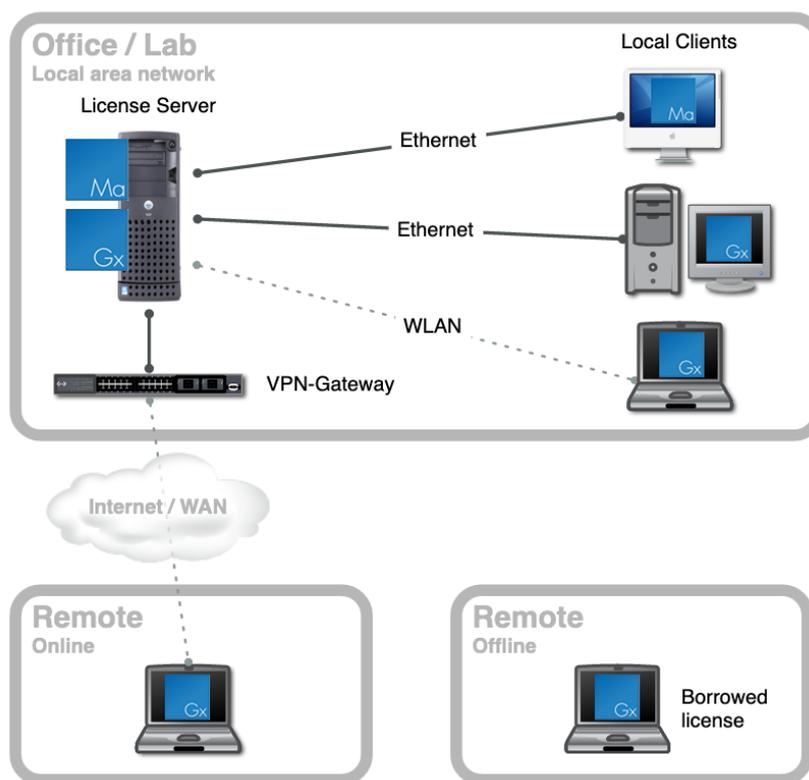


Figure 1.1: Diagram of a setup to serve network licenses.

1.2 Software requirements

The CLC Network License Manager does not require much processing power and only consumes a few megabytes of memory. This means that if you are putting together a dedicated server specifically for running the license manager, a modestly powered system equipped with a high number of redundant components will probably be a better investment than a system which is faster, has more memory, etc.

The system requirements for the CLC Network License Manager are:

- Windows 8.1 and Windows 10
- macOS 10.14, 10.15 and 11.2
- CentOS 7

The CLC Network License Manager is based on the LM-X License Manager 4.9.1. The list of systems above has been derived from the LM-X supported system list: <https://docs.x-formation.com/display/LMX/Supported+platforms> and systems we have tested using. The CLC Network License Manager will likely work on other Windows, Linux and macOS systems, but we cannot guarantee this.

1.3 Network requirements

To check out a license, the software client needs to establish a TCP-connection to the license manager program running on your server machine. This means that the server system needs to

be contactable by clients on the LAN or WAN network.

Clients at remote locations can also use network licenses if they are on systems that can contact the license manager, e.g. if they are on systems connected via a VPN gateway or a similar solution.

Access to the CLC Network License Manager can be configured, as described in section 3.

1.4 Firewall settings

To allow clients to connect to the license manager, incoming TCP-traffic to the port that the server is listening on must be allowed. The default port number used by the CLC Network License Manager is 6200. This can be changed if desired, as described in section 3.1.

To allow use of the auto-discovery feature, incoming broadcast UDP traffic to port number 6200 must be allowed. This port number cannot be changed.

1.5 Quick overview of CLC Network License Manager setup

The general steps for setting up the CLC Network License Manager are:

1. Install the software.
2. Configure the service.
3. Download license files.
4. Start the CLC Network License Manager and check it is running as expected.
5. Optionally, customize the setup to suit local requirements.
6. Configure clients to connect to the CLC Network License Manager.

The remainder of this manual expands on each of these steps.

Chapter 2

Installation and launch

This chapter describes how to install and launch the CLC Network License Manager for each supported OS type separately.

2.1 Windows installation and launch

If upgrading from an earlier version, please refer to section 2.4.

To install the CLC Network License Manager:

1. Download the installer from <https://digitalinsights.qiagen.com/products/clc-network-license-manager-direct-download/> or from your myCLC account.
2. Double-click the installer icon to launch it. You will be prompted to choose the location to install the software to. If the C: drive is the default drive, then the default installation location offered will be C:\Program Files\CLCNetworkLicenseManager5.

To run the CLC Network License Manager as a Windows Service, right-click on the `installservice` file in the installation directory and choose the option **Run as administrator** from the menu. See figure 2.1.

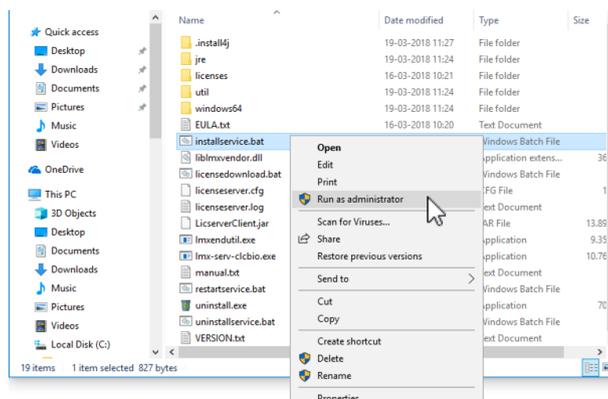


Figure 2.1: Installing the license manager as a service.

This will open a terminal window and guide you through the service installation procedure. Press

a key on the keyboard when prompted to do so.

Once successfully installed, the service will be visible in the **Services** control panel in Windows. See figure 2.2.

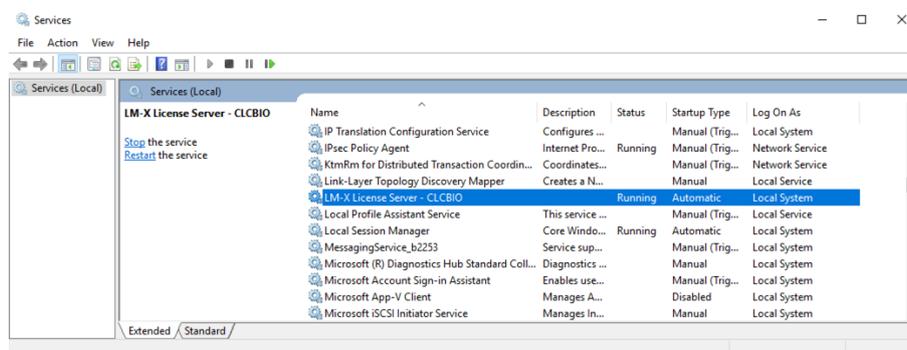


Figure 2.2: The services window can be found in the Control Panel.

The name of the service is LM-X License Server - CLCBIO. From here you can start, stop and restart the service if needed.

You are now ready to download a license file. See section 2.1.1.

2.1.1 Downloading license files for Windows

On a networked machine, license files can be downloaded by running the `licensedownload.bat` script with administrator privileges. To do this, view the contents of the CLC Network License Manager installation directory, and right-click on the `licensedownload.bat` file. Choose the option **Run as administrator** from the context menu. This will result in a window like that shown in Figure 2.4.

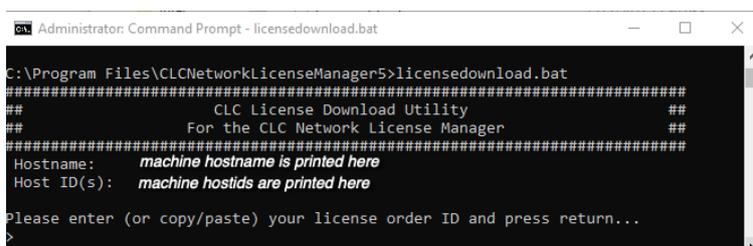


Figure 2.3: Enter a License Order ID at the prompt to download a license.

Paste the Order ID supplied by QIAGEN.

When you run the `licensedownload.bat` script, a new license file is downloaded into the `licenses` folder, which is under the installation area of the CLC Network License Manager software. This is where the CLC Network License Manager looks for licenses by default.

If the license manager is already running, you need to restart it for the new licenses to be loaded. You can restart the service through the Services control panel, as shown in figure 2.2. It can also be restarted by right-clicking on the `restartservice` script and choosing the option **Run as administrator**.

To download and install a license file on a non-networked machine, please see section A.4.

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

2.1.2 Checking that the server is ready

After starting the CLC Network License Manager, check that it is up and running and the licenses you expect to see are available. See section 4 for details.

2.1.3 Uninstalling the Windows Service

To uninstall the service, you can use the `uninstallservice.bat` script. Run this by right-clicking on the icon and choosing the menu option **Run as administrator**.

2.2 macOS installation and launch

2.2.1 Installing the software on macOS

If upgrading from an earlier version of the CLC Network License Manager, please refer to section 2.4.

To install the CLC Network License Manager:

1. Download the installer from <https://digitalinsights.qiagen.com/products/clc-network-license-manager-direct-download/> or from your myCLC account.
2. Double-click the installer icon to launch it. You will be prompted to choose the installation location. The default location on macOS is: `/Applications/CLCNetworkLicenseManager5/`.

The installer extracts the relevant files, places them in the chosen installation folder, and starts the service.

2.2.2 Configure the service to be run by a designated user

We recommend the service is configured to be run as a standard user rather than the default daemon user. These steps need to be done by someone working with administrative privileges. In the examples below, the software had been installed to the default installation folder, `/Applications/CLCNetworkLicenseManager5/`.

1. Create a user for running the CLC Network License Manager if you do not already have one. We use the user `jobloggs` in the example in this section.
2. Ensure the CLC Network License Manager is not running. If you are not sure, then run the `stopserver.command` script (e.g. by double clicking on it its icon).

3. Check that there is no lock file. If there is one, remove it.

```
ls /var/tmp/clcbio.lock
sudo rm /var/tmp/clcbio.lock
```

4. Change the ownership of the license manager installation directory and its contents to the user that should own the CLC Network License Manager process.

```
sudo chown -R joebloggs /Applications/CLCNetworkLicenseManager5/
```

5. Specify the user to run the process in the plist file under the `CLCLicenseServerLaunchDaemon` subfolder of the installation area:

```
/Applications/CLCNetworkLicenseManager5/CLCLicenseServerLaunchDaemon/com.clcbio.licenseserver.plist
```

Find this section:

```
<key>UserName</key>
<string>daemon</string>
```

And edit the name between the string tags:

```
<key>UserName</key>
<string>joebloggs</string>
```

After making changes, reload the plist using the `installservice` command in the '`CLCLicenseServerLaunchDaemon`' subfolder of the installation directory:

```
/Applications/CLCNetworkLicenseManager5/CLCLicenseServerLaunchDaemon/installservice
```

2.2.3 Downloading license files for macOS

Downloading and installing licenses on a machine with the CLC Network License Manager installed and with access to the external network is described in this section. To download and install a license file on a system without access to the external network, please see section [A.4](#).

To download and install licenses in the CLC Network License Manager on a machine with access to the external network:

1. Run the `downloadlicense.command` script, found in the CLC Network License Manager installation area. Usually this will need to be done as a user with administrator privileges.

For example, if the default installation location for the CLC Network License Manager was used, the following command could be run:

```
sudo /Applications/CLCNetworkLicenseManager5/downloadlicense.command
```

This script launches a terminal window, where you are prompted to supply a license order ID.

2. Paste in the license order ID supplied by QIAGEN and press Enter.

A new license file is downloaded into the `licenses` folder of the installation area of the CLC Network License Manager software. This is where the CLC Network License Manager looks for licenses by default. The location of the file is printed to the terminal.

3. To load the new license information, the CLC Network License Manager service must be started up, or re-started if it is already running. See section [2.2.5](#) for details about how to do this.

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

2.2.4 Check the service is running on macOS

After starting or restarting the CLC Network License Manager after licenses have been installed, check that it is running as expected, including that the installed licenses have been loaded. See section [4](#) for further details.

2.2.5 Starting and stopping the license manager on macOS

The following scripts are provided for starting, stopping and restarting the CLC Network License Manager respectively.

- **startserver.command** Run this script to start up the CLC Network License Manager.
- **stopserver.command** Run this script to stop a running CLC Network License Manager.
- **restartserver.command** Run this script to stop a running CLC Network License Manager and start it up again.

The CLC Network License Manager is installed as a service, and should start up automatically when the system is restarted.

2.3 Linux installation and launch

The instructions provided here are for installing the CLC Network License Manager on a CentOS Linux distribution.

If upgrading from an earlier version of the CLC Network License Manager, please refer to section [2.4](#).

2.3.1 Installing the software on Linux

1. Download the installer from <https://digitalinsights.qiagen.com/products/clc-network-license-manager-direct-download/> or your myCLC account.
2. Launch the installer.

From within the same folder the installer is in, a command of this form could be used to launch the installer:

```
sudo /bin/sh ./<installerName.sh>
```

Installing to a central location on the server machine usually requires administrator privileges.

You will be prompted for the location to install the software to. Locations in this section of the manual refer to the software installation location as <installationDirectory>. The default location on Linux is /opt/CLCNetworkLicenseManager5.

2.3.2 Initial configuration steps on Linux

1. **Create a user to run the CLC Network License Manager service** Create a standard user account for running the CLC Network License Manager service if you do not already have one. Please ensure that this user account has a home directory, such that \$HOME exists and can be found. For some Linux flavors, you can do this simply with a command like:

```
useradd <serviceusername>
```

For other Linux flavors, you may need to add a flag to enable the creation of a home directory.

2. **Ensure appropriate ownership of the license manager files** Change the ownership of the installation directory and all files under that area to be owned by the user that will run the license manager process.

```
chown -R <serviceusername> <installationDirectory>
```

e.g.

```
chown -R clclicsrv /opt/CLCNetworkLicenseManager5
```

3. **Configure the password for remote access to the license manager**

- Open the configuration file <installationDirectory>/licenseserver.cfg with a text editor (e.g. nano, pico, emacs, vi or similar).
- Change the value of the variable **REMOTE_ACCESS_PASSWORD**.

This password is needed when remotely starting or stopping the server, or carrying out certain other administrative tasks remotely.

4. **Optional: make any other desired changes to the configuration file** See section 3 for further details on configuring the CLC Network License Manager.

2.3.3 Running the CLC Network License Manager as a service

The CLC Network License Manager can be run as a service and configured to start when the system is booted. Here we include instructions for doing this using systemd and SystemV. The service should be configured either under systemd or SystemV, not both.

systemd service configuration

To configure the CLC Network License Manager to run as a systemd service and to start up when the system boots up:

1. Edit the file `<installationDirectory>/runscript/clclicsrv.service` using a text editor (e.g. nano, pico, emacs, vi or similar), following the instructions contained in the file. This includes editing the User and Group variables as well as setting the correct password and providing the installation location of the CLC Network License Manager. Notice: the password must be identical to the **REMOTE_ACCESS_PASSWORD** in the license manager configuration file, `licenseserver.cfg`. This file can be found in the installation directory of the CLC Network License Manager.
2. Copy the configured `<installationDirectory>/runscript/clclicsrv.service` file to `/etc/systemd/system/`.
3. For the service to be started when the system boots up, run the command:

```
systemctl enable clclicsrv.service
```

At this point, the CLC Network License Manager normally has not been started. The following sections cover downloading license files and starting up the CLC Network License Manager.

Note: When upgrading the CLC Network License Manager in place, the file `<installationDirectory>/runscript/clclicsrv.service` may be overwritten. Configuration files in central locations like `/etc/systemd/system/` will **not** be overwritten on upgrade.

SystemV service configuration

To configure the CLC Network License Manager to run as a SystemV service and to start up when the system boots up:

1. Edit the file `<installationDirectory>/runscript/clclicsrv` with a text editor (e.g. nano, pico, emacs, vi or similar), providing the relevant information for your installation and environment.

If you have installed the software to the default location, `/opt/CLCNetworkLicenseManager5`, you should only need to edit the values for the variables:

- **USER** Set this to the user that should own the license manager process.
- **PASSWORD** Set this to the same value given for the **REMOTE_ACCESS_PASSWORD** in the license manager configuration file, `licenseserver.cfg`. This file can be found in the installation directory of the CLC Network License Manager.

If you have installed the software to a location other than the default, edit the value of the **DIRECTORY** variable accordingly and check the other variables are correct for your installation.

2. Copy the configured `<installationDirectory>/runscript/clclicsrv` file to your startup-script directory. Typically this is `/etc/init.d`.

Note: When upgrading the CLC Network License Manager in place, the file `<installationDirectory>/runscript/clclicsrv` may be overwritten. Configuration files in central locations like `/etc/init.d/` will **not** be overwritten on upgrade.

Enable on-boot startup using chkconfig It is common to want the license manager service to start up whenever the system is started up. If you are installing on a Red Hat-style distribution you can use the `chkconfig` tool to do this.

```
chkconfig clclicsrv on
```

To check if the license manager is set to startup automatically use the following command:

```
chkconfig --list
```

In the output look for a line similar to:

```
clclicsrv 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

Make sure that the service is listed as **on** for the appropriate run-level (typically 3 or 5).

2.3.4 Downloading license files for Linux

On a networked machine, license files can be downloaded using the `downloadlicense` script with administrator privileges. For example, if the default installation location for the CLC Network License Manager was used, the following command could be run:

```
sudo /opt/CLCNetworkLicenseManager5/downloadlicense
```

Paste in the license order ID supplied by QIAGEN and press Enter.

A new license file is downloaded into the `licenses` folder, which is under the installation area of the CLC Network License Manager software. This is where the CLC Network License Manager looks for licenses by default. The location of the license file is printed to the terminal.

If the license manager is already running, it must be restarted for new licenses to be loaded.

To download and install a license file on a non-networked machine, please see section [A.4](#).

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

2.3.5 Starting and stopping the CLC Network License Manager on Linux

Starting and stopping the CLC Network License Manager under systemd

If you have configured the CLC Network License Manager service under `systemd`, then:

- To start the service, run the command:

```
systemctl start clclicsrv.service
```

- To stop the service, run the command:

```
systemctl stop clclicsrv.service
```

- To restart the service, run the command:

```
systemctl restart clclicsrv.service
```

If you make changes to the service while it is running by editing or replacing the file at `/etc/systemd/system/clclicsrv.service` or by editing the `licenseserver.cfg` file, or if you add or remove license files from the `licenses` folder, you will need to restart the service to get the changes to take effect.

- To check the status of the service, run the command:

```
systemctl status clclicsrv.service
```

The commands given in this section must be run by a user with administrative privileges.

For more detailed monitoring of a running license manager, including getting information on the licenses available and usage data, please refer to section 4.

Starting and stopping the CLC Network License Manager under SystemV

If you have configured the CLC Network License Manager service under SystemV, then the `clclicsrv` script is used to start and stop the CLC Network License Manager.

- To start the service, run the command:

```
service clclicsrv start
```

- To stop the service, run the command:

```
service clclicsrv stop
```

- To restart the service, run the command:

```
service clclicsrv restart
```

If you make changes to the service while it is running by editing or replacing the file at `/etc/init.d/clclicsrv` or by editing the `licenseserver.cfg` file, or if you add or remove license files from the `licenses` folder, then you need to restart the service to get the changes to take effect.

The commands given in this section must be run by a user with administrative privileges.

For information about monitoring a running license manager, including getting information on its status, the licenses available and usage data, please refer to section 4.

Starting and stopping the CLC Network License Manager without running it as a service

If you choose not to run the CLC Network License Manager as a service, you can start, stop and restart the server directly by editing the file `<installationDirectory>/runscript/clclicsrv` with a text editor (e.g. nano, pico, emacs, vi or similar), providing the relevant information for your installation and environment and then running that script with the argument `start`, `stop` or `restart`.

- To start the server, run the command:

```
<installationDirectory>/runscript/clclicsrv start
```

- To stop the server, run the command:

```
<installationDirectory>/runscript/clclicsrv stop
```

- To restart the service, run the command:

```
<installationDirectory>/runscript/clclicsrv restart
```

If you make changes to the service while it is running by editing the `licenseserver.cfg` file, or if you add or remove license files from the `licenses` folder, then you need to restart the server to get the changes to take effect.

The commands given in this section must be run by a user with administrative privileges.

For information about monitoring a running license manager, including getting information on its status, the licenses available and usage data, please refer to section [4](#).

2.4 Upgrading the CLC Network License Manager

When upgrading from an earlier installed version of the CLC Network License Manager or CLC License Server, the general steps are:

- Stop the running license manager process.
- Install the new CLC Network License Manager in a **new location**, following the installation instructions for the relevant platform.
- Install the licenses, following the instructions for downloading license files for the relevant platform.

Alternatively copy the old license files, usually this is from within the `licenses` folder of the old installation area, into the `licenses` folder of the new installation.

If upgrading the CLC Network License Manager around the time of a major release of the CLC analysis software, we recommend downloading new license files.

- If you have customized the `licenseserver.cfg` file in the older installation, then either copy that file into the installation area of the new CLC Network License Manager or edit the new `licenseserver.cfg` file as needed.

When upgrading from CLC License Server 3.6.1, we recommend that you read and keep a copy of the new `licenseserver.cfg` file as it contains more information about possible configurations than earlier versions of that file. This file has not changed in format between CLC License Server 4.0 and CLC Network License Manager 5.0.

- If you were previously running the CLC Network License Manager (or CLC License Server) as a service, check that the service configuration is correct.

When upgrading on Linux: If the service is configured under SystemV, check that the `clclicsrv` script under `/etc/init.d` has the correct information for the upgraded installation. If changing from using SystemV to `systemd` for handling the CLC Network License Manager service, ensure that you remove any earlier SystemV configuration files from `/etc/init.d`.

- Start up the new CLC Network License Manager following the instructions given for the relevant platform.

Troubleshooting note when upgrading mac installations If the CLC Network License Manager service does not start up as expected on a mac after upgrading from CLC License Server 4.0 to CLC Network License Manager 5.0, check that `/usr/local/lib` is a folder. If you find it is not, for example, if it is a symbolic link to `liblrmxvendor.dylib` in the CLC License Server 4.0 installation, remove that file/symbolic link and rerun the `installservice` script in the installation area of the CLC Network License Manager, e.g. at

```
/Applications/CLCNetworkLicenseManager5/CLCLicenseServerLaunchDaemon/installservice
```

Chapter 3

Configuration

Configuration of the CLC Network License Manager is done by editing the `licenseserver.cfg` file and subsequently restarting the license manger. Many customizations are possible, including setting the paths to various files and creating access restrictions. Many of the configuration options are described within the `licenseserver.cfg` file itself.

Information in this section can also be found at <https://docs.x-formation.com/display/LMX/License+server+configuration+file>, although not all options described there are supported.

3.1 General configuration

Below are descriptions of configuration options that specify the environment of the license manager, paths to various files, and the administration password.

TCP_LISTEN_PORT This option defines the TCP port number that the license manager will use to listen for connections. The TCP port is used for the data traffic protocol.

The default TCP port is 6200, but can be changed by editing the `TCP_LISTEN_PORT` setting.

```
TCP_LISTEN_PORT = 6200
```

A separate UDP port is used for automatic server discovery protocol. The UDP port is fixed to 6200. It cannot be changed.

LICENSE_FILE Specify the path to a license file to be read by the server. The filenames must be lowercase. You can specify one or multiple paths as needed.

By default, all licenses in the folder called *licenses* in the installation area of the CLC Network License Manager will be read.

Examples:

```
LICENSE_FILE = d:\server\network.lic  
LICENSE_FILE = /home/licserver/floating_license.lic  
LICENSE_FILE = /home/licserver/floating_license2.lic
```

REMOTE_ACCESS_PASSWORD Specify the remote administration password which is used when remotely stopping and restarting the license manager, and when carrying out administration tasks via graphical client, described in section 4.1. We recommend this password is changed from its default value.

The password is case-sensitive.

Example:

```
REMOTE_ACCESS_PASSWORD = MyPassword123
```

LOG_FILE Specify where the log file should be written to.

If you do not specify this setting, the log file is written to the default location. See section 4.3 [The license manager log file](#)

If editing this entry, the absolute path to the log file is recommended.

Examples:

```
LOG_FILE = c:\program files\licenserver.log  
LOG_FILE = /var/log/licenseserver.log
```

LOG_EXCLUDE

Exclude specific messages from the log. The following messages can be excluded:

CHECKOUT, CHECKIN, STATUS, BORROW, BORROW_RETURN, REMOVE_USER, REMOTE_RESTART or REMOTE_SHUTDOWN.

Example:

```
LOG_EXCLUDE = CHECKOUT, CHECKIN, STATUS
```

3.2 Access configuration

This section describes how to customize access to licenses. This includes things like defining users or systems that can connect to the CLC Network License Manager, as well as which licenses they have access to, reserving licenses, and restricting borrowing rights.

Configurations are specified as a set of rules. These rules are applied in the sequence they appear in the configuration file. The first rule matched for a particular type of configuration is the one used for that user or system.

Access configurations can be applied for all products or for specific products. An individual product is specified using its feature name. This is indicated in the information below as <feature>. The feature names for the products supported by your network licenses can be found by either of the following methods:

- Running the `lmxendutil` command as described in section [4.2.1](#)
- Running the LM-X License Server Client, described in section [4.1](#), and referring to the drop down list labelled Feature in the right hand pane.

Feature names for a number of CLC products are also provided in the appendix [B](#).

Configurations are set using IP addresses, hostnames or usernames. Multiple entries for a given configuration must be specified as a space-separated list. IP addresses must be specific addresses with the form: A.B.C.D or with wildcards A.*.B.*

To specify that a rule should apply to a group of users, provide the username of each member individually. Alternatively, for CLC Workbenches, members of a particular group could use a single custom username, used when requesting network licenses. Then this custom username could be entered in configurations, instead of individual group member user names. See section [5](#).

3.2.1 Permissions

Standard license checkouts

By default, software on any machine able to connect to the CLC Network License Manager could request a license. This can be restricted, with fine grained configurations limited access to certain hosts, domains or users.

Rules that can be configured:

Option	Argument	Description
ALLOW_IPADDR_ALL	One or more IP addresses	Allow access to all features for the specified IP addresses.
ALLOW_IPADDR_<feature>	One or more IP addresses	Allow access to a specific feature for the specified IP addresses.
DENY_IPADDR_ALL	One or more IP addresses	Deny access to all features for the specified IP addresses.
DENY_IPADDR_<feature>	One or more IP addresses	Deny access to a specific feature for the specified IP addresses.
ALLOW_HOST_ALL	One or more host names	Allow access to all features for the specified host names.
ALLOW_HOST_<feature>	One or more host names	Allow access to a specific feature for the specified host names.
DENY_HOST_ALL	One or more host names	Deny access to all features for the specified host names.
DENY_HOST_<feature>	One or more host names	Deny access to a specific feature for the specified host names.
ALLOW_USER_ALL	One or more users	Allow access to all features for the specified users
ALLOW_USER_<feature>	One or more uses	Allow access to a specific feature for the specified users
DENY_USER_ALL	One or more users	Deny access to all features for the specified users
DENY_USER_<feature>	One or more users	Deny access to a specific feature for the specified users

In the example below, 2 clients on 2 subnets are allowed to connect to the license manager, and two users, *alice* and *bob* are allowed to connect. All others are denied access.

Example 1:

```
ALLOW_IPADDR_ALL = 192.168.1.* 192.168.2.*
ALLOW_USER_ALL = alice bob
DENY_IPADDR_ALL = *.*.*.*
```

In the example below, machines with hostname 'lab1' or 'office1' are denied access to CLC Main Workbench licenses. Other clients on the internal network are allowed to request CLC Main Workbench licenses, but any others are denied access to CLC Main Workbench licenses.

Example 2:

```
DENY_HOST_CLCMAINWB = lab1 office1
ALLOW_IPADDR_CLCMAINWB = 192.168.*.*
DENY_IPADDR_CLCMAINWB = *.*.*.*
```

Borrowing restrictions

By default users can borrow network licenses, allowing them to work for a period of up to 7 days without being connected to the license manager. Borrowing is cases useful in situations like taking a laptop home to work, or when traveling off-site. Workbench users can select the license(s) they wish to borrow from within the Workbench License Manager, and select the duration to borrow the license for. The durations offered are between 1 hour and 7 days.

Rules that can be configured:

Option	Argument	Description
ALLOW_BORROW_IPADDR_ALL	One or more IP addresses	Allow all features to be borrowed for the specified IP addresses.
ALLOW_BORROW_IPADDR_<feature>	One or more IP addresses	Allow the specific feature to be borrowed for the specified IP addresses.
DENY_BORROW_IPADDR_ALL	One or more IP addresses	Deny all features to be borrowed for the specified IP addresses.
DENY_BORROW_IPADDR_<feature>	One or more IP addresses	Deny Allow the specific feature to be borrowed for the specified IP addresses.
ALLOW_BORROW_HOST_ALL	One or more host names	Allow all features to be borrowed for the specified host names.
ALLOW_BORROW_HOST_<feature>	One or more host names	Allow the specific feature to be borrowed for the specified host names.
DENY_BORROW_HOST_ALL	One or more host names	Deny all features to be borrowed for the specified host names.
DENY_BORROW_HOST_<feature>	One or more host names	Deny the specific feature to be borrowed for the specified host names.
ALLOW_BORROW_USER_ALL	One or more users	Allow all features to be borrowed for the specified users
ALLOW_BORROW_USER_<feature>	One or more uses	Allow the specific feature to be borrowed for the specified users
DENY_BORROW_USER_ALL	One or more users	Deny all features to be borrowed for the specified users
DENY_BORROW_USER_<feature>	One or more users	Deny the specific feature to be borrowed for the specified users

The rules are written and used in the same way as the access restriction rules described in the previous section.

The following line would disable borrowing for all users:

```
DENY_BORROW_IPADDR_ALL = *.*.*.*
```

Borrow limits

Two limits are available that can be used to prevent clients from borrowing all the available licenses for a given feature, or from borrowing a feature for an unreasonable long time.

- BORROW_LIMIT_COUNT Imposes a limit on the number of licenses which can be borrowed

to prevent all licenses from being borrowed at the same time. Borrow limits are configured separately for each feature.

The syntax is:

```
BORROW_LIMIT_COUNT_<feature name> = <limit count>
```

Where `<limit count>` is number from 1 to the number of available licenses for the given feature. If you wish to restrict the feature from being borrowed completely you should specify a restriction as described in the previous section.

Example:

```
BORROW_LIMIT_COUNT_CLCMAINWB = 1
BORROW_LIMIT_COUNT_CLCGENOMICSWB = 5
```

The configuration in the example above will allow one license for the CLC Main Workbench to be borrowed and five licenses for the CLC Genomics Workbench to be borrowed.

- **BORROW_LIMIT_HOURS** Limit the number of hours that licenses can be borrowed to prevent licenses from being borrowed too long. Borrow limits are configured separately for each feature.

The syntax is:

```
BORROW_LIMIT_HOURS_<feature name> = <limit hours>
```

Where `<limit hours>` is a number between 1 and the maximum borrow period imposed by the license. The maximum borrow limit for CLC Workbenches is one week.

Example:

```
BORROW_LIMIT_HOURS_CLCMAINWB = 48
BORROW_LIMIT_HOURS_CLCGENOMICSWB = 12
```

The configuration in the example above will allow licenses for the CLC Main Workbench to be borrowed and for 48 hours and licenses for the CLC Genomics Workbench to be borrowed for 12 hours.

3.2.2 Reservations

A specified number of licenses can be reserved for particular users or systems. Rules are applied in the order specified, allowing you to give some users higher priority than others.

Example:

```
RESERVE_USER_CLCGENOMICSWB_1 = joebloggs marysmith
RESERVE_IPADDR_CLCGENOMICSWB_3 = 192.168.2.* 192.168.4.*
```

This would have the effect of reserving 1 CLC Genomics Workbench license for use by joebloggs or marysmith and 3 CLC Genomics Workbench licenses for use on machines with particular IP addresses.

`RESERVE_HOST_feature name_reservenumber` is also available for reserving licenses by hostname.

3.2.3 Limitations

The number of licenses that can be used by particular users or groups of users can be limited, to help support the desired distribution of licenses. Limiting particular users' access is done by a first match rule, so if a user is listed in more than one rule, the first rule encountered will apply to that user.

Example:

```
LIMIT_USER_CLCGENOMICSWB_1 = joebloggs marysmith  
LIMIT_IPADDR_CLCGENOMICSWB_3 = 192.168.2.* 192.168.4.*
```

The first statement would limit the number of CLC Genomics Workbench licenses available to joebloggs and marysmith to one, meaning only one of them could be running a CLC Genomics Workbench at any given time. The second statement specifies that a maximum of 3 CLC Genomics Workbench licenses can be checked out at any given time by machines with IP addresses matching the pattern provided.

`LIMIT_HOST_featurename_limitcount` is also available for limiting licenses by hostname.

Chapter 4

Monitoring the license manager

4.1 The LM-X Graphical License Server Client

The LM-X License Server Client software can be used to monitor license usage as well as carry out administrative tasks, such as restarting or shutting down the license manager and editing the configuration file.

Documentation for the LM-X License Server Client can be found at <https://docs.x-formation.com/display/LMX/Using+LM-X+License+Server+Client>.

Figure 4.1 shows a view of the LM-X License Server Client. The Feature Usage chart shown on the right hand side displays license usage for the selected software over a maximum period of the previous month. For information on longer running instances, the license manager log file can be referred to. See section 4.3 and section 4.2.1.

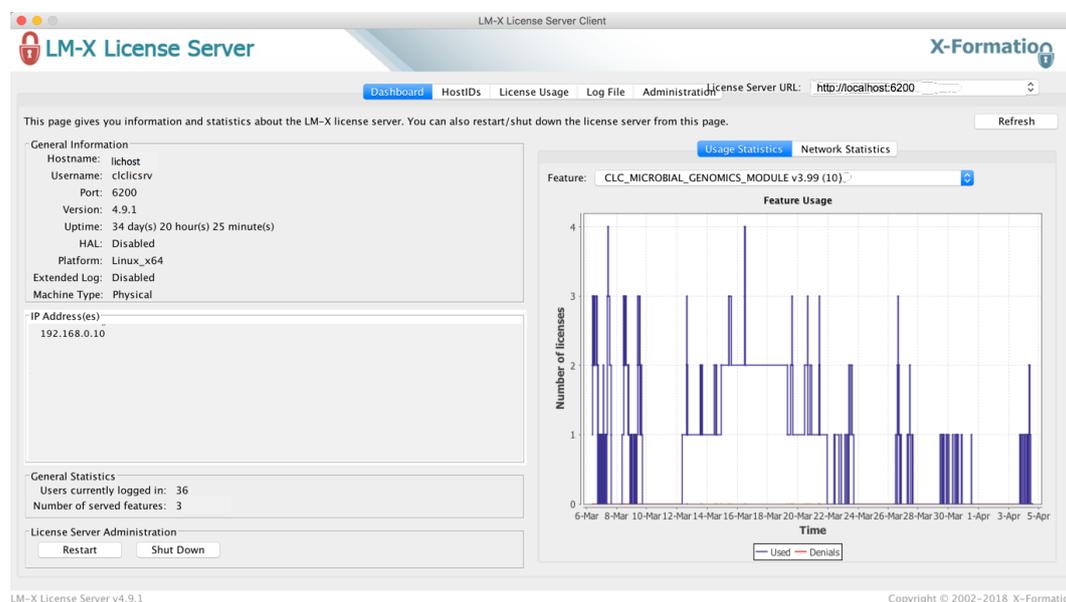


Figure 4.1: The LMX License Server Client provides views of license usage and allows administrative tasks to be carried out. The version of the software reported is that of the underlying LM-X License Manager.

The LM-X License Server Client is distributed as a jar file called `LicserverClient.jar` and is

included with the CLC Network License Manager distribution. It can be used on any system with Java Runtime Environment (JRE) v. 1.8 or newer present on it.

The operating system of the machine LM-X License Server Client is used on does not need to match the operating system of the machine the CLC Network License Manager is running on. So, for example, a license manager running on Linux can be monitored from a computer running Windows.

To get the `LicserverClient.jar` onto a client machine, you can either copy the file from the installation area of the CLC Network License Manager, or you can download the CLC Network License Manager installer for the client machine from <https://digitalinsights.qiagen.com/products/clc-network-license-manager-direct-download/> or from your myCLC account, run the installer, and then use the `LicserverClient.jar` file that is included with the distribution.

4.2 The LM-X End User Utility

The LM-X End User Utility is a command line client that can be used to query the license manager. It is available for all platforms and is distributed as a binary file called `lmxendutil`. It is included with the CLC Network License Manager distribution.

The LM-X End User Utility output displays the *current status* of the license manager. This differs from the information presented using the LM-X License Server Client described in section [4.1](#), which provides information on current and past usage.

In the commands below, the information enclosed in angle-brackets, `<` and `>`, must be replaced by the relevant information for your system. Angle brackets should not be included in the command used.

If you are running the LM-X End User Utility on the same machine as the CLC Network License Manager and it is using the standard port (6200), you can omit the `-host` and `-port` options from the commands. If you omit the `-password` option from the command, you will be prompted for it when executing the command if it is needed.

To display the current status of the license manager, use the command:

```
lmxendutil -licstat -host <server host> -port <port>
```

This returns a listing of the licenses in use, including the user and host name, and date and time a license was checked out.

Licenses checked out for a particular user can be retrieved using the following command:

```
lmxendutil -removeuser -clientusername <user>
-clienthostname <host> -host <host>
-port <port> -password <password>
```

The operating system of the machine the LM-X End User Utility is used on does not need to match the operating system of the machine the CLC Network License Manager is running on. So, for example, a license manager running on Linux can be monitored from a computer running Windows.

To get a copy of the `lmxendutil` suitable for a particular operating system, download the corresponding CLC Network License Manager installer from <https://digitalinsights.qiagen.com/products/clc-network-license-manager-direct-download/> or from your myCLC account, run the installer, and then use the `lmxendutil` program that is included.

4.2.1 XML format status information

The `lmxendutil` End User Utility can also be used to extract the CLC Network License Manager status in XML format.

The syntax for displaying the license statistics in XML format is:

```
/lmxendutil -licstatxml -host <server host> -port <server port>
```

The output produced will look something like that shown below. The values for the `FEATURE_NAME` tags refer to the products licenses being offered on this system.

```
<?xml version="1.0" encoding="UTF-8"?>
<LM-X STAT_VERSION="4.9.1">
<LICENSE_PATH TYPE="NETWORK" HOST="6200@localmachine" SERVER_VERSION="4.9.1" UPTIME="2 day(s)
1 hour(s) 56 min(s) 59 sec(s) "STATUS="SUCCESS">
<FEATURE NAME="ASSEMBLY_CELL" VERSION="5.99" VENDOR="CLCBIO" USED_LICENSES="0" TOTAL_LICENSES="2"
DENIED_LICENSES="0" RESERVED_LICENSES="0" SHARE="VIRTUAL"/>
<FEATURE NAME="BIOMEDICALGENOMICSWB" VERSION="5.99" VENDOR="CLCBIO" USED_LICENSES="1" TOTAL_LICENSES="2"
DENIED_LICENSES="0" RESERVED_LICENSES="0" SHARE="VIRTUAL">
<USED>
<USER NAME="joebloggs" HOST="macbook-xx.local" IP="::1" USED_LICENSES="1" LOGIN_TIME="2018-01-04 09:05"
CHECKOUT_TIME="2018-01-04 09:05"/>
</USED>
</FEATURE>
<FEATURE NAME="CLCGENOMICSWB" VERSION="11.99" VENDOR="CLCBIO" USED_LICENSES="1" TOTAL_LICENSES="2"
DENIED_LICENSES="0" RESERVED_LICENSES="0" SHARE="VIRTUAL">
<USED>
<USER NAME="marysmith" HOST="macbook-yy.local" IP="::1" USED_LICENSES="1" LOGIN_TIME="2018-01-04 09:04"
CHECKOUT_TIME="2018-01-04 09:04"/>
</USED>
</FEATURE>
<FEATURE NAME="CLCMAINWB" VERSION="8.99" VENDOR="CLCBIO" USED_LICENSES="0" TOTAL_LICENSES="2"
DENIED_LICENSES="0" RESERVED_LICENSES="0" SHARE="VIRTUAL"/>
</LICENSE_PATH>
</LM-X>
```

A list of the feature names for many of our licensed products is given in the appendix [B](#).

Depending on how this output is processed you can use this functionality for many different purposes including:

- Automatic monitoring of license manager health and usage
- Generating statistics about license usage
- Presenting the status of the license manager in some other way (for example on a web page)

4.3 The license manager log file

A good source of information about a running CLC Network License Manager is the log file. It contains information about the license manager software itself (e.g. start up, shutdown, version, location of the configuration file, etc.) as well as about the licenses available, and the usage of those licenses. By default, the log file is created anew when the CLC Network License Manager is started up.

The log file is a text file called `licenseserver.log` and is located in the installation area of the CLC Network License Manager. It can be viewed directly using standard tools for reading text files, or it can be viewed and searched using the LM-X License Server Client described in section 4.1.

The name and location of the log file, and aspects of its contents, can be customized as described in section 3.1.

The log file can be used for generating license usage statistics directly, but for this purpose, the LM-X License Server Client or the XML output that can be generated using the LM-X End User Utility tool, described in section 4.2.1 may be of interest.

The top of a CLC Network License Manager log file is shown below. This example information is from a license manager running on Windows, but the output looks similar on all platforms. In this case, two license files were found in the `licenses` folder, and two licenses are available, one for the CLC Genomics Workbench and one for the CLC Main Workbench.

```
[2021-05-17 13:53:10] LM-X License Server v4.9.1 build xxxxxxxx on <..host info..> (Win64_x64)
[2021-05-17 13:53:10] Copyright (C) 2002-2018 X-Formation. All rights reserved.
[2021-05-17 13:53:10] Website: http://www.lm-x.com http://www.x-formation.com
[2021-05-17 13:53:10] License server has pid xxxxxx.
[2021-05-17 13:53:10] Serving licenses for vendor CLCBIO.
[2021-05-17 13:53:10]
[2021-05-17 13:53:10] License server using TCP IPv4 port 6200.
[2021-05-17 13:53:10] License server using TCP IPv6 port 6200.
[2021-05-17 13:53:10] License server using UDP IPv4 port 6200.
[2021-05-17 13:53:10] WARNING: Windows firewall blocks TCP port 6200.
[2021-05-17 13:53:10] WARNING: Communication to license server might not work properly.
[2021-05-17 13:53:11] WARNING: Windows firewall blocks UDP port 6200.
[2021-05-17 13:53:11] WARNING: Automatic server discovery might not work properly.
[2021-05-17 13:53:11] Reading licenses...
[2021-05-17 13:53:11] License file(s):
[2021-05-17 13:53:11] C:\Program Files\CLCNetworkLicenseManager5\licenses\CLC-NETWORKLICENSE-xxxxx-xxxxx-xxxxx
[2021-05-17 13:53:11] C:\Program Files\CLCNetworkLicenseManager5\licenses\CLC-NETWORKLICENSE-xxxxx-xxxxx-xxxxx
[2021-05-17 13:53:11] Log file path: C:\Program Files\CLCNetworkLicenseManager5\licenseserver.log
[2021-05-17 13:53:11] Log to stdout: No
[2021-05-17 13:53:11] Log format: Normal
[2021-05-17 13:53:11] Configuration file path: C:\Program Files\CLCNetworkLicenseManager5\licenseserver.cfg
[2021-05-17 13:53:11] Serving following features:
[2021-05-17 13:53:11] CLCGENOMICSWB (v21.99) (1 license(s)) license type: exclusive
[2021-05-17 13:53:11] CLCMAINWB (v21.99) (1 license(s)) license type: exclusive
[2021-05-17 13:53:11]
[2021-05-17 13:53:11] To administrate the license server go to your enduser directory and run the License Serv
[2021-05-17 13:53:11] Ready to serve...
```

Chapter 5

Configuring Workbenches to use network licenses

Workbench users configure their software to connect to the CLC Network License Manager using the Workbench's License Manager.

Once configured, the information about how to connect to the CLC Network License Manager is stored in a file called *license.properties* under the settings directory in the installation area of the Workbench (e.g. C:\Program Files\CLC Main Workbench 21\settings\license.properties).

A running Workbench uses a Workbench license, whether or not the Workbench is being actively used. A Workbench needs to be shut down to release the license for others to use. It is possible to retrieve a license from running software, but in practice, a Workbench will immediately re-contact the license manager and thus would almost always get the license back right away.

The Workbench License Manager is shown in figure 5.1.

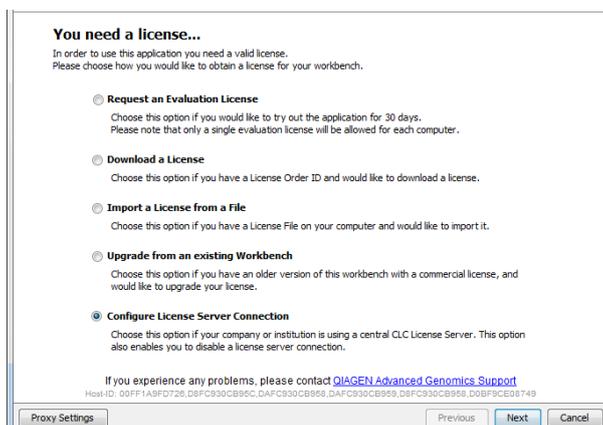


Figure 5.1: Select "Configure license server connection".

To configure the Workbench to connect to a *CLC Network License Manager* or *CLC License Server*, select the **Configure License Server connection** option and click on the **Next** button. A dialog appears, as shown in figure 5.2.

The options in that dialog are:

- **Enable license server connection.** This box must be checked for the Workbench is to

Configure License Server connection...

Please choose how you would like to connect to your CLC License Server.

Enable license server connection

Automatically detect license server.

Manually specify license server:

 Hostname/IP-address:

 Port:

Use custom username when requesting a license

 Username:

Disable license borrowing

If you choose this option, users of this computer will not be able to borrow licenses from the License Server.

Figure 5.2: Connecting to a CLC Network License Manager or CLC License Server.

contact the *CLC Network License Manager* or CLC License Server to get a license for the CLC Workbench.

- **Automatically detect license server.** By checking this option the Workbench will look for a *CLC Network License Manager* or CLC License Server accessible from the Workbench. Automatic server discovery sends UDP broadcasts from the Workbench on port 6200. Available license servers respond to the broadcast. The Workbench then uses TCP communication for to get a license, if one is available. Automatic server discovery works only on local networks and will not work on WAN or VPN connections. Automatic server discovery is not guaranteed to work on all networks. If you are working on an enterprise network on where local firewalls or routers cut off UDP broadcast traffic, then you may need to configure the details of the *CLC Network License Manager* or CLC License Server using the **Manually specify license server** option instead.
- **Manually specify license server.** Select this option to enter the details of the machine the *CLC Network License Manager* or CLC License Server software is running on, specifically:
 - **Host name.** The address of the machine the *CLC Network License Manager* or CLC License Server software is running on.
 - **Port.** The port used by the *CLC Network License Manager* or CLC License Server to receive requests.
- **Use custom username when requesting a license.** Optional. If this is checked, a username can be entered that will be used when requesting a network license instead of the username of the account being used to run the Workbench.
- **Disable license borrowing on this computer.** Check this box if you do not want users of the computer to borrow a license. See section 5 for further details.

Special note on modules needing a license

A valid module license is needed to start a module tool, or a workflow including a module tool. Network licenses for modules are valid for four hours after starting the tool or the workflow. A process started (whether a module tool or a workflow including a module tool) will always be completed, even if its completion exceeds the four hours period where the license is valid.

If the tool or the workflow completes before the four hour validity period, it is possible to start a new tool or a workflow, and this will always refresh the validity of the license to a full four hours period. However, if the tool or the workflow completes after the four hour validity period, a new license will need to be requested after that to start the next tool or workflow.

These measures ensure that more licenses are available to active users, rather than blocked on an inactive computer, i.e., where the workbench would be open but not in use.

Borrowing a license

A CLC Workbench using a network license normally needs to maintain a connection to the *CLC Network License Manager* or CLC License Server. However, if allowed by the network license administrator, network licenses can be *borrowed* for offline use. During the period a license has been borrowed, there will be one less network license available for other users.

If administrator has chosen not to allow the borrowing of network licenses, then the information in this section is not relevant.

The Workbench must be connected to the *CLC Network License Manager* or CLC License Server at the point when the license is borrowed. The procedure for borrowing a license is:

1. Go to the Workbench menu option:

Help | License Manager

2. Click on the "Borrow License" tab to display the dialog shown in figure 5.3.

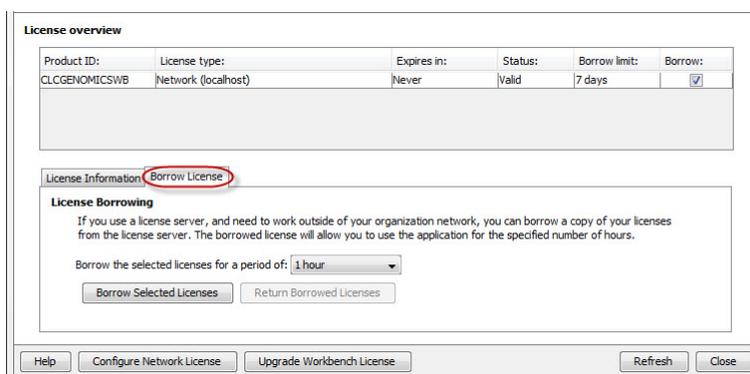


Figure 5.3: Borrow a license.

3. Select the license(s) that you wish to borrow by clicking in the checkboxes in the Borrow column in the License overview panel.
4. Choose the length of time you wish to borrow the license(s) for using the drop down list in the Borrow License tab. By default the maximum is 7 days, but network license administrators can specify a lower limit than this.
5. Click **Borrow Selected Licenses**.
6. Close the License Manager when you are done.

You can now go offline and continue working with the CLC Workbench. When the time period you borrowed the license for has elapsed, the network license will be again made available for other

users. To continue using CLC Workbench with a license, you will need to connect to the network again so the Workbench can request another license.

You can return borrowed licenses early if you wish by started up the **License Manager**, opening the "Borrow License" tab, and clicking on the **Return Borrowed Licenses** button.

Common issues when using a network license

- No license available at the moment If all licenses are in use, you will see a dialog like that shown in figure 5.4 when you start up the Workbench.

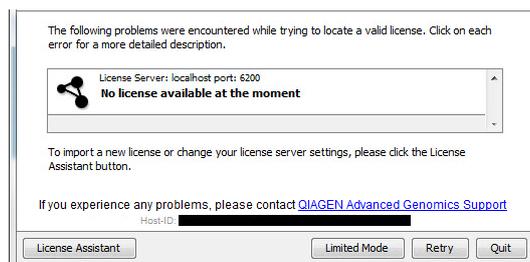


Figure 5.4: This window appears when there are no available network licenses for the software you are running.

You will need to wait for at least one license to be returned before you can continue to work with a fully functional copy of the software. If running out of licenses is a frequent issue, you may wish to discuss this with your administrator.

Clicking on the **Viewing Mode** button in the dialog allows you to run the CLC Workbench for viewing data, and for basic analyses, import and export. Please see section ?? for further details.

- Lost connection to the CLC Network License Manager or CLC License Server If the Workbench connection to the *CLC Network License Manager* or CLC License Server is lost, you will see a dialog like that shown in figure 5.5.

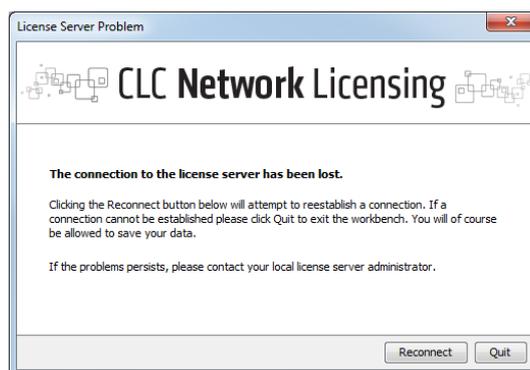


Figure 5.5: Here, the Workbench is unable to establish a connection to obtain a network license.

If you have chosen the option to **Automatically detect license server** and you have not succeeded in connecting to the *CLC Network License Manager* or CLC License Server before, please check with your local IT support that automatic detection will be possible to do at your site. If it is not, you will need to specify the settings, as described earlier in this section.

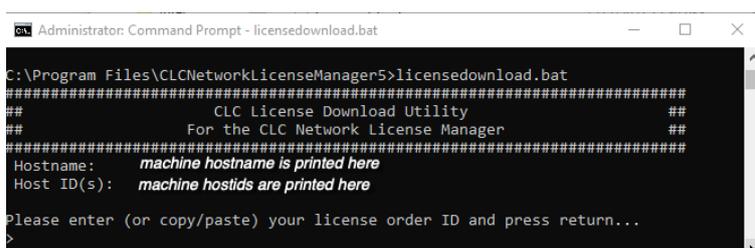
If you have successfully contacted the *CLC Network License Manager* or *CLC License Server* from your Workbench previously, please consider discussing this issue with your administrator, for example, making sure that the *CLC Network License Manager* or *CLC License Server* is running and that your Workbench is able to connect to it.

Appendix A

License download

A.1 Download license files for Windows

On a networked machine, license files can be downloaded by running the `licensedownload.bat` script with administrator privileges. To do this, view the contents of the CLC Network License Manager installation directory, and right-click on the `licensedownload.bat` file. Choose the option **Run as administrator** from the context menu. This will result in a window like that shown in Figure 2.4.



```
Administrator: Command Prompt - licensedownload.bat
C:\Program Files\CLCNetworkLicenseManager5>licensedownload.bat
#####
##          CLC License Download Utility          ##
##          For the CLC Network License Manager  ##
#####
Hostname:    machine hostname is printed here
Host ID(s):  machine hostids are printed here
Please enter (or copy/paste) your license order ID and press return...
>
```

Figure A.1: Enter a License Order ID at the prompt to download a license.

Paste the Order ID supplied by QIAGEN.

When you run the `licensedownload.bat` script, a new license file is downloaded into the `licenses` folder, which is under the installation area of the CLC Network License Manager software. This is where the CLC Network License Manager looks for licenses by default.

If the license manager is already running, you need to restart it for the new licenses to be loaded. You can restart the service through the Services control panel, as shown in figure 2.2. It can also be restarted by right-clicking on the `restartservice` script and choosing the option **Run as administrator**.

To download and install a license file on a non-networked machine, please see section A.4.

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

A.2 Download license files for macOS

Downloading and installing licenses on a machine with the CLC Network License Manager installed and with access to the external network is described in this section. To download and install a license file on a system without access to the external network, please see section A.4.

To download and install licenses in the CLC Network License Manager on a machine with access to the external network:

1. Run the `downloadlicense.command` script, found in the CLC Network License Manager installation area. Usually this will need to be done as a user with administrator privileges.

For example, if the default installation location for the CLC Network License Manager was used, the following command could be run:

```
sudo /Applications/CLCNetworkLicenseManager5/downloadlicense.command
```

This script launches a terminal window, where you are prompted to supply a license order ID.

2. Paste in the license order ID supplied by QIAGEN and press Enter.

A new license file is downloaded into the `licenses` folder of the installation area of the CLC Network License Manager software. This is where the CLC Network License Manager looks for licenses by default. The location of the file is printed to the terminal.

3. To load the new license information, the CLC Network License Manager service must be started up, or re-started if it is already running. See section section 2.2.5 for details about how to do this.

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

A.3 Download license files for Linux

On a networked machine, license files can be downloaded using the `downloadlicense` script with administrator privileges. For example, if the default installation location for the CLC Network License Manager was used, the following command could be run:

```
sudo /opt/CLCNetworkLicenseManager5/downloadlicense
```

Paste in the license order ID supplied by QIAGEN and press Enter.

A new license file is downloaded into the `licenses` folder, which is under the installation area of the CLC Network License Manager software. This is where the CLC Network License Manager looks for licenses by default. The location of the license file is printed to the terminal.

If the license manager is already running, it must be restarted for new licenses to be loaded.

To download and install a license file on a non-networked machine, please see section A.4.

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

A.4 Download license files on non-networked machines

The license download tools distributed with the CLC Network License Manager assume the machine the tool is running on has access to the external network. This section outlines how to download a license when this is not the case.

Please make sure you have your license order ID before you start the below process.

1. Find the host ID of the machine that will run the CLC Network License Manager software by running the license download script located in the installation area of the software. The relevant script name for each OS is:
 - On Linux: `downloadlicense`
 - On macOS: `downloadlicense.command`
 - On Windows: `licensedownload.bat`

Note down the host ID.

2. Go to a computer with internet access, open a browser window and go to the network license download web page
<https://secure.clcbio.com/LmxWSv3/GetNetworkLicenseFile>
3. Paste in your license order ID and the host ID noted down earlier.
4. Click on the 'Download License' button and save the resulting .lic file.
5. Copy this file onto the machine with the CLC Network License Manager software installed, placing it in the folder called `licenses` in the CLC Network License Manager installation directory.
6. Restart the CLC Network License Manager by following instructions in the "Downloading Licenses" section of this manual pertinent to the operating system you are running the CLC Network License Manager on.

We recommend that all license files are placed in the `licenses` subfolder of the installation directory. This location is used by default by the CLC Network License Manager without requiring further configuration.

If license files are placed elsewhere their locations must be configured. See section 3 for further details.

Upgrading an existing license: If you are *upgrading* an existing license file, then it is very important that old license files, that is, the ones you are replacing, are deleted before the

CLC Network License Manager is restarted. The old file(s) can be removed before or after you download the new license file(s).

If you have not received a license order ID or there are problems with your license order ID, please contact bioinformaticslicense@qiagen.com.

Appendix B

Feature names

Feature names are used when configuring the CLC Network License Manager to limit or restrict access to licenses for particular products. The feature names supported by your network licenses can be found by running the `lmxendutil` command as described in section 4.2.1 Below is a table of the feature names for some of our licensed products.

Product name	Feature name for configuration purposes
CLC Assembly Cell	ASSEMBLY_CELL
CLC Genomics Workbench	CLCGENOMICSWB
CLC Main Workbench	CLCMAINWB
CLC Premium Modules (21.x and later)	CLC_GENOMICS_PREMIUM_MODULES
CLC MLST Module	CLCMLSTMODULE
CLC Genome Finishing Module (20.x and earlier)	CLC_MICROBIAL_GENOME_FINISHING_MODULE
CLC Microbial Genomics Module (20.x and earlier)	CLC_MICROBIAL_GENOMICS_MODULE

If a licensed product you are interested in is not listed in the table above and you have not been able to determine it using the `lmxendutil`, as described in section 4.2, please contact us at ts-bioinformatics@qiagen.com.

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