TASKING®

TASKING License Management

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Manual Purpose and Structure

Manual Purpose

You should read this manual if you:

- install a licensed TASKING product and need more information about licensing and installation than what is described in the Getting Started manual of the TASKING product
- are upgrading or otherwise modifying existing licenses
- install a TASKING local license server on a network

Manual Structure

Chapter 1, *Licensing Overview*

Contains an overview of the terminology used in this manual and describes the different license types.

Chapter 2, *Licensing TASKING Products*

Explains step-by-step how to obtain and install a license for a TASKING product. Also contains a list of options and environment variables that a TASKING product uses to check for a license. Furthermore it explains the use of a license file.

Chapter 3, *Local License Server*

Explains how to install and configure a local license server.

Chapter 4, *Administering Licenses*

Explains how to monitor the status of the local license server. Also explains how to borrow, join or bulk install licenses and control access to licenses.

Related Publications

For details about installing a TASKING product, see the Getting Started manual delivered with the product.

Chapter 1. Licensing Overview

1.1. Licensing Terminology

TASKING products are protected with TASKING license management (TLM) software. To use a TASKING product, you must install that product and install a license.

The following terminology is used to describe the licensing concepts and software components (in alphabetical order).

Access file

An access file is a file used by a local license server with rules to bind, deny and permit users and systems to licenses.

Client

A client is a TASKING product for which a license is needed. For example, a C compiler.

Computer ID

The computer ID is an alphanumeric value that uniquely identifies your computer. The Computer ID is required to identify the computer for a node-locked license.

Heartbeat

The heartbeat is the duration in seconds after which a client tries to refresh a license from the server.

License

A license is the right to use a product. During the execution of a TASKING product (client), the client verifies whether you have the right to use it. Therefore, the client sends the license key to the license server. If you are allowed to use the client the license server sends a granted license back to the client. If you use a node-locked client based license the license is not retrieved from a license server but is read from a license file stored on your computer.

License key

The license key is a unique key (in the format xxxx-xxxx-xxxx-xxxx) provided to you by TASKING. The license key is associated with the product you ordered, it identifies that you have the right to use the product. During the installation of your product you need to enter this key.

License pool

A license pool is a pool of licenses from which the local license server can pick a license. By using a license pool you can join or group licenses for a TASKING product.

License server

A license server is the process that handles the license requests from client processes. A license server can be a remote license server on the internet or a local license server on your company network.

In this manual "TASKING Local License Server" and "Local License Server" are used as synonyms. "Remote License Server" is used as a synonym for "TASKING Remote License Server".

License type

Any of the license types as explained in Section 1.2, *License Types*.

Linger time

The linger time is a period in which the license server recognizes the license as being in-use after the user exits the software and the license is no longer running. During that period another user cannot use the license. After the linger time has finished, the license seat will be freed by the license server.

In build systems or larger builds that employ multiple files to be compiled and linked, the build time is such that it may happen that another client attempts to use a license. As the tools (compiler, assembler) are individually called per file to compile and assemble, a different user may 'grab' a license in between calls and the build would terminate abnormally. To avoid this, especially if the number of available licenses is exhausted, the linger time was introduced.

Pool name

A pool name is the name of a license pool in the format POOL-*xxxxx-xxxx-xxxx* for TASKING products prior to March 2023, or POOL-*name* for TASKING products built with TLM v1.5r1 or newer.

Process limit

The maximum number of parallel processes allowed by a build server license.

Seats

The number of users that are allowed to use the client according to the license.

Security ID

The security ID is an alphanumeric value that uniquely identifies the computer that runs a local license server.

1.2. License Types

The following license types can be ordered from TASKING.

Node-locked license

A node-locked license locks the software to one specific computer so you can use the product on that particular computer only.

For information about installing a node-locked license see Section 2.3.2, *Installing Server Based Licenses (Floating or Node-Locked)* and Section 2.3.3, *Installing Client Based Licenses (Node-Locked)*.

Floating license

A floating license is a license located on a license server and can be used by multiple users on the network. Floating licenses allow you to share licenses among a group of users up to the number of users (seats) specified in the license.

For example, suppose 50 developers may use a client but only ten clients are running at any given time. In this scenario, you only require a ten seats floating license. When all ten licenses are in use, no other client instance can be used. Also a linger time is in place. This means that a license seat is locked for a period of time after a user has stopped using a client. The license seat is available again for other users when the linger time has finished.

For information about installing a floating license see Section 2.3.2, *Installing Server Based Licenses (Floating or Node-Locked)*.

Build server license

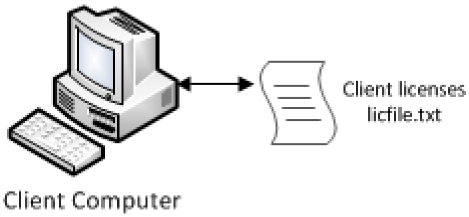
A build server license is a license on a central computer system, shared (used) by other systems, automated processes or users. A build server license is limited to a maximum number of parallel processes per user (seat). A build server license is usually installed as a floating license with a process limit.

When the maximum number of parallel processes is reached a new client process is set to waiting until the number of running client processes under the same license seat is below the process limit.

License service types

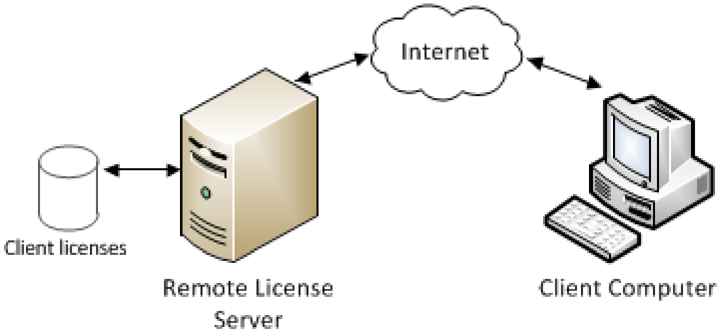
The license service type specifies the process used to validate the license. The following types are possible:

- **Client based** (also known as 'standalone'). The license is serviced by the client. All information necessary to service the license is available on the computer that executes the TASKING product. This license service type is available for node-locked licenses only.

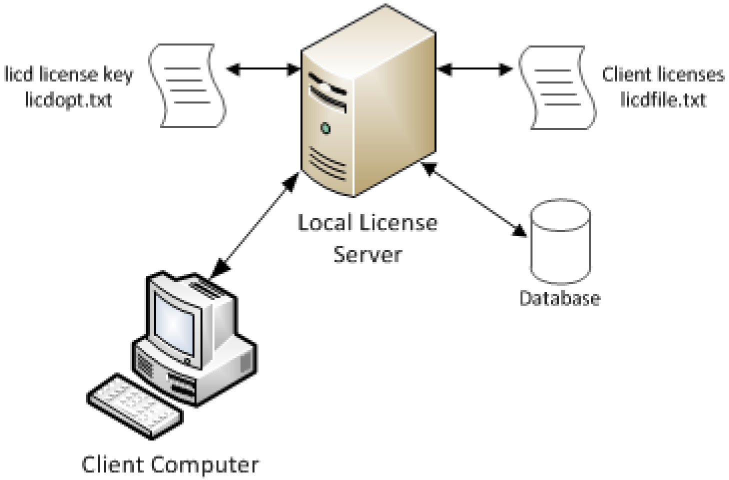


- **Server based** (also known as 'network based'). The license is serviced by a separate license server program that runs either on your companies' network or runs in the cloud. This license service type is available for both node-locked licenses and floating licenses.

  Licenses can be serviced by a cloud based license server called "**Remote License Server**". This is a license server that is operated by TASKING.



  Alternatively, you can install a license server program on your local network. Such a server is called a "**Local License Server**". You have to configure such a license server yourself, see Section 3.3, *Installing a Local License Server*.



  The benefit of using the Remote License Server is that product installation and configuration is simplified.

  Unless you have an IT department that is proficient with the setup and configuration of licensing systems we recommend to use the facilities offered by the Remote License Server.

Chapter 2. Licensing TASKING Products

This chapter guides you through the process of licensing a TASKING product.

Installation advice when using a local license server

During the installation of a TASKING product you can specify to use a local license server. If you do so, the installation program asks for the server name and port number of the local license server. If you do not know this information, you can simplify the installation if you first install and run the local license server before you install the TASKING product. See Section 3.3, *Installing a Local License Server*.

2.1. Obtaining a License

You need a license key when you install a TASKING product on a computer. If you have not received such a license key follow the steps below to obtain one. Otherwise, you cannot install the software.

Obtaining a server based license (floating or node-locked)

- Order a TASKING product from TASKING or one of its distributors.

  A license key will be sent to you by email or on paper.

If your node-locked server based license is not yet bound to a specific computer ID, the license server binds the license to the computer that first uses the license.

Obtaining a client based license (node-locked)

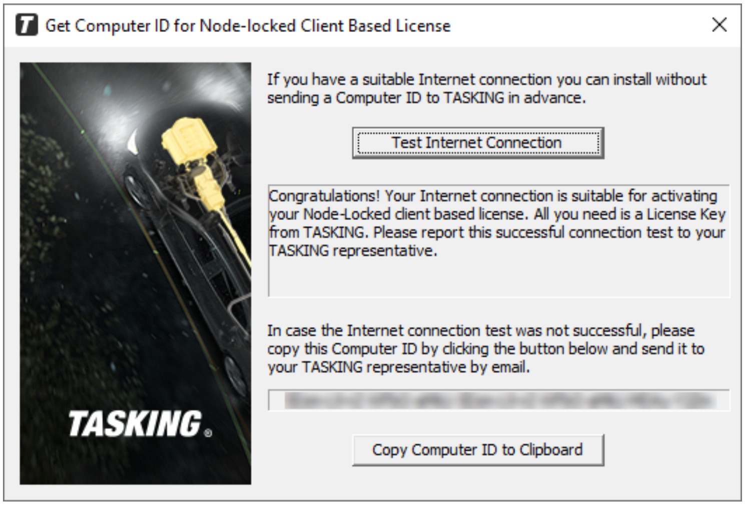
To use a TASKING product on one particular computer with a license file, TASKING needs to know the computer ID that uniquely identifies your computer. You can do this with the **getcid** program that is available on the TASKING website. The detailed steps are explained below.

1. Download the **getcid** program from https://www.tasking.com/support/tlm/downloads.

2. Execute the **getcid** program on the computer on which you want to use a TASKING product. The tool has no options. For example,

   Windows (GUI):

   ```
   getcid_version
   ```


Get Computer ID for Node-locked Client Based License
TASKING
Test Internet Connection
Copy Computer ID to Clipboard

If you have a suitable Internet connection you can install without sending a Computer ID to TASKING in advance.

Congratulations! Your Internet connection is suitable for activating your Node-Locked client based license. All you need is a License Key from TASKING. Please report this successful connection test to your TASKING representative.

In case the Internet connection test was not successful, please copy this Computer ID by clicking the button below and send it to your TASKING representative by email.

[redacted]

The computer ID is displayed in the lower part of the dialog.

Windows (command prompt):

```
getcidcmd_version
```

The computer ID is displayed on your screen.

Linux:

```
./getcid_version
ComputerID: 5Dzm-L9+Z-WFbO-aMkU-5Dzm-L9+Z-WFbO-aMkU-MDAy-Y2Zm
```

The computer ID is displayed on your screen.

3. Order a TASKING product from TASKING or one of its distributors and supply the computer ID.

   A license key and a license file will be sent to you by email or on paper.

When you have received your TASKING product, you are now ready to install it.

2.2. Frequently Asked Questions (FAQ)

If you have questions or encounter problems you can check the support page on the TASKING website.

https://www.tasking.com/support/tlm/faqs

This page contains answers to questions for the TASKING license management system TLM.

If your question is not there, please contact your nearest TASKING Sales & Support Center or Value Added Reseller.

2.3. Installing a License

On Windows the license setup procedure is done by the installation program. On Linux you have to install a license manually.

If the installation program can access the internet then you only need the license key. Given the license key the installation program retrieves all required information from the remote license server. The installation program sends the license key and the computer ID of the computer on which the installation program is running to the remote license server, no other data is transmitted.

If the installation program cannot access the internet the installation program asks you to enter the required information by hand. If you install a node-locked client based license you should have the license file at hand (see Section 2.1, *Obtaining a License*).

Floating licenses are always server based and node-locked licenses can be server based. All server based licenses are installed using the same procedure.

2.3.1. Configure the Firewall in your Network

For using the TASKING license servers the TASKING license manager tries to connect to the remote license servers `lic1.tasking.com`, `lic2.tasking.com`, `lic3.tasking.com`, `lic4.tasking.com` at the TCP ports 8080, 8936 or 80. Make sure that the firewall in your network is transparently enabled for one of these ports.

2.3.2. Installing Server Based Licenses (Floating or Node-Locked)

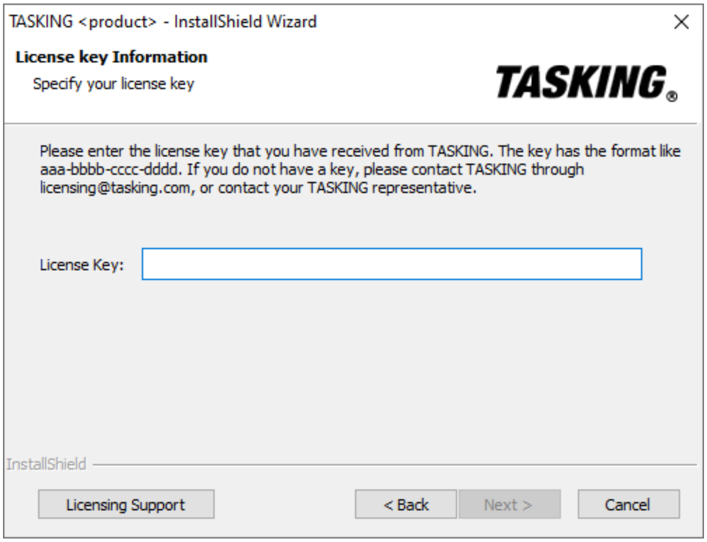
If you do not have received your license key, read Section 2.1, *Obtaining a License* before you continue.

Windows

1. If you want to use a local license server, first install and run the local license server before you continue with step 2. See Section 3.3, *Installing a Local License Server*.

2. Install the TASKING product and follow the instructions that appear on your screen.

   The installation program asks you to enter the license information.



TASKING <product> - InstallShield Wizard

License key Information

Specify your license key

Please enter the license key that you have received from TASKING. The key has the format like aaa-bbbb-cccc-dddd. If you do not have a key, please contact TASKING through licensing@tasking.com, or contact your TASKING representative.

License Key:

3. In the **License Key** field enter the license key you have received from TASKING and click **Next** to continue.

   *The installation program tries to retrieve the license information from a remote license server. Wait until the license information is retrieved. If the license information is retrieved successfully subsequent dialogs are already filled-in and you only have to confirm the contents of the dialogs by clicking the **Next** button. If the license information is not retrieved successfully you have to enter the information by hand.*

4. Select your **License Type** and click **Next** to continue. If the license type is already filled in and grayed out, you can just click **Next** to continue.

   You can find the license type in the email or paper that contains the license key.

5. (For floating licenses only) Select **Remote license server** to use one of the remote license servers, or select **Local license server** for a local license server. The latter requires optional software.

   (For local license server only) specify the **Server name** and **Server port** of the local license server.

6. Click **Next** and follow the rest of the instructions to complete the installation.

Linux

1. If you want to use a local license server, first install and run the local license server before you continue with step 2. See Section 3.3, *Installing a Local License Server*.

2. After installation of the TASKING product, the license options file `licopt.txt` is present in the directory *<install-dir>*/*<product-name>*`/etc`, for example `/opt/TriCore/etc` for the TriCore product, assuming you have installed the TASKING product in `/opt`. Edit this file with a text editor and change the line:

   ```
   TSK_LICENSE_KEY_SW160800 = 0000-0000-0000-0000
   ```

Replace `0000-0000-0000-0000` with the license key you obtained from TASKING.

3. Set the environment variable `TSK_OPTIONS_FILE_<Product-Code><version>` to the absolute location of `licopt.txt`. For example:

```
TSK_OPTIONS_FILE_SW160800v6_3r1=/opt/TriCore/etc/licopt.txt
export TSK_OPTIONS_FILE_SW160800v6_3r1
```

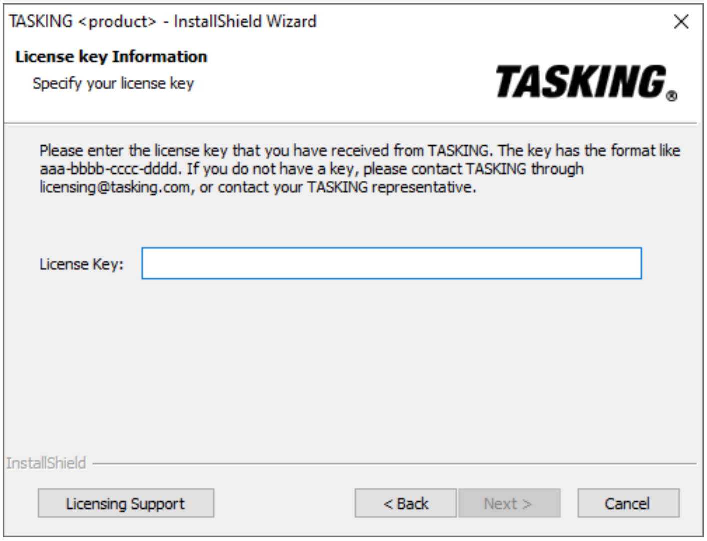
2.3.3. Installing Client Based Licenses (Node-Locked)

If you do not have received your license key and license file, read Section 2.1, *Obtaining a License* before continuing.

Windows

1. Install the TASKING product and follow the instructions that appear on your screen.

   The installation program asks you to enter the license information.



TASKING <product> - InstallShield Wizard

License key Information

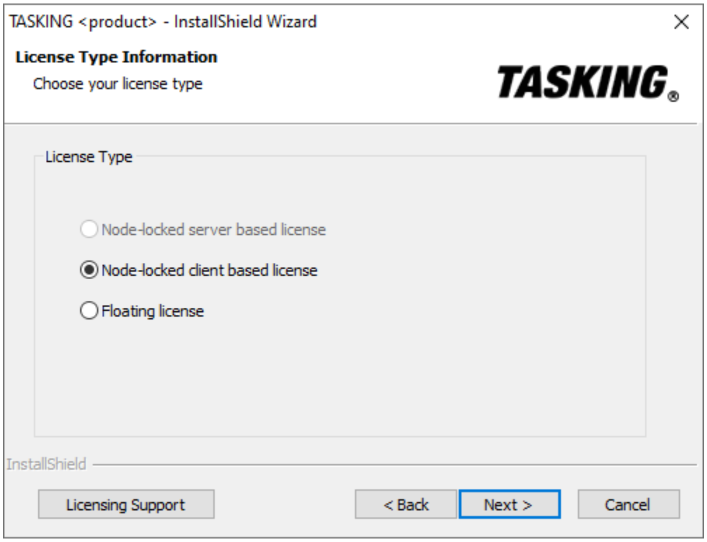
Specify your license key

Please enter the license key that you have received from TASKING. The key has the format like aaa-bbbb-cccc-dddd. If you do not have a key, please contact TASKING through licensing@tasking.com, or contact your TASKING representative.

License Key:

2. In the **License Key** field enter the license key you have received from TASKING and click **Next** to continue.

   *The installation program tries to retrieve the license information from a remote license server. Wait until the license information is retrieved. If the license information is retrieved successfully subsequent dialogs are already filled-in and you only have to confirm the contents of the dialogs by clicking the **Next** button. If the license information is not retrieved successfully you have to enter the information by hand.*



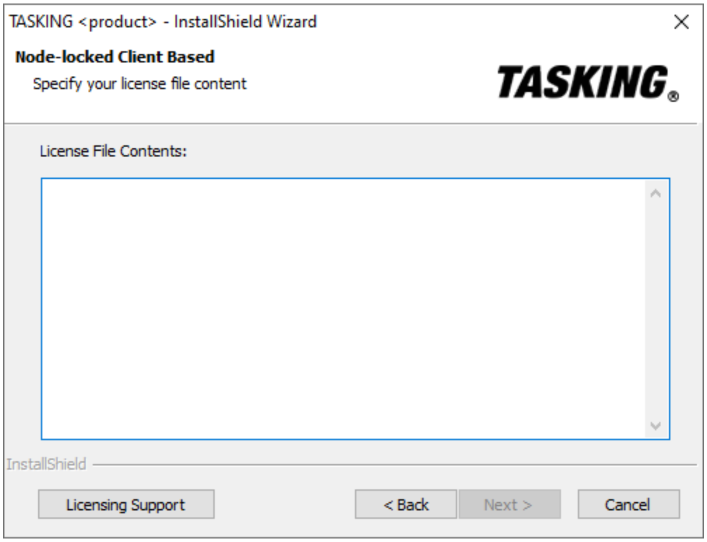
License Type

○ Node-locked server based license

● Node-locked client based license

○ Floating license

3. Select **Node-locked client based license** and click **Next** to continue.



4. In the **License File Contents** field enter the contents of the license file you have received from TASKING.

   The license data is stored in the file licfile.txt in the etc directory of the product (<install_dir>\etc).

5. Click **Next** and follow the rest of the instructions to complete the installation.

Linux

1. Install the TASKING product and put the license file `licfile.txt` you have received from TASKING in the directory *<install-dir>*/*<product-name>*`/etc`. For example, if you installed a TriCore product in `/opt`, the path is `/opt/TriCore/etc`

2. After installation of the TASKING product, the license options file `licopt.txt` is present in the directory *<install-dir>*/*<product-name>*`/etc`. Edit this file with a text editor:

   a. Change the line:

   ```
   TSK_LICENSE_KEY_SW160800 = 0000-0000-0000-0000
   ```

   Replace `0000-0000-0000-0000` with the license key you obtained from TASKING.

   b. Change the line:

   ```
   #TSK_LICENSE_FILE_SW160800 = licfile.txt
   ```

   to:

   ```
   TSK_LICENSE_FILE_SW160800=/opt/TriCore/etc/licfile.txt
   ```

   Specify the absolute path to the file `licfile.txt`.

3. Set the environment variable `TSK_OPTIONS_FILE_`*`<Product-Code><version>`* to the absolute location of `licopt.txt`. For example:

   ```
   TSK_OPTIONS_FILE_SW160800v6_3r1=/opt/TriCore/etc/licopt.txt
   export TSK_OPTIONS_FILE_SW160800v6_3r1
   ```

2.4. License Files Created During Installation

The installation program stores the license key in the file `licopt.txt` in the `etc` directory of the product. See Section 2.4.1, *Licensing Options File* for details about this file. Additionally, for a node-locked client base license only, the installation program stores the license data in the file `licfile.txt` in the `etc` directory of the product. See Section 2.4.2, *License File* for more information.

2.4.1. Licensing Options File

All information needed by the client program to perform the license check is read from the options file `licopt.txt` or from environment variables. The options in the options file have precedence over the environment variables.

You can specify the name and location of the options file in an environment variable. When you specify an absolute path then that file is taken. When you specify a relative path or only the filename then the specified file is searched for according to a search path.

The license options file is searched for in this order:

1. Search for the license options file in an environment variable in this order:

   ```
   TSK_OPTIONS_FILE_SWxxxxxxvX_YrZ=file
   TSK_OPTIONS_FILE_SWxxxxxxhhXXY=file
   TSK_OPTIONS_FILE_SWxxxxxx=file
   TSK_OPTIONS_FILE=file
   ```

   where,

   SW*xxxxxx* is the product code,

   hh is the host code (02 is Linux, 05 is Windows),

   v*X_Y*r*Z* is the full version of the product, and

   XXY is the major (*XX*) and minor (*Y*) version of the product.

   Examples:

   ```
   TSK_OPTIONS_FILE_SW160800v6_3r1=C:\TriCore_v6.3r1\etc\licopt.txt  (*)
   TSK_OPTIONS_FILE_SW160800v6_3r1=/opt/TriCore_v6.3r1/etc/licopt.txt
   TSK_OPTIONS_FILE_SW16080002062=/opt/TriCore_v6.2r2/etc/licopt.txt
   TSK_OPTIONS_FILE_SW160800=sw160800-opt.txt  (**)
   TSK_OPTIONS_FILE=myoptions.txt  (**)
   ```

   (*) This variant is automatically set by the installation program of a TASKING product for Windows. For Linux you have to set the environment variable yourself.

   (**) The files `sw160800-opt.txt` and `myoptions.txt` are searched for according to the rules specified in the search path below.

2. When no environment variable exists for the license options file, the default filename searched for is `licopt.txt` according to the following search path. This path is also searched for when you have specified a relative path in one of the environment variables.

   Windows:

   ```
     .;.\etc;.\..\etc;tooldir\..\etc;tooldir\..\..\etc;tooldir\..\bin;tooldir
   ```

   Linux:

   ```
     .;./etc;./../etc;tooldir/../etc;tooldir/../../etc;tooldir/../bin;tooldir
   ```

License options

The following options can be present in the license options file or as an environment variable:

Option / Environment Variable	Description	Mandatory / Optional

`TSK_LICENSE_KEY=` *`License-key`* | *`pool-name`*
or
`TSK_LICENSE_KEY_SW`*`xxxxxx`*`=` *`License-key`* | *`pool-name`*
or
`TSK_LICENSE_KEY_SW`*`xxxxxxhhXXY`*`=` *`License-key`* | *`pool-name`*
or
`TSK_LICENSE_KEY_SW`*`xxxxxxvX_YrZ`*`=` *`License-key`* | *`pool-name`*
	Assign the license key *`License-key`* to a TASKING product. If you have several license keys for different products you can use the software product code in the name. The different variants are the same as specified above this table with `TSK_OPTIONS_FILE`. If a license pool name is entered instead of a license key, then the client can retrieve an arbitrary license associated with the TASKING product from a license pool from the local license server. This functionality is, for example, used for joining licenses (see Section 4.3, *Joining or Grouping Licenses by Using a License Pool*). You can find the software product code in the email or paper that contains the license key.
	When you specify an environment variable, matching is done in reverse order as listed in the table. When you have specified more than one option in the options file the last one matching in the file is taken.
		Mandatory

`TSK_LICENSE_SERVER=` *`host`* [: *`port`*] [;...]	Specifies the list of license servers and associated port numbers that can be contacted by a client. A client tries to connect to a server in the order specified in the list. Only if a server is offline then a connection to another (backup) server is made. The server can be a remote license server or a local license server. The default is:
	`lic1.tasking.com:8080;`
	`lic1.tasking.com:8936;`
	`lic1.tasking.com:80;`
	`lic2.tasking.com:8080;`
	`lic2.tasking.com:8936;`
	`lic2.tasking.com:80;`
	`lic3.tasking.com:8080;`
	`lic3.tasking.com:8936;`
	`lic3.tasking.com:80;`
	`lic4.tasking.com:8080`
	`lic4.tasking.com:8936;`
	`lic4.tasking.com:80`
		Optional

<table>
<tr><th>Option / Environment Variable</th><th>Description</th><th>Mandatory / Optional</th></tr>
<tr><td><code>TSK_LICENSE_PORT=</code><i>port</i></td><td>Connect to port <i>port</i> on the license server. For the remote license server you can use port 8080, 8936 or port 80 (the remote license server listens on all three ports). If you use a local license server, specify 9090 or the port that you used during the installation of the local license server.</td><td>Optional</td></tr>
<tr><td><code>TSK_LICENSE_PROXY_SERVER=</code><i>proxyserver</i>[:<i>port</i>]</td><td>If a proxy server is required for outgoing license requests, use this option to specify <i>proxyserver</i> as the HTTP proxy server. If you omit the <i>port</i>, the default port is 3128.</td><td>Optional</td></tr>
<tr><td><code>TSK_LICENSE_PROXY_PORT=</code><i>port</i></td><td>Specify the TCP port number to use for a proxy server (default: 3128).</td><td>Optional</td></tr>
<tr><td><code>TSK_LICENSE_FILE=</code><i>file</i>

or</td><td>If this option or environment variable is set, the client retrieves a license from the license file <i>file</i> instead of a remote server. Use this option when you use a node-locked client-based license (default: <code>licfile.txt</code>). The search path is the same as for the options file. Alternatively, you can specify an absolute path.</td><td>Optional</td></tr>
<tr><td><code>TSK_LICENSE_FILE_SW</code><i>xxxxxx</i>=<i>file</i>
or
<code>TSK_LICENSE_FILE_SW</code><i>xxxxxxhhXXY</i>=<i>file</i>
or
<code>TSK_LICENSE_FILE_SW</code><i>xxxxxxvX_YrZ</i>=<i>file</i></td><td>If you have several license files for different products you can use the software product code in the name. The different variants are the same as specified above this table with <code>TSK_OPTIONS_FILE</code>. When you specify an environment variable, matching is done in reverse order as listed in the table. When you have specified more than one option in the options file the last one matching in the file is taken.</td><td></td></tr>
<tr><td><code>TSK_LOG_VERBOSE</code>[=<i>level</i>]</td><td>Log verbose, repeat in the option file for more verbose, or specify the verbose level. With this option log information about a license request by a client is sent to <code>stderr</code>. This option can be useful for debugging licensing problems. You can specify the following levels:
<table>
<tr><th>Level</th><th>Description</th></tr>
<tr><td>0</td><td>No verbose logging.</td></tr>
<tr><td>1</td><td>License errors.</td></tr>
<tr><td>2</td><td>General license information.</td></tr>
<tr><td>3 or higher</td><td>Detailed license configuration information, useful for debugging. For example, the environment variables or options used, the license key, the search path.</td></tr>
</table>
</td><td>Optional</td></tr>
</table>

Option / Environment Variable	Description	Mandatory / Optional
`TSK_LICENSE_WAIT[=`*`sec`*`]`	Wait for a free license. With this option you can set the license retry time-out (default: none). When a request for a floating license is denied because no free seats are available or the license server is unresponsive then the license request(s) will be retried for a maximum of *sec* seconds or until a seat becomes available. If *sec* is 0 or =*sec* is omitted, an unlimited number of retries will be used.	Optional
`TSK_PROCESS_WAIT=`*`sec`*	Set the parallel process time-out (default: unlimited). This specifies the number of seconds the system is allowed to wait for a process to run if the maximum number of parallel processes permitted by the license is already running. If *sec* is 0, this is the same as not specifying the option, and the system will wait as long as needed for the process to run.	Optional
`TSK_NET_TIMEOUT=`*`sec`*	Set the network time-out (default: 4 seconds). This specifies the number of seconds the system is allowed to wait for a connection.	Optional
`TSK_NO_ANONYMOUS`	Send user name and system name with the license request. This is useful for statistics and access information of the local license server. This option is necessary when you use an access file with a local license server. On Windows make sure the Windows environment variable `USERNAME` is set to the user name. See Section 4.5, *Restricting Access to Licenses*.	Optional

Speed up network connection

If you know that only TCP port 80, the last one in the list, is open for transparent access on your firewall, you can speed up the connection process by setting the following variable in the `licopt.txt` file:

```
# Connect to port 80
TSK_LICENSE_PORT=80
```

or a full version:

```
TSK_LICENSE_SERVER=lic1.tasking.com:80;lic3.tasking.com:80
```

Example of an options file

```
TSK_LICENSE_KEY_SW160800=1283-cc0a-5e67-8ae3
TSK_LICENSE_SERVER=lic1.tasking.com:8080;lic3.tasking.com:8080
TSK_LICENSE_PROXY_SERVER=proxy.mydomain.com
TSK_LICENSE_PROXY_PORT=8081
```

```
TSK_LOG_VERBOSE=2
TSK_LICENSE_WAIT
TSK_NET_TIMEOUT=10
```

2.4.2. License File

If you installed a node-locked client based license, a license file has been created on your computer (`licfile.txt`). This file contains the license of your product.

Example of a license file:

```
#
# TASKING License File
#
# Issue date: 2023-10-20 15:35:43
#
# License type: Node-locked client based license|Joinable
#
# Suitable for the computer with computer ID: 5Dzm-L9+Z-WFbO-aMkU-5Dzm-L9+Z-WFbO-aMkU-MDAy-Y2Zm
#
# License key: 1283-cc0a-5e67-8ae3
#
# Product code: SW16080005060000
#
SW16080005060000=71R4BfrOqSwOUF14DTfNsrmluhHEbVNaM
O7B/BrtRkIJ2KKsBYnnB2D2l6TIHtBB9EDGbyi0fDE2jE6RmTv
JdlBiiQMFQ792pZT4fU7oArmAtSVx3e6XwyyaSz1VdV97Z81TJ
PS7Pe60V14wESjWGl8Q9G5yQfe4QKAzeWexkghdCBDd8RIdq+g
sgA==
```

Chapter 3. Local License Server

3.1. Overview

Server based licenses can be serviced by either the TASKING remote license server or a local license server. The remote license server is accessed over the Internet whereas a local license server is accessed via your office network or your companies intranet.

A remote license server has the following advantages:

- Ease of use since you do not have to setup a local license server.
- TASKING can generate a license and license key without knowing the Computer ID in advance. So, you can install the package and run it without delay, without sending the Computer ID.
- You can easily update, upgrade (e.g. from Standard to Premium Edition), add extra seats and extend your license.
- The TASKING remote license server has an uptime of 99,9%, through four servers at two different locations.

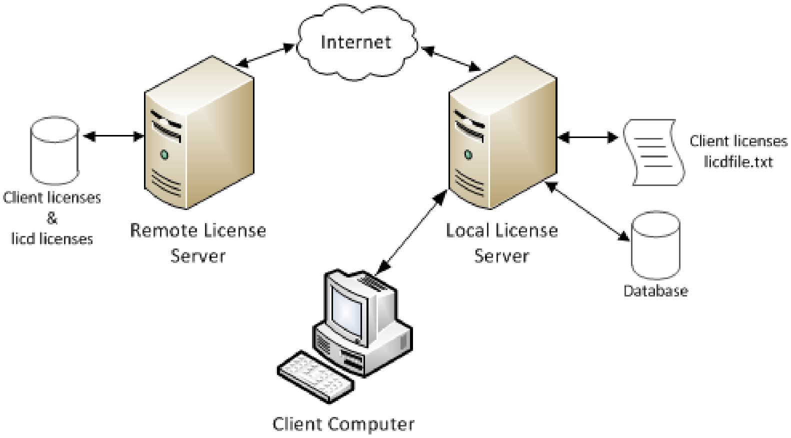
A local license server has the following advantages:

- Enables you to inspect license usage.
- Enables you to manage access to the license server and the licenses.
- Provides facilities for centralized bulk product distributions.
- Provides facilities for license management and transfer of licenses.
- Reduces internet traffic and associated delays.

The following restrictions apply to a local license server:

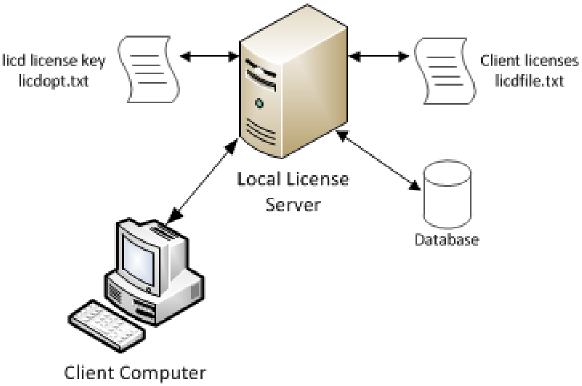
- By default the local license server will not execute on a virtual system. To use a local license server on a virtual system you need a special license. Also your virtual system must be configured to have a static CPU ID and a static MAC address.
- Windows 7 (64-bit), Windows 10 (64-bit) or Windows Server 2008R2 (64-bit) or higher.
- Linux (64-bit) distributions must support GLIBC version 2.11 or higher. You can check the version with the command `ldd --version`

Solution 1: Local license server with internet access to remote license server



In this situation, the local license server licenses itself against a remote license server at first startup. This requires internet access. If internet access is unavailable or not permitted, use solution 2.

Solution 2: Local license server without internet access



In this situation, the local license server licenses itself by reading its license data from a local key. This key must be obtained from TASKING support and added to `licdopt.txt`.

Client licenses

The local license server can retrieve licenses from a license file (`licdfile.txt`) or can retrieve licenses from the remote license server, or a combination of the two, depending on the chosen solution. The license file is read at startup. If the license is not available in the license file, the local license server optionally retrieves the license from the remote license server. In this case the license is not available for the client on the remote license server anymore.

Database

The local license server maintains all licenses and current license usage in a database. The licenses in the database are refreshed from the license file or from a remote server at certain intervals. When you modify the license file `licdfile.txt`, for example, to add a license, you do not need to restart the license server, since the license file is re-read automatically. When the local license server terminates, the current license usage is preserved in the database and is used again at startup. The database is locked to the security ID of the local license server's hardware. Therefore, you cannot move the database to another computer.

3.2. Replacing the Local License Server with a Newer Version

When you want to replace an older version of the local license server with a new one, follow these steps.

1. Make a backup of your `licdfile.txt` file.

2. Install the new version of the local license server as explained in Section 3.3, *Installing a Local License Server*. You do not need to uninstall the older version (if you want to revert back).

   If the security ID has not changed, you only need a new license key to activate your new local license server. You can still use the same TASKING product licenses from `licdfile.txt`. If the security ID has changed, you also need to ask for new license keys for the TASKING products serviced by the local license server and you need to update the license keys in `licdfile.txt`.

3. Stop and delete any current running local license server service or daemon or process. See Section 3.3.4, *Stop and Delete the TASKING License Service on Windows* or Section 3.3.5, *Stop and Remove the taskinglm Service on Linux*.

   Note that on Windows you can run `licd --uninstall` from the new installation to stop and delete a running service from a previous version.

4. Start the new local license server. You can start the local license server as a service, daemon or from the command line. See Section 3.3.1, *Start the Local License Server as a Service on Windows*, Section 3.3.2, *Start the Local License Server as a Daemon on Linux* or Section 3.3.3, *Start the Local License Server from the Command Line*.

Read the rest of this chapter for more information on the local license server. See also Chapter 4, *Administering Licenses*.

3.3. Installing a Local License Server

Install the local license server

1. Download the TASKING License server from https://www.tasking.com/support/tlm/downloads.

2. For Windows follow these steps:

   1. Unpack the ZIP file and run the program **setup.exe**.

    The TASKING Setup dialog box appears.

    2. Click on the **Install** button.

    3. Follow the instructions that appear on your screen and **Finish** the installation.

3. For Linux follow these steps:

    1. Unpack the ZIP file in a temporary location.

        A GNU zipped TAR file is now present (SW000089-vX.YrZ.tar.gz)

    2. As root user unpack the `tar.gz` file in the directory where you want to install the local license server, e.g. `/opt`:

        ```
        tar xzvf SW000089-vX.YrZ.tar.gz -C /opt
        ```

        where, v*X.YrZ* is the version number.

        The directory `taskinglm` will now be created under `/opt`.

4. Get the security ID of the computer on which you installed the local license server.

    - Open a command prompt (Windows) or a shell (Linux) in the `bin` directory of the installation directory of the TASKING license server, and enter the following command:

        ```
        licd -I
        ```

        The security ID is displayed.

    For more information, or when you have problems with a changed security ID because of changed hardware, see Section 3.3.6, *Obtaining a License for a Local License Server*.

5. Send the security ID to TASKING by email: `licadmin@tasking.com`

6. You will receive an email in return with the license key to activate your local license server, attached as file `licdopt.txt`. On Windows save this file into directory `C:\Tasking` (default) or into a directory of your choice. On Linux save the file for example to `/opt/taskinglm/etc`. Use option **-W***working-directory* to specify a non-default working directory (see Section 3.4, *Local License Server Options and Defines*). This file contains a line in the form:

    ```
    LICD_KEY=abcdeFGHIjklmn1OPQrSTuVwxY2ZgBtWZuKUIiKTrxB98rUPkNdxi6FDlSN
    jR8KLFVCnMM7Axr8fYRPzfDMw724xf93J1q3gFw3jGGTYUCNC3gz4eZVnZw==
    ```

7. In a second mail, you will receive the 16-character license key that is used for installing the TASKING product on your clients (see Section 2.3, *Installing a License*). If you also have received license data for the TASKING product, store it in a file, for example `licdfile.txt`. On Windows put this file into directory `C:\Tasking` (default) or into a directory of your choice. On Linux put the file in the directory `etc` under the installation directory of the local license server, e.g. `/opt/taskinglm/etc`. Use option **-W***working-directory* to specify a non-default working directory (see Section 3.4, *Local License Server Options and Defines*).

If the directory does not exist you need to create the directory yourself.

8. Add the following line to the options file `licdopt.txt`:

   Windows:

   ```
   LICD_LICFILE=C:\Tasking\licdfile.txt
   ```

   If you have stored the `licdfile.txt` in another place, replace `C:\Tasking` with the path from step 7.

   Linux:

   ```
   LICD_LICFILE=/opt/taskinglm/etc/licdfile.txt
   ```

   If the file `licdopt.txt` does not exist, create one and put it in the same directory as you stored the license file.

You can start the local license server as a service, daemon or from the command line.

3.3.1. Start the Local License Server as a Service on Windows

Install and start the local license server as a service on Windows

1. Open a command prompt as Administrator, navigate to the `bin` directory of the local license server installation, and install the local license server as a service:

   ```
   licd --install [-Wworking-directory] [option]...
   ```

   Note that without administrator rights, you cannot install a service. Also note that you can specify other command line options or set defines in `licdopt.txt`. When you start the local license server as a service, this file must be present in the directory `C:\Tasking` or in the directory specified with option **-W***working-directory*. See Section 3.4, *Local License Server Options and Defines* for a list of options and defines.

2. Open a command prompt as Administrator and start the local license server as a service:

   ```
   net start "TASKING License Service"
   ```

   Note that without administrator rights, you cannot start a service.

3.3.2. Start the Local License Server as a Daemon on Linux

Install and start the local license server as a systemd service on Linux

1. Open a shell prompt and as root set up a systemd service to start it by creating the file `/etc/systemd/system/taskinglm.service` with the following contents (assuming the license manager is installed in `/opt/taskinglm`):

   ```
   [Unit]
   Description=TASKING License Manager
   After=syslog.target network.target
   ```

```
[Service]
Type=forking
ExecStart=/opt/taskinglm/bin/licd
```

2. Open a shell prompt and as root start the local license server as a service:

   ```
   systemctl daemon-reload
   systemctl start taskinglm
   ```

3.3.3. Start the Local License Server from the Command Line

The preferred way is to start the local license server as a service, but when necessary, for example for debugging purposes or on Linux, you can start the local license server from the command line.

1. Windows only: Open a command prompt as Administrator.

2. Start the local license server:

   ```
   licd [option]...
   ```

   Instead of specifying options on the command line, you can set defines in `licdopt.txt`. This file must be present in the current working directory or in the `etc` or `bin` directory relative to the current working directory or the directory specified with option **-W***working-directory*. See Section 3.4, *Local License Server Options and Defines* for a list of options and defines.

3. (Optional) When you get a security alert from a firewall, allow access to the network(s) that **licd** needs access to.

> You can only run one instance of the license server on a system. If you start a second one, the first one stops. This will lead to unexpected results.

3.3.4. Stop and Delete the TASKING License Service on Windows

How to stop and delete the TASKING License Service on Windows

- Open a command prompt as Administrator, navigate to the `bin` directory of the local license server installation, and stop and delete the local license server as a service:

  ```
  licd --uninstall
  ```

  Note that without administrator rights, you cannot uninstall a service.

  Also note that you can use this command to stop and delete a previous version of the local license server as a service.

3.3.5. Stop and Remove the taskinglm Service on Linux

How to stop and remove the taskinglm service on Linux

If you want to uninstall the local license server, you must first stop and remove the service.

- Open a shell prompt and as root stop and remove the local license server as a service:

  ```
  systemctl stop taskinglm
  systemctl disable taskinglm
  rm /etc/systemd/system/taskinglm.service
  systemctl daemon-reload
  systemctl reset-failed
  ```

3.3.6. Obtaining a License for a Local License Server

A local license server is licensed with the security ID of the computer on which you installed the local license server. When the local license server starts it contacts the remote license server with its security ID to get its license, or if you received a license key in `licdopt.txt` it verifies its security ID against this key locally.

The security ID of a local license server is unique. You can obtain the security ID with the following command:

```
licd -I
```

On first need for an security ID the system takes a snapshot of the hardware. On consecutive needs for a security ID the hardware will be compared with the snapshot. If you changed anything to your hardware configuration and the deviation is within limits, the original security ID will be used and your license key is still valid. If the deviation is outside limits there is a security ID mismatch, meaning that your license key is no longer valid. If you use the **`-I`** option when the deviation is outside limits, the local license server will report:

```
System deviates too much from its Security ID. Restore your previous
hardware configuration, or combine option -I with -F to update the
Security ID to match the current hardware. If the Security ID has
changed, please request a new local license server key from TASKING.
Note that all product licenses served from a license file need to be
updated by TASKING as well.
```

Only when you run '`licd -I -F`' the snapshot will be updated and the security ID will change. This invalidates the emailed local license server key and you will need to send the new security ID to TASKING to get a new local license server key. Also you need to request new license keys for all product licenses served from a license file by the local license server. Therefore, only use this option combination when instructed to do so, because when the system deviates a little and you still use '-I -F', the snapshot will be updated and the security ID will change.

If you install a new version of the local license server, this invalidates the database. However, the security ID is still the same, so the product licenses serviced by the local license server are still valid. In this case you only need a new local license server key. After startup the local license server validates itself at the remote license server, or with the local license key, and retrieves the client data on demand from a license file or the remote license server and builds a new database.

3.4. Local License Server Options and Defines

You can set defines in the file `licdopt.txt` to control the local license server. The defines in `licdopt.txt` are read by the local license server when installed as a service or when started from the command line. If `licdopt.txt` is present, this file is always read.

When you start the local license server from the command line, the file `licdopt.txt` is searched for in the following path:

Windows:

```
.;.\etc;<licddir>\..\etc;<licddir>\..\bin;<licddir>
```

Linux:

```
.;./etc;<licddir>/../etc;<licddir>/../bin;<licddir>
```

where '`.`' represents the current working directory and <*licddir*> is the directory where **licd** is installed.

When you start the local license server as a Windows service, the '`.`' is replaced by '`\Tasking`' in the above search path.

When you start the local license server with option **-W***working-directory*, the '`.`' or '`\Tasking`' is replaced by *working-directory* in the search path. This must be an absolute path and can include a drive letter specification under Windows.

The option flags mentioned in the table below are available on the command line only. Command line options have precedence over defines from the options file. Note that you cannot use environment variables to set options for the local license server. The following options and defines are available:

Option	Define in licdopt.txt	Description
-A[*access-file*]	`LICD_ACCESSFILE`[=*`file`*]	Use an access file with access rules (default: `licdaccess.txt`). See Section 4.5, *Restricting Access to Licenses*.
-E[*event-file*]	`LICD_EVENTFILE`[=*`file`*]	Log license management event information in a file (default: `licd.csv`). See Section 3.7, *License Management Event Log*.
-f[*license-file*]	`LICD_LICFILE`[=*`file`*]	Use a license file instead of a remote license server (default: `licdfile.txt`). The search path is the same as with the options file specified above this table.
-h*hostname*	`LICD_REM_SERVER=`*`host`* [:*`port`*] [;...]	Use the remote license server for LicD validation and if requested, client licenses (default: `lic3.tasking.com:8080`). Possible ports you can use are 8080, 8936 or 80.

Option	Define in licdopt.txt	Description
`-I`		Show Security ID of the computer that executes the local license server.
`-L`[*logfile*]	`LICD_LOGFILE[=`*`file`*`]`	Log information in a file (default: `licd.log`).
`-l`		Use the syslog (Linux only).
`-n`		Run LicD, but not as a daemon (Linux only).
`-P`*port*	`LICD_REM_SERVER_PORT=`*`port`*	Connect to port *port* on the remote license server (default: 8080). Possible ports you can use are 8080, 8936 or 80.
`-p`*port*	`LICD_LISTEN_PORT=`*`port`*	Listen on port *port* for communication with clients (default: 9090).
`-Q`*port*	`LICD_PROXY_PORT=`*`port`*	Specify the TCP port number to use for a proxy server (default: 3128).
`-q`*proxyserver*	`LICD_PROXY_SERVER=` *`proxyserver`* [`:` *`port`*]	If a proxy server is required for outgoing license requests, use this option to specify *proxyserver* as the HTTP proxy server. If you omit the *port*, the default port is 3128.
`-R`*num*	`LICD_AUTOREFRESH_TIMER=`*num*	Auto-refresh timer. When the auto-refresh timer expires, the license server retrieves all licenses from either the license file (`LICD_LICFILE`) or from the remote license server. The number *num* specifies the refresh time in seconds. Valid values are between 60 and 14400 seconds (default: 600 seconds).
`-r`	`LICD_USE_REMOTE`	Use the remote license server to get client licenses in addition to a license file, or if no license file is present.
`-v`	`LICD_LOG_VERBOSE`	Verbose, repeat for more verbose.
	`LICD_KEY=`*`key_data`*	If network connectivity is unavailable, a local license server can read its license data from a local license key. This key must be obtained from TASKING support by providing the security ID with `licd -I`.
	`LICD_MASTER=`*`host`* [`:` *`port`*]	In a redundant master - slave configuration, use this option to specify the master server in the option file on the slave server. See Section 3.5, *Redundant Master - Slave Configuration*.
	`LICD_REFUSE_ANONYMOUS`	Do not allow anonymous access to the local license server. This option forces that every client publishes his user name and system name with the client option `TSK_NO_ANONYMOUS`.

Option	Define in licdopt.txt	Description
-W*working-directory*		Use *working-directory* instead of the default current directory or `\Tasking` if running as a Windows Service. The *working-directory* must contain an absolute path. Under Windows the *working-directory* can contain a drive letter specification.
--install		Install the local license server as a Windows Service (Windows only, run as Administrator).
--uninstall		Uninstall the local license server as a Windows Service (Windows only, run as Administrator).

Example of a local license server options file:

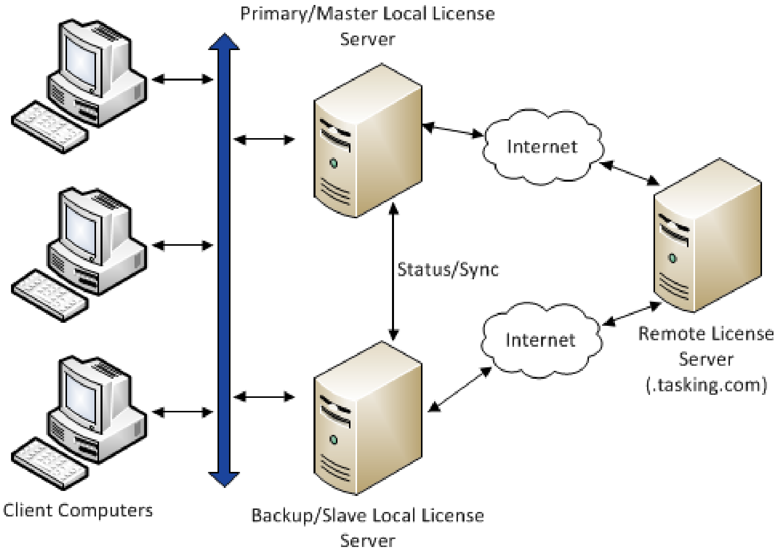
```
LICD_LICFILE=licdfile.txt
LICD_LOGFILE=mylog.log
LICD_EVENTFILE=licdevents.csv
LICD_ACCESSFILE=myveryspecialaccess.txt
LICD_LOG_VERBOSE
LICD_REM_SERVER=lic3.tasking.com:8080
LICD_LISTEN_PORT=9090
LICD_PROXY_SERVER=proxy.mydomain.com
LICD_PROXY_PORT=8081
LICD_AUTOREFRESH_TIMER=300
LICD_USE_REMOTE
```

3.5. Redundant Master - Slave Configuration

In a redundant server configuration there is a master local license server and a slave local license server. In normal operation mode the master server serves the licenses for the clients and the 'Sleeping Slave' server synchronizes its own database every minute with the master database. The slave server refuses to serve licenses.

If the master becomes unreachable, the slave server changes its operation mode to 'Active Slave'. It tries to get a time limited slave license from a TASKING remote license server and starts serving licenses with the last known master status. If the master server is back online again, the slave server changes its operation mode to 'Sleeping Slave' and starts the sync again with its master. The status of the slave server is not synchronized back with the master.

A slave server cannot read license files and cannot get license data from a TASKING remote license server except its own slave license. It can only get data from its master.


Primary/Master Local License Server
Internet
Status/Sync
Internet
Remote License Server (.tasking.com)
Client Computers
Backup/Slave Local License Server

Client configuration

To use a redundant master - slave configuration, the client options file `licopt.txt` must contain both servers. For example,

```
TSK_LICENSE_SERVER=master.domain.com:9090;slave.domain.com:9090
```

If the master becomes unreachable a client switches to the next server in the list, the slave. If the master comes online again the slave refuses license requests. The client switches back to the first server in the list, the master.

A redundant local license server configuration needs two local license server licenses, one for the master and one for the slave (a time limited slave license).

The master and slave license servers must have the same version number and must run on the same operating system.

Slave server configuration

The file `licdopt.txt` of a slave server must contain the following configuration item:

```
LICD_MASTER=hostname[:port]
```

For example:

```
LICD_MASTER=lic-master.domain.com:9090
```

3.6. Creating a Local License Server License File

When you receive a license that must be serviced by a local license server then the email that you receive contains a license key and the license data. You have to copy the license data to the license file (default: `licdfile.txt`).

Example of a license email:

```
Dear user,

Please find below the license for the 07-200-160-808
(TASKING VX-toolset for TriCore, Premium Edition) version 6.0.

The license key for your floating server license for 10 seats is:

    e3e9-daef-d1c9-aa91

Software Product code : SW16080005060
License serial number : 12345678
Platform              : Windows

Serviced by the license server with Security ID: hgtl-KvZ4-Q70W-qBoG

Below you’ll find details to get started:

License Installation

If you haven’t done so already, please download your TASKING toolset here.

Once downloaded, follow the steps in our License Options Page to install
your software and license.

Need Support?

 - Support Home - Access documentation and downloads for your TASKING toolset.
 - Contact Us - Get in touch with a TASKING support representative.


Best regards,

Your TASKING Team


- Copy the following data to your license file licdfile.txt, default
in: C:\Tasking, on the system that will be running the license server -

SW16080005060000=4879pXXTSdt6WNMg5YDnkJvxLxFIP+Cqz
/aZB84oPIyFgJrIXymgVd1qM8odSKkFSLO4Vdu7IissrsLVJGQ
yw6qDAPK3beos7Kc62UCICJ1SL3oCIFw7QT7CvD7tSNnV6Wsq0
9e380BHqOhtzVNxAjku8R+X7qLwqhttdZ2HhpRnOtN76WY1BT2
```

```
4BcDSQoen5N+A5QmY6BrqCrbKwNJpseOGNR5MiXLe+Ijk635md
V/9L0j/vufm0Uvc9XzQfPaTpxqoOR80Vhbo06UHKQ==
```

Note that when you have multiple license key entries in `licdfile.txt` you must separate the keys with at least one empty line, or comment line. For example:

```
SW16080005060000=4879pXXTSdt6WNMg5YDnkJvxLxFIP+Cqz
/aZB84oPIyFgJrIXymgVd1qM8odSKkFSLO4Vdu7IissrsLVJGQ
yw6qDAPK3beos7Kc62UCICJ1SL3oCIFw7QT7CvD7tSNnV6Wsq0
9e380BHqOhtzVNxAjku8R+X7qLwqhttdZ2HhpRnOtN76WY1BT2
4BcDSQoen5N+A5QmY6BrqCrbKwNJpseOGNR5MiXLe+Ijk635md
V/9L0j/vufm0Uvc9XzQfPaTpxqoOR80Vhbo06UHKQ==

SW16080005050000=5wZBpxCwRRucQgRQNipXuSdptwSPgeZxb
twndcFx558BZtq9Ct4rCo/XxqqhDr2O0FrZYPjeg9T2NTOxYV+
xSCTejMVsS+9WUDFzu+JzGIBEIbZotvNiCL0118bBWr4vAovsp
8ZSijdCZNXZrCkj2xK5NlVqEDa2lL3cJ7lvHPhV98l7znvA9ma
Qy8JvXw2fbOcHgU1nEs6gLwtleoQ4gEmVMeoMmh0z14BqpR/Wc
gi6Wu0T9j9YU8S7WpHZjA1UFapL6etbkcMBWSMnRw==
```

3.7. License Management Event Log

With command line option **`-E`**[*event-file*] or define `LICD_EVENTFILE`[=*`file`*] in `licdopt.txt`, the TASKING local license server LicD can log incoming license requests and their results in a license management event log.

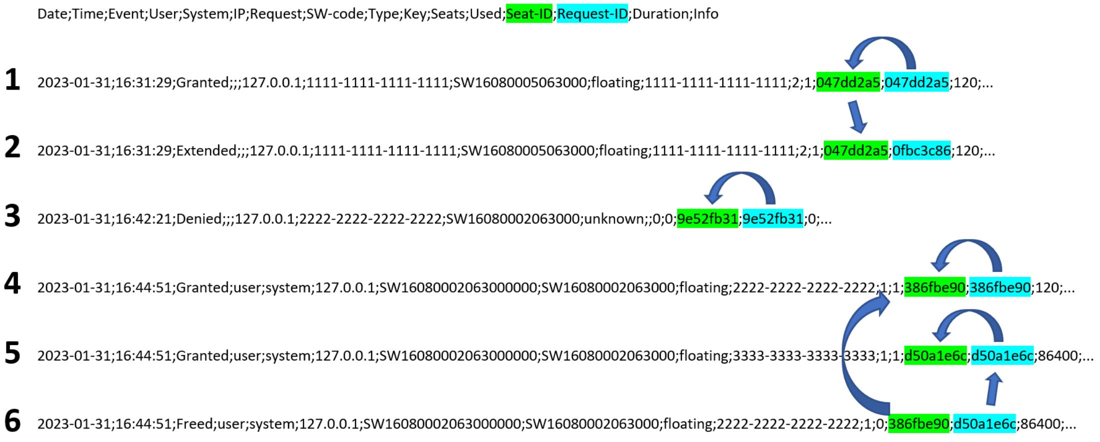
The event log file is a Comma Separated Values (CSV) file with a single header defining the fields and one or more detail records of the event. The log file includes the status, including the number of used license seats, after the request.

The following fields are present:

Field	Description
`Date`	Date part of the timestamp of the record *`YYYY-MM-DD`*.
`Time`	Time part of the timestamp of the record *`HH:MM:SS`*.
`Event`	Possible events are: • `Granted` The request was granted, license count was incremented. • `Extended` The request was granted while re-using the seat of the previous request, license count was not changed. This is equivalent to a `Freed` and subsequent `Granted` event. • `Denied` The request was denied, license count was not changed. • `Freed` The seat was freed (by request of clean-up process), license count was decremented.

Field	Description
`User`	Username (or empty if unknown).
`System`	Hostname (or empty if unknown).
`IP`	IP address.
`Request`	Possible values are: • The license key *xxxx-xxxx-xxxx-xxxx*. • The full Software Code in case of a joinable license `SW`*pppppphhvvv*`000`. • The pool name `POOL-`*xxxxxxxxxxxxxx*.
`SW-code`	The Software Code `SW`*pppppphhvvv*`000`.
`Type`	floating or node-locked.
`Key`	Actual license key *xxxx-xxxx-xxxx-xxxx*.
`Seats`	Total number of seats available for this 'Key'.
`Used`	Total number of used/active seats for this 'Key'.
`Seat-ID`	Seat identifier in the form *xxxxxxxx* (equals Request-ID of a similar initial request).
`Request-ID`	Request identifier of the current request in the form *xxxxxxxx*.
`Duration`	Duration in seconds of validity for the requested license (linger time for a regular request, borrowing time for a borrow request).
`Info`	Extra textual information on this record. Usually this contains LicD log information.

The following example shows parts of an event log:



```
  Date;Time;Event;User;System;IP;Request;SW-code;Type;Key;Seats;Used;Seat-ID;Request-ID;Duration;Info

1 2023-01-31;16:31:29;Granted;;;127.0.0.1;1111-1111-1111-1111;SW16080005063000;floating;1111-1111-1111-1111;2;1;047dd2a5;047dd2a5;120;...

2 2023-01-31;16:31:29;Extended;;;127.0.0.1;1111-1111-1111-1111;SW16080005063000;floating;1111-1111-1111-1111;2;1;047dd2a5;0fbc3c86;120;...

3 2023-01-31;16:42:21;Denied;;;127.0.0.1;2222-2222-2222-2222;SW16080002063000;unknown;;0;0;9e52fb31;9e52fb31;0;...

4 2023-01-31;16:44:51;Granted;user;system;127.0.0.1;SW16080002063000000;SW16080002063000;floating;2222-2222-2222-2222;1;1;386fbe90;386fbe90;120;...

5 2023-01-31;16:44:51;Granted;user;system;127.0.0.1;SW16080002063000000;SW16080002063000;floating;3333-3333-3333-3333;1;1;d50a1e6c;d50a1e6c;86400;...

6 2023-01-31;16:44:51;Freed;user;system;127.0.0.1;SW16080002063000000;SW16080002063000;floating;2222-2222-2222-2222;1;0;386fbe90;d50a1e6c;86400;...
```

On line 1 an initial license request was Granted and the Seat-ID gets the same value as the initial Request-ID.

On line 2 the license of line 1 was Extended. The Seat-ID stays the same as the initial one (from line 1) and the Request-ID gets a new value because of the new request.

On line 3 a license request was Denied because, for example, there were no more seats available.

On lines 4, 5 and 6 the following has happened: On line 4 a license request from a license pool was Granted. A borrowing request came in, but the license from line 4 was not marked as being borrowable. Line 5 shows that another license from the pool could be borrowed and this was Granted and on line 6 the seat from line 4 was Freed.

Chapter 4. Administering Licenses

4.1. Monitoring the Status of the Local License Server

Browser

You can inspect the actual status and see the log information of the local license server with a browser. Use the following address:

```
http://lic_server_hostname:9090/stats
```

where, *lic_server_hostname* is the IP address or DNS name of the local license server.

The following columns are available:

Column	Description
License key	The license keys of the available licenses.
Product code	The product code.
Serial#	The serial number of the product.
Valid from	The date at which the license becomes valid.
Expires	The expiration date of the license, empty for perpetual licenses.
Modified	The date the license was modified.
Type	The type of license: Float (floating license), Node (node-locked license)
Seats	The number of license seats for a floating license.
Seats in use	The number of license seats currently in use.
Processes	The maximum number of concurrent processes per seat.

If you want to log the information in a file, you can use option **-L** of the local license server:

```
licd -L licd.log
```

Command line

Instead of using a browser you can also use the tool **licdstat** to see the status and log information of a local license server.

```
licdstat [option]...
```

The following options are available:

-a*file*	append output to a file, mutual exclusive with **-f**
-f*file*	write output to a file, mutual exclusive with **-a**
-h*host*	host to query (default: localhost)

-k*key*	query a specific key
-l	list current license status
-p*port*	TCP port to use (default: 9090)
-t	display server status and version
-u	list current users
-v	verbose output
-X	generate X-Formation compatible output

Note that the user name and system name in the users lists of a license is only available if the option `TSK_NO_ANONYMOUS` is present in `licopt.txt` on the respective client computers. On Windows also make sure the Windows environment variable `USERNAME` is set to the user name.

Example:

```
licdstat -l -u -t
```

```
LicD: vx.yrz  localhost:9090  Thu 26 Oct 2023 09:24:54 CET  SecurityID: 3cHE-GME0-FW3I-sHTW

08f3-0d7b-9fe9-25de  SW16080002 v5.0 (floating ser#:99224421 seats:10 inuse:10 processes:16)

    Firstname1 Lastname1/pc_a                       (v4.9  2023-10-26 09:24:11)
    Firstname2 Lastname2/pc_b                       (v5.0  2023-10-26 09:24:11)
    Firstname3 Lastname3/pc_c                       (v4.1  2023-10-26 09:24:12)
    Firstname4 Lastname4/pc_d                       (v4.6  2023-10-26 09:24:12)
    Firstname5 Lastname5/pc_e                       (v4.9  2023-10-26 09:24:13)
    Firstname6 Lastname6/pc_f                       (v4.4  2023-10-26 09:24:13)
    Firstname7 Lastname7/pc_g                       (v4.4  2023-10-26 09:24:14)
    Firstname8 Lastname8/pc_h                       (v4.4  2023-10-26 09:24:14)
    Firstname9 Lastname9/pc_i                       (v4.1  2023-10-26 09:24:15)
    Firstname10 Lastname10/pc_j                     (v5.0  2023-10-26 09:24:15)

5854-61b9-4ecb-04f0  SW16080002 v6.0 (floating ser#:99015724 seats:3 inuse:3 processes:8)

    Firstname11 Lastname11/pc_h                     (v4.4  2023-10-26 09:24:16)
    Firstname12 Lastname12/pc_i                     (v4.1  2023-10-26 09:24:16)
    Firstname13 Lastname13/pc_j                     (v6.0  2023-10-26 09:24:17)
```

You can use **licdstat** to generate output for the license statistics and management system X-Formation. The output is an XML status file which can be read by X-Formation. The following example is a Windows batch file that updates the license statistics for X-Formation:

```
:loop
    licdstat -h tlmserver.example.com -X -f c:\tlmlogs\tlm.xml
    timeout 60
    goto :loop
```

Instead of a batch file you can use the Windows Task Scheduler to call **licdstat** on a regular basis.

4.2. Transferring a License (Borrow Feature)

It is possible to move a floating license to a node-locked client based license temporarily. This is called 'borrowing'. You can use the tool **licborrow** to obtain a time restricted node-locked client based license on a client system from a local license server servicing a floating license for that client.

The license is retrieved by specifying the product code of the TASKING product. You can find the product code in the email or paper that contains the license key. The product code consists of the letters SW and the first 6 digits of the SW code, for example `SW160800`.

You can restrict access to which users and systems are allowed to borrow a license. A 0 days request returns the borrowed license to the TASKING server.

To borrow a license (Windows, GUI)

1. From the **Start** menu, select **Programs » TASKING *product* vx.*yrz* » Borrow License**.

   The Borrow License dialog appears.

2. From the **Borrow license for** list, select the product for which you want to borrow a license.

3. Enter the number of **Days** you want to borrow the license. One day literally means 24 hours.

4. Click **Borrow License**.

To borrow a license (Windows, command line)

On Windows a command line version is available also. You can download it from https://www.tasking.com/support/tlm/downloads. Enter the following command at a Windows command prompt:

```
licborrowcmd [option]... product-code version
```

The following options are available:

-d*days*	number of days to borrow (0 .. 128), 0 returns a license
-L	extended list installed products
-l	list installed products
-v	verbose

Examples

Show a list of installed products:

```
licborrowcmd -l

SW160800 v6.0r1 TASKING VX-toolset for TriCore
SW160800 v6.1r1 TASKING VX-toolset for TriCore
SW160800 v6.2r2 TASKING VX-toolset for TriCore
SW160800 v6.3r1 TASKING VX-toolset for TriCore
```

Borrow a license for 7 days:

```
licborrowcmd -d7 SW160800 v6.1r1
```

Return a license:

```
licborrowcmd -d0 SW160800 v6.1r1
```

Show license details about the installed products:

```
licborrowcmd -L
```

```
SW160800 TASKING VX-toolset for TriCore v6.0r1. License for key license-key
    expired on this system at 2023-07-24 17:04
SW160800 TASKING VX-toolset for TriCore v6.1r1. License for key license-key
    not yet borrowed
SW160800 TASKING VX-toolset for TriCore v6.2r2. License for key license-key
    expires on this system at 2023-08-31 15:23
SW160800 TASKING VX-toolset for TriCore v6.3r1. License for key license-key
    expires on this system at 2023-08-31 15:23
```

To borrow a license (Linux)

On Linux PCs, enter the following command at a shell command prompt, assuming that the `bin` directory of the TASKING product is in the search path:

```
licborrow [option]... product-code version
```

The following options are available:

-d*days*	number of days to borrow (0 .. 128), 0 returns a license
-v	verbose

Example

Borrow a license for 7 days:

```
licborrow -d7 SW160800 v6.1r1
```

Return a license:

```
licborrow -d0 SW160800 v6.1r1
```

4.3. Joining or Grouping Licenses by Using a License Pool

When you are using a local license server, you can join licenses for a product or group licenses for different products by using a license pool. License pools are defined in the file `licdfile.txt` which is read by the local license server. You can then use a license pool in your license options file `licopt.txt`.

Joining licenses

You can bring together all licenses for one product into one overall license, this is called 'joining licenses'. Suppose you have placed two orders for a given product. In the first order you bought 5 floating licenses, in the second order you bought 10 additional floating licenses. With each order you have received a license key. You now have 15 floating licenses and 2 license keys. One key associated with 5 floating licenses, the other associated with 10 licenses.

If you run six instances of the product that use the license key obtained with the first order then one product instance will fail to execute due to the fact that there are only five licenses available. You do not want such behavior since you have bought 15 licenses. To solve this you can join licenses by using a license pool.

Grouping licenses

To specify that the licenses for one or more products shall be grouped together you can use a license pool. This can be the case for example when your license agreement has constraints on geographical location, such as a single site license, country license or continental license. In that case you can put all product licenses that are allowed to be used by a specific location into a license pool.

Pool names

For TASKING products built with TASKING License Management v1.5r1 or newer (see the release note of the TASKING product), pool names have the following format:

`POOL-`*`name`*

The *name* part is free to choose from 1 up to 14 characters (no whitespace characters). You can use lowercase and uppercase alphanumerical characters.

Pool names are also supported with existing TASKING products that have been built with an older version of TLM, as long as you use the new local license server and specify the pool names in the fixed format and length:

`POOL-`*`xxxx-xxxx-xxxx`*

Only the *xxxx* parts are free to choose as long as all positions are filled in (no whitespace characters). You can use lowercase and uppercase alphanumerical characters.

> Note that if you need to continue to use older versions of TASKING products which support the fixed pool name format and length together with newer versions which do support the more flexible format, you need to use a pool name with the fixed format and length.

Defining license pools in licdfile.txt

You can define license pools in the file `licdfile.txt` using the following format:

```
[licenses outside any pool]

POOL-aaaa-aaaa-aaaa
licenses for pool POOL-aaaa-aaaa-aaaa

POOL-bbbb-bbbb-bbbb
licenses for pool POOL-bbbb-bbbb-bbbb

POOL-
[licenses outside any pool]
```

For example when joining licenses:

```
POOL-tric-stan-dard
SW16080005063000=4879pXXTSdt6WNMg5YDnkJvxLxFIP+Cqz
/aZB84oPIyFgJrIXymgVd1qM8odSKkFSLO4Vdu7IissrsLVJGQ
yw6qDAPK3beos7Kc62UCICJ1SL3oCIFw7QT7CvD7tSNnV6Wsq0
9e380BHqOhtzVNxAjku8R+X7qLwqhttdZ2HhpRnOtN76WY1BT2
4BcDSQoen5N+A5QmY6BrqCrbKwNJpseOGNR5MiXLe+Ijk635md
V/9L0j/vufm0Uvc9XzQfPaTpxqoOR80Vhbo06UHKQ==

SW16080005063000=5wZBpxCwRRucQgRQNipXuSdptwSPgeZxb
twndcFx558BZtq9Ct4rCo/XxqqhDr2O0FrZYPjeg9T2NTOxYV+
xSCTejMVsS+9WUDFzu+JzGIBEIbZotvNiCL0118bBWr4vAovsp
8ZSijdCZNXZrCkj2xK5NlVqEDa2lL3cJ7lvHPhV98l7znvA9ma
Qy8JvXw2fbOcHgU1nEs6gLwtleoQ4gEmVMeoMmh0z14BqpR/Wc
gi6Wu0T9j9YU8S7WpHZjA1UFapL6etbkcMBWSMnRw==
```

For example when grouping by location:

```
POOL-Coun-try_-AAAA
SW16080005063000=4879pXXTSdt6WNMg5YDnkJvxLxFIP+Cqz
/aZB84oPIyFgJrIXymgVd1qM8odSKkFSLO4Vdu7IissrsLVJGQ
yw6qDAPK3beos7Kc62UCICJ1SL3oCIFw7QT7CvD7tSNnV6Wsq0
9e380BHqOhtzVNxAjku8R+X7qLwqhttdZ2HhpRnOtN76WY1BT2
4BcDSQoen5N+A5QmY6BrqCrbKwNJpseOGNR5MiXLe+Ijk635md
V/9L0j/vufm0Uvc9XzQfPaTpxqoOR80Vhbo06UHKQ==

SW26080005102000=71MW/SvMfTlNacAkiizdDUz1Fc0BGLKhA
CPmPwwrjT+uS6EVWOVzLm7eAtHDhVhfijSzPijDzdrO6VH41XZ
1VFvlkRugmsQ0TL7BAJBsmoWRqy9e6s3NMVCRAFbyK00RcXfHl
rbHKQaNzzx3qcn85P1s+LfiHXm5fSPyycbvPx7zgX5h6jE/kS4
nfSLcf5mnL0rDzI3p1LNnsUFJ980e8h/ZmhGxN+9xgVZXiKxdG
XGISMoQt+HSLmc4XQ9Rebjq1URe+h1Gu+iqNg4Imw==

POOL-Coun-try_-BBBB
SW16080005063000=5wZBpxCwRRucQgRQNipXuSdptwSPgeZxb
```

```
twndcFx558BZtq9Ct4rCo/XxqqhDr2O0FrZYPjeg9T2NTOxYV+
xSCTejMVsS+9WUDFzu+JzGIBEIbZotvNiCL0118bBWr4vAovsp
8ZSijdCZNXZrCkj2xK5NlVqEDa2lL3cJ7lvHPhV98l7znvA9ma
Qy8JvXw2fbOcHgU1nEs6gLwtleoQ4gEmVMeoMmh0z14BqpR/Wc
gi6Wu0T9j9YU8S7WpHZjA1UFapL6etbkcMBWSMnRw==
```

Note that the same license can occur only once in `licdfile.txt`, meaning it can only be included in a single license pool.

The local license server gives out seats based on the order of the licenses in `licdfile.txt`, the topmost license first.

Selecting a pool name in licopt.txt

To use a pool name, you must make the following modification in file `licopt.txt`: replace the license key by a pool name.

For example in a TriCore product `licopt.txt`:

```
# If you use a local license server you can
# join or group licenses by using a
# pool name instead of a license key.
TSK_LICENSE_KEY_SW160800=POOL-tric-stan-dard
```

For example in a SmartCode product `licopt.txt`:

```
TSK_LICENSE_KEY_SW260800=POOL-Coun-try_-AAAA
```

When the product validates its license the local license server resolves the license request by scanning through all of its licenses in the specified pool.

Note that the 'PRODUCT' keyword, which was present in older versions, is only supported for backwards compatibility.

4.4. Bulk Installation

If you have to install a product on a large number of computers you may want to distribute one and the same instance of a TASKING product including the license files (`licopt.txt`) to all computers involved without having to execute the install program on each computer. This functionality is called "bulk installation".

To facilitate a bulk installation

1. Install a TASKING product in the regular way as described in Chapter 2, *Licensing TASKING Products*.

2. Define a pool name in `licdfile.txt` on the computer where the local license server is installed. For example `POOL-tric-stan-dard`, as explained in Section 4.3, *Joining or Grouping Licenses by Using a License Pool*.

3. Enter the pool name instead of the license key in file `licopt.txt` on the computer where the TASKING product is installed, as explained in Section 4.3, *Joining or Grouping Licenses by Using a License Pool*. Note that when you just have a single floating license with a number of seats, you can also use the license key itself instead of a pool name.

4. Copy the installed product tree, including file `licopt.txt`, to all computers.

5. On all computers where you copied `licopt.txt` to in step 4, set the environment variable `TSK_OPTIONS_FILE_<Product-Code><version>` to the location of `licopt.txt`. For example:

   ```
   TSK_OPTIONS_FILE_SW160800v6_3r1=install-dir\licopt.txt
   ```

When the product validates its license the local license server resolves the license request by scanning through all of its licenses in the specified pool.

Note that the 'PRODUCT' keyword, which was present in older versions, is only supported for backwards compatibility.

4.5. Restricting Access to Licenses

With an access file (default: `licdaccess.txt`) you can bind, deny and permit users and systems to licenses. Without an access file no restrictions apply, every user, system or IP address is allowed access. See option **-A** in Section 3.4, *Local License Server Options and Defines*.

By default, license requests are anonymous. To see which user name and system name are sent with a license request, you need to add the option `TSK_NO_ANONYMOUS` to your local `licopt.txt` file. See Section 2.4.1, *Licensing Options File*. On Windows also make sure the Windows environment variable `USERNAME` is set to the user name.

> After a change in the access file the license server must be restarted.

The following access rules are possible in an access file. See also the Order of processing below.

bind

```
bind   user   { all | name } to key | poolname
bind   system { all | name } to key | poolname
bind   ip     { all | ipaddr[-ipaddr] } to key | poolname
```

With this rule the local license server binds one specific license or license pool to a user, a system, an IP address or a range of IP addresses. A subsequent `bind` rule can overrule a previous `bind` rule. Note that the `bind` rules are processed first, before any `deny`/`permit` rules are applied.

deny

```
deny   user   { all | name } [ to { all | key | poolname } ]
deny   system { all | name } [ to { all | key | poolname } ]
deny   ip     { all | ipaddr[-ipaddr] } [ to { all | key | poolname } ]
```

With this rule the local license server denies access to all licenses, a specific license or a specific license pool for a user, a system, an IP address or a range of IP addresses. When you omit the `to` part, this is the same as `to all`, meaning that access to any license serviced by the local license server is denied. A `deny` rule can overrule a previous `permit` rule of the same category (user, system, ip).

permit

```
permit user   { all | name } [ to { all | key | poolname } ]
permit system { all | name } [ to { all | key | poolname } ]
permit ip     { all | ipaddr[-ipaddr] } [ to { all | key | poolname } ]
```

With this rule the local license server permits access to all licenses, a specific license or a specific license pool for a user, a system, an IP address or a range of IP addresses. When you omit the `to` part, this is the same as `to all`, meaning that access to any license serviced by the local license server is permitted. A `permit` rule can overrule a previous `deny` rule of the same category (user, system, ip).

borrow deny

```
borrow deny   user   { all | name } [from { all | key | poolname }]
borrow deny   system { all | name } [from { all | key | poolname }]
borrow deny   ip     { all | ipaddr[-ipaddr] } [from { all | key | poolname }]
```

With this rule the local license server denies a user, a system, an IP address or a range of IP addresses to borrow any license or a specific license or a license from a license pool. When you omit the `from` part, this is the same as `from all`, meaning any license. A `borrow deny` rule can overrule a previous `borrow permit` rule of the same category (user, system, ip).

borrow permit

```
borrow permit user   { all | name } [from { all | key | poolname }] days n
borrow permit system { all | name } [from { all | key | poolname }] days n
borrow permit ip     { all | ipaddr[-ipaddr] }  [from { all | key | poolname }]
                     days n
```

With this rule the local license server permits a user, a system, an IP address or a range of IP addresses to borrow any license or a specific license or a license from a license pool for a maximum number of days. When you omit the `from` part, this is the same as `from all`, meaning any license. A `borrow permit` rule can overrule a previous `borrow deny` rule of the same category (user, system, ip).

> Note that the `block` rule, which was present in previous versions, is only supported for backwards compatibility. Use the `deny` rule instead.

Order of processing

The access file is parsed for rules in this order:

1. Parse `bind` rules to optionally enforce a key or license pool.

2. Parse access rules for each category user/system/ip. The categories are AND-ed to find the resulting permit/deny.

3. Parse borrow request rules for each category user/system/ip. The categories are AND-ed to find the resulting borrow permit/deny.

   With the days limit for a borrow, the last match of each category wins, and the lowest of all categories wins.

Examples

To specify that all users are bound to license pool POOL-xxxx-yyyy-zzzz, except for users hans and martin and that they are bound to license key 1234-5678-9012-3456 and aaaa-bbbb-cccc-dddd respectively, enter:

```
bind user all to POOL-xxxx-yyyy-zzzz
bind user hans to 1234-5678-9012-3456
bind user martin to aaaa-bbbb-cccc-dddd
```

To bind all users to the (product code) license 3de8-76aa-ed65-3271, except for two development departments:

```
bind ip all to 3de8-76aa-ed65-3271
bind ip 192.168.1.0-192.168.1.100 to 6a3c-cc42-1b40-a4ec
bind ip 192.168.1.101-192.168.1.200 to 11fa-5eca-7fee-1cd8
```

To allow all access to user eric only, enter:

```
deny user all
permit user eric
```

To specify that system svr100a is not allowed to access license key aaaa-bbbb-cccc-dddd, enter:

```
deny system svr100a to aaaa-bbbb-cccc-dddd
```

To prevent all users except testuser1 and testuser2 to access license pool POOL-work-from-home, enter:

```
deny user all to POOL-work-from-home
permit user testuser1 to POOL-work-from-home
permit user testuser2 to POOL-work-from-home
```

To allow all IP addresses in a particular range except for a small range to access license key 1111-2222-3333-4444, enter:

```
permit ip 192.168.1.0-192.168.200 to 1111-2222-3333-4444
deny ip 192.168.1.100-192.168.120 to 1111-2222-3333-4444
```

To allow an IP address range to borrow a license from `6a3c-cc42-1b40-a4ec` for a maximum of three days, enter:

```
borrow deny ip all from all
borrow permit ip 192.168.1.0-192.168.1.100 from 6a3c-cc42-1b40-a4ec days 3
```