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## Genero Licensing User Guide

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What's new with Genero Licensing, v 3.00

Review this topic for information about new features and changes in existing functionality that have been introduced in this release of the Genero Licensing manual.

Table 1: License Controller

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System Requirements

Ensure hardware and software requirements are met before licensing Genero.

A network card is used when available to license your Genero installation. The license controller identifies a computer with the network card MAC address. In devices where no network card is available, the license controller identifies inodes in Linux®/UNIX™, device-id (MAC address), or file indexes in Windows® NTFS.

An internet browser and an internet connection is required to register a license and retrieve the license installation key.

A network connection is required if you want to use the License Manager.
Licensing your product

You must install a license before you can use an installed product. This chapter provides you with the information you need to licence your Genero products.

- License basics on page 8
- License types on page 11
- License installation steps on page 14
- Get license information on page 22

License basics

During the product installation, you are prompted to license the software. A license must be entered before you can use the product.

**Note:** The information provided in this topic gives a brief explanation of how licensing works generally. For more specific details, please see your license agreement, or contact your nearest Four Js sales office.

What to look for

Four Js provides a license number and license key with the product package, as well as a maintenance key with your maintenance contract.

Genero Business Development Language (BDL) license numbers start with the letter \textit{T}. For example:

- License number: TAB#X350006TG
- License key: RFAL8FS73XDT
- Maintenance key: M9A3R5UCLMGH

Genero Mobile license numbers start with the letter \textit{M}. For example:

- License number: MAC#AAP00014
- License key: QYBW9RXAQ0DF
- Maintenance key: WAGQGRSYFL8S7

Genero Report Writer license numbers start with the letter \textit{R}. For example:

- License number: R4Z#X34006TG
- License key: GFAS9FD78XDT
- Maintenance key: M0ST5VXLMFH

How to install licenses

You can install your license as a local license using the license controller included with your Genero product. You can also use the Four Js License Manager (FLM) to install licenses for multiple Genero products installed on machines across your network.

**License Controller**

A license can be installed locally on the computer where the Genero programs execute using the license controller provided in the product package. For more information see License Controller on page 83.

**License Manager**

A license manager is a Genero product that provides a complete solution for managing Four Js licenses where multiple Genero products are
Licensing your product

installed on the same machine as the License Manager or on machines on the same network as the License Manager. Each Genero product's FGLPROFILE file needs to be configured with its license number and license key and it also must contain the details of the license manager it needs to use to validate the license. See License Manager.

**Important:** Installing Genero on a Remote File Systems (such as NFS or Samba) with a local license is not supported, in this case you must use a license manager configuration instead.

**Maintenance key**

An active maintenance contract is required to license a product. A maintenance key is provided with your maintenance contract. The maintenance key determines which version of the Genero product you are authorized to use with your license, and the date that the maintenance contract expires. When you are licensing a product, you will be prompted for the maintenance key during the licensing process.

**What happens when my license expires?**

Licenses apply to the version or build of the product you have installed. If your license is **date-limited**, then the date when the license expires will be shown when you run the license controller command, for example, fglWrt -a info license.

```
C:\Program Files\FourJs\Genero_Studio_3_00_22\fgl\bin>fglWrt.exe -a info license
License : THM#AAF00ZSE
License key : JIEG6GN8P065
Product : Four Js Universal Compiler
Type : Development version
Users : 5
Extension(s) :
  - Open Database Interface
  - Enhanced license key format
This license is date limited and expires the 2016/03/31 (Year/Month/Day). Warning! This is a temporary license, installation number is 'CLXANYVAFML8'. This temporary installation will expire in 28 days(s). WARNING! Your maintenance key has expired. Please contact your vendor. End of maintenance date: 2016/03/03 (Year/Month/Day).
```

**What happens when my maintenance contract expires?**

If you see the following message, then your maintenance key has expired.

```
WARNING! Your maintenance key has expired. Please contact your vendor.
```

You can continue to use your Genero product after the expiration of the maintenance contract but this will have an impact on how you can use your Genero product.

Contact your local sales office to purchase a new maintenance contract. With a valid maintenance contract, you have full use of the product and can continue to install any new product update or patch that is provided by Four Js.

**My maintenance contract has expired, can I still use the installed versions of Genero?**

You can continue to use your Genero product after the expiration of the maintenance contract but you can **not** install any new update or patch where the Genero product build date is later than the expiration date.
of the maintenance key, without installing a new maintenance key. If you try to run a product version built after the expiration of your maintenance contract, for example:

```
C:\fjs\fgl\2.20-9999\demo>fglr run demo.42r
```

You will get an error message like the following when you run applications:

```
Program stopped at 'demo.4gl', line number 20.
   FORMS statement error number -6144.
   The DVM build date is greater than the maintenance key expiration date.
   Contact your nearest FourJ's sales representative to update the maintenance key.
```

### Genero BDL

For Genero Business Development Language (BDL) product licensing, you are allowed continued use of the product as follows:

- You can continue to run the product version built prior to the expiration date of the maintenance key.
- You can continue to run applications that you have already packaged and deployed before the maintenance contract expired, these will remain valid and will continue to work.
- You can continue to run your applications with all the versions of the Genero product that were built before the end of maintenance date.

### Genero Report Engine (GRE) under DVM Maintenance

For Genero Report Engine licensing under DVM maintenance with your Genero BDL installation, applications will continue to work for a grace period of **two months** after the end of the maintenance contract.

At the beginning of the third month the following notice will be printed on the first page of each report the GRE generates.

```
ERROR(-33015) : Please contact your sales office regarding licensing.
```

The GRE stops functioning at the end of the third month and you will need to purchase a maintenance contract. To check the status of your product's maintenance contract or other license information, see the topic on **Get license information** on page 22.

**Note:** If you have a Genero Report Writer installed, the GRE will not be limited under the DVM maintenance but instead will function under the Genero Report Writer installation maintenance.

### Genero Report Writer

For Genero Report Writer product licensing, your are allowed continued use of the product as follows:
Licensing your product

• You can continue to run the product version built prior to the expiration date of the maintenance key.
• You can continue to run applications that you have already packaged and deployed before the maintenance contract expired, these will remain valid and will continue to work.
• You can continue to run your applications with all the versions of the Genero product that were built before the end of maintenance date.

What hardware or software changes affect licensing?

Some hardware changes affect licensing. If, for example, a network card is used for license locking to a server and you have to change your network card on the machine where the license was installed, you have to reapply your Four Js product license. Network cards are used if found because they allow a license to be restored to the same location, on the same hardware when you need to do a restore from backup.

On devices or systems that have no network card, license locking may rely on inodes in Linux®/UNIX™, device-id (MAC address), or file indexes used in Windows® NTFS filesystem. If, for example, a directory change is required, for example an inode structure change, this may impact the license.

The path where the license has been installed should not change, even though latest versions of the licensing software take symbolic links into account, but older versions may not. If, for example, you have to move your Genero runtime FGL directory, it requires you to reapply the license. To reapply the license:

1. Delete the existing license: run the license controller command, for example fglWrt -d, to uninstall the existing license. See Uninstall a local license on page 37.
2. Apply the license: run the command, fglWrt -l to install the license. See Install the license number and key on page 16.

Note: If you are unsure of what impact a server hardware or software change may have on licensing, please contact your local Four Js support center.

License types

There is a different license needed for when Genero applications are executed (runtime license) to when the source files are compiled (development license).

You need a development license in a development environment to compile your source files. You need a runtime license for each application you package and deploy on production sites.

License types by product

Genero BDL (desktop or web) has two types of licenses:

• You need a development license in a development environment. A development license is needed to compile your Genero Business Development Language (BDL) source (4gl) files.
• You need a runtime license on production sites.

Genero Mobile has two types of licenses:

• You need a development license in a development environment. The development license is free for personal use and suitable for applications whose p-code is under 64 KB. You can monitor the size of your apps using the --
Licensing your product

For applications whose p-code exceeds 64 KB and/or to receive different levels of support, developer subscription plans are offered. See the Genero Mobile web site for details on the different plans.

**Important:**

When licensing Genero Mobile, your Genero Business Development Language (BDL) license must be for a Genero Mobile installation. If you receive an error message:

```
ERROR(-6024) : Modules compiled with Genero Mobile require a Genero Mobile license at runtime.
```

This means that the Genero BDL license you have is not valid for Genero Mobile. Please contact your local sales office for further information.

- You need a **runtime license** for each app deployed to a mobile device. Please contact your local sales office for details.

### Genero Report Writer has two types of licenses:

- You need a **development license** in a development environment. A development license is needed to compile your source files.
- You need a **runtime license** on production sites.

**Note:** For Genero Report Engine licensing: if your Genero BDL installation has a valid maintenance key, you do not need to install a license for the Genero Report Engine. Otherwise, a license is required.

---

**Multi-user Licensing**

A license is needed for every server where a Genero product is installed and for every user that can access it to run your applications.

For example, when an application is requested from a user agent (e.g desktop or Web browser), the dispatcher starts a Dynamic Virtual Machine (DVM) to handle the connection. It is the DVM that consumes the license. When the application is closed and the DVM is stopped, the license is freed. This license is then available for another user. In this way the license controller maintains a pool of licenses and only active users consume licenses.

This section describes the options you have for purchasing volume licenses to ensure that you have a sufficient pool of licenses available when users connect to a server to run your applications.
• User Licenses on page 13
• CPU Licenses on page 13

User Licenses

A User license creates a pool of available connections between each user’s workstation and the server. This topic describes the User License option for ensuring that a sufficient pool of licenses is available where multiple users may connect to a server to run applications.

The size of this User License pool is defined by the number of licenses purchased, which is encrypted in the license key and verified by the license controller.

Typically, the number of users equals the number of connections, but it is recommended to anticipate a greater number because multiple connections may be needed by applications which open more than one active window or browser tab.

To determine the number of licenses used, run the license controller command, for example, fglWrt -u followed by fglWrt -a info users on the application server where the Genero runtime is installed. If you are using the Four Js License Manager, run the license manager command flmprg -u.

When the pool of connections is exhausted, the Dynamic Virtual Machine (DVM) will output a message blocking access to new users.

- 6017 User limit exceeded. Cannot run this program.

If this occurs frequently, it is recommended to purchase more users and add them to the license. However, a better option may be to consider using CPU licenses instead. See CPU Licenses on page 13.

CPU Licenses

A CPU license creates a pool of available connections, which allows for an unlimited number of user to make connections.

This topic describes the CPU License option you have for purchasing licenses to ensure that a sufficient pool of licenses is available for users connecting to a server to run your applications.

A CPU license provides for an infinite pool of available connections. The CPU license is so called because the number of physical or virtual CPUs (cores/threads) in the server where the product is installed must match the number encrypted in the license when verified by the license controller.

Degraded Mode

CPU licenses operate in degraded mode if the physical CPUs on the server do not match the CPUs purchased on the license. The license controller will limit the size of the license pool to the number of CPUs purchased multiplied by 25. So, for example, if a server has 32 CPUs and the license is only for 16, then the available pool will be 400 connections. If you see the following message, it means that your CPU license is operating in degraded mode. To resolve this, you will need to contact your local Four Js sales office.

-6180 CPU limit exceeded. The users control is reactivated.

Important: Before ordering CPU licenses, you need to run the license controller command, for example, fglWrt -a cpu on the application server where the Genero runtime is installed, to determine the exact number of CPUs (cores/threads) for licensing.

CPU licensing is recommended for the following:

Large sites

Large sites may potentially have many active users. CPU licenses are better suited than User licenses because they provide for an infinite pool of connections.
Genero Web Client (GWC) applications

For GWC applications, detecting when the user has left the application or simply closed the browser (as opposed to stopping the application by explicitly exiting it taking the appropriate action) has implications for licensing. If the user closes the browser without exiting the application, the DVM stays running and continues to consume a license. While the DVM will eventually timeout, timeout configuration is not as critical to license management when CPU licenses are used.

Web services applications

A Web Service consumes a license in the same way that a user does, with one notable difference. On reaching the available limit in the connections pool, Web services are queued rather than blocked as with users. However, the greater the number of connections you can allocate for the Web service pool, the greater the Web service throughput. This is why it is generally recommended to opt for CPU licenses for Web services.

Logical Partition (LPAR) and Virtualization

Where Genero is installed on LPAR or Workload Partitions (WPARs) using virtualization technology, such as that used on IBM® Advanced Interactive eXecutive (AIX®) systems, CPU licenses are recommended. In this case, you will need to provide the number of virtual CPUs allocated, not the number of physical CPUs in the server, to determine the exact number of CPUs for licensing.

License installation steps

Genero product licensing involves a standard license installation process; requiring you to install the licence number, licence key and maintenance key provided with the product. Use the topics in this section to quickly become familiar with how to license Genero products.

Licensing steps

Note: The procedures described in these topics are valid for a local license installation only. If you are using the Four Js License Manager, see License Manager Usage and Options (flmprg) on page 70 (or the Four Js License Manager User Guide).

The following steps describe the licensing process that applies to the licensing of all Genero products, depending on whether you have internet access or not from the machine you are installing the license:

With Internet Access

With internet access from the machine you are installing the license, you can complete the installation of your license and maintenance key in one step via HTTP, see Install the license number and key on page 16

Figure 1: Installing and Registering a License via HTTP with License Controller (fglWrt)
Tip: Another licensing option is to use the Genero Licenser Application tool (see Genero Licenser Application on page 93) to complete the license installation.

Without Internet Access

If you do not have internet access from the machine you are installing the license, you can complete licensing manually as described in these steps:

1. Installing the license key and license number locally on your machine; (an installation number is generated).

![Administrator: Command Prompt - fglWrt.exe -l](image)

Figure 2: Installing Thirty-day Temporary License with License Controller (fglWrt)
2. Registering your license manually on Four Js Activation server by providing the installation number to obtain the installation key, see Register the license on page 17.
3. Installing the installation key, see Install the installation key on page 19.
4. Installing the maintenance key, see Install the maintenance key on page 20.
   - Install the license number and key on page 16
   - Register the license on page 17
   - Install the installation key on page 19
   - Install the maintenance key on page 20

**Install the license number and key**
You can license Genero products from the command line using a licence controller program.

**About this task:**
Genero Enterprise and Genero Mobile product licenses can be installed using the licence controller program, `fglWrt`, as described in this topic.

**Note:** For licensing of Genero Report Writer for Java, C# and PHP installations using the `grxWrt` license controller and Genero Report Engine (GRE) using `greWrt`, see Install a local license from the command line on page 47.

**Tip:** For local licensing, you also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller, see Genero Licenser Application on page 93.

**Before you begin:**
- You must have a valid license number and license key. Typically, these are delivered by email with the maintenance key. If you do not have these, please contact your local Four Js sales office for details.
- You must first uninstall a license, if a license already exists, see Uninstall a local license on page 37.
- You must be the root user or the user who installed the software, to run the `fglWrt` command.
- You must set your Genero environment if you wish to run the `fglWrt` command from any directory:
  - `FGLDIR` must be set to the Genero Business Development Language (BDL) installation directory.
  - `PATH` must include `FGLDIR/bin`.

1. At the command line enter the command, `fglWrt -l`.
2. When prompted, enter the license number.
3. When prompted, enter the license key.
   An installation number is generated.

**Register the license automatically**
4. If you have internet access from the machine you are installing the license, at the prompt:
   ```
   Do you want to obtain the installation key using http ? (y/n) 
   ```
   enter: y
   The installation key is retrieved automatically from the Four Js Activation server. License installation is now completed.

**Register the license later**
5. If you do not have internet access, at the prompt:
   ```
   Do you want to obtain the installation key using http ? (y/n) 
   ```
   enter: n

   **Note:** Until registration is complete:
   - Your Genero product has now a temporary license, which means that all product features are available for use for 30 days.
You also have 30 days to register the **installation number** and obtain an **installation key**.

At this point:

If you need to get the **installation key**, follow the procedure to register the license and obtain the **installation key** manually as described in Register the license on page 17, and after continue with installing the maintenance key as described in Install the maintenance key on page 20.

**Note:** This procedure described here is valid for a local license only. If you are using the Four Js License Manager, see Add a License to Four Js License Manager on page 72 (or the Four Js License Manager User Guide).

Register the license

Register the installation number manually on the Four Js product website to validate the license.

About this task:

This topic shows you how to register your license on the Four Js product web site to get an **installation key**. Please be aware you will only need to use the procedure described here if you did not register the license automatically at the time you installed the license number and license key as described in Install the license number and key on page 16. Alternatively, you can also obtain the installation key by contacting your local support center.

**Note:** This procedure is valid for a local license only. If you are using the Four Js License Manager, see License Manager Usage and Options (flmprg) on page 70 (or the Four Js License Manager User Guide).

Before you begin:

- You must have the **Customer code** delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a **Customer code**, please contact your local Four Js sales office.
- You must have your product's license number and license key to hand.
- You must have your product **installation number**. To get the installation number see Get license information on page 22.
- You must have internet access.

1. Open your browser and navigate to the Four Js web site of the product you wish to license:
   - **Genero Enterprise**
   - **Genero Mobile**
   - **Genero Report Writer**

2. Navigate to the **Support > License your products** page.
   The **Online registration** form is displayed.
3. Complete the **Online registration** form as described in the following sub steps:
   a) Enter your **Customer Code** in the **Customer code** field.
   b) Enter the **licence number** in the **Licence number** field.
   c) Enter the **licence key** in the **licence number key** field.
   d) Enter the **installation number** in the **Installation number** field.
   e) Make sure that everything is entered correctly and select **Submit**.

A new page is displayed showing information that your license has been registered and providing you with:

- Installation key
- Maintenance key
Figure 4: Online Registration complete

At this point, you need to install the installation key, see Install the installation key on page 19, and after continue with installing the maintenance key as described in Install the maintenance key on page 20.

Install the installation key

Enter the installation key to complete the licensing.

About this task:

After installing the license number and license key, to complete the licensing of Genero products you need to install an installation key. The procedure in this topic describes installation methods for Genero Enterprise and Genero Mobile products using the licence controller program, fglWrt.

For licensing of Genero Report Writer for Java, C# and PHP installations using the grxWrt license controller and Genero Report Engine (GRE) using greWrt, see Install the installation key on page 49.

Tip: For local licensing, you also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller, see Genero Licenser Application on page 93.

Before you begin:

- You must have the installation key obtained when you registered your licence, see Register the license on page 17.
- You must be the root user or the user who installed the software to run the fglWrt command.
- You must have set your Genero environment, if you wish to run the fglWrt command from any directory.

Auto option:

If you intend to use the auto option to automatically complete licensing over the internet:

- You must have the Customer Code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer Code, please contact your local Four Js sales office.
- You do not need the installation or maintenance keys as they will be retrieved automatically and installed for you.

Important: You can run the command to install an installation key whilst users are on the system. They will not be affected by this procedure.

Choose from one of the following command line options:

- If you do not have internet access, run the command:
Licensing your product

fglWrt -k <installation-key>

Where <installation-key> is the installation key. You should receive a message to say the license installation was successful.

- If you have internet access from the machine you are installing, you can complete licensing automatically using the auto option.
  1. At the command prompt type:
     
    fglWrt -k auto
  
  2. At the prompt
     
    Enter your customer login >

    Type in your:
    
    Customer Code

  3. At the prompt for proxy configuration:
     
    Do you need to configure an HTTP proxy ? (y/n)

    Enter:
    
    n

    **Note:** If you enter y, you will be prompted for the required proxy information.

    The **maintenance key** is then retrieved from the Four Js Activation server and is displayed.

    License installation is now completed.

    Installing maintenance key 'S7MO51KGYR7Z'
    License installation successful.

    **At this point:** If you need to install the maintenance key, see Install the maintenance key on page 20.

    **Note:** The procedure described in this topic is valid for a **local license only**. If you are using the Four Js License Manager, see License Manager Usage and Options (flmprg) on page 70 (or the Four Js License Manager User Guide).

### Install the maintenance key

Enter the maintenance key to complete the licensing or upgrade the maintenance contract.

**About this task:**

Following the installation of the installation key, you need to install a **maintenance key**. If you have purchased a new maintenance contract, you only need to install the new maintenance key. You do not need to reinstall your license, or uninstall the old maintenance key. The procedure in this topic describes the installation of the maintenance key for Genero Enterprise and Genero Mobile products using the licence controller program, fglWrt.

**Note:** For licensing of Genero Report Writer for Java, C# and PHP installations using the grxWrt license controller and Genero Report Engine (GRE) using greWrt, see Install or update the maintenance key on page 57.

**Tip:** For local licensing, you also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller, see Genero Licenser Application on page 93.

**Before you begin:**

- You must be the root user or the user who installed the software to run the fglWrt command.
• You must have set your Genero environment, if you wish to run the \texttt{fglWrt} command from any
directory.

\textbf{Before you begin a manual installation:}

If you intend to manually add the maintenance key, you must have a valid maintenance key to hand. If you
do not have this, please contact your local Four Js sales office to purchase a new maintenance contract.

\textbf{Before you begin an automatic installation:}

If you intend to use the auto option to automatically complete licensing over the internet:

• You must have the \texttt{Customer Code} delivered by Four Js with your product. Typically, this is delivered
by email with license number, license key, and maintenance key. If you do not have a \texttt{Customer
Code}, please contact your local Four Js sales office.

• You do not need the maintenance key as it will be retrieved automatically and installed for you.

To install the maintenance key, choose from one of the following command line options:

• If you do not have internet access, type the command:

\begin{verbatim}
fglWrt -m <maintenance-key>
\end{verbatim}

Where \texttt{<maintenance-key>} is the maintenance key. You should receive a message to say the
license installation was successful.

• If you have internet access from the machine you are installing, you can complete licensing
automatically using the \texttt{auto} option.

1. At the command prompt type:

\begin{verbatim}
fglWrt -m auto
\end{verbatim}

2. At the prompt

Enter your customer login >

Type in your:

\texttt{Customer Code}

3. At the prompt for proxy configuration:

Do you need to configure an HTTP proxy ? (y/n)

Enter:

\texttt{n}

\textbf{Note:} If you enter \texttt{y}, you will be prompted for the required proxy information.

You should receive a message to say the maintenance key installation was successful. Your
Genero product is now fully licensed. All features are available for use. To check your license
status, see \texttt{Get license information} on page 22.

\begin{verbatim}
Installing maintenance key 'S7MO51KGYR7Z'
License installation successful.
\end{verbatim}

\textbf{Note:} The procedure described in this topic is valid for a \textbf{local license only}. If you are using
the Four Js License Manager, see \texttt{Add a Maintenance Key to Four Js License Manager} on page
76 (or the \texttt{Four Js License Manager User Guide}).
Get license information

Display the license information for a Genero product installed on your machine by using a command line license controller program.

About this task:

The procedure in this topic describes a method you can use to get information about the license of your Genero product using the license controller. Use this procedure, for example, to find out the date the maintenance contract expires or to retrieve the license installation number when you need to register the license and finalize the installation. Alternatively, you can also use the Genero BDL Licenser to display license information, see Display license information with Licenser Application on page 99.

**Note:** This procedure is valid for a local license only. If you are using the Four Js License Manager, see Display License Information (flmprg) on page 77.

Different licence controller programs are used by different Genero products. The licence controller appropriate for your product is provided in the product package.

<table>
<thead>
<tr>
<th>Genero product</th>
<th>Licence controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genero Enterprise</td>
<td>fglWrt</td>
</tr>
<tr>
<td>Genero Mobile</td>
<td>fglWrt</td>
</tr>
<tr>
<td>Genero Report Writer for Java, C# and PHP</td>
<td>grXwrt</td>
</tr>
<tr>
<td>Genero Report Engine</td>
<td>greWrt</td>
</tr>
</tbody>
</table>

**Before you begin:**

- You must be the root user or the user who installed the software.
- You must have set your Genero environment, if you wish to run the license controller program from any directory:

  **For Genero Enterprise and Mobile products**
  - `FGLDIR` must be set to the Genero Business Development Language (BDL) installation directory.
  - `PATH` must include `FGLDIR/bin`.

  **For Genero Report Writer products**
  - `GREDIR` must be set to the Genero Report Engine (GRE) installation directory.
  - `PATH` must include `GREDIR/bin`.

**From a command prompt, enter** `<licence_controller> -a info license`

Where `<licence_controller>` is the licence controller for the product, for example, `fglWrt`.

License information about the product is displayed along with license type, and number of users, as shown in the examples.

**Example of Genero BDL license information:**

<table>
<thead>
<tr>
<th>License</th>
<th>TW8#AAB0002R</th>
</tr>
</thead>
<tbody>
<tr>
<td>License key</td>
<td>JAK5S46GAVGV</td>
</tr>
<tr>
<td>Product</td>
<td>Four J's Universal Compiler</td>
</tr>
<tr>
<td>Type</td>
<td>Development version</td>
</tr>
<tr>
<td>Users</td>
<td>1</td>
</tr>
<tr>
<td>Extension(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Enhanced license key format</td>
</tr>
<tr>
<td></td>
<td>- Strict licensing option</td>
</tr>
<tr>
<td>This license is date limited and expires the 2009/03/15 (Year/Month/Day).</td>
<td></td>
</tr>
<tr>
<td>End of maintenance date: 2009/01/01 (Year/Month/Day).</td>
<td></td>
</tr>
</tbody>
</table>
Example of Genero Report Engine license information:

<table>
<thead>
<tr>
<th>License</th>
<th>(GRE Built-in license)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Four Js Genero Report Writer</td>
</tr>
<tr>
<td>Type</td>
<td>Runtime version</td>
</tr>
<tr>
<td>CPU(s)</td>
<td>CPU unlimited</td>
</tr>
<tr>
<td>Extension(s)</td>
<td>- DVM License under maintenance</td>
</tr>
</tbody>
</table>

Example of Genero Report Writer license information:

<table>
<thead>
<tr>
<th>License</th>
<th>TAB#EBE00ZTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Genero Report Writer for Java C# PHP</td>
</tr>
<tr>
<td>Type</td>
<td>Development version</td>
</tr>
</tbody>
</table>

Warning! This is a temporary license, installation number is 'CLYA6VXAADI7'.
This temporary installation will expire in 17 day(s).
End of maintenance date: 2016/07/31 (Year/Month/Day)

Note: The installation number is retrieved if the license installation has not been finalized.

The output from the license controller command may display the following details about the installed license:

**Server name**
Is the name of the license manager server.

**TCP Port**
Is the port the license manager is listening.

Note: Server name and TCP port details are only displayed if the licensing is managed by a License Manager.

**License**
Is the value of the license number.

**Product**
Is the name of the product license. In relation to Genero product, this can be, for example:

- Four J's Universal Compiler (for Genero Enterprise and Genero Mobile products)
- Four Js Genero Report Writer (for Genero Report Engine)
- Genero Report Writer for Java C# PHP (for Genero Report Writer products)

**Type**
Is the type of license. This can be runtime or development.

**Users**
Is the maximum number of users allowed.

**Extension(s)**
Provides information on some specific conditions of the license. For example:

- "- Open Database Interface" means that your license allows you to use any database.
- A "-Strict licensing option" means that you do not have an option to install as a temporary license. Therefore, the license needs to be registered at the time of license installation.
- A "-DVM License under maintenance" applies to a GRE license and indicates that your GRE has also a valid license because your Genero
Licensing your product

BDL installation has a valid maintenance key. See License types on page 11.

The installation number is displayed if the license is a temporary license and the installation has not been finalized.

If the license is date-limited, then the date when the license expires is shown.

Is the date the maintenance contract expires.

**Troubleshoot license issues**

You may become aware of licensing issues when using Genero products via messages output from the Dynamic Virtual Machine (DVM).

**Licensing errors**

Error messages that you will see in the DVM output views about licensing are generally self-explanatory, detailing the specific cause. For example,

```
SYS ERROR(-6054,2): No such file or directory

Cannot read a license file.
Check installation path and your environment.
Verify if a license is installed.
```

You will find additional information about licensing related errors in the Genero Business Development Language User Guide, chapter "Genero BDL errors". Errors with numbers in the range 6001 to 6200 describe known and common licensing errors. You will find additional information about the action you need to take to resolve a particular error.

**Four Js License Manager (FLM) Log**

If you are using FLM, an error log feature is available (FLM version 5.10.3u or later). To troubleshoot licensing issues, you may have to activate this logging feature by enabling the following resource in $FLMDIR/etc/lmprofile, (for details see Configuring the License Manager on page 67):

```
flm.cnxlog.enabled=1
```

After making a configuration change, you will need to restart the FLM. You will now get an flm.log file in the $FLMDIR directory. You may be asked to send this log file to Four Js support for further assistance with a licensing problem.

For more information or assistance you can also contact your local Four Js support center for help.
License Genero Business Development Language

These topics cover the licensing of Genero Business Development Language.

- Genero Development Language License keys on page 25
- License Genero using a local license on page 25
- License Genero using the Four Js License Manager (FLM) on page 42

Genero Development Language License keys

Four Js provides a license number and license key with the product package, as well as a maintenance key with your maintenance contract.

Genero Development Language license numbers start with the letter T. For example:

- License number: TAB#X35006TG
- License key: RFA8FS73XDT

After you apply the license number and license key, you must apply the maintenance key to use Genero Report Writer. Therefore, you need a valid maintenance key.

For example:

- Maintenance key: M9A3R5UCLMGH

License Genero using a local license

Information about local license.

This section contains topics about installing and managing licenses locally using the license controller (fglWrt) installed with the product. Alternatively, if you do not want to install or manage licenses locally, you can use the License Manager, see the topic Using a license manager.

Notes About Upgrading

When upgrading a Genero product, the product is installed over the existing directory having a valid license. You do not have to re-enter the license keys. See License an upgraded installation on page 42.

When you have purchased a new maintenance contract, the new maintenance key must be installed. To install your new maintenance key, you do not need to reinstall your license. Updating the maintenance key is handled separately. There is also no need to uninstall the old maintenance key. See Install or update the maintenance key on page 39.

- License from Genero Studio on page 26
- Install a local license from the command line on page 30
- Register a license on page 31
- Install the installation key on page 31
- Get license information on page 34
- Uninstall a local license on page 37
- The FGLDIR/lock directory on page 39
- Install or update the maintenance key on page 39
- License an upgraded installation on page 42
License from Genero Studio

You can complete licensing of Genero Business Development Language (BDL) from the Genero Studio installation.

Before you begin:

• You must have your product's license number and license key to hand.
• You need a valid maintenance key. If you do not have this, please contact your local sales office to purchase a new maintenance contract.
• Make sure you have the Customer code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer code, please contact your local sales office.

1. From Genero Studio’s Tools > Genero Tools menu select Genero BDL Licenser. The Four Js Licensing Application opens.
2. In the **License number** field enter your license number.
3. In the **License key** field enter your license key.
4. Select **Install license**. An **installation number** is generated.
Note: You have 30 days to register the installation number and obtain an installation key.

Register the license
5. If you have internet access from the machine you are installing the license, select the Install using Four Js Activation server option to complete the license installation:
Figure 6: Example registering the license with Genero BDL Licenser

If you need to go out through a proxy, you will have to provide the required information here. But if you have direct access to the internet, you can just leave the HTTP proxy and Port options blank.
In the Login field, enter your customer code.

Select Install Keys
If the response from the activation server is good, a window pops up displaying “Licence successfully installed”.

Select OK to continue.
The maintenance key is automatically installed at the same time, so another window pops up displaying “Maintenance key successfully installed”.

Select OK to continue.
License status updated:

- The Licensing status field is updated; “temporary information stored” has been replaced with “License installation successful”.
- In the field under Licensing status you will see the maintenance expiry date appears after the End of maintenance date: This means that your maintenance key is valid until the date displayed.

If you do not have internet access, follow the procedure to register the license in Register a license on page 31, and then continue with the installation procedure described in Install or update the maintenance key on page 39.

Note: Until registration is completed:

- Your Genero product has a temporary license, which means that all product features are available for use for 30 days.
- You also have 30 days to fully complete the license installation.

Install a local license from the command line
You can license Genero Enterprise and Genero Mobile products from the command line using the licence controller program, fglWrt.

Before you begin:

- You must be the root user or the user who installed the software.
- If a license already exists, you must first uninstall the license, see Uninstall a local license on page 37
- Your Genero environment must be set:
  - FGLDIR must be set to the Genero Business Development Language (BDL) installation directory.
  - PATH must include FGLDIR/bin.
1. At the command line enter the command, fglWrt -l.
2. When prompted, enter the license number.
3. When prompted, enter the license key.
   An installation number is generated.
   Note: You have 30 days to register the installation number and obtain an installation key.

Register the license automatically
4. If you have internet access from the machine you are installing the license, at the prompt:

   Do you want to obtain the installation key using http ? (y/n)
   enter: y

   The installation key is retrieved automatically from the Four Js Activation server. License installation is now completed.

Registering the license manually

If you do not have internet access, follow the procedure to register the license in Register a license on page 31, and then continue with the installation procedure described in Install or update the maintenance key on page 39.
Note: Until registration is completed:

- Your Genero product has a temporary license, which means that all product features are available for use for 30 days.
- You also have 30 days to fully complete the license installation.

Register a license

Register the installation number manually on the Four Js product website to validate the license.

An installation number is generated from the license number and license key. For information on getting the installation number see Get license information on page 34. You need to register the installation number with Four Js to validate the license and obtain the installation key.

Note: If you did not opt to automatically register the license at the time you installed the license number and license key, you have 30 days to register the installation number and obtain an installation key.

If you do not have internet access from the machine you are installing the license, take one of the following options to register your license:

- You can manually register the license on the Four Js product web site to get an installation key, see the procedure described in “Register the license” in the Genero Licensing User Guide.
- Or alternatively, you can also obtain the installation key by contacting your local support center.

After obtaining the installation key, your next step is to install the installation key, see Install the installation key on page 31.

Install the installation key

Enter the installation key with either the fglWrt -k command or the Genero BDL Licenser.

About this task:

After installing the license number and license key, you need to install an installation key. The procedure in this topic describes the installation of the installation key for Genero Enterprise and Genero Mobile products using the licence controller program, fglWrt.

Note: This procedure is valid for a local license only. If you are using the Four Js License Manager, see the “Add a License to Four Js License Manager” topic in the Four Js License Manager User Guide.

Important: You can run the command to install an installation key whilst users are on the system. They will not be affected by this procedure.

Before you begin:

- You must be the root user or the user who installed the software to run the fglWrt command.
- You must have set your Genero environment, if you wish to run the fglWrt command from any directory

Before you begin a manual installation:

If you intend to manually install the installation key, you must have a valid installation key to hand, see Register a license on page 31. If you do not have this, please contact your local Four Js support office.

Before you begin an automatic installation:

If you intend to use the auto option to automatically complete licensing over the internet:

- You must have the Customer Code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer Code, please contact your local Four Js sales office.
- You do not need the installation key as it will be retrieved automatically and installed for you.

Choose from one of the following command line options:
• If you do not have internet access, type the command:

    fglWrt -k <installation-key>

*Where* <installation-key> is the installation key. You should receive a message to say the license installation was successful.

• If you have internet access from the machine you are installing, you can complete licensing automatically using the *auto* option.

1. At the command prompt type:

    fglWrt -k auto

2. At the prompt

    Enter your customer login >

    Type in your:

        Customer Code

3. At the prompt for proxy configuration:

    Do you need to configure an HTTP proxy ? (y/n)

    Enter:

        n

  **Note:** If you enter *y*, you will be prompted for the required proxy information.

The *maintenance key* is then retrieved from the Four Js Activation server and is displayed.

    Installing maintenance key 'S7MO51KGYR7Z'

    License installation successful.

License installation is now completed. To check your license status, see *Get license information* on page 34

**Use the Genero BDL Licenser to Install the Installation key.**

You also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller. This task shows you how to install the installation key using the *Genero BDL Licenser*.

1. From Genero Studio’s *Tools > Genero Tools* menu select *Genero BDL Licenser*, or launch the application tool from the desktop by selecting *Genero BDL Licenser* from your Four Js program list.
2. In the **Installation Key** field, enter the installation key and select **Install key**
3. Select **Quit** to exit the dialog.
At this point: If you need to install the maintenance key, see Install or update the maintenance key on page 39.

Get license information
Display the license information for the Genero Business Development Language.

About this task:
The procedure in this topic describes a method you can use to display information about the license of your Genero product using the license controller. Use this procedure, for example, to find out the date the maintenance contract expires.

Tip: You can also use the procedure described in this topic to retrieve the installation number when you need to register the license and finalize the installation.

Before you begin:
• Your Genero environment must be set:
  • FGLDIR must be set to the Genero Business Development Language (BDL) installation directory.
  • PATH must include FGLDIR/bin.

1. From a command prompt, enter fglWrt -a info license.

Example of Genero BDL license information:

<table>
<thead>
<tr>
<th>License</th>
<th>THM#AAF00ZSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>License key</td>
<td>JIEG6GN8P065</td>
</tr>
<tr>
<td>Product</td>
<td>Four Js Universal Compiler</td>
</tr>
<tr>
<td>Type</td>
<td>Development version</td>
</tr>
<tr>
<td>Users</td>
<td>5</td>
</tr>
</tbody>
</table>
| Extension(s)     | - Open Database Interface
  - Enhanced license key format |
| This license is date limited and expires the 2016/03/31 (Year/Month/Day). |
| Warning! This is a temporary license, installation number is 'CLXANYVAFML8'. |
| This temporary installation will expire in 29 day(s). |
| WARNING! Your maintenance key has expired. Please contact your vendor. |
| End of maintenance date: 2016/03/03 (Year/Month/Day). |

The output from the license controller command may display the following details about the installed license:

Server name Is the name of the license manager server.
TCP Port Is the port the license manager is listening.

Note: Server name and TCP port details are only displayed if the licensing is managed by a License Manager.

License Is the value of the license number.
License key Is the value of the license key.
Product Is the value of the product license. In relation to Genero product, this can be, for example: Four J's Universal Compiler for Genero Enterprise and Genero Mobile products.
Type Is the type of license. This can be runtime or development.
Users Is the maximum number of users allowed.
Extension(s) | Provides information on some specific conditions of the license. For example:

- "Open Database Interface" means that your license allows you to use any database.
- A "Strict licensing option" means that you do not have an option to install as a temporary license. Therefore, the license needs to be registered at the time of license installation.

The installation number is displayed if the license is a temporary license and the installation has not been finalized.

If the license is date-limited, then the date when the license expires is shown.

End of maintenance date | Is the date the maintenance contract expires.

2. Alternatively, you can also use the Genero BDL Licenser to display license information.

Launch the Genero Licenser tool from the desktop by selecting Genero BDL Licenser from your Four Js program list.
Figure 8: Genero BDL Licenser Sample License Window

License information is displayed in the **Licensing status** field.

3. Select **Quit** to exit the dialog.
Uninstall a local license

Follow this procedure to uninstall a local license.

About this task:

The procedure in this topic describes methods you can use to uninstall the license of your Genero product using the license controller.

Note: This procedure is valid for a local license only. If you are using the Four Js License Manager, see the Four Js License Manager User Guide.

Before you begin:

• You must be the root user or the user who installed the software.
• At the command line set your Genero environment:
  • FGLDIR must be set to the Genero Business Development Language (BDL) installation directory.
  • PATH must include FGLDIR/bin.

1. Enter fglWrt -d.
2. Enter “y” when prompted if you really want to uninstall the license.
   The license is uninstalled. A message confirms the license is uninstalled.

![Figure 9: Uninstalling a License with the License Controller (fglWrt)](image)

Using the Genero BDL Licenser application to uninstall the license

3. Alternatively, you can also use the Genero Licenser application to uninstall the license.
   Launch the Genero BDL Licenser from your Four Js program list.
4. Select **Uninstall** to uninstall the license.
   
   The **Licensing status** field is updated to show a license is not installed.
5. Select Quit to exit the dialog.

The FGLDIR/lock directory

When using a local license, the license controller uses the FGLDIR/lock directory to store information (number of active users). This directory must have access rights for any user running a BDL program. If it does not exist, it is automatically created.

**Note:** The FGLDIR/lock directory is not used when Genero is configured to use a license manager.

By default, the FGLDIR/lock directory is created with rwxrwxrwx rights, to let any user access the directory and create files. To restrict the access to a specific group or user, use the FGLWRTUMASK environment variable to force fglWrt to use a specific mask when creating the lock directory:

```
$ FGLWRTUMASK="022"; export FGLWRTUMASK
```

**Important:** The FGLWRTUMASK environment variable must be set for all users executing BDL programs, because the FGLDIR/lock directory can be re-created by any user at first BDL program execution.

Install or update the maintenance key

Information on methods for installing or updating the maintenance key for your Genero product using the license controller and the Genero BDL Licenser.

A maintenance key is provided with your maintenance contract. The key indicates the day that the maintenance contract expires. If you are licensing the product, you will be prompted for the maintenance key during the licensing process.

If you have purchased a new maintenance contract, you only need to install the new maintenance key. You do not need to reinstall your license, or uninstall the old maintenance key.

**Note:** This topic is valid for a local license only. If you are using the Four Js License Manager, see the Four Js License Manager User Guide.

Before you begin:

- You must be the root user or the user who installed the software to run the fglWrt command.
- You must have set your Genero environment, if you wish to run the fglWrt command from any directory

**Before you begin a manual installation:**

If you intend to manually add the maintenance key, you must have a valid maintenance key to hand. If you do not have this, please contact your local Four Js sales office to purchase a new maintenance contract.

**Before you begin an automatic installation:**

If you intend to use the auto option to automatically complete licensing over the internet:

- You must have the Customer Code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer Code, please contact your local Four Js sales office.
- You do not need the maintenance key as it will be retrieved automatically and installed for you.

Choose from one of the following command line options:

- If you do not have internet access, run the command:

  ```
  fglWrt -m <maintenance-key>
  ```

  Where `<maintenance-key>` is the maintenance key. You should receive a message to say the license installation was successful.
• If you have internet access from the machine you are installing, you can complete licensing automatically using the auto option.

1. At the command prompt type:

   fglWrt -m auto

2. At the prompt

   Enter your customer login >

   Type in your:

   Customer Code

3. At the prompt for proxy configuration:

   Do you need to configure an HTTP proxy ? (y/n)

   Enter:

   n

   **Note:** If you enter y, you will be prompted for the required proxy information.

You should receive a message to say the maintenance key installation was successful.

```
Installing maintenance key 'S7MO51KGYR7Z'
License installation successful.
```

Your Genero product is now fully licensed. All features are available for use. To check your license status, see Get license information on page 34

**Use the Genero BDL Licenser to Install or Update the Maintenance key**

You also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller. This task shows you how to install or update the maintenance key using the **Genero BDL Licenser**.

1. Launch the Genero Licenser tool from the desktop by selecting **Genero BDL Licenser** from your Four Js program list.
2. In the **Maintenance/Subscription Key** field, enter the maintenance key and select **Update key**. A window pops up displaying "Maintenance key successfully installed".
License status updated:

- The **Licensing status** field is updated: “temporary information stored” has been replaced with “License installation successful”.
- In the field under **Licensing status** you will see the maintenance expiry date appears after the **End of maintenance date**: This means that your maintenance key is valid until the date displayed.

Your product is now fully licensed.

3. Select **Quit** to exit the dialog.

**License an upgraded installation**

It is not necessary to re-enter the license of the product if the new version:

- Is installed into an existing installation directory
- Is not a major version number change

You will need to enter a new maintenance key if the build date of the Genero Business Development Language (BDL) package is greater than the end of maintenance date (encoded in the maintenance key).

**License Genero using the Four Js License Manager (FLM)**

How to set up a Genero Business Development Language (BDL) product installation to use a license manager on the network.

To specify the use of a license manager, you need to configure the fglprofile locally. The default fglprofile is found in $FGLDIR/etc/fglprofile. To specify an alternate fglprofile, set the FGLPROFILE environment variable. To specify a license manager, set these FGLPROFILE resources:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.server</td>
<td>none</td>
<td>Name of the machine that holds the license service program. You must set this value to use FLM from this machine.</td>
</tr>
<tr>
<td>flm.license.number</td>
<td>none</td>
<td>Value of your current license number. (For example: XXX#XXXXXXXX)</td>
</tr>
<tr>
<td>flm.license.key</td>
<td>none</td>
<td>Value of your current license key. (For example: YYYYYYYYYYYY)</td>
</tr>
</tbody>
</table>

If needed, specify these optional resources:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.service</td>
<td>6399</td>
<td>Service or port number for the communication between the local license controller and Four Js License Manager. This port number should be the same as that set in the FLM configuration file, SFLMDIR/etc/lmprofile. See the topic Configuring the License Manager in the <em>Four Js License Manager User Guide</em></td>
</tr>
<tr>
<td>Resource</td>
<td>Default Value</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>flm.check</td>
<td>10</td>
<td>Number of iterations between two controls of the user list. This resource is only available on UNIX™ platforms.</td>
</tr>
</tbody>
</table>
| flm.ps    | ps -ae        | Specifies the command that gives a process list for a machine. This value is used to recover unreleased licenses by synchronizing the real user list on the current machine with the registered users list on FLM.  
**Warning:** This entry is not used on most platforms as the default value `ps -ae` is replaced by a call to an operating system specific API. This resource should not be set unless the internal implementation relying on API calls fail. |

For server-side configuration of the license manager and for information on installing a license in the license manager, see the *Four Js License Manager User Guide*. 
License Genero Report Writer

These topics cover the licensing of Genero Report Writer.

The topics in this section provide information on installing licenses for Genero Report Writer products:

- Genero Report Writer for Java, C# and PHP
- Genero Report Engine (GRE)

Different licence controller programs are used for both, though they perform similar licensing functions. To license Genero Report Writer for Java, C# and PHP use grxWrt. To license Genero Report Engine (GRE) use greWrt. The licence controller appropriate for your product is provided in the product package.

Alternatively, you can use the License Manager to manage Genero Report Engine (GRE) licenses, see the topic License Genero Report Engine using the Four Js License Manager on page 60.

**Important:** Licensing for Genero Report Writer for Java, C# and PHP must be managed locally as it cannot be managed by the License Manager.

- License Genero Report Engine on page 44
- Genero Report Writer License keys on page 44
- License Genero Report Writer using a local license on page 45
- License Genero Report Engine using the Four Js License Manager on page 60

License Genero Report Engine

If your Genero Business Development Language installation has a valid maintenance key, you do not need to install a license for the Genero Report Engine. Otherwise, a license is required.

A Genero Report Engine (GRE) license is included with Genero Studio. While your Genero Business Development Language (BDL) installation has a valid maintenance key, you do not need to install a separate license for GRE.

If your Genero BDL installation does not have a valid maintenance key, a GRE license is required. To install a GRE license, you need a valid license number and license key.

**Note:** If you have a Genero Report Writer installed, the GRE will not be limited under the DVM maintenance but instead will function under the Genero Report Writer installation maintenance.

Genero Report Writer License keys

Four Js provides a license number and license key with the product package, as well as a maintenance key with your maintenance contract.

Genero Report Writer license numbers start with the letter R. For example:

- License number: R4Z#X34006TG
- License number key: GFAS9FD78XDT

After you apply the license number and license key, you must apply the maintenance key to use Genero Report Writer. Therefore, you need a valid maintenance key.

For example:

- Maintenance key: M0ST5VXLMFH
License Genero Report Writer using a local license

Information about licensing Genero Report Writer products using a license controller.

Licensing at product installation

If you want to install a license locally during the initial product installation, you need the license number and license key supplied with the product package, as well as the maintenance key supplied with your maintenance contract.

At the time of installation, you are prompted for the license number and license key. If you have a direct internet connection, the maintenance key is automatically activated. If you are not connected to the internet, you must update the maintenance key.

Notes about Upgrading

When upgrading, if the product is installed over the existing directory having a valid license, you do not have to re-enter the license keys, see License an upgraded installation on page 42.

When you have purchased a new maintenance contract, the new maintenance key must be installed. To install your new maintenance key, you do not need to reinstall your license. Updating the maintenance key is handled separately. There is also no need to uninstall the old maintenance key. See Install or update the maintenance key on page 57.

- License from Genero Studio on page 45
- Install a local license from the command line on page 47
- Register a local Genero Report Writer license on page 48
- Install the installation key on page 49
- Get license information on page 52
- Uninstall a local license on page 55
- Install or update the maintenance key on page 57
- License an upgraded installation on page 42

License from Genero Studio

You can license Genero Report Engine from the Genero Studio installation.

About this task:

A Genero Report Engine (GRE) license is included with Genero Studio. While your Genero Business Development Language (BDL) installation has a valid maintenance key, you do not need to install a separate license for GRE. If your Genero BDL installation does not have a valid maintenance key, a GRE license is required. This topic describes how to install a GRE license from within Genero Studio.

- You must have your product's license number and license key to hand.
- You need a valid maintenance key. If you do not have this, please contact your local sales office to purchase a new maintenance contract.
- Make sure you have the Customer code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer code, please contact your local sales office.

1. From the Genero Studio Tools > Genero Tools menu select Genero Report Engine Licenser
The Four Js Licensing Application opens.

2. In the License number field enter your license number.

3. In the License key field enter your license key.
4. Select **Install license**. An **installation number** is generated.
   
   **Note:** You have 30 days to register the installation number and obtain an **installation key**.

**Register the license**

5. If you have internet access from the machine you are installing the license, select the **Install using Four Js Activation server** option to complete the license installation:
   
   If you need to go out through a proxy, you will have to provide the required information here, but if you have direct access to the internet, you can just leave the **HTTP proxy** and **Port** options blank.

6. In the **Login** field, enter your customer code.

7. Select **Install Keys**
   
   If the response from the activation server is good, a window pops up displaying "Licence successfully installed".

8. Select **OK** to continue.
   
   The maintenance key is automatically installed at the same time, and another window pops up displaying "Maintenance key successfully installed".

9. Click **OK** to continue.
   
   License status is updated:
   
   - The **Licensing status** field is updated; "temporary information stored" has been replaced with "License installation successful".
   
   - In the field under **Licensing status** you will see the maintenance expiry date appears after the **End of maintenance date**. This means that your maintenance key is valid until the date displayed.

   The Genero Report Engine is licensed. All features of the Genero Report Writer are available for use.

If you do **not** have internet access, follow the procedure to register the license in **Register a local Genero Report Writer license** on page 48, and then continue with the installation procedures described in **Install the installation key** on page 49 and **Install or update the maintenance key** on page 57.

   **Note:** Until registration is completed:
   
   - Your Genero product has a temporary license, which means that all product features are available for use for 30 days.
   
   - You also have 30 days to fully complete the license installation.

**Install a local license from the command line**

You can license the Genero Report Writer from the command line using the licence controller program.

Different licence controller programs are used for both Genero Report Writer for Java, C# and PHP and Genero Report Engine. The licence controller appropriate for your product is provided in the product package.

<table>
<thead>
<tr>
<th>Genero product</th>
<th>Licence controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genero Report Writer for Java, C# and PHP</td>
<td>grXwrt</td>
</tr>
<tr>
<td>Genero Report Engine</td>
<td>greWrt</td>
</tr>
</tbody>
</table>

**Before you begin:**

- You must have a valid **license number** and **license key**.
- Your Genero environment must be set:
  - **GREDIR** must be set to the Genero Report Writer installation directory.
  - **PATH** must include **GREDIR/bin**.
- To register the license automatically, you must have internet access.
1. Run the license controller with the command to install the license:
   - To license Genero Report Writer for Java, C# and PHP with a local license, run the following command:
     ```bash
     grxWrt -l
     ```
   - To license GRE with a local license, run the following command:
     ```bash
     greWrt -l
     ```

2. At the prompts, enter your license number and license key. An installation number is generated.

   **Note:** You have 30 days to register the installation number and obtain an installation key.

3. If you have internet access from the machine you are installing the license, at the prompt:
   ```text
   Do you want to obtain the installation key using http ? (y/n)
   ```
   Enter: y
   The installation key is retrieved automatically from the Four Js Activation server.

   **Note:** Licensing can be completed by installing the maintenance key.

Register the license automatically

If you do not have internet access, follow the procedure to register the license in Register a local Genero Report Writer license on page 48, and then continue with the installation procedure described in Install the installation key on page 49.

**Note:** Until registration is completed:
- Your Genero product has a temporary license, which means that all product features are available for use for 30 days.
- You also have 30 days to fully complete the license installation.

Register a local Genero Report Writer license

Enter the installation key to complete the licensing.

To perform a full licensing of your product, you will be prompted for the license number and license key. An installation number is generated from the license number and license key. You need to register the installation number to validate the license and obtain the installation key. This topic describes how to register a license and install the installation key.

**Note:** If you do not opt to automatically register the license at the time you installed the license number and license key, you have 30 days to register the installation number and obtain an installation key.

If you do not have internet access from the machine you are installing the license, take one of the following options to register your license:
- You can manually register the license on the Four Js product web site to get an installation key, see the procedure described in "Register the license" topic in the Genero Licensing User Guide.
- Or alternatively, you can also obtain the installation key by contacting your local support center.

After obtaining the installation key, your next step is to install the installation key, see Install the installation key on page 49.
Install the installation key

Enter the installation key with either the license controller -k command or the Genero Licensing Application tool.

About this task:

After installing the license number and license key, you need to install an installation key. The procedure in this topic describes the installation of the installation key for Genero Report Writer for Java, C# and PHP installations using the grxWrt license controller and Genero Report Engine (GRE) using greWrt. Alternatively, you can use Genero Licensing Application tool, see Use the Genero Report Engine for Java Licenser to Install the Installation key. on page 50.

Note: This procedure is valid for a local license only. If you are using the Four Js License Manager, see the “Add a License to Four Js License Manager” topic in the Four Js License Manager User Guide.

Important: You can run the command to install an installation key whilst users are on the system. They will not be affected by this procedure.

Before you begin:

• You must be the root user or the user who installed the software to run the grxWrt or greWrt commands.
• You must have set your Genero environment, if you wish to run the grxWrt or greWrt commands from any directory

Before you begin a manual installation:

If you intend to manually install the installation key, you must have a valid installation key to hand, see Register a local Genero Report Writer license on page 48. If you do not have this, please contact your local Four Js support office.

Before you begin an automatic installation:

If you intend to use the auto option to automatically complete licensing over the internet:

• You must have the Customer Code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer Code, please contact your local Four Js sales office.
• You do not need the installation key as it will be retrieved automatically and installed for you.

Choose from one of the following command line options:

• If you do not have internet access, run the required command:
  • To install the installation key for Genero Report Writer for Java, C# and PHP, run the following command:
    grxWrt -k <installation-key>
  • To install the installation key for Genero Report Engine, run the following command:
    greWrt -k <installation-key>
  Where <installation-key> is the installation key. You should receive a message to say the license installation was successful.
• If you have internet access from the machine you are installing, you can complete licensing automatically using the auto option.

1. At the command prompt type the required command:
  • To install the installation key for Genero Report Writer for Java, C# and PHP, run the following command:
    grxWrt -k auto
  • To install the installation key for Genero Report Engine, run the following command:
2. At the prompt:

Enter your customer login >

Type your:

Customer Code

3. At the prompt for proxy configuration:

Do you need to configure an HTTP proxy? (y/n)

enter:

n

Note: If you enter y, you will be prompted for the required proxy information.

The maintenance key is also retrieved from the Four Js Activation server and is displayed.

```
Installing maintenance key 'S7MO51KGYR7Z'
License installation successful.
```

License installation is now completed. To check your license status, see Get license information on page 52.

At this point: If you need to install the maintenance key, see Install or update the maintenance key on page 57.

Use the Genero Report Engine for Java Licenser to Install the Installation key.

You also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller. This task shows you how to install an installation key using the Genero Report Engine for Java Licenser.

1. Launch the required Licensing Application tool.

   • For Genero Report Writer for Java, C# and PHP licensing, launch the Genero Report Engine for Java Licenser from your Four Js program list.
   • For Genero Report Engine licensing, launch the Genero Report Engine Licenser from your Four Js program list.
2. In the **Installation Key** field, enter the installation key and select **Install key**
3. Select **Quit** to exit the dialog.
Get license information

Display the license information for Genero Report Writer products.

About this task:

The procedure in this topic describes a method you can use to display information about the license of your Genero Report Writer product using the license controller. Use this procedure, for example, to find out the date the maintenance contract expires.

Tip: You can also use the procedure described in this topic to retrieve the installation number when you need to register the license and finalize the installation.

Before you begin:

Your Genero environment must be set:

- **GREDIR** must be set to the Genero Report Writer installation directory.
- **PATH** must include **GREDIR/bin**.

1. From a command prompt, enter the license controller command.
   - To display license details for a Genero Report Writer for Java, C# and PHP installation, run the following command:
     ```
     grxWrt -a info license
     ```
   - To display license details for a Genero Report Engine installation, run the following command:
     ```
     greWrt -a info license
     ```

Example of Genero Report Writer license information:

<table>
<thead>
<tr>
<th>License</th>
<th>RAA#AAA0000X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Genero Report Writer for Java C# PHP</td>
</tr>
<tr>
<td>Type</td>
<td>Development version</td>
</tr>
</tbody>
</table>

Warning! This is a temporary license, installation number is 'CLWA9NPAAQE0'.

This temporary installation will expire in 8 day(s).
End of maintenance date: 2016/07/31 (Year/Month/Day).

The output from the license controller command may display the following details about the installed license:

| Server name | Is the name of the license manager server. |
| TCP Port    | Is the port the license manager is listening. |
| License     | Is the value of the license number. |
| Product     | Is the name of the product. |
| Type        | Is the type of license. This can be runtime or development. |
| Users       | Is the maximum number of users allowed. |
| Extension(s)| Provides information on some specific conditions of the license. For example: |
|             | • "- Open Database Interface" means that your license allows you to use any database. |

Note: Server name and TCP port details are only displayed if the licensing is managed by a License Manager.
A "-Strict licensing option" means that you do not have an option to install as a temporary license. Therefore, the license needs to be registered at the time of license installation.

The **installation number** is displayed if the license is a temporary license and the installation has not been finalized.

If the license is **date-limited**, then the date when the license expires is shown.

**End of maintenance date**

Is the date the maintenance contract expires.

2. Alternatively, you can also use the **Genero Licenser** application to display license information.
   - For Genero Report Writer for Java, C# and PHP licensing, launch the **Genero Report Engine for Java Licenser** from your Four Js program list.
   - For Genero Report Engine licensing, launch the **Genero Report Engine Licenser** from your Four Js program list.
The **Licensing status** field displays details of the license installed. For more information see Step 1.

3. Select **Quit** to exit the dialog.
Uninstall a local license

Follow this procedure to uninstall a local Genero Report Engine (GRE) or Genero Report Writer for Java, C# and PHP installation license.

Before you begin:

• Your Genero environment must be set:
  • GREDIR must be set to the Genero Report Writer installation directory.
  • PATH must include GREDIR/bin.

1. Uninstall a GRE license.

• To uninstall a license for a Genero Report Writer for Java, C# and PHP installation, run the following command:
  
  grxWrt -d

• To uninstall a license details for a Genero Report Engine installation, run the following command:
  
  greWrt -d

2. Answer "y" when asked whether you really want to uninstall the license.

The license is uninstalled. A message confirms the license is uninstalled.

Using the Genero Licenser application to uninstall the license

3. Alternatively, you can also use the Genero Licenser application to uninstall the license.

• For Genero Report Writer for Java, C# and PHP licensing, launch the Genero Report Engine for Java Licenser from your Four Js program list.

• For Genero Report Engine licensing, launch the Genero Report Engine Licenser from your Four Js program list.
Figure 15: Genero Report Engine for Java Licenser

4. Select **Uninstall** to uninstall the license.
   The **Licensing status** field is updated to show the license is not installed.

5. Select **Quit** to exit the dialog.
Install or update the maintenance key

Information on methods for installing or updating the maintenance key for a Genero Report Writer for Java, C# and PHP and Genero Report Engine (GRE) installation.

A maintenance key is provided with your maintenance contract. The key indicates the day that the maintenance contract expires. If you are licensing the product, you will be prompted for the maintenance key during the licensing process.

If you have purchased a new maintenance contract, you only need to install the new maintenance key. You do not need to reinstall your license, or uninstall the old maintenance key.

**Note:** This topic is valid for a local license only. If you are using the Four Js License Manager, see the *Four Js License Manager User Guide*.

Before you begin:

- You must be the root user or the user who installed the software to run the `grxWrt` or `greWrt` commands.
- You must have set your Genero environment, if you wish to run the `grxWrt` or `greWrt` commands from any directory

Before you begin a manual installation:

If you intend to manually install the maintenance key, you must have a valid maintenance key to hand, see *Register a local Genero Report Writer license* on page 48. If you do not have this, please contact your local Four Js support office.

Before you begin an automatic installation:

If you intend to use the auto option to automatically complete licensing over the internet:

- You must have the Customer Code delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a Customer Code, please contact your local Four Js sales office.
- You do not need the maintenance key as it will be retrieved automatically and installed for you.

To install the maintenance key, choose from one of the following command line options:

- If you do not have internet access, run the required command:
  
  - To install the maintenance key for Genero Report Writer for Java, C# and PHP, run the following command:

    ```
    grxWrt -m <maintenance-key>
    ```

  - To install the maintenance key for Genero Report Engine, run the following command:

    ```
    greWrt -m <maintenance-key>
    ```

  Where `<maintenance-key>` is the installation key. You should receive a message to say the license installation was successful.

- If you have internet access from the machine you are installing, you can complete licensing automatically using the `auto` option.

  1. At the command prompt type the required command:

     - To install the maintenance key for Genero Report Writer for Java, C# and PHP, run the following command:

       ```
       grxWrt -m auto
       ```

     - To install the maintenance key for Genero Report Engine, run the following command:

       ```
       greWrt -m auto
       ```

  2. At the prompt:

    ```
    Enter your customer login >
    ```
Type your:

Customer Code

3. At the prompt for proxy configuration:

Do you need to configure an HTTP proxy? (y/n)

enter:

n

Note: If you enter y, you will be prompted for the required proxy information.

The maintenance key is retrieved from the Four Js Activation server and is displayed.

Installing maintenance key 'S7MO51KGYR7Z'
License installation successful.

License installation is now completed. To check your license status, see Get license information on page 52

Use the Genero Licenser to Install or Update the Maintenance key

You also have the option of using the Genero Licenser Application tool, which provides you with a graphical user interface to the licence controller. This task shows you how to install or update the maintenance key using the Genero Report Engine for Java Licenser.

1. Launch the required Licensing Application tool.

   • For Genero Report Writer for Java, C# and PHP licensing, launch the Genero Report Engine for Java Licenser from your Four Js program list.

   • For Genero Report Engine licensing, launch the Genero Report Engine Licenser from your Four Js program list.
2. In the Maintenance Key field, enter the maintenance key and select Update key. A window pops up displaying "Maintenance key successfully installed".
• The **Licensing status** field is updated; “temporary information stored” has been replaced with “License installation successful”.
• In the field under **Licensing status** you will see the maintenance expiry date appears after the End of maintenance date: This means that your maintenance key is valid until the date displayed.

Your product is now fully licensed.

3. Select **Quit** to exit the dialog.

## License an upgraded installation

It is not necessary to re-enter the license of the product if the new version:

• Is installed into an existing installation directory
• Is not a major version number change

You will need to enter a new maintenance key if the build date of the Genero Business Development Language (BDL) package is greater than the end of maintenance date (encoded in the maintenance key).

## License Genero Report Engine using the Four Js License Manager

How to set up a Genero Report Engine (GRE) product installation to use a license manager on the network.

The procedure described in this topic is valid for configuring the licensing of Genero Report Engine (GRE) using the License Manager.

**Important:** Licensing for Genero Report Writer for Java, C# and PHP must be managed locally as it can not be managed by the License Manager.

To specify the use of a license manager, you need to configure the `greprofile` locally. By default, the `greprofile` used is found in `$GREDIR/etc/greprofile`. To specify an alternate `greprofile`, set the `GREPROFILE` environment variable. The following `greprofile` resources need to be set:

### Table 4: Virtual Machine - License Server Configuration Required Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.server</td>
<td>none</td>
<td>Name of the machine that holds the license service program. You must set this value to use FLM from this machine.</td>
</tr>
<tr>
<td>flm.license.number</td>
<td>none</td>
<td>Value of your current license number. (For example: XXX#XXXXXXXX)</td>
</tr>
<tr>
<td>flm.license.key</td>
<td>none</td>
<td>Value of your current license key. (For example: YYYYYYYYYYYY)</td>
</tr>
</tbody>
</table>

If needed, specify these optional parameters:

### Table 5: Virtual Machine - License Server Configuration Optional Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.service</td>
<td>6399</td>
<td>Service or port number for the communication between the local license controller and Four Js License Manager. This port number should be the same as that set in the FLM configuration</td>
</tr>
<tr>
<td>Resource</td>
<td>Default Value</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>file, $FLMDIR/etc/lmprofile. See the topic Configuring the License Manager in the <em>Four Js License Manager User Guide</em></td>
</tr>
<tr>
<td>flm.check</td>
<td>10</td>
<td>Number of iterations between two controls of the user list. This resource is only available on UNIX™ platforms.</td>
</tr>
</tbody>
</table>
| flm.ps    | ps -ae        | Specifies the command that gives a process list for a machine. This value is used to recover unreleased licenses by synchronizing the real user list on the current machine with the registered users list on FLM.  
**Warning:** This entry is not used on most platforms as the default value ps -ae is replaced by a call to an operating system specific API. This resource should not be set unless the internal implementation relying on API calls fail. |

For server-side configuration of the license manager and for information on installing a license in the license manager, see the *Four Js License Manager User Guide*. 
License Genero Mobile

To license Genero Mobile, you license the Genero Business Development Language. Please see the topics covering the licensing of Genero Business Development Language.

When licensing Genero Mobile, your Genero Business Development Language (BDL) license must be for a Genero Mobile installation. If you receive an error message:

```
ERROR(-6024) : Modules compiled with Genero Mobile require a Genero Mobile license at runtime.
```

This means that the Genero BDL license you have is not valid for Genero Mobile. Please contact your local sales office for further information.

**Tip:** While you can use a license manager for Genero Mobile, the Genero Mobile license is an individual license and there is no need to use a license manager. You would only consider using the Four Js License Manager for Genero Mobile if you already use it with an existing Genero installation.

- Find your mobile app p-code size on page 62

Find your mobile app p-code size

Determine the p-code size for your app.

The free developer license is suitable for apps whose p-code is under 64K (65,535 bytes to be precise). This procedure tells you how to determine your app p-code size.

**Note:** For general information about the `fglrun` sizing options `--program-size` and `--module-size`, see the [Genero Business Development Language User Guide](#).

1. From Genero Studio, open the **Tools > Genero Tools** menu and select **Genero Workplace Window**. The **Genero Workplace Window** opens and displays a command prompt.
2. Verify that you are using a free Genero Mobile license.
   Type the command `fglWrt -a info`.

![Figure 17: Checking your Genero Mobile license](image)

Figure 17: Checking your Genero Mobile license

The output states when you are using a free license. You only need to continue this procedure if you are using a free license. A paid license has no limit.

3. Navigate to the directory where your compiled program files reside.
4. Type the command `fglrun --program-size appname`, where `appname` is your app name.
Figure 18: Determining the bytes towards your app p-code limit

The last line of the output shows the number of kilobytes of p-code for the app, as well as the number of kilobytes that apply towards the free license limit. The limit number cannot exceed 64K.

Note: The limit only includes the modules compiled with the free license. These modules are identified with the (limited) tag in the command output. Modules precompiled in Genero packages are not compiled with a free license, and therefore do not count towards the limit.
Why should you use the Four Js License Manager (FLM)?

The License Manager is dedicated to licence management of Four Js products for an entire network. This chapter provides you with information to help you configure and use the License Manager.

For information on installing the License Manager, see the Install Four Js License Manager chapter in the Genero Installation Guide.

Topics

- What is the Four Js License Manager (FLM)? on page 64
- Scenarios on page 64
- Setting the environment on page 66
- License Manager configuration on page 67
- License Manager Usage and Options (flmprg) on page 70
- License Manager DVM Version Compliance on page 81

What is the Four Js License Manager (FLM)?

The FLM provides a global solution for controlling Four Js product licenses.

One license manager can manage various types and versions of Four Js products for an entire network. The license manager can manage Four Js products installed on the same machine as the License Manager or on machines on the same network as the License Manager.

**Note:** Licensing for Genero Report Writer for Java, C# and PHP must be managed locally as it can not be managed by the License Manager.

**Tip:** While you can use a license manager for Genero Mobile, the Genero Mobile license is an individual license and there is no need to use a license manager. You would only consider using the FLM for Genero Mobile if you already use it with an existing Genero installation.

License Manager Overview

The FLM provides the following licensing features:

- The license manager simplifies the updating of licenses and centralizes license management for a pool of Four Js Dynamic Virtual Machines (DVMs) without affecting performance.
- The license manager supports the sharing of licenses for different versions of a Genero product, or different Genero products of the same type with the same license extensions (i.e. specific conditions of the license, but not including temporary licenses), as long as your maintenance contract is up to date.
- Installing Genero products on a Remote File Systems (such as NFS or Samba) with a local license is not supported, you must use an FLM configuration instead.
- For more examples of how you can use the FLM to manage license users more effectively, please see the Scenarios on page 64 topic.

Scenarios

The Four Js License Manager can be used in a full Windows™ environment using network drives. In addition to managing user licenses, the Four Js License Manager can prove to be very useful in a
development environment as it allows several compiler installations to use only one license on the same machine or on several machines connected to a network.

In this scenario there are two groups - a Developers Corner and a Final Users Corner. The Developers Corner is connecting to the Four Js License Manager and sharing one license on one machine, similarly the Final Users Corner is also sharing one license.

![Diagram of Four Js License Manager Scenario 1]

**Figure 19: Four Js License Manager Scenario 1**

In another scenario, Four Js License Manager simplifies the installation and the license management of a pool of DVMs.
Note: Previous version 2.60 and below of the license server included in old Windows™ DVM distributions are not compatible with Four Js License Manager. This prior license server module (which only existed on Windows operating systems) can be replaced by Four Js License Manager.

Setting the environment

Before starting the Four Js License Manager, the FLMDIR and PATH environment variables must be set.

A script for setting the environment is created during the installation phase. Located in the Four Js License Manager installation root directory (FLMDIR), this file is named envflm on Linux®/UNIX™ platforms and envflm.bat on Windows® platforms. By running this script file, the following actions are performed:

on Unix (using sh as shell script):

```
FLMDIR=/opt/fourjs/flm
export FLMDIR
PATH=$PATH:$FLMDIR/bin
export PATH
```

on Windows:

```
set FLMDIR=c:\fjs\flm
set PATH=%PATH%;%FLMDIR%\bin
```
License Manager configuration

This section discusses the configuration of an installed License Manager and provides information about linking a DVM to a License Manager.

Topics

- Configuring the License Manager on page 67
- Linking a DVM to Four Js License Manager on page 68
- Restricting access to a Four Js License Manager on page 69

Configuring the License Manager

To configure the Four Js License Manager (FLM), edit the $FLMDIR/etc/lmprofile file.

To set the value of a resource in this file, add the line with the following format:

Syntax

```
name-of-resource="value"
```

For example:

```
flm.server="localhost"
```

The following resources are available:

Table 6: License Manager Configuration Resources

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.server</td>
<td>none</td>
<td>Name of the machine that hosts FLM. Set this value to the current machine name or IP address. If your DNS or your hosts file is correctly configured, you can safely use localhost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Warning: Although no default is provided, this parameter is mandatory.</td>
</tr>
<tr>
<td>flm.service</td>
<td>6399</td>
<td>Service or port number for the communication between the license controller and FLM.</td>
</tr>
<tr>
<td>flm.check</td>
<td>100</td>
<td>Number of connections between checks of the registered users list for a host machine. The control of active users is important, as it will synchronize real users on the network with the registered users list managed by FLM. The check is used to recover licenses from user that are no longer alive (in case of vm crash, the associated license may not be recovered).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Caution: To disable this control, set the parameter to -1. However, if you disable it, please be aware that some registered users will never be unregistered by the FLM unless you run the flmprg -u &lt;license number&gt;, see Force a Check of the Registered Users List (flmprg) on page 80</td>
</tr>
<tr>
<td>Resource Name</td>
<td>Default Value</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>flm.license.shared</td>
<td>1</td>
<td>Indicates whether the users are shared between licenses. If you have licenses for the same product, type, and extension, the total number of users will be cumulative. If this resource is set to 0, this will not be done.</td>
</tr>
</tbody>
</table>
| flm.cnxlog.enabled    | 0             | Set this entry to 1 to activate the FLM connection log. Support may request that you enable this option and send the generated log files to aide in analyzing licensing issues. The log files are created in FLMDIR. The files are named using the pattern flm-YYYYMMDD-id.log, where:  
  • YYYY = current year  
  • MM = current month  
  • DD = day of month  
  • id = counter value. The counter value is incremented each time the FLM is started. |

**Note:** The flm.storage configuration entry was deprecated in version 5.12.08. If a configuration entry is set for flm.storage, it is silently ignored.

### Linking a DVM to Four Js License Manager

All Four Js DVMs include a license controller program.

A licence controller (e.g. fglWrt) is installed as part of your Genero product installation. It is provided in the product package. Different licence controller programs are used by different Genero products; though they all provide license information and perform similar licensing functions.

<table>
<thead>
<tr>
<th>Genero product</th>
<th>Licence controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genero Enterprise</td>
<td>fglWrt</td>
</tr>
<tr>
<td>Genero Mobile</td>
<td>fglWrt</td>
</tr>
<tr>
<td>Genero Report Writer for Java, C# and PHP</td>
<td>grXwrt</td>
</tr>
</tbody>
</table>

**Important:** Licensing for Genero Report Writer for Java, C# and PHP must be managed locally as it can not be managed by the License Manager. For more details on local licensing see *Genero Licensing User Guide*.

| Genero Report Engine                               | greWrt             |

The configuration of the DVM (see [Configuration of the license controller](#)) on page 68

### Configuration of the license controller

To configure your license controller for License Manager, on the server where the DVM is installed, edit its configuration file.

In order for the Four Js License Manager (FLM) to manage Genero product licenses, each product's DVM configuration file needs to be configured locally as described in this topic:
• Genero Enterprise and Genero Mobile products can be configured by setting values in the FGLPROFILE file.
• Genero Report Engine (GRE) can be configured by setting values in the GREPROFILE file.

**Important:** Licensing for Genero Report Writer for Java, C# and PHP must be managed locally as it cannot be managed by the License Manager. For more details on local licensing see Genero Licensing User Guide.

**Tip:**
The DVM configuration file, for example $FGLDIR/etc/fglprofile, can be automatically updated with FLM server details when installing Genero on a Unix™ platform, as long as the FLM is installed, and the option to use the FLM is selected at time of installation.

**DVM Configuration**
Values for the resources flm.server, flm.license.number, and flm.license.key are required if you want to use FLM.

**Table 7: Virtual Machine - License Server Configuration**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.server</td>
<td>none</td>
<td>Name of the machine that holds the license service program. You must set this value to use Four Js License Manager from this machine.</td>
</tr>
<tr>
<td>flm.license.number</td>
<td>none</td>
<td>Value of your current license number. (For example: XXX#XXXXXXXX)</td>
</tr>
<tr>
<td>flm.license.key</td>
<td>none</td>
<td>Value of your current license key. (For example: YYYYYYYYYYY)</td>
</tr>
<tr>
<td>flm.service</td>
<td>6399</td>
<td>Service or port number for the communication between the local license controller and Four Js License Manager. This value should be the same as in the Four Js License Manager configuration file, $FLMDIR/etc/lmprofile. See Configuring the License Manager on page 67.</td>
</tr>
<tr>
<td>flm.check</td>
<td>10</td>
<td>Number of iterations between two controls of the user list. Default is 10.</td>
</tr>
<tr>
<td>flm.ps</td>
<td>ps -ae</td>
<td>Specifies the command that gives a process list for a machine. This value is used to synchronize the real user list on the current machine with the registered users list on Four Js License Manager.</td>
</tr>
</tbody>
</table>

**Warning:** This entry is not used on most platforms as the default value ps -ae is replaced by a call to an API. This resource should not be set unless the internal implementation relying on OS specific API calls fail.

**Restricting access to a Four Js License Manager**
The license manager can be configured to filter the hosts connecting to it.
The following resources are available:
Table 8: Filter Access Resources

<table>
<thead>
<tr>
<th>Resource Name</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>flm.filter.deny.ip</td>
<td>none</td>
<td>List of IP addresses to deny.</td>
</tr>
<tr>
<td>flm.filter.deny.host</td>
<td>none</td>
<td>List of hostnames to deny.</td>
</tr>
<tr>
<td>flm.filter.deny.domain</td>
<td>none</td>
<td>List of domains to deny.</td>
</tr>
<tr>
<td>flm.filter.allow.ip</td>
<td>none</td>
<td>List of IP addresses to allow.</td>
</tr>
<tr>
<td>flm.filter.allow.host</td>
<td>none</td>
<td>List of hostnames to allow.</td>
</tr>
<tr>
<td>flm.filter.allow.domain</td>
<td>none</td>
<td>List of domains to allow.</td>
</tr>
<tr>
<td>flm.filter.priority</td>
<td>deny</td>
<td>Defines which rules will be processed first.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Valid values for this parameter are &quot;allow&quot; and &quot;deny&quot;.</td>
</tr>
</tbody>
</table>

The IP addresses, host names and domains must be separated by a space character and can contain wildcards (* or ?).

Example:

```
flm.filter.deny.ip="127.0.0.1 192.168.200.1"
```

The processing order of the rule is important.

Example:

```
flm.filter.deny.ip="127.0.0.1"
flm.filter.allow.ip="127.0.0.1"
```

Using the priority **deny**, the IP address 127.0.0.1 is rejected, as the rule for `flm.filter.deny.ip` matches first. Using the priority **allow**, the IP address 127.0.0.1 is accepted, as the rule for `flm.filter.allow.ip` matches first.

The license manager checks for IP addresses first, then host names, then domains.

License Manager Usage and Options (flmprg)

The Four Js License Manager program is called `flmprg` on Linux®/UNIX™ and `flmprg.exe` on Windows®.

This program should be started only on the machine where Four Js License Manager is installed and configured. Four Js License Manager starts as a daemon listening to license controller connections. This chapter includes topics in installing the License Manager and using it to manage licences.

**Note:** On Linux®/UNIX™ systems to avoid issues with directory permissions, it is recommended that the non-privileged user (not root user) who installs the License Manager, should also start the daemon and add licenses.

Topics

- Installing the service (Windows only) on page 72
- Uninstalling the service (Windows only) on page 72
- Add a License to Four Js License Manager on page 72
- Add a Maintenance Key to Four Js License Manager on page 76
Display License Manager help

To display the help for the license manager, execute the command:

```bash
flmprg -h
```

![Figure 21: Displaying flmprg Options](image)

Display License Manager version number

To display the version of the license manager, execute the command:

```bash
flmprg -V
```
Installing the service (Windows® only)

The installation program installs Four Js License Manager as a service. To install the service manually as a service on Windows®, execute the following command:

`flmprg --service-install`

Uninstalling the service (Windows® only)

To uninstall the service on Windows™, execute the following command:

`flmprg --service-uninstall`

Add a License to Four Js License Manager

Before the Four Js License Manager (FLM) can manage Genero product licenses, each product’s DVM configuration file needs to be configured locally with license key and license number, see Configuration of the license controller on page 68.

With internet access

With internet access from the machine where the FLM is running, you can complete the installation of your license via HTTP.

1. Start the command line interface.
   a) Open a command prompt.
      • On Windows®, open the License Manager Workplace window from the Start menu.
      • On Linux®, open a command prompt. "sudo" may be required.
   b) Type the command:

```
flmprg -l
```

At the prompts install the license key and license number.

2. At the prompt:

```
Do you want to obtain the installation key using HTTP ? (y/n)
```

Enter: y
Your product is now fully licensed.

Without internet access

If you do not have internet access, you can complete licensing manually as described in these steps:

3. At the prompt in Step 2:

```
Do you want to obtain the installation key using HTTP? (y/n)
```

Enter: n

![Figure 23: Installing and Registering a License via HTTP with License Manager (flmprg)](image)

```
Figure 23: Installing and Registering a License via HTTP with License Manager (flmprg)
```

Take note of the installation number generated.

![Figure 24: Installing License with License Manager (flmprg) without internet](image)
4. Register your license with Four Js.
   Provide the installation number to obtain the installation key. See Register the license on page 74.
   Or you can contact your local Four Js support office to obtain the installation key.

5. Type the command:

   ```
   flmprg -l
   ```

   When prompted, enter the license number.

   **Note:** The FLM will prompt you for the missing installation key. Take the option to enter the installation key by hand.

   ![Figure 25: Installing Installation Key with License Manager](image)

6. Type the command:

   ```
   flmprg -m
   ```

   At the prompt enter the maintenance key. Your product is now fully licensed.

   **Note:** It is not necessary to restart Four Js License Manager to add new licenses.

**Register the license**

Register the installation number manually on the Four Js product website to validate the license.

**About this task:**

This topic shows you how to register your license on the Four Js product web site to get an installation key.

**Important:** Please be aware you will only need to use the procedure described here if you did not register the license automatically at the time you installed the license number and license key as described in Add a License to Four Js License Manager on page 72. Alternatively, you can also obtain the installation key by contacting your local Four Js support center.

**Before you begin:**

- You must have the **Customer code** delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a **Customer code**, please contact your local Four Js sales office.
- You must have your product's license number and license key to hand.
• You must have your product **installation number**. To get the installation number see Display License Information (flmprg) on page 77.

• You must have internet access.

1. Open your browser and navigate to the Four Js web site of the product you wish to license:
   - Genero Enterprise
   - Genero Mobile
   - Genero Report Writer

2. Navigate to the **Support > License your products** page. The **Online registration** form is displayed.

3. Complete the **Online registration** form as described in the following sub steps:
   a) Enter your **Customer Code** in the **Customer code** field.
   b) Enter the **licence number** in the **Licence number** field.
   c) Enter the **licence key** in the **licence number key** field.
   d) Enter the **installation number** in the **Installation number** field.
   e) Make sure that everything is entered correctly and select **Submit**.

A new page is displayed showing information that your license has been registered and providing you with:

• **Installation key**
• Maintenance key

Figure 27: Online Registration complete

At this point:

You now need to install the installation key, see the option to do this manually as described in Install Installation key, and after continue with installing the maintenance key as described in Add a Maintenance Key to Four Js License Manager on page 76.

Add a Maintenance Key to Four Js License Manager

To add a maintenance key, execute the following command:

```bash
flmprg -m <license>
```

where:

- `<license>` is the license number for which you want to add a maintenance key.

You will then be prompted for the maintenance key. You should receive a message to say the maintenance key installation was successful. Your Genero product is now fully licensed. All features are available for use.

To check your license status, run the command:

```bash
flmprg -a info license
```

For more information see Display License Information (flmprg) on page 77.

Remove a license from Four Js License Manager

To remove a license, execute the command:

```bash
flmprg -d <license>
```

where `<license>` is the value of the license number. This value is required.

Figure 28: Uninstalling a License with the License Manager (flmprg -d)
To remove all licenses:

```shell
flmprg -d all
```

**Note:** Active users can continue to work after the license is deleted. No check on the registered users list is done for the deleted license. Once they stop their sessions, however, they will not be able to start them again.

### Starting Four Js License Manager

To start Four Js License Manager, execute the following command:

```shell
flmprg -r
```

On Linux®/UNIX™, the Four Js License Manager runs as a daemon. On Windows®, it runs as a service.

You can also use the following command on Windows™:

```shell
flmprg --service-start
```

**Caution:** For security reasons, it is strongly recommended that the daemon be run as a non-privileged user (not root) on Linux®/UNIX™ systems. Also to avoid running into issues with directory permissions, it is recommended that the non-privileged user should also add the licenses.

### Stopping Four Js License Manager

To stop Four Js License Manager, execute the following command:

```shell
flmprg -s
```

Alternatively, on Windows®, you can also issue the following command:

```shell
flmprg --service-stop
```

### Display license information and statistics

Four Js License Manager provides various types of license information and statistics.

**Topics**

- [Display License Information (flmprg)] on page 77
- [Display Statistical Information] on page 79
- [Display Registered Active User Information] on page 80

### Display License Information (flmprg)

Display license information with the command:

```shell
flmprg -a info license
```
Tip: If you need to check a specific license, you may also find it useful to run the license controller command, for example, fglWrt -a info, from the target host that consumes the license. For more details see the "License Controller Options (fglWrt)" topic in the Genero Licensing User Guide.

This command displays all existing and enabled licenses, and their maintenance expiration dates.

Example of display:

<table>
<thead>
<tr>
<th>License</th>
<th>TW8#AAB0002R</th>
</tr>
</thead>
<tbody>
<tr>
<td>License key</td>
<td>JAK5S46GAVGV</td>
</tr>
<tr>
<td>Product</td>
<td>Four J's Universal Compiler</td>
</tr>
<tr>
<td>Type</td>
<td>Development version</td>
</tr>
<tr>
<td>Users</td>
<td>1</td>
</tr>
<tr>
<td>Extension(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Enhanced license key format</td>
</tr>
<tr>
<td></td>
<td>- Strict licensing option</td>
</tr>
</tbody>
</table>

This license is date limited and expires the 2009/03/15 (Year/Month/Day).
End of maintenance date: 2009/01/01 (Year/Month/Day).

The output from the license manager command may display the following details about the installed licenses:

- **License**: Is the value of the license number.
- **License key**: Is the value of the license key.
- **Product**: Is the name of the product license. In relation to Genero product, this can be, for example:
  - Four J's Universal Compiler (for Genero Enterprise and Genero Mobile products)
  - Four Js Genero Report Writer (for Genero Report Engine)
  - Genero Report Writer for Java C# PHP (for Genero Report Writer products)
- **Type**: Is the type of license. This can be runtime or development.
- **Users**: Is the maximum number of users allowed.
- **Extension(s)**: Provides information on some specific conditions of the license. For example:
  - "- Open Database Interface" means that your license allows you to use any database.
  - A "-Strict licensing option" means that you do not have an option to install as a temporary license. Therefore, the license needs to be registered at the time of license installation.
  - A "-DVM License under maintenance" applies to a GRE license and indicates that your GRE has also a valid license because your Genero BDL installation has a valid maintenance key.

The **installation number** is displayed if the license is a temporary license and the installation has not been finalized.

If the license is **date-limited**, then the date when the license expires is shown.

- **End of maintenance date**: Is the date the maintenance contract expires.
Display Statistical Information

You can display statistical license information with the command:

`flmprg -a info stat`

**Tip:** If you need to display statistical information on the use of a specific license on a machine, you may also find it useful to run the license controller command, for example, `fglWrt -a info stat`, from the target host that consumes the license. For more details see the "License Controller Options (fglWrt)" topic in the *Genero Licensing User Guide*.

Example of display:

```
License Manager Statistics:
Runtime : 0
Accepted : 0
Rejected : 0
System Problem : 0
Compilation : 0
Accepted : 0
Rejected : 0
System Problem : 0
Extension : 0
Accepted : 0
Rejected : 0
System Problem : 0
End Runtime : 0
PID request : 0
Information : 1
Bad License : 58
Stop Manager : 0
Deleted licenses : 0
Unknown : 0
Total : 59
```

where:

- **Runtime**
  - Is the number of runtime requests, split into accepted, rejected and system problem categories.

- **Compilation**
  - Is the number of compilation requests, split into accepted, rejected and system problem categories.

- **Extension**
  - Is the number of extension requests, split into accepted, rejected and system problem categories.

- **EndRuntime**
  - Is the number of requests which specified that a runtime is finished.

- **PID request**
  - Is the number of requests for PID checking. This is an internal mechanism to synchronize the real users list and registered users list of the license manager.

- **Information**
  - Is the number of requests for statistics.

- **Bad License**
  - Is the number of requests for bad licenses (license not enabled or that does not exist).

- **Stop Manager**
  - Is the number of request to stop the license manager.

- **Deleted licenses**
  - Is the number of requests for deleting licenses.

- **Unknown**
  - Is the number of requests of unknown type.
Total

Is the number of total requests.

Display Registered Active User Information

You can display registered active users information with the command:

`flmprg -a info user`

**Tip:** If you need to check registered users on a specific license, you may also find it useful to run the license controller command, for example, `fglWrt -a info users`, from the target host that consumes the license. For more details see the "License Controller Options (fglWrt)" topic in the Genero Licensing User Guide.

Example of display:

<table>
<thead>
<tr>
<th>License</th>
<th>FAA#YYYYYYYY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Four J's Universal Compiler</td>
</tr>
<tr>
<td>Type</td>
<td>Development version</td>
</tr>
<tr>
<td>Users</td>
<td>2/200</td>
</tr>
<tr>
<td>Host</td>
<td>Athena</td>
</tr>
<tr>
<td>GUI Server</td>
<td>10.0.0.33:0</td>
</tr>
<tr>
<td>Process Id</td>
<td>2768</td>
</tr>
<tr>
<td>Process Id</td>
<td>2854</td>
</tr>
<tr>
<td>Terminal</td>
<td>772</td>
</tr>
<tr>
<td>Process Id</td>
<td>2775</td>
</tr>
<tr>
<td>License</td>
<td>FAB#ZZZZZZZZZ</td>
</tr>
<tr>
<td>Product</td>
<td>Four J's Universal Dynamic Virtual Machine</td>
</tr>
<tr>
<td>Type</td>
<td>Runtime version</td>
</tr>
<tr>
<td>Users</td>
<td>0/700</td>
</tr>
</tbody>
</table>

where:

- **License** is the value of license number.
- **Product** is the name of the product.
- **Type** is the type of license (test, runtime, development, and so on).
- **Users** is the current number of active users/maximum number of users allowed.
- **Host** is the name of the host machine.
- **GUI server** is the IP address value of a graphical client.
- **Process Id** is the current process identifier.
- **Terminal** is the value of an ASCII client.

Manage the active user list (flmprg)

Four Js License Manager (FLM) provides you with methods to manage licenses being consumed by users by synchronizing the real users list with the registered users list.

**Topics**

- Force a Check of the Registered Users List (flmprg) on page 80
- Clean Registered Users List on page 81

**Force a Check of the Registered Users List (flmprg)**

To force a check of the registered users list for a specific machine, execute the command:
flmprg -u <host>

where <host> is the name of the machine.

This option requests a synchronization of the real users list with the registered users list for a specific machine. The synchronization will be done at the next dialogue between the license controller of the machine <host> and the Four Js License Manager.

**Tip:** A faster way to synchronize users may be to run the license controller command, for example, fglWrt -u, from the target host that consumes the license. For more details see the "License Controller Options (fglWrt)" topic in the *Genero Licensing User Guide*.

To request a check of all machines using the license manager, execute the command:

flmprg -u all

### Clean Registered Users List

To clean the registered users list of a specific license, execute the command:

flmprg -i <license>

where <license> is a license number. All users registered for this license are disconnected when you use this option.

To clean all licenses, execute the command:

flmprg -i all

**Caution:** The flmprg -i should be used with caution because it invalidates implicitly all existing sessions of a specific license and eventually all running applications will stop with a license error. It may be used in the case of, for example, a DVM crash when the associated license would not be recovered otherwise. In other cases, the -u option to force a check of the registered users should be preferred to the -i option.

### Reloading the configuration file (Windows® only)

To reload the configuration file, execute the command:

flmprg --configuration-reload

### License Manager DVM Version Compliance

The Four Js License Manager is fully compliant with recent Dynamic Virtual Machine (DVM) versions. For older versions of the DVM, you will need to apply patches or edit the configuration before the DVM is considered compliant with the Four Js License Manager.

These topics identify which DVM versions are compliant, how to find out the DVM version(s) on your system, how to determine whether a non-compliant DVM has been updated to be compliant, and steps for making a DVM compliant.

**Topics**

- Compliant DVM Versions on page 82
- Patching a DVM license controller on page 82
- Identify a DVM version on page 82
Compliant DVM Versions
Dynamic Virtual Machine (DVM) versions that are fully compatible with the Four J's License Manager and those older versions that need to be patched.

Four Js License Manager is ported to all platforms supported by the Four Js DVM. The following DVM versions are fully compatible with the Four Js License Manager:

• BDS version 3.55 and higher
• Genero version 1.32 and higher

Versions older than those specified above need to be patched (or entries in the fglprofile file need to be updated) to be compliant with Four Js License Manager.

Recent versions of the DVM can show the minimum license version required. The License Controller or License Manager will return an appropriate message in case of incompatibility. The minimum license version required should be displayed too.

Patching a DVM license controller
Making an older version of Dynamic Virtual Machine (DVM) compliant with Four Js License Manager.

In order for an older version of DVM to become compliant with Four Js License Manager:

• The older version will require a patch or
• The fglprofile file will need to be updated

Contact Four Js support center for exact steps for updating your DVM license controller.

Identify a DVM version
How to find the version number of Dynamic Virtual Machine (DVM).

To display the version number of a DVM, execute the command:

```
fpi
```

For older DVM versions, execute the command:

```
fglrun -V
```

or

```
fglnodb -V
```
License Controller

Why and when should you use the Four Js Licence Controller?

This chapter describes the licence controller features and options you can use when licensing Four Js products locally on your machine. The Genero Licenser application section provides details about the usage of the graphical user interface tool to license Genero products locally.

Topics

- What is the License Controller? on page 83
- License Controller Options (fglWrt) on page 84
- Genero Licenser Application on page 93

What is the License Controller?

The Four Js License Controller provides a local solution for controlling Four Js product licenses.

A license controller (for example fglWrt) is installed as part of your Genero product installation. It is provided in the product package. The license controller is a command line program only.

Tip:

The Genero Licenser application is a GUI tool that provides an interface to the licence controller, which you can use instead to complete the licensing process, see Genero Licenser Application on page 93.

Licence controller programs

Different licence controller programs are used by different Genero products; though they all perform similar licensing functions. The licence controller appropriate for your product is provided in the product package.

<table>
<thead>
<tr>
<th>Genero product</th>
<th>Licence controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genero Enterprise</td>
<td>fglWrt</td>
</tr>
<tr>
<td>Genero Mobile</td>
<td>fglWrt</td>
</tr>
<tr>
<td>Genero Report Writer for Java, C# and PHP</td>
<td>grXwrt</td>
</tr>
<tr>
<td>Genero Report Engine</td>
<td>greWrt</td>
</tr>
</tbody>
</table>

With the licence controller you can perform the installation, updating and management of licenses locally and also view licence information and various types of license-related statistics.

Locating the Licence Controller

- The fglWrt program is located in the bin subdirectory of the Genero Enterprise installation directory (in Windows®, for example, the default installation is located at C:\Program Files\FourJs\<gst_version>\fgl).
- The grXwrt program is located in the bin subdirectory of the Genero Report Writer for Java, C# and PHP installation directory (in Windows®, for example, the default installation is located at C:\Program Files\FourJs\<grw_version>\gre).
- The greWrt program is located in the bin subdirectory of the Genero Report Engine installation directory (in Windows, for example, the default installation is located at C:\Program Files\FourJs \<grw_version>\gre).
License Controller Options (fglWrt)

All Four Js DVMs include a License Controller program named fglWrt on UNIX systems and fglWrt.exe on Windows™ systems. Genero Report Writer for Java, C# and PHP installations use the grxWrt license controller and Genero Report Engine (GRE) uses greWrt. The same options apply to all Four Js license controllers.

The license controller program is located in the bin subdirectory of the installation root directory. You can use license controllers to perform licensing functions and provide various types of license information and statistics.

This topic uses the example of the fglWrt license controller to describe some of the options available (see Table 9: License Controller (fglWrt) options on page 84).

Table 9: License Controller (fglWrt) options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-l license number license key</td>
<td>Installs a license (requires license number and license key), see Install the license number and key on page 16</td>
</tr>
<tr>
<td>-d</td>
<td>Deletes current license.</td>
</tr>
<tr>
<td>-k installation key</td>
<td>Install an installation key for license validation; directly or if you have internet access from the machine you are installing, you can complete licensing automatically using the auto option, see Install the installation key on page 19.</td>
</tr>
<tr>
<td>-m maintenance key</td>
<td>Install or update a maintenance key; directly, or if you have internet access from the machine you are installing, you can complete licensing automatically using the auto option, see Install the maintenance key on page 20.</td>
</tr>
<tr>
<td>-i</td>
<td>Clears the list of registered user sessions, see Clean Registered Users List on page 92.</td>
</tr>
<tr>
<td>-u</td>
<td>Force a check of the registered users list on current machine, see Force a Check of Registered Users List on page 92.</td>
</tr>
<tr>
<td>-h</td>
<td>Display the help for the License Controller, see Display the License Controller help on page 85.</td>
</tr>
<tr>
<td>-v /-V</td>
<td>Shows license controller version information, see Display Version Number of the License Controller on page 86.</td>
</tr>
<tr>
<td>-a opt</td>
<td>Check or view various options, possible options are:</td>
</tr>
<tr>
<td></td>
<td>ps</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>env</td>
<td>Shows current environment. See Display Environment Information on page 86</td>
</tr>
<tr>
<td>cpu</td>
<td>Shows the number of CPUs in the computer. See Display CPUs (cores) information on page 89.</td>
</tr>
<tr>
<td>info license</td>
<td>Shows license information, see Display License information on page 87.</td>
</tr>
<tr>
<td>info stat</td>
<td>Shows statistics of FLM, see Display Statistics information on page 88.</td>
</tr>
<tr>
<td>info up</td>
<td>Checks if the FLM is started, see Check Four Js License Manager (FLM) is started on page 92.</td>
</tr>
<tr>
<td>info users</td>
<td>Shows all registered active users, see Display Registered Active Users Information on page 90.</td>
</tr>
</tbody>
</table>

- Display the License Controller help on page 85
- Display Environment Information on page 86
- Display Version Number of the License Controller on page 86
- Displaying License Information and Statistics on page 86
- GDC/GDCAX/GJC on page 89
- GWC on page 90
- Managing the Active User List on page 90
- Check Four Js License Manager (FLM) is started on page 92

**Display the License Controller help**

To display the help for the License Controller, execute the command:

```
fglwrt -h
```

![Image of the License Controller help output](image.png)

**Figure 29: Display the Licence Controller Options with `fglwrt -h`**
Display Environment Information

To display information about the environment on your machine where the license is installed, execute the command:

```bash
fglWrt -a env
```

This command will show the path to your FGL directory. It also shows details from the FGL configuration file (`$FGLDIR/etc/fglprofile`), under the `Resource` heading. If you have a local license installed and therefore **not** using a Four Js License Manager (FLM) server for license control, the `server` field will be displayed as `(undefined)`.

**Note:** If you have a local license installed, your license numbers will not be displayed by the `fglWrt -a env` command. License numbers that may be displayed are from the `fglprofile`, if any had been filled in there.

![Figure 30: Display the environment settings where license is installed.](image)

Display Version Number of the License Controller

To display the version of the License Controller, execute the command:

```bash
fglWrt -V
```

![Figure 31: Display the Version Number of License Controller (fglWrt)](image)

Displaying License Information and Statistics

License controllers provide various types of license information and statistics.
Topics

- Display License information on page 87
- Display Statistics information on page 88
- Display the Process Id List on page 88
- Display CPUs (cores) information on page 89

Display License information

License information is displayed with the command:

`fglwrt -a info license`

This command will display information about the current license for your Four Js product.

**Figure 32: Display the license information**

![Command output](image)

The output from the license controller command may display the following details about the installed license:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Server name</strong></td>
<td>Is the name of the license manager server.</td>
</tr>
<tr>
<td><strong>TCP Port</strong></td>
<td>Is the port the license manager is listening.</td>
</tr>
</tbody>
</table>

**Note:** Server name and TCP port details are only displayed if the licensing is managed by a License Manager.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>License</strong></td>
<td>Is the value of the license number.</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td>Is the name of the product license. In relation to Genero product, this can be, for example:</td>
</tr>
<tr>
<td></td>
<td>• Four J's Universal Compiler (for Genero Enterprise and Genero Mobile products)</td>
</tr>
<tr>
<td></td>
<td>• Four Js Genero Report Writer (for Genero Report Engine)</td>
</tr>
<tr>
<td></td>
<td>• Genero Report Writer for Java C# PHP (for Genero Report Writer products)</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Is the type of license. This can be runtime or development.</td>
</tr>
</tbody>
</table>
Users

Is the maximum number of users allowed.

Extension(s)

Provides information on some specific conditions of the license. For example:

- "Open Database Interface" means that your license allows you to use any database.
- A "Strict licensing option" means that you do not have an option to install as a temporary license. Therefore, the license needs to be registered at the time of license installation.
- A "DVM License under maintenance" applies to a GRE license and indicates that your GRE has also a valid license because your Genero BDL installation has a valid maintenance key. See License types on page 11.

The installation number is displayed if the license is a temporary license and the installation has not been finalized.

If the license is date-limited, then the date when the license expires is shown.

End of maintenance date

Is the date the maintenance contract expires.

Display Statistics information

To display statistical information for the current machine, execute the license controller command:

`fglWrt -a info stat`

This command will display statistics locally only when a License Manager is used for license control. For more information see Display statistical information for the License Manager.

Display the Process Id List

To display the current list of process Ids on your machine, execute the command:

`fglWrt -a ps`

Figure 33: Display the ids of Processes Currently Running
Display CPUs (cores) information

Displays the number of logical CPUs (cores) in your machine. Use this command on the application server where the Genero runtime is installed, to determine the exact number of CPUs (cores/threads) for CPU licensing. For more information, see CPU Licenses on page 13

`fglWrt -a cpu`

This command will tell you how many CPUs (cores/threads) you have. Example of display on a machine which has one physical CPU with four cores:

![Figure 34: Display the Number of CPUs using License Controller (fglWrt)](image)

GDC/GDCAX/GJC

**Note:** Genero Desktop Client ActiveX (GDCAX) and Genero Java Client (GJC) are desupported.

The following Client Information (clientInfo) is sent:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cx-mode</code></td>
<td>Is the connection type. The value can be &quot;gas&quot; or &quot;direct&quot;</td>
</tr>
<tr>
<td><code>user-name</code></td>
<td>Is the local user name. The user that runs the Front End.</td>
</tr>
<tr>
<td><code>host-addr</code></td>
<td>Is the user computer IP address; this is the local IP address even if the connection goes through a router or a proxy.</td>
</tr>
<tr>
<td><code>hw-addr</code></td>
<td>Is the user computer mac address</td>
</tr>
<tr>
<td><code>host-name</code></td>
<td>Is the user computer name</td>
</tr>
</tbody>
</table>

Examples:

- With direct connection to the DVM

  ```
  cx-mode : direct
  user-name : Administrator
  host-addr : 10.0.0.65
  hw-addr : 00-0C-29-BD-EE-F0
  host-name : server-2
  ```
• With connection to GAS or through a web server

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cx-mode</td>
<td>gas</td>
</tr>
<tr>
<td>user-name</td>
<td>Administrator</td>
</tr>
<tr>
<td>host-addr</td>
<td>10.0.0.65</td>
</tr>
<tr>
<td>hw-addr</td>
<td>00-0C-29-8D-EE-F0</td>
</tr>
<tr>
<td>host-name</td>
<td>server-2</td>
</tr>
</tbody>
</table>

**GWC**

The following Genero Web Client (GWC) information (clientInfo) is sent:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>appName</td>
</tr>
<tr>
<td>app-id</td>
<td>appId</td>
</tr>
<tr>
<td>user-agent</td>
<td>ua</td>
</tr>
<tr>
<td>host-addr</td>
<td>ip</td>
</tr>
<tr>
<td>host-name</td>
<td>hname</td>
</tr>
</tbody>
</table>

where:

- **appName** is the application identifier that is in the URL `/wa/r/appName`.
- **appId** is the application session number that is in the URL `/sua/appId`.
- **ua** is the user agent name.
- **ip** is the user computer IP address.
- **hname** is the user computer name.

**Note:** Depending on the proxy configuration or the web server configuration, **host-name** and **host-addr** can be the proxy or the web server information instead of the user information.

**Example:**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>host-addr</td>
<td>10.0.0.65</td>
</tr>
<tr>
<td>host-name</td>
<td>10.0.0.65</td>
</tr>
<tr>
<td>user-agent</td>
<td>Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.8.1.2) Gecko/20070219 Firefox/2.0.0.2</td>
</tr>
<tr>
<td>app-name</td>
<td>gwc-demo</td>
</tr>
<tr>
<td>app-id</td>
<td>131551616</td>
</tr>
</tbody>
</table>

See *Display registered active user information for the License Manager* for more information.

**Managing the Active User List**

License controllers allow you to manage users in various ways.

**Topics**

- Display Registered Active Users Information on page 90
- Force a Check of Registered Users List on page 92
- Clean Registered Users List on page 92

**Display Registered Active Users Information**

To display the registered active user list of the current license, execute the command:

`fglWrt -a info users`
The information displayed differs depending on the network architecture and the front-end client.

Example of display with direct connection to the DVM via the Genero Desktop Client (GDC):

C:\Program Files\FourJs\Genero_Studio_3_00_22\fgl\bin>fglWrt.exe -a info
users
License      : THM#AAF00ZSE
License key  : JIEG6GN8P065
Product      : Four Js Universal Compiler
Type         : Development version
Users        : 1/5
  FrontEndId2: {f3619311-3f9b-4a93-bba5-5d9b4ec6d84b}
  GUI Server 127.0.0.1:0 - Process Id 5144
    host-name: 4jsl
    host-addr: ::ffff:127.0.0.1
    user-name: user1
    app-id: {f4afc501-f7c9-c9c6-e16f-2b881a8bf3f0}
    cx-mode: direct

Example of display with connection through a Web server to the DVM:

C:\Program Files\FourJs\Genero_Studio_3_00_22\fgl\bin>fglWrt.exe -a info
users
License      : THM#AAF00ZSE
License key  : JIEG6GN8P065
Product      : Four Js Universal Compiler
Type         : Development version
Users        : 1/5
  GUI Server 127.0.0.1:47274
  Process Id 5596

where:

- **License**
  Is the value of the license number.

- **License Key**
  Is the value of the license key.

- **Product**
  Is the name of the product license. In relation to Genero product, this can be, for example:
  - Four J's Universal Compiler (for Genero Enterprise and Genero Mobile products)
  - Four Js Genero Report Writer (for Genero Report Engine)
  - Genero Report Writer for Java C# PHP (for Genero Report Writer products)

- **Type**
  Is the type of license. This can be runtime or development.

- **Users**
  Is the number of active users over the maximum number of users allowed.

- **FrontEndId2**
  For desktop clients, the Global Unique Identifier (GUID) of the front end client is displayed. For the web and desktop clients, the GUI server's IP address and port, and the process identifier is displayed.

- **host-name**
  Is the name of the computer that runs the DVM.

- **host-addr**
  Is the server's IP address and port it is listening on.
user-name Is the user name
app-id For desktop clients, the Global Unique Identifier (GUID) of the application is displayed.

**Force a Check of Registered Users List**

To force a check of the registered users list on current machine, execute the command:

`fglWrt -u`

The `-u` option forces the synchronization of the real users list and the registered users list for the current machine. This command should be used after a system crash or an abnormal termination of the application.

**Clean Registered Users List**

To clean the registered users list, execute the license controller command:

`fglWrt -i`

All users registered are disconnected when you use this option.

![Figure 35: Clean the Registered Users with fglWrt -i](image)

**Caution:** The `fglWrt -i` should be used with caution because it invalidates implicitly all existing sessions and eventually all running applications will stop with a license error. It may be used in the case of, for example, a DVM crash when the associated unreleased licenses would not be recovered otherwise. In other cases, the `-u` option to force a check of the registered users should be preferred to the `-i` option.

**Check Four Js License Manager (FLM) is started**

To check if the FLM is started, execute the license controller command:

`fglWrt -a info up`

Typical example of display where license manager is currently not running because configuration details are missing in `fglprofile`.

![Figure 36: Check License Manager is Started](image)
Genero Licenser Application

The Genero Licenser Application is a graphical user interface tool to the licence controller that supports the installation locally of Genero product licenses.

This section includes topics in using the Genero Licenser application tool to manage license.

- What is Genero Licenser? on page 93
- Installing a license on page 95
- Display license information with Licenser Application on page 99
- Install installation key / update maintenance key on page 97

What is Genero Licenser?

The Four Js Genero Licenser application provides a local solution for managing the license of a Four Js product.

A Genero Licenser application is installed as part of your Genero product installation. It is provided in the product package.

If you opt to license your product at the time of software installation, the Genero Licenser tool pops up and you are prompted to license the software by entering your license number and license key.
Figure 37: Genero BDL Licenser

Genero Licenser programs

Different Genero Licenser application programs are used by Genero products:
• **Genero BDL Licenser** (for Genero Enterprise or Genero Mobile products)
• **Genero Report Engine for Java Licenser** (for Genero Report Writer products)
• **Genero Report Engine Licenser** (for Genero Report Engine (GRE))

The Genero Licenser application appropriate for your product is provided in the product package. You can access it either from within the product interface **Tools** menu, or from the desktop by selecting the Genero Licenser tool from your Four Js program list.

With the Genero Licenser you can perform the installation, updating and management of licences locally and also view the license status of your product.

### Installing a license

You can license Genero products using the Genero Licenser program as described in this topic.  

### About this task:

The procedure in this topic describes a method you can use to install a license using the Genero Licenser. If you have internet access from the machine you are installing the license, you can also register the license to complete the licensing process.

**Note:** This procedure is valid for a local license only. If you are using the Four Js License Manager, see [License Manager Usage and Options (flmprg)](#) on page 70 (or the [Four Js License Manager User Guide](#)).

### Before you begin:

- You must have your product’s license number and license key to hand.
- You need a valid maintenance key. If you do not have this, please contact your local sales office to purchase a new maintenance contract.
- Make sure you have the **Customer code** delivered by Four Js with your product. Typically, this is delivered by email with license number, license key, and maintenance key. If you do not have a **Customer code**, please contact your local sales office.
- If a license already exists, you must first uninstall the license, see [Uninstall a local license](#) on page 37

1. Launch the Genero Licenser application either from within the product interface **Tools > Genero Tools** menu, or from the desktop by selecting the required Genero Licenser application tool from your Four Js program list:

   - **Genero BDL Licenser** (for Genero Enterprise or Genero Mobile products)
   - **Genero Report Engine for Java Licenser** (for Genero Report Writer products)
   - **Genero Report Engine Licenser** (for Genero Report Engine (GRE))

   The **Four Js Licensing Application** opens.

2. Enter your license number and license key, and click **Install license**. The **installation number** field is automatically updated with an installation number and **Licensing status** is updated with “Temporary information stored” to indicate that you now have a temporary license.

### Register the license

3. If you have internet access from the machine you are installing the license, select the **Install using Four Js Activation server** option to complete the license installation:
If you need to go out through a proxy, you will have to provide the required information here. But if you have direct access to the internet, you can just leave the HTTP proxy and Port options blank.
4. In the Login field, enter your customer code.

5. Select Install Keys
   If the response from the activation server is good, a window pops up displaying “Licence successfully installed”.

6. Click OK to continue.
   The maintenance key is automatically installed at the same time, so another window pops up displaying “Maintenance key successfully installed”.

7. Click OK to continue.

   License status updated:
   • The Licensing status field is updated; “temporary information stored” has been replaced with “License installation successful”.
   • In the field under Licensing status you will see the maintenance expiry date appears after the End of maintenance date: This means that your maintenance key is valid until the date displayed.

   Your product is now fully licensed.

Registering the license on the product website
If you do not have internet access, follow the procedure to register the license on the product web site manually as described in Register the licence on page 17, and then continue with the installation procedure described in Install installation key / update maintenance key on page 97.

   Note: Until registration is completed:
   • Your Genero product has a temporary license, which means that all product features are available for use for 30 days.
   • You also have 30 days to fully complete the license installation.

Install installation key / update maintenance key
Enter the installation and maintenance keys to complete the licensing.

About this task:
This procedure describes the method for installing the installation key and maintenance key for Genero products using a Genero Licenser application.

   Note: This procedure is valid for a local license only. If you are using the Four Js License Manager, see License Manager Usage and Options (flmprg) on page 70 (or the Four Js License Manager User Guide).

Before you begin: You need the installation and maintenance keys obtained when you registered your licence, see Register the licence on page 17.

1. Launch the Genero Licenser application either from within the Genero product (Tools > Genero Tools menu) or by selecting the required tool from the Four Js product program list:
   • Genero BDL Licenser (for Genero Enterprise or Genero Mobile products)
   • Genero Report Engine for Java Licenser (for Genero Report Writer products)
   • Genero Report Engine Licenser (for Genero Report Engine (GRE))

The Four Js Licensing Application opens.
2. In the **Installation Key** field enter your installation key and select **Install key**. A window pops up displaying "Installation key successfully installed."
3. In the **Maintenance Key** field enter your maintenance key and select **Update key**.

   **Note:** If you have purchased a new maintenance contract, you only need to install the new maintenance key. You do not need to reinstall your license, or uninstall the old maintenance key.

   A window pops up displaying "Maintenance key successfully installed".

   License status updated:

   - The **Licensing status** field is updated: “temporary information stored” has been replaced with “License installation successful”.

   - In the field under **Licensing status** you will see the maintenance expiry date appears after the **End of maintenance date**: This means that your maintenance key is valid until the date displayed.

   Your product is now fully licensed.

4. Select **Quit** to close the Genero Licenser application.

**Display license information with Licenser Application**

Display license information with the Genero Licenser Application.

You can use the Genero Licenser application tool to display information about the existing license. Use this procedure, for example, to find out the date the maintenance contract expires or to retrieve the license installation number when you need to register the license and finalize the installation.

   **Note:** This topic is valid for a local license only. If you are using the Four Js License Manager, see `License Manager Usage and Options (flmprg)` on page 70 (or the `Four Js License Manager User Guide`).

To display the license information, launch the Genero Licenser application either from within the product interface **Tools > Genero Tools** menu, or from the desktop by selecting the required Genero Licenser application tool from your Four Js program list:

- **Genero BDL Licenser** (for Genero Enterprise or Genero Mobile products)
- **Genero Report Engine for Java Licenser** (for Genero Report Writer products)
- **Genero Report Engine Licenser** (for Genero Report Engine (GRE))
Figure 40: Genero BDL Licenser Sample License Information
### Four Js Genero Licenser Application license information

The Four Js Genero Licenser Application displays the details about the installed license, where:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>License number</td>
<td>Is the value of the license number</td>
</tr>
<tr>
<td>License key</td>
<td>Is the value of the license key</td>
</tr>
<tr>
<td>Installation number</td>
<td>Is the value of the installation number</td>
</tr>
</tbody>
</table>

**Note:** The installation number is displayed if the license installation has not been finalized.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FGLDIR path</td>
<td>Is the path to the Genero Business Development Language (BDL) installation directory.</td>
</tr>
</tbody>
</table>

**Note:** GREDIR path is displayed if the product is a Genero Report Writer product and the path is to the Genero Report Engine installation directory.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensing status</td>
<td>Shows the status of the license, for example:</td>
</tr>
<tr>
<td></td>
<td>• &quot;Temporary information stored&quot; means temporary license installed</td>
</tr>
<tr>
<td></td>
<td>• “License installation successful” indicates license is fully installed</td>
</tr>
</tbody>
</table>

Additional details about the license are shown under the Licensing Status field:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>License</td>
<td>Is the value of the license number.</td>
</tr>
<tr>
<td>Product</td>
<td>Is the name of the product license. In relation to Genero product, this can be, for example:</td>
</tr>
<tr>
<td></td>
<td>• Four J's Universal Compiler (for Genero Enterprise and Genero Mobile products)</td>
</tr>
<tr>
<td></td>
<td>• Four Js Genero Report Writer (for Genero Report Engine)</td>
</tr>
<tr>
<td></td>
<td>• Genero Report Writer for Java C# PHP (for Genero Report Writer products)</td>
</tr>
<tr>
<td>Type</td>
<td>Is the type of license. This can be runtime or development.</td>
</tr>
<tr>
<td>Users</td>
<td>Is the maximum number of users allowed.</td>
</tr>
<tr>
<td>Extension(s)</td>
<td>Provides information on some specific conditions of the license. For example:</td>
</tr>
<tr>
<td></td>
<td>• &quot;- Open Database Interface&quot; means that your license allows you to use any database.</td>
</tr>
<tr>
<td></td>
<td>• A &quot;-Strict licensing option&quot; means that you do not have an option to install as a temporary license. Therefore, the license needs to be registered at the time of license installation.</td>
</tr>
<tr>
<td></td>
<td>• A &quot;-DVM License under maintenance&quot; applies to a GRE license and indicates that your GRE has also a valid license because your Genero BDL installation has a valid maintenance key. See License types on page 11.</td>
</tr>
<tr>
<td><strong>End of maintenance date</strong></td>
<td>Is the date the maintenance contract expires.</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------</td>
</tr>
</tbody>
</table>

The **installation number** is displayed if the license is a temporary license and the installation has not been finalized. If the license is **date-limited**, then the date when the license expires is shown.
Upgrading

These topics talk about what steps you need to take to upgrade to the next release of Genero licensing, and allows you to identify which features were added for a specific version.

New Features of Genero License

These topics provide a look back at the new features introduced with each release of Genero License.

What's new with Genero Licensing, v 3.00

Review this topic for information about new features and changes in existing functionality that have been introduced in this release of the Genero Licensing manual.

Table 10: License Controller

<table>
<thead>
<tr>
<th>Overview</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning with Four Js License Manager (FLM) and License Controller (fglwrt) version 5.18.00, there is a new method for calculating CPU Licenses operating in degraded mode.</td>
<td>See CPU Licenses on page 13</td>
</tr>
</tbody>
</table>

Upgrade Guides

Review the list of migration recommendations each time you move to a new version.

At this time, there are no migration topics.