

# **How Genero Licensing Works**

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# How Genero Licensing Works

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This guide is intended as a general overview and introduction to licensing Genero products. It presents the options for Genero licensing, and enables you to decide on the best licensing solution for your requirements.

This guide does not include step-by-step instructions for installing and managing product licenses. For these instructions, see *Install and License your Genero Products* manual and/or *Four Js License Manager User Guide*.

## Selecting a license to purchase

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When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

When selecting which licenses to purchase, follow these steps to help inform your decision.

### Tip:

If you need additional assistance in determining which licenses to purchase, contact your Four Js sales office. They can ask the questions to ensure that you are purchasing the correct license for your needs.

#### 1. Identify which Genero products you need to license.

You will need to know from which Genero package you installed: Genero Enterprise, Genero Mobile, or Genero Report Writer.

For more information, see [Development and runtime licenses by product](#) on page 4.

#### 2. Identify the environment that your Genero product will be used in.

- For development environments, you need *development licenses*. A development license is required for compiling source files, and for allowing developers to run applications for testing. In addition, you may need *runtime licenses* for QA testers, document writers, and other internal staff that need to run the same applications.
- For production sites, you need *runtime licenses*. A runtime license is required for users accessing deployed applications.

For more information, see [Development and runtime licenses by product](#) on page 4.

#### 3. Identify how many users need a license.

Identify the number of *concurrent* users likely to use the software. The number of users will help you choose between a User license or a CPU license.

- A *User license* is for a specific number of concurrent users.
- A *CPU license* allows an unlimited number of users.

To learn more, see [Multi-user licensing](#) on page 5.

#### 4. Decide which licensing model you wish to use: subscription or perpetual.

- A *subscription license* is time-limited, but can be renewed each year.
- A *perpetual license* allows you to use the license indefinitely, but will require a renewable maintenance contract to access current releases of the software.

For more information, see [Subscription and perpetual licenses](#) on page 10.

#### 5. Identify the type of license needed: standard, evaluation, or backup.

In most cases, a standard license is required.

For more information, see [Standard, evaluation, and backup licenses](#) on page 10.

**Related concepts**

[Estimating how many licenses you need](#) on page 8

Information about how runtime licenses are consumed may help you use licenses as efficiently as possible.

[Multi-user licensing](#) on page 5

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.

**Related tasks**

[Using a license](#) on page 11

Having bought a license, you may have some questions about how it all works. Review these topics to find answers to your questions.

**Related reference**

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## Development and runtime licenses by product

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Four Js provides both development and runtime licenses.

In development environments, you need development licenses for developers to compile their source files; the development license also allows that same developer to run applications. In production environments, you need runtime licenses for users accessing applications you deploy on production sites.

The following sections clarify your development and runtime license needs within the context of the different Genero packages and products.

**Genero Business Development Language (BDL)**

When working with the Genero Enterprise package of products, you license your Genero BDL installation.

- You need *development licenses* for your development environment. A development license is needed to compile Genero Business Development Language (BDL) source files.
- You need *runtime licenses* on production sites.

**Genero Mobile**

Both the Genero Enterprise and Genero Mobile packages support the development of mobile apps.

- You need a *development license* for your development environment.

If you are using the Genero Enterprise package and have a Genero BDL development license under maintenance, you do not need a separate Genero Mobile development license. Most developers using Genero Enterprise will have a Genero BDL development license under maintenance.

If you are using the Genero Mobile package, a development license is required. 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 `--program-size` and `--module-size` options of the `fglrun` command. For more information, see *Find your mobile app p-code size* in the *Install and License your Genero Products* guide.

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.

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

When licensing for the Genero Mobile product suite, your Genero Business Development Language (BDL) license must be for a Genero Mobile installation. If your Genero BDL license is not specifically for Genero Mobile, you will receive this error:

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

Please contact your local sales office for further information.

## Genero Report Engine

Both Genero Enterprise and Genero Report Writer use the Genero Report Engine.

- In your development environment, you need *development licenses* for the Genero Report Engine.

If you are using the Genero Enterprise package and have a Genero BDL development license under maintenance, you do not need to install a license for the Genero Report Engine; otherwise, a license is required. Most developers using Genero Enterprise will have a Genero BDL development license under maintenance.

If you are using the Genero Report Writer, a development license is needed to compile your source files.

- You need *runtime licenses* on production sites.

If you are using the Genero Enterprise package and have a Genero BDL runtime license under maintenance, you do not need to install a license for the Genero Report Engine; however, it is recommended that you have a runtime license for the Genero Report Engine, as it will improve performance.

If you are using the Genero Report Writer package, a runtime license is required.

## Multi-user licensing

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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 (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.

### Related tasks

[Selecting a license to purchase](#) on page 3

When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

### Related reference

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## User Licenses

The User license option ensures that a sufficient pool of licenses is available where a specified number of users may connect to a server to run applications.

The size of the 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 concurrent 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.

### Related concepts

[CPU Licenses](#) on page 6

The CPU license option ensures that a sufficient pool of licenses is available for an unspecified number of users connecting to a server to run your applications.

### Related tasks

[Estimating how many licenses you need](#) on page 8

Information about how runtime licenses are consumed may help you use licenses as efficiently as possible.

### Related reference

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## CPU Licenses

The CPU license option ensures that a sufficient pool of licenses is available for an unspecified number of users connecting to a server to run your applications.

This licensing option provides for an **infinite** pool of available connections. The total number of user that can connect at any given time is ultimately constrained by the central processing unit (CPU) capacity to handle the connections. The CPU license is so called because it takes into account the number of cores/threads of the CPU to be licensed.

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.

### Determine the number of CPUs for licensing

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. If you are using the Four Js License Manager, run the license manager command `flmprg -a cpu`. The command returns the number of cores/threads on the processor on your server.

#### Note:

#### Cores and hyper-threading

- Cores describe the number of independent CPUs in a single physical multi-core processor.
- Some CPUs use hyper-threading to boost multi-tasking performance using threads. When a core uses hyper-threading, the operating system will treat the core as if it were two entirely separate CPUs. These are known as virtual CPUs.

For example, if your server has an 8-core processor, the command output will show 16 virtual CPUs if the cores use hyper-threading. Your CPU license order must be for the number of CPUs output by the command.

## Degraded Mode

CPU licenses operate in degraded mode if the physical or virtual 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.
```

## When to use CPU 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 Browser Client (GBC) applications

For GBC 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.

#### Tip:

We recommend that you read the examples given in the *Licensing examples* section of the *Genero Application Server User Guide* that show you how you can take advantage of ways of running applications and implementing GAS configurations so as to help you use licenses as efficiently as possible.

### 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.

## Related concepts

[User Licenses](#) on page 5

The User license option ensures that a sufficient pool of licenses is available where a specified number of users may connect to a server to run applications.

### Related tasks

[Estimating how many licenses you need](#) on page 8

Information about how runtime licenses are consumed may help you use licenses as efficiently as possible.

### Related reference

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## Estimating how many licenses you need

Information about how runtime licenses are consumed may help you use licenses as efficiently as possible.

A Genero license is not consumed at the MAIN statement of the application, but as soon as there is a user interface instruction in the code. This can be an instruction to open a window or form, to set an OPTIONS attribute, to display a menu, and so on.

If there is no UI instruction in the application, no license is consumed, even if it connects to a client. For example, no license is consumed if the application simply runs reports, accesses databases, completes file transfers, or makes front-end function calls.

TUI applications (applications run in text mode using a text-based user interface) and GUI applications (applications that use the Genero front-ends) have the same requirements for licenses.

There are licensing considerations specific to Web services and to the front-ends. These considerations are detailed in the following sections.

### GDC applications

For Genero Desktop Client (GDC) applications, one license is consumed per GDC process. If you have multiple GDC clients started on one machine, and each GDC client runs one or more applications, one license will be used per GDC.

For example, if you run one or more GBC applications on a GDC server, there is one license used. But if, however, you start another GDC server to run applications, a new license is used for this process.

To summarize: For each GDC that is running applications, one license is consumed, no matter how many applications that GDC is running.

### Web applications

For Genero Browser Client (GBC) applications, one license is consumed per browser. For example, if you have multiple applications started on browser tabs, one license will be used.

No additional licenses are consumed when an application is started by a RUN or a RUN WITHOUT WAITING request.

For example, if you run GBC applications on tabs of a Firefox® browser, there is one license used. If you start another browser, such as Chrome, or Microsoft® Edge, and so on, to run additional applications, a new license is used for each of these new browsers.

The license controller also views an application open in a browser's private or incognito tab as a distinct browser and a new license is used for that application.

In the event that the user refreshes a browser page running a GBC application (regardless of whether it is the first application started or one started by RUN), a new application is started but the same license is used, not a new one.

A browser refresh does not properly close the DVM that was running before the refresh. But as the GBC is no longer active, it is only a matter of time before the DVM times out on the server (set by the USER\_AGENT timeout) and the DVM shuts down. See the section *Freeing up licenses* on this page.



## DVM license use with RUN

When a user requests an application, the dispatcher starts a DVM to handle the request. It is the DVM that consumes a license. If a `RUN` or a `RUN WITHOUT WAITING` is executed within this application, the same license is used.

## Web services

For Web service applications, one license is consumed per service started. If your Web service applications are secured by the Genero Identity Provider, additional licenses may be used. As GIP is based on micro services, each of its services your application calls consumes a license.

Genero Web service DVMs are managed in a pool by the GAS. Unlike application DVMs, the license is bound to the Web service process id. If a new child process is started, an additional license is consumed.

You can control the maximum number of licenses consumed by a Web service by configuring its `MAX_AVAILABLE` pool element. If the number of user requests exceeds what is available in the pool at any one time, the request will be queued (rather than blocked) until a DVM becomes available.

A Web service client does not consume a license. Users can make a request to a Web service server without needing a license.

## Freeing up licenses

When a license is freed depends on how the application is exited. A license is freed when the applications closes, or to be more exact, when the DVM is shut down. If the user exits the application by clicking on the cancel or exit button, the DVM is shut down and the license is immediately freed.

If the user does not exit the application, but instead closes the user agent (browser), the DVM continues to run until the application times out (the number of seconds is set for the `USER_AGENT` timeout). After the timeout period passes, the proxy closes the connection to the DVM, the DVM shuts down, and the license is freed.

## Checking licenses in use

To determine the number of licenses used, run the license controller command on the application server where the Genero runtime is installed. For example run:

```
fglWrt -u
```

Followed by:

```
fglWrt -a info users
```

## Recommendations

It is recommended to size your runtime license number to the number of users anticipated to run your applications. Another option is to use [CPU Licenses](#) on page 6.

## Related tasks

[Using a license](#) on page 11

Having bought a license, you may have some questions about how it all works. Review these topics to find answers to your questions.

[Selecting a license to purchase](#) on page 3

When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

[Selecting a license to purchase](#) on page 3

When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

#### **Related reference**

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## **Subscription and perpetual licenses**

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Deciding on a license term depends on your software needs and/or on the duration of the license you require; whether you want to use a subscription-based licensing model or the perpetual licensing model for your runtime and/or development licenses.

### **Subscription license**

A subscription license allows you to use the product on an ongoing subscription basis. A subscription license allows access to support services and to the latest versions of the software as they are released. A subscription license has a subscription date, which is the date when the license expires.

Genero products have a grace period, allowing you to continue to use the product after the expiration of the subscription license. The grace period varies, depending on the product. For details, see [My subscription license has expired, can I still use the installed versions of Genero?](#) on page 18

To use subscription licensing with Genero 3.10 and 3.20, you need to update your license tools (the license controllers and the Four Js License Manager) to version 6.00.12 or higher. For details on upgrading license controllers, see the *Install and License your Genero Products* manual and/or *Four Js License Manager User Guide*.

### **Perpetual license**

A perpetual license is a license you purchase once, which allows you to use the product indefinitely. A perpetual license is sold with a renewable maintenance contract. Maintenance allows access to support services and to the latest versions of the software as they are released. You can use a perpetual license as long as the version of product you are using was built prior to the maintenance expiry date. After the maintenance contract expires, there is a grace period when you can continue to use the product. For details of how this affects different products, see [My maintenance contract has expired. Can I still use the installed versions of Genero?](#) on page 20

#### **Related tasks**

[Managing a perpetual license](#) on page 19

This topic answers frequently asked questions about perpetual licenses.

[Managing a subscription license](#) on page 17

This topic answers frequently asked questions about subscription licenses.

#### **Related reference**

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## **Standard, evaluation, and backup licenses**

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A Genero product can be installed under a standard license, an evaluation license, or a backup license.

### **Standard license**

A standard license forms an agreement with Four Js giving the licensee a non-exclusive, non-transferable development or runtime license to use the software in compliance with the terms and conditions of the End User License Agreement. This license is granted to the licensee only for the number of users (concurrent users or CPU

users) and for the term (perpetual or subscription) specified in the purchase order accepted by Four J's and paid for by the licensee.

### **Evaluation license**

Evaluation licenses are issued to users trialing the software; for example, as part of the Genero Evaluation Program (GEP). Evaluation licenses are fully-functional licenses allowing use of the Genero family of products (compiler, database, Studio, and runtime environments) to a specified number of users. The licenses are time limited for a period (typically 90 days) and can only be activated (registered) once.

### **Backup license**

A backup license is a duplicate license installed on a "mirror" machine for secure installations requiring fault-tolerant or fail-over configurations. The backup license is a replica of the active server license and must have an equal number of users and be of the same version.

### **Related tasks**

[Estimating how many licenses you need](#) on page 8

Information about how runtime licenses are consumed may help you use licenses as efficiently as possible.

[Selecting a license to purchase](#) on page 3

When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

### **Related reference**

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## **Using a license**

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Having bought a license, you may have some questions about how it all works. Review these topics to find answers to your questions.

### **Note:**

For specific license details, see your license agreement or contact your local Four Js sales office.

### **Related concepts**

[Estimating how many licenses you need](#) on page 8

Information about how runtime licenses are consumed may help you use licenses as efficiently as possible.

### **Related tasks**

[Selecting a license to purchase](#) on page 3

When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

### **Related reference**

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## **How to install licenses**

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Install licenses locally or with the Four Js License Manager (FLM).

### **Note:**

For specific license details, see your license agreement or contact your local Four Js sales office.

You can install your license as a local license using the License Controller command line tool or the Genero Licenser browser-based application. These are both included with your Genero product.

If using the Four Js License Manager (FLM), you can centralize license installation for multiple Genero products running on machines across your network.

For more information on license installation, see *Install and License your Genero Products* manual or *Four Js License Manager User Guide*.

## Recognize a license number by product

Details for licensing your Genero products are delivered by email. By examining the license number, you can identify the product it licenses.

Four Js provides a license number and license key with the product package. For a [perpetual license](#), you will get a maintenance key with your maintenance contract. For a [subscription license](#), you will get a subscription key.

Before you begin Genero product licensing, locate your email message that contains the following:

- product license string

### Note:

A license string is an encoding of your license number, license key, maintenance or subscription key, and customer code. It is easier to use in license installation and upgrading.

- product license key
- product license number
- product maintenance or subscription key
- your customer code

If you do not have this email, contact your local Four Js sales office.

## Genero Business Development Language (BDL)

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

- License number: TAB#X35006TG
- License key: RFAL8FS73XDT
- Maintenance or subscription key: M9A3R5UCLMGH

## Genero Report Engine (GRE)

The Genero Report Engine exists in two products: Genero Enterprise and the Genero Report Writer. Both products use the Genero Report Engine (GRE); it is the GRE that is licensed.

With Genero Enterprise, license numbers for the Genero Report Engine start with the letter R. For example:

- License number: R4Z#X34006TG
- License number key: GFAS9FD78XDT
- Maintenance or subscription key: M0ST5VXLMFHO

With Genero Report Writer, license numbers for the Genero Report Engine start with the letter P. For example:

- License number: P7Z#C00459GL
- License key: TEBLE8RS31SE
- Maintenance or subscription key: OZ8K2ACHHROW

## Genero Mobile

Genero Mobile license numbers start with the letter M. For example:

- License number: MAC#AAP00014

- License key: QYBW9RXAQ0DF
- Maintenance or subscription key: WAGQRSYFL8S7

### Related reference

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## What is the License Controller?

The License Controller is a license management tool for controlling product licenses.

A License Controller is installed with your Genero product. The license controller responds to requests for licenses when a Dynamic Virtual Machine (DVM) process is started. It determines if a license is available, based on the number of users allowed by the license and the number of licenses actively in use. When a DVM stops, the license controller releases the license.

You use the license controller's command line program (`fglWrt` or `greWrt`) to install and manage your licenses.

### Tip:

To license your Four Js product using a browser-based application, see [What is the Genero Licenser?](#) on page 13.

### License controller programs

The license controller appropriate for your product is provided in the product package.

**Table 1: Genero Products and License Controllers**

Genero product	License controller
Genero Enterprise	<code>fglWrt</code>
Genero Mobile	<code>fglWrt</code>
Genero Report Writer for Java, C#, and PHP	<code>greWrt</code>
Genero Report Engine	<code>greWrt</code>

### Note:

Starting at license controller version 6.00, the `greWrt` license controller program is now provided with Genero Report Engine and Genero Report Writer for Java, C#, PHP, and Swift (GSTRW) products. Prior to this, the `greWrt` tool was provided with the Genero Report Engine product and the `grxWrt` tool was provided with the Genero Report Writer for Java, C#, PHP, and Swift products.

### Locating the License Controller

- The `fglWrt` program is located in `$FGLDIR/bin`.
- The `greWrt` program is located in `$GREDIR/bin`.

## What is the Genero Licenser?

The Genero Licenser is a browser-based graphical user interface (GUI) license management tool you can use to install, update, and manage your Genero product license on a local server.

### Tip:

To license your Four Js product using the command line, see [What is the License Controller?](#) on page 13.

The Genero Licenser tool for your product is provided in the product package. Genero Licensers exist for the Genero Business Development Language (BDL), the Genero Report Engine (GRE), and Genero Report Writer for Java, C#, and PHP. The licenser can be launched when you finish installing the product. It can also be launched from the **Tools** > **Genero tools** menu in Genero Studio.

Figure 1: Genero BDL Licenser on page 14 shows the Genero BDL Licenser in a Web browser. Other licensers have a different look-and-feel, but they essentially perform the same function.

Genero. Genero Business Development Language - Version: 6.00.08-202107091

License string

License number

License key

Maintenance key

Customer code

**No license installed.**

Temporary installation

Network proxy settings

[Install license](#)

When you have completed the requisite fields, the Install license button enables.  
Clicking this button installs a temporary license.  
To activate the license, you have two options:

- Enter your customer code and click the Activate license button (Internet connection required).
- Manually activate your license:
  - Select the Manual License Activation check box.
  - Click the Four Js Online Registration link.
  - Complete the online registration. If successful, this returns an installation key.
  - Return to the Licensing form and enter the installation key.
  - Click Activate license.

Figure 1: Genero BDL Licenser

## What is the Four Js License Manager (FLM)?

With the license manager you can manage Four Js products installed on the same machine or the same network as the License Manager.

One license manager can manage various types and versions of Four Js products. Once the FLM is installed, you then use the command line program `flmprog` to install and manage licenses. You configure each Genero product to work with the FLM by updating its license configuration file (for example, `fglllicense` file) with the following details:

1. Details of the license manager to use to validate the license.
2. The product's license number.

### When FLM is required

In the following situations, a license manager is required:

- Management of licensing for Genero products on a Remote File Systems (such as NFS or Samba) requires use of an FLM. A local license configuration is not supported.

- The management of licensing for Genero products in a Docker container requires the use of an FLM configuration outside the container. The FLM server can not run inside a docker instance. This is effective since version 5.19.00.

### Considerations for FLM use

Use of FLM is recommended in development environments, as it allows you to share your licenses between multiple Genero product versions. For example, your 3.00, 3.20, and 4.00 product versions can all share the same license. If you did not use a license manager, you would need a separate license for each version.

In a production environment, it is recommended to only use FLM where there is a technical requirement to do so. This typically means when two or more Genero installations – or two or more servers – share a single Genero license. If you have one Genero installation on one server, FLM is not required.

## Four Js License Manager usage scenarios

Use the scenarios described here to understand some ways you can implement an FLM in your network.

FLM is useful in both development and runtime environments, as it allows for easier management of licensing for different machines, platforms, Genero products, and product versions connected across a network.

### Scenario 1: Different versions of Genero products

In this scenario, you have a five-user developer license. You have five developers whose workload on any given day could be divided between the following:

- Working on the next release of your products
- Supporting the current release of your product
- Supporting one or more older releases of your product

For example, two users may be using Genero product version 3.10 and three users may be using version 3.20. FLM supports this scenario.

### Implementation

On the network:

- Install the Four Js License Manager (FLM) on a server.
- Edit your FLM configuration file, `$FLMDIR/etc/flmprofile`:

```
[server] # FLM host # host=localhost # Default service port port=6800
```

- Set the `host` resource to the name of the machine that hosts FLM. The default is `localhost`.
- Set the `port` to the port number for the communication between the license controller and FLM. If not set, the default is 6800.
- Start the FLM service. Run `flmprg -r` on UNIX®/Linux® and `flmprg --service-start` on Windows®.

On the user server:

- Update your Genero product license configuration file (`fgllicense` or `grelicense`):
  - Set the `host` and `port` with details of the FLM. These values should be the same as the entry in the FLM configuration file (`$FLMDIR/etc/flmprofile`).

```
[server] # FLM service host host=localhost # FLM service port port=6800
```

- Add the license number in the configuration

```
[license] # License to use with FLM service
number=TAB#XXXXXXXXX
```

All licenses need to be installed on the FLM (run the command `flmprg -l` to install licenses), but only one license needs to be specified in the product license configuration file.

### Tip:

When you install a new product version, just add details of the license in the Genero product license configuration file. With FLM there is no need to register the license (get the installation key).

### Scenario 2: Sharing licenses on different servers for QA and Development

In this scenario, you have more than one server in your development environment. There are three servers dedicated to QA: a Windows®, a Linux®, and a Mac® server. You have five QA team members and on any given day they could be testing on Windows, Linux, or Mac® versions of your product. You also have ten-users on a developer server.

In a local license scenario all four servers need separate Genero licenses:

- A ten-user license for your development server
- A two-user license for your Linux® QA server
- A two-user license for your Windows® QA Server
- A two-user license for your Mac® QA Server

Using FLM you only need one license that all these different servers share. You might, for example, decide to have a fourteen-user license that is shared by all users as demand permits.

### Implementation

On the network:

- Install the Four Js License Manager (FLM) on a server.
- Edit your FLM configuration file, `$FLMDIR/etc/flmprofile`:

```
[server] # FLM host # host=localhost # Default service port port=6800
```

- Set the `host` resource to the name of the machine that hosts FLM. The default is `localhost`.
- Set the `port` to the port number for the communication between the license controller and FLM. If not set, the default is 6800.
- Start the FLM service. Run `flmprg -r` on UNIX®/Linux® and `flmprg --service-start` on Windows®.

On the QA and developer servers:

- Update your Genero product license configuration file (`fgllicense` or `grelicense`):
  - Set the `host` and `port` with details of the FLM. These values should be the same as the entry in the FLM configuration file (`$FLMDIR/etc/flmprofile`).

```
[server] # FLM service host host=localhost # FLM service port port=6800
```

- Add the license number in the configuration

```
[license] # License to use with FLM service
number=TAB#XXXXXXXXXX
```

All licenses need to be installed on the FLM (run the command `flmprg -l` to install licenses), but only one license needs to be specified in the product license configuration file.

### Scenario 3: Development and/or runtime License Sharing



#### Warning:

Sharing licenses of the same product, type, and option between a cumulative group of users, as previously set by `flm.license.shared`, is not yet available in FLM 6.00.



In this scenario you have two or more development and/or runtime licenses for the same Genero product used by different teams. In a local licensing scenario you have, for example:

- Five users on one license
- Ten users on a second license

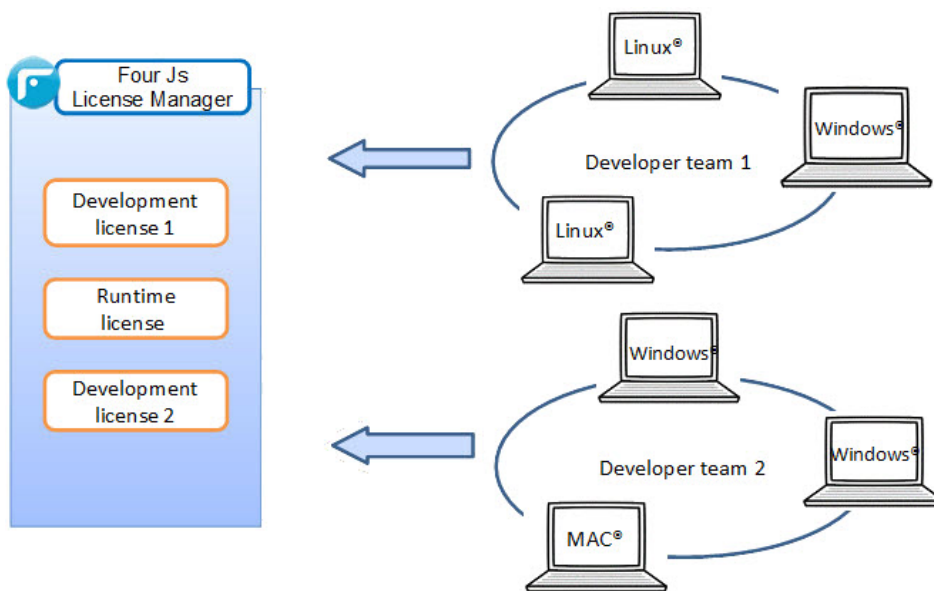
Often the demand for licenses can change from one team to the other.

Using FLM, you can combine the licenses. Instead of having five users on one license and ten users on the other, you now have fifteen users using the two licenses as demand requires.

**Note:**

This license sharing solution applies only to licenses for the same product, type (runtime or developer), and extension (specific conditions of the license). The total user count can not exceed the number of users allowed for by the combined licenses.

The image illustrates the scenario where two development teams are connecting to the Four Js License Manager and sharing the developer licenses. This scenario can equally be applied for runtime purposes.



**Figure 2: Four Js License Manager Scenario**

**Implementation**

Details on implementation will be added when this feature is made available.

**Note:**

The license server included in Windows® DVM distributions version 2.60 and earlier is not compatible with Four Js License Manager. This earlier license server module (which only existed on Windows® operating systems) can be replaced by Four Js License Manager.

## Managing a subscription license

---

This topic answers frequently asked questions about subscription licenses.

- [What is a subscription key?](#) on page 18
- [What happens when my subscription license expires?](#) on page 18
- [My subscription license has expired, can I still use the installed versions of Genero?](#) on page 18

**Note:**

For specific license details, see your license agreement or contact your local Four Js sales office.

## What is a subscription key?

A subscription key is required for a product with a subscription license. The subscription key determines the date that the license expires. When you are licensing a product, you will be prompted for the subscription key during the licensing process.

When you renew a subscription license, a new subscription key must be installed. To install your new key, you do not need to reinstall your license. There is also no need to uninstall the expired subscription key.

## What happens when my subscription license expires?

A subscription license expires when the end of the subscription date is reached. If you see the following message in the DVM output, then your subscription key has expired.

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

You can continue to use your Genero product after the expiration of the subscription key for a grace period, see [My subscription license has expired, can I still use the installed versions of Genero?](#) on page 18. You have options to renew your subscription within the grace period. Once the grace period ends, you can no longer use your Genero product.

The date when the subscription license expires is shown when you run the license controller command `fglWrt -a info license`.

```
C:\Program Files\FourJs\Genero_Studio_4_00_03\fgl\bin>fglWrt.exe -a info
license
License       : TDY#XXXXXXXXX
License key   : KKKKKKKKKKKKKK
Product      : Four Js Universal Compiler
Type         : Development version
Users        : 5
Extension(s) :
              - Open Database Interface
End of subscription date: 2021/12/31 (Year/Month/Day).
```

## My subscription license has expired, can I still use the installed versions of Genero?

Genero products have a grace period, allowing you to continue to use the product after the expiration of the subscription license. The grace period varies, depending on the product:

### Genero Business Development Language (BDL)

For Genero BDL product licensing, there is a grace period of **60 days**. Once the grace period ends, you can no longer use your Genero product.

### Genero Report Engine (GRE)

For Genero Report Engine licensing with your Genero BDL installation, there is a grace period of **60 days**. Once the grace period ends, you can no longer use your Genero product.

### Genero Report Writer for Java, C#, and PHP

For Genero Report Writer for Java, C#, and PHP 4.00 or greater, there is a grace period of **60 days**. Once the grace period ends, you can no longer use your Genero product.

For Genero Report Writer for Java, C#, and PHP 3.20 or earlier, there is no grace period. Once the license expires, you can no longer use your Genero product.

## Related concepts

[Subscription and perpetual licenses](#) on page 10

Deciding on a license term depends on your software needs and/or on the duration of the license you require; whether you want to use a subscription-based licensing model or the perpetual licensing model for your runtime and/or development licenses.

### Related tasks

[Managing a perpetual license](#) on page 19

This topic answers frequently asked questions about perpetual licenses.

### Related reference

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## Managing a perpetual license

---

This topic answers frequently asked questions about perpetual licenses.

- [What is a maintenance key?](#) on page 19
- [What happens when my maintenance contract expires?](#) on page 20
- [My maintenance contract has expired. Can I still use the installed versions of Genero?](#) on page 20
- [My maintenance contract has expired, can I still add users to installed versions of Genero?](#) on page 20
- [My maintenance contract has expired, can I reinstall my Genero product?](#) on page 21

### Note:

For specific license details, see your license agreement or contact your local Four Js sales office.

### What is a maintenance key?

An active maintenance contract is required for a product with a perpetual license. A maintenance key is provided with your maintenance contract. The maintenance key allows you to use any version of your licensed Genero product built before the maintenance date. The maintenance key also determines 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.

When you purchase a new maintenance contract, a new maintenance key must be installed. To install your new key, you do not need to reinstall your license. There is also no need to uninstall the expired maintenance key.

### What happens when my perpetual license expires?

A perpetual license does not expire; however, a maintenance contract can expire. The date when the maintenance contract expires is shown when you run the license controller command `fglWrt -a info license`. You have options to renew your maintenance contract within a grace period, see the section [What happens when my maintenance contract expires?](#) on page 20.

If you have an evaluation license, it is **date-limited**. The date when the license expires is shown when you run the license controller command `fglWrt -a info license`.

```
C:\Program Files\FourJs\Genero_Studio_4_00_03\fgl\bin>fglWrt.exe -a info
license
License       : THM#XXXXXXXXX
License key   : KKKKKKKKKKKKK
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! 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 in the DVM output, 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 key; however, you won't receive software updates, nor will you be able to upgrade the software to the newest version. It will also have an impact on how you can use your Genero product, such as [installing updates or patches](#), [adding users](#), and [reinstalling the 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 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 **cannot** install any new update or patch where the Genero product build date is later than the expiration date of the maintenance key. If you try to run a product version built after the expiration of your maintenance contract, you will get an error message similar to 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 built prior to the expiration date of the maintenance contract.

### 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.

#### Note:

If you have installed Genero Report Writer for Java, C#, and PHP, the GRE will not be limited under the DVM maintenance but instead will function under the Genero Report Writer installation maintenance.

## My maintenance contract has expired, can I still add users to installed versions of Genero?

If your license is not under maintenance, you can still add users up to the number of users allowed by the original version of the license.

## My maintenance contract has expired, can I reinstall my Genero product?

After the expiration of the maintenance contract, you can only reinstall your Genero product on the same hardware and operating system as originally installed. Exceptions to this may be allowed. For more information, please see the [Order Processing Procedures](#) document, found on the *About Licensing* page at <https://4js.com/support/about-licensing/>.

### Related concepts

[Subscription and perpetual licenses](#) on page 10

Deciding on a license term depends on your software needs and/or on the duration of the license you require; whether you want to use a subscription-based licensing model or the perpetual licensing model for your runtime and/or development licenses.

[Multi-user licensing](#) on page 5

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.

### Related tasks

[Managing a subscription license](#) on page 17

This topic answers frequently asked questions about subscription licenses.

[Selecting a license to purchase](#) on page 3

When purchasing a license for your Genero products, you must select what type of licenses to purchase. Deciding what types of licenses to purchase requires you to evaluate your licensing needs: development or runtime, number of concurrent users, duration of license, and so on.

### Related reference

[Glossary of licensing terms](#) on page 22

A glossary of terms used in Genero licensing.

## Temporary licenses

---

A temporary license is the state of a license after it has been installed, but before it is activated with Four Js.

With a temporary license, you have full use of the product for 30 days. To continue using the product beyond 30 days, simply activate the license.

In most cases, you activate your license immediately after installing the license; however, there are times when you might run with a temporary license.

- Temporary licensing can be used in an emergency; if anything ever happens to your system and you need to get a Genero system up and running, you can use your existing license on a temporary basis on a new server.
- Temporary licensing can help to avoid down time when migrating Genero products to a new machine.
- Temporary licensing can be used when the server does not have internet connection and the license needs to be activated on the Four Js website from another machine.

## What hardware or software changes affect licensing?

---

Some hardware changes affect licensing.

### Note:

For specific license details, see your license agreement or contact your local Four Js sales office.

If 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 allow a license to be restored to the same location and 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<sup>®</sup>/UNIX<sup>™</sup>, device-id (MAC address), or file indexes used in Windows<sup>®</sup> NTFS file system. If a directory change is required, such as 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 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 `fglwrt -d`, to uninstall the existing license.
2. Apply the license: run the command `fglwrt -l` to install the license.

**Note:**

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

## Glossary of licensing terms

A glossary of terms used in Genero licensing.

**Table 2: Genero license terminology**

Term	Definition
Activate license	Activating a license is the act of registering the license with Four Js, so you can legally use the software on the server where it has been installed. The license can be registered over the internet when <a href="#">installing</a> the license, or it can be registered on the <a href="#">Four Js</a> website.
Backup license	A backup license is a duplicate license installed on a "mirror" machine for secure installations requiring fault-tolerant or fail-over configurations. The backup license is a replica of the active server license. To read more about backup licensing, see <a href="#">Standard, evaluation, and backup licenses</a> on page 10.
Compilation license	See <a href="#">runtime license</a> .
Concurrent-user licensing	Genero software user licensing is based on the number of concurrent users accessing Dynamic Virtual Machines (DVM) running on a server. See <a href="#">User licenses</a> and <a href="#">Estimating how many licenses you need</a> on page 8. See also <a href="#">CPU Licenses</a> on page 6.
CPU license	A CPU license provides an infinite pool of licenses, allowing an unlimited number of users to connect to a specific server and run applications. A CPU license is limited by the CPU count; the number of physical or virtual CPUs on the server must match the number encrypted in the license. To read more about CPU licensing, see <a href="#">CPU Licenses</a> on page 6. See also <a href="#">User license</a> .
Customer code	The customer code is a unique code that Four Js assigns to each customer. You must enter the code when <a href="#">activating</a> a license.
Deployment license	See <a href="#">runtime license</a> .
Development license	A development license is needed in a development environment to compile source files of applications developed with Genero products used for development purposes. The development license also allows developers to run applications. To read more about development licensing, see <a href="#">Selecting a license to purchase</a> on page 3.

Term	Definition
End-user license agreement (EULA)	An end-user license agreement is a legal contract entered into between Four Js and the user of the software. For more information, see the <i>Standard End User License Agreement</i> and <i>Service Level Agreement</i> documents at <a href="https://4js.com/end-user-license-agreements/">https://4js.com/end-user-license-agreements/</a> .
Evaluation license	An evaluation license is a license for trialing the software; for example, as part of the Genero Evaluation Program (GEP). It is a fully-functional license allowing use of the Genero family of products to a specified number of users. The license is time limited for a period (typically 90 days). To read more about the evaluation license, see <a href="#">Standard, evaluation, and backup licenses</a> on page 10.
Four Js License Manager (FLM)	The Four Js License Manager is a license management server that centralizes the management of licenses for various types and versions of Genero products on a single machine or on a network. It has a command-line interface ( <code>f1mprrg</code> ) to install and manage licensing. To read more on FLM usage, see <a href="#">What is the Four Js License Manager (FLM)?</a> on page 14 and <a href="#">Four Js License Manager usage scenarios</a> on page 15, or see <i>Four Js License Manager User Guide</i> .
Genero licenser	The Genero Licenser is a browser-based graphical user interface (GUI) license management tool you can use to install, update, and manage your Genero product license on a local server. For more information on the Genero licenser, see <a href="#">What is the Genero Licenser?</a> on page 13.
Grace period	A grace period is a set amount of time (typically 60 days) for which your Genero software will continue to function after the <a href="#">Subscription license</a> or the <a href="#">maintenance contract</a> has expired. This allows for the occasions when licenses or maintenance may unintentionally lapse. For more information on grace period by product, see <a href="#">Using a license</a> on page 11.
Install license	Installing the license is the act of unlocking the software for use on your server by applying the <a href="#">license number</a> , <a href="#">license key</a> , and <a href="#">maintenance</a> or <a href="#">subscription</a> key using the <a href="#">license controller</a> or <i>FLM</i> . License installation is completed when the <a href="#">installation number</a> is <a href="#">activated</a> by Four Js and the <a href="#">installation key</a> is installed. For more information on license installation, see <i>Install and License your Genero Products</i> manual or <i>Four Js License Manager User Guide</i> .
Installation key	The installation key is a code assigned by Four Js when you <a href="#">activate</a> the license for the Genero product. The installation key is installed using the <a href="#">license controller</a> or <i>FLM</i> as part of <a href="#">license installation</a> .
Installation number	The installation number is a code generated by the license controller when you install the license for the Genero product on your server. You must enter the installation number when <a href="#">activating</a> a license.
License controller	The License controller is a license management tool installed with the Genero product. It has a command-line interface ( <code>fg1Wrt</code> or <code>grEWrt</code> ) to install and manage licensing on your server. For more information on the license controller, see <a href="#">What is the License Controller?</a> on page 13.
License key	The license key is a unique code given to you with the purchase of the software to unlock it and make it available for use. You must enter the key when <a href="#">installing the license</a> . For more information on the license key, see <a href="#">Recognize a license number by product</a> on page 12.
License Manager	See <a href="#">Four Js License Manager</a>

Term	Definition
License number	The license number is a unique code given to you with the purchase of the software. The number of CPUs or the number of users allowed by the license is encrypted in the number and used by the <a href="#">license controller</a> to manage licensing. You must enter the license number when <a href="#">installing the license</a> . For more information on the license number, see <a href="#">Recognize a license number by product</a> on page 12.
License server	See <a href="#">Four Js License Manager</a> .
License string	A license string is an encoding of your license number, license key, maintenance or subscription key, and customer code. It is easier to use in license installation and upgrading. For more information on license installation with a license string, see <i>Install and License your Genero Products</i> manual or <i>Four Js License Manager User Guide</i> .
Local licensing	With local licensing, you license each Genero installation on the server where installed. Each Genero product has a <a href="#">license controller</a> for installing and managing licensing. For more information on local license installation, see <i>Install and License your Genero Products</i> manual. See also <a href="#">Four Js License Manager</a> .
Maintenance contract	The maintenance contract forms an agreement with Four Js giving you the right to receive software updates and upgrade the software to the newest version for a product licensed with a <a href="#">perpetual license</a> . The maintenance contract is valid for a year and is renewable at the end of term. For more information on maintenance, see <a href="#">Managing a perpetual license</a> on page 19.
Maintenance key	A maintenance key is supplied when you purchase or renew a <a href="#">maintenance contract</a> for a <a href="#">perpetual license</a> of a Genero product. The maintenance key determines the date when the maintenance contract expires. When you are <a href="#">installing</a> a product license, you will be prompted for the maintenance key. For more information on maintenance keys, see <a href="#">Managing a perpetual license</a> on page 19.
New Activation key request	Once a license is <a href="#">installed</a> and <a href="#">activated</a> on a server, typically it can not be activated again on another server. For example, if you need to replace a server where Genero products are installed, you will need an activation key to install the license on the new server. You must request a new activation key from Four Js. A <a href="#">Temporary license</a> may be needed at this time.
Perpetual license	A perpetual license allows you to install and use the software indefinitely. Software updates, and upgrades to the newest version are not included. You need to purchase them in a <a href="#">maintenance contract</a> to receive them. For more information on perpetual licensing, see <a href="#">Subscription and perpetual licenses</a> on page 10 and <a href="#">Managing a perpetual license</a> on page 19.
Runtime license	A runtime license is needed in production environments for users accessing applications developed with Genero products and deployed on production sites. To read more about runtime licensing, see <a href="#">Development and runtime licenses by product</a> on page 4.
Standard license	A standard license forms an agreement with Four Js giving the licensee a non-exclusive, non-transferable <a href="#">development</a> or <a href="#">runtime</a> license to use the software in compliance with the terms and conditions of the End User License Agreement. This license is granted to the licensee only for the number of users ( <a href="#">concurrent users</a> or <a href="#">CPU users</a> ) and for the term ( <a href="#">perpetual</a> or <a href="#">subscription</a> ) specified in the purchase order accepted by Four J's and paid for by the licensee.



Term	Definition
Subscription license	A subscription license allows you to install and use the software for a specified time period. This license includes technical support and access to upgrades and patches released during the term of the subscription. Once the agreement term has expired, a new subscription license must be purchased. For more information on subscription licensing, see <a href="#">Subscription and perpetual licenses</a> on page 10 and <a href="#">Managing a subscription license</a> on page 17.
Subscription key	A subscription key is required when you purchase or renew a <a href="#">Subscription license</a> . The subscription key determines the date that the license expires. When you are licensing a product, you will be prompted for the subscription key during the licensing process. For more information on subscription key, see <a href="#">Managing a subscription license</a> on page 17.
Temporary license	A temporary license is a stage between when the license is <a href="#">installed</a> on a server and before it is <a href="#">activated</a> with Four Js. During this period, you have full use of the product for 30 days. For more information on temporary license, see <a href="#">Temporary licenses</a> on page 21.
User license	A User license defines a pool of licenses, based on the number of licenses purchased. The size of the license pool is what limits the number of concurrent users that can connect to and run Genero applications. To read more about user licensing, see <a href="#">User Licenses</a> on page 5. See also <a href="#">CPU licenses</a> .

### Related concepts

[Multi-user licensing](#) on page 5

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.

## Copyrights and Trademarks

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