



Licensing Guide

HP Remote Graphics Software

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User input syntax key

Text that you must enter into a user interface is indicated by `fixed-width font`.

Item	Description
Text without brackets or braces	Items you must type exactly as shown
<Text inside angle brackets>	A placeholder for a value you must provide; omit the brackets
[Text inside square brackets]	Optional items; omit the brackets
{Text inside braces}	A set of items from which you must choose only one; omit the braces
	A separator for items from which you must choose only one; omit the vertical bar
...	Items that can or must repeat; omit the ellipsis

Table of contents

1 RGS licensing overview	1
License types	1
Floating licenses	2
RGS version number	2
License version date	3
RGS license policy	3
2 Installing a local license key file	4
Configuring RGS Sender to access a local license key file on Windows	4
Configuration during RGS Sender installation	4
Configuration after RGS Sender installation	4
Configuring RGS Sender to access a local license key file on Linux	5
3 Installing and configuring the FLEXnet license server	6
Before you install the license server	6
Installing the license server on Windows	6
Starting and stopping the license server on Windows	7
Using LMTTOOLS	7
Installing the FlexLM license server on Linux	8
Configuring the license file on a Linux license server	9
Configuring the license file on a Windows license server	9
Accessing the RGS floating license	10
Configuring RGS Sender to access a floating license	10
Down, missing, or moved floating license servers	11
Appendix A Troubleshooting licensing	12
Using the RGS Sender log file for troubleshooting	12
Contacting HP for licensing support	12
Appendix B Cleaning registry references to the FlexLM license server for RGS	13
Appendix C Uninstalling Remote Graphics FlexLM License Server on Windows	14

1 RGS licensing overview

This document describes licensing of HP Remote Graphics Software (RGS). RGS licensing applies to RGS Sender only; RGS Receiver can be used freely.

 **NOTE:** RGS does not require a license on HP Z series desktop workstations or HP ZBook mobile workstations.

For detailed RGS information, see the latest version of the *HP Remote Graphics Software User Guide*, available at <http://www.hp.com/go/rgs>. This website may also contain a more recent version of this licensing guide.

RGS Sender licensing is based on a license key that is obtained from HP after you purchase RGS. The license key is saved in a license key file, which is checked each time an RGS connection is established.

You can download, install, and run RGS Sender to verify connection without a license key file. If the license key file is missing or invalid, you will still be able to view and interact with the remote desktop, but a notification will be displayed in your viewing window indicating that the RGS Sender is unlicensed.

License types

The following RGS license types are available:

- **Local license**—A local license key file must be stored on each computer running RGS Sender. The following local license types are available:
 - **Standard license**—This license type fully activates a single instance of RGS Sender on any supported computer.
 - **HDI license**—This license type for HP Moonshot follows the same installation process and functions the same as the standard license, but it can only be used for HP Moonshot systems.
- **Floating license**—Floating licenses are stored on a license server. This license type is ideal for deployments with many potential RGS users but limited simultaneous use. Licenses are checked out on a concurrent-use basis up to the number purchased. For details, see [Floating licenses on page 2](#).

 **NOTE:** The license file is good for a single HP Moonshot 1500 Chassis, but it must be installed on each server within the system.

- **Trial license**—HP also offers a free, 60-day trial license for RGS Sender.

For information about downloading RGS and purchasing a license, go to <http://www.hp.com/go/rgs>.

 **NOTE:** Except for the 60-day trial license, RGS licenses never expire. However, a new license purchase is required to upgrade to a newer major version of RGS. For more information, see [RGS license policy on page 3](#).

Floating licenses

With floating licenses, a pool of RGS licenses is purchased. These licenses are dynamically allocated on a first-come, first-served basis whenever RGS Receiver attempts to connect to RGS Sender. A floating license is checked out when a connection is established to RGS Sender and is checked in when the connection terminates.

If multiple receivers are connecting to a single sender (for example, when conducting a collaboration session), only one license is consumed by RGS Sender. This happens when the first RGS connection is established.

Floating licenses allow a company to purchase, for example, 75 licenses but support a user community of perhaps hundreds of users, as long as no more than 75 users ever attempt to establish connections with separate RGS Senders simultaneously.

Floating licenses require a license server, which can be installed on one of the computers running RGS Sender, or the license server can be installed on a separate computer. RGS includes an installer for the FLEXnet license server. For installation information, see [Installing and configuring the FLEXnet license server on page 6](#).

RGS version number

The RGS version number contains the three components shown in [Figure 1-1 RGS version number components on page 2](#).

Figure 1-1 RGS version number components



Table 1-1 RGS version number components

Item	Description
1.	Primary release number —A primary release contains sufficient changes such that interoperability with the prior primary release is not guaranteed. For example, RGS Sender version 6.x.x is not guaranteed to interoperate with RGS Receiver version 7.x.x.
2.	Minor release number —Minor releases introduce new RGS features and functionality. Minor releases will also include (roll up) the changes in any prior patch releases.
3.	Patch release number —Patch releases are generated only for a security issue or for a major defect in a feature. A patch release is indicated by this number being non-zero.



NOTE: Each release of RGS is a complete release of the entire product, regardless of which components have changed.

License version date

Each release of RGS has a license version date that is used by the RGS licensing mechanism. For example, the RGS 7 license version date is April 1, 2014, which is formatted **2014.0401** (YYYY.MMDD). Viewing the license version date might assist in troubleshooting any licensing issues.

To view the license version date:

1. Right-click the RGS Sender icon in the Windows notification area, and click **About**.
2. Locate the line **License Version Date** like in the following example:

```
License Version Date: 2014.0401
```

 **NOTE:** The license version date should not be confused with the build date. The build date is not used by the RGS licensing mechanism.

RGS license policy

You are only required to purchase a new license for RGS when the version date changes, and the version date only changes for primary releases, such as RGS 6.0 or RGS 7.0. Therefore, when you purchase a license for RGS, you are entitled to free upgrades to all future minor and patch releases.

For example, if you purchased an RGS 6 license, you are entitled to free upgrades to versions 6.x.x. However, you would have to purchase a new license to upgrade to RGS 7.

 **NOTE:** RGS licenses also work with older versions of RGS. For example, an RGS 7 license can be used with RGS 6.

The following table demonstrates example RGS version numbers and license version dates.

 **IMPORTANT:** The values in this table might not match actual releases of RGS.

Table 1-2 RGS version number and license version date examples

RGS version number	Release type	License version date
7.1	Minor release	2014.0401
7.0.1	Patch release	2014.0401
7.0	Primary release	2014.0401
6.1	Minor release	2013.0113
6.0.1	Patch release	2013.0113
6.0	Primary release	2013.0113

2 Installing a local license key file

This chapter describes how to install a local license key file.

Configuring RGS Sender to access a local license key file on Windows

RGS Sender can be configured to access a local license key file either during installation or after installation.

Configuration during RGS Sender installation

During RGS Sender installation (as described in the *HP Remote Graphics Software User Guide*), you will be presented with a dialog box that asks you to install the RGS Sender license. For local licenses, select **Install a license file on this system**, and click **Next**.

Browse to the location where you saved your license key file, select it, and click **Open**.

 **NOTE:** License key files must end with the .lic suffix.

The license key file will be copied from the location you specified to the RGS Sender installation directory:

- For 32-bit version of RGS Sender:
`C:\Program Files (x86)\Hewlett-Packard\Remote Graphics Sender`
- For 64-bit version of RGS Sender:
`C:\Program Files\HP\Remote Graphics Sender`

Configuration after RGS Sender installation

If, during RGS installation, you select **I do not yet have a license file**, you can specify the location of the license key file post-installation in one of two ways.

The first way to specify the location of the license key file post-installation is to copy the license file into the RGS Sender installation directory:

- For 32-bit version of RGS Sender:
`C:\Program Files (x86)\Hewlett-Packard\Remote Graphics Sender`
- For 64-bit version of RGS Sender:
`C:\Program Files\HP\Remote Graphics Sender`

The second way to specify the location of the license key file post-installation is by using the `LM_LICENSE_FILE` environment variable. To set this environment variable:

1. Click **Start >Control Panel >System**.
2. Click **Advanced system settings**, and then click **Environment Variables**.
3. Under **System variables**, click **New**. This opens the **New System Variable** dialog box.

4. Enter `LM_LICENSE_FILE` as the variable name.
5. Enter the path to the local license key file as the variable value. Multiple paths may be entered, separated by semicolons, such as:

```
C:\licenses;C:\backuplicenses
```

RGS Sender will sequentially examine each folder from left to right until it finds a folder containing a valid local license key file.



NOTE: If a license key file is specified and found during RGS Sender installation, it will be copied into the folder `C:\Program Files\HP\Remote Graphics Sender` or `C:\Program Files (x86)\Hewlett-Packard\Remote Graphics Sender`, according to your version of RGS Sender. License key files found in folders specified by the `LM_LICENSE_FILE` environment variable are not copied; they are read in place.

If a license key file location is specified during RGS Sender installation and is also specified by the `LM_LICENSE_FILE` variable, RGS Sender will look in both locations for a valid local license key file at startup.

Configuring RGS Sender to access a local license key file on Linux

For RGS Sender on Linux to find the local license key file, it must be saved in this directory on the remote computer:

```
/etc/opt/hpremote/rgsender
```

3 Installing and configuring the FLEXnet license server

The FLEXnet license server is required only if you are using the HP RGS floating license.

Before you install the license server

This section provides information to help you plan your installation of the FLEXnet license server.

- The 64-bit version of the FLEXnet license server is provided with RGS.
- Remote Graphics FlexLM server version 11.14.1.1 is required beginning with RGS 7.4. If you have a previous version installed, it must be uninstalled first. Previous versions of RGS will still be able to check out licenses from the newer license server. Licenses from older license servers can be used on newer servers.

 **NOTE:** The FLEXnet license server included with RGS can be run only on Windows and Linux® operating systems.

- The license server is usually installed on a computer other than one of the computers running RGS Sender. However, nothing prohibits installing the license server on an RGS Sender computer.
- When the license server is active on Windows, the following processes will be running:
 - HPQ.exe
 - lmgrd.exe (x2)

 **NOTE:** Two separate lmgrd.exe processes will be running, one as a service.

 **NOTE:** The FLEXnet license server for Linux has two associated processes, lmgrd and HPQ.

- The HPQ.exe “vendor daemon” interfaces with RGS Sender and provides license server functions specific to HP, such as counting RGS floating licenses.

 **NOTE:** Other products, such as HP OpenView, also have a vendor daemon named HPQ.exe. The different HPQ.exe executables may not be interchangeable. Furthermore, only one HPQ.exe vendor daemon at a time can execute on the license server computer. Therefore, a single computer cannot run two FLEXnet license servers simultaneously.

- The RGS license does not support FLEXnet’s three-server redundancy capability, also known as *triad license servers*.
- During license server installation on Windows, the FLEXnet administration utility, LMTTOOLS, is installed. LMTTOOLS provides a graphical user interface that allows you to administer the license server. See [Using LMTTOOLS on page 7](#).

Installing the license server on Windows

To install the license server, perform the following steps:

1. Locate the FLEXnet installation executable, Setup.exe, in the following location in the RGS installation package:
`/flexlm/Setup.exe`
2. Move the Setup.exe file to your license server computer.
3. Double-click **Setup.exe** to begin installation of the license server. If an installation of an older version of the license server is detected, you will be prompted to uninstall it. If you uninstall the older server this way, you may be prompted to reboot after the uninstall finishes. If you select to reboot, you will have to restart the installation of the new server when the system starts up again. The default installation folder, C:\Program Files\HP\Remote Graphics FlexLM for 64-bit version of RGS Sender or C:\Program Files\Hewlett-Packard\Remote Graphics FlexLM for 32-bit version of RGS Sender, can be changed to another folder. If the installation is successful, a notification indicating **InstallShield Wizard Complete** will be displayed.

Starting and stopping the license server on Windows

The license server can be started and stopped in two ways:

- Using Windows Services—Open the Windows **Control Panel**, select **Administrative Tools**, then select **Services**, which brings up the **Services** dialog box. Next, open the properties dialog box for the Remote Graphics FlexLM License Server Service, and click **Start**. Because the license server is installed with a Startup type of “Automatic,” the license server will also start when the computer is restarted. To stop the license server, click **Stop**.
- Using the Service Control (SC) command—The SC command can be used in a Command Prompt window when run as an administrator to start and stop the license server.

```
sc start "Remote Graphics FlexLM License Server Service"
```

```
sc stop "Remote Graphics FlexLM License Server Service"
```

Using LMTOOLS

LMTOOLS can be executed from the start menu as follows:

For Windows 7:

Start>All Programs>HP>Remote Graphics FlexLM>lmtools

For Windows 10:

Start >HP >lmtools

LMTOOLS can be used for tasks such as the following:

- Configuring the license server
- Adding licenses
- Re-reading the license file
- Viewing system information and the license server status
- Troubleshooting issues with the license server



NOTE: Although LMTOOLS provides the **Start Server** and **Stop Server** buttons (under the **Start/Stop/Reread** tab), HP recommends that the license server be started and stopped using the methods described in [Starting and stopping the license server on Windows on page 7](#).

Installing the FlexLM license server on Linux

- Copy the FlexLM server package to a directory (e.g. /opt/hpremote/licensing).
- Extract the tar archive with the command:

```
/usr/bin/tar xvf flexlm-server.tar.gz
```
- Change ownership of the directory and executables to the user account that will run the daemon (FlexLM recommends using a non-root account).
- Copy the license file(s) to a directory that is accessible by the owner of the license tools (e.g. /opt/hpremote/licensing).
- Create a script that launches lmgrd at boot time as described below.
- On UNIX, or any SysV system, edit the appropriate boot script, which may be /etc/rc.boot, /etc/rc.local, /etc/rc2.d/Sxxx, /sbin/rc2.d/Sxxxx. Include commands similar to the following. See the notes section below for a full explanation.

```
/bin/su daniel -c 'echo starting lmgrd > /opt/hpremote/licensing/boot.log'
```

```
/bin/nohup /bin/su daniel -c 'umask 022; \  
/opt/hpremote/licensing/flexlm-server/64-bit/lmgrd -c \  
/opt/hpremote/licensing/license.dat >> \  
/opt/hpremote/licensing/boot.log'
```

```
/bin/su daniel -c 'echo exiting >> /opt/hpremote/licensing/boot.log'
```

- On any UNIX/LINUX SystemD system (RHEL/CENTOS 7.* and up), create a new service unit file at /etc/systemd/system/flexlic.service with the following content:

```
[Unit]  
Description= HP RGS Flexnet License Start Service  
After=network.target  
  
[Service]  
Type=simple  
ExecStart=/opt/hpremote/licensing/start.sh  
TimeoutStartSec=0  
  
[Install]  
WantedBy=default.target
```

Run the commands `systemctl daemon-reload` and `systemctl enable flexlic.service` to allow service to start at next, and every, system boot.

 **NOTE:** An alternative method to creating a service enabled at boot is to set an @reboot cron job. However, the license server will be dependent on the cron service working properly.

- Create a boot script at /opt/hpremote/licensing/start.sh with commands like the following:

```
#!/bin/bash
```

```

/bin/su daniel -c 'echo starting lmgrd > /opt/hpremove/licensing/
boot.log'

/bin/su daniel -c 'umask 022; \
/opt/hpremove/licensing/flexlm-server/64-bit/lmgrd -c \
/opt/hpremove/licensing/license.dat >> \
/opt/hpremove/licensing/boot.log'

/bin/su daniel -c 'echo exiting >> /opt/hpremove/licensing/boot.log'

```

- Please note the following about how these scripts were written:
- All paths must be specified in full because paths cannot be assumed at boot time.
- The su command is used to run lmgrd as a non-root user, “daniel”. It is recommended that lmgrd not be run as root since it is a security risk to run any program as root that does not require root permissions. lmgrd does not require root permissions.
- Daniel has a csh login, so all commands executed as daniel must be in csh syntax. All commands not executed as daniel must be in /bin/sh syntax since that is what is used by the boot scripts.
- The use of nohup and sleep are required on some operating systems, notably HP-UX. These are not needed on Solaris and some other operating systems but are safe to use on all.

Configuring the license file on a Linux license server

Edit the license file to add the following two lines at the top of the file:

```
SERVER <hostname> <MAC address> <port> where:
```

- <hostname> is the host name of the license server.
- <MAC address> is the MAC address of the license server stripped of all punctuation.
- <port> is the listening port used by lmgrd. The port is optional if using the default port (27000).

```
DAEMON HPQ <full path to the vendor daemon HPQ>
```

The example below shows a complete entry for a license file on a Linux license server:

```
SERVER RGSLicServer 00505695334a 27000
DAEMON HPQ '/opt/hpremove/licensing/flexlm-server/64-bit/HPQ'
```

Configuring the license file on a Windows license server

Edit the license file to add the following two lines at the top of the file:

```
SERVER <hostname> <MAC address> <port> where:
```

- <hostname> is the host name of the license server.
- <MAC address> is the MAC address of the license server stripped of all punctuation.
- <port> is the listening port used by lmgrd. The port is optional if using the default port (27000).

```
DAEMON HPQ <full path to the vendor daemon HPQ>
```

The example below shows a complete entry for a license file on a Windows license server:

```
SERVER RGSLicServer 00505695334a 27000
```

```
DAEMON HPQ "c:\Program Files\HP\Remote Graphics FlexLM\HPQ.exe"
```

For detailed information about this license server and LMTTOOLS, go to <http://www.flexerasoftware.com>.

 **NOTE:** LMTTOOLS is available on Windows only.

Accessing the RGS floating license

This section describes how to access the RGS floating license. After you've obtained your floating license key file, store it on the license server in accordance with the FLEXnet license server configuration requirements.

 **NOTE:** When you acquire an RGS floating license key, you'll provide your license server hostname. The signature included in the license key file reflects the hostname that you provide; changing the hostname within the license key file to a different license server will invalidate the license key. If you need to change your license server hostname, contact the appropriate HP Regional License Center.

Configuring RGS Sender to access a floating license

RGS Sender can be configured to access a floating license by setting the `LM_LICENSE_FILE` environment variable to point to the RGS license server.

Specify the location of the license server in this format:

```
<port>@<host>
```

 **NOTE:** This location should match the values from the `SERVER` line in the floating license file.

If a port number isn't specified, the default port 27000 is used. See the following examples:

```
@MyLicenseServer.hp.com
```

```
@15.2.21.129
```

```
27002@MyLicenseServer.hp.com
```

Multiple server locations can be entered, separated by colons, as shown below:

```
27000@15.232.16.2:@MyLicenseServer.hp.com:27002@BackupServer.hp.com
```

 **NOTE:** RGS Sender will sequentially examine each listed license server from left to right until it finds a license server containing a valid RGS license.

To set this variable on Windows:

1. Click **Start>Control Panel>System**.
2. Click **Advanced system settings**, and then click **Environment Variables**.
3. Under **System variables**, click **New**. This opens the **New System Variable** dialog box.
4. Enter `LM_LICENSE_FILE` as the variable name.
5. Enter the location of the floating license server as the variable value.

To set this variable on Linux, run the following command:

```
export LM_LICENSE_FILE=<location of the floating license server>
```

For the `LM_LICENSE_FILE` variable, both the environment and the registry are used, with the environment used first and the registry appended to the path. On UNIX, the registry information is stored in `$HOME/.flexlrc`. In this file, the syntax is `variable=value`.

Down, missing, or moved floating license servers

If a license server is down, missing, or has been moved, an RGS connection may fail. Depending on where the license server is listed in `LM_LICENSE_FILE`, this could result in RGS waiting until a network timeout occurs when trying to communicate with the license server.

If the timeout is greater than RGS Receiver's **Dialog** timeout (defaulted to 15 seconds), then a connection will not be made because RGS expects the connection to be made before the timeout is reached.

To correct this issue, increase the timeout to 60 seconds or remove the reference to moved or nonexistent license servers in the `LM_LICENSE_FILE` environment variable. If the license server is down, resolve that issue and then retry using RGS.

If you still experience issues, you might need to clean the Windows registry. See [Cleaning registry references to the FlexLM license server for RGS on page 13](#) for more information.

A Troubleshooting licensing

Using the RGS Sender log file for troubleshooting

To help debug licensing problems, RGS Sender records licensing failures in a log file.

 **TIP:** The default log file is **rg.log**, but it might vary if you did custom logging configuration. See the *HP Remote Graphics User Guide* for more information about RGS Sender logging.

If licensing fails, an entry containing the string **FlexLM** will be added to the log file. The remainder of the entry will indicate where RGS Sender is searching for the license key file.

- For local licenses, the location will be the path you specified either during or after installation (see [Installing a local license key file on page 4](#)).
- For floating licenses, the location will be the hostname and port number used to contact the license server (see [Accessing the RGS floating license on page 10](#)).

However, in both cases, the log entry does not identify the specific cause of a licensing failure. For local licenses, failure to locate the RGS license key file is not differentiated from an RGS license key file that is found but contains an invalid license. Likewise, for floating licenses, failure to contact the license server is not differentiated from a license server that is contacted but has an invalid RGS license.

Contacting HP for licensing support

If you have questions or need assistance with RGS licensing, go to the following:

<https://myhplicensing.hp.com/cwp-ui/static/contactus>

B Cleaning registry references to the FlexLM license server for RGS

This appendix provides supplemental information about removing FlexLM references from the Windows registry. The registry keys listed in this appendix are not removed during uninstallation of RGS and might need to be removed manually if you are experiencing issues using a FlexLM server.

 **CAUTION:** Back up the registry prior to making any changes. See Windows documentation for more information.

When a FlexLM license server is used with RGS, the FlexLM libraries will add the license server information to the following registry keys:

- HKLM\SOFTWARE\FLEXlm License Manager\HPQ_LICENSE_FILE
- HKLM\SYSTEM\ControlSet001\Control\Session Manager\Environment\LM_LICENSE_FILE
- HKLM\SYSTEM\ControlSet001\Control\Session Manager\Environment\HPQ_LICENSE_FILE
- HKLM\SYSTEM\ControlSet002\Control\Session Manager\Environment\LM_LICENSE_FILE
- HKLM\SYSTEM\ControlSet002\Control\Session Manager\Environment\HPQ_LICENSE_FILE
- HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\LM_LICENSE_FILE
- HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment\HPQ_LICENSE_FILE
- HKEY_USERS\.DEFAULT\Software\FLEXlm License Manager\LM_LICENSE_FILE

 **NOTE:** Some keys might not be present in your registry.

In some cases, there may be other registry entries that are used by FlexLM. To find them, search the registry for keys named either "LM_LICENSE_FILE" or "HPQ_LICENSE_FILE". The value of these keys will be the license server paths, as specified by the environment variables. See [Configuring RGS Sender to access a floating license on page 10](#) for details on these values and how they are set.

 **CAUTION:** Any registry keys named "LM_LICENSE_FILE" may be used by any application that accesses a FlexLM license server on the system. If other applications besides RGS are using a FlexLM license server, they may be adversely impacted by any changes made to the LM_LICENSE_FILE registry entries. Any registry keys named "HPQ_LICENSE_FILE" may be used by any HP application that accesses a FlexLM license server. If other HP applications besides RGS are using a FlexLM license server, they may be adversely impacted by any changes made to the HPQ_LICENSE_FILE registry entries.

C Uninstalling Remote Graphics FlexLM License Server on Windows

To uninstall the Remote Graphics FlexLM License Server on Windows:

- ▲ Open the **Programs and Features** item in **Control Panel**, and uninstall the entry corresponding to HP Remote Graphics FlexLM.