**CITRIX**®

# Citrix Licensing 11.12.1

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# Contents

# Citrix Licensing 11.12.1

## Licensing highlights

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# About Citrix Licensing 11.12.1

## What's new

- License Server installation — The new enhanced License Server installer UI matches other Citrix product installers.

- Clustering — This version of Licensing, updates and simplifies the installation for the Microsoft Failover Cluster environment. Not supported with License Server VPX.

- Supplemental Grace Period — This feature enables users to connect to a product for a limited time even if all licenses are in use and gives administrators time to address the problem. The default Supplemental Grace Period is 15 days. Not supported with License Server VPX.

- Licensing alerts in Citrix Studio — Studio now displays comprehensive licensing alerts when you are in the licensing node. Not supported with License Server VPX.

- Licensing alerts in Citrix Director — Director now displays alerts making you aware of issues that might impact user connections. Director also displays a recommended action to correct the condition. Not supported with License Server VPX. Some of the conditions displayed in Director are:

  - All licenses have expired.

  - Licenses are about to expire.

  - Citrix license grace period has expired

  - The Supplemental Grace Period is active and all installed licenses are currently in use.

# Fixed issues

- This fix addresses a security vulnerability (GNU Bash Shellshock) for Licensing Server VPX. For more information, see http://support.citrix.com/article/CTX200217.

- This fix addresses a security vulnerability (Poodle SSLv3.0) for Licensing Server VPX by disabling SSLv3.0. [#510369]

  > **Important:** If your deployment requires SSLv3.0, you can enable it using this procedure. Be aware that enabling SSLv3.0 will make your deployment vulnerable to Poodle SSLv3.0.

  1. Stop the Citrix licensing service: `>service citrixlicensing stop`.

  2. Create a backup of the server.xml file by copying it to temporary location. You can then restore the backed up file if necessary. The server.xml file is at /opt/citrix/licensing/LS/conf/server.xml.

  3. Open server.xml for editing and remove the sslProtocol attribute under the configuration > webServer node. Before editing, the webserver node should look like this:

     <webServer certificateFile="conf/server.crt" certificateKeyFile="conf/server.key" documentRoot="we
                                    securePort="0"
                                    sslProtocol="-ALL +TLSv1">

  4. Start the Citrix licensing service: `>service citrixlicensing start`.
- If you include a backslash in a locally managed user name (for example, test\), you cannot delete the user. [#0270349]

- Changing the licensing port after licenses are installed might cause the No such product or vendor exists: CITRIX message to appear on the Dashboard instead of the installed licenses. [#0269423]

- When a locally managed user having an administrator role does not exist, a domain administrator can only add domain users or groups as administrators to the License Server. To edit and delete domain administrators or groups on the User Configuration page in the License Administration Console, a locally managed user having the Administrator role must exist. [#0263016 and #0269719]

- In the License Administration Console, localized characters in user names and passwords can display with unexpected results. To avoid this issue, use US-ASCII alphabetic letter characters for user names and passwords in the License Administration Console. [#0272738, #0273089, #0156833, #0156839, #0156969, #223870, #242767]

- You cannot import licenses containing a parentheses in the pathname. [#0264908]

- The Overwrite Vendor Daemon Log checkbox is not saved properly. [#00115207]

- If you do use Desktop Studio to initially point XenDesktop to the License Server VPX, the following condition might occur - CtxLSPortSvc is consuming 100% CPU on VPX. If this happens, restart the licensing support service by logging onto the License Server VPX console as root. Within the shell, execute `/etc/init.d/citrixlicensingsupportservice restart`.

- The user list for the License Administration Console and the Citrix Simple License Service web page does not support non-ASCII characters in user/group names. Due to this limitation, on a Russian operating system, the BUILTIN Administrators group is not added to the user list, as it is created with non-ASCII characters. This applies to both fresh installs and upgrades. Any users belonging to the BUILTIN Administrators group in an earlier release of XenDesktop and the Simple License Service will not have access to the License Administration Console or the Simple License Service after an upgrade.

  As a workaround, add ASCII-character versions of Russian users/groups names post installation using the License Administration Console interface. Alternatively, install the License Server on one of the other supported operating systems. [#0395305]

- Citrix Branch Repeater with Windows Server — If you install the same license twice, the second time may trigger a change in the Send Bandwidth Limit, which will be set to the maximum licensed speed. To solve this issue, do not install the same license twice. If you must do so, verify that the Send Bandwidth Limit is set correctly. [#53894]

# Known issues

This section contains:

- Installation issues

- Other known issues

- Other known issues and considerations - License Server VPX Only

- License files

- Product-specific issues

# Installation issues

· To install License Server using PowerShell Remoting or deploy with Group Policy Objects, set the environment variable FORCE_NO_SERVICE=1 on the target system. [#507466]

· If Citrix Licensing is installed in a clustered environment and Windows Firewall is enabled (the default configuration for Windows 2008), connections can fail. Connecting remotely to the console or checking out licenses works until failover occurs in the cluster. Exception rules for CITRIX.exe and lmadmin.exe are created during installation of Licensing and Simple License Service, but do not work after a cluster failover. To work around this issue, create exceptions for Licensing components on the Exceptions tab of the Windows Firewall panel. Create an exception for each of the following ports: Console Web Server port (default port is 8082); License Server Manager port (default port is 27000); Simple License Service port (default port is 8083); and Vendor Daemon port (default port is 7279). This issue occurs with Windows Server 2008 (32-bit and 64-bit), Windows Server 2008 R2, and Windows Server 2012. For more information, see http://support.microsoft.com/kb/2568645. [#232365]

· During the installation, the Configuration page is presented. If you choose not to configure the License Server, you can configure it at a later time. You must restart the License Server installer or use the configuration tool. You can open the tool from: C:\Program Files\Citrix\Licensing\LS\resource\Licensing.Configuration.Tool.exe. If the License Server Configuration tool fails for any reason, uninstall and reinstall the License Server.

· During installation, localized characters in the installation path can cause the installation to fail. Accept the default installation path or enter only ASCII alphabetic letter characters for the installation directory. [#229456]

· When configuring the product-side setting for the License Server name, do not use localhost. Though you can use the host name, IP address, or FQDN instead, Citrix recommends you use the FQDN. [#165986]

· When you have the Citrix License Server 11.11.1 and greater installed and then install XenDesktop 5.6, the 30-day free trial license is the only license available to you. Workaround: Accept the trial license and complete the installation. Use Desktop Studio to change the product edition and license model settings after the installation. [#0388512]

· The installation might fail if the User Account Control (UAC) is enabled when installing on a cluster. [#0484356, #0486196]

# Other known issues

· **For Windows only** — Citrix Licensing 11.12.1 for Windows might be vulnerable to the Padding Oracle On Downgraded Legacy Encryption (POODLE) vulnerability. POODLE affects older standards of encryption - Secure Socket Layer (SSL) version 3 but not the newer encryption method Transport Layer Security (TLS). The workaround to mitigate a security issue is documented at http://support.citrix.com/article/CTX200265. [#0512929]

· If you upgrade an older, existing cluster to 11.12.1, the message, "The installation drive is not part of the selected cluster group. Select the correct cluster group or add the drive to the selected group." displays. To successfully use the new 11.12.1 clustering features, you must uninstall any License Server older than 11.12.1. The older License Servers do not conform to current Microsoft cluster guidelines.

· When you try to start the License Administration Console or the Simple License Service, a blank page might display if the Internet Explorer Enhanced Security Configuration is enabled and the License Administration Console or the Simple License Service is not in the Trusted Sites. Workaround: Disable Internet Explorer Enhanced Security Configuration. [#382429]

· Older Desktop Studio releases (prior to XenDesktop 7 Studio) using this version of the License Server do not display license usage information or manage the License Server using the Licensing Node. This version of the License Server is fully compatible with XenDesktop and can serve licenses for any Citrix product deployment. If you continue to use an older Desktop Studio, use the License Administration Console that ships with the License Server to display license usage, manage License Server users, and upload licenses. If you are using a version of XenDesktop prior to the XenDesktop 7 and you upgrade from earlier versions of Citrix License Server for Windows to version 11.11.1 and 11.12.1, you might see the following warning:

Warning: Installing this update removes the Licensing Configuration Service. As a result, all versions prior to this release of Studio provide only limited licensing information.

· On non-English platforms, when starting a License Service installation on a cluster node, the Cluster Group list on the Configure screen might contain the system default Cluster Group. Select one of the non-default Cluster Groups and the installation continues normally. [#0497524]

# Other known issues and considerations - License Server VPX Only

·   Studio does not display license usage information or manage the License Server. Use the License Administration Console that ships with the License Server to display license usage, manage License Server users, and upload licenses.

·   When configuring XenDesktop 7.0, 7.1, and 7.5 or XenApp 7.5, use the PowerShell Set-Configsite cmdlet to point to License Server VPX. If doing a fresh install, install and configure XenDesktop and XenApp using its installer, and then use PowerShell to reconfigure and point to License Server VPX.

    Set-ConfigSite -LicenseServerName <*DNS_name/IP_of_licence_server*> -LicenseServerPort <*port*>

·   Clustered License Servers are not supported for VPX. You can use the High Availability (HA) feature on XenServer 5.6 and later.

·   Ports 1-1024 are reserved by the operating system. When configuring the VPX ports, use ports above 1024. If you use SSL, use port 10443, which is open in the firewall. If you choose a different port for SSL, reconfigure the firewall in the iptables.

·   Upgrades are not supported for License Server VPX.

·   The License Server VPX does not support Active Directory.

·   When the vendor daemon CITRIX is down or stopped, a Critical Alert does not appear in the notification panel. [#450894]

# License files

· Certain license types are not covered by Subscription Advantage and therefore appear in alerts in the Dashboard of the License Administration Console indicating that the Subscription Advantage date is expired. You can ignore such alerts for any license not covered by Subscription Advantage. This includes Evaluation licenses, Not for Resale licenses, Early Release licenses and Technology Preview licenses. These types of licenses do not need Subscription Advantage and your Citrix products do not stop working when the Subscription Advantage date is expired. You can verify the status of any license for which you receive an alert by clicking the license on the Dashboard. The license information expands to show the license type (such as Technology Preview), the license expiration date, and the Subscription Advantage date. [#231847]

· License Files with multiple lines referencing HOSTNAME= are ignored by the License Server. Licenses in these files cannot be checked out. This issue is caused when you download licenses associated to different License Server hostnames into the same license file. The License Administration Console displays the following error message: "…Error List Returned…Unknown Host."

   To resolve this issue, download again separate license files for each Citrix product tied to different License Server names.

· After you replace evaluation license files on the License Server with new license files, the Citrix product might continue to display the following license expiration message when users log on: "Warning: The following Citrix Product is using an Evaluation license. This license will expire in…"

   To resolve this issue:

   1. Remove the old evaluation license files from the License Server. (See *Delete license files* in Citrix eDocs.)

   2. At the License Server, restart the Citrix Licensing service.

   3. At the Citrix product server, point to a fictional License Server and then point the product back to the actual License Server. (See your product's documentation for information about changing these settings.)

   4. If the problem persists, restart the product server.

# Product-specific issues

**Citrix XenApp Management Pack**

· Details about the Citrix License Server are always blank on the Monitoring tab of the System Center Operations Manager for Citrix Managed Servers. There is no workaround for this issue. [#192159]

# System requirements for Citrix Licensing
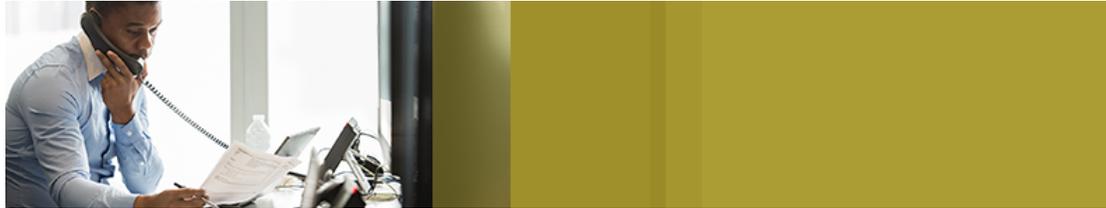
## Requirements for Licensing for Windows

Citrix Licensing is compatible with the same hardware required to support the compatible operating systems. No additional hardware is required.

> **Note:** The license server does not support multi-homing (two network cards plugged into distinct networks).

The License Administration Console manages the license server on the computer on which it is installed. It cannot manage remote license servers. The Simple License Service can install licenses only on the license server where it is installed.

| Operating Systems | You can install the license server on servers running the following Microsoft operating systems. Citrix recommends that you install the latest Microsoft Service Pack and updates.<br><br>· Windows Server 2008 Family<br><br>· Windows Server 2008 R2 Family<br><br>· Windows Server 2012 Family<br><br>· Windows Server 2012 R2 Family<br><br>· Windows 7, 32-bit and 64-bit editions<br><br>· Windows 8, 32-bit and 64-bit editions<br><br>· Windows 8.1, 32-bit and 64-bit editions |
|---|---|
| Disk Space Requirements | · 55 MB for the licensing components<br><br>· 2 GB for User/Device licensing |
| Microsoft .NET Framework Requirements | Microsoft .NET Framework 3.5 SP1 or greater is required. |

| Browsers | · Internet Explorer Version 8 and 9 in compatibility mode |
| --- | --- |
| | · Mozilla Firefox Version 14.0 and 15.0 |
| | · Chrome Version 14.0 and 15.0 |
| | · Safari Version 5.1 |

# Requirements for installing License Server VPX

**Important:** License Server VPX is not supported with XenApp 7.6 and XenDesktop 7.6.

XenServer must provide adequate virtual computing resources to the License Server VPX as listed in this table.

| Memory | 512 MB. Sufficient for up to 500 Citrix servers and approximately 50,000 licenses, but monitor available memory during operation to determine if you need to add more memory. For larger environments, Citrix recommends allocating more memory. |
| --- | --- |
| XenServer version | XenServer 6.1 and XenServer 6.2. |
| Minimum Storage Requirement | 8 GB on the default Storage Repository inside the XenServer pool. |
| Virtual CPU (VCPU) | 1 VCPU. For larger environments or those leveraging User/Device licensing, consider adding a second VCPU. |
| Browsers | · Internet Explorer Versions 10.0 for 32-bit and 11.0 for 64-bit |
| | · Mozilla Firefox Versions 26.0 and 27.0 |
| | · Chrome Versions 31.0 and 32.0 |
| | · Safari Versions 3.0.3 and 5.1.7 |

# Get started with Citrix Licensing

Citrix recommends that you upgrade the license server to the latest version when you upgrade or install new Citrix products. New license servers are backward compatible and work with older products and license files. New products often require the newest license server to check out licenses correctly.

**Note:** To install License Server using PowerShell Remoting or deploy with Group Policy Objects, set the environment variable FORCE_NO_SERVICE=1 on the target system.

Licensing your product includes the following steps:

1. Ensure you have the latest license server version.

2. Verify system requirements.

3. Install licensing.

4. Obtain license files from My Account.

5. Install your Citrix product (or, if already installed, restart the Citrix products for the new licenses to be recognized)

6. Configure product-side licensing communication settings that were not set during product installation, if applicable. This includes setting the correct product-edition in the product. Details about these settings are covered in the product documentation.

   Ensure that the product-side edition setting correctly matches the licenses you have purchased. For example, if you purchased Platinum edition licenses, ensure that the edition setting in the product indicates Platinum—not Enterprise or Advanced.

See Architectural Overview for an overview of the licensing components and process.

## Ensure you have the latest license server

**When upgrading or installing new Citrix products, always have the latest license server.** The new license server is backward compatible and will work with older products and license files; however, new products require the newest license server to check out licenses correctly. You can install or upgrade the latest version from the product media.

**Note:** Citrix does not provide hotfixes for license server components and does not support older license servers with newer products. The latest versions of the license server often contain resolutions to issues appearing in earlier versions.

## To find your license server version number

If you are unsure if your license server version is current, you can verify it by comparing your version with the number on the Downloads site.

On a license server with the License Administration Console:

1. **For windows:** Start the License Administration Console from the programs menu: Citrix > License Administration Console.

   **For License Server VPX and remote systems:** Open a web browser and go to http://*License Server Name*:*webport*.

2. Click Administration and select the System Information tab. See the release version in the information list.

# Security considerations

Citrix recommends that you upgrade the license server to the latest version when you upgrade or install new Citrix products. New license servers are backward compatible and work with older products and license files. Each time a new license server is released, it may contain better security features than in previous versions.

Citrix also recommends the following security considerations when you configure your environment or use the Licensing Administration Console.

· Configure the license server environment so that only authorized administrators on a trusted network are permitted to access the Licensing Administration Console port. You achieve this with an appropriately configured network or host-based firewall.

· When using the Licensing Administration Console, avoid visiting untrusted websites or clicking on untrusted URLs.

# Firewall considerations

Determine if you need to place a firewall between the license server and any product servers. Citrix recommends that you determine if your products will communicate with the license server through a firewall before installing licensing. Where you install the license server can be impacted by firewall considerations.

The License Server VPX has default ports enabled. To change ports, use the Linux iptables command.

If you have hardware firewalls in your environment, you must manually create the necessary rules.

If there is a firewall between your product and the license server, you need to configure port numbers. This configuration process entails:

· Determining which port numbers you need to change. You can change port numbers during the installation process or afterward.

· Opening up the firewall ports. Open any ports on the firewall that you modified so that traffic can flow. For Windows Server 2008, the license server Version 11.5 or later configures the built-in firewall automatically.

- Modifying the product-side settings. Your Citrix product must be configured with the same port numbers as those in the License Administration Console. If you do not change the port number referenced in the product, the product cannot contact the license server. You can change the product-side settings during and after installation of the product. See your product's documentation for information about these settings.

# Install licensing components for Windows

Licensing components can either be installed on a separate, dedicated server or on a server they share with another application. Alternatively, you can use a Web or application server; however, the locations mentioned below are less resource intensive. If you are running fewer than 50 servers or 10,000 licenses, you can install the License Server on the same server as your product. You can monitor CPU and Memory load (lmadmin.exe and CITRIX.exe) to determine if you should relocate the License Server to another system.

**Install the License Server and console using the graphical interface**

If you install the License Server without successfully configuring it during or after installation, any subsequent License Server upgrades fail.

1. Download the License Server from citrix.com and start the License Server installer, CitrixLicensing.exe, as an administrator or a member of the Administrators group.

2. Follow the installer graphical interface to accept the destination folder.

   Licensing components are installed in *C*:\Program Files\Citrix\Licensing on a 32-bit computer and *C*:\Program Files (x86)\Citrix\Licensing on a 64-bit computer.

3. On the Configure page, accept or change the default port numbers for use by licensing components and choose whether to allow the installer to configure the Windows Firewall exception. You can change the port numbers after the installation, if needed. If you choose to finish the installation without configuring the License Server, restart the CitrixLicensing.exe installer or use the License Server Configuration tool to configure the settings after the installation. You can open the configuration tool from: C:\Program Files\Citrix\Licensing\LS\resource\Licensing.Configuration.Tool.exe.

   - License server port number is 27000

   - Vendor daemon port number is 7279

   - Management Web port is 8082

   - Web Services for Licensing port is 8083

4. The License Server adds the default License Administration Console administrator based on how you are logged on. If you are in a domain, the License Server adds the installing user (domain\user) as a default License Administration Console administrator. If you are a local Windows user, the License Server adds the installing user (computer\user) as a default License Administration Console administrator. The BUILTIN\administrator group, which allows any administrator to manage licensing, is added by default. You can remove BUILTIN\administrators to restrict licensing to specified users. Any user that has access to managing the License Administration Console can also manage the Simple License Service.

5. Choose to launch the License Administration Console or the Simple License Service.

If you do not choose the Simple License Service, or a license from you product's administration console, you are now ready to go to the Citrix Web site to obtain the license files needed to run your Citrix products. This procedure is detailed in Obtaining Your License Files.

**Use the command line to install licensing**

When using the CitrixLicensing.exe command to install licensing, set properties by adding *Property=value* on the command line anywhere except between an option and its argument.

> **Note:** Ensure that you run the command line with administrator privileges. To start the command prompt with elevated privileges, choose Start, right-click Command Prompt, and choose Run as administrator.

The following sample command line installs licensing in silent mode. Add the properties you want to set.

Type the command in one line without returns. The following example shows multiple lines due to space limitations.

CitrixLicensing.exe /quiet /l install.log INSTALLDIR=*installdirectory* WSLPORT=*portnumber* LSPORT=*portnumber* VDPORT=*portnumber* MCPORT=*portnumber*

where:

- /quiet specifies a silent (quiet) installation.

- /l specifies the log file location

- INSTALLDIR is the location where the License Server executable is stored. *Optional parameter. The default is c:\program files\citrix licensing or c:\program files (x86)\citrix\licensing.*

- WSLPORT is the port number used for the Web Services for Licensing. *Optional parameter. The default is 8083.*

- LSPORT is the port number used for the License Server. *Optional parameter. The default is 27000.*

- VDPORT is the port number used for the vendor daemon. *Optional parameter. The default is 7279.*

- MCPORT is the port number used for the console. *Optional parameter. The default is 8082.*

**Using the command line to install licensing for an Active Directory deployment**

When using the Msiexec command to install licensing, set properties by adding Property="value" on the command line anywhere except between an option and its argument. Clustering is not supported in the .msi.

> **Note:** Ensure that you run the command line with administrator privileges. To start the command prompt with elevated privileges, choose Start, right-click Command Prompt, and choose Run as administrator.

The following sample command line installs licensing in silent mode and creates a log file to capture information about this operation. Add the properties you want to set after the switches.

Type the command in one line without returns. The following example shows multiple lines due to space limitations.

msiexec /I ctx_licensing.msi /l*v install.log /qn INSTALLDIR=*installdirectory* LICSERVERPORT=*portnumber* VENDORDAEMONPORT=*portnumber* MNGMTCONSOLEWEBPORT=*portnumber* WEBSERVICELICENSINGPORT=*port*

where:

- /l*v is the location of the setup log. *Optional parameter*.

- /qn specifies a silent (quiet) installation.

- INSTALLDIR is the location where the License Server executable is stored. *Optional parameter. The default is c:\program files\citrix licensing or c:\program files (x86)\citrix\licensing*.

- LICSERVERPORT is the port number used for the License Server. *Optional parameter. The default is 27000.*

- VENDORDAEMONPORT is the port number used for the vendor daemon. *Optional parameter. The default is 7279.*

- MNGMTCONSOLEWEBPORT is the port number used for the console. *Optional parameter. The default is 8082.*

- WEBSERVICELICENSINGPORT is the port number used for the Simple License Service. *Optional parameter. The default is 8083.*

# Obtain your license files

After you install the licensing components, you are ready to obtain your license files.

You can obtain your license files in several ways:

- Studio in XenApp and XenDesktop. For more information, see Manage licensing in the XenApp and XenDesktop documentation in eDocs.

- Simple License Service.

- License Administration Console.

- citrix.com.

Before going to the Citrix web site, you need the following information at hand:

- **The license code.** Find this code: on the Citrix installation media pack, in an email you receive from Citrix, or from the Subscription Advantage Management-Renewal-Information system (SAMRI).

- **Your user ID and password for My Account.** You can register for this password on My Account.

  **Note:** If you cannot locate these items, contact Citrix Customer Service.

- **The name of the server on which you installed the licensing components.** The entry field for this name is case-sensitive, so ensure that you copy the name exactly as it appears on the computer.

  You can find the license server host name and Ethernet address in the License Administration Console in the Administration area on the System Information tab. You can also run the hostname command at a command prompt on the license server.

- **How many licenses you want to include in the license file.** You do not have to download all of the licenses you are entitled to at once. For example, if your company purchases 100 licenses, you can choose to allocate and download only 50 at this time. At a later date, you can allocate the rest in another license file. You can have more than one license file.

**Obtain licenses with the Simple License Service**

**Considerations** - Be aware of these considerations when using the Simple License Service to allocate and download licenses:

- The Simple License Service allocates and downloads all the licenses available for a specific product. If you want to allocate and download only some of the licenses for a product, use My Account.

- Once you click Allocate and Download, you cannot cancel it. If the Allocate and Download fails, use My Account at citrix.com.

- The Simple License Service can allocate only retail licenses (no evaluation or demo licenses or Subscription Advantage renewals) and does not support redownloading or reallocating of license files. For those features, use My Account.

- If you rename the license server, you must reallocate any license files allocated under the old license server name and update the Simple License Service shortcut. You cannot use the Simple License Service to reallocate license files. For more information about reallocating files, see Reallocate license files in Citrix eDocs.

1. In the Start menu, click All Programs > Citrix > Citrix Simple License Service or from a remote machine, https://licenseservername:8083.

2. If you want to change the port and/or language, click Configure on the menu bar at the top of the page. Make changes and click Save.

3. Enter the License Access Code, which is supplied in an email from Citrix.

4. Select a product from the displayed list and click Allocate and Download. All the licenses available for that product are allocated and downloaded. To select more than one product, choose a product, click Allocate and Download, choose the next product, click Allocate and Download, and so on and they are processed in order. Note that once you allocate and download all the licenses for a specific License Access Code, you cannot use that License Access Code again. If you must perform additional transactions with that code, log on to My Account.

5. To change the port and language, click Configure on the menu bar at the top of the page. Make changes and click Save.

6. To display the newly downloaded licenses, refresh the License Administration Console.

**Obtain license files with the License Administration Console**

1. For Windows: Start the console ( Start > All Programs > Citrix > License Administration Console).

   **For License Server VPX and remote systems:** Open a web browser and go to http://*License Server Name*:*webport*.

2. Click Administration and Vendor Daemon Configuration.

3. Click Import License.

4. Click the citrix.com link.

5. On the My Account page, enter your user ID and password.

6. Select All Licensing Tools.

7. From the main menu, select Allocate.

8. Follow the process to allocate and generate your file.

9. Select the licenses you want to download, click Download and save the file to:

   - `C:\Program Files\Citrix\Licensing\MyFiles` on a 32-bit computer

   - `C:\Program Files (x86)\Citrix\Licensing\MyFiles` on a 64-bit computer

   - `/opt/citrix/licensing/myfiles` for License Server VPX

10. In the License Administration Console on the Import License File page, browse to the license file.

11. If you copied the file directly to the MyFiles directory, or if the file has the same name as an existing one, select Overwrite License File on License Server.

12. Click Import License.

13. Click Vendor Daemon Configuration and click Administer in the Citrix vendor daemon line.

14. Click Reread License Files to allow the license server to recognize the new file.

    Users can begin using these licenses as soon as the licenses are read by the license server.

**Manually obtain license files**

1. From a Web browser, go to http://www.citrix.com.

2. Click My Account and enter your user ID and password.

3. Select All Licensing Tools.

4. From the main menu, select Allocate.

5. Follow the process to allocate and generate your file.

6. Select the licenses you want to download, click Download and save the file to a directory (remember the location where you downloaded the file; you will need this location). This is the suggested location:

   - `C:\Program Files\Citrix\Licensing\MyFiles` on a 32-bit computer

   - `C:\Program Files (x86)\Citrix\Licensing\MyFiles` on a 64-bit computer

   - `/opt/citrix/licensing/myfiles` for License Server VPX

7. t the license server, copy the license file from the directory where it was saved to the myfiles directory (*C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit computer or *C*:\Program Files (x86)\Citrix\Licensing\MyFiles on a 64-bit computer or /opt/citrix/licensing/myfiles for License Server VPX).

   Tip: Ensure that the license file retains the .lic file extension. Some copy processes do not recognize a file type for that extension and add a ".txt" file extension during the copy. License files with the wrong file extension cannot be imported.

8. At a command prompt, navigate to:

   - `C:\Program Files\Citrix\Licensing\LS` on a 32-bit computer

   - `C:\Program Files (x86)\Citrix\Licensing\LS` on a 64-bit computer

   - `/opt/citrix/licensing/LS` for License Server VPX
   and type the following command: lmreread -c @localhost -all.

# Manually install a certificate used by the Simple License Service

## Create a certificate

To install a certificate, there are three steps:

1. Obtain a .pfx file, which contains the certificate and private key. You can use one of two methods to do this.

2. Extract the certificate and private key from the .pfx file.

3. Install the certificate and private key on to the License Server.

## Step 1, method 1 — Obtain the .pfx file using a domain certificate

Log on to a server in the domain, open the MMC, and follow these steps:

1. Create a directory c:\ls_cert to hold the exported .pfx file.

2. Add the Certificate snap-in by selecting File > Add/Remove Snap-in > Certificates > Computer account > Local computer.

3. In the left pane under Certificates, right-click Personal and choose All Tasks > Request New Certificate, and then click Next.

4. In the Certificate Enrollment Policy wizard, choose Active Directory Enrollment Policy, click Next, and then select the check box next to Computer, and select Details to the right.

5. Select Properties and on the General tab, type a friendly name and description.

6. On the Subject tab, under Subject Type, choose Common name from the Type drop-down menu, type a friendly name in the text box, click Add, and then click Apply.

7. On the Extensions tab, choose Key usage from the drop-down menu, add Digital signature and Key encipherment to the Selected options box.

8. On the Extended Key Usage drop-down menu, add Server Authentication and Client Authentication to the Selected options box. .

9. On the the Private Key tab and under the Key options drop-down menu, ensure that the Key size is 2048 and select the Key Exportable check box, and then click Apply.

10. On the Certification Authority tab, ensure the CA check box is selected, and click OK > Enroll > Finish.

11. In the Certificates console, select Personal > Certificates, click the certificate you built, select All Tasks > Export > Next, and select the Yes, Export the Private Key radio button and Next.

12. Under Personal Information Exchange – PKCS #12(.PFX), select the check box to include all certificates, click Next, create a password, and click Next.

13. Click Browse, navigate to C:\ls_cert and type server.PFX, and then follow the wizard to finish.

# Step 1, method 2 — Obtain the .pfx file sending a request to a Certificate Authority (CA)

These steps might vary based on your Certificate Authority.

1. Log on to the License Server, open the MMC, and follow these steps:

   a. Add the Certificate snap-in by selecting File > Add/Remove Snap-in > Certificates > Computer account > Local computer.

   b. In the left pane under Certificates, right-click Personal and choose All Tasks > Advance Operations > Create Custom Request, and click Next.

   c. On the Custom request screen, choose (No template) CNG key from the drop-down menu and PKCS#10 for the Request format, and click Next.

   d. On the Certificate Information screen, choose Details and click Properties.

   e. On the General tab, type a friendly name and description.

   f. On the Subject tab, under Subject name, choose Common name and type a value in the text box.

   g. On the Extensions tab, choose Key usage from the drop-down menu, add Digital signature and Key encipherment.

   h. On the Extensions tab, choose Enhanced Key usage from the drop-down menu, add Server Authentication and Client Authentication.

   i. On the Private Key tab, choose RSA, Microsoft Software Key Storage Provider (the default) and from the drop-down menu choose Key options and 2048 for the Key size and Make private key exportable.

   j. Save the file to a .req file, submit the .req file to a Certificate Authority (CA), and save the .cer file.

2. In the MMC, select Certificates > Personal > Certificates and right-click All Tasks > Import. In the Import wizard, select the .cer file.

3. Create a directory c:\ls_cert to hold the exported .pfx file.

4. In the Certificates console, select Personal > Certificates, click the certificate you just imported, select All Tasks > Export > Next, and select the Yes, Export the Private Key radio button and Next.

5. Under Personal Information Exchange – PKCS #12(.PFX), select the check box to include all certificates, click Next, create a password, and then click Next.

6. Click Browse, navigate to C:\ls_cert and type server.PFX, and then follow the wizard to finish.

# Step 2 — Extract the certificate and private key

This step requires OpenSSL or another tool that allows you to extract the certificate and private key from a .pfx file.

**Important:** The version of OpenSSL shipped with the License Server does not support extracting certificates and private keys. You can download OpenSSL for Windows at https://www.openssl.org/related/binaries.html. Citrix recommends installing OpenSSL on a separate workstation to perform these steps:

1. Navigate to the *<openssl directory>*\bin folder.

2. Run `openssl pkcs12 -in C:\ls_cert\server.pfx -out server.crt -nokeys`

   **Note:** The License Server uses only the .crt certificate format.

3. Type the password created during the export process (password).

4. Run `openssl pkcs12 -in C:\ls_cert\server.pfx -out server.key -nocerts -nodes`

5. Type the password created during the export process (password).

# Step 3 — Install the .crt and .key files on the License Server

1. Copy the server.crt and server.key created above to `cd \program files (x86)\citrix\licensing\WebServicesForLicensing\Apache\conf\`

2. Restart the Simple License Service.

# Upgrade

Each time you upgrade your Citrix product, you should also upgrade the Citrix License Server. Each time a new License Server is released, it may contain better security, fixes to known issues, and so on. In some cases, new versions of the Citrix product will not work with older versions of the License Server.

> **Note:** New versions of the License Server are compatible with older versions of the product.

If you are a current Citrix Subscription Advantage member, you are eligible to version upgrade to the latest release of Citrix products and upgrade your existing licenses to the license system used by these products.

*Version Upgrade* means the movement from any previous version of a product to the newest version of the product (for example, moving from XenDesktop 5.6 to XenDesktop 7.*x*).

*Edition Upgrade* means the purchase of a higher edition level of a product (for example, you currently have Enterprise Edition and you purchase an upgrade to Platinum Edition).

> **Important:** Upgrades are not supported for License Server VPX.

## Upgrade the License Server

Citrix recommends that you install the newest License Server. The new License Server is backward compatible and will work with older products and license files; however, new products require the newest License Server to check out licenses correctly. You can install or upgrade the latest version from the Citrix Web site (Downloads page).

Upgrade your licensing components before upgrading your product, if necessary.

> **Important:** Uninstall any versions of Citrix Licensing older than version 11.3 before installing this version.

Unsure which version of the License Server you have? See Ensure you have the latest license server.

For information about system requirements, see System requirements.

> **Note:** To avoid the failure of any subsequent License Server upgrades, ensure that you when you installed your License Server, you successfully configured it with the post installation License Server Configuration tool or uninstalled your previous License Server.

**To upgrade the License Server:**

Download the license components on the Citrix Web site (Downloads page), start the License Server installer (CitrixLicensing.exe) as an administrator and follow the graphical interface.

**To upgrade the License Server from your product media:**

1. From your License Server, open the media for your product.

2. If you do not see Setup, use Windows Explorer to open Autorun.exe or AutoSelect.exe.

3. Navigate through the setup wizard screens to Citrix Licensing and follow the instructions.

# Upgrade licenses for your edition

If you decide to run a higher edition of a Citrix product (for example, XenDesktop Enterprise to Platinum), you must purchase an upgrade license and add it to the License Server. You will also need to change the product edition setting in the product's user interface. Citrix recommends that you plan to change the product edition setting during a time when there are not many connections to the affected servers or that you plan to redirect connections to another computer. When you change the product edition setting, you must restart the product server for changes to take effect. See the product's documentation for changing the edition setting. If you add the upgrade license to the License Server before you set the edition to the new edition, the Citrix product stops accepting new connections.

**Note:** Licenses from old product editions appear on the Dashboard of the License Administration Console even though they are no longer valid. If you do not remove obsolete and/or unnecessary license allocations, you might see persistent alerts regarding the Subscription Advantage expiration dates of these licenses. You cannot turn these alerts off. The only impact of leaving obsolete license allocations on License Servers is that you will continue to receive these alerts. If you want to remove the licenses, see Delete License Files.

To upgrade edition licenses:

1. From a Web browser, go to http://www.citrix.com.

2. Click Log In and enter your user ID and password.

3. Select All Licensing Tools.

4. From the main menu, select Upgrade.

5. Follow the site's options and instructions for upgrading your product edition licenses.

6. Either download or order new media. An email message provides you with instructions to return to citrix.com to allocate or receive additional feature licenses.

7. Log on to www.citrix.com to allocate your licenses, generate a license file, download the license file to your License Server, and reread the file.

# Licensing architecture overview

Before you can use your Citrix product, you must install Citrix Licensing. Citrix Licensing is a system of components that function together. This system includes:

- License server — A system that allows licenses to be shared across the network.

- License files — The files that you need to license your product. These files are stored on the License Server.

- License Administration Console — The interface you use to manage your license files and your License Server.

- Web Services for Licensing — Enables Studio, Director, and the Licensing Administration PowerShell Snap-in to communicate with the License Server and manage users, allocate and install licenses, display License Server health, license usage, and other alert messages.

- Simple License Service — Enables allocation and installation of license files on a License Server using a web page interface.

- Product-side settings in your Citrix products that are associated with the License Server.

## Overview of Citrix Licensing

Every Citrix product environment must have at least one shared or dedicated License Server. License servers are computers that are either partly or completely dedicated to storing and managing licenses. Citrix products request licenses from a License Server when users attempt to connect.
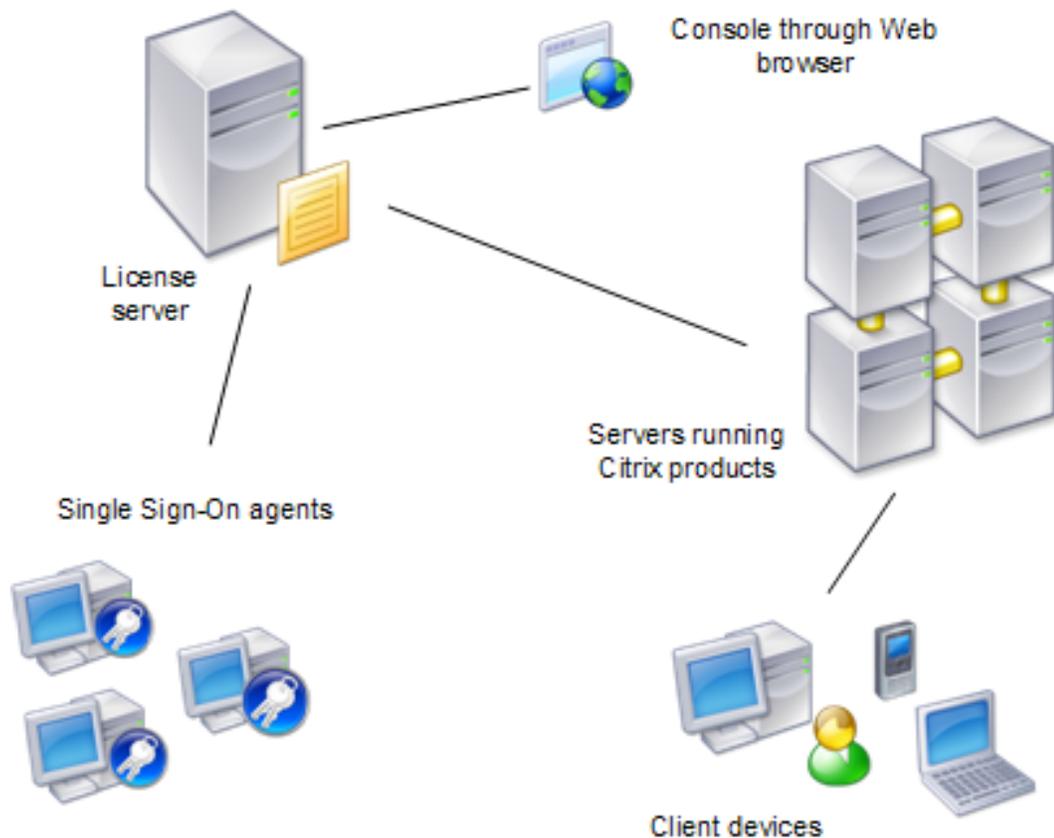
Servers running Citrix products contact the License Server to obtain licenses.

When users connect to a Citrix product, it draws licenses from the License Server. That is, the Citrix product requests to check out a license from the License Server on behalf of the user or client device. When the license is successfully checked out, the user can run the product.

Depending on the size and configuration of your product deployment, you may deploy licensing on a server shared with other applications, a dedicated License Server, or multiple License Servers.

License files must be located on the License Server that is associated with the product you are licensing and the product must be configured to communicate with that specific License Server. The License Administration Console lets you manage and monitor your Citrix licenses by providing a user interface to the License Server. You can view a dashboard of licenses and alerts, import license files, and manage License Server settings.

# Licensing operations overview

Typically, the first time a user connects to a Citrix product, the product requests a license from the License Server. When the License Server grants a license request, the Citrix product reserves a license for its use. Reserving licenses for this purpose is known as *checking out* licenses. When the user logs off from the product server, the product returns the license to the License Server. This process is known as *checking in* licenses. With some Citrix products the license is checked out as soon as a user connects to the product, and the license remains checked out for a predetermined amount of time.

Each time a Citrix product starts, it opens a connection to the License Server by checking out the *startup license*. The startup license is a Citrix system file that enables Citrix products to maintain a continuous connection to the License Server. The following figure shows that each product forms its own constant connection to the License Server.

The Citrix product makes a continuous connection to the License Server. The License Server can support up to 10,000 continuous connections.

For example, when a server running XenDesktop requests a license, the product retrieves the License Server name and port number information from the data store and establishes a connection to acquire the appropriate licenses.
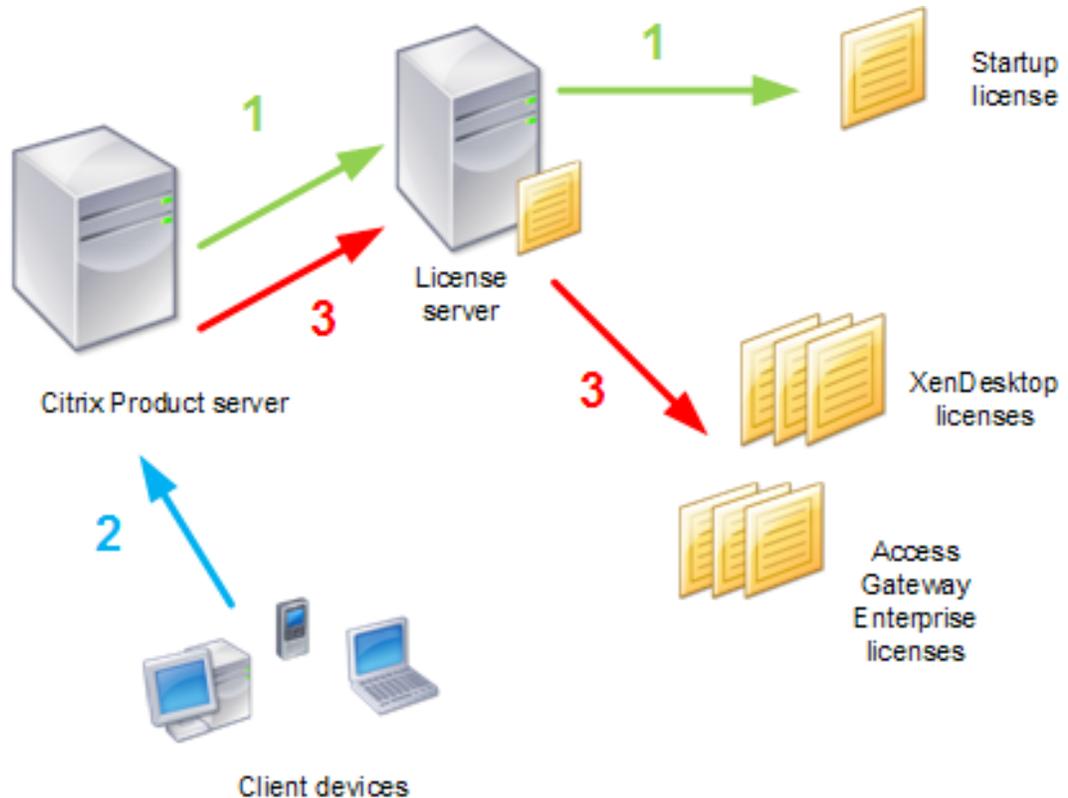


There are three stages of the license checkout process.

A Citrix product goes through a three-step process to check out licenses:

1. At startup, a computer running a Citrix product checks out a startup license.

2. A client device connects to the product server.

3. The product requests a license from the License Server.

Citrix products, such as XenDesktop, store a replica of the licensing information from the License Server, including the number and type of licenses. If a Citrix product server loses its connection to the License Server, or the License Server does not respond in a timely manner, the product enters a grace period and uses its local record of the licenses to continue licensing the product during the grace period. Citrix products update this record every hour.

**Grace periods**

If product servers lose communication with the License Server, the users and the products are protected by a *grace period* that allows the product servers to continue operations as if they were still in communication with the License Server. After a startup license is checked out by the Citrix product, the product and the License Server exchange "heartbeat" messages every five minutes to indicate to each other that they are still up and running. If the product and the License Server fail to send or receive heartbeats, the product lapses into the licensing grace period and licenses itself through cached information.

The grace period is set by Citrix. It is typically 30 days but can vary depending upon the product. The Windows Event Log, and other in-product messages, indicate if the product has entered the grace period, the number of hours remaining in the grace period. If the grace period runs out, the product stops accepting connections. After communication is re-established between the product and the License Server, the grace period is reset.

The grace period takes place only if the product has successfully communicated with the License Server at least once.

> **Note:** For products that operate in disconnected mode, the grace period takes effect after the preconfigured time specified for the license check-out expires.

*Grace period example — two sites, both using the same License Server*

The connection between Site 1 and the License Server goes down causing Site 1 to go into the grace period, continuing operation and making connections. For Concurrent licenses, they can connect up to the maximum concurrent licenses installed. For User/Device licenses, they have unlimited connections. When Site 1 reestablishes communication with the License Server, connections are reconciled and no new connections are allowed until they are within normal license limits. Site2 is unaffected and operates as normal.

If the License Server goes down, both sites go into the grace period. Each site allows up to the maximum number of licenses installed. As above, the User/Device licenses have no limit.

**Disconnected mode**

Some Citrix products can operate in a disconnected mode (not connected to the server). These products allow a user to check out a license and operate the product for a preconfigured period of time that is set by the administrator. In this case, heartbeat messages are not exchanged. For products that operate in disconnected mode, the grace period takes effect after the preconfigured time specified for the license check-out expires.

**Supplemental grace period**

For the supplemental grace period to be available, you must be using XenApp 7.6 or XenDesktop 7.6.

License Server VPX does not support supplemental grace periods.

If all licenses are in use, the supplemental grace period enables users to connect to a product for a limited period of time allowing you to address the issue. The default supplemental grace period is 15 days. During this period there is no limit on connections. After it expires, normal (to the extent of license availability) connection limits are enforced. Users are not disconnected, but as they disconnect, no new connections occur until license levels return to normal.

Supplemental grace periods are granted per product and edition and per Subscription Advantage Eligibility date (per product) and only for Retail licenses. For example, if you have two clients requesting XenDesktop Enterprise Concurrent, with different Subscription Advantage Eligibility dates, two supplemental grace periods are granted.

Rearming the supplemental grace period — When you take corrective action (for example, installing an additional Retail license), the supplemental grace period is rearmed, and normal license limits are enforced again. If you take action while the supplemental grace period is in force, the License Server exits the supplemental grace period before rearming. When the supplemental grace period is rearmed, you can trigger a new 15 day supplemental grace period the next time you go over the license limit.

The supplemental grace period is enabled by default. To disable it, enter the following line in the options file:

#CITRIX SGPOFF

# License server components

The License Server comprises several licensing components:

- Citrix vendor daemon

- License Administration Console

- License files

- Options file

- Startup license

- Web Services for Licensing

- Simple License Service
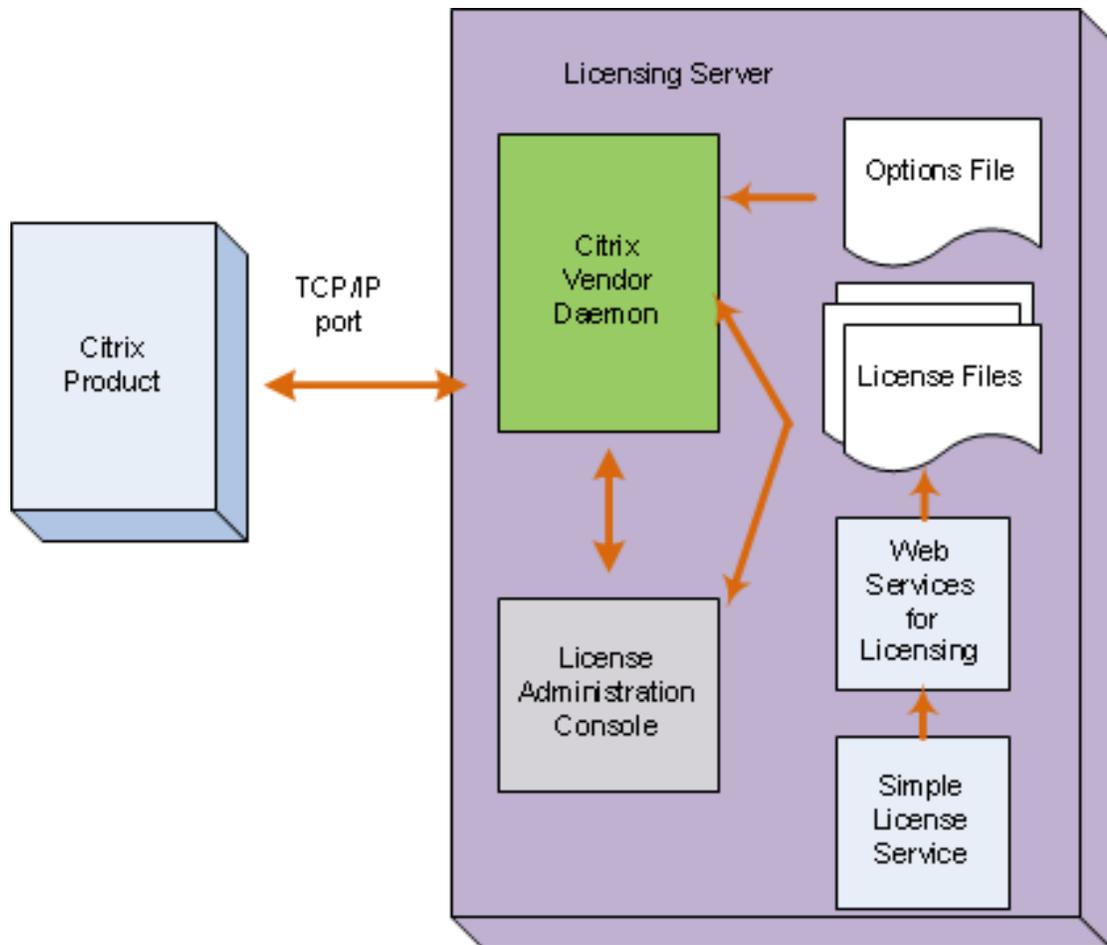
Figure 1. License Server Components. This diagram shows the Citrix product using TCP/IP to connect to License Server components.

**Citrix vendor daemon**

Licenses are granted by the *Citrix vendor daemon* (CITRIX), a process that runs on the License Server. The Citrix vendor daemon tracks the number of licenses that are checked out and which product has them. Citrix products communicate with the Citrix vendor daemon using TCP/IP. By default, the Citrix vendor daemon uses TCP/IP port 7279.

**License files**

License files are text files created by Citrix that store licensing data. They contain information about the product licenses and the number of licenses, as well as system information such as the name of the License Server. The License Server uses these files to determine whether to grant a license to a Citrix product.

**Startup license**

The startup license (citrix_startup.lic) allows Citrix products to communicate with the License Server using a continuous open connection. The startup license:

· Tracks which product servers are connected to the License Server

· Stores licensing system information

· Does not affect your license count

> **Caution:** Do not edit the startup license file, or any other license files.

**Citrix License Server Diagnostics License|Server**

The License Server uses Citrix License Server Diagnostics License|Server for internal diagnostics and alert message notifications displayed in Studio and Director. It is available by default with the startup license in the citrix_startup.lic file

**Options file**

The options file (Citrix.opt) is a License Server configuration file that the Citrix vendor daemon reads every time it restarts or receives a command to reread the file. This configuration file defines licensing behavior—the number of licenses a product server can use, the location of the system logs, and other user-defined customizations.

**Web Services for Licensing**

License Server VPX does not support Web Services for Licensing.

Studio, Director, and the Licensing Administration PowerShell Snap-in use Web Services for Licensing to communicate with the License Server and manage users, allocate and install licenses, display License Server health, license usage, and other alert messages. The Simple License Service also uses it.

**Simple License Service**

License Server VPX does not support Simple License Service.

The Simple License Service enables allocation and installation of license files on a license server using a web page interface. Connect to the Simple License Service locally with the Start menu shortcut or remotely with the Simple License Service URL.

# The License request process

When a product requests a license from the License Server, the Citrix vendor daemon determines whether a license is available for the request.

The license request process has two phases: the product startup phase and the user connection phase.

**Product Start-Up Phase**

· When a Citrix product starts, it retrieves the License Server location from its data store

· The product connects to the Citrix vendor daemon

· The product checks out a startup license

**User connection phase**

· A user connects to a computer running the Citrix product

- The product requests a license from the License Server

- The Citrix vendor daemon checks to see if any licenses are available and grants or denies the product's request

- The license module in the product grants or denies the use of the product based on the response from the Citrix vendor daemon

# Types of licenses



Your product uses one of the following types of licenses (some products allow you to choose more than one type). It is important that you are aware of which types of licenses your company has purchased and how they are consumed. This ensures that you do not run out of licenses. The license types are:

**User/Device licenses**

With XenDesktop 5 Service Pack 1 or later and XenApp 6.5 or later, the license server can assign licenses to a user or a device and monitor license consumption. When assigned to a user, the license allows access from an unlimited number of devices. When assigned to a device, the license allows access from the device by an unlimited number of users.

A licensed device requires a unique device ID and is authorized for use by any individuals to access instances of XenDesktop. Use this type of license for shared devices, such as classroom or hospital.

A licensed user requires a unique user ID, such as an Active Directory entry. When assigned to a user, the license allows the user to connect to their desktops and applications with multiple devices, such as desktop computer, laptop, netbook, smartphone, or thin client. A licensed user can connect to multiple instances of XenDesktop concurrently.

When users or devices connect to an application or desktop, they consume a license for the 90 day license assignment period. The assignment period begins when a connection is made, is renewed to the full 90 days during the life of the connection, and expires (allowing reassignment) 90 days after the last connection terminates (logs off or disconnects). If you have to manually end a license assignment before the 90 day period elapses (for example, an employee consuming a User license leaves the company), use the udadmin command line tool.

**Optimization**

Using the optimization process, the License Server determines how to minimize consumption based on users and connections. The license server optimizes every 5 seconds until there are 5000 unique connections. At 5000 unique connections optimization occurs every 5 minutes, which might delay status information until the next optimization impacting when license usage statistics are updated in various consoles..

Examples of unique connections — Note that optimization is not consumption and these examples show when optimization occurs.

Optimization occurs every 5 seconds for 1-4999 uses and every 5 minutes for 5000 or more uses.

700 users * 1 device each = 700 (optimize every 5 seconds)

5000 users * 1 device each = 5000 (optimize every 5 minutes)

5000 devices * 1 user each = 5000 (optimize every 5 minutes)

2500 users * 2 devices each = 5000 (optimize every 5 minutes)

**Note:** Optimization can be CPU intensive depending on the number of unique connections. Citrix recommends using machines with multiple cores if you have an extremely large deployment.

**Concurrent licenses**

This type of license is not tied to a specific user. When a user launches a product, the product requests the license and it is checked out to the specific computer or device that the user is using. When the user logs off or disconnects from the session, the license is checked back in and is available for another user. Using this logic, keep the following scenarios in mind:

- Multiple sessions at different computers use multiple licenses. Each time a user launches a Citrix session from a different computer or device, a license is checked out until the user closes the session at that computer or device (at which point the license is checked back in). For example, if a user launches a session from one computer and then launches another from another computer (before closing the session on the first), two licenses are checked out.

- Because, license servers do not communicate with each other, if you are running multiple license servers you may consume more than one license (for example, with load balancing). If you are using load balancing, Citrix recommends that the product servers point to the same license server.

- Different editions consume different licenses. If a user connects to an application published on a computer running Advanced edition and then uses the same client to connect to an application published on a computer running Enterprise edition, two licenses are consumed.

- Only one license is consumed when a user makes multiple connections from a single device to different product servers configured as the same edition and pointing to the same license server.

- When a user connects from a single device to two product servers that are the same edition but different versions, one or two licenses might be consumed based on the order in which the user makes the connections. For example, the two servers are XenApp 6.0 and XenApp 6.5 (though this applies to nearly all Citrix products and versions):

  - The user connects to XenApp 6.0 first - Two licenses might be consumed - An older license first and then a newer license.

  - The user connects to XenApp 6.5 first - Only one license is consumed.
- RDP connections consume a license (RDP connections to a console do not consume a license).

**Per user licenses (Only user licenses - not the same as User/Device licenses)**

A licensed user requires a unique user ID, such as an Active Directory entry. When assigned to a user, the license allows the user to connect to their desktops and applications with multiple devices, such as desktop computer, laptop, netbook, smartphone, or thin client. A licensed user can connect to multiple instances of a product concurrently. When users connect to an application or desktop, they consume a license for the 90 day license assignment period. The assignment period begins when a connection is made, is renewed to the full 90 days during the life of the connection, and expires (allowing reassignment) 90 days after the last connection terminates (logs off or disconnects). If you have to manually end a license assignment before the 90 day period elapses (for example, an employee consuming a User license leaves the company), use the udadmin command line tool.

**Per device licenses (Only device licenses - not the same as User/Device licenses)**

A licensed device requires a unique device ID and is authorized for use by any individuals to access instances of a product. Use this type of license for shared devices, such as classroom or hospital. It allows an unlimited number of users per device. When devices connect to an application or desktop, they consume a license for the 90 day license assignment period. The assignment period begins when a connection is made, is renewed to the full 90 days during the life of the connection, and expires (allowing reassignment) 90 days after the last connection terminates (logs off or disconnects). If you have to manually end a license assignment before the 90 day period elapses (for example, an employee consuming a User license leaves the company), use the udadmin command line tool.

**Per socket licenses**

Licenses are consumed per CPU socket actually used by a CPU and cores are not counted. For example, if a computer with two CPU sockets has only one CPU, only one license is used. In another example, if that same computer with two sockets has two CPUs, each with a quad core, only two licenses are used.

**Named user licenses**

When a product requests a license, it is checked out to the user until a preconfigured period of time expires. This type of check-out is not tied to a computer or device; once the license is checked out, the user can run multiple sessions on different computers without checking out more licenses.

# Overview of the License Administration Console

The License Administration Console lets you manage and monitor your Citrix licenses through a Web browser.

Use the Dashboard to:

- Monitor licenses, license activity, and alerts

Use the Administration area to:

- Administer licenses

- Configure console users

- Configure alerts

- Import licenses

- Log license management activities

- Secure the console server

- View system information

Toggle between the *Dashboard* and *Administration* views from links in the top right area of the console. Access to the Administration area requires administration privileges and is password-protected.

## Open the console on a Windows computer

To open the License Administration Console on the computer on which it is installed:

From the Start menu, select All Programs > Citrix > License Administration Console.

## Open the console on a remote server or cluster

Navigate your browser to one of the following URL options:

- http://*license server name*:*web service port*

- http://*client access point name*:*web service port*

- http://*IP*:*web service port*

where:

- *license server name* is the name of your license server

- *client access point name* is the name given to the client access point during cluster configuration

- *IP* is the IP address of the license server

- *web service port* is the port number for the console's Web service

The default Web service port for the console is 8082.

# Monitor licenses and alerts

Use the Dashboard to monitor your license activity. The Dashboard is the default view when you open the License Administration Console.

## License status at a glance

The Dashboard presents a synopsis of your licenses:

| Name | Description |
|------|-------------|
| Product | Product, edition, and type of license |
| SA Date | The Subscription Advantage membership expiration date for the product license |
| In Use (Available) | The number of licenses currently in use, followed by the total number available for use |
| Expiration | The date the license expires |
| License Type | The type of license, such as concurrent user or system licenses |
| Hosts | The Hosts link appears when licenses are checked out and links to a list of the host names with licenses in use |

## About alerts

Dashboard alerts are triggered by licensing events such as the license server stopping or the expiration of a Subscription Advantage membership. You configure alerts in the Administration area. The list of displayed alerts is updated when the Dashboard page is reloaded or refreshed.

Alerts about concurrent licenses are tested and triggered at one minute intervals. The "Vendor Daemon Down" alert is triggered immediately.

There are two categories of alerts:

**Critical alerts**

| Dashboard Alert | Administration Name | Triggering Event |
|-----------------|---------------------|------------------|
| The vendor daemon has stopped | Vendor daemon down | The license server stops, unexpectedly or purposely stopped by the administrator |
| The concurrent license has expired | Out of concurrent licenses | All the concurrent licenses have been checked out |

| Licenses for *product_name* have expired | Concurrent license expired | The license has expired. Note that if the license is not a type of license covered by Subscription Advantage, there is no deleterious effect from being expired. For example, the startup license and evaluation licenses are always "expired" because they are not covered by Subscription Advantage. You can ignore this alert unless it is for a license that shows an expired Subscription Advantage date in the dashboard. |
|---|---|---|
| Subscription Advantage membership expired | Subscription Advantage membership expired | The Subscription Advantage membership for a concurrent license has expired |

**Important alerts**

| Name of Alert | Triggering Event |
|---|---|
| Concurrent threshold exceeded | A percentage (specified by the administrator) of concurrent licenses have been checked out |
| Concurrent license expiring | A certain number of days (specified by the administrator) remains before the concurrent license expires |
| Subscription Advantage membership expiring | A certain number of days (specified by the administrator) remains before the Subscription Advantage membership for a license expires. Note that if the license is not a type of license covered by Subscription Advantage, there is no deleterious effect from being expired. For example, the startup license and evaluation licenses are always "expired" because they are not covered by Subscription Advantage. You can ignore this alert unless it is for a license that shows an expired Subscription Advantage date in the dashboard. |

# To view alerts

1. On the Dashboard, click the red X icon to view critical alerts or the orange ! icon to view important alerts.

2. Click items in the list to their details.

# To clear alerts

Alerts are not cleared automatically when the condition changes. You must clear the alert manually to remove it from the list.

Click the X icon next to the alert item.

# Change the display language

You can customize your user session by changing the console's display language. The console language reverts to the default when you log off. You can change the display language:

Select the language you want:

- When prompted during logon.

- By clicking Change Display Language at the bottom left corner of the console

# Change your console password

You can change your License Administration Console password at any time.

**Note:** The Windows license server does not support changing Active Directory user and local Windows user passwords. Active Directory users and local Windows users can change their passwords using their native operating systems. On Windows, if you login as a Locally Managed User and then login, you will see the "Change Password" link at the bottom right corner. But, if you login as a Windows Active Directory user/admin, you will not get the change password link as you cannot change passwords for AD users. On License Server VPX, you will always have the "Change Password" link at the bottom right corner as it does not support AD users.

1. In the bottom right corner of the console, click Change Password. If you do not see the link, it is because you are in the Dashboard area and you are not required to enter your credentials. Clicking the Administration option will cause the link to appear.

2. Type your old password.

3. Type to enter and confirm your new password.

If you forget your password, contact the console administrator to assign you a new one.

# Secure the console

Steps you can take to secure the License Administration Console:

· Use HTTPS for the console's Web server communications

· Require users to log onto the Dashboard

· Specify a user session timeout

## To configure a server certificate file and key file

You can use HTTPS (Hypertext Transfer Protocol Secure) to create a secure channel for console communications over your network. If you use HTTPS, you must have a valid server certificate. The license server already contains a self-signed certificate, but you can create your own. If you create your own certificate and key file, follow these steps to configure it.

1. Copy a valid server certificate file and server certificate key file into the \Licensing\LS\conf\ for Windows or /opt/citrix/licensing/LS/conf/ Licenser Server VPX folder fof the License Server installation directory.

2. Click Administration and select the Server Configuration tab.

3. Click the Secure Web Server Configuration bar.

4. Select Enable HTTPS (Default 443).

5. Enter a port for the HTTPS communication.

6. Enter the location of the server certificate file and the server certificate key file.

7. Restart the Citrix Licensing service.

## To require users to log onto the Dashboard

You can optionally secure the Dashboard by forcing users to enter a password. The Administration area is password-protected for all users.

1. Click Administration and select the Server Configuration tab.

2. Click the User Interface bar.

3. Select Require user to log on to view Dashboard.

# To specify a session timeout

You can log out users after a specified time of inactivity, ensuring they do not leave the console unattended.

1. Click Administration and select the Server Configuration tab.

2. Click the Web Server Configuration bar.

3. For Session Timeout, enter the number of minutes that a user can remain inactive before being logged out of the console. The maximum value is 99999 (69 days, 10 hours, 39 minutes).

# Change port numbers

Licensing installation sets several port numbers for communications. After installation you can use the License Administration Console to change port numbers.

- **Console Web Server Port**: The HTTP TCP/IP port that the Web server uses to listen for communication with clients connecting to the License Administration Console. By default, the port is set to 8082. If you are already using that port number for another application, you can change it to a range between 1 and 65535. If you use HTTPS, the default port is 443. If you change the port, you must stop and restart the Citrix Licensing service.

- **License Server Manager Port**: This port number is used by the license server manager, which handles the initial communication between the products, starts the vendor daemon, and relays check out and check in requests to the vendor daemon. By default, this port number is 27000.

  Tip: You can verify which port number is being used from the System Information tab in the Administration area.

- **Vendor Daemon Port**: This port number is used by the Citrix vendor daemon, which is responsible for the core operations of the license server, including license allocation. By default, this port number is 7279; however, you may need to change it if you have a firewall or if the number is already in use.

  Tip: You can verify which port number is being used from the Vendor Daemon Configuration tab in the Administration area.

When using the License Administration Console you no longer need to use the License Server Port Utility to change port numbers. The License Server Port Utility was used to change port numbers before this functionality was developed in the License Administration Console.

**Note:** The Linux kernel reserves Ports 1-1024. When configuring the VPX ports, use ports above 1024. If you use SSL, use port 10443, which is open in the firewall. If you choose a different port for SSL, reconfigure the firewall in the iptables.

## To change the console port

1. In the top right corner of the console, click Administration.

2. Click the Server Configuration tab.

3. Click the Web Server Configuration bar.

4. In the HTTP Port field, modify the current port number and click Save.

5. In the host machine operating system open the Services panel and select the Citrix Licensing service.

6. Restart the Citrix Licensing service.

# To change the license server port

This procedure changes the port number used by the License Server Manager (lmadmin.exe).

1. In the top right corner of the console, click Administration.

2. Click the Server Configuration tab.

3. Click the License Server Configuration bar to display the associated options.

4. Click the Use this Port radio button and type the new port number in the adjacent field. Click Save to save the new port number.

5. Restart the Citrix Licensing service.

# To change the vendor daemon port

1. In the top right corner of the console, click Administration.

2. Click the Vendor Daemon Configuration tab.

3. Select the Citrix vendor daemon from the table.

4. Under Vendor Daemon Port, set the new port number.

5. Click Save.

6. Restart the Citrix Licensing service.

# Import license files

After generating your license file from citrix.com, you are ready to import it into the license server. A *startup license* is imported during the license server installation to allow Citrix products to communicate with the license server.

1. After generating and downloading your license file, copy the file to the computer hosting the license server and console. The default location for storing the license file is *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit computer, *C*:\Program Files (x86)\Citrix\Licensing\MyFiles on a 64-bit computer, and /opt/citrix/licensing/myfiles for License Server VPX.

   Tip: Ensure that the license file retains the ".lic" file extension. Some copy processes do not recognize a file type for that extension and add a ".txt" file extension during the copy. License files with the wrong file extension cannot be imported.

2. **For Windows:** Start the License Administration Console from the programs menu: Citrix > License Administration Console.

   **For License Server VPX and remote systems:** Open a web browser and go to http://*License Server Name*:*webport*.

3. Start the console and click Administration.

4. Log on and click the Vendor Daemon Configuration tab.

5. Click Import License.

6. Browse to the license file.

7. If you copied the file directly to the myfiles directory, or if the file has the same name as an existing one, select Overwrite License File on License Server.

8. Click Import License. The import process copies the file from its existing location into the MyFiles directory where it can be read by the license server.

9. Click Administer in the Citrix vendor daemon line.

10. Click Reread License Files to allow the license server to recognize the new file.

    Users can begin using these licenses as soon as the licenses are read by the license server.

# To use the command line

1. From a Web browser, go to http://www.citrix.com.

2. Click My Account and enter your user ID and password.

3. Select All Licensing Tools.

4. From the main menu, select Allocate.

5. Follow the process to allocate and generate your file.

6. Select the licenses you want to download, click Download and save your license files. You can save the files directly to the default location. The default locations where license files are kept are:

   - *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

   - *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

   - /opt/citrix/licensing/myfiles for License Server VPX
7. At a command prompt, navigate to:

   - `C:\Program Files\Citrix\Licensing\LS` on a 32-bit computer

   - `C:\Program Files (x86)\Citrix\Licensing\LS` on a 64-bit computer

   - /opt/citrix/licensing/LS for License Server VPX
   and type the following command: lmreread -c @localhost -all.

# License administration

After you have imported your license files, they are administered by the Citrix vendor daemon (CITRIX). The Citrix vendor daemon is responsible for the core operations of the license server, such as tracking how many licenses are checked out and who has them. The vendor daemon can manage all of your Citrix license files and is fully backward compatible with any license files you have. Set properties for the vendor daemon on the Vendor Daemon Configuration page of the console.

**Note:** You can manage only the Citrix vendor daemon with this console.

## Configuring the vendor daemon

The Vendor Daemon Configuration page allows you to import license files, configure the vendor daemon, and view logs about license activity. Only users with Administrator privileges can view this page.

Click Administer in the vendor daemon summary grid to set these options:

| Option | Description |
| --- | --- |
| Vendor Daemon Port in Use | The TCP/IP port number that the vendor daemon uses for communication with products. |
| Stop | Stops the vendor daemon, but leaves the console running. When you stop a vendor daemon, this button changes to Start. Disabled by default. |
| Start | Starts the vendor daemon and reads the license files. This button only appears when the vendor daemon is stopped. When you start a vendor daemon, this button changes to Stop. |
| Reread License Files | Rereads the contents of the license files and the options file. |
| Report Log Name | This option is not functional. |
| Rotate Report Logs | This option is not functional. |

# Configure console users

The License Administration Console can use License Administration users, local Windows users and groups, and Active Directory users and groups. The Simple License Service can use local Windows users and groups and Active Directory users and groups. The License Administration Console manages them all. These users are not connected to the computer's local users.

The Active Directory users and groups are part of an Active Directory/network authentication system. To support Active Directory users and groups, the Windows license server must be a member of a Microsoft Active Directory domain and must be running the License Administration Console. Windows NT domains are not supported.

Users are configured with local roles or Active Directory roles for adding users and groups. All users are created as administrators and can:

**Note:** The License Server VPX does not support Active Directory or the Simple License Service.

Users are configured with local roles. All users are created as administrators and can:

- View the Dashboard for license activity and alerts.

- Change their own password. Active Directory users and groups do not have passwords associated with them. They contact Active Directory to be authorized and follow standard Active Directory user password policies.

- Select a console display language.

- Change their own password.

- Select a console display language.

- View system information.

- Add and delete users and expire their passwords. You can expire passwords for local users only.

- Configure alerts.

- Configure the license server.

- Configure the vendor daemon.

- Stop the license server after you have made changes to it.

- Configure the administration console.

- Configure, and add licenses with, the Simple License Service.

Administrators must enter user name and password when opening the Administration area. Settings in Server Configuration allow you to optionally secure the Dashboard by requiring

users to log on. If Password Protected Dashboard is enabled ALL users accessing the License Administration Console must log on.

**What types of accounts are added at installation**

A default administrator account is created during installation of the License Administration Console. Use the administrator account to first log on to the console and then configure additional users.

During installation of the License Administration Console, accounts are added based on machine membership. For workgroup machine installations, *computer\InstallUser* and *BUILTIN\Administrators* are added. For Active Directory installations, *domain\InstallUser* and *BUILTIN\Administrators* are added. You can remove any of these accounts after installation, but ensure that there is at least one administrator.

**Note:** If an "admin" user remains after an upgrade, the domain administrator can delete that user.

# Add locally managed users

1. Click Administration and then the User Configuration tab.

2. Click New Users.

3. Select Locally Managed Admin from the drop-down menu.

4. Type information based on the Role chosen. Required fields are identified with an asterisk (*).

    · User names are case sensitive, are limited to 32 characters, and cannot contain a backslash (\).
5. Optionally select the User must change password on next logon check box to force the user to create a new password.

# Add local Windows users and domain users and groups

1. Click Administration and then the User Configuration tab.

   a. If you are adding domain users or groups, click Domain Users/groups.
2. Click New Users.

3. Select a role from the drop-down menu.

4. Type information based on the Role chosen. Required fields are identified with an asterisk (*).

   · User names are limited to 32 characters.

   · Users and groups must be created as *domain\user* (*domain* can refer to a *machineName*) or *domain\group*.

   · Local Windows users must be created as *computer\user*.

   · For domain users, names are converted to upper case and stored. An upper case domain user name (for example, TEST\HARVEY) can coexist with a lower case local user name (for example, test\harvey), but an upper case domain user cannot coexist with an upper case local user name.

# Change a user password for locally-added users

1. On the User Configuration page, click Edit in the line containing the user's record.

2. Type and confirm the new password.

3. Optionally select the User must change password on next logon check box to force the user to change the new password.

# Configure licensing alerts

Alerts display on the Dashboard and are classified as *critical* or *important*. Administrators can select which alerts appear on the Dashboard and set the thresholds that trigger them.

1. In the top right corner of the console, click Administration and select the Alert Configuration tab.

2. Select the alerts you want to display on the Dashboard, and for the important alerts determine the threshold to trigger the alert.

3. Click Save.

4. By default, Subscription Advantage membership alerts are also displayed on the Dashboard. To turn on or off these alerts:

   a. Click Vendor Daemon Configuration.

   b. Select the Citrix vendor daemon.

   c. Select or clear Enable Subscription Advantage membership expiration alerts for this vendor daemon.

# Improve performance by specifying thread use

Requests come in to the license server through a listener port. All communication must be accepted by an acceptance thread. If the message is accepted, a receive thread handles it and then a processing thread processes it. To improve license server performance when receiving a large number of requests, you can configure the maximum number of receive and processing threads to use.

When a program initiates an I/O request (an example would be a request to check-out a license), it creates and uses a thread. The thread maintains the place and data in the program as a reference point, and once the request is complete, the program can be re-entered at the same point. You can have many requests at the same time, depending upon how many threads are allowed. This is called *multi-threading*.

The optimal values needed for acceptable license server performance are dependent on the hardware, the site configuration, and the request volume. If you set the limits too high and your hardware cannot support it, it will slow down the communication. If you set the limits too low, it will take longer for the communication to occur as the system will wait until it can create more threads before it executes incoming requests. You should test and evaluate different values to determine the configuration that meets your site's needs. A good starting point for a large scale deployment might be setting the Maximum Number of License Server Manager Processing Threads to 30 and the Maximum Number of License Server Manager Receiving Threads to 15.

There are two areas where you can specify the thread limits:

- License Server

- Web Server

## To set license server thread use

1. In the top right corner of the console, click Administration.

2. Click the Server Configuration tab and the License Server Configuration bar.

3. Modify the Maximum Number of License Server Manager Processing Threads and Maximum Number of License Server Manager Receiving Threads fields (up to 999 threads).

4. Restart the Citrix Licensing service.

# To set Web server thread use

Use this procedure to set the maximum number of threads that the Web server for the License Administration Console uses to process requests. Specify a larger number if you expect many users to simultaneously access the console.

1. In the top right corner of the console, click Administration.

2. Click the Server Configuration tab and the Web Server Configuration bar.

3. Modify the Maximum Number of Web Server Threads field (up to 999 threads).

4. Restart the Citrix Licensing service.

# View system information

You can view system information about the license server and the system running the license server. The following information is available by clicking the Administration option in the top right corner of the License Administration Console, followed by the System Information tab.

| Name | Description |
|---|---|
| Release Version | The version of the license server. |
| License Server Manager Port Number in Use | The port number that the license server uses to communicate with the products. |
| Display | On Windows, this is the system name or the terminal server client name (in a terminal server environment). |
| | On UNIX, this is the X-Display name or the value returned by the ttyname() (or comparable) function. |
| Host Name | The name of the computer hosting the license server. |
| Host Domain Name | The fully-qualified name of the computer hosting the license server. |
| IPv4 Address | The IP version 4 address of the computer hosting the license server. The IPv4 address appears only if the computer has IPv4 enabled. |
| IPv6 Address | The IP version 6 address used to identify the computer hosting the license server. The IPv6 address appears only if the computer has IPv6 enabled. |
| Ethernet Address | The Ethernet address (also known as the MAC address) of the computer hosting the license server. |
| Local Stop Server Allowed | Displays either yes or no. If it is no, you cannot stop the license server using the lmdown utility or the console. Configure this property using the -allowStopServer command line option when you run the license server manager (lmadmin). Disabled by default. |
| Remote Stop Server Allowed | Displays either yes or no. If it is no, you cannot stop the license server from a remote machine using lmdown or the console. Disabled by default. |

# Logs

Log files are stored in:

- C:\Program Files\Citrix\Licensing\LS\Logs on a 32-bit server

- C:\Program Files(x86)\Citrix\Licensing\LS\Logs on a 64-bit server

- C:\Program Files (x86)\Citrix\Licensing\WebServicesForLicensing\Logs on a 64-bit server

- /opt/citrix/licensing/LS/logs for VPX

| Log | File name | Viewable from | What it logs |
|---|---|---|---|
| License server log | lmadmin. log | Server Configuration > Logging | License server, console, and administration activities |
| Vendor daemon log | citrix.log | Vendor Daemon Configuration > Vendor Daemon Log | Licenses and license activities |
| Access log | access.lo g | logs folder | HTTP access events<br><br>**Note:** This log is used by support personnel for debugging purposes only. |
| Web log | web.log | logs folder | Web server information<br><br>**Note:** This log is used by support personnel for debugging purposes only. |

Some versions of the license server (previous to 11.6.1) included a report log. The License Administration Console does not include a report log. If you have a legacy report log file (C:\Program Files\Citrix\Licensing\LS\reportlog.rl for Windows or /opt/citrix/licensing/LS/reportlog.rl for License Server VPX), it will not be updated unless you relocate the file "reportlog.rl" to the logs directory and update the options file to control it.

# To view and configure the license server log

1. In the Administration area, on the Server Configuration page, click the Logging bar.

2. Click View log file.

3. To change the level of logging, select the type of information to be recorded from the Log Level dropdown list.

   **Note:** Leave this property set to the default setting of Information unless you are instructed by support personnel to change it to aid in troubleshooting.

# To view the vendor daemon log

This procedure displays the latest 200 lines of data in the file. You can view the entire contents of the log (citrix.log) by opening it directly from the \\Program Files\Citrix\Licensing\LS\Logs folder for Windows or the /opt/citrix/licensing/LS/logs folder for License Server VPX.

1. In the Administration area, on the Vendor Daemon Configuration page, click the Vendor Daemon Log bar.

2. Click View log file.

# To configure the vendor daemon log

1. In the Administration area, on the Vendor Daemon Configuration page, click the Vendor Daemon Log bar.

2. Select whether to overwrite or append to the log:

   | Option | Description |
   | --- | --- |
   | **Overwrite Vendor Daemon Log** | When selected, this option overwrites the log when you restart the Citrix Licensing service or the vendor daemon. If the option is clear, the log entries are appended to the end of the file. |
   | **Vendor Daemon Log Location** | Changing log location is not recommended. |

3. Click Save.

4. Click Stop under Vendor Daemon Actions.

5. Click Administer on the Vendor Daemon Configuration page and then Start under Vendor Daemon Actions.

# Set the default language

Administrators can change the default language of the License Administration Console display. The default applies to all console users. Available languages include:

· Chinese (Simplified)

· English

· French

· German

· Japanese

· Spanish

Users can set a display language for the duration of their session. The console display reverts to the default language at the end of each user session.

1. Click Administration and choose the Server Configuration tab.

2. Click the User Interface bar.

3. From the Default Display Language drop-down list, choose a language.

# About license files

When you install the license server, a startup license and an options file are installed automatically. To license your Citrix products you add one or more license files. See "Obtain your license files" in Get started with Citrix Licensing for information about adding your product licenses.

You cannot change the location of license files on the license server. License files must reside in their default location.

**Startup license file**

The startup license file (citrix_startup.lic) is a text file that is used by Citrix products to communicate with the license server using a continuous open connection. Every five minutes the license server and the product send a heartbeat message to each other to verify that they are mutually communicating. If the product and the license server have been exchanging heartbeat messages but there is an interruption in the exchange (for example, there is a power failure), the product goes into a *grace period*. The startup license does not affect your license count. Do not edit this file.

**Note:** Some Citrix products can operate in a disconnected mode (not connected to the server). These products allow a user to check out a license and operate the product for a preconfigured period of time that is set by the administrator. In this case, heartbeat messages are not exchanged.

You can control different aspects of your licensing operations and environment by customizing the license file.

**License file**

The license file is a text file that contains product licensing information as well as the license server name (or other binding identifier), the Subscription Advantage membership renewal date (also known as the Subscription Advantage Expiration date), the license expiration date (if applicable), and other system information. All of this information is encrypted with a digital signature. When you purchase a Citrix product, you go to the citrix.com Web site to download a license file. You can have more than one license file per license server. The license file resides in the *C*:\Program Files\Citrix\Licensing\MyFiles directory on a 32-bit server, the *C*:\Program Files(x86)\Citrix\Licensing\MyFiles directory on a 64-bit server or in the /opt/citrix/licensing/myfiles directory for License Server VPX where it is referenced by the license server. The license server uses this file(s) to determine whether or not to grant a license to a Citrix product.

# Move license files to a different host

If you need to move your license files to a server with a different hostname or Ethernet address, you cannot use the license files that you downloaded for the old license server. Create new license files that reference the new server name by reallocating them.

See Reallocate license files for more information.

# License file format

> **Caution:** Modifications can make license files unusable. If using Citrix Licensing for Windows 11.6.1 or later, you should never need to edit license files. You can manage licenses and their tasks through the License Administration Console and the My Account site.

Citrix License files employ the following naming convention:
license_FID_XDT-PLT-UD_25-mar-2013.lic.

> **Note:** You can change the name of the license file, but it must have a .lic extension.

License files are composed of lines that list specific information, such as the server name (SERVER) or quantity of licenses (INCREMENT). These lines begin with words denoting their purpose in uppercase letters, such as VENDOR, SERVER, INCREMENT, USE_SERVER, and so on.

The following sections provide in-depth information about the following elements of license file syntax: the SERVER line, VENDOR line, USE_SERVER line, INCREMENT line, and UPGRADE line. While the term *feature* is used in the options and license file syntax, in this document, the term *product license* is used whenever possible for clarity.

```
# This file is in UTF-8 format.
#
SERVER this_host HOSTNAME=license_server1              (1)
VENDOR CITRIX   (2)
USE_SERVER
INCREMENT MPS_ENT_CCU CITRIX 2006.0428 01-may-2006 1000 \
        VENDOR_STRING=;LT=Retail;GP=720;CL=ENT,ADV,STD;SA=0;ODP=0 \
        DUP_GROUP=V ISSUED=12-Mar-2004 NOTICE="eMail Test - Citrix" \
  (3)   SN=LA-0000150712-86261:872 START=11-mar-2004 SIGN="0885 F320 \
        0AE2 EE72 68A4 92FC 86C2 3648 A2CF 346D A88F  BD44 TS111\
        D790 1830 7535 553C B774 DE8C 1F5D A5D3 D5F6 D078 217B BH050 \
        A14C 2893 7756 ACF5"

#
#[English]   (4)
#CITRIXTERM     FEATURE     2.0     MPS_STD_CCU   EN     Citrix Presentation Server Standard|Concurrent User
#CITRIXTERM     FEATURE     2.0     MPS_ADV_CCU   EN     Citrix Presentation Server Advanced|Concurrent User
#CITRIXTERM     FEATURE     2.0     MPS_ENT_CCU   EN     Citrix Presentation Server Enterprise|Concurrent User
#
```

Example license file with numbers corresponding to the explanations following the example:

# 1 SERVER Line

The SERVER Line. The SERVER line specifies the binding identifier (also known as the *hostname*) of the license server.

> **Caution:** Do not modify the binding identifier on the SERVER line; otherwise, the license file will not work.

**Syntax**

SERVER this_host *ether*

or

SERVER this_host HOSTNAME=*hostname*

| Parameters | Description |
|---|---|
| *ether* | The MAC address of the appliance on which the license server is running. Do not edit this string. |
| *hostname* | The name of the computer on which the license server is running. Do not edit this string. |

**Example**

SERVER this_host HOSTNAME=license_server1

# 2 VENDOR Line

The VENDOR line specifies the Citrix vendor daemon name.

**Syntax**

VENDOR CITRIX [vendor_daemon_path]

| Field | Description |
|---|---|
| VENDOR CITRIX | Name of the Citrix vendor daemon. Do not edit this name. |
| vendor_daemon_path | Path to the executable for the Citrix vendor daemon. Citrix recommends that you do not change this path. |

# 3 INCREMENT Lines

An INCREMENT line describes the license required to use a product. License files (*.lic) contain one or more INCREMENT lines. Each INCREMENT line makes up a user-specified allocation of product and license (users, connections) counts..

Each increment line contains a signature based on the data in that line, the hostids specified in the SERVER line(s), and data chosen by Citrix. INCREMENT lines use a backslash ( \ ) to wrap long lines of text.

**Syntax**

INCREMENT *feature vendor SA_expiry_date exp_date num_lic* \
  SIGN=sign [optional_attributes]

> **Caution:** Do not modify the six fields after the INCREMENT line keyword; they are required and have a fixed order.

The following table explains these fields in the order they appear:

| Field | Description |
|---|---|

| *feature* | The product license. Do not edit this line. |
|-----------|---------------------------------------------|
| *vendor* | Indicates this license is for a Citrix vendor daemon. Do not edit this line. |
| *SA_expiry_date* | Indicates the date until which you are entitled to product version upgrades. If you do not have a Subscription Advantage membership or this is not a Subscription Advantage license, the date indicates when you ordered or redeemed the license. Do not edit this line.<br><br>**Note:** If you renewed your Subscription Advantage membership and received an upgrade license, two dates are listed.<br><br>· The first date is the date when the Subscription Advantage membership was originally purchased<br><br>· The second date is the SA_expiry_date<br><br>Example:<br><br>INCREMENT MPS_ENT_CCU CITRIX 2005.0311 2007.0311 permanent 1000 \\<br><br>See Upgrade Lines for additional information. |
| *exp_date* | Expiration date of license in the format dd-mmm-yyyy, that is, 07-may-2006. Do not edit this line.<br><br>**Note:** If the exp_date field contains the string "permanent," the license never expires. |
| *num_lic* | Number of concurrent licenses for this product license. Do not edit this line. |
| SIGN=sign | SIGN= signature to authenticate this INCREMENT line. Do not edit this line. |

INCREMENT lines also determine the grouping of licenses in the management console. These groups are known as *license pools*. The Citrix vendor daemon creates the license pools based on common attributes, such as product license or version. When a new pool is created, the console displays and tracks this pool independently from other license pools. When two or more attributes are different, the Citrix vendor daemon creates a new license pool.

**Citrix Attributes in INCREMENT Lines**

INCREMENT lines can also include additional attributes from Citrix. These attributes provide information about the license, such as the date on which it was issued or that the license is an upgrade license.

**Caution:** Do not modify or delete these attributes.

**Example**

```
INCREMENT MPS_ENT_CCU CITRIX 2008.0606 permanent 10 \
VENDOR_STRING=;LT=Retail;GP=720;CL=ENT,ADV,STD,AST;SA=1;ODP=0 \ DUP_GROUP=V
ISSUED=06-Jun-2007 NOTICE="Citrix" \ SN=12345:67890 START=6-jun-2007 SIGN="18F8 1546
F605 E3BD 010E 7E4F A4B3 9DE3 B90E 7937 3337 0180 1FFB C6EB D491"
```

Important items are highlighted in the above example:

- The Product (license feature) appears in blue

- The Citrix Subscription Advantage expiration date appears in red (Format: YYYY.MMDD)

- The License (user, connection) Count appears in GREEN

**Syntax**

keyword=value

The following table describes the Citrix attributes. The uppercase letters of the attributes indicate that this attribute is not editable.

| Attribute | Description |
|---|---|
| DUP_GROUP=V | This attribute allows license sharing for the same client device. |
| ISSUED=dd-mmm-yyyy | Date issued. |
| ISSUER="..." | Issuer of the license. |
| NOTICE="..." | Your company's name. |
| SN=serial_num | A number that is used to identify INCREMENT lines. |
| START= dd-mmm-yyyy | The date from which you can use a license. The license server cannot use licenses before their start date. |
| SUPERSEDE="MPS_ADV_CCU MPS_STD_CCU ..." | This appears in the upgrade license file when you move to a higher product edition. If this appears, all licenses issued before the date specified in ISSUED= are superseded by this line and become ineffective. |
| VENDOR_STRING="..." | String defined by Citrix. |

**Optional Attributes in INCREMENT Lines**

INCREMENT lines contain several attributes that you can add, edit, or delete. You can add attributes, if desired. For example, you can insert an asset tag or a purchase order number beside each license in a file. Likewise, you can add attributes that indicate a specific group of licenses is dedicated for a department in your organization.

Some of these attributes may be inserted by Citrix or your Value Added Reseller.

Optional attributes are listed in the table that follows. Like the Citrix-specific attributes, the optional attributes have a keyword=value syntax where keyword is in lowercase. You can tell the difference between optional and required attributes by the case of the letters: optional attributes have lowercase letters.

| Attribute | Description |
|---|---|
| asset_info= "…" | Additional information you can add for asset management |
| dist_info= "…" | Additional information provided by the software distributor |
| user_info= "…" | Additional information provided by the license administrator |
| vendor_info = "…" | Additional information provided by Citrix |

# UPGRADE Lines

An UPGRADE line indicates the date when a Subscription Advantage membership was renewed and the date it expires.

**Caution:** Do not modify this line.

**Syntax**

UPGRADE *feature* CITRIX *from_Subscription_Advantage_date*
*to_Subscription_Advantage_renewal_date*
*exp_date num_lic* \
[options ... ] SIGN=*sign*

All the data is the same as for an INCREMENT line, with the addition of the from_Subscription_Advantage_date field. An UPGRADE line removes up to the number of licenses specified from any old version (>= from_Subscription_Advantage_date) and creates a new version with that same number of licenses.

**Example 1**

For example, the following lines renew the ABCD Corporation's Subscription Advantage membership for 1000 MPS_ENT_CCU licenses for one year (until March 11, 2006):

INCREMENT MPS_ENT_CCU CITRIX 2005.0311 permanent 1000 \
VENDOR_STRING=;LT=Retail;GP=96;CL=ENT,ADV,STD;SA=1;ODP=0 \
DUP_GROUP=V ISSUED=12-Mar-2004 NOTICE="ABCD Corporation" \
SN=LA-0000150712-12345:123 START=11-mar-2004 SIGN="1234567"

UPGRADE MPS_ENT_CCU CITRIX 2005.0311 2006.0311 permanent 1000 \
VENDOR_STRING=;LT=Retail;GP=96;CL=ENT,ADV,STD;SA=1;ODP=0 \
DUP_GROUP=V ISSUED=12-Mar-2005 NOTICE="ABCD Corporation" \
SN=RE-0000164638-12345:123 START=11-mar-2005 SIGN="1234567"

**Example 2**

For example, the following lines renew the ABCD Corporation's Subscription Advantage membership for 1000 MPS_ENT_CCU licenses for one year (until March 11, 2006):

```
INCREMENT MPS_ENT_CCU CITRIX 2005.0311 permanent 1000 \
VENDOR_STRING=;LT=Retail;GP=96;CL=ENT,ADV,STD;SA=1;ODP=0 \
DUP_GROUP=V ISSUED=12-Mar-2004 NOTICE="ABCD Corporation" \
SN=LA-0000150712-12345:123 START=11-mar-2004 SIGN="1234567"
```

```
UPGRADE MPS_ENT_CCU CITRIX 2005.0311 2006.0311 permanent 1000 \
VENDOR_STRING=;LT=Retail;GP=96;CL=ENT,ADV,STD;SA=1;ODP=0 \
DUP_GROUP=V ISSUED=12-Mar-2005 NOTICE="ABCD Corporation" \
SN=RE-0000164638-12345:123 START=11-mar-2005 SIGN="1234567"
```

An UPGRADE line applies to the closest preceding INCREMENT line with a Subscription Advantage date that is greater than or equal to from_Subscription_Advantage_date, and less than to_Subscription_Advantage_renewal_date.

Upgrade lines use a continuation character ( \ ) to break up long lines. When using license files with an UPGRADE line, you must keep the license files with the original INCREMENT lines in the same folder.

# Reallocate license files

License files run only on the license server or hardware appliance that was specified when they were generated. If you change the binding identifier of a server or appliance hosting license files, you must reallocate license files so that they match the new binding identifier.

The *binding identifier* is the information in the license file that identifies the machine where the license file is hosted. The binding identifier is usually the license server hostname, but it can also be a hardware appliance name, Ethernet address (MAC address), or FQDN.

Situations in which you might need to reallocate a license file:

· You rename your license server

· You want to move your license files to a server with a different name

· You used some licenses initially to create a test environment and now you want to reuse those licenses on a different license server

Designating a new binding identifier when you reallocate licenses does not consume additional licenses. The process changes only the binding identifier for the licenses.

# To reallocate license files with the License Administration Console

1. **For windows:** Start the console (Start > All Programs > Citrix > License Administration Console).

   **For License Server VPX:** Open a web browser and go to http://*License Server Name*:*webport*.

2. Click Administration and Vendor Daemon Configuration.

3. Click Import License.

4. Click the My Account link.

5. On the My Account page, enter your user ID and password.

6. Select All Licensing Tools.

7. From the main menu, select Reallocate.

8. Select the check boxes preceding the licenses you want to reallocate, click Continue.

9. On the pages that follow, follow the instructions to select the licenses to be reallocated into the new file (and associated with a new license server) and download the license file.

10. Save the files to a location such as your desktop (remember the name of the files and location where you downloaded the file; you will need this location). You can save the file directly to the default location. The default locations for license files:

    · *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

    · *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

    · /opt/citrix/licensing/myfiles for License Server VPX

11. In the License Administration Console on the Import License File page, browse to the license file.

12. If you copied the file directly to the MyFiles directory, or if the file has the same name as an existing one, select Overwrite License File on License Server.

13. Click Import License.

14. Click Vendor Daemon Configuration and click Administer in the Citrix vendor daemon line.

15. Click Reread License Files to allow the license server to recognize the new file.

# To reallocate license files without the console

1. From a Web browser, go to http://www.citrix.com.

2. Click My Account and enter your user ID and password.

3. Select All Licensing Tools.

4. From the main menu, select Reallocate.

5. Select the check box preceding the licenses you want to reallocate, then click Continue.

6. On the pages that follow, follow the instructions to select the licenses to be reallocated into the new file (and associated with a new license server) and download the license file.

7. Save the file to a location such as your desktop (remember the name of the file and location where you downloaded the file; you will need this location). You can save the file directly to the default location. The default locations for license files:

   - *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

   - *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

   - /opt/citrix/licensing/myfiles for License Server VPX

8. At a command prompt, navigate to:

   - `C:\Program Files\Citrix\Licensing\LS` on a 32-bit computer

   - `C:\Program Files (x86)\Citrix\Licensing\LS` on a 64-bit computer

   - /opt/citrix/licensing/LS for License Server VPX

   and type the following command: lmreread -c @localhost -all.

# Replace (redownload) license files

Replacement license files are copies of license files you previously generated. You might need to download replacement files if you corrupt or delete a license file. You can choose how to redownload the licenses by using the By Host or By Allocation tabs.

## To redownload license files using the License Administration Console

1. **For windows:** Start the console (Start > All Programs > Citrix > License Administration Console). **For License Server VPX and remote systems:** Open a web browser and go to http://*License Server Name*:*webport*.

2. Click Administration and Vendor Daemon Configuration.

3. Click Import License.

4. Click the My Account link.

5. On the My Account page, enter your user ID and password.

6. Select All Licensing Tools.

7. From the main menu, select Redownload.

8. Click Select All to select all items on all pages, click the Page check box to select all items on that page, or select the check boxes preceding the licenses that you want to download.

9. Click Download and save the files to a location such as your desktop (remember the name of the file and location where you downloaded the file; you will need this location). You can save the file directly to the default location. The default locations for license files:

   · *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

   · *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

   · /opt/citrix/licensing/myfiles for License Server VPX

10. If you copied the file directly to the MyFiles directory, or if the file has the same name as an existing one, select Overwrite License File on License Server.

11. Click Import License.

12. Click Vendor Daemon Configuration and click Administer in the Citrix vendor daemon line.

13. Click Reread License Files to allow the license server to recognize the new file.

# To redownload license files without the console

1. From a Web browser, go to http://www.citrix.com.

2. Click My Account and enter your user ID and password.

3. From the main menu, select Redownload.

4. Click Select All to select all items on all pages, click the Page check box to select all items on that page, or select the check boxes preceding the licenses that you want to download.

5. Click Download and save the file to a location such as your desktop (remember the name of the file and location where you downloaded the file; you will need this location). You can save the file directly to the default location. The default locations for license files:

   - *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

   - *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

   - /opt/citrix/licensing/myfiles for License Server VPX
6. At a command prompt, navigate to:

   - `C:\Program Files\Citrix\Licensing\LS` on a 32-bit computer

   - `C:\Program Files (x86)\Citrix\Licensing\LS` on a 64-bit computer

   - /opt/citrix/licensing/LS for License Server VPX
   and type the following command: lmreread -c @localhost -all

# Combine license files

If you are accumulating a lot of license files on a license server, you can combine the licenses into one license file. License files can accumulate when you:

· Purchase additional licenses

· Renew your Subscription Advantage membership

Tip: Back up and then delete the old license files from the license server before replacing them with the new files.

# To combine files using the License Administration Console

1. **For windows:** Start the console (Start > All Programs > Citrix > License Administration Console). **For License Server VPX and remote systems:** Open a web browser and go to http://*License Server Name*:*webport*.

2. Click Administration and Vendor Daemon Configuration.

3. Click Import License.

4. Click the My Account link.

5. On the My Account page, enter your user ID and password.

6. Select All Licensing Tools.

7. From the main menu, select Redownload.

8. Use the By Host tab (to automatically combine all specified licenses allocated to a host ID into single line item) and click Select All to select all items on all pages, click the Page check box to select all items on that page, or select the check boxes preceding the licenses that you want to download.

9. Click Download and save the files to a location such as your desktop (remember the name of the file and location where you downloaded the file; you will need this location). You can save the file directly to the default location. The default locations for license files:

    · *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

    · *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

    · /opt/citrix/licensing/myfiles for License Server VPX

10. In the License Administration Console on the Import License File page, browse to the license file.

11. If you copied the file directly to the MyFiles directory, or if the file has the same name as an existing one, select Overwrite License File on License Server.

12. Click Import License.

13. Click Vendor Daemon Configuration and click Administer in the Citrix vendor daemon line.

14. Click Reread License Files to allow the license server to recognize the new file.

# To combine files without the console

1. From a Web browser, go to http://www.citrix.com.

2. Click My Account and enter your user ID and password.

3. Select All Licensing Tools.

4. From the main menu, select Redownload.

5. Use the By Host tab (to automatically combine all specified licenses allocated to a host ID into single line item) and click Select All to select all items on all pages, click the Page check box to select all items on that page, or select the check boxes preceding the licenses that you want to download.

6. Click Download and save the files to a location such as your desktop (remember the name of the file and location where you downloaded the file; you will need this location). You can save the file directly to the default location. The default locations for license files:

   · *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

   · *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

   · /opt/citrix/licensing/myfiles for License Server VPX

7. At a command prompt, navigate to:

   · `C:\Program Files\Citrix\Licensing\LS` on a 32-bit computer

   · `C:\Program Files (x86)\Citrix\Licensing\LS` on a 64-bit computer

   · `/opt/citrix/licensing/LS` for License Server VPX
   and type the following command: lmreread -c @localhost -all

# Delete license files

When you upgrade your edition (for example, Advanced to Enterprise, or Enterprise to Platinum) you receive new Citrix product licenses that you can allocate to one or many Citrix License Servers through license files created at citrix.com. There is no requirement that obsolete Citrix licenses be removed from license servers; however, Citrix recommends as a best practice that you remove them for the following reasons:

· License asset management

· License compliance

· Remove unnecessary alerts from appearing in the management console

If you do not remove obsolete and/or unnecessary license allocations, you might see persistent alerts regarding the Subscription Advantage expiration dates of these licenses. You cannot turn these alerts off.

 **Note:** The only impact of leaving obsolete license allocations on license servers is that you will continue to receive alerts about them.

Considerations when deleting files:

· Incorrect removal of license files could inadvertently lower the total licenses available.

· Place any new license files on the license server prior to deleting any licenses.

· Unless you are deleting license files permanently, always keep back-up copies of the files you are deleting.

· Remove a license file only when all INCREMENT lines in the file are obsolete or unnecessary. For example, every increment line has been replaced with a new license as a result of an upgrade.

· If you used the License Administration Console to add license files, you have to update the console UI for any deleted files.

**Important:** Never delete the options file (citrix.opt) or startup license (citrix_startup.lic).

1. At the license server, open the Services panel and stop the Citrix Licensing service.

2. Open Windows Explorer and navigate to where the license files are stored. By default license files are stored in:

    · *C* :\Program Files\Citrix\Licensing\MyFiles on a 32-bit server

    · *C*:\Program Files(x86)\Citrix\Licensing\MyFiles on a 64-bit server

    · /opt/citrix/licensing/myfiles for License Server VPX
3. Back up all license (.lic) files.

4. Using a text editor (Microsoft WordPad is recommended), open each license (.lic) file and identify the obsolete license feature INCREMENT line(s).

5. Ensure all increment lines are obsolete or unnecessary. See License file format for information about increment lines.

6. Close the file and change the file extension from .lic to .old.

7. In the Services panel, restart the Citrix Licensing service.

# To update the License Administration Console UI

If you added license files with the console, you must update the console UI after removing those files.

1. Start the console and click Administration.

2. Log on as an administrative user and click the Vendor Daemon Configuration tab.

3. Select the Citrix vendor daemon from the list.

4. Edit the contents of License File or Directory to remove any deleted licenses and then save the configuration.

# License administration commands
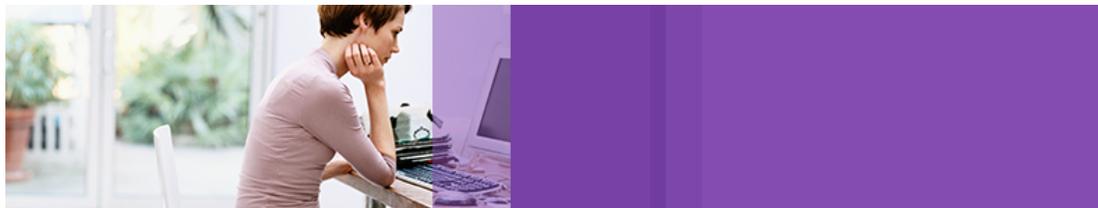


While the License Administration Console provides an easy method of accessing many licensing features, you can also perform licensing tasks using commands. You might use license administration commands when performing advanced operations on the license server that are not available in the console. Such operations include diagnosing check-out problems using lmdiag.

License administration commands are stored in:

· *C*:\Program Files\Citrix\Licensing\LS on a 32-bit computer

· *C*:\Program Files (x86)\*CC*itrix\Licensing\LS on a 64-bit computer

· /opt/citrix/licensing/LS for License Server VPX

## Table of commands

| Utility | Description |
| --- | --- |
| lmadmin | Provides licensing configuration. Use the License Administration Console for licensing configuration and administration tasks. Do not use lmadmin. |
| lmdiag | Diagnoses license check-out problems. |
| lmdown | Gracefully shuts down the License Manager and Citrix vendor daemons (disabled by default). |
| lmhostid | Reports the host ID of the server on which Citrix Licensing is running. |
| lmreread | Causes the License Manager daemon to reread the license file and start the Citrix vendor daemon. |
| lmstat | Displays the status of a license server. |
| lmutil | Displays a list of licensing utilities or executes other commands. |
| lmver | Displays version information for the licensing binaries. See lmver. |
| udadmin | Displays all licensed users and devices and deletes specified licensed users and devices. This command applies to User/Device licenses only. |

# Format license commands

Formatting conventions for the license administration commands:

| Convention | Description |
|---|---|
| Bold | A command or switch, such as lmstat. |
| *Italic* | You need to replace variables with a value; for example, in the expression:<br><br>lmstat -c*license_file_list*<br><br>Before you run the command you must replace *license_file_list* with the names of one or more license files. |
| [square brackets] | Square brackets around text indicate options that can be added to the command or that text within the brackets needs to be replaced. |

# Universal arguments

Valid arguments for most license administration commands:

| Argument | Description |
|---|---|
| -all | Applies the command to all of the license servers on the network. |
| -c | Lets you specify license file(s) or license server port and host name.<br><br>If you specify the path without a license file name, the command applies to all the license files in the directory.<br><br>For a local host: -c @localhost<br><br>For a remote license server: -c @*servername*<br><br>For a license server in a cluster: -c @*clientaccesspointname*<br><br>For a specified path: -c *path*<br><br>For the names of one or more license files: -c *license_file_list*<br><br>You can enter more than one license file path by separating each path with a semicolon.<br><br>Path names that include spaces must be enclosed in double quotes. |
| -h | License *handle*, as reported by lmstat -a. The license handle is a number used to identify a specific checked out license. |
| -help | Displays usage information and exits. |

| -s [*server*] | Displays the status of all license files listed on the license server or on all license servers, if *server* is not specified. |
|---|---|
| -verbose | Displays a longer description for all errors found. |

# Diagnose checkout problems (lmdiag)

lmdiag allows you to diagnose problems when a product cannot check out a license. In particular, you can test if your licenses are valid and if the license server is running. When you run this utility, it attempts to check out a license.

You can also use the lmdiag utility to see if a specific type of license is working. For instance, you can run lmdiag on your Citrix XenApp server, Advanced edition licenses only by specifying MPS_ADV_CCU as an argument.

## Syntax

lmdiag -c *license_file_list* [-n] [feature[:keyword=*value*]]

| Argument | Description |
|---|---|
| -c *license_file_list* | Diagnoses the specified files. You can also use:-c @localhost or -c @*server-name* |
| -n | Runs in non-interactive mode; lmdiag does not prompt for any input in this mode. |
| *feature* | Limits the feedback to the specified feature. |
| keyword=*value* | If a license file contains multiple lines for a particular feature, the result is limited to the line containing the text value. For example: lmdiag –c @localhost MPS_ENT_CCU:HOSTID=LICSERV01 attempts a checkout on the line with the host ID "LICSERV01." Keyword is one of the following: VERSION, HOSTID, EXPDATE, KEY, VENDOR_STRING, ISSUER |

If no feature is specified, lmdiag operates on all features in the license files in your list. lmdiag displays information about the license, then attempts to check out each license. If the check out succeeds, lmdiag indicates success. If the check out fails, lmdiag gives you the reason for the failure. lmdiag attempts to connect to each TCP/IP port on the license server. It detects if the port number in the license file is incorrect. lmdiag lists each TCP/IP port number that is listening, and if -c *license_file_list* is specified, diagnoses the specified files.

lmdiag does not contact the computer running the Citrix product when it attempts to check out licenses. lmdiag indicates only if there are problems on the license server. That is, your product cannot check out licenses because it is pointing to the wrong license server (for example, a license server that does not have licenses for that product on it), but lmdiag does not detect this problem. lmdiag reports that it can check out licenses when the Citrix product is pointing to the wrong license server.

# Stop daemons (lmdown)

The lmdown utility shuts down the License Manager daemon and the Citrix vendor daemon on your license server or all license servers on your network but is disabled by default. To enable it:

1. Stop the license service.

2. Run lmadmin - allowStopServer and/or -allowRemoteStop Server.

3. Restart the license server.

## Syntax

lmdown -c *license_file_list* [-vendor CITRIX] [-q] [-all]

| Argument | Description |
|----------|-------------|
| -c @localhost<br>or<br>-c@*server*<br>or<br>-c *license_file_list* | Use the specified license files. Note that specifying -c license_file_list is always recommended with lmdown. You can also use:-c @localhostor -c @*server-name* |
| -vendor CITRIX | Shut down only the Citrix vendor daemon. The License Manager daemon continues to run. |
| -q | Do not prompt or print a header. Otherwise lmdown asks "Are you sure? [y/n]: ." |
| -all | If multiple servers are specified, automatically shuts down all of them. -q is implied with -all. |

The lmdown utility must be run on a license server. You can use -all to shut down all of the license servers on your network.

If lmdown encounters more than one server (for example if -c specifies a directory with many *.lic files) and -all is not specified, the utility displays a choice of license servers to shut down. You can shut down remote license servers by using -c and specifying the name of the license server.

**Note:** If you use the Task Manager to terminate the License Manager daemon (Citrix Licensing Service), stop the lmgrd process first, then stop the Citrix vendor daemon process.

To stop and restart the Citrix vendor daemon only, use lmdown -c @localhost -vendor CITRIX, then use lmreread -c @localhost -vendor CITRIX to restart the vendor daemon.

# Check host names (lmhostid)

The lmhostid utility returns the host ID of the license server. You can use the command to check the host name of your license server. You can open a license file and compare the host name in the license file to that of your license server.

> **Note:** Citrix Licensing, versions 11.5 and later for Windows allows you to display multiple host IDs if there are more than one host.

## Syntax

lmhostid –*bindingidentifier*

| Argument (*bindingidentifier*) | Description |
| --- | --- |
| -ether | Used for product licenses that are tied to the MAC address of the appliance. |
| -internet | Used for Windows-based Citrix product software licenses that require a TCP/IP address. |
| -hostname | Used for Windows-based Citrix product software licenses that are tied to the *hostname*of the license server.<br><br>**Note:** The parameter *hostname* is case-sensitive and must match your license server name exactly. |

# Reread license and options files (lmreread)

The lmreread utility causes the Citrix vendor daemon to reread changes to the license file and the options file. After rereading, the Citrix vendor daemon uses the new settings and/or licenses going forward.

lmreread cannot be used remotely; run it locally on the license server.

## Syntax

lmreread -c *license_file_list* [-all] [-vendor CITRIX]

| Argument | Description |
| --- | --- |
| -c @localhost or -c *license_file_list* | Use the specified license files. |
| -all | If more than one lmgrd is specified, instructs all License Manager daemons to reread. |
| -vendor CITRIX | Specifies for the Citrix vendor daemon to be restarted. |

## Examples

- lmreread -c @localhost [-all]

- lmreread -c @*client_access_point_name*

- lmreread -c /opt/citrix/licensing/myfiles/CITRIX.lic -vendor CITRIX

# Display the list of licensing utilities (lmutil)

The lmutil utility displays a list of licensing utilities when used standalone. When you specify lmutil with another command, it executes that command.

## Syntax

lmutil

lmutil *other_command*

## Examples

- lmutil

  Displays all the licensing utilities.

- lmutil lmstat -c @localhost

  Executes the lmstat command.

# Determine licensing status (lmstat)

The lmstat utility helps you monitor the status of all network licensing activities and provides you with information about license check outs, including:

- The product that checked out one or more licenses

- The check out data

- The version of the license file

- The license server name and port

- The date the license was checked out

- Information about the Citrix vendor daemon status and the license files

lmstat displays information that it receives from the license server. lmstat displays only one use of the license, even if there are multiple connections sharing that license.

# Syntax

lmstat [-a] [-c *license_file_list*] [-f [*feature*]] [-i [*feature*] [-s[*server*] [-S [CITRIX]] [-t *timeout_value*]

| Argument | Description |
|---|---|
| -a | Displays all information. |
| -c @localhost or -c@*server* or -c *license_file_list* | Uses the specified license files. |
| -f [*feature*] | Displays the products using a feature (product license). If *feature* is not specified, usage information for all features is displayed. |
| -i [*feature*] | Displays information from the INCREMENT line for the specified feature (product license) or all features if *feature* is not specified. |
| -s [*server*] | Displays status of all license files listed on the license server or on all license servers, if *server* is not specified. |
| -S [CITRIX] | Lists all product servers using the features (product licenses) served by the Citrix vendor daemon. |
| -t *timeout_value* | Sets connection time-out to *timeout_value*. This limits the amount of time lmstat spends attempting to connect to the license server. |

The output of lmstat -c@localhost -a looks similar to:

License server status: 27000@license_server1
License files on license_server1: C:\Program Files\Citrix\Licensing\MyFiles\citrix_startup.lic:
C:\Program Files\Citrix\Licensing\MyFiles\citrixlic_20031001094430.lic:

license_server1: license server UP (MASTER) v9.2

Vendor daemon status (on license_server1):

CITRIX: UP v9.2

Feature usage info:
  Users of CITRIX: (Total of 5000 licenses issued; Total of 1 license in use)
   "CITRIX" v2002.0101, vendor: CITRIX
   floating license
    MPS mps_server1 MPS MPS_ENT_2004.0227 (v1.0)
    (license_server1/27000 101), start Tue 3/16 16:59

  Users of MPS_ENT_CCU: (Total of 30 licenses issued; Total of 1 license in use)
   "MPS_ENT_CCU" v2004.1201, vendor: CITRIX
   floating license
   MPS mps_server1 MPS 25fb337e:MPSCLIENT
   (v2004.0227) (license_server1/27000 203), start
   Wed 3/17 11:56

The following represents a breakdown of the information contained in the MPS_ENT_CCU line of the lmstat output:

| MPS | *citrix_product_name* | The name of the Citrix product that has the license checked out. |
|---|---|---|
| mps_server1 | *hostname* | Computer where the Citrix product is running. |
| MPS | *display* | The name of the Citrix product that has the license checked out. |
| license_server1 | *server_host* | Computer where the license server is running. |
| 27000 | *port* | TCP/IP port where the license server is running. |
| 203 | *handle* | License handle. The license handle is a number used to identify a specific checked out license. |
| start Wed 3/17 11:56 | *checkout_time* | Time that this license was first checked out. |

**Note:** lmstat -c@localhost -a can potentially generate a lot of network activity in systems with many product licenses checked out.

You can use lmstat -a to verify license check out data.

# Display versions of binaries (lmver)

The lmver utility displays version information for the licensing binaries, such as the command utilities. One exception is the lmadmin utility. To display version information for the lmadmin utility, use lmadmin -version.

## Syntax

lmver *binary*

## Example

lmver lmdiag

# Display or release licenses for users or devices (udadmin)

udadmin displays the licensed users and devices and releases licenses for specified users and devices.

You can release a license for a user only when the employee is no longer associated with the company or is on an extended leave of absence. You can release licenses for devices

only when the devices are out of service.

> **Caution:** Be aware that mass releases of licenses, prior to the automatic 90 day lease period, outside of the reasons highlighted above might violate the Citrix End User License Agreement (EULA). Before doing so, contact Citrix.

The udadmin command line help displays usage information only in English, but you can use the command on non-English systems.

# Syntax

udadmin [-*options*] [-delete | -list ]

| Options | Description |
|---|---|
| -f *featurename* | When used with -list or -delete, displays or releases the license for only the user or device for the specified *featurename*. |
| -user *username* | Releases the license for only the user specified by the *username*. |
| -device *devicename* | Releases the license for only the device specified by the *devicename*. |
| -a | Lists all features and versions installed on the license server. |

| Argument | Description |
|---|---|
| -delete | Releases the license for one user, feature, or device at a time. |
| -list | Displays the users and devices with licenses and the time since the last update. The time to the next update appears if significant activity occurred within 15 minutes of the last report. |
| no argument or ? | Displays usage information for the udadmin command. |

# Examples

- udadmin -list

  Displays all the users and devices.

- udadmin -list -a

  Lists all features, versions, counts of licenses, and the users and devices for each feature.

- udadmin -f XDT_ENT_UD -user u8.08 -delete

  Releases one user from one feature.

- udadmin -f XDT_ENT_UD -device dn01.88 -delete

  Releases one device from one feature.

# Subscription Advantage and licensing

When you purchase a new Citrix product, your purchase includes a one-year membership in Citrix Subscription Advantage. This membership entitles you to, among other benefits, any product updates, including major and minor releases, released during your membership period. For example, if you purchased XenDesktop, Enterprise edition on July 22, 2013, you are entitled to any updates released for XenDesktop, Enterprise edition until July 21, 2014. After your initial one-year membership period expires, you may choose to renew your Subscription Advantage membership. After paying Citrix for your renewal, you must go to citrix.com and download a license file containing your renewal license.

**Note:** A Subscription Advantage membership and its associated license are distinct from your license to run the product. If you do not renew your Subscription Advantage membership, your Citrix products do not stop working; however, you are not entitled to any software releases after it expires.

## Adding Subscription Advantage renewal files

Subscription Advantage renewal license files contain licenses, known as *renewal licenses*, that extend your Subscription Advantage membership for a one-year period. These licenses are required to run any new product releases, excluding hotfixes, that are released during your membership period.

After you download your Subscription Advantage renewal license file from citrix.com, you must add it to your license server. Copy the Subscription Advantage renewal license files to the same directory as your existing license files and reread the license files. By default, this location is *C*:\Program Files\Citrix\Licensing\MyFiles on a 32-bit server, *C*:\Program Files (x86)\Citrix\Licensing\MyFiles on a 64-bit server and /opt/citrix/licensing/LS for License Server VPX. After you add the renewal license to your license server, the license automatically unlocks any subsequent versions of the product released during the Subscription Advantage period.

If you do not add the Subscription Advantage renewal licenses immediately, your Citrix products do not stop working. However, you cannot run any new software released during your renewed membership until you have the renewal license on your license server.

You do not need to download additional licenses when you install new versions of your products during this membership period. If Citrix releases a product version after your Subscription Advantage membership ends, you must renew your Subscription Advantage membership and obtain a renewal license before you can use the new product version.

**Note:** When you download additional license files, you can delete the expired Subscription Advantage licenses; however, it is not a requirement. You might want to

keep them to make it easier to identify the upgrade that is associated with each base license.

You can find out what your Subscription Advantage dates are:

- In the License AdministrationConsole on the Dashboard.

- Using a text editor to view the license file: See the Upgrade Lines section in License file format for information about reading the contents of the license file.

# Renewing only part of your Subscription Advantage membership

If you run products from two different releases in your environment (for example, you have a mixed XenDesktop environment of versions 5.0 and 7.0) and you are not purchasing Subscription Advantage for all your licenses, Citrix recommends that you separate the product licenses on two separate license servers. Subscription Advantage is applied to the older product versions first.

For example, if you own 200 licenses for 5.0 and you renew your Subscription Advantage membership for only 100 of those licenses, it is possible that those 100 renewal licenses, which are required for 7.0, could be consumed by connections to computers running 5.0. For additional information about how Subscription Advantage is applied to different versions, see the article CTX107980 in the Citrix Knowledge Center.

# To separate your licenses (two different licenses on two different servers)

1. Select a second server and install the license server software.

2. Go to citrix.com to reallocate your original licenses (these are the licenses contained in your current license file on the original license server) and then reallocate the licenses into two new files:

   - Allocate 5.0 licenses to create a license file for your first server

   - Allocate 7.0 licenses to create another license file for the second server

3. Generate and download your Subscription Advantage files and then copy them to the server to which you want them applied.

4. Point all computers to the license server running the version of the Citrix product you want them to use. For information about pointing your Citrix product server to the license server, see your Citrix product's administrator guide.

# Set up the License Server on a Microsoft cluster

Cluster servers are groups of computers that are combined to increase availability, reliability, and scalability. Microsoft clustering functionality exists in:

- Windows Server 2008

- Windows Server 2008 R2

- Windows Server 2012

- Windows Server 2012 R2

Clustering the License Server lets users continue working during failure situations without interrupting their access to critical applications. When the active node in a cluster-enabled License Server suffers from hardware failure, failover occurs automatically. Resources are available again in a few seconds.

A typical cluster configuration has, at a minimum, one active and one passive (backup) server. When the active server in a cluster fails, the ownership of the resources in the cluster are transferred to the backup (passive) server. Typically, users cannot detect when one server in a cluster fails over to another.

When the active node of a clustered License Server fails, there is no impact on users connected to the Citrix product. The product may briefly enter the licensing grace period and an event may be written in the product's event log.

**Important:** License Server VPX does not support clustered License Servers. You can use the High Availability (HA) feature on XenServer 5.6 and later.

## Citrix Licensing in a cluster

Like most clusters, a private network is used to send heartbeats, commands, and state information between the nodes of the cluster. If the connection is interrupted, the nodes try to reconnect by the private network first, then the public network. The following diagram illustrates a cluster-enabled licensing deployment:
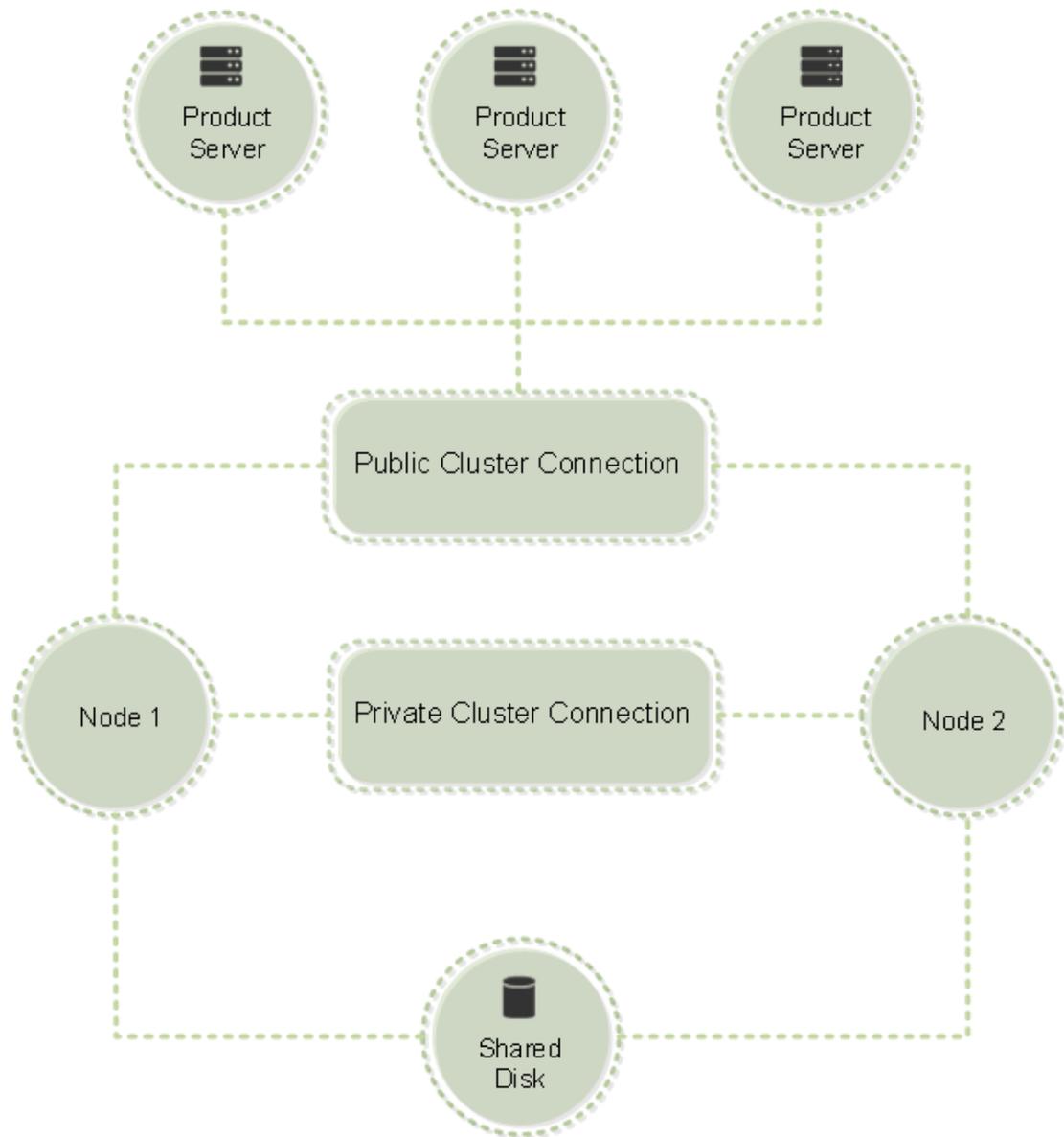
Figure 1. Communications in a clustered licensing environment

Only one node can use the resources in a cluster at any given time. If you already deployed Citrix Licensing and you want to migrate your deployment to a cluster-enabled server, keep the following points in mind:

- Because you already generated license files that reference a specific server name, you must either give the client access point the same name as the original License Server or rehost your license files with the new name of the License Server cluster.

- Host names in license files are case-sensitive; therefore, the client access point names must be the same case as the host names in the license file. If they are not, you must rehost your license files with the correct capitalization of the names. You can use the Failover Cluster Manager to ensure the client access point name matches the host name specified in the license file. Note: Cluster and host name case is not an issue if you use Studio in XenDesktop or the Simple License Service (from the Start menu on your License Server) to download your licenses.

- You must point all product installations (for example, servers running Citrix XenDesktop) serviced by the old License Server to the new License Server cluster. Change product communication settings so that they use the name of the client access point as the License Server name. For information about editing product-side communication settings, see the product's documentation.

# Opening the console or running commands

All licensing administration features available in standard deployments are also available on clustered License Servers, including the management console and the ability to run license administration commands.

Open the License Administration Console in a cluster by browsing to:

http://*client access point name*:*web service port*

Where *client access point name* is the name of the cluster and *web service port* is the port number for console communications (the default port number is 8082).

You can run many license administration commands using the argument -c @*client access point name* to specify the location of the license file(s) in the cluster. For example:

lmreread -c @*client access point name*

# Requirements for clustered License Servers

The following list outlines the requirements for setting up a License Server in a Microsoft Cluster:

- Citrix Licensing does not support Clustered Shared Volumes or third party Volume Management products for clusters.

- Before configuring Citrix Licensing for Microsoft clustering, you must have a fully-functional Microsoft cluster environment. Citrix Licensing Services runs on only one node at a time.

- To cluster the License Server, you must follow the following cluster requirements in addition to any requirements from Microsoft for hardware and clustering in general.

- You must install licensing on the cluster with the License Server installer CitrixLicensing.exe.

- When you install Citrix Licensing on a cluster, you must specify the name of the client access point when prompted for the name of the License Server during product installation.

- Citrix recommends that you use identical License Server hardware for each node in the cluster. In particular, Citrix recommends two network adapters on each node and the servers have one drive configured as a shared drive.

- Each node should have two network adapters—one for connection to the public network and the other for the node-to-node private cluster network. Citrix does not support using one network adapter for both connections.

- The public and the private IP address must be on different subnets because the Cluster Service will recognize only one network interface per subnet.

- A name resolution method, such as DNS, WINS, HOSTS, or LMHOSTS, is necessary to resolve the client access point name.

- Each server that form the cluster must be in the same domain.

- Set static IP addresses for the private network connector.

- When you generate a license file at citrix.com, use the name of the client access point when prompted for the host name.

- After you download a license file, you must copy it to the *F*:\Program Files\Citrix\Licensing\MyFiles folder (where *F*: is the shared drive for the cluster) on the License Server and reread it. Alternatively, use the License Administration Console to download, copy, and reread the file.

> **Important:** Citrix recommends setting static IP addresses for all network adapters in the cluster, both private and public. If IP addresses are obtained by Dynamic Host Configuration Protocol (DHCP), access to cluster nodes could become unavailable if the DHCP server goes down. If you must use DHCP for your public network adapter, use long lease periods to assure that the dynamically assigned lease address remains valid even if the DHCP service is temporarily lost or perform a DHCP reservation.

# Overview of the clustering process

The following steps describe the overall process involved in installing and configuring licensing on a cluster-enabled server. These steps assume you configured the clustering on the hardware on which you intend to install the License Server.

1. Create a cluster resource group. Assign a client access point and shared storage to the resource group. Ensure that the first node has control of the cluster resources and the resource group you created points to the first node.

2. On the first node of the cluster, start the Citrix Licensing installer, CitrixLicensing.exe, as an administrator and install it on the first node to the shared cluster drive (not the quorum drive). Leave the Last Node in Cluster checkbox unchecked.

3. Move the resources from the active node in the cluster to the second node.

4. Install the License Server on the second node to the same shared location as the first node. Note that you can add more than two nodes to a cluster.

5. When installing the License Server on the last node in the cluster, ensure that you check the Last Node in Cluster checkbox.

6. Obtain license files that specify the client access point name of the License Server as the host name. After obtaining license files, you must add them to the License Server and then reread them.

7. Configure your Citrix product to use the client access point name—not the node name—of the License Server cluster.

**Note:** When a clustered License Server fails over, the cluster service renames the lmgrd_debug.log to the name of the node that previously hosted the services. Then it starts the services on the new active node and creates a new lmgrd_debug.log.

# Install, upgrade, and uninstall

## Install licensing on a clustered-enabled server

The following drive letters and paths/variables are used in this procedure:

- D is the drive for your product media.

- C is the local hard drive on the specified node.

- F is the cluster shared drive resource. (This is the installation drive. That is, the place where installation files used by each node are stored.)

1. You must create a separate, noncore cluster resource group. The resource group must have attached storage assigned a drive letter and a client access point with the same hostname name used when obtaining the license file. Create this by using the failover cluster manager and going to Services and applications in Windows 2008 or Roles in Windows 2012 and select the Other Server type in the menu. Ensure all cluster resources are owned by the first node of the cluster.

2. Run the License Server installer, CitrixLicensing.exe, as an administrator.

3. On the Install Location page, set the drive letter to correspond with the cluster shared drive. By default, the licensing components are installed in F:\Program Files\Citrix\Licensing.

4. Leave the Last Node in Cluster checkbox unchecked during the installation on the first node.

5. Move the resources for the resource group you created in Step 1 to the second node.

6. In node 2 of the cluster, run CitrixLicensing.exe as an administrator.

7. Go back to Step 3. You can install more than two nodes on the cluster. You can install more than two nodes on the cluster. For each additional cluster, repeat Step 3.

8. When installing the License Server on the last node in the cluster, ensure that the Last node in the cluster check box is checked. The last node is where the ports are configured.

9. Import your license files using the console.

   a. Open the License Administration Console from http://*client access point name*:*web service port*, where *client access point name* is the name of the cluster and *web service port* is the port number for the console Web server (8082 by default).

   b. Click Administration and choose the Vendor Daemon Configuration tab.

   c. Click Import License.

   d. Click the citrix.com link.

e. On the My Account page, enter your user ID and password.

f. Select All Licensing Tools.

g. From the main menu, select Allocate.

h. Follow the process to allocate and generate your file. Select the licenses you want to download, click Download and save generated license files to the shared drive of the cluster: F:\Program Files\Citrix\Licensing\MyFiles\.

i. In the License Administration Console on the Import License File page, browse to the license file.

j. Select Overwrite License File on License Server.

k. Click Import License.

10. Reread the license files.

a. Choose the Vendor Daemon Configuration tab.

b. Click Administer in the CITRIX vendor daemon line.

c. Click Reread License Files.

# Upgrade a clustered License Server

If you are running a version of a License Server older than 11.12.1, uninstall it and then install this version. The older versions of the License Server do not conform to current Microsoft cluster guidelines.This version of the License Server has the functionality required to work with W2K8 and greater.

# Uninstall a clustered License Server

Uninstall licensing from a clustered License Server using the Control Panel > Programs and Features option from the active node.

1. From the first node in the cluster, launch Control Panel > Programs and Features .

2. Remove Citrix Licensing.

3. Using the failover cluster manager, move the resources in the Citrix Licensing resource group to the second node.

4. Remove Citrix Licensing from the second node. If there are additional nodes, repeat Steps 3 and 4 for each node, and then procede to Step 5.

5. Delete the remaining files from the shared drive.

   **Note:** The uninstallation process does not remove the license files and options file from the shared drive.

# Troubleshoot cluster-enabled license servers

**Note:** If any of the licensing services fail to start, the cluster detects that licensing is offline and attempts to restart the service three times (by default). If these attempts are unsuccessful, fail-over to the next node is initiated and the cluster attempts to start the services on the second node. If the attempts fail on the second server, the process may enter into an infinite loop. In this case, the computers running Citrix products fall into the grace period. During the grace period, client connections are not affected.

When troubleshooting a cluster-enabled license server, try the following:

- If you move the resources to the other node, do you still see the issue?

- Did you check the Use Network Name for Computer Name check box in the Microsoft Cluster Server? See http://support.microsoft.com/kb/198893.

- For Windows Server 2008, Windows Server 2008 R2, and Windows Server 2012:

  1. In the Failover Cluster Management window, from the left pane, select the cluster. In the middle pane, the summary information for the cluster appears.

  2. Click the Cluster Core Resources title to expand the section.

  3. Verify that the cluster resources are all online (green arrow).

# Back up the License Server

Depending on how crucial the applications associated with your licenses are, you may want to create backup License Servers. Although Citrix stores backup copies of your licenses, downloading many replacement licenses can be time-consuming. You can either store backup licenses on a network file share or have a configured backup License Server ready in case of License Server failure.

## Redundancy solutions

Setting up redundancy solutions might be necessary only in mission-critical environments. For smaller or less mission-critical deployments, you can back up your License Server by creating a duplicate License Server that can be stored on or off the network.

You can ensure redundancy for your mission-critical environments by:

- Creating a clustered License Server. For more information about clustering and licensing, see Setting up the License Server on a Microsoft Cluster.

- Using the High Availability (HA) feature on XenServer 5.6 and later.

- Duplicating the License Server and its contents - Give the duplicate computer the same name as the active License Server and store it off the network.

- Storing an additional License Server on the network with a different server name - In this case, when the active License Server fails, you need to change the backup server name to start using it as the active License Server.

- Using a network appliance - If you are using only one License Server to service license requests at any time, you can use a network appliance that detects server or network outages and route traffic to a backup License Server.

All methods let you exchange one server license for another without a loss of service, provided the exchange occurs within the grace period. There are key points to remember:

- Because license files reference the server specified during allocation, you can use the files only on a server with the same binding information (server name or FQDN or Ethernet address) as the original License Server

- You cannot have two License Servers with the same name on your network active at the same time

- You must add any additional licenses that you download to both the active License Server and the backup License Server

# Frequently Asked Questions for Licensing



These are frequently asked questions about your licensing environment.

## Can I rename the license server?

License files run only on the license server for which they were made. More specifically, license files contain the hostname or binding identifier of the license server you specify when you allocate the licenses. You cannot use the license file that you generated, which specifies a particular license server name, or a MAC address (in the case of an appliance.), with a different license server name or appliance.

Create new license files that reference the new server name or MAC address by reallocating and generating the new file.

## If I upgrade my license server will it affect my license files?

No. The license server and all product licenses are fully backward compatible and will not introduce any issues into your environment.

## Can a single license server supply licenses to users connecting from different servers using different product editions?

Yes. One license server can contain licenses for multiple editions of a Citrix product. The type of license checked out corresponds to the edition that is configured on the product server. A product server is configured to consume an edition of a license and therefore will check out that edition of a license.

For example:

ProductServerA is configured to checkout Enterprise licenses.

ProductServerB is configured to checkout Platinum licenses.

LicenseServer1 contains both Enterprise and Platinum licenses.

- Users who connect to LicenseServer1 from ProductServerA will check out Enterprise licenses only. Once the number of Enterprise licenses on LicenseServer1 is exceeded, new requests from ProductServerA users will be denied until existing Enterprise connection licenses are released.

- Users who connect to LicenseServer1 from ProductServerB will check out Platinum licenses only. Once again, if the number of Platinum licenses on LicenseServer1 is exceeded, new requests from ProductServerB users will be denied until Platinum connection licenses are released.

**Note:** License checkout times may increase if many product servers with many users are contacting the same license server simultaneously. One license server can accept only 10,000 inbound TCP-IP requests at one time. If you are planning to have more than 10,000 computers connecting at the same time, Citrix recommends that you use several license servers.

Examples of Possible Deployments:

Scenario 1: Two farms

- FarmA contains product servers configured for Enterprise edition

- FarmB contains product servers configured for Platinum edition

- One license server (shared)

- User1, User2, User3, User4...User5000 connect only to FarmA

- User5001, User5002, User5003...User10000 connect only to FarmB

Scenario 2: One farm

- The farm has two sets of published applications

- One set of applications is hosted by product servers configured for Enterprise edition

- One set of applications is hosted by product servers configured for Platinum edition

- One license server (shared)

- User1, User2, User3, User4...User5000 connect only to product servers with the first set of applications

- User5001, User5002, User5003...User10000 connect only to product servers with the second set of applications