Licensing 11.16.6

Contents

Licensing 11.16.6

December 17, 2023

Every Citrix product environment must have at least one shared or dedicated License Server. License servers are computers that are partly or fully dedicated to storing and managing licenses. Citrix products request licenses from a License Server if users attempt to connect.

Servers running Citrix products contact the License Server to obtain licenses.

If users connect to a Citrix product, it draws licenses from the License Server. 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.
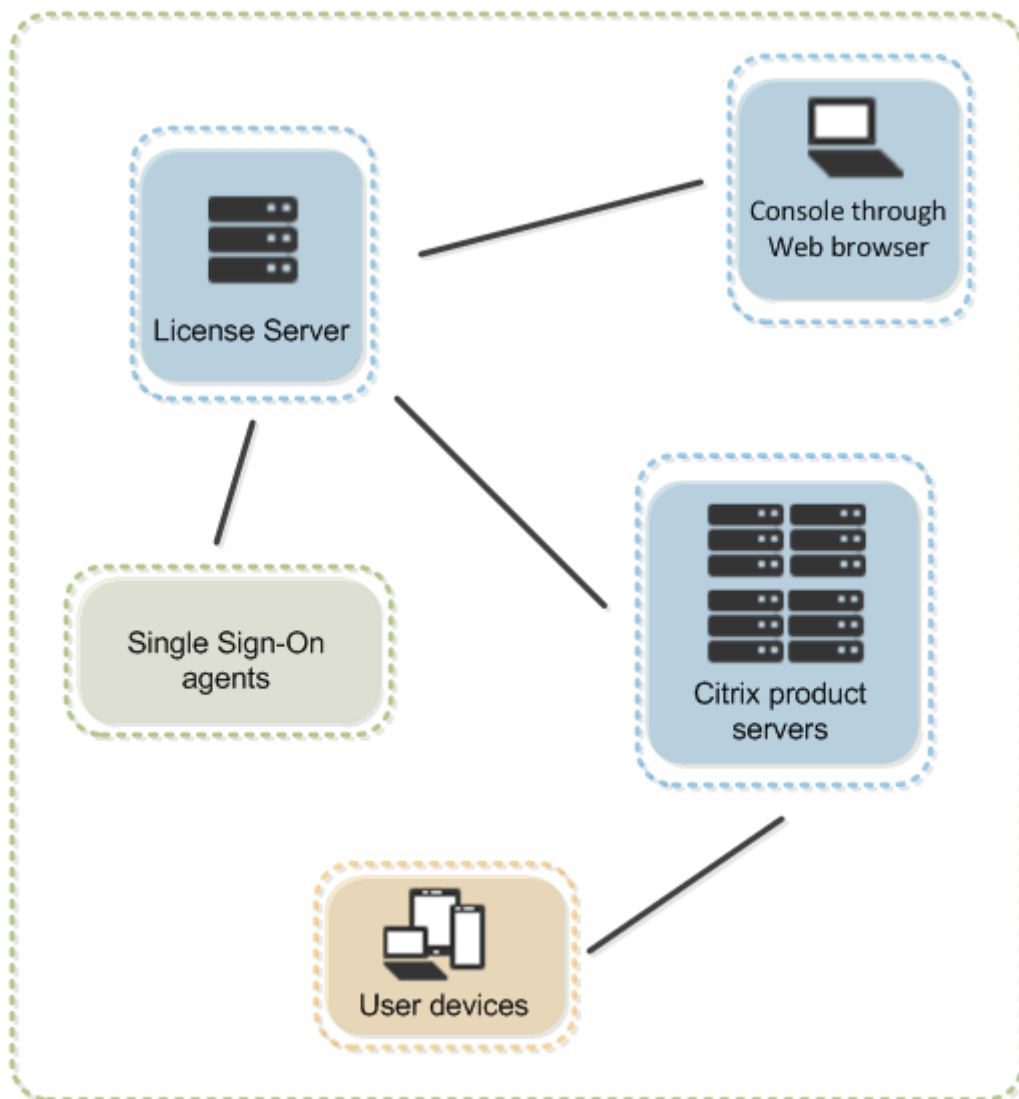
Depending on the size and configuration of your product deployment, you might deploy licensing on

a server shared with other applications, a dedicated License Server, or multiple License Servers.

License files must be on the License Server that is associated with the product you are licensing. The product must be configured to communicate with that specific License Server. The Citrix Licensing Manager lets you manage and monitor your Citrix licenses by providing a user interface to the License Server. You can view licenses and alerts, import license files, create historical usage reports, and manage License Server settings.

Product-specific licensing information

- Citrix ADC
- Citrix Cloud
- Citrix Endpoint Management
- Citrix Gateway
- Citrix Hypervisor
- Citrix Virtual Apps and Desktops

What's new

December 18, 2023

What's new in the License Server build 34000

Release date: March 17, 2021

Lmadmin.exe transitioned to Lmgrd.exe

In this release, the Citrix License Server's existing user management **lmadmin.exe** is transitioned to Citrix owned user management **lmgrd.exe** for improved security and less 3rd party dependencies.

OpenSSL version upgrade

OpenSSL version: 1.1.1h

Libxml2 version upgrade

libxml2 version: 2.9.10

What's new in the License Server build 33000

Release date: December 15, 2020

A new configuration option added to the Configure usage telemetry

- With the new option under **Configure usage telemetry** you can choose not to send data or to send data in an unidentifiable format.

For more information, see Configure usage telemetry.

Apache version update

Apache version 2.4.46.

OpenSSL version upgrade

OpenSSL 1.1.1g

What's new in the License Server build 32000

Release date: September 29, 2020

Enhancement to the Settings and Historical Use sections

- In the **Citrix License Manager > Settings > Usage and Statistics** screen, use the **Configure usage telemetry** to manage data privacy preferences related to user name or device ID details.

  For more information, see Configure usage telemetry.

- In the **Citrix License Manager > Historical Use > Customer Success Services Date** field, **All** is the new default option in the menu. It is used to export data for multiple Customer Success Services dates.

jQuery version update

The Citrix Licensing Manager is upgraded to jQuery version 3.5.1.

What's new in the License Server build 31000

Release date: June 17, 2020

Removal of the Citrix License Administration Console

The Citrix License Administration Console was removed from this version of the License Server. Use the Citrix Licensing Manager.

Apache version upgrade

Apache v2.4.43

OpenSSL version upgrade

OpenSSL 1.1.1e

Older cipher suite support

TLS 1.0 and 1.1, DES, 3DES, RC4, and MD5 cipher suites are not supported. If removal of these cipher suites causes an issue for older versions (released before 2009) of Studio and Director then change the `SSLEngine` configuration in `C:\Program Files (x86)\Citrix\Licensing\WebServicesForLicensing\Apache\conf\extra\httpd-ssl.conf`.

Fixed issues

December 5, 2023

Fixed issues in License Server build 34000

- In the **Citrix Licensing manager > Settings > Account > User Administration** section, the Username/Group name in the Japanese language or double-byte characters appear garbled. The registered double-byte User/Group names cannot log on to the Citrix Licensing Manager. [LIC-2032]

Fixed issues in License Server build 33000

There are no fixed issues in this build.

Fixed issues in License Server build 32000

- License Servers on Kernel-based Virtual Machines (KVMs) might be unable to successfully send reports to the License Usage Insights Service. [LIC-2555]

- Licenses with expiry date incorrectly formatted as `D-MMM-YYYY` appear as **permanent** in Studio. Use the Citrix Licensing Manager to display the correct license expiration dates. [LIC-2556]

- When used with concurrent licenses, the License Server build 31000 is not backward compatible with the Citrix Virtual Apps (previously, XenApp) 6.5 and earlier version. Use License Server v11.16.6 build 32000.[LIC-2807]

Fixed issues in License Server build 31000 and earlier

- When you access the Citrix Licensing Manager from the Start menu for the first time after installation, an error message might appear on Firefox and Chrome browsers. [LIC-195]

- In a double-hop scenario, a single user might consume two Citrix concurrent user (CCU) licenses. Double hop is when a user launches the HDX session within another HDX session (for example, when you launch a published application within a virtual desktop session). [CVADHELP-14150]

Known issues

December 5, 2023

Known issues in License Server build 34000

- In a cross-domain environment, the Citrix Licensing Manager and POSH cmdlet support only two-way trust to add a user.

With the external trust(one-way trust), the Citrix Licensing Manager, and the POSH cmdlet displays the following error message `Active Directory account resolution failed`.

We recommend that you run the **CtxManageUserAndGroup.exe** from the 'Citrix\Licensing\LS\resource' location with the following parameters:

- Command to add a user: `CtxManageUserAndGroup.exe –useradd "domain\username"`
  `–Role "admin/user"`
- Command to add a group: `CtxManageUserAndGroup.exe –useradd "domain\username`
  `" –Role "adminGroup/userGroup"`

For example, if domain1 has an outgoing trust to domain2, then a user from domain2 can authenticate in domain1 and add a user to License Server using the executable only. [LIC-3268]

Known issues in License Server build 32000 and earlier

- In the **Citrix Licensing manager > Settings > Account > User Administration** section, the Username/Group name in the Japanese language or double-byte characters appear garbled. The registered double-byte User/Group names cannot log on to the Citrix Licensing Manager.

  The workaround is to use English user/group names or without double-byte characters. [LIC-2032]

Known issues in License Server build 31000 and earlier

- User/Device license fails to checkout with a space in the username and displays the following error message:

  `Error: checkoutOutBatch failed: Error_UNEXPECTED_DATA: Unexpected`
  `server response 'UD: ERROR_SYNTAX'`

  Use the License Server build 30000 as a workaround. [LIC-3506]

- The Citrix Licensing Manager does not differentiate between users and groups. For example, you can choose to add a user but add a group instead. [LIC-438]

- The Windows 2016 **Start** menu, might not list the Citrix Licensing Manager. Workaround: Use this URL to access the console:

  `https://licenseservername:8083` [LIC-506]

- When registering your License Server with Citrix Cloud, the Citrix Licensing Manager UI might stick and display a spinning wheel. To avoid this issue, before registering your License Server with Citrix Cloud, ensure that you have the Digicert Global Root CA certificates installed in the system. These certificates are updated in the Windows update. If they're not installed, manually download and install the certificates before starting the Citrix Cloud registration. Also, ensure you verify firewall settings. For more information, see the **Important** note under Register and remove registration with Citrix Cloud. [LIC-1510]

- License Servers on Kernel-based Virtual Machines (KVMs) might be unable to successfully send reports to the License Usage Insights Service. [LIC-2555]

- When used with concurrent licenses, the License Server build 31000 is not backward compatible with the Citrix Virtual Apps (previously, XenApp) 6.5 and earlier version. Use License Server v11.16.6 build 30000.[LIC-2807]

License file issues

- The License Server ignores license files that have multiple lines referencing `HOSTNAME=`. Licenses in these files cannot be checked out. This issue is caused when you download licenses associated to different License Server host names in to the same license file.

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

- Licenses with expiry date incorrectly formatted as `D-MMM-YYYY` appear as **permanent** in Studio. Use the Citrix Licensing Manager to display the correct license expiration dates. [LIC-2556]

Third party notices

July 12, 2021

Citrix Licensing 11.16.6 might include third party software licensed under the terms defined in the following documents:

- Non-Commercial Software Disclosures For FlexNet Publisher 2020 (11.16.6) (PDF download)
- FlexNet Publisher Documentation Supplement Open Source Licenses applicable to FlexNet Publisher 11.16.6 (PDF download)

System requirements for Citrix Licensing

October 7, 2023

Requirements for Licensing

Citrix Licensing is compatible with the same hardware required to support the compatible operating systems. Extra hardware is not required.

> **Notes:**
>
> - We do not support running third party vendor daemons on the Citrix License Server, or the Citrix vendor daemon on third party license servers.
> - The License Server does not support multi-homing (two network cards plugged into distinct networks).
> - The Citrix Licensing Manager installs licenses only on the License Server where it is installed.
> - License Servers don't communicate with each other.

Operating system:

You can install the License Server on servers running the following Microsoft operating systems. We recommend that you install the latest Microsoft Service Pack and updates.

- Windows Server 2019 Family
- Windows Server 2016 Family
- Windows Server 2012 R2 Family

Server Core installations are not supported.

Disk space requirement:

- 161 MB for the licensing components
- 2 GB for user/device licensing
- More disk space might be required based on the amount of historical data that is configured in the Citrix Licensing Manager.

Microsoft .NET Framework minimum requirements:

- Microsoft .NET Framework 4.7.2

Cluster platforms:

- Windows Server 2019 Family
- Windows Server 2016 Family
- Windows Server 2012 R2 Family

Browsers:

We tested the following browsers. Other browsers might work, but all functionality might not be available.

- Microsoft Edge
- Mozilla Firefox
- Google Chrome
- Safari

What's next

- Get started, install, and configure the License Server

Licensing FAQ

December 18, 2023

The following questions are asked frequently about your licensing environment.

Licenses

What is a license file and what do I do with it?

The license file is a text file that contains the following:

- Product licensing information
- License Server name (or other binding identifier)
- Customer Success Services membership renewal date
- License expiration date (if applicable)
- Other system information

When you purchase a Citrix product and allocate licenses, a license file is generated. The License Server uses this file to determine whether to grant a license to a Citrix product. For more information, see License files.

Why would I return a license?

An example would be if you're decommissioning a License Server, but you're not ready to deploy existing licenses elsewhere. For more information, see Return allocations.

What happens to returned licenses?

Returned licenses are put back in the licensing pool. You can then allocate these licenses in any quantity at any time. After you return a license, remove the old license file from the License Server. For more information, see Return allocations and Modify licenses.

What happens when I hide a license?

Hide (previously called archiving) doesn't remove licenses from an account. Hiding removes them from view. To view hide and unhide licenses, see Hide and unhide licenses.

How can I get a copy of my license file?

You can obtain a copy of your license file from your License Server. Alternatively, all purchased licenses and allocated license files are available from the secure **My Account** > **Manage Licenses** portal at www.citrix.com.

Allocating licenses

For more information about allocating licenses, see Allocate licenses.

What does allocating licenses mean?

When you allocate licenses, you apportion purchased licenses by product and License Server so you can split them among multiple environments or use cases. For example, your organization might own 1,000 licenses for the same product. You might want to use 800 in 1 location and 200 in another location. You can allocate 800 licenses to a License Server in the first location today, and allocate the remaining 200 later to a different License Server.

What's the difference between a host ID type and a host ID?

The host ID type is the required binding type you supply to allocate licenses. The host ID is the License Server host name, MAC address, or other binding ID required to allocate licenses.

Why can't I partially allocate some licenses?

Some licenses do not allow partial allocation.

The License Server

Can I rename the License Server?

License files run only on the License Server that is bind during the license allocation. License files contain the host name or binding identifier of the License Server you specify when you allocate the

licenses. You cannot use the license file that you generated for a particular License Server or a MAC address (for an appliance), on a different License Server or appliance.

Create license files that reference the new server name or MAC address by returning allocations and generating the new file on `citrix.com`. For more information, see Manage Licenses on citrix.com.

If I upgrade my License Server does it affect my license files?

No. The License Server and all product licenses are fully backward compatible and do not introduce any issues into your environment. For more information about upgrading the License Server, see Upgrade the License Server.

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 a specific edition of a license and checks out that license edition.

For more information and examples, see Single License Server and different servers using different product editions.

Where is the License Administration Console?

The License Administration Console is not available in License Server 11.16.6 and later. We recommend you
use the Citrix Licensing Manager to manage the License Server.

Disaster recovery and maintenance

How do I license my disaster recovery site?

You can use the same licenses for your disaster recovery that you use for your production environment.

- Configure and manage your disaster recovery environment independently of your production environment.
- Don't use both the production and backup License Servers to service license checkouts at the same time.

- Make only one License Server accessible at any one time
- The License Server in your disaster recovery environment must have an identical host name to the License Server in your production environment.

For more information, see Disaster recovery - back up and redundancy.

Citrix licensing technical overview

December 7, 2023

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 required to license your product. These files are stored on the License Server.

Citrix Licensing Manager. The recommended License Server management method.

For more information about the following Citrix Licensing Manager features, see Settings:

- Configure user and group accounts.
- Short code registration of the License Server to Citrix Cloud and easy removal of registration.
- Change these ports:

    – License Server (default 27000)
    – Vendor Daemon (default 7279)
    – Web Services for Licensing (default 8083)

- Check for and install the Customer Success Services renewal.
- Enable and disable the supplemental grace period.
- Register your License Server with Citrix Cloud.
- Configure historical data retention by selecting a retention period. Default data retention is 180 days.
- Configure Citrix Customer Experience (CEIP) and Call Home at any time.
- Retry failed citrix.com and Customer Experience Improvement Program uploads.
- Force data uploads to Citrix.

For more information about the following Citrix Licensing Manager features, see Install licenses:

- Simplified installation of license files on the License Server using a license access code or down-loaded file.
- Display details of licenses after they are installed.

For more information about the following Citrix Licensing Manager features, see *Dashboard* Dashboard and Historical Use:

- Dashboard that displays installed, in-use, expired and available licenses, and Customer Success Services dates.
- Enhanced user/device license usage reporting.

For more information about the following Citrix Licensing Manager feature, see *Historical Use* in Dashboard and Historical Use:

- Simplify data export by allowing you to select all products, all license models, and all Customer Success Services (Subscription Advantage) dates.

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.

Citrix License Management Service. Enables management of your license environment through a license management console within Citrix Insight Services. This service assists with license management and support:

- Allocating new licenses if you are about to exceed your license capacity
- Rescinding old licenses after an upgrade
- Managing duplicate licenses in a Disaster Recovery (DR) environment

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

For more information, see Licensing elements and Services.

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. Some Citrix products check out the license when a user connects to the product. 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.

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

> **Note**
>
> 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 that you use the FQDN.

There are three stages of the license checkout process.
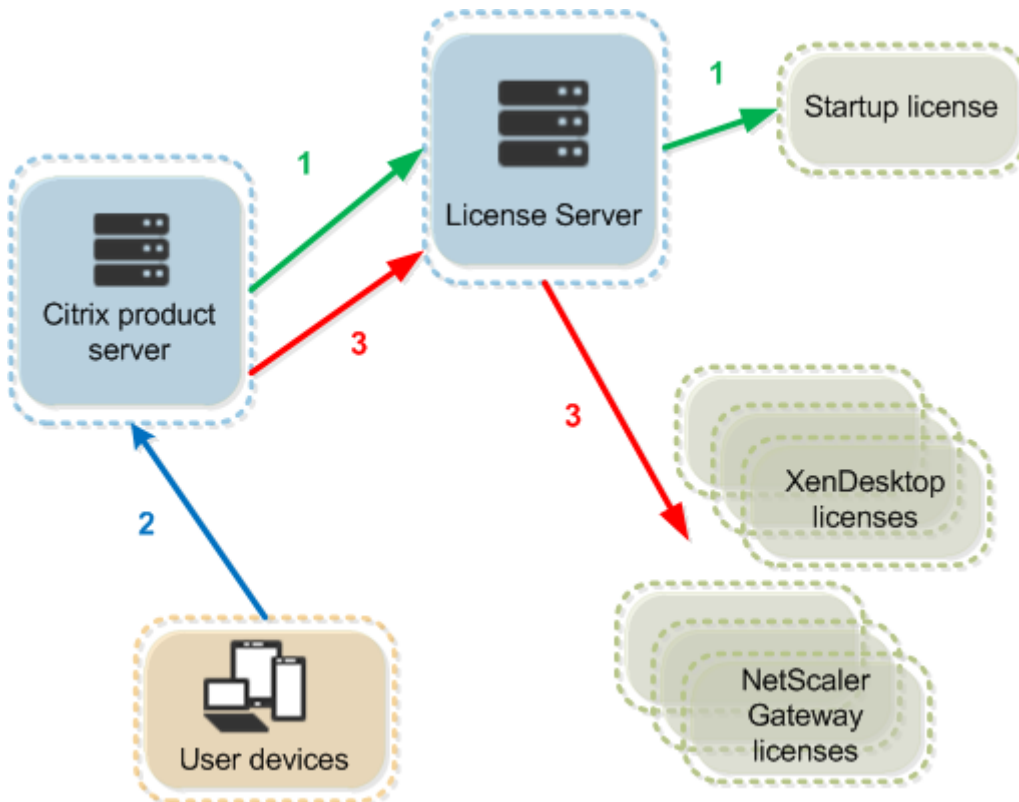
A Citrix product goes through a three-step process to check out licenses:

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 Citrix Virtual Desktops, 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. During the grace period, the product uses its local record of the licenses to continue licensing the product. Citrix products update this record every hour.

Scalability

This section provides guidance to ensure successful License Server usage by examining the impact of license usage scalability in a Citrix environment. We performed this scalability testing:

Virtual Machine Hardware/Configuration:
Intel Xeon E5-2650 v3 @ 2.30 GHz
4 Virtual CPUs
8 GB RAM
Windows Server 2016

6.5 and earlier Concurrent:

- 3000 connected Citrix Virtual Apps servers
- 53,000 concurrent licenses
- 50–60 connections per second

Efforts to scale more than 53,000 licenses result in servers going into a grace period. Also, there are issues with WMI and lmstat. We recommend that you maintain 50,000 or fewer concurrent connections per License Server.

7.x Concurrent:

- 16 Delivery Controllers
- 70,000 concurrent licenses
- 50–60 checkouts per second

7.x User/Device:

- 16 Delivery Controllers
- 150,000 user/device licenses
- 50/60 checkouts per second

CITRIX.exe is a single threaded process. While it's serving Concurrent connections, the maximum connection limit is based on the single core processor speed. During peak activity, CITRIX.exe uses 100% of a single core and eventually starts timing out. This usage might cause Citrix products to go into a grace period or errors in the License Server utilities. After the License Server has processed backlog connections, it returns to normal. Monitor the CITRIX.exe processor usage to determine if a faster processor is required. We recommend if you experience issues in high scalability environments, you deploy more License Servers.

User/Device technology is multi-threaded and scales better than Concurrent. During license optimizations, you might see that periods were licensing activity takes 100% of a single core. This usage is normal and doesn't impact the CITRIX.exe processor usage or functionality. We recommend that you monitor License Server resource usage and add more License Servers to maintain a properly functioning environment.

> **Note**
>
> Running `WMI`, `lmstat`, `lmutil`, or other inventory actions can negatively impact the License Server performance. We recommend that you minimize these activities. If you require usage data, export the data from the Citrix Licensing Manager. For more information, see Historical Use.

Single License Server and different servers using different product editions

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 a specific edition of a license and checks out that license edition.

For example:

ProductServerA is configured to check out Advanced licenses.

ProductServerB is configured to check out Premium licenses.

LicenseServer1 contains both Advanced and Premium licenses.

- Users who connect to LicenseServer1 from ProductServerA check out Advanced licenses only. After the number of Advanced licenses on LicenseServer1 is exceeded, new requests from ProductServerA users are denied until existing Advanced connection licenses are released.
- Users who connect to LicenseServer1 from ProductServerB check out Premium licenses only. If the number of Premium licenses on LicenseServer1 is exceeded, new requests from ProductServerB users are denied until Premium connection licenses are released.

> **Note**
>
> License checkout times might increase if many product servers that have 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 Citrix product servers connecting at the same time, we recommend that you use several License Servers. These product servers can include Citrix Virtual Apps and Desktops, Delivery Controllers, and Appliances.

Examples of possible deployments:

Scenario 1: Two sites

- SiteA contains product servers configured for the Advanced edition.
- SiteB contains product servers configured for the Premium edition.
- One License Server (shared).
- User1, User2, User3, User4…User5000 connect only to SiteA.
- User5001, User5002, User5003…User10000 connect only to SiteB.

Scenario 2: One site

- The site has two sets of published applications.
- The site is configured as Citrix Virtual Apps and Desktops Premium concurrent and Delivery Groups 2 as Citrix Virtual Apps and Desktops user/device
- One License Server (shared).
- User1, User2, User3, User4…User5000 connect only to the concurrent licenses.
- User5001, User5002, User5003…User10000 connect only to Delivery Group 2 user/device licenses.

Grace period

> **Note:**
>
> The grace period and supplemental grace period are two different features.
>
> The grace period and supplemental grace period features do not apply when licenses expire.
>
> For more information about the supplemental grace period, see Supplemental grace period.

If product servers lose communication with the License Server, the users and the products are protected by a grace period. The grace period allows the product servers to continue operations as if they were still communicating with the License Server. After the Citrix product checks out a startup license, the product and the License Server exchange *heartbeat* messages every five minutes. The heartbeat indicates to each that they are still up and running. If the product and the License Server don't send or receive heartbeats, the product lapses into the licensing grace period and licenses itself through the cached information.

Citrix sets the grace period. 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.

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.

Limitation

The user name is case sensitive in some localized languages. To log on to the Citrix Licensing Manager, set the *domain-name\username* in UPPER CASE if it contains non-ASCII characters.
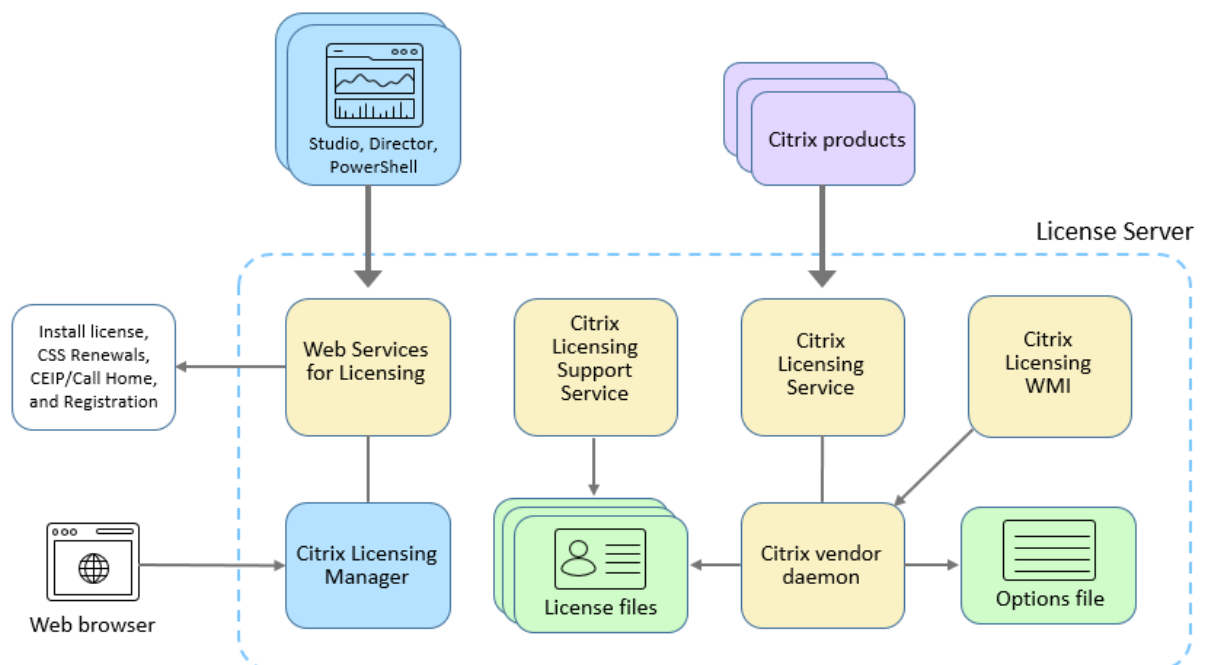
Licensing elements

December 5, 2023

The License Server comprises several licensing elements:

- Citrix vendor daemon
- Options configuration file
- License request process
- Citrix Licensing Customer Experience Improvement Program (CEIP), Call Home, and compliance

This diagram shows Citrix products connect to the License Server.

Citrix vendor daemon

The Citrix vendor daemon (CITRIX), a process that runs on the License Server, grants licenses. 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.

Options file

The options file (Citrix.opt) is a License Server configuration file. The Citrix vendor daemon reads this file 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, logging levels, and other user-defined customizations. The Customer Experience Improvement Program (CEIP) and Call Home configurations are stored in this file.

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.

Citrix licensing Customer Experience Improvement Program (CEIP), Call Home, and compliance usage and analytics programs

The Citrix Licensing CEIP, Call Home, and compliance usage and analytics programs are data collection programs designed to improve your product experience and gather important license compliance information.

Citrix handles your data in accordance with the terms of your contract with Citrix, and protects it as specified in the Citrix Services Security Exhibit available on the Citrix Trust Center.

CEIP and compliance are enabled by default during License Server installation. Call Home is voluntary. You can change your participation in the programs at any time by using the Citrix Licensing Manager. For more information, see "Share usage statistics" under Usage and statistics.

> **Important**
>
> The Citrix Service Provider program requires CEIP and Call Home. If you have Citrix Service Provider licenses installed, you can change the settings, but you cannot disable CEIP or Call Home. When the License Server detects Citrix Service Provider licenses, it enforces daily uploads.

For information about configuring a proxy server, see *Configure a proxy server manually* in the Get started article.

For information about command-line installation, see Use the Windows command line to install licensing.

Citrix Licensing Customer Experience Improvement Program (CEIP)

The CEIP program gathers configuration and usage data from your Citrix product deployment and sends the data to Citrix once a day, based on the service start time.

Data Collected	Description	What We Use It For
License usage and compliance data	Information about the Citrix licenses installed on the License Server, including product ID, license type, and quantity, in addition to license usage information.	We use this data to track how licenses are consumed and track customer population compliance.

Data Collected	Description	What We Use It For
License Server deployment and configuration data	Information about the License Server and how it was deployed, including license server version, operating system version, and configuration states.	We use this data to inform further development of Citrix products and to improve the customer experience.

CEIP data elements for build 32000:

License Server Information	Feature	SADate	StartupCounts	SerialNumbers
GUID	FeatureID	DateSampleStartUTC	LPE ID	Serial
DateSampleStopUTC	UDBinFileCreatedUTC	DateSampleStopUTC		ID
DateSampleStop	UDReportGenerationUTC	CntUsedMax		SADate
PortLACHTTP	EventLog	Active		SN
PortLACHTTPS	UDAdminUsersReleased	Licensees		
PortLACRedirect	UDAdminDevicesReleased	CountInstalled		
PortLS		Pool		
PortVD		CountTotal		
PortWSL		Devices		
UDUseDomain		Usage Samples		
OptFileNoLogStatus		Serial		
OptFileComplianceConfig		DateExpiration		
UDUserNameCase		DateIssued		
UDDeviceNameCase		VendorStr		
SARenewalCheckOption		CountInstalled		
EncoreSamplingPeriod		CountOverdraft		
EncoreRetentionTime		Sample		
EncoreEnabled		Timestamp		
SLSProxy		CountInUse		
SLSProxyWinAutoURL		OverDraft		

License Server Information	Feature	SADate	StartupCounts	SerialNumbers
SLSProxyWinIE		Installed		
SLSProxyWinDefault		Users		
SLSProxySlsConfig				
OS				
WindowsBuildLabEx				
WindowsEditionID				
WindowsInstallationType				
WindowsProductName				
WindowsDomainMember				
OSBits				
OSLocale				
VM				
VMIDString				
VMHVIDString				
InstallUTC				
ProductVersion				
UpgradeFrom				
SetupCluster				
SGPClockErrorCode				
SGPMaxDays				
SupplementalGracePeriod				

CEIP data elements for build 31000 and earlier:

GUID	WindowsEditionID	FlexeraVersion	Feature ID
DateSampleStopUTC	WindowsInstallationType	SGPClockErrorCode	UDBinFileCreatedUTC
DateSampleStop	WindowsProductName	SGPMaxDays	UDReportGenerationUTC

PortLACHTTP	WindowsDomainMember	Services	Event Log
PortLACHTTPS	OSBits	Name	SADate
PortLACRedirect	OSLocale	DisplayName	DateSampleStartUTC
PortLS	MemPhysMB	State	DateSampleStopUTC
PortVD	CPUIDString	StartType	CountUsedMax
UDUseDomain	VM	Path	Active
OptFileNoLogStatus	VMIDString	FirewallProfile	Licensees
OptFileComplianceConfig	VMHVIDString	FirewallRule	CountTotal
UDUserNameCase	CPUCountLogical	Profile	CountInstalled
UDDeviceNameCase	DiskFreeMB	Enabled	Pool
PortWSL	DiskTotalMB	BlockAllInboundTraffic	Usage Samples
SARenewalCheckOption	HasIPv4	DefaultInboundAction	Sample
EncoreSamplingPeriod	HasIPv4_DHCP	DefaultOutboundAction	Timestamp
EncoreRetentionTime	HasIPv6	FirewallRule	CountInUse
EncoreEnabled	HasIPv6_DHCP	Name	OverDraft
SLSProxy	HardwareId	Enabled	Installed
SLSProxyWinAutoURL	FQDN	Application	LPE ID
SLSProxyWinIE	PrivacySetting	Protocol	Count
SLSProxyWinDefault	InstallUTC	LocalPorts	
SLSProxySlsConfig	ProductVersion	Action	
OS	UpgradeFrom	Direction	
WindowsBuildLabEx	SetupCluster	Inventory	

Citrix Call Home

Call Home is voluntary. When you opt in, Call Home performs a periodic collection of system and product configuration, performance, errors, and more. This information is transmitted to Citrix Insight Services once a day, based on the service start time.

You can scramble user names and device information on the License Server before it's sent to Citrix for processing. For more information, see Anonymize usernames through the License Server.

If you want to disable the Call Home Citrix Cloud-registered License Server upload, use the Citrix Licensing Manager. Change your selection under **Usage and statistics > Share usage statistics** to either **Help improve Citrix products by sending detailed License Server system and non-identifiable usage information (which does not identify users) to the Citrix Customer Experience Improvement Program (CEIP)** or **Send only basic License Server system and usage information (which does not identify users) required for license compliance purposes**. You're still registered with Citrix Cloud, but your Call Home information isn't sent.

If you want to remove your registration, see *Register and remove registration with Citrix Cloud* in Usage and statistics.

Data Collected	Description	What We Use It For
License usage and compliance data	Information about the Citrix licenses installed on the License Server, including product ID, license type, and quantity, in addition to license usage information.	We use this data to track how licenses are consumed and track customer population compliance. Registering the License Server with Citrix Cloud allows you to track your usage over time in Citrix Cloud.
License Server deployment and configuration data	Information about the License Server and how it was deployed, including license server version, operating system version, and configuration states.	We use this data to inform further development of Citrix products and to improve the customer experience.

Call Home data elements for build 32000:

License Server Information	Feature	SADate	StartupCounts	SerialNumbers
GUID	FeatureID	DateSampleStartUTC	LPE ID	Serial
DateSampleStopUTC	UDBinFileCreatedUTC	DateSampleStopUTC		ID
DateSampleStop	UDReportGenerationUTC	CountUsedMax		SADate
PortLACHTTP	EventLog	Active		SN
PortLACHTTPS	UDAdminUsersReleased	Licensees		
PortLACRedirect	UDAdminDevicesReleased	CountInstalled		
PortLS		Pool		

License Server Information	Feature	SADate	StartupCounts	SerialNumbers
PortVD		CountTotal		
CustomerID		Users		
OrgID		Devices		
PortWSL		Usage Samples		
UDUseDomain		Serial		
OptFileNoLogStatus		DateExpiration		
OptFileComplianceConfig		DateIssued		
UDUserNameCase		VendorStr		
UDDeviceNameCase		CountInstalled		
SARenewalCheckOption		CountOverdraft		
EncoreSamplingPeriod		Sample		
EncoreRetentionTime		Timestamp		
EncoreEnabled		CountInUse		
SLSProxy		OverDraft		
SLSProxyWinAutoURL		Installed		
SLSProxyWinIE				
SLSProxyWinDefault				
SLSProxySlsConfig				
OS				
WindowsBuildLabEx				
WindowsEditionID				
WindowsInstallationType				
WindowsProductName				
WindowsDomainMember				
OSBits				
OSLocale				
VM				
VMIDString				

License Server Information	Feature	SADate	StartupCounts	SerialNumbers
VMHVIDString				
HardwareId				
FQDN				
PrivacySetting				
InstallUTC				
ProductVersion				
UpgradeFrom				
SetupCluster				
SGPClockErrorCode				
SGPMaxDays				
SupplementalGracePeriod				

Citrix Call Home data elements for build 31000 and earlier:

GUID	WindowsEditionID	FlexeraVersion	Feature ID
DateSampleStopUTC	WindowsInstallationType	SGPClockErrorCode	UDBinFileCreatedUTC
DateSampleStop	WindowsProductName	SGPMaxDays	UDReportGenerationUTC
PortLACHTTP	WindowsDomainMember	Services	Event Log
PortLACHTTPS	OSBits	Name	SADate
PortLACRedirect	OSLocale	DisplayName	DateSampleStartUTC
PortLS	MemPhysMB	State	DateSampleStopUTC
PortVD	CPUIDString	StartType	CountUsedMax
UDUseDomain	VM	Path	Active
OptFileNoLogStatus	VMIDString	FirewallProfile	Licensees
OptFileComplianceConfig	VMHVIDString	FirewallRule	CountTotal
UDUserNameCase	CPUCountLogical	Profile	CountInstalled
UDDeviceNameCase	DiskFreeMB	Enabled	Pool

PortWSL	DiskTotalMB	BlockAllInboundTraffic	Usage Samples
SARenewalCheckOption	HasIPv4	DefaultInboundAction	Sample
EncoreSamplingPeriod	HasIPv4_DHCP	DefaultOutboundAction	Timestamp
EncoreRetentionTime	HasIPv6	FirewallRule	CountInUse
EncoreEnabled	HasIPv6_DHCP	Name	OverDraft
SLSProxy	HardwareId	Enabled	Installed
SLSProxyWinAutoURL	FQDN	Application	LPE ID
SLSProxyWinIE	PrivacySetting	Protocol	Count
SLSProxyWinDefault	InstallUTC	LocalPorts	
SLSProxySlsConfig	ProductVersion	Action	
OS	UpgradeFrom	Direction	
WindowsBuildLabEx	SetupCluster	Inventory	

Compliance uploads

Installing the License Server enables the sending of compliance information to the Citrix License Management Service. Your installation of the License Server constitutes your acknowledgment of the License Management Service and your consent to use the License Management Service. You can disable the License Management Service anytime after installation.

For information about the Citrix License Management Service and how to disable the compliance upload, see Citrix License Management Service.

Data Collected	Description	What We Use It For
License usage and compliance data	Information about the Citrix licenses installed on the License Server, including product ID, license type, and quantity, in addition to license usage information.	We use this data to confirm customer compliance with license requirements.
License Server system information	Information about the license server (such as Hardware ID)	We use this data to identify the License Server in the customer's environment.

Compliance data elements for build 32000:

License Server Information	Feature	SADate	StartupCounts
GUID	Feature ID	CountUsedMax	LPE ID
HardwareId	UDBinFileCreatedUTC	Serial	
InstallUTC	UDReportGenerationUTC		
	UDAdminUsersReleased		
	UDAdminDevicesReleased		

Compliance data elements for build 31000 and earlier:

GUID	Feature ID	Serial
HardwareId	SADate	Startup Counts
Inventory	CountUsedMax	LPE ID

License types

May 30, 2024

Your Citrix product uses one of the license types described in this document. Some products allow you to select more than one type of license. Ensure that you are aware of the licenses that are purchased and how they are consumed. Some license types offer license overdraft and supplemental grace period as a feature.

The Citrix License Server supports any Citrix products that require Citrix licenses. For more information, see Products and license models.

User/device license

Overview

In user/device type licensing the License Server dynamically assigns a license to a user or a device based on the usage and monitors license consumption. The default assignment is a user license. The

license server considers each connection and its optimization engine. It ensures that the smallest number of licenses are used based on the userID and deviceID.

The license server truncates domains by default so that `eng@abc.com` and `citrite@abc.com` are treated as a same user. For more information, see Disable the domain name truncation.

> **Note:**
>
> Domain membership doesn't play a role in how licenses are served. A license server can host licenses for any product that can connect to it across the network. Workgroup or Domain membership primarily controls who can be configured as License Server Administrators to access the Citrix Licensing Manager.

Scenarios

- **When a license is assigned to a user.** A user license allows the user to access from an unlimited number of devices. A licensed user requires a unique user ID, such as an Active Directory entry.

For example, the user can connect to their desktops and applications using multiple devices such as desktop, laptop, smartphone, or thin client. A licensed user can connect to multiple instances of Citrix Virtual Desktops concurrently.

- **When a license is assigned to a device.** A device license is assigned to a device when two or more users connect to an exclusively shared endpoint device.

For example, single shared devices such as a kiosk or a workstation in a call center environment used by multiple users.

The following table illustrates how user/device licenses are assigned to non-shared devices and exclusively shared devices. Blue color cells display user licenses, where the devices are not shared. Green color cells display device licenses, where the devices are exclusively shared.

Devices/Users	John	Rose	Joe	Roy	Tom	Karen	Rick	Tony
Laptop	x	x						
PC	x							
Mobiles	x	x	x	x				
Laptop2			x	x				
PC1			x					
Desktop1					x	x	x	x
Desktop2							x	x

License assignment period

When users or devices connect to an application or desktop, they consume a license for a 90 day assignment period. The license assignment period begins when a connection is established. The period is renewed to a full 90 day during the life of the connection. The user/device lease for the license assignment will expire in 90 days after the last connected user or device disconnects.

Release licenses for users or devices

You can release a license for a user only when:

- The employee is no longer associated with the company.
- The employee is on an extended leave of absence.

You can release licenses for devices only when the devices are out of service.

For more information, see Display or release licenses for users or devices.

License optimization

The License Server uses the optimization process to determine how to minimize license consumption. This optimization is based on licenses in use and connections to the License Server. The License Server optimizes every five seconds until there are 5000 unique connections. Connections at 5000 and above optimization occurs every five minutes. Optimization might delay status information until the next optimization, impacting when license usage statistics are updated in various consoles.

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

Optimization is not consumption. The following table is the example of connections and optimization time when optimization occurs.

Device and user connection	Optimization time
700 users * 1 device each	700 (optimize every 5 seconds)
5000 users * 1 device each	5000 (optimize every five minutes)
5000 devices * 1 user each	5000 (optimize every five minutes)
2500 users * 2 devices each	5000 (optimize every five minutes)

Note:

- If you have a large deployment, optimization can be CPU intensive depending on the number of unique connections. We recommend using machines with multiple cores.
- Customers hosting many license servers or shared disk systems see high read and write operations. Even if all the license servers have less than 5000 users, each would optimize every 5 seconds and write cache data to disk. You cannot disable the optimization or change its frequency.

Concurrent license

Overview

Concurrent license is not tied to a specific userID, Active Directory account, or a domain. Concurrent licensing is based on the originating endpoint deviceID.

You start a product that requests a license and it is checked out to a unique endpoint deviceID. When you log off or disconnect from the session, the license is checked in and is available for a new user.

Scenarios

- **Multiple sessions at different computers use multiple licenses.** Each time you start a Citrix session from various devices, a license is checked out until you close that session. At that point, the license is checked back in.

  For example, a user starts a session from one computer and then starts another from a different computer before closing the first session. Two licenses are checked out.

- **License Servers do not communicate with each other.** If you run multiple License Servers, you might consume more than one license (for example, with load balancing). If you are using load balancing, we recommend that the product servers point to the same License Server.

- **Different editions consume different licenses.** Two licenses are consumed, if you use the same client to connect to applications running on an Advanced edition and Premium edition each.

- **Same product, edition, and license model consume single license.** If you make multiple connections from a single device to different product servers configured with same edition and license model and pointing to the same License Server. Only one license is consumed.

- **For license sharing, pass-through connections on Citrix Virtual Apps and Desktops pass the endpoint client device ID to the product server.** If you connect to a single product, edition, and license model with a shared License Server, all connections share a single license.

- 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 Citrix Virtual Apps and Desktops 7 1811 and Citrix Virtual Apps and Desktops 7 1903:

  - **The user connects to Citrix Virtual Apps and Desktops 7 1811 first.** Two licenses might be consumed. An older license first, for the older product, and then a newer license because version 1903 requires a newer Customer Success Services date. For more information, see Customer Success Services.
  - **The user connects to Citrix Virtual Apps and Desktops 7 1903 first.** Only one license is consumed because the Customer Success Services date required by version 1903 is compatible with all older product versions.
  - If the Customer Success Service date of all the installed licenses are compatible with all the product versions then a single license is required for each connecting device.

- RDP connections consume a license but RDP connections to a console do not consume a license.

- If the number of connections exceed the purchased and available standalone concurrent licenses, users are denied access unless the supplemental grace period is enabled. For more information, see Supplemental grace period.

Per user license

Overview

A licensed user requires a unique user ID, such as an Active Directory entry. When a license is assigned to a user, the license allows the user to connect to their desktops and applications using multiple devices. A User license is assigned to the User and not to the User's devices.

> **Note:**
>
> These licenses are only user licenses and are not the same as user/device licenses.

Scenario

- A user can connect to multiple devices such as desktop computer, laptop, netbook, smartphone, or thin client. A licensed user can connect to multiple instances of Citrix Virtual Desktops concurrently.

License assignment period

When a user connects to multiple devices, a user license is consumed for the 90 day assignment period. The license assignment period begins when a connection is made. The period is renewed to the full 90 days during the life of the connection. The device lease for the license assignment will expire in 90 days after the last connected user or device disconnects.

Release licenses for users or devices

You can release a license for a user only when:

- The employee is no longer associated with the company.
- The employee is on an extended leave of absence.

You can release licenses for devices only when the devices are out of service.

For more information, see Display or release licenses for users or devices.

Per device license

Overview

A licensed device requires a unique device ID and any individuals can access instances of a product. It allows an unlimited number of users per device. A single Device license can support multiple users from the same device.

> **Note:**
>
> These licenses are only device licenses and are not the same as user/device licenses.

Scenarios

- A classroom workstation, used by many students.
- A clinical workstation in a hospital, used by hospital staff.

License assignment period

When a single device is used by multiple users, a device license is consumed for the 90 day assignment period. The license assignment period begins when a connection is made. The device lease for the license assignment will expire in 90 days after the last connected user or device disconnects.

Release licenses for users or devices

You can release a license for a user only when:

- The employee is no longer associated with the company.
- The employee is on an extended leave of absence.

You can release licenses for devices only when the devices are out of service.

For more information, see Display or release licenses for users or devices.

Per socket license

Per socket licenses are consumed based on the number of CPU sockets. Cores are not counted. For example:

- If a computer with two CPU sockets has only one CPU then only one license is consumed.
- If a computer with two sockets has two CPUs, each with a quad core, then two licenses are used.

Citrix Hypervisor uses per socket licenses.

Named user license (legacy)

In a product when you request a license, a named user license is checked out until a preconfigured period expires. This type of license check-out is not tied to a computer or a device. After the license is checked out, the user can run multiple sessions on different computers without checking out more licenses.

License overdraft

On-premises products that support user/device, user, or device license models include a license overdraft feature. This feature enables you to use an additional 10% of extra licenses beyond the purchased quantity to prevent access denial. The license overdraft count is displayed in a separate column within the License Administration Console. The installed column displays both the purchased license total plus the associated overdraft total. Overdraft usage is also visible in Studio.

The license overdraft feature is offered as a convenience, not as a license entitlement. Any overdraft licenses used must be purchased within 30 days of first use.

Concurrent licenses and server licenses do not contain the overdraft feature. Citrix reserves the right to remove any overdraft feature in new product releases.

Supplemental grace period

The supplemental grace period enables unlimited connections to a product for 15 consecutive days. This feature is available to Citrix Virtual Apps and Desktops licenses. You can use this feature with a XenApp 7.6 or XenDesktop 7.6 version and above.

If all licenses are in use, including the license overdraft where applicable, the supplemental grace period gives you time to determine why you exceeded the maximum license count and to purchase more licenses without disrupting your users.

After the supplemental grace period expires, normal connection limits are enforced. Users are not disconnected during active sessions. As they disconnect, however, no new connections can occur until the license levels return to normal.

The supplemental grace period is not automatically re-enabled once it completes. To re-enable the supplemental grace period, you must install another retail license, which grants a new 15-day supplemental grace period if and when you exceed the subsequent maximum installed licenses limit.

We recommend that you allow the supplemental grace period to run out after it starts. To clear the warning condition do not add licenses immediately. Doing so gives you time to fully assess the situation and correctly address any issues.

> **Note:**
>
> If you install licenses while the supplemental grace period is in force, the License Server exits the supplemental grace period. Reenabling the supplemental grace period before fully determining the reason for the supplemental grace period, and how many licenses you require, might cause you to reenter the period after installing new licenses.

Supplemental grace periods are granted **per product version and edition and only for retail licenses**. The supplemental grace period is enabled by default when you first install the licenses. To

disable the supplemental grace period feature, use the Citrix Licensing Manager.

There is no way to track the total number of licenses consumed while in the supplemental grace period. You can use `lmstat udadmin` and connection information from the product to determine how many additional licenses are required.

> **Note:**
>
> The grace period and supplemental grace period are two different features.
>
> The grace period and supplemental grace period features do not apply when licenses expire.
>
> For more information about grace periods, see Grace period.

Citrix Virtual Apps and Desktops Director displays the grace period states. For more information, see Panels on the Director Dashboard.

The supplemental grace period feature is offered as a convenience, not as a license entitlement. Citrix reserves the right to remove any such feature in new product releases.

Overdraft and Supplemental grace period examples

Example 1: Citrix Virtual Apps and Desktops user/device, user, or device licenses using the overdraft and supplemental grace period features
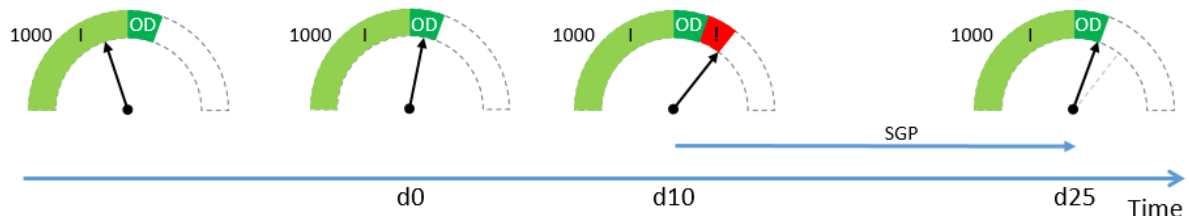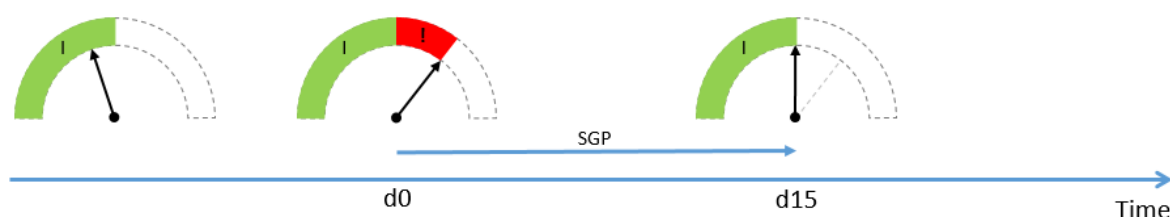

You initially purchase and install 1000 licenses from Citrix (I) which includes a 10% license overdraft allowance (OD). When licenses are allocated, you'll have 1100 licenses in total. At the time it is sufficient for the number of users connecting.

d0 At a later date (day 0) you are using 1050 licenses. When the 1001st license was used, the overdraft feature was activated. Your users can continue to connect without any disruption of service. You start evaluating your licensing needs now. Do not wait until you exceed the OD. Think about buying more licenses in addition to the 1000 you bought initially.

d10 10 days later (day 10) more users connect and 1150 licenses are being used, which exceeds the 1100 total licenses you have available (!). When the 1101st license was used, the 15 day supplemental grace period (SPG) started, to allow you time to evaluate your license needs. Your users can continue to connect without any disruption of service.

d25 15 days later after **d10** (day 25) the supplemental grace period runs out because you chose not to purchase and install more licenses. Users cannot make new connections if doing so requires more than 1100 licenses to be checked out. You cannot re-enable the supplemental grace period until you purchase and install more licenses.

Example 2: Citrix Virtual Apps and Desktops concurrent licenses using supplemental grace period feature

You initially purchase and install 1000 concurrent licenses (I). There is no overdraft allowance with concurrent licenses. At the time these licenses are sufficient for the number of users connecting.

d0 At a later date (day 0) you are using 1050 licenses. When the 1001st license was used, the 15 day supplemental grace period (SPG) started, to allow you time to evaluate your license needs. Your users can continue to connect without any disruption of service. You start evaluating your licensing needs now. Do not wait until the supplemental grace period runs out. Think about buying more licenses in addition to the 1000 you bought initially.

d15 15 days later (day 15) the supplemental grace period runs out because you chose not to purchase and install more licenses. Users cannot make new connections if doing so requires more than 1000 licenses to be checked out. You cannot re-enable the supplemental grace period until you purchase and install more licenses.

Overdraft and supplemental grace period availability

The following table lists the support for license overdraft and supplemental grace period for each product. For more information, see Products and license models.

On-premises product	License type	10% Overdraft	Supplemental Grace Period (15 days)
Citrix Virtual Apps and Desktops	User/device, User, Device	Yes	Yes
Citrix Virtual Apps and Desktops	Concurrent	No	Yes
XenMobile Server	User, Device	Yes	No

Citrix on-premises subscription for annual and term-based retail licenses

On-premises subscription licensing allows customers to host a Citrix environment within their infrastructure for a set period. The on-premises subscription license is time bound for 1-5 years and expires on a specific date. The license ceases to operate following the expiration date. The products offer everything that is available today with perpetual conversions.

Your purchase includes both an on-premises subscription license and Customer Success Services Select service. Customer Success Select service is included for the entire term of the subscription.

> **Note:**
>
> Mixing permanent (perpetual) and subscription licenses is supported. They can be used to expand existing environments provided customers use the same product, edition, and license model. There are no performance impacts to using perpetual vs. subscription licenses. The only difference between them is one expires.

Before license expiration

Citrix notifies you at certain intervals when your existing subscription approaches expiration. These notifications alert you to extend the subscription and avoid service interruption.

When your on-premises subscription expires, as per the date listed in the Citrix Licensing Manager, no new connections are allowed. Existing users are not impacted, however, if users log off or disconnect they are not allowed to reconnect.

Extend on-premises subscription licenses

To extend your on-premises license subscriptions, visit https://www.citrix.com/buy/.

> **Note:**
>
> Licenses with a future start date are not displayed in the License Server inventory until the actual start date mentioned in the license file.

FAQs

- **Will on-premises subscription licenses work with existing perpetual licenses on the same server?**

  Yes, within the guidelines of existing license server operation. Customers must add a new term license file to the license server.

Term or subscription licensing does not have a negative impact on delivering the on-premises subscription licenses to a customer's existing environment, provided the product version (Virtual Apps / Virtual Apps and Desktops), edition (Standard, Advanced, Premium), and type (User/Device, Concurrent) are the same. For example:

- Virtual Apps and Desktops Premium Concurrent perpetual + Virtual Apps and Desktops Premium Concurrent term will have no issues.

- Virtual Apps and Desktops Premium Concurrent perpetual + Virtual Apps and Desktops Premium User/Device term. This license combination is non-standard and requires consideration and additional configuration. This combination may not be optimal for license utilization.

- Virtual Apps and Desktops Premium Concurrent perpetual + Virtual Apps and Desktops Advanced User/Device term. This license combination is non-standard and not advisable. Requires customer to have multiple sites or farms to use all purchased licenses.

- **Will the XenApp farm, Citrix Virtual Apps, Citrix Virtual Apps & Desktops stop accepting connections?**

    Yes. No new connections are allowed after the license expires. Existing connections would not be impacted until users disconnect, logoff, or reset.

- **Will there be a supplemental grace period (SGP) of 15 days or does that only apply to perpetual licenses?**

    No. There is no grace period for license expiration. An extra month is added into the expiration date for customers to install repurchased licenses.

License files

October 7, 2023

Before you start installing product licenses, see the prerequisites to obtain your license files.

When you install the License Server, a Citrix start-up license (citrix_startup.lic) and an options file (CITRIX.opt) are installed by default. To license your Citrix products, you add one or more license files. For information about adding your product licenses, see Install licenses.

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

Citrix Start-up license

The start-up license file (citrix_startup.lic) is a text file that Citrix products use to communicate to 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. When the product and License Server exchange heartbeat messages and there is an interruption in the exchange, the product goes into a grace period. A power failure is an example of an interruption. The startup license file does not affect your license count.

Citrix License Server Diagnostics License

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

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

License file

The license file is a text file containing the following:

- Product licensing information
- License Server name (or other binding identifier)
- Customer Success Services membership renewal date (also known as the Customer Success Services expiration date)
- License expiration date (if applicable)
- Other system information

All this information is encrypted using a digital signature. When you purchase a Citrix product, go to the `citrix.com` website to download a license file. For more information, see Manage licenses on Citrix.com. You can have more than one license file per License Server. The license file resides in these directories, where the License Server references it.

- C:\Program Files\Citrix\Licensing\MyFiles directory on a 32-bit server
- C:\Program Files(x86)\Citrix\Licensing\MyFiles directory on a 64-bit server

The License Server uses this file to determine whether to grant a license to a Citrix product.

A license overdraft is included in all user/device, per user, and per device licenses. For more information on the license overdraft, see License overdraft.

Move licenses to a different host

The license file you downloaded for the old License Server cannot be moved to a server that has a different host name or MAC address. Create license files that reference the new server name by returning them and then allocating them.

For more information, see Modify licenses.

License file format

> **Important**
>
> Any changes to the license file can make license files unusable. If using Citrix Licensing for Windows 11.6.1 or later, editing license files is not necessary. You can manage licenses through the Citrix Licensing Manager and the **My Account** site at `citrix.com`. For more information, see Manage licenses in MyAccount on citrix.com.

You can change the name of the license file, but it must have a **.lic** (lower case) extension.

Citrix license files use the following naming convention:

`FID_fulfillmentID.lic`

For example: FID_30d0000_0000_xxxx_c800_00xxyy000zz7.lic

License files are composed of lines listing specific information, such as the server name (SERVER) or quantity of licenses (INCREMENT). These lines begin by using words denoting their purpose in uppercase letters, such as VENDOR, SERVER, INCREMENT, USE_SERVER.

The following sections provide in-depth information about the following elements of license file syntax: the SERVER line, VENDOR line, USE_SERVER line, and INCREMENT line.

The following image is an example license file:

1. **SERVER line** shows an identifier required for binding licenses to the License Server.
2. **VENDOR line** specifies the Citrix vendor daemon name.
3. **INCREMENT lines** specifies the license required to use a product.
4. Comments used by the License Server to translate license FEATURES (PRODUCT_EDITION_LICENSEMODEL) to Citrix product names.

```
# 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 \          ③
        DUP_GROUP=V ISSUED=12-Mar-2004 NOTICE="eMail Test - Citrix" \
        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
#
```

SERVER Line

The SERVER line specifies the binding identifier (also known as the host name) of the License Server.

> **Caution:**
>
> Do not change the binding identifier on the SERVER line otherwise, the license file doesn't 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 text string.
hostname	The name of the computer on which the License Server is running. Do not edit this text string.

Example

```
1  SERVER this_host HOSTNAME=license_server1
```

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.

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 one or more SERVER lines
- Data selected by Citrix

INCREMENT lines use a backslash () to wrap long lines of text.

Syntax:

INCREMENT feature vendor css_expiry_date exp_date num_lic
SIGN=sign [optional_attributes]

> **Caution:**
>
> Do not change the six fields after the INCREMENT line keyword. The fields 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 that this license is for a Citrix vendor daemon. Do not edit this line.

Field	Description
CSS_expiry_date	Indicates the date until which you are entitled to product version upgrades. If you don't have a Customer Success Services membership, or this license isn't a Customer Success Services license, the date indicates when you ordered or redeemed the license. Do not edit this line. **Note:** If you renewed your Customer Success Services membership and received an upgrade license, the CSS_expiry_date is listed. **For example:** INCREMENT MPS_ENT_CCU CITRIX 2019.0311 permanent 1000
exp_date	Expiration date of license in the format dd-mmm-yyyy, that is, 07-may-2006. Do not edit this line. **Note:** If the exp_date field contains the text 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.
SUPERSEDE_SIGN=sign	Strategically turns off specific licenses based on license feature and signature or INCREMENT line to be disabled. Customer Success Services or maintenance upgrade licenses include SUPERSEDE_SIGN. **Example:** SUPERSEDE_SIGN={"CBR_100_SSERVER:0F76 2946 4790 6B67 08E0 65BC 302B E1B6 6ECE 41D6 8AB6 E9C6 FE44 4EB3 9A83 01E4 D405 3E95 74B8 9BC8 7791 BDD3 1385 33F8 9533 95FF A3E4 F461 35B4 251E"}

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. The console displays and tracks a newly created pool independently from other license pools. The Citrix vendor daemon creates a license pool when two or more attributes are different.

Citrix Attributes in INCREMENT Lines:

INCREMENT lines can also include more attributes from Citrix. These attributes provide information about the license, such as the date of issue or if the license is an upgrade license.

> **Caution:**
>
> Do not change or remove 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 preceding example:

- The Product (license feature) appears in blue
- The Customer Success Services 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 name.
SN=serial_num	Serial number is the License Access Code and the fulfillment ID of that license.
START= dd-mmm-yyyy	The date from which you can start using a license. The License Server cannot use licenses before their start date. You can install licenses before the START date but there are not visible in your License Server inventory until the actual START date.

Attribute	Description
SUPERSEDE="MPS_ADV_CCU MPS_STD_CCU …"	This attribute appears in the upgrade license file when you move to a higher product edition. If this attribute appears, this line supersedes all licenses issued before the date specified in ISSUED= and they become ineffective.
VENDOR_STRING="…"	Text string defined by Citrix.

Example of a base license:

```
 1  INCREMENT CBR\_100\_SSERVER CITRIX 2016.1201 permanent 10 \\
 2
 3      VENDOR\_STRING=;LT=Retail;GP=720;MAXBW=1;MLC=0;HA=0;CL=BRSE;SA=1;ODP
           =0 \\
 4
 5      DUP\_GROUP=V ISSUED=18-dec-2005 NOTICE="Citrix" \\
 6
 7      SN=100se200seB SIGN="1B19 C213 7517 CC62 756F 864C 9C93 06FC \\
 8
 9      E1DE B5D5 D793"
10  <!--NeedCopy-->
```

Example of a Customer Success Services renewal license containing SUPERSEDE_SIGN:

```
 1  INCREMENT CBR\_100\_SSERVER CITRIX 2017.1201 permanent 10 \\
 2
 3      VENDOR\_STRING=;LT=Retail;GP=720;MAXBW=2;MLC=0;HA=0;CL=BRSE;SA=1;ODP
           =0 \\
 4
 5      DUP\_GROUP=V ISSUED=18-dec-2007 NOTICE="Citrix" \\
 6
 7      SN=100se200seU SUPERSEDE\_SIGN={
 8   "CBR\_100\_SSERVER:1B19 C213 7517 \\
 9
10      CC62 756F 864C 9C93 06FC E1DE B5D5 D793" }
11    SIGN="1D5D 869A 40BE \\
12
13      D4DB 361D 7897 AFA5 FF8B E52A 20BA 5525 01AA F241 6919
14  <!--NeedCopy-->
```

Licensing services

October 7, 2023

This article contains the following information:

- Web Services for Licensing
- Citrix License Management Service
- Citrix Licensing
- Citrix licensing Windows Management Instrumentation (WMI)

Web Services for Licensing

Studio, Director, and the Licensing Administration PowerShell Snap-in use Web Services for Licensing to do the following:

- Communicate with the License Server and manage users
- Allocate and install licenses
- Display License Server health, license usage, and other alert messages.

The Citrix Licensing Manager also uses it.

Citrix License Management Service

The License Management Service enables better capacity planning and license management. This service also helps you avoid prohibited practices:

- Duplication of licenses outside a Disaster Recovery (DR) environment
- Use of legacy licenses for new product versions
- Use of rescinded licenses

This service alerts the administrator in Citrix Insight Services about duplicate licenses in a Disaster Recovery (DR) environment. For more information about Citrix Insight Services, see Citrix Insight Services.

The License Management Service uses product telemetry, built into the License Server, to send data to Citrix Insight Services. The License Management Service is not a Windows service. The first upload occurs approximately five minutes after the License Server first starts, or restarts, and subsequent uploads occur once a day thereafter. The schedule resets if you reinstall the License Server. If an upload fails, another attempt is made in 24 hours until either the upload succeeds or you disable the License Management Service. Citrix might use uploads to help you understand and support your license environment. See Using the command line to disable or enable the License Management Service.

> **Important**
>
> Your installation of the License Server constitutes your acknowledgment of the License Management Service and your consent to use the License Management Service. You can disable the

License Management Service anytime after installation.

The License Management Service collects this information:

- License serial numbers
- License Server GUID
- Licenses used count
- Feature name
- Product versions

For more information about the data collected, see Compliance uploads.

Citrix Licensing

The Citrix Licensing service is the Windows service responsible for core licensing functionality. Citrix Licensing services licenses to Citrix products and is responsible for managing the CITRIX vendor daemon, license server port 27000 (by default).

Citrix Licensing WMI

The WMI service provides access to Citrix Licensing WMI classes. There's a namespace (ROOT\CitrixLicensing) with a few classes (notably, **Citrix_GT_License_Pool**) that gives license usage and availability counts. Querying the License Server too often (more than every 15 minutes) might impact performance negatively.

Customer Success Services

October 7, 2023

Your purchase of a new Citrix product includes a one-year membership in Customer Success Services. This membership entitles you to all product updates, along with other benefits. These updates include all releases during your membership period.

After your initial one-year membership period expires, renew your Customer Success Services membership by paying Citrix for your renewal. Use the Citrix Licensing Manager to install your renewal licenses. You can go to citrix.com and download a license file that has your renewal license.

> **Important:**
>
> A Customer Success Services membership and its license are distinct from your license to run the product. Your Citrix products don't stop working if you don't renew your Customer Success

Services membership. But you are not entitled to any software releases after it expires.

Customer Success Services renewal licenses

Customer Success Services renewal license files contain licenses, known as renewal licenses, that extend your Customer Success Services membership for a one-year period. These licenses are required to run all new product releases, excluding hotfixes, that are released during your membership period.

If you do not add the Customer Success Services 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.

If Citrix releases a product version after your Customer Success Service membership ends, renew your Customer Success Services membership. Obtain a renewal license before you can use the new product version.

Example:

Before you upgrade to any of the Citrix Virtual Apps and Desktops releases, ensure that your current Customer Success Services dates are valid and have not expired. Citrix Virtual Apps and Desktops releases use a year-month date format (YYMM). Ensure that the date in your license is equal or newer than the product release date. For a comprehensive list of release dates, see Citrix Product Customer Success Services Eligibility Dates.

When you renew your Customer Success Services membership, you can use the renewal license features of the Citrix Licensing Manager. For more information see, Update licenses.

> **Note:**
>
> When you download more license files, you can delete the expired Customer Success Services 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.

Find out your Customer Success Services dates by using Citrix Licensing Manager, or view the license file in the text editor.

Check for and install Customer Success Services renewal licenses with the Citrix Licensing Manager

When enabled, the Citrix Licensing Manager contacts Citrix.com web services weekly to check for available Customer Success Services renewal licenses.

Based on your configuration, the Citrix Licensing Manager automatically checks for Customer Success Services renewal licenses, or allows you to check manually. It notifies you or installs the licenses when found.

1. In the Citrix Licensing Manager, click **Settings** in the upper right of the UI.
2. Choose how you want to be notified and if you want renewal licenses to be automatically installed.

If the automatic checks for Customer Success Services renewal licenses fail, check the firewall setting or configure a proxy. For this feature to work, the License Server must be able to access https://citrix services.citrix.com. For more information, see How to configure a proxy server manually.

> **Note:**
>
> You can also configure the ports, the supplemental grace period, and the language on this page.

- **Automatically check for Customer Success Services renewal licenses and notify when available:** Citrix Licensing Manager displays a notification. Click the link to download and install the available renewals. This same notification appears in Studio and Director if they are configured to manage the License Server.
- **Automatically check for and install Customer Success Services renewal licenses when available:** Citrix Licensing Manager checks weekly and automatically installs renewal licenses when available. A notification displays for a few days stating that renewals have been installed.
- **Manually check for Customer Success Services renewal licenses:** Select the **Update Licenses** tab and **Check for Available Renewals**. You can check the **Update Licenses** tab at any time to see a list of licenses installed in the last 30 days.

Get started, install, and configure the License Server

December 7, 2023

> **Important:**
>
> - We do not support running third party vendor daemons on the Citrix License Server, or the Citrix vendor daemon on third party license servers.
>
> - We recommend that you run the latest version of the License Server. We do not provide hot-fixes for License Server components and don't support older License Servers with newer products. The latest version of the License Server often contains resolutions to issues appearing in earlier versions. When you upgrade or install new Citrix products, upgrade the licensing components as well. New License Servers are backward compatible and support older products and license files. However, new products often require the newest License

> Server to check out licenses correctly. You can find the latest version from the Citrix Downloads site.
>
> To see the new features in this release, go to What's new.

- We don't support installing the License Server from a UNC path (`\\\\server\share`). Install the License Server from a local copy.

Step 1 Review your prerequisites

Before you begin to install and configure your License Server, review the system requirements.

Step 2 License your product

Licensing your product includes the following steps:

1. Ensure that you have the latest License Server version.
2. Verify the system requirements.
3. Install licensing.
4. Obtain license files from **My Account** or if you have a license code, use the Citrix Licensing Manager.
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 the product installation, if applicable. This configuration includes setting the correct product-edition in the product. For more information, see Licensing elements and Services.

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

For an overview of the licensing components and process, see Technical overview and Licensing elements.

> **Important:**
>
> The License Server does not require domain membership. You can install the License Server in a workgroup and still perform all licensing functions on behalf of Citrix products. To manage Citrix Licensing Manager users having Active Directory users or groups, the users must be part of a domain. Otherwise, use local Windows users and groups.

Step 3 Check your security and firewall

Security considerations

We recommend that you upgrade the License Server to the latest version when you upgrade or install new Citrix products. The new License Servers are backward compatible and support older products and license files. Each time a new License Server is released, it might contain better security features than in previous versions. We also recommend the following security considerations when you configure your environment.

- Configure the License Server environment so that only authorized administrators on a trusted network can access the Citrix Licensing Manager port. You achieve this outcome by using an appropriately configured network or host-based firewall.
- When using the Citrix Licensing Manager, avoid visiting untrusted websites or clicking untrusted URLs.

Firewall considerations

Determine if you require a firewall between the License Server and any product servers before installing licensing. Firewall considerations can impact where you install the License Server.

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

If there is a firewall between your product and the License Server, configure port numbers. This configuration process entails:

- **Determining which port numbers 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 changed so that traffic can flow. Current releases configure the built-in firewall automatically.
- **Changing the product-side settings**. Configure your Citrix product to use the same port numbers as in the Citrix Licensing Manager. 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 documentation for information about these settings.

For more information about allowing registered URLs and ports through the firewall and a list of open URLs, see Register and remove registration with Citrix Cloud.

Step 4 Install licensing components, server, and certificate

During installation, localized characters in the installation path can cause the installation to fail. Accept the default installation path or type only ASCII alphabetic letter characters for the installation

directory.

Step 4A Install licensing components

You can install licensing components 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 later in this article 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. To determine if relocation of the License Server to another system is necessary, monitor CPU and memory load (`lmgrd.exe` and `CITRIX.exe`).

> **Important:**
>
> Use the `CitrixLicensing.exe` file for all future installations, except for Active Directory deployments. In that case, use the .msi. Ensure that both `.exe` and `.msi` files are present for the installation.

Step 4B Install the License Server and console using the graphical interface

1. Download the License Server from Citrix downloads and start the License Server installer, `CitrixLicensing.exe`, as an administrator or a member of the administrators group.
2. Follow the installer on the GUI 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 used by licensing components. Choose whether to allow the installer to configure the Windows Firewall exception. If needed, you can change the port numbers after the installation. If you choose to finish the installation without configuring the License Server, restart the `CitrixLicensing.exe` installer. You can also use the License Server Configuration tool to configure the settings after the installation.
   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
   - Web Services for Licensing port number is 8083

4. The License Server adds the default administrator for the Citrix Licensing Manager 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 Server or a Citrix Licensing Manager administrator. If you are a

---

local Windows user, the License Server adds the installing user (computer\user) as a default administrator account. 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.

5. Choose to start the Citrix Licensing Manager and whether to join the Citrix Customer Experience Improvement Program.

Step 4C Install licensing using the Windows command line

> **Important:**
>
> The Citrix Service Provider program requires Customer Experience Improvement Program (CEIP) and Call Home. If you are a Citrix Service Provider, you cannot disable CEIP or Call Home.

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.

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 is in multiple lines because of space limitations.

```
CitrixLicensing.exe /quiet /l install.log INSTALLDIR=installdirectory
 WSLPORT=port_number LSPORT=port_number VDPORT=*port_number CEIPOPTIN
=value
```

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.

- **CEIPOPTIN** specifies whether, or how, to opt in to the Citrix Customer Experience Improvement Program (CEIP) or Call Home. Optional parameter. The default is **ANON**.

  - **DIAG** - Call Home
  - **ANON** - CEIP
  - **NONE**

You can change the CEIP and Call Home choice using the Citrix Licensing Manager.

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 any 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 is in multiple lines because of space limitations.

```
msiexec /I ctx_licensing.msi /l*v install.log /qn INSTALLDIR=installdirectory
 LICSERVERPORT=port_number VENDORDAEMONPORT=port_number MNGMTCONSOLEWEBPORT
=port_number WEBSERVICESLICENSINGPORT=port_number CEIPOPTIN=value
```

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.

- WEBSERVICESLICENSINGPORT is the port number used for the Citrix Licensing Manager. Optional parameter. The default is 8083.

- CEIPOPTIN specifies whether, or how, to opt in to the Citrix Customer Experience Improvement Program (CEIP) or Call Home. Optional parameter. The default is **ANON**.

    - DIAG - Call Home
    - ANON - CEIP
    - NONE

You can change the CEIP and Call Home choice using the Citrix Licensing Manager.

Using the command line to disable or enable the License Management Service

The License Management Service operates automatically within the License Server and allows for license management and support. We recommend using the License Management Service for management of your license environment, but you can disable it anytime after installation. For more information, see **Citrix License Management Service** in Technical overview.

Syntax:

`ctx_license_management_service.exe (-enable | -disable | -query)`

Where:

- **-enable** enables license management. The first upload to Citrix occurs seven days after you install the License Server.
- **-disable** disables license management. We recommend that you use the License Management Service to manage your licensing environment.
- **-query** displays the current configuration.

Step 4D Manually install a certificate used by the Citrix Licensing Manager and Web Services for Licensing

> **Note:**
>
> Use this procedure if you don't want to use the self-signed certificate that is generated during installation.

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 obtain the .pfx file.

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

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

Method 1 - How to 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 **Next**.

4. In the **Certificate Enrollment Policy** wizard, choose **Active Directory Enrollment Policy**, and then **Next**. 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** menu. Type a friendly name in the text box, choose **Add**, and then **Apply**.

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

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

9. On the **Private Key** tab and under the Key options menu, ensure that the Key size is 2048. Select the **Key Exportable** check box, and then **Apply**.

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

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

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

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

Method 2 - How to 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 then **Next**.

c) In the **Certificate Enrollment Policy** wizard, choose **Proceed without enrollment policy** under **Custom Request**, and then **Next**.

d) On the **Custom request** screen, choose **(No template) CNG key** from the menu and **PKCS#10** for the Request format, and then **Next**.

e) On the **Certificate Information** screen, choose **Details** and then **Properties**.

f) On the **General** tab, type a friendly name and description.

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

h) On the **Extensions** tab, choose **Key usage** from the menu, add **Digital signature** and **Key encipherment**.

i) On the **Extensions** tab, choose **Extended Key usage** from the menu, add **Server Authentication** and **Client Authentication**.

j) On the **Private Key** tab, under **Cryptographic Service Provider**, choose **RSA, Microsoft Software Key Storage Provider** (the default). From the **Key** options menu, ensure that the key size is 2048, select the **Key Exportable** check box, and then **Apply**.

k) 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**, under **Certificates**, right-click Personal and choose **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, choose **Personal > Certificates**, and choose the certificate you 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, choose **Next**, create a password, and then choose **Next**.

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

How to 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. The version of OpenSSL shipped with the License Server does not support extracting certificates and private keys. For information about downloading OpenSSL, go to www.openssl.org. 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).

How to install the `.crt` and `.key` files on the License Server

Windows - Web Services for Licensing:

1. Stop the Citrix Web Services for Licensing service.
2. Copy the server.crt and server.key created earlier in this procedure to `c:\program files (x86)\citrix\licensing\WebServicesForLicensing\Apache\conf\`.
3. Start the Citrix Web Services for Licensing service.

Windows - License Administration Console:

> **Note:**
>
> - License Administration Console was removed from Windows License Server v11.16.6.0 build 31000 and onwards. For more information, see What's new.
> - License Server VPX still uses License Administration Console.

1. Stop the Citrix licensing service.
2. Copy the server.crt and server.key created earlier in this procedure to `c:\Program Files (x86)\Citrix\Licensing\LS\conf`.
3. Start the Citrix licensing service.

Step 5 Configure a proxy server

You can use a proxy with the Citrix Licensing Manager, CEIP, and Call Home. When you configure a proxy server, requests to download licenses and upload Call Home data are sent through a proxy server.

> **Important:**
>
> Citrix Licensing components requiring outward bound web communications can inherit network proxy settings using Windows automatic proxy detection. We do not support authenticated prox-

> ies. For more information about Windows automatic proxy detection, see WinHTTP AutoProxy Functions.

How to configure a proxy server manually

1. Edit the SimpleLicenseServiceConfig.xml file, which is in the `<Citrix Licensing>\ WebServicesForLicensing` directory.
2. Add a line of xml to the file in the format `<Proxy>proxy server name:port number </Proxy>`

Important:

The .xml tags are case-sensitive.

```
1    <Configurations>
2      <EncoreConfiguration>
3        <SamplingPeriod>15</SamplingPeriod>
4        <RetentionTime>180</RetentionTime>
5        <Enabled>true</Enabled>
6      </EncoreConfiguration>
7      <Proxy>10.211.55.5:808</Proxy>
8    </Configurations>
9  <!--NeedCopy-->
```

Next steps

- Citrix Licensing Manager
- Product specific licensing guides

Upgrade the License Server

December 18, 2023

Before you upgrade

The following information helps you to prepare well before you begin your upgrade.

- Each time you upgrade your Citrix product, upgrade the Citrix License Server also. Each time a new License Server is released, it might contain better security, fixes to known issues, and so on.

- Sometimes, new versions of the Citrix product are incompatible with older versions of the License Server. New versions of the License Server are compatible with older versions of the product and old licenses.

- Version upgrade is moving from any previous version of a product to the newest version of the product. For example, moving from XenDesktop 7.18 to Citrix Virtual Desktops 7 1909.

- Edition upgrade means the purchase of a higher edition level of a product. For example, you now have Advanced Edition and you purchase upgrade to Premium Edition.

Prerequisites and precautions

- For information about system requirements, see System requirements.
- Ensure you download the latest version of License Server, go to Citrix Downloads.
- Installing the License Server from a UNC path (\\server\share). Install the License Server from your local copy.
- Upgrade your licensing components before upgrading your product, if necessary.
- Uninstall any versions of Citrix Licensing older than version 11.12.1 before installing this version.
- To avoid the failure of any subsequent License Server upgrades: Ensure that when you installed your License Server, you successfully configured it with the post installation License Server Configuration tool or uninstalled your previous License Server.

How to upgrade the License Server

Citrix recommends that you install the newest License Server. The new License Server is backward compatible and supports older products and license files. However, new products require the newest License Server to check out licenses correctly. Perform the following steps to upgrade your License Server:

1. Go to the Citrix Downloads page and download the installer to install or upgrade to the latest version.
2. Start the License Server installer (CitrixLicensing.exe) as an administrator, and follow the graphical interface.

To upgrade the License Server from your product media:

If you use the product media for your installation, you might have to enable some functionality by using the Citrix Licensing Manager after your installation. For example, use the Citrix Licensing Manager to enable Customer Success Services renewals.

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 screens to Citrix Licensing and follow the instructions.

To upgrade the License Server from the command line:

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**.

You cannot change ports during command line upgrades.

The following sample command line installs licensing in silent mode.

CitrixLicensing.exe /quiet /l install.log INSTALLDIR=*installdirectory* CEIPOPTIN=ANON

*   /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.
*   CEIPOPTIN specifies whether, or how, to opt in to Citrix Customer Experience Improvement Program (CEIP) or Call Home. Optional parameter. The default is **ANON**.

    *   DIAG - Call Home
    *   ANON - CEIP
    *   NONE

You can modify the CEIP and Call Home choice using the Citrix Licensing Manager.

> **Important**
>
> The Citrix Service Provider program requires Customer Experience Improvement Program (CEIP) and Call Home. If you are a Citrix Service Provider, you cannot disable CEIP or Call Home.

Events during a License Server upgrade

As part of the License Server upgrade, we stop services, upgrade the License Server, and then restart services. During the upgrade, products enter the grace period and self-license. When the License Server is online again, all product servers return from the grace period and reconcile license counts. This grace period works in the same manner as the regular grace period functionality.

How to upgrade licenses for your edition

If you are eligible for a version upgrade as a benefit of your maintenance, you can download your CSS Renewal license and add it to the License Server. Also change the product edition setting in the product user interface. It's best to change the product edition setting when there are few connections to the affected servers or redirect connections to another computer. When you change the product

edition setting, restart the product server for changes to take effect. See the product 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.

Perform the following steps to upgrade edition licenses:

1. From a web browser, go to http://www.citrix.com.
2. Choose Log In and type your user ID and password.
3. Select **Manage Licenses**.
4. At the bottom of the landing page, select **Upgrade my licenses**.
5. Follow the site 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 more 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.

Uninstall the License Server

March 18, 2024

If you want to uninstall License Server from your server completely or have issues with the current version and prefer a clean installation, you can choose to uninstall it. You have the flexibility to use either the GUI or the Windows command line for the uninstallation process.

> **Note**
>
> The `Myfiles` folder is kept even after successful uninstallation in the file path `C:\Program Files (x86)\Citrix\Licensing\MyFiles`. To make sure that there is no interruption on the Citrix products.

Uninstall the License Server using the GUI

To uninstall License Server, do the following steps:

1. In the **Search** on the taskbar, enter **Control Panel** and select it from the results.
2. Select **Programs > Programs and Features**.
3. Drag (or right-click) on **Citrix Licensing** and select **Uninstall** or **Uninstall/Change**. The **Citrix Licensing** wizard appears.
4. Click **Remove** and then click **Yes** when prompted for **Are you sure you want to remove?**.
5. Click **Finish**. The License Server has been successfully removed.

Uninstall the License Server using the Windows command line

To uninstall License Server, run the following command in the Windows command line:

`CitrixLicensing.exe /quiet /uninstall /1 uninstall.log`

To re-install, download License Server from Downloads and Install.

Prerequisites to obtain your license files

October 7, 2023

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 Citrix Virtual Apps and Desktops. For more information, see Citrix Virtual Apps and Desktops Licensing.
- Citrix Licensing Manager.
- MyAccount on citrix.com. For more information, see Manage Licenses on citrix.com.

Ensure you have the following information ready, before going to the Citrix website to get your product licenses:

- Your user ID and password for **My Account**.

- **The license access code.** You can get this code in **My Account** on citrix.com or in an email you receive from Citrix.

  Note: If you cannot locate the license access code or licenses you purchased, contact the Citrix Customer Service.

- **The hostname of the License Server on which you installed the licensing components.** The License Server hostname is case-sensitive, so ensure that you copy the name exactly as it appears on the system.

  Select the down arrow in the top bar of the Citrix Licensing Manager screen to find the License Server hostname, Ethernet address, and IPv4 address. 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 the licenses you are entitled to at once. For example, if your company purchases 100 licenses, you can allocate and download only 50 now. Later, you can allocate the rest in another license file. You can have more than one license file based on the number of licenses allocated.

Citrix Licensing Manager

October 7, 2023

The Citrix Licensing Manager is a web-based management console for Citrix Licensing. It enables the License Server features using a simple web interface. For more information on the functions you can perform using the Citrix Licensing Manager, see the Citrix licensing technical overview.

The Citrix Licensing Manager is installed on the license server. You can only use it to manage the license server on which it is installed. The Citrix Web Services provide the functionality for the **Licensing** windows service.

Access the Citrix Licensing Manager using the link `https://*LicenseServerName:WSLPort*`. The default WSL Port is 8083.

The **Citrix Licensing Manager** screen displays the following details:

- The License Server version in the top bar of the screen. You can also view the host name, Ethernet address, and IPv4 address, from the drop-down list in the titlebar.
  by selecting the down arrow at the top right of the Citrix Licensing Manager screen.
- Important notifications of license availability, expiration, and other conditions. You can view these notifications by selecting the bell icon at the top of the Citrix Licensing Manager screen.

The Citrix Licensing Manager also allows you to perform the following actions:

- Configure Customer Success Services renewal license actions. Specify whether to download and install licenses automatically, check for the available renewals and notify, or manually install the licenses. For more information on configuring this feature, see Check for and install Customer Success Services renewal licenses with the Citrix Licensing Manager.

- Store and export historical usage reports from the License Server. You can specify a date range for the historical usage data and export it to a CSV file. The CSV file provides daily usage information including the number of licenses in overdraft. For information about exporting historical usage data, see Historical Use.

Prerequisites

See the System requirements for Citrix Licensing article to understand the prerequisites and requirements.

Where to go next

- **Dashboard**: View details about the installed, in-use, available licenses, expiration date of licenses, and Customer Success Services dates.
  For more information, see Dashboard.

- **Historical use**: Review and export data related to products, license models, and Customer Success Services (Subscription Advantage) dates.
  For more information, see Historical Use.

- **Install licenses**: Install license files on the License Server using a license access code or downloaded file. View details of licenses after they are installed.
  For more information, see Install licenses.

- **Update licenses**: Check for, download, install, and update available Customer Success Services renewal licenses.
  For more information, see Update licenses.

- **Settings**: Modify settings related to user and group accounts, server configuration, and usage and statistics data. For more information, see Settings.

Dashboard and Historical Use

October 7, 2023

Dashboard

The **Dashboard** in Citrix Licensing Manager provides information about product edition, model, installed or in-use status and availability of your licenses.
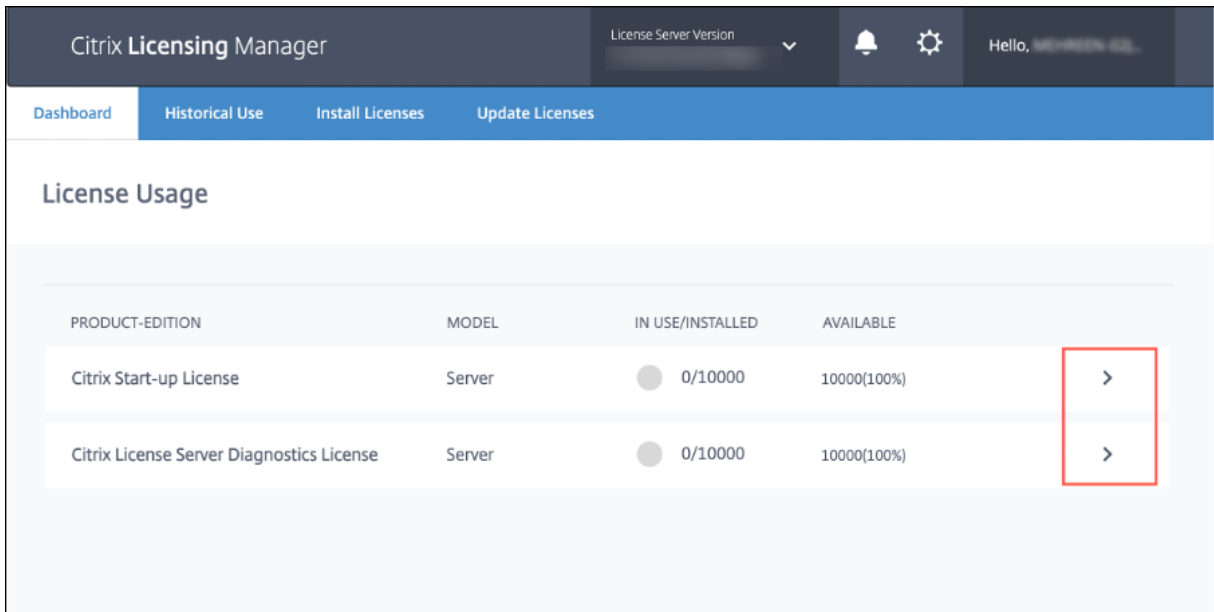
To view detailed information about the licenses, click **>** for a particular license. The Citrix Licensing Manager displays a table containing the following details of the license:

- Customer Success Services date
- Total installed licenses
- Overdraft
- Licenses in use
- Available licenses
- Expiration date
- Type

Note:

The dashboard data updates every five minutes.

Historical Use

The **Historical Use** feature in the Citrix Licensing Manager allows you to store and export historical usage reports from the Licensing Server. The default retention period is one year. You can view and specify the data retention period by selecting **Change**. Use the filters to export a License Server Product usage report as a CSV file.

Export historical usage data

You can view and export the historical usage by performing the following steps:

1. Log on to the Citrix Licensing Manager hosted on the License Server. Type the following URL into a browser on a system having access to the License Server, and use your actual License Server host name.
   `http://License-Server-Hostname:8083/`

2. Select **Product & Edition**, **Model**, and **Customer Success Service Date**. Enter a date range for which you want to gather the history.

   > **Note:**
   >
   > Selecting Customer Success Services date limits exported data to a specific pool of licenses and does not accurately reflect the total number of licenses in use.

3. Select **Export**.

4. Select **Save** > **Save As** on the browser download dialog to save the exported CSV file. The CSV file provides daily usage information, including the number of licenses in overdraft.

Install licenses

October 7, 2023

The Citrix Licensing Manager gives you the following options to obtain your licenses:

- **Use license access code**
- **Use downloaded license file**

In the **Start** menu, select **All Programs > Citrix > Citrix Licensing Manager**, or from a remote machine use the `https://licenseservername:8083` URL with your License Server name.

Use license access code

1. Choose **Use license access code**, and enter the license access code provided by Citrix.

2. Click **Display Licenses** to see your license entitlements.

   Select the licenses and the quantity to install.

3. Select a product from the displayed list, type the number of licenses to install, and click **Install**. To select multiple products, click **Install** every time you select a product. The products are processed in order of selection.

4. To display the newly downloaded licenses, click **Dashboard**.

Use downloaded license file

1. Choose **Use downloaded license file**.

2. Choose a file.

3. Choose the check box to replace an older file with the same name.

4. Click **Import**.

   The Citrix Licensing Manager displays information about the licenses.

5. After your license file is successfully uploaded to the License Server, a message displays. To display the newly downloaded licenses, click **Dashboard**.

> **Note:**
>
> Avoid issues while uploading a license file by removing special characters in the file name. Ensure that the file has a .lic extension (all lower case).

Allocating and downloading licenses

Consider the following points while using the Citrix Licensing Manager to allocate and download licenses:

- As a prerequisite, ensure that you have internet access or a configuration with a proxy server.
- Once you click **Allocate > Download**, you cannot cancel it. If this action fails, use **My Account** at citrix.com.
- The Citrix Licensing Manager doesn't support redownloading or reallocating of license files. You can return licenses on citrix.com and use the Citrix Licensing Manager to allocate them again. For redownloading, use **My Account**.
- If you rename the License Server, you must reallocate any license files allocated under the old License Server name.

Update licenses

June 10, 2021

Install your Customer Success Services renewal licenses from the **Update Licenses** tab in the Citrix Licensing Manager. You can also see a record of the recently installed renewal licenses in the **Customer Success Services renewal licenses renewed in the last 30 days** section.

To update the licenses

1. In the **Customer Success Services renewal licenses available** section, click **Check for Available Renewals**.
2. Click **Download and Install** to install the licenses. For more information see **Use downloaded license file** section in Install licenses.
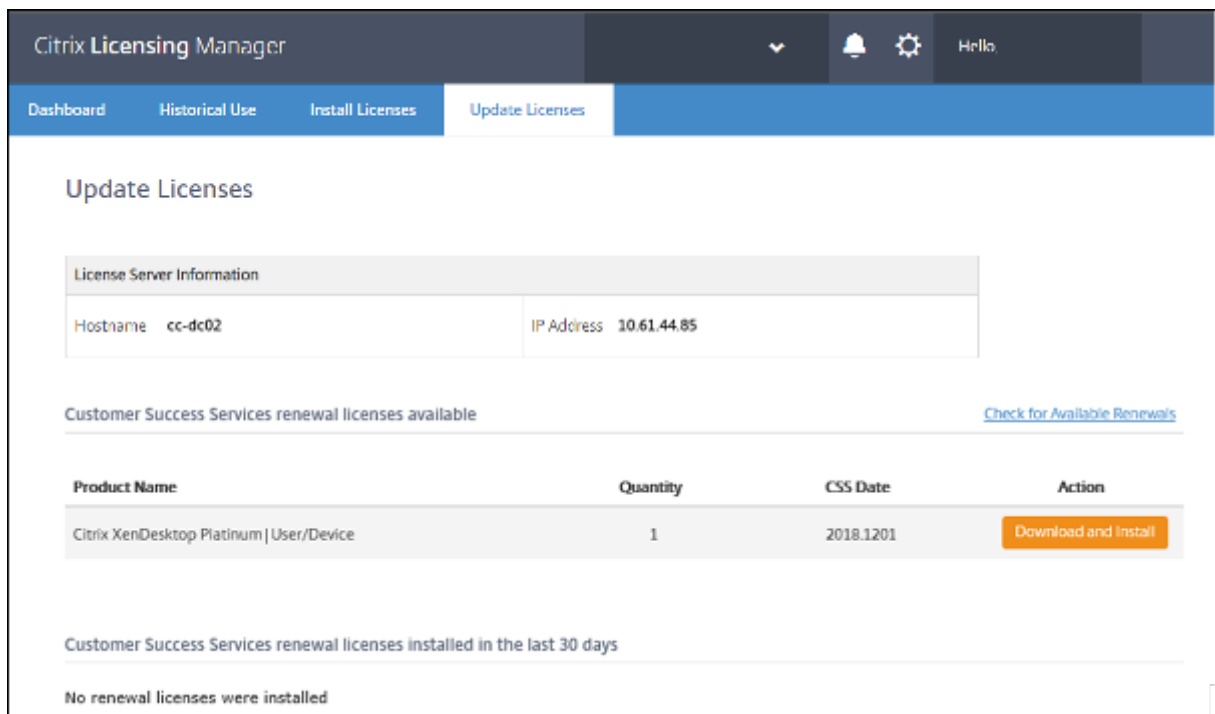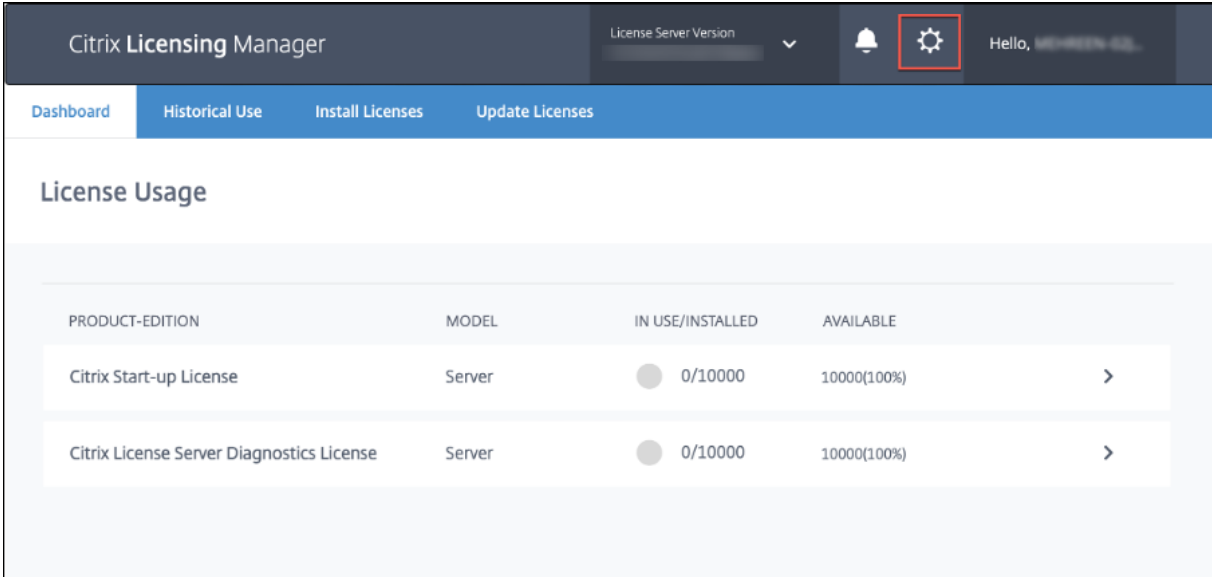
Settings

October 7, 2023

Modify and configure the following settings in Citrix Licensing Manager:

- **Account**: Configure user and group accounts.
- **Server configuration**: Configure ports and Customer Success Services renewal license actions.
- **Usage and statistics**: Register your License Server with Citrix Cloud and configure the historical data retention by selecting a retention period.

To configure these settings, click the settings icon on the top right corner of the title bar.

Account

On the **Account** tab, configure users and group access for both local Windows users and groups and Active Directory users and groups.

> **Note:**
>
> Active Directory users and groups are part of an Active Directory or network authentication system. To support them, ensure that the Windows License Server is a member of a Microsoft Active Directory domain.

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

- Select a console display language.
- View system information.
- Add and remove users.
- Configure the License Server port.
- Configure the vendor daemon port.
- Configure the Web Services for Licensing port.
- Configure and add licenses.
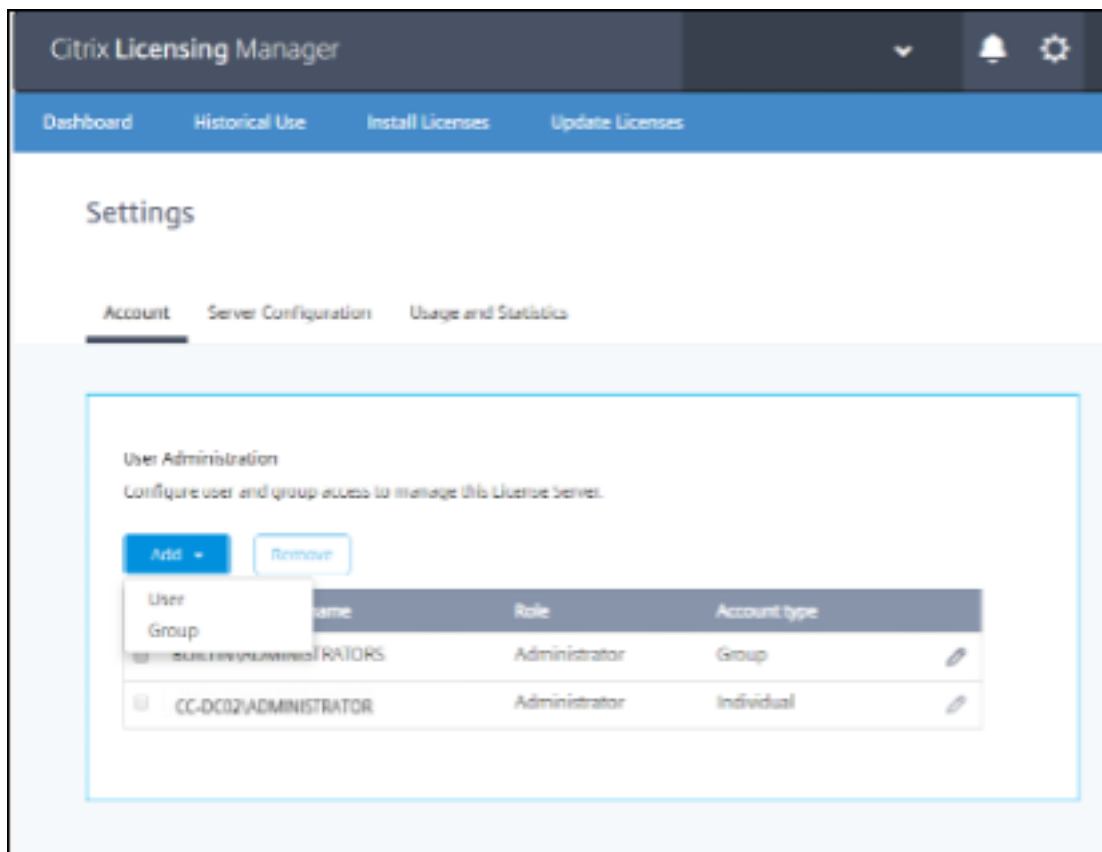
To add and remove users and groups

To add a user or a group, click **Add**, choose **User or Group**, enter **Domain\Username**, and then click **Finish**.

To remove a user or a group, click **User** or **Group** from the list and then click **Remove**.

To edit the role of an existing user or group, click the edit button, choose the role, and click **Update**.

Server configuration

Use the **Server Configuration** setting to make the following changes:

- Configure the License Server, Citrix vendor daemon, and Web Services for Licensing ports.

- Configure Customer Success Services renewal license actions.

- Enable and disable the supplemental grace period.

- Select the console display language.

Configure port numbers

You can edit the following default ports:

- **License Server**. This port number is used by the Citrix Licensing Manager. License Server Manager handles the initial communication among the products, starts the Citrix vendor daemon, and relays check out and check in requests to the vendor daemon. By default, this port number is 27000.
- **Citrix vendor daemon**. This port number is used by the Citrix vendor daemon. The vendor daemon is responsible for the core operations of the License Server, including license allocation. By default, this port number is 7279. However, if you have a firewall or if the number is already in use, you must change the port number.
- **Web Services for Licensing**. Port used by the Web Services for Licensing. The **Web Services for Licensing** hosts the Citrix Licensing Manager, so users connecting to the Citrix Licensing Manager use this port. Director and Studio use this port to communicate with the License Server using **Web Services for Licensing**. By default, this port number is 8083.

Customer Success Services Renewals

This feature checks for already available renewed licenses, and notifies they are available for renewals, or automatically installs them. When enabled, the Citrix Licensing Manager contacts Citrix.com web services weekly to check for available Customer Success Services renewal licenses.

You have the following options to renew Customer Success Services licenses:

- **Automatically check for Customer Success Services renewal licenses and notify when available**
- **Automatically check for and install Customer Success Services renewal licenses when available**
- **Manually check for Customer Success Services renewal licenses**

The check for available renewals is performed weekly. To manually update your licenses, click **Update License > Check for Available Renewals**. Check the **Update License** tab at any time to see a list of licenses installed in the last 30 days.

Based on your configuration, the Citrix Licensing Manager does one of the following:

- Checks for Customer Success Services renewal licenses, notifies you, and installs the licenses when found.
- Checks for Customer Success Services renewal licenses, and notifies you they are available to be installed.
- Allows you to check manually.

If the automatic checks for Customer Success Services renewal licenses fail, check the firewall setting or configure a proxy. For this feature to work, the License Server must be able to access https://citrix services.citrix.com.

Supplemental grace period

You can use the Supplemental grace period feature to start the 15-day supplemental grace period, when you reach the regular license consumption limit. During the supplemental grace period, the product allows unlimited connections for 15 days, enabling you to fix the issue. Ensure you check your product documentation to determine if your product supports the supplemental grace period.

Language

You can change the default language of the Citrix Licensing Manager display, which applies to all the console users. The following languages are available:

- Chinese (Simplified)
- English
- French
- German
- Japanese
- Spanish

Usage and Statistics

Use the **Usage and Statistics** setting to do the following:

- Configure how you share usage statistics with Citrix.

- Find out if your License Server is registered, or register your License Server with Citrix Cloud.

- Know the status of your uploads, and fix failed uploads.

- Force data upload to Citrix.

- Set the period to retain the historical usage information.
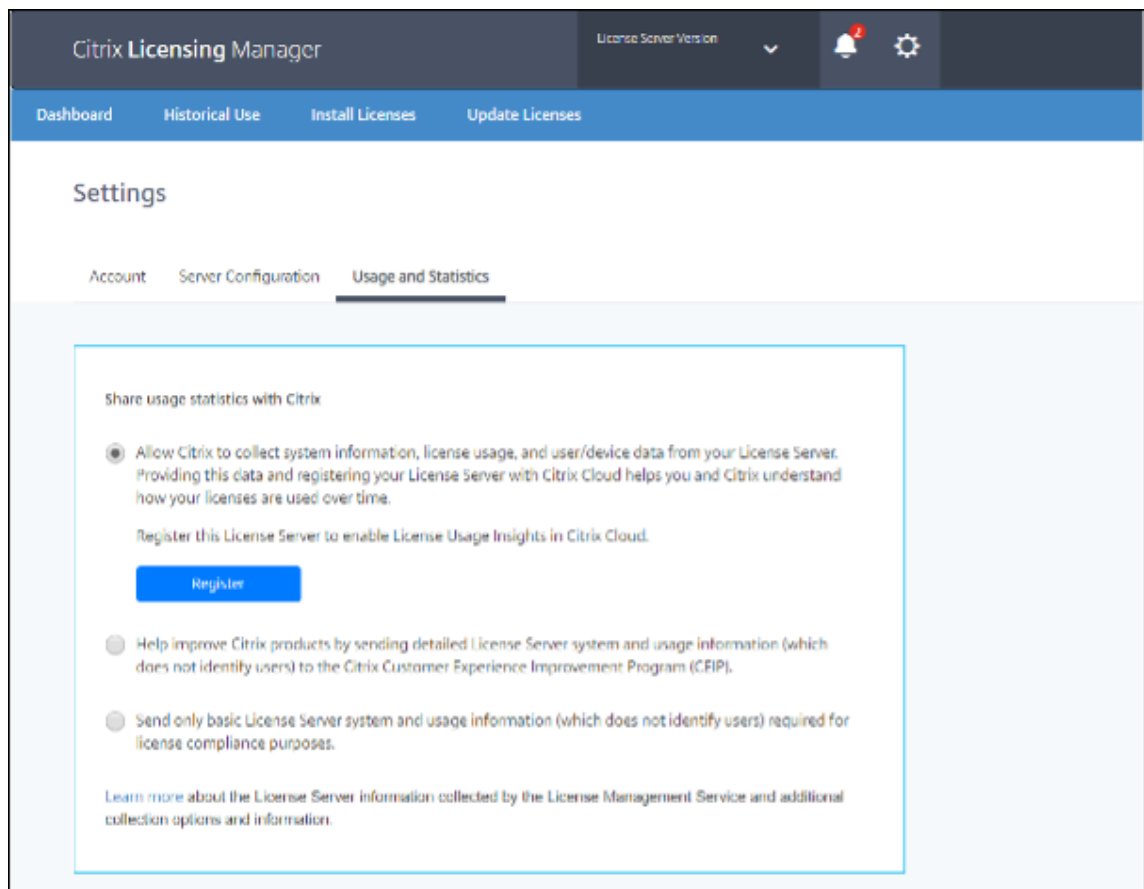
Register and remove registration of your Citrix License Server

Use the **Register** option in the **Usage and Statistics** section to register your Citrix License Server with Citrix Cloud. Once registered, the screen indicates that you are registered. Use the **Remove Registration** option if you want to remove the License Server registration. For more information, see Register Citrix License Server with Citrix Cloud.

Share usage statistics

The Citrix Licensing Customer Experience Improvement Program (CEIP) and Call Home usage and analytics programs are voluntary data collection programs designed to improve your product experience. CEIP is enabled by default during License Server installation. Call Home is voluntary. You can participate in the programs anonymously, choose to be identified, or decline to participate. You can change your participation in the program at any time by using the Citrix Licensing Manager.

For more information about the statistics that are collected, see Citrix licensing Customer Experience Improvement Program (CEIP), Call Home, and compliance usage and analytics programs.

> **Important:**
>
> The Citrix Service Provider program requires CEIP and Call Home. If you have Citrix Service Provider licenses installed, you can only change the settings and not disable CEIP or Call Home.

Configure usage telemetry

By using this feature, you have the option of allowing Citrix to collect data from the License Server. You can choose to send data in an unidentifiable format, or choose not to send data.
You have the following options:

- Select the **Send identifiable user name and device ID data** option to send your user name and device ID.
- Select **Replace identifiable user name and device ID data with non-identifiable values before transmission** options to send your user name and device ID in a non-identifiable format, once you have selected the **Send identifiable user name and device ID data**.
- Do not select the **Send identifiable user name and device ID data** option if you don't want you send your user name and device ID.

Upload Information

This Upload information feature provides the status for the last CEIP, Call Home, or Citrix Service Provider upload. You can force a data upload to Citrix without waiting for the daily upload. Click **Upload now** to force a data upload to Citrix, when CEIP is enabled. For successful uploads, allow five minutes between uploads.

If the upload fails, the Citrix Licensing Manager displays the troubleshooting information.

Historical Use

Use the **Historical Use** feature to choose the retention period to retain your License Server usage information. The default historical use retention period is one year.
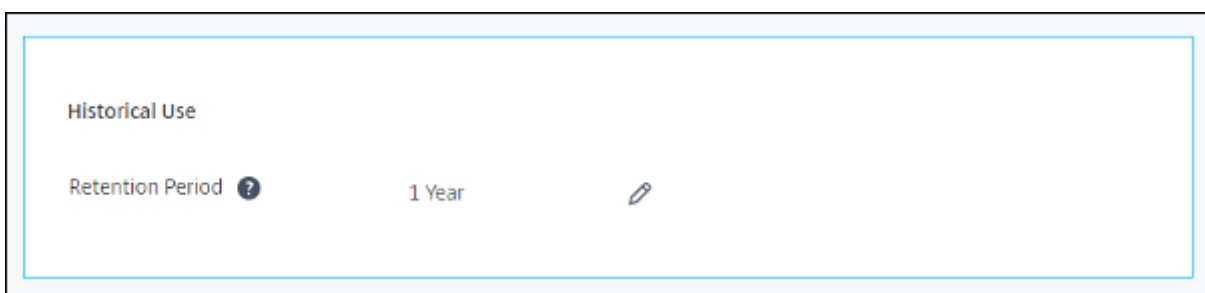
Register and remove registration of your Citrix License Server

December 20, 2023

Register your Citrix License Server

Register your Citrix License Server with Citrix Cloud, by using a short-code activation process, using the **Register** option in the **Usage and Statistics** section of the **Settings**.

Once registered, the screen indicates that you are registered, and you can use the **Remove Registration** option to remove the License Server registration.

By registering the License Server with Citrix Cloud, you allow the License Server to collect and store the Call Home license usage information, and regularly transmits that data to Citrix Cloud.

For steps to register an on-premise License Server, see Register on-premises products with Citrix Cloud.

View the status of your Citrix License Servers to understand which ones are successfully reporting usage and when they last reported usage to Citrix Cloud. For more information, see Monitor licenses and usage for on-premises deployments.

After your License Server is registered successfully in Citrix Cloud, you can view the details in the Citrix Cloud UI.

> **Important:**
>
> Before registering your License Server with Citrix Cloud, use the firewall rules to open the following URLs:
>
> `https://trust.citrixnetworkapi.net:443`
>
> `https://trust.citrixworkspacesapi.net:443`
>
> `https://cis.citrix.com port 443`
>
> `https://core.citrixworkspacesapi.net:443`
>
> `https://core-eastus-release-a.citrixworkspacesapi.net`
>
> `https://core.citrixworkspacesapi.net`
>
> `ocsp.digicert.com port 80`
>
> `crl3.digicert.com port 80`
>
> `crl4.digicert.com port 80`
>
> `ocsp.entrust.net port 80`
>
> `crl.entrust.net port 80`
>
> `crl.entrust.net port 80`
>
> Ensure that the License Server can access the Certificate Revocation List server for DigiCert and Entrust. The License Server checks the server to see if the required certificates are valid or revoked.

Steps to register your License Server

To register your License Server by performing the following steps:

1. Navigate to **Settings > Usage and Statistics**.

2. Click **Register** to generate an 8-character alphanumeric code.
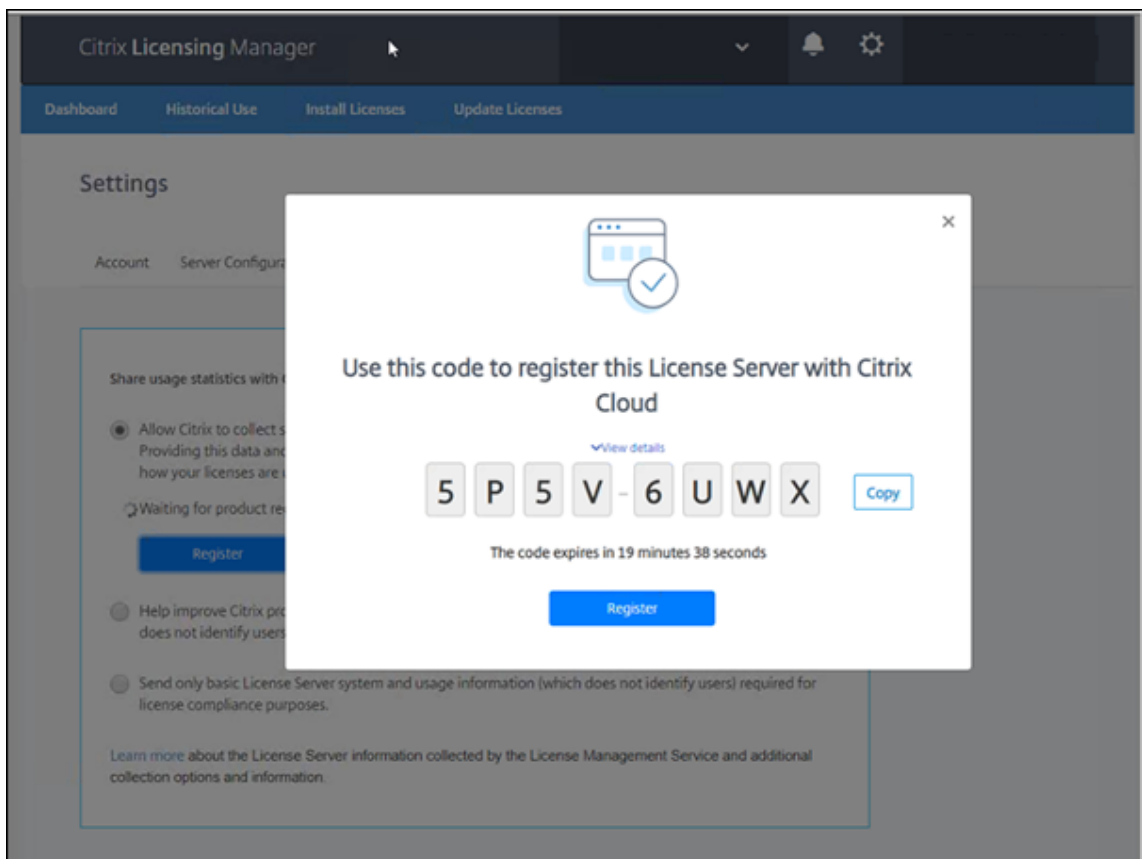
3. Select **View details** to view your License Server version, MAC ID, host name, and IP address.

4. Click **Register**. You're navigated to the Citrix Cloud sign-in page.

5. Enter your Citrix Cloud account credentials and navigate to **Product Registration > Register**. Enter the 8-character alphanumeric code, and click **Continue**.

6. Review the registration details and click **Register**.

> **Note:**
>
> If you're not redirected to the Product Registration experience, do the following:
>
> 1. Go to citrix.cloud.com and sign in to Citrix Cloud.
> 2. Select your company, select **Identity and Access Management > API Access tab > Product Registrations** from the select menu.

Remove registration of your License Server

If you want to register your license server with a different or new Citrix Cloud account, remove the registration and re-register the license server.

To remove your license server registration navigate to **Settings > Usage and Statistics**, and click **Remove Registration**. Review and confirm the confirmation message.
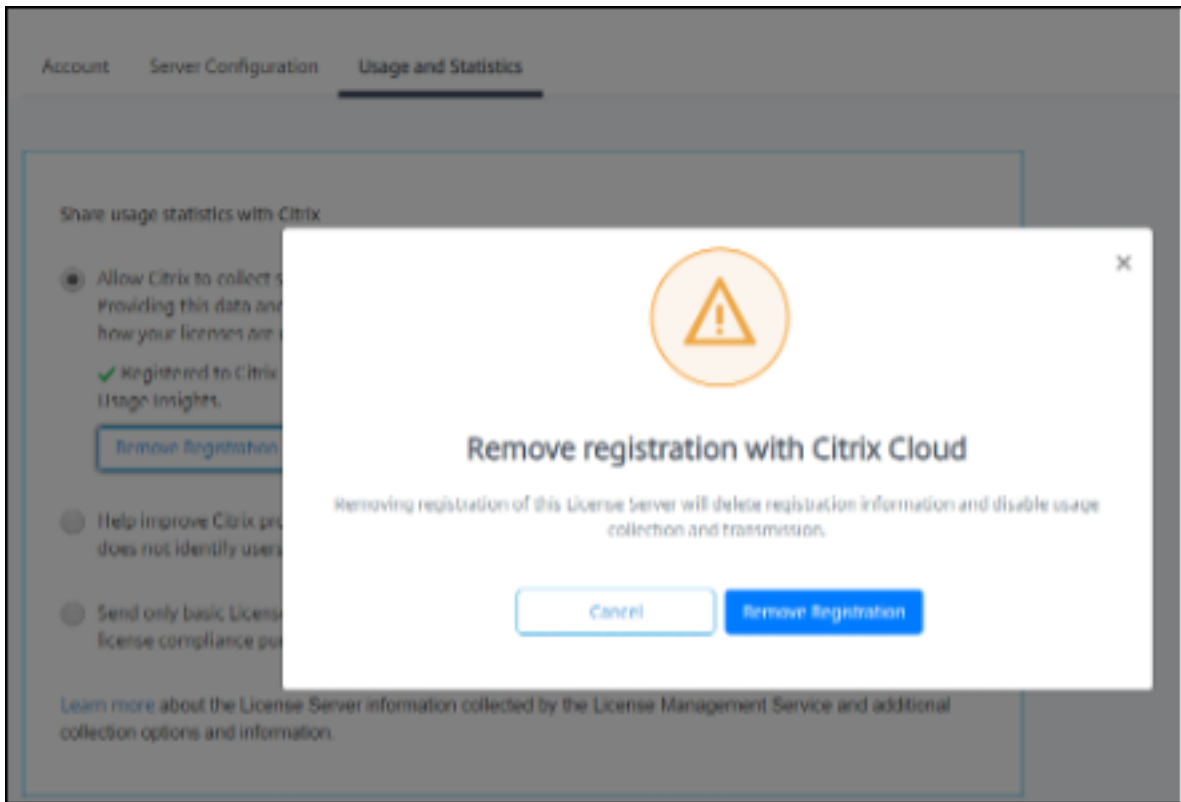
The registration of your License Server is removed from Citrix Cloud. You can now follow the steps to register your license server and register with a new Citrix Cloud account.

Use Manage Licenses in My Account on citrix.com

December 18, 2023

> **Note:**
>
> Citrix is working to improve the licensing experience in My Account on citrix.com. You can choose **Manage Licenses** to easily find, allocate, download, modify, return, hide, and unhide licenses.

There are several administration procedures that you can do without using the Citrix Licensing Manager. We recommend that you use the appropriate console whenever possible.

You can also use Manage Licenses at `citrix.com`. This article describes how to manage licenses on `citrix.com`.

Introduction to licensing concepts

New licenses

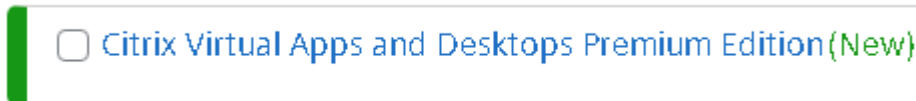You can display only new licenses by choosing **New Licenses** in the **Filter by** menu.

- New licenses are the licenses you purchased from Citrix within the last 30 days.
- The new licenses section displays the top five recent purchases.
- New licenses are indicated with a green bar and the word (New) in green.

☐ Citrix Virtual Apps and Desktops Premium Edition (New)

- You can Allocate licenses from the landing page only for new licenses. Select the required license and start the allocation process by clicking **Allocate licenses**.

Expiring term licenses

You can display only expiring licenses by choosing **Expiring Licenses** in the **Filter by** menu.

- Expiring licenses are term licenses that are expiring within 90 days.
- Licenses expiring within 0 through 30 days are displayed with a red bar. Licenses expiring within 31 through 90 days are displayed with an orange bar.

Expiring term licenses showing 3 of 3

Product name	License access code ▾	Allocated	Expires
Citrix ADC VPX 3000 Mbps Advanced Edition Term License		1 of 25	6 days
Citrix ADC Connector VPX 200Mbps - 1 Year On-Premises Subscription License		0 of 25	6 days
Citrix Gateway Universal - Annual License		0 of 25	36 days

Once the expiration date passes, these licenses do not work on your server nor appear in your list of licenses. If you need assistance with expired licenses, contact Customer Service.

- The **Expires** column shows the number of days until the license expiry date.
- The **Allocated** column shows the allocated quantity and total purchased quantity.
- The expiring licenses section shows the 5 most recent purchases.

Glossary

Allocate licenses: When you allocate licenses, you apportion purchased licenses by product and License Server so you can split them among multiple environments or use cases. For example, your

organization might own 1,000 licenses for the same product. You might want to use 800 in 1 location and 200 in another location. You can allocate 800 licenses to a License Server in the first location today, and allocate the remaining 200 later to a different License Server.

Asset components: Asset components are the license details.

CSV files: The Excel CSV file provides daily usage information, including the number of licenses in overdraft.

Modify licenses: Choosing to modify licenses, returns the license file and allocates it to another License Server.

Return allocations: When you Return licenses, you put the licenses back in the licensing pool. You can then allocate these licenses in any quantity at any time. After you return a license, remove the old license file from the License Server.

Term licenses: Term licenses are purchased for a specified amount of time and have an expiration date.

To access Manage Licenses on citrix.com

1. From a web browser, go to http://www.citrix.com.
2. Select **Sign In > My Account** and type your user ID and password.
3. Select **Manage Licenses**.
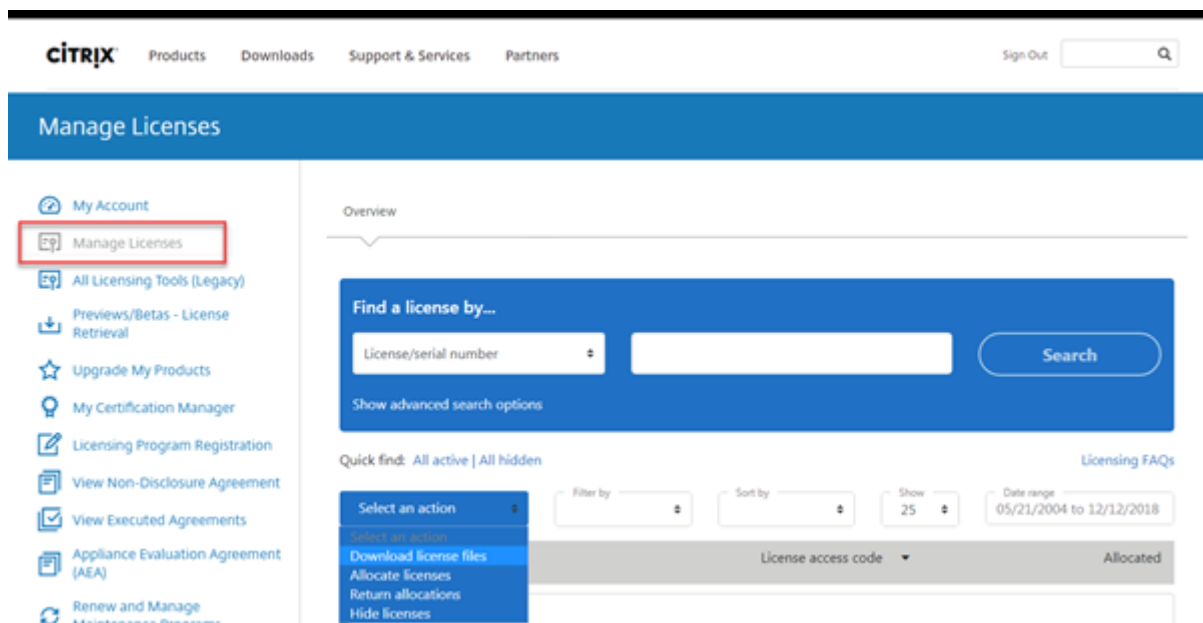
Search for licenses

- In the **Find a license by…** menu, choose the search criterion, type the search text, and select **Search**.

  You can select **Show advanced search options** to further narrow down your search.

Allocate licenses

1. Select the licenses you want to allocate. The landing page displays only new licenses within 30 days and expiring term licenses. You can use the **Find a license by…** search to find all licenses using one of the search criteria and then the **Filter by** menu to narrow the display down to specific types of licenses or you can select **Quick find: All active** to see all licenses.

2. From the **Select an action** menu, choose **Allocate licenses**.

3. Enter host name and how many licenses to allocate, and click Create license file.

4. Select **Yes, create license file**. If you want to make a change before creating the license file, select **No, modify the allocation**, and make your change. Then select **Yes, create license file**.

5. Select **Download license file**, and save the file to a temporary location. Remember the file name and location where you downloaded the file. You need this location.

6. Install the license. See Install licenses.

Download licenses

1. Select the licenses you want to download. The landing page displays only new licenses within 30 days and expiring term licenses. You can use the **Find a license by…** search to find all licenses using one of the search criteria and then the **Filter by** menu to narrow the display down to specific types of licenses or you can select **Quick find: All active** to see all licenses.

2. From the **Select an action** menu, choose **Download all licenses**, and save the file to a temporary location. Remember the file name and location where you downloaded the file. You need this location.

3. At a command prompt, navigate to the folder and type the following command:

   ```
   lmreread -c @localhost -all
   ```

For more information about the `lmreread` command, see Reread license and options files (lmreread).

Install licenses

1. Choose **Download license files**, and save the file to a directory.

2. At the License Server, copy the license file from the directory where it was saved to the `myfiles` directory.

   Ensure that the license file retains the lower case **.lic** file name extension. Some copy processes don't recognize a file type for that extension and add a ".txt" file name extension during the copy. You can't import license files that have the wrong file name extension.

   - `C:\Program Files\Citrix\Licensing\MyFiles` on a 32-bit computer
   - `C:\Program Files (x86)\Citrix\Licensing\MyFiles` on a 64-bit computer

3. 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

   And type the following command: `lmreread -c @localhost -all`

For more information about the `lmreread` command, see Reread license and options files (lmreread).

Asset components

Asset components are the To display asset components click **View my products** at the top of the screen. Choose a license and click the down arrow to expand and view the details. You can toggle between the order number and the license access code view.

Return allocations

Returning allocations puts the licenses back in the licensing pool. These licenses can then be allocated in any quantity at any time. For example, you're decommissioning a License Server, but you're not ready to deploy existing licenses elsewhere.

1. Select the check box of the licenses you want to return.
2. From the **Select an action** menu, choose **Return allocations**.
3. Select **Yes, process return**. If you choose this option, you cannot undo it.

Modify licenses - returns and allocates licenses to another License Server

Modifying a license returns a single license file and allows for allocation to another server. For example, you have 5000 licenses installed on **license server1**. You want to move 1000 licenses to **license server2**. Modify allocations and then allocate 4000 licenses to **license server1** and 1000 licenses to **license server2**.

1. To select a product, click the link, and view the product license details page.
2. Select the check box of the allocated license to modify.
3. From the **Select an action** menu, choose **Modify allocations**.
4. Type a new server host address.
5. Select **Modify license file**.
6. Select **Yes, create license file**. If you want to make a change before creating the license file, select **No, modify the allocation**, and make your change. Then select **Yes, create license file**.
7. Select **Download license file**, and save the file to a temporary location. Remember the file name and location where you downloaded the file. You need this location.
8. Install the license. See Install licenses.

Upgrade license edition

If you are eligible for a version upgrade as a benefit of your maintenance, you can obtain a new license and add it to the License Server.

1. At the bottom of the landing page, select **Upgrade my licenses**.
2. Follow the site options and instructions for upgrading your product edition licenses.
3. Either download or order new media. An email message provides you with instructions to return to citrix.com to allocate or receive more feature licenses.
4. 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.

Hide and unhide licenses

Hiding licenses doesn't remove them from an account. When you hide licenses, it removes them from view. You might want to hide legacy product licenses. Hiding those licenses increases the visibility of product licenses that you want to view.

1. Select the licenses you want to hide.
2. From the Select an action menu, choose **Hide licenses**.
3. To unhide licenses, choose **Quick find: All hidden** and select licenses.
4. From the **Select an action** menu, choose **Unhide licenses**.

Manage multiple licenses (bulk actions)

You can apply actions to multiple licenses at the same time. Select the check boxes of different licenses and then select and action.

To successfully apply actions to multiple licenses, be aware of these considerations:

- You can apply certain actions only to licenses with the same attributes. For example, you can only allocate licenses that have the same binding type. An error message appears when you select licenses that are not compatible for the bulk action.

  The first license you select is what subsequent selections are compared to for compatibility.

- If you select licenses that can't have an action applied to all of them, some actions might be disabled or not displayed, and a message might appear. For example, if you select two licenses, one that has been allocated and one that has not, a message appears. The message states that the action can apply only to allocated licenses.

Filter licenses

Use the **Filter by** menu to narrow your list to expired licenses, new licenses, available allocations, or trial licenses.

- From the **Filter by** menu, choose how you want to filter your output.

Create a product license report - Export to Excel (CSV)

Select this option to export your full list of assets and data to Excel.

1. Select the licenses you want in the report.
2. Choose the Export to Excel (.CSV) link. In the **View my product** screen, it's above the list of products. In the **Manage my licenses** screen, it's at the bottom of the list.
3. Save the file.

License Server administration without a console

December 18, 2023

There are several administration procedures that you can do without using the Citrix Licensing Manager. We recommend that you use the console whenever possible. This article describes the procedures required if you are unable to use a console.

- Customer Success Services renewal files
- Delete license files
- Disable the domain name truncation on Windows
- Find renewal and maintenance expiration dates

You can use the licensing management tool on citrix.com to download, allocate, install, modify allocations, return, and hide licenses. For more information, see Manage Licenses at citrix.com My Account.

You can use licensing commands to perform licensing tasks. For more information, see Licensing commands.

Customer Success Services

After you download your Customer Success Services renewal license file from citrix.com, you must add it to your License Server. Copy the Customer Success Services renewal license files to the same directory as your existing license files and reread (using `lmreread`) the license files. For more information about the `lmreread` command, see Reread license and options files (lmreread).

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

After you add the renewal license to your License Server, the license automatically unlocks any subsequent versions of the product released during the Customer Success Services period.

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 modify and allocate your original licenses into two new files. These original licenses are contained in your current license file on the original License Server.

   - Allocate licenses to your first License Server for your first deployment.
   - Allocate licenses to create another license file for the second License Server for your second deployment.

3. Generate and download your Customer Success Services 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.

Delete license files

When you upgrade your edition (for example, Standard to Advanced, or Advanced to Premium) you receive new Citrix product licenses. You can allocate these licenses to one or many Citrix License Servers through license files created at citrix.com. Rescinded licenses must be deleted from License Servers within 90 days of new license purchase. Deleting the licenses enables:

- License asset management
- License compliance
- Delete unnecessary alerts from appearing in the management console

Considerations when deleting files:

- Incorrect removal of license files might inadvertently lower the total licenses available.
- Place any new license files on the License Server before deleting any licenses.
- Delete a license file only when all INCREMENT lines in the file are obsolete or unnecessary. For example, every increment line was replaced with a new license because of an upgrade.

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 the 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

3. Back up all license (.lic) files.

---

4. Using a text editor (we recommend Microsoft WordPad), open each license (.lic) file and identify one or more obsolete license feature INCREMENT lines.

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

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

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

8. Delete the renamed .old file.

Disable the domain name truncation

Warning

Editing the registry incorrectly can cause serious problems that might require you to reinstall your operating system. Citrix cannot guarantee that problems resulting from the incorrect use of Registry Editor can be solved. Use Registry Editor at your own risk. Be sure to back up the registry before you edit it.

When you host multiple domains and multiple users who have the same user name on different domains, you can leave the domain name truncation enabled. For example, **jack**@mycompany.com and **jack**@newplace.com. If you have unique users on various domains, ensure that the License Server does not truncate @domain.com.

The License Server detects Citrix Service Provider licenses and enables this functionality.

1. Locate the registry key:

   For 32-bit machines: `HKEY_LOCAL_MACHINE\SOFTWARE\Citrix\licenseserver`

   For 64-bit machines: `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Citrix\licenseserver`

   Name: UDUseDomain

2. Set the registry key to 1.

Data	Description
0	The domain field is truncated. (default)
1	The domain field is not truncated.

Find renewal and maintenance expiration dates

You must have unrestricted access to **My Account**.

1. From a web browser, go to www.citrix.com.
2. Select **Sign In > My Account** and type your user ID and password.
3. Select **Renew and Manage Maintenance Programs**.
4. Select **Manage Renewal Contacts** at top of page.
5. Renewal dates are listed next to each license under **Current Expiration**.

Licensing commands

October 7, 2023

While the Citrix Licensing Manager provides an easy method of accessing many licensing features, you can also perform licensing tasks using commands. You might use the license administration commands for 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)\Citrix\Licensing\LS` on a 64-bit computer

Description of the licensing commands

> **Note:**
>
> In License Server version 11.16.6 build 34000, existing user management **lmadmin.exe** is replaced with Citrix owned user management **lmgrd.exe**. Ensure you do not use `lmadmin`.

Licensing commands	Description
`lmgrd`	Starts and manages the licensing server and other associated processes. `lmgrd` is the core licensing server file used for the Citrix licensing Windows service. It hosts the license server port (default 27000). Use the Citrix Licensing Manager for licensing configuration and administration tasks.
`lmdiag`	Diagnoses license check-out problems.
`lmdown`	Gracefully shuts down the License Manager and Citrix vendor daemons (disabled by default).

Licensing commands	Description
`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 runs other commands.
`lmver`	Displays version information for the licensing binaries.
`udadmin`	Displays all licensed users and devices and deletes specified licensed users and devices. This command applies to user/device licenses only. To get a list of licenses, specify `udadmin -list`.
`CtxManageUserAndGroup`	Configures user and group access to manage the License Server.
`CtxManageUserAndGroup.exe -useradd "domain\username" -Role "admin/user"`	Command to add a user.
`CtxManageUserAndGroup.exe -useradd "domain\username" -Role "adminGroup/userGroup"`	Command to add a group.

Format license commands

Formatting conventions for the license administration commands:

Convention	Description
Bold	A command or switch, such as **lmstat**.
Italic	Replace variables with a value. For example, in the expression: **lmstat -c** *license_file_list*. Before you run the command, replace license_file_list with the names of one or more license files.

Convention	Description
[Brackets]	Brackets around text indicate the options that you can add to the command. It might indicate that text within the brackets must be replaced. For example: `lmstat [-a] [-c license_file_list] [-f [feature]]` can be written as: `C:\Program Files (x86)\Citrix\Licensing\LS>lmstat.exe -a -c @localhost -f XDT_ENT_UD`

Universal arguments

Valid arguments for most license administration commands:

Argument	Description
-all	Displays all information about the License Server.
-c	Lets you specify license files or License Server port and host name. If you specify the path without a license file name, the command applies to all the license files in the directory. For a local host: `-c @localhost`. For a remote License Server: `-c @servername`. For a License Server in a cluster: `-c @clientaccesspointname`. For a specified path: `-c path`. For the names of one or more license files: `-c license_file_list`. You can enter more than one license file path by separating each path with a semicolon. 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.

Argument	Description
-s [*server*]	If you don't specify a *server*, this argument displays the status of all the license files listed on the License Server or the license files on all the License Servers.
-verbose	Displays a longer description for all errors found.

Diagnose checkout problems (lmdiag)

The `lmdiag` command 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 command, it attempts to check out a license.

You can also use the `lmdiag` command to see if a specific type of license is working.

Example:

Run `lmdiag` on your Citrix Virtual Apps server Advanced edition licenses only. Specify `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. The `lmdiag` command displays information about the license, then attempts to check out each license. When the checkout succeeds, `lmdiag` indicates that the checkout was successful. When the checkout fails, `lmdiag` gives you the reason for the failure. The `lmdiag` command tries 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.

The `lmdiag` command does not contact the computer running the Citrix product when it attempts to check out licenses. The `lmdiag` command 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, but `lmdiag` does not detect this problem. For example, a License Server that does not have licenses for that product on it. The `lmdiag` command reports that it can check out licenses when the Citrix product is pointing to the wrong License Server.

Stop daemons (lmdown)

The `lmdown` command shuts down the License Manager daemon and the Citrix vendor daemon on your License Server or all License Servers on your network. The `lmdown` command is disabled by default.

Syntax:

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

Argument	Description
-c license_file_list or -c @localhost or -c @server	Use the specified license files. We always recommend specifying `-c license_file_list` with `lmdown`. You can also use: `-c @localhost` or `-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.

Run the `lmdown` command on a License Server. You can use **-all** to shut down all the License Servers on your network.

If `lmdown` encounters more than one server and you didn't specify the **-all** argument, the command displays a choice of License Servers to shut down. For example, the **-c** argument specifies a directory with many *.lic files. Shut down the 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.

Checks the license server binding information (lmhostid)

The `lmhostid` command 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
```

where `bindingidentifier` is the argument.

Argument	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 host name of the License Server. **Note:** The parameter `hostname` is case-sensitive and must match your License Server name exactly.

Reread license and options files (lmreread)

The `lmreread` command 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 licenses from then on.

You cannot use `lmreread` 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, this argument 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` command displays a list of licensing utilities when used standalone. When you specify `lmutil` with another command, it runs that command.

Syntax:

`lmutil`

`lmutil other_command`

Examples:

- `lmutil`

  Displays all the licensing utilities.

- `lmutil lmstat -c @localhost`

  Runs the lmstat command.

Determine licensing status (lmstat)

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

- The product that checked out one or more licenses
- The checkout 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

The `lmstat` command displays information that it receives from the License Server. The `lmstat` command 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 you don't specify a *feature*, usage information for all features is displayed.
-i [feature]	If you don't specify a *feature*, this argument displays information from the INCREMENT line for the specified feature (product license) or all features.
-s [server]	If you don't specify a *server*, this argument displays the status of all license files listed on the License Server or the license files listed on all the License Servers.
-S [CITRIX]	Lists all product servers using the features (product licenses) served by the Citrix vendor daemon.
-t timeout_value	Sets connection timeout to timeout_value. This value limits the amount of time `lmstat` spends attempting to connect to the License Server.

The output from `lmstat -c @localhost -a` looks similar to this example. The lines in the example might break because of the screen space.

```
 1  License Server status: 27000@localhost
 2
 3     License file(s) on localhost: C:\Program Files (x86)\Citrix\
           Licensing\MyFiles\citrix_startup.lic:C:\Program Files (x86)\
           Citrix\Licensing\MyFiles\License.lic:
 4
 5     localhost: license server UP v11.15.0
 6
 7     Vendor daemon status (on LicenseServer):
 8
 9        CITRIX: UP v11.15.0
10
11  Feature usage info:
12
13     Users of CITRIX: (Total of 10000 licenses issued; Total of 1
           licenses in use)
14
15     "CITRIX" v2038.0101, vendor: CITRIX, expiry: permanent(no expiration
           date)
16  vendor_string: ;LT=SYS;GP=720;SA=0
17  floating license
18
19     XDT DDCPrinc-0001.citrix.com XDT XDT\_PLT\&MPS_PLT_2018.0518 (v1.0)
           (localhost/27000 102), start Tue 5/8 17:59
20
21  Users of CTXLSDIAG: (Total of 10000 licenses issued; Total of 0
           licenses in use)
22
23  Users of XDT_PLT_CCS: (Total of 200000 licenses issued; Total of 3
           licenses in use)
24
25     "XDT_PLT_CCS" v2018.1201, vendor: CITRIX, expiry: 01-dec-2018
26  vendor_string: ;LT=Retail;GP=720;PSL=10;CL=VDS,VDA,VDE,VDP;SA=0;ODP=0;
           NUDURMIN=2880;NUDURMAX=525600
27  floating license
28
29     XDT DDCAux-0001.citrix.com XDT 00001E3A (v2018.0518) (localhost
           /27000 534201), start Wed 5/9 15:17
30     XDT DDCAux-0001.citrix.com XDT 00001E81 (v2018.0518) (localhost
           /27000 392504), start Wed 5/9 15:18
31     XDT DDCAux-0001.citrix.com XDT 00001E0C (v2018.0518) (localhost
           /27000 419703), start Wed 5/9 15:18
32  <!--NeedCopy-->
```

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

		Description
Citrix product name	MPS	The name of the Citrix product that has the license checked out.
Host name	mps_server1	Computer where the Citrix product is running.
Display	MPS	Name of the Citrix product that has the license checked out.
Server host	license_server1	Computer where the License Server is running.
Port	27000	TCP/IP port where the License Server is running.
Handle	203	License handle. The license handle is a number used to identify a specific checked out license.
Checkout time	start Wed 3/17 11:56	Time that this license was first checked out.

The command `lmstat -c @localhost -a` can potentially generate much network activity in systems that have many products licenses checked out.

You can use `lmstat -a` to verify license checkout data.

Display versions of binaries (lmver)

The `lmver` command displays version information for the licensing binaries, such as the command utilities.

Syntax:

`lmver binary`

Example:

`lmver lmdiag`

Display or release licenses for users or devices (udadmin)

The `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.
- The employee is on an extended leave of absence.

You can release licenses for devices only when the devices are out of service.

> **Caution:**
>
> Mass releases of licenses, before the automatic 90-day lease period, outside of the reasons high-lighted earlier might violate the Citrix 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 | -events | -export | -list | -times]`

Options	Description
-f feature name	When used with -list or -delete, displays or releases the license for only the user or device for the specified feature name.
-user user name	Releases the license for only the user specified by the user name.
-device device name	Releases the license for only the device specified by the device name.
-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.
-events	Reports all events logged by the user/device licensing for each feature sorted in chronological order.
-export	Exports unprocessed user and device data. This data is used to calculate license use and is not a list of licenses in use. Citrix does not recommend customers use this argument. It is used for support or debugging only.

Options	Description
-list	Displays the users and devices with licenses and the time since the last update. If significant activity occurred within 15 minutes of the last report, the time to the next update appears. Specifying -list -times generates output containing a timestamp.
-times	Specifying -list -times generates output containing a timestamp.
No argument or ?	Displays usage information for the udadmin command.

Examples:

```
 1  -  udadmin -list -times
 2
 3     Usage data is 0 minutes old. Next update in 15 minutes.
 4
 5     Users:
 6
 7     u01.01 XDT_ENT_UD 2017.1201 (Thu Sep 14 13:41:07 2017)
 8
 9     u01.04 XDT_ENT_UD 2017.1201 (Thu Sep 14 13:41:07 2017)
10     .
11     .
12     .
13
14     Devices:
15
16     D.ADV.23 XDT_ADV_UD 2017.1201 (Thu Sep 21 18:31:01 2017)
17
18     D01 XDT_PLT_UD 2017.1201 (Tue Sep 12 14:30:33 2017)
19
20  -  udadmin -list -a
21
22     Lists all features, versions, counts of licenses, and the users and
           devices for each feature.
23
24  -  udadmin -export
25
26     feature,userId,deviceId,deviceName,versionRequested,
           versionUserAllocated,versionDeviceAllocated,time
27
28  -  udadmin -f XDT_ENT_UD -device dn01.88 -delete
29
30     Releases one device from one feature.
31
```

```
32  <!--NeedCopy-->
```

Clustered License Servers —configure, install, upgrade, and uninstall

October 7, 2023

Why clustered License Servers

Cluster servers are groups of computers that are combined to increase availability, reliability, and scalability. Clustering the License Server lets users continue working during failure situations without interrupting their access to critical applications.

How clustered License Servers work

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 another node in the cluster. 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 might briefly enter the licensing grace period and an event might be written in the product's event log.

> **Important:**
>
> If Citrix Licensing is installed in a clustered environment and Windows Firewall is enabled, 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 lmgrd.exe are created during the installation of Licensing, 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:
>
> - License Server port number is 27000
> - Vendor daemon port number is 7279
> - Web Services for Licensing port number is 8083

Citrix Licensing in a clustered environment

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:

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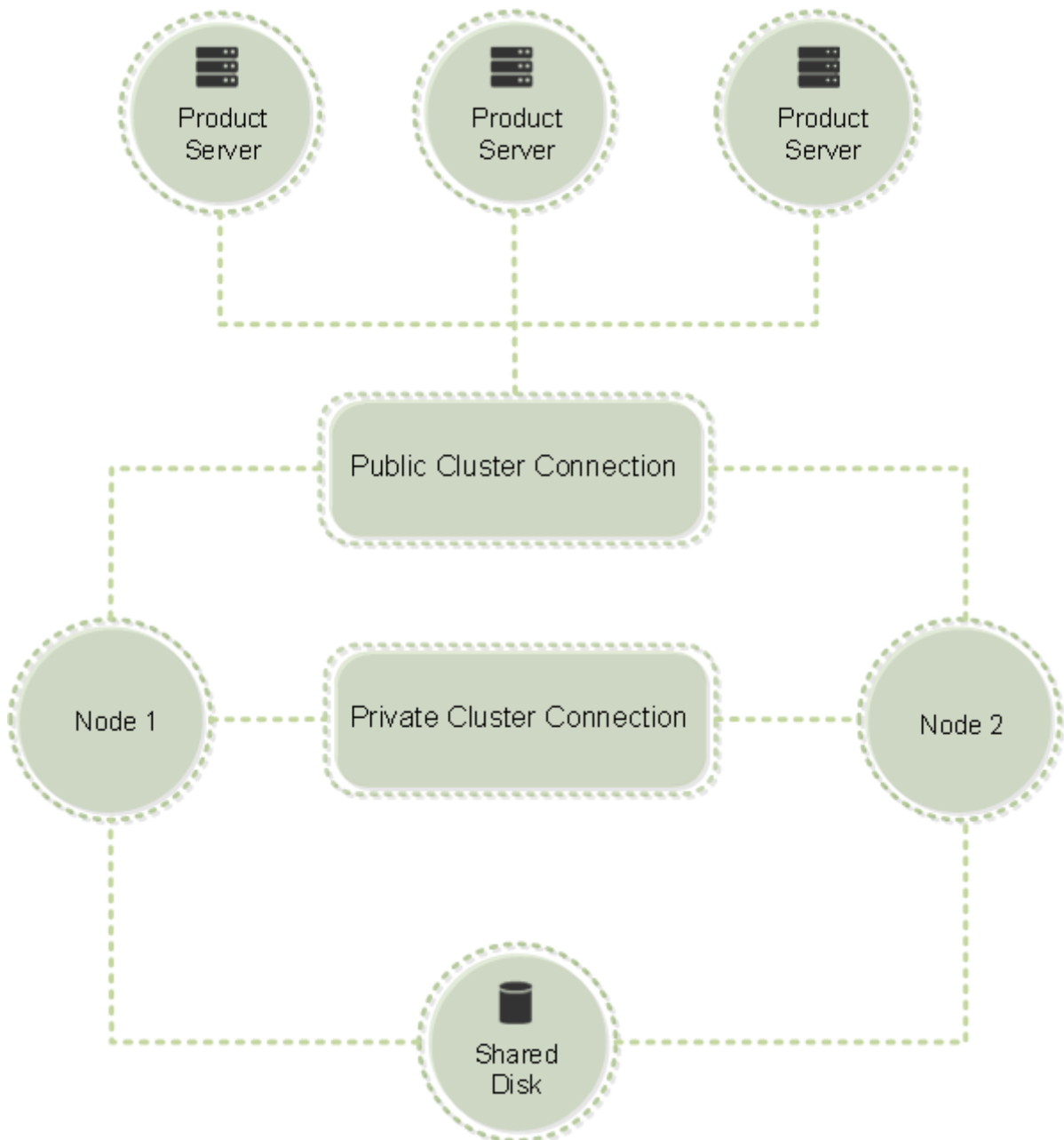
Only one node can use the resources in a cluster at any given time. If you already deployed Citrix Licensing and you want to migrate your deployment to a cluster-enabled server, keep the following

points in mind:

- Because you already generated license files that reference a specific server name, you must give the client access point the same name as the original License Server. If not, then 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 that the client access point name matches the host name specified in the license file. Cluster and host name case is not an issue if you use Studio in Citrix Virtual Apps and Desktops or the Citrix Licensing Manager (from the Start menu on your License Server) to download your licenses.

- Point all product installations (for example, servers running Citrix Virtual Apps and Desktops) 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.

Prerequisites to configure a clustered License Server

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

- Microsoft clustering functionality exists in:

  - Windows Server 2019
  - Windows Server 2016
  - Windows Server 2012 R2

- 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, follow these cluster requirements in addition to any requirements from Microsoft for hardware and clustering in general.

- Install licensing on the cluster with the License Server installer CitrixLicensing.exe.

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

- We recommend 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 configured with a shared disk.

- Ensure that each node has two network adapters. One for the connection to the public network and the other for the node-to-node private cluster network. We do 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 recognizes 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 forms the cluster must be in the same domain.

- Set static IP addresses for the private network connector.

- We recommend that you use the Citrix Licensing Manager to allocate licenses to the cluster.

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

- After you download a license file, 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.

Important:

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

Configure a clustered License Server

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. Install it on the first node to the shared cluster drive (not the quorum drive). Leave the Last Node in the Cluster check box cleared.

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. 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 the Cluster check box.

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.

Important:

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 lmgrd_debug.log.

Install licensing on a cluster-enabled server

Important:

The .msi does not support clustering. To install or upgrade for clustering, use CitrixLicensing.exe.

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 drive is the installation drive. That is, the place where installation files used by each node are stored.)

Because of a NetBios restriction, ensure that the client access point name is fewer than 15 characters. 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.

1. Create a separate, noncore cluster resource group. The resource group must have the attached storage assigned a drive letter and a client access point. The client access point must have the

same host name used when obtaining the license file. Use the Failover Cluster Manager and **Roles > Configure Role** in Windows Server 2012 R2, Windows Server 2016, and Windows Server 2019. Then select the **Other Server** type in the menu. Ensure that the first node of the cluster owns all cluster resources.

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

3. Leave the Last Node in the Cluster check box cleared during the installation on the first node.

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

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

6. 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.

7. 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.

8. Use the Citrix Licensing Manager to import your license files.

Open the console or run commands

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

Browse to the following location to open the **Citrix Licensing Manager** in a cluster:

`https://client access point name:web service port`

Where the *client access point name* is the name of the cluster and the *web service port* is the port number for console communications. The default port number is 8083. To specify the location of the license files in the cluster, you can run many license administration commands using the argument -c *@client access point name*. For example:

`lmreread -c @client access point name -all`

Upgrade a clustered License Server

To upgrade your clustered License Server (from versions 11.12.1 onwards) to the latest version, complete the following steps:

1. Download the latest License Server build.

---

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

3. Move the resources for the resource group you created when you installed licensing on a clus-
tered enabled server, to the second node.

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

5. If you have more than 2 nodes on the cluster, repeat **Step 3**.

6. Use the Citrix Licensing Manager to import your license files.

Known issue

When you begin the upgrade steps, an unnecessary **Configure Ports** page appears. You can safely
ignore it and click **Next**. [LIC-1434]

> **Note:**
>
> If you are running a version of a License Server older than 11.12.1, uninstall it and then install
> the 11.16.6 version. These older versions of License Server do not conform to current Microsoft
> cluster guidelines. The 11.16.6 version of the License Server has the functionality required to
> support Windows Server versions 2008 and later.

Uninstall a clustered License Server

Uninstall licensing from a clustered License Server using the **Control Panel > Programs and Features**
option from the active node.
Ensure that the first node contains all the resources.

1. From the first node in the cluster, start **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 more nodes, repeat Steps 3 and 4
for each node, and then proceed to Step 5.

5. Remove the remaining files from the shared drive.

> **Note:**
>
> The uninstallation process does not remove the license files and options file from the shared
> drive. For more information, see Troubleshoot Licensing.

Disaster recovery - back up and redundancy

December 18, 2023

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

You can use the same licenses for your disaster recovery site that you use for your production environment.

- Configure and manage your disaster recovery environment independently of your production environment.
- Don't use both the production and backup License Servers to service license checkouts at the same time.
- Make only one License Server accessible at any one time
- The License Server in your disaster recovery environment must have an identical host name to the License Server in your production environment.

When the License Server is offline for maintenance activity

The standard 30-day grace period allows your systems to continue to function without degradation of performance or denial of service to support License Server maintenance requirements.

What can I do if my License Server is unrecoverable?

When you have a backup copy of your license files available, you have 30 days to do the following:

1. Rename an existing server in your environment to have the identical host name as your original License Server.
2. Install the License Server component and your backup license files to relicense your environment.

What can I do if my License Server is unrecoverable and I do not have a backup copy of my license files immediately available?

When you don't have a backup copy of your license files immediately available, you have 30 days to access your My Account > Manage Licenses portal at www.citrix.com. To relicense your environment, do the following:

1. Download your license files.
2. Rename an existing server in your environment to have the same host name as your original License Server.
3. Install the License Server component and the license files you downloaded.

What can I do if my License Server is unrecoverable and I cannot rename an existing server in my environment?

When you can't rename an existing server in your environment, you have 30 days to relicense your environment. Do the following:

1. Identify another server in your environment.
2. Install the License Server component.
3. Access your My Account > Manage Licenses portal at www.citrix.com.
4. Return and reallocate your license files using the host name of the new server you selected.
5. Download and install these license files.

Does any failure of the License Server degrade performance or deny service to users?

No. The 30-day grace period prevents you from experiencing degradation in performance and denial of service to users.

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 and store it 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 feature on XenServer minimum release version 5.6.
- 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 another License Server that has a different server name on the network. In this case, when the active License Server fails, you must 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**. For more information, see Grace period.

Remember these key points:

- Because license files reference the server specified during allocation, you can use the files only on a server that has the same binding information. That is, the server name or FQDN or MAC address (possibly displayed on the portal as an Ethernet address) as the original License Server.
- You cannot have two License Servers that have the same name on your network active at the same time.
- Add any other licenses that you download to both the active License Server and the backup License Server.

Troubleshoot the License Server

December 7, 2023

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

Troubleshoot the cluster-enabled License Server

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?

- If the installation fails, ensure that you don't enable the User Account Control (UAC) when installing on a cluster.

- For Windows Server 2019, Windows Server 2016, and Windows Server 2012 R2:

  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. Select the **Cluster Core Resources** title to expand the section.
  3. Verify that the cluster resources are all online (green arrow).

The "-evaluation license-"warning message

After you replace the evaluation license files on the License Server with new license files, the Citrix product might 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. Delete the old evaluation license files from the License Server. For more information, see Delete license files.
2. At the License Server, restart the Citrix Licensing service.
3. At the Citrix product server that needs license validation, point to a fictional License Server and then point the product back to the actual License Server. (See your product documentation for information about changing these settings.)
4. If the problem persists, restart the product server (for example, Delivery Controller).

Required product licenses are not installed on Director or Studio

The following error message is displayed on the Citrix Virtual Apps and Desktops Director or Studio UI:

- Required product licenses are not installed
- Trial period has expired

The following reasons can cause the error messages:

- No valid licenses are installed on the License Server
- Product Edition and Product Model are not set correctly on Citrix Studio
- If the maintenance dates of the licenses are not compatible with the product version installed

To resolve this issue:

1. On Citrix Studio, check if the licenses are reflecting the correct maintenance dates. If not, reallocate and import renewed licenses. For more information, see the Citrix article CTX134629.
2. Verify if Citrix Studio is pointing to a valid License Server.
3. Click **Edit Product Edition** under **Actions** and choose correct licensing edition or model as per the licenses applied.

   - If the right edition or model is set and still the error remains, toggle between the license editions and then choose the correct one.
   - If the above steps do not work, click "**change license server**"under **actions** and click **connect**.

4. Relaunch Citrix Studio and then reboot the product server if the issue still persists.

> **Note:**
>
> License Server VPX is not compatible with Citrix Virtual Apps and Desktops (Version 7.x and above).

License Server VPX

October 7, 2023

> **Important:**
>
> The License Server VPX is deprecated and won't receive any further maintenance or security fixes. Customers using 11.16.6 or previous versions of License Server VPX are advised to migrate to the latest version of License Server for Windows as soon as possible.

The License Server VPX is a self-contained Linux-based virtual appliance that allows deployment of licensing in your Citrix environment.

The License Server VPX section of the Citrix Licensing documentation contains information that is specific to the License Server VPX. The rest of the Licensing documentation set contains articles that apply to only Windows or to Windows and VPX.

Limitations

These items are not supported with the License Server VPX.

- Supplemental grace periods.
- Citrix Licensing Manager:
    - The Citrix Licensing Manager is available on the License Server VPX only if you configure Active Directory and install the keytab file.
    - Enable and disable the supplemental grace period.
    - Modify ports License Server (default 27000), Vendor Daemon (default 2729)
    - Displays the License Server version in the top bar of the screen. If you click the down arrow, the hostname, Ethernet address, and IPv4 address appear.
    - License usage dashboard.
- Upgrades - See Export the database for use in a different License Server VPX.
- Clustered servers.
- Use the Linux iptables command to change License Server VPX default ports.

What's new in License Server VPX

October 7, 2023

What's new in the License Server VPX build 33500

Version upgrades

- Apache version 2.4.46
- CentOS version 7.9
- OpenSSL version 1.1.1h

Fixed issues

- DNS server configuration was added to the VPX configuration during static IP setup. [LIC-3270]

Known issues

- An unknown error appears the first time you import the license file from the Citrix Licensing Manager. As a workaround, refresh the page and try again. [LIC-3343]

- You cannot SSH/SCP as a root user for security reasons. As a workaround, to SSH/SCP as a new user:

    - Log in as root via XenCenter.
    - Use **useradd** to create a new user.
    - Use **passwd** to create a password for the new user.

What's new in the License Server VPX earlier builds

Version upgrades

- Apache version 2.4.41
- jQuery version 3.4.1
- CentOS version 7.7
- OpenSSL version 1.1.1d

Fixed issues

- After a CEIP upload failure, the log file location doesn't appear in the error message displayed on the Citrix Licensing Manager. The log file location is /opt/citrix/licensing/L-S/logs/log_ctxuploader.txt. [LIC-396]
- The user name of the logged on user displayed on the Citrix Licensing Manager page is in the domain\user format. The Citrix Licensing Manager of a License Server for Windows displays the user name as user@domain.

Known issues

- Sometimes after a few failed attempts to join Active Directory, when the Active Directory integration succeeds, you might see an LDAP error during the initial configuration of the License Server VPX. As a workaround, run resetsettings.sh and reenter the details.
- If you access the Citrix Licensing Manager from outside the domain to which it has been joined, you might be prompted for credentials multiple times. You must change your browser settings. For more information, see https://techsupport.osisoft.com/Troubleshooting/KB/KB01223.
- The operating system reserves ports 1 through 1024. When configuring the VPX ports, use ports higher than 1024. By default, VPX uses port 8082 for SSL, which is open in the firewall. If you choose a different port for SSL, reconfigure the firewall in the iptables.
- A network error might appear the first time you access the Citrix Licensing Manager from the Chrome browser. As a workaround, refresh the page.

Requirements for installing License Server VPX

October 7, 2023

Citrix Hypervisor (formerly XenServer) must provide adequate virtual computing resources to the License Server VPX as listed in this table.

Memory

2 GB. Sufficient for up to 500 Citrix servers and approximately 50,000 licenses. Monitor available memory during operation to determine if you require more memory. For larger environments, we recommend allocating more memory.

Citrix Hypervisor or XenServer version

- Citrix Hypervisor 8.2
- XenServer 7.0

Minimum storage requirement

10 GB on the default Storage Repository inside the XenServer pool.

Virtual CPU (vCPU)

1 vCPU. For larger environments or those using user/device licensing, consider adding a second vCPU.

Browsers

We tested the following browsers. Other browsers might work, but all functionality might not be available.

- Microsoft Edge
- Mozilla Firefox
- Chrome
- Safari

Get started with the License Server VPX

December 7, 2023

Download the License Server VPX from Citrix Licensing Version 11.16.6.0.

We distribute the Citrix License Server VPX as a virtual machine system configured in `.xva` format.

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 supports 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.

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

To find your License Server version number on the License Administration Console:

1. Open a web browser and go to `https://License ServerName:secureWebPort`.
2. Click **Administration** and select the **System Information** tab. See the release version in the information list.

Directory and file locations

- **License file location:** /opt/citrix/licensing/myfiles
- **Keytab file location:** `/opt/citrix/licensing/LS/conf/ctx_http.keytab`
- **server.crt and server.key location:** `/opt/citrix/licensing/LS/conf/`
- **Log locations:** `/opt/citrix/licensing/LS/logs`
- **Report log:** `/opt/citrix/licensing/LS/reportlog.rl`
- **Customer success service renewal files:** `/opt/citrix/licensing/LS/`

To import License Server VPX using Citrix Hypervisor

1. Open XenCenter, click the server on which to import the License Server VPX, and select Import.
2. Browse to the location of your package and choose the `.xva` package.
3. Choose a Home Server for your VM. This Home Server is the server on which the VM starts automatically. Alternately, you can click a Citrix Hypervisor pool and the VM automatically starts on the most suitable host in that pool.
4. Choose a storage repository for the virtual disk. The repository must have a minimum of 8 GB of free space.
5. Define network interfaces. The License Server VPX communicates on a single virtual NIC. Choose a network that is accessible to the Citrix Servers to which you want to provide license services.

After you import the VM, it appears inside your XenCenter management console. You can restart the virtual appliance in Citrix Hypervisor by right-clicking on its name and choosing **Start**.

Configure the License Server VPX for first use

After importing the License Server VPX, you have a fully functional Citrix License Server on your Citrix Hypervisor pool. The first time you start the License Server, a setup wizard opens to configure networking.

1. After the wizard opens, create a strong root password for administrators.

2. Specify a host name for the License Server VPX.

   Most Citrix license files are tied to the case-sensitive host name of your License Server.

3. Specify a domain for the License Server VPX.

4. Specify whether to use DHCP as your network type. Choose y to obtain network information automatically. Otherwise, choose n, and type the required network information.

5. Specify a License Administration Console user name and password for the licensing service.

6. Choose whether to enable the Customer Experience Improvement Program and Call Home. For more information, see About the Citrix Customer Experience Improvement Program (CEIP).

7. Choose whether to add the VPX License Server to the Active Directory domain. If you do, after the setup is complete, follow the instructions to generate and install the key tab file.

> Important:
>
> If you don't configure Active Directory, then Citrix Licensing Manager, Studio, and Director integration are unavailable.

Configure licenses from a web-based interface, available on port 8082

If you make a configuration error, log on to the appliance as **root** with the password you specified. Type the command `resetsettings.sh` or `reset_ceip.sh` to rerun the setup wizard.

resetsettings.sh command

`resetsettings.sh` provides the option to retain or delete historical data files while resetting the Licensing Server VPX configuration. You can fully reset the configuration by deleting all historical data collected until that time or partially reset the configuration by retaining the historical data.

As **root**, run the following script and make your choices:

```
# resetsettings.sh
```

reset_ceip.sh command

`reset_ceip.sh` provides the option to reset the Customer Experience Improvement Program (CEIP) options you chose during the original configuration. This command resets only the CEIP settings and retains all other settings.
On VPX, do not modify the CITRIX.opt file.

As **root**, run the following script and make your choice of CEIP [1.DIAG 2.ANON 3. NONE]

```
# reset_ceip.sh
```

Export the database for use in a different License Server VPX

Use the `migrate_historical_data.sh` script to migrate the historical data to a newer Licensing Server VPX. The script provides options to back up and restore historical data.

> Important:
>
> Run this script as **root**.

This example procedure migrates the data from `VPX_O` to `VPX_N`.

1. Run the command # `migrate_historical_data.sh -b` on `VPX_O` to create a back-up file **/tmp/historical_data.tar**.
2. When `VPX_N` is running, copy or move the **/tmp/ historical_data.ta** file to `VPX_N` using any file transfer protocol. For example, `scp`.
3. Run the # `migrate_historical_data.sh -r /directory` command on `VPX_N` to restore the data. Where **directory** is the directory in which **historical_data.tar** resides.

Generate and install the keytab file

1. Use the `ktpass.exe` utility from a Windows server that is connected to the same domain. Type the command on one line without returns. The following example shows multiple lines due to space limitations.

   ktpass.exe -princ HTTP/*hostFQDN:port@DOMAIN REALM* **-mapuser** *domainuser* **-pass** *password* **-out** *filepath* **-ptype KRB5_NT_PRINCIPAL**

   Where:

   -princ HTTP/*hostFQDN:port@DOMAIN REALM* specifies the principal name:

   hostFQDN is the Fully Qualified Domain Name of the License Server VPX.

   port is port configured for Web Services for Licensing. Default is 8083.

   DOMAIN REALM is the Active Directory domain typed in UPPERCASE LETTERS.

   -mapuser *domainuser* specifies a user in the domain that can be used to bind to Active Directory.

   -pass *password* specifies the domain user password.

   -out *filepath* specifies the path where the generated keytab file is saved.

   -ptype KRB5_NT_PRINCIPAL specifies the principal type. `KRB5_NT_PRINCIPAL` is the only supported principal type.

   Example:

```
ktpass.exe -princ HTTP/VPXHOST.example.domain.com:8083@EXAMPLE.
DOMAIN.COM –mapuser administrator -pass password –out C:\example.
keytab -ptype KRB5_NT_PRINCIPAL
```

2. Rename the generated keytab file to `ctx_http.keytab`.

3. From the License Server VPX command line interface, mount a network path.

   a) Create and share a folder with the `ctx_httpd.keytab` file in it.

   b) On the VPX, create a mount point, mount the shared drive, and copy the file.

   ```
   mkdir /mnt/temp
   ```

   ```
   mount //your_windows_machine/shared_folder/ cp /mnt/temp/
   ctx_http.keytab /opt/citrix/licensing/LS/conf
   ```

   c) Unmount the drive on the VPX.
   ```
   umount /mnt/temp
   ```

4. Copy the generated keytab file using the Windows share to this path on the License Server VPX.

   ```
   /opt/citrix/licensing/LS/conf/ctx_http.keytab
   ```

5. To access the Citrix Licensing Manager, open `https://VPXHOST.example.domain.com:8083/`

6. To bind the Active Directory, log on using the user configured in the command in step 1.

7. To configure and administer other domain users, log on to the Citrix License Administration Console:
   `https://VPXHOST.example.domain.com:8082`

8. Add and remove Active Directory users.

Important:

- License Server VPX doesn't support Active Directory groups.
- Because Kerberos authenticates the Active Directory users, the keytab file generation is crucial.
- As per Kerberos rules, you must map a unique user against the principal name created using `ktpass.exe`. For more information, see the ktpass command article.
- The port in the service principal name (SPN) is required for Studio to display and manage licenses.
- SSH/SCP is disabled for the root user. Create a new user to access the VPX with SSH/SCP.

Disable domain name truncation on the Citrix License Server VPX

The License Server detects Citrix Service Provider licenses and enables this functionality.

1. On the command line, go to the `/opt/citrix/licensing/LS/conf/ud_settings.conf` file.
2. Using the vi editor, set `CTX_UD_USERDOMAIN=1`.
3. Restart the License Server VPX or the Citrix Licensing daemon.

Setting	Description	
CTX_UD_USERDOMAIN=1	Use the user domain from user profile. Disables domain name truncation.	
CTX_UD_USERDOMAIN=0	Use the user domain from user profile. Disables domain name truncation.	Do not use the user domain from user profile. (default)

Move license files from an older License Server VPX version

This procedure moves only the license files. Reconfigure all the users on the new License Server. Ensure that the license files that you move have the correct ownership and permissions.

1. Back up the license files from the old Citrix License Server VPX to a network share.
   All the *.lic license files from: `/opt/citrix/licensing/myfiles` except citrix_startup.lic
2. Close the old License Server.
3. Spin up the new Citrix License Server VPX with the same binding as the older one. The binding might be a MAC address or host name or IP Address specified in the SERVER line of the license files.
4. Restore the backed-up license files from the Network Share to the new License Server. Restore the files to: `/opt/citrix/licensing/myfiles` with the file ownership as `ctxlsuser:lmadmin` (user:group) and permission as 644.
5. Run this command as `ctxlsuser`: `/opt/citrix/licensing/LS/lmreread -c @localhost`

Change port numbers

The Linux kernel reserves Ports 1 through 1024. When configuring the VPX ports, use ports above 1024. When using SSL, use port 8083 for the Citrix Licensing Manager and port 8082 for the License Administration Console, which is open in the firewall. If you select a different port for SSL, reconfigure the firewall in the iptables.

Citrix Licensing Manager

December 7, 2023

> **Important:**
>
> The Citrix Licensing Manager operates automatically within the License Server for Windows. The Citrix Licensing Manager is available with the License Server VPX if you configure Active Directory and install the keytab file.

The Citrix Licensing Manager enables the following features on a License Server using a simple web interface:

- Force data uploads to Citrix.
- Simplify data export by allowing you to select individual products, license models, all Customer Success Services (Subscription Advantage) dates.
- Change the Web Services for Licensing port (default 8083).
- Configure historical data retention by selecting a retention period. Default data retention is one year.
- Simplified installation of license files on the License Server using a license access code or downloaded file.
- Display details of licenses after they are installed.
- Configure Citrix Customer Experience (CEIP) and Call Home at any time.
- Retry failed citrix.com and Customer Experience Improvement Program uploads.
- Configure Configuring Subscription Advantage renewal (also known as Customer Success Services) license actions. You can specify whether to check automatically or manually for renewal licenses and whether you want notification of renewal licenses or the licenses installed.
- Store and export historical usage reports from the License Server VPX on which the tool is installed. You can specify a date range for the historical usage data and export it to a CSV file. The CSV file provides daily usage information including the number of licenses in overdraft.
- Important notifications of license availability, expiration, and other conditions. Use the bell icon at the top of the Citrix Licensing Manager screen to display notifications.

Settings

Display the Settings by clicking the **Settings** gear icon on the top of the screen. Use this screen to set the **Server Configuration**, which includes:

- Configuring the License Server port
- Configuring Subscription advantage renewal (also known as Customer Success Services) license actions

- Share usage statistics with Citrix. For more information about the data collected, see Citrix licensing Customer Experience Improvement Program (CEIP), Call Home, and compliance usage and analytics programs.
- Knowing the status of your uploads. If uploads fail, information appears with suggestions to fix the issues.

Upload information

Provides status for the last Citrix Customer Experience Improvement Program (CEIP), Call Home, or Citrix Service Provider Program upload

Last successful upload Not available

⛔ An upload to cis.citrix.com failed due to Error code 10 - "Network Failure HTTP Error connecting to citrix.com". An automatic retry is attempted in 24 hours, but you can click Retry now to try again. If this message doesn't resolve itself, see the troubleshooting steps below.

˅ Steps to troubleshoot

Retry now

CEIP data elements for Citrix License Server 11.16.6 build 33500

LSInfo	GUID		
	DateSampleStopUTC		
	DateSampleStop		
	SARenewalCheckOption		
	EncoreSamplingPeriod		
	EncoreRetentionTime		
	EncoreEnabled		
	UDUseDomain		
	OptFileNoLogStatus		
	OptFileComplianceConfig		
	UDUserNameCase		
	UDDeviceNameCase		
Inventory	Feature	ID	
		UDBinFileCreatedUTC	
		UDReportGenerationUTC	
		EventLog	TimeLapse
			UpgradeV2
			Corruption

			FirstCreation
			RemoveUser
			RemoveDevice
		SADate	DateSampleStartUTC
			DateSampleStopUTC
			CountUsedMax
			Active
			CountInstalled
			Pool	DateExpiration
				VendorStr
				CountInstalled
				CountOverdraft
StartupCounts	LPE	ID	
		Count	

Call home data elements for Citrix License Server 11.16.6 build 33500

LSInfo	GUID
	DateSampleStopUTC
	FQDN
	DateSampleStop
	SARenewalCheckOption
	EncoreSamplingPeriod
	EncoreRetentionTime
	EncoreEnabled
	UDUseDomain
	OptFileNoLogStatus

		OptFileComplianceConfig	
		UDUserNameCase	
		UDDeviceNameCase	
Inventory	Feature	ID	
		UDBinFileCreatedUTC	
		UDReportGenerationUTC	
		EventLog	TimeLapse
			UpgradeV2
			Corruption
			FirstCreation
			RemoveUser
			RemoveDevice
		SADate	DateSampleStartUTC
			DateSampleStopUTC
			CountUsedMax
			Active
			CountInstalled
			Pool	Serial
				DateExpiration
				VendorStr
				CountInstalled
				CountOverdraft
StartupCounts	LPE	ID	
		Count	
SerialNumbers	Serial	ID	
		SADate	
		SN	

Compliance data elements for Citrix License Server 11.16.6 build 33500

LSInfo	GUID		
Inventory	Feature	ID	
		SADate	CountUsedMax
			Serial
StartupCounts	LPE	ID	
		Count	

Historical use

The Citrix Licensing Manager stores and exports historical usage reports from the License Server VPX on which you've installed the tool. You can specify a date range for the historical usage data and export it to a CSV file. The CSV file provides daily usage information, including the number of licenses in overdraft.

You can also view and specify the amount of time to retain the data.

Install licenses

Considerations - Be aware of these considerations when using the Citrix Licensing Manager to allocate and download licenses:

- The License Server requires internet access or configuration with a proxy server.
- After you click Allocate and Download, you cannot cancel it. If the Allocate and Download fails, use My Account at citrix.com.
- The Citrix Licensing Manager allocates most license access codes but doesn't support redown-loading or reallocating of license files. You can return licenses on citrix.com and use the Citrix Licensing Manager to allocate them again. For redownloading, use My Account.
- If you rename the License Server, you must reallocate any license files allocated under the old License Server name.
- The Citrix Licensing Manager gives you the option of choosing how to obtain your licenses:

    - **Use license access code**
    - **Use downloaded license file**

Use license access code:

1. Select **Use license access code** and type the license access code (which is supplied in an email from Citrix) and choose **Display Licenses**. Your license entitlements display and you can choose which licenses and the quantity to install.

2. Select a product from the displayed list, type the number of entitlements to install, and choose **Install**. To select more than one product, choose a product, click Install, choose the next product, click Install, and so on. They are processed in order. After you install all the licenses for a specific license access code, you cannot use that license access code again. If you must perform more transactions with that code, log on to **My Account**.

Use downloaded license file:

1. Select Use downloaded license file, choose a file, and check the check box if you want to replace and older file with the same name.
2. Click Import. The Citrix Licensing Manager displays information about the licenses.
3. If your license file is successfully uploaded to the License Server, a message displays.

Note:

If you experience issues uploading a license file, remove any special characters in the file name and ensure that the file has a `.lic` extension (all lower case).

Update licenses

You can check for available Subscription Advantage (Customer Success Services) renewal licenses. When licenses are available, the list of licenses, quantity, and Subscription Advantage date display on this screen. You can download and install the licenses. This screen lists any licenses installed in the last 30 days.

Troubleshoot License Server VPX

December 7, 2023

Active Directory integration

These errors are the most commonly encountered errors during integration of the License Server VPX to Active Directory:

- **ERROR: Cannot find user**

    - The domain user account being used is not found in the target domain.
    - Trust domains are not supported. You might see this error if a user belongs to any trusted/parent domain and is not a part of the target domain.

- **ERROR: User does not have access**

    - Ensure that the domain user has the right privileges to join the machine to Active Directory.
    - For more information, see this Microsoft Support article.

- **ERROR: Cannot contact the domain**

    - Correct the domain name or check if the domain is reachable from the License Server VPX and fix any network related issues.

- **ERROR: User has insufficient permissions to join the domain**

    - The account does not have the privileges required to join a machine to Active Directory.

For more information, see this article.

For any other errors, see this article for details.

Keytab creation

If you see any issues during the keytab creation, follow these instructions and retry:

1. Ensure that you have elevated permissions when running the `ktpass.exe` command. Run the cmd prompt as Administrator.
2. Ensure that the User Account Control (UAC) restrictions are minimal.
3. Ensure that all password requirements are met. For example, password filters aren't blocking password characters on the target domain and you are specifying a supported number of characters.

4. Retry the command by adding the domain to account used in the `-mapuser` argument. Use a user principal name (`account@domain.com`) or a down-level logon name (domain\username).

5. Ensure that the account being used is a member of the target domain and not of a trusted or parent domain.

6. Add the -target argument to the command and pass the domain.

    a) Ensure that the account used in the `-mapuser` argument is a service account created solely for this purpose.

    b) Ensure that the first name, last name, and the service account name for the account are the same.

    c) We recommend that you name the account with the name of the License Server VPX name to ensure that uniqueness is maintained during mappings.

For more details, see the ktpass command article.

Manually install a certificate

Use this procedure if you are a Director or Studio administrator who doesn't want to use the self-signed certificate that is generated during installation.

Install the .crt and .key files on the License Server:

VPX - License Administration Console:

1. Stop Citrix licensing `etc`/`init`.`d`/`citrixlicensing stop`.
2. Copy the server.crt and server.key created earlier in this procedure to `/opt`/`citrix`/ `licensing`/`LS`/`conf`/.
3. Start Citrix licensing `etc`/`init`.`d`/`citrixlicensing start`.

VPX - Web Services for Licensing:

1. Stop the services `etc`/`init`.`d`/ `citrixwebservicesforlicensing stop`.
2. Copy the server.crt and server.key created earlier in this procedure to `/opt`/`citrix`/ `licensing`/`WebServicesForLicensing`/`Apache`/`conf`/.
3. Start the services `etc`/`init`.`d`/ `citrixwebservicesforlicensing start`.

Configure a proxy server for use with Citrix Licensing Manager, Customer Experience Improvement Program (CEIP), and Call Home

You can use a proxy with the Citrix Licensing Manager, CEIP, and Call Home. When you configure a proxy server, requests to download licenses and upload Call Home data are sent through a proxy server.

> **Important:**
>
> Citrix Licensing components requiring outward bound web communications can inherit network proxy settings using Windows automatic proxy detection. We do not support authenticated proxies. For more information about Windows automatic proxy detection, see WinHTTP AutoProxy Functions.

Configure a proxy server manually

Edit the SimpleLicenseServiceConfig.xml file, which is in `/opt`/`citrix`/`licensing`/`WebServicesForLice` `/`.

Add a line of xml to the file in the format `<Proxy>``proxy server name``:port number``</` `Proxy>`. The .xml tags are case-sensitive.