Pulse Connect Secure
Pulse Policy Secure

License Management Guide

Product Release 8.2/5.3

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*Pulse Connect Secure / Pulse Policy Secure License Management Guide*

The information in this document is current as of the date on the title page.

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**Revision History**

2015/12/15 – Changes for rebranding
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- Audience
- Document Conventions
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Audience

This guide is designed for network administrators who are configuring and maintaining Pulse Connect Secure or Policy Secure gateways. To use this guide, you need a broad understanding of networking principles and network configuration. Any detailed discussion of these concepts is beyond the scope of this guide.

Document Conventions

Table 1 defines notice icons used in this guide.

Table 1: Notice Icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
<th>Description</th>
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<tr>
<td><img src="image" alt="i" /></td>
<td>Informational note</td>
<td>Indicates important features or instructions.</td>
</tr>
<tr>
<td>![!]</td>
<td>Caution</td>
<td>Indicates a situation that might result in loss of data or hardware damage.</td>
</tr>
<tr>
<td>![!]</td>
<td>Warning</td>
<td>Alerts you to the risk of personal injury or death.</td>
</tr>
<tr>
<td>![!]</td>
<td>Laser warning</td>
<td>Alerts you to the risk of personal injury from a laser.</td>
</tr>
<tr>
<td>![!]</td>
<td>Tip</td>
<td>Indicates helpful information.</td>
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Best practice Alerts you to a recommended use or implementation.

Documentation

For a list of related Connect Secure documentation, see http://www.juniper.net/support/products/sa/. If the information in the latest Connect Secure Release Notes differs from the information in the documentation, follow the Connect Secure Release Notes.

Obtaining Documentation

To obtain the most current version of all Pulse Secure technical documentation, see the products documentation page on the Pulse Secure website at http://www.pulsesecure.net/techpubs.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation at http://www.pulsesecure.net/techpubs. You can provide feedback by using either of the following methods:

- Document name
- Page number
- Software release version

Requesting Technical Support

Technical product support is available through the Pulse Secure Global Support Center (PSGSC). If you have a support contract, then file a ticket with PSGSC.

- Product warranties—For product warranty information, visit http://www.pulsesecure.net/support.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Pulse Secure, LLC has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: http://www.pulsesecure.net/support
- Search for known bugs: http://www.pulsesecure.net/support
- Find product documentation: http://www.pulsesecure.net/techpubs/
- Find solutions and answer questions using our Knowledge Base: http://www.pulsesecure.net/support
- Download the latest versions of software and review release notes: http://www.pulsesecure.net/support
• Search technical bulletins for relevant hardware and software notifications:
  http://www.pulsesecure.net/support

• Open a case online in the CSC Case Management tool:  http://www.pulsesecure.net/support

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool:  http://www.pulsesecure.net/support

Opening a Case with PSGSC

You can open a case with PSGSC on the Web or by telephone.

• Use the Case Management tool in the PSGSC at http://www.pulsesecure.net/support.
• Call 1-844 751 7629 (Toll Free, US).

For international or direct-dial options in countries without toll-free numbers, see http://www.pulsesecure.net/support.
PART 1 Overview

- License Management Overview
- License Overview
CHAPTER 1 License Management

Overview

- About License Management
- About License Servers
- About License Clients
- About Auto-Leasing
- Updating Client Configuration
- Importing and Exporting Configuration Files
- Licensing Virtual Appliances
- Pulse Licensing Enforcement Update & FAQ

About License Management

Pulse Connect Secure software and Pulse Policy Secure software include a license management system that lets you configure the Connect Secure gateway (including services modules on a MAG Series Pulse Gateway configured as Connect Secure) as a license server to allow administrators to view all configured systems and move those licenses as needed. Other devices on the network lease licenses from the central license server.

Alternatively, you can install and manage licenses directly on each device and eliminate the license server entirely. Your company’s needs and requirements dictate which configuration is best for you.

End User License Agreement (EULA) acceptance is mandatory and you are entitled to use the features of the software that you have licensed within the limits of your Proof of Entitlement. Contact your sales representative for more information.

Related Documentation

- About License Servers
- About License Clients
- About License Allocations

About License Servers

If you choose to use license servers, the license server software can be run on any SAx000 and SAx500 devices and Pulse Secure gateways running the Connect Secure personality. Once you configure a device to be a license server, that appliance ceases to be anything except a license server; it will no longer accept end-user client connections. You can configure more than one license server, but each client can be associated with only one license server. A device cannot be both a license server and a license client at the same time.
Note the following about license servers:

- Only administrators can log in to a license server.
- Virtual appliances cannot be configured as license servers and you cannot install licenses on virtual appliances.
- A license server cannot lease licenses from another license server.
- The license server manages and leases licenses associated with a user count, such as basic concurrent user licenses, and RDP (remote desktop) licenses.
- License servers must have either an ACCESS-LICENSE-SVR or an ACCESS-SUB-SVR-ZYR license (for example, ACCESS-SUB-SVR-1YR) in order to be recognized as a license server. If you are using Connect Secure 7.0 software you must use ACCESS-SUB-SVR-ZYR. If you are using Connect Secure 7.1 software you can use either ACCESS-LICENSE-SVR or ACCESS-SUB-SVR-ZYR.

**Disabled Features**

Only administrators can log in to the device configured as a license server. An error message is displayed to non-administrator users attempting to log in to the license server. All existing end-user sessions are terminated when a device is configured as a license server.

Some Connect Secure features and windows are disabled on the license server’s administration console.

**Related Documentation**

- About License Management
- Disabled Features on a License Server

**About License Clients**

Clients are configured to communicate with a particular license server. The client then requests the licenses (over HTTPS) that are allocated to it.

An optional LICENSE-MBR license (for example, SA2500-LICENSE-MBR or IC4000-LICENSE-MBR) must be installed when clients need to access capacity from non-subscription licenses or if an administrator wants to surrender a client’s licenses to the license server.

If you are not using a license server, all your devices are still configured as license clients. However, the steps to set up communication with the license server are not needed.

**Leasing Licenses from a License Server**

If the concurrent user count is greater than its leased license limit, a license client requests the license server to increase its capacity until the maximum lease limit (MUC) is met.

When the number of concurrent users drops, the client relinquishes the leases it no longer needs. When the license server receives license lease requests, it first verifies that the client has been allocated the licenses it is requesting. The license server then checks that it has sufficient licenses before granting the request.
Reserved licenses are leased for 10 days at a time. Incremental leases are leased from a configurable time of 24 hours to a maximum of 10 days. Clients can renew their licenses at any time before the lease expires. The reply sent by the license server includes a new lease expiration date, which is the minimum of the current time plus the incremental lease time and the license allocation expiration date. If a client does not renew a license before the lease expires, the license server reclaims the license. The renewal interval can be one hour to a maximum of IncrementalLeaseDuration/2.

A minimum lease interval of 24 hours is built-in. Once a client acquires an incremental license lease, it is kept for at least 24 hours even if the load diminishes on the client.

NOTE: For Instant Virtual System (IVS), license leasing is applicable to only the root IVS. IVS is supported on platforms (requires an IVS license) except for virtual appliances and MAG Series devices.

Related Documentation

- About License Management
- About Auto-Leasing

If a license client is unable to contact the license server because of network interruptions or license server maintenance, the license client can still increase its user count lease with the auto-leasing feature. Auto-leasing activates automatically on a license server based on the number of extra licenses available and the current allocation of those licenses amongst the license server’s clients.

Auto-leasing applies only to subscription or user capacity licenses, not licenses tied to a specific platform or platform family. For example, there is no auto-leasing for the SA6000-ADD-1000U license because that license is tied to the SA6000 platform. Auto-leasing can be enabled for the CONSEC-1000U-1YR license because the CONSEC-1000U-1YR license is not platform or platform family specific.

NOTE: Even though the ACCESS-RDP licenses are applicable only to the Connect Secure, auto-leasing is enabled for RDP users because this license is applicable to all platforms within the Connect Secure System.

Auto-leasing is automatically enabled for a user capacity feature when the average available count over 24 hours for that feature is greater than 30% of the unallocated maximum capacity. For example, assume the following scenario:

- A license server has a CONSEC-1000U-1YR concurrent user license installed.
- The server has 10 clients each configured with a reserved count of 50, an incremental count of 10 and a maximum count of 100.
- Each client has currently leased 60 user counts.
- The average available count over the past 24 hours is 400.

The unallocated maximum capacity is 10 clients * (100 maximum count - 60 leased) or 400. 30% of 400 is 120. Since the average available count over the past 24 hours is 400 and is greater than 30% of the unallocated maximum capacity (120), auto-leasing is enabled.
If, however, the maximum count on each client is 200, then the unallocated maximum capacity changes to 10 clients * (200 maximum count - 60 leased) or 1400. Since the average available count over the past 24 hours is 400 and is now less than 30% of the unallocated maximum count (420), auto-leasing is now disabled.

For clusters, the cluster lease leader performs the auto-increments for all connected cluster nodes.

During any one continuous disconnected state, auto-leasing can be used till the reserved leases expire or for 10 days.

The auto leasing feature automatically disables if the client is unable to communicate with the license server for more than 10 days.

When a disconnected client re-establishes connection to the license server, information is passed to the license server to reconcile capacity allocations for the duration of the automated lease increments and “normal” leasing rules are in effect. If the license server is unable to reconcile the client’s auto-lease usage, the license server turns off auto-leasing for all features for the next 5 days. All clients that connect to that license server during these 5 days cannot auto-lease until the 5-day penalty period expires. If new user count subscription license (such as RDP, EES, concurrent users or PRM) are added to the license server, the penalty period expires immediately.

Related Documentation

- About License Management

Updating Client Configuration

Administrators can change a client configuration (at the license server) at any time. This change is communicated to the client the next time it contacts the license server for the next renewal. You can also click the Pull State from Server button in the client’s admin console to register any changes immediately.

If you reduce the maximum user count (MUC) value for a feature at a client, the current leased count is reduced immediately without waiting for the client to contact the server. An increase to the reserved user count (RUC) or MUC value does not impact the current leased count until after the client contacts the license server. Once the client connects to the license server, licenses are relinquished. Optionally, you can delete the client configuration from the license server for the license capacity to become available.

Surrendering Licenses

An administrator can surrender permanent user count licenses installed on a client to a license server so that they can be shared by other appliances of the same family. When surrendering licenses, the entire license is removed; you cannot surrender portions of a license. You surrender a license only to the license server to which the client is registered. Once a license is surrendered, the license server can treat the licenses as if they were installed directly on the server.

NOTE: You can surrender only permanent concurrent user licenses (for example, CONSEC-ADD-xU) and permanent meeting user licenses (for example,
CONSECx600-MTG-xU). You cannot surrender feature licenses (for example, SAx000-IVS, ICx000-OAC-ADD-UAC), cluster licenses (for example, SAx000-CL-100U) and duration-based licenses (for example, CONSEC-1000U-1YR, SAx000-LAB) licenses.

When licenses are surrendered to the license server, it will have an expiration date set to 10 days. The client automatically contacts the license server every 4 hours to extend the transfer by resetting the expiration date. If the client loses communication with the server for more than 10 days, the server can no longer lease these licenses. However, these licenses are not automatically returned to the client; they are returned only with the recall function.

In a cluster, each node surrenders and recalls its licenses independently of the other nodes. There is no concept of a surrender leader. However, an administrator can log in to a cluster node and surrender or recall licenses for that node or any node within that cluster.

**Recalling Licenses**

An administrator can recall licenses surrendered to a license server at any time. The recall operation can be done only at the client where the licenses were surrendered. Recalled licenses are available immediately at the client regardless of whether the client can communicate with the license server. If the license server/client communication is down at the time of the recall, the client continues to contact the license server. When communication is again established, the server stops leasing those licenses. If the license server had already leased those licenses at the time of the recall operation, those leased licenses are valid until the client renews its leases. If licenses are unavailable, the client is not assigned any capacity. The license server does not recall the licenses it already granted.

**Automated Downloading of License Keys**

Administrators are given the option to automatically download license keys from the LMS server using the Download and Install button on the Download Licenses page. This feature is applicable for all license keys (subscription-based, capacity-based, and so forth.) Communication is done via https.

The automated download process uses the following schedule for contacting the LMS server:

- Once every 3 months if there are no expiring licenses.
- Once a month if a license is expiring within the next 3 months.
- Once a week if a license is expiring within the next 2 weeks.
- Once a day if a license grace period is expiring within the next week.

**Related Documentation**

- About License Management
- Surrendering and Recalling Licenses
- Configuring the Automated Downloading of License Keys
Importing and Exporting Configuration Files

License information is not imported when importing a configuration file containing the new license scheme on a device running software prior to Connect Secure 8.0 or Policy Secure 5.0. Devices will continue to run with their current license scheme.

Existing permanent licenses are overwritten for devices running Connect Secure 7.0 (and later) and Policy Secure 4.0 (and later) and importing configuration files containing the new license scheme. Time-based licenses are merged with the licenses in the imported configuration file.

Related Documentation

- About License Management

Licensing Virtual Appliances

Virtual appliances do not allow licenses to be installed directly on them. As such, virtual appliances can be only license clients and not license servers.

Related Documentation

- About License Management

Pulse Licensing Enforcement Update & FAQ

Pulse Secure, LLC temporarily removed software-based license enforcement in its Pulse mobility products in Connect Secure 8.0 and Policy Secure 5.0 in December 2013 as part of evaluating a new licensing initiative. Pulse Secure, LLC reinstated software-based license enforcement in these products in Connect Secure 8.0R5 and Policy Secure 5.0R5. The software-based license enforcement in the R5 and later versions will be the same as in pre 8.0 releases. This topic is to make you aware of what to expect both in deployments with or without the License Server.

When did Pulse Secure, LLC reverse its licensing enforcement in Pulse products?

Reversal refers to the restoration of software-based license enforcement (reverting to the same licensing behavior as pre CS/PS version 8.0/5.0). This was implemented in CS/PS 8.0R5 /5.0R5, respectively.

What is Pulse Secure’s guidance to customers regarding upgrading to CS/PS versions 8.0/5.0?

Customers upgrading to any of the versions with licensing enforcement removed (versions 8.0/5.0 to 8.0r4 /5.0r4) should see no disruption in operation of their deployment. Customers running the License Server may see specific messages related to the licensing enforcement removal; however, as long as customers have the correct entitlements, they are not in violation of their EULA’s with Pulse Secure, LLC.

Does this mean that my purchases for a specific quantity of licenses or a license server in v8.0 were unnecessary?

No, any customer purchases of concurrent session quantities or a Pulse License Server are still valid for versions 8.0/5.0. The removal of software-based license enforcement did not change
our licensing entitlement strategy, which still obligated quantity-based concurrent session purchases and the use of a License Server to share or lease licenses across Pulse gateways.

What is the difference between enforcement and entitlement?

Entitlement refers to the right to have service and use features. A license buys you entitlement to (use) a product. Enforcement is the action taken by the system based on the presence or absence of licenses. Connect Secure 8.0 and Policy Secure 5.0 code (r4 and earlier) do not enforce licenses but entitlement is still required. A user must purchase licenses to be compliant, even though the gateway might allow a non-restricted number of concurrent sessions (up to max capacity) for some features.

What happens to customers who upgrade from Pulse CS/PS versions 8.0RX /5.0RX (where X <= 4) to Pulse CS/PS version 8.0R5 /5.0R5?

The expectation is that a user running Pulse CS/PS version r1 through r4 has purchased licenses to stay compliant and entered them into a gateway device or License Server. When this user or organization upgrades, licenses will begin being enforced. The max number of sessions on an CS or PS gateway and features available will be dependent on the licenses. Access maybe denied to users if the number of concurrent users exceeds the purchased license (although the products do provide for some default level of over-capacity).

If you have licenses bought but not entered in your gateway, an upgrade to 8.0R5 will cause the max session count to fall back to the system default of 2 users until such time that a license is entered to open up more concurrent sessions. In addition, virtual CS’s will not work without a License Server in 8.0R5. When in doubt, expect the behavior to be the same as in pre-8.0/5.0.

How does software-based license enforcement reinstatement impact CS/PS version 7.x / 4.x customers who plan to upgrade to 8.0R5?

No change. Customers running Pulse CS/PS versions 7.x / 4.x who upgrade to version 8.0R5 /5.0R5 will see the same upgrade behavior as seen in upgrades prior to versions 8.0/5.0.

Will there be any operational impact to production devices upon upgrade to CS/PS 8.0R5 /5.0R5?

Once upgraded to the R5 release or later (i.e. after software-based license enforcement is reintroduced), the transition will be seamless for customers that have purchased and applied the appropriate licenses to their devices either directly or through the License Server model. Customers that have purchased but not applied the licenses to the devices will be required to install the license keys on the device before purchased capacity is made available. To minimize any impact, we strongly recommend that customers install the license keys on the device before upgrading to 8.0R5/5.0R5 or higher.

Are there any changes to the EULA upon license reversal?

The EULA will revert to the EULA in place in versions of Pulse CS/PS prior to versions 8.0/5.0. EULA changes in version 8.0/5.0 were reflective of the software-based license enforcement changes and other concepts.
CHAPTER 1: License Management Overview

Does the behavior of the license server change in CS/PS version 8.0R5 /5.0R5?

No, behavior of the license server will be the same as CS/PS versions prior to 8.0/5.0.

Is it mandatory for a customer to buy licenses if he/she is running CS/PS 8.0RX (where X<=4)?

Any customers using our features must buy licenses to stay compliant, per our legally binding EULA.

For any other specific concerns, please work with your account managers/team.

What are the newly introduced role specific licenses?

With the 8.0r5 and 7.4r12 releases of the Connect Secure software and the 5.0r5 and 4.4r12 releases of the Policy Secure software, role specific licenses were introduced in conjunction with the common access licenses. The Connect Secure licenses (CONSEC*) must be used on Pulse Connect Secure devices/personality only and Policy Secure (POLSEC*) licenses must be used on Pulse Policy Secure devices/personality only. These licenses enable customers to support as many users as specified in the license and will work additively with common access licenses. These role specific licenses are available in subscription and perpetual flavors and will be usable on a license server.

The CONSEC licenses are not compatible with Connect Secure software releases prior to 8.0r5 or 7.4r12; the POLSEC licenses are not compatible with Policy Secure software releases prior to 5.0r5 or 4.4r12. Examples of these SKUs are:

- CONSEC-ADD-100U-2Y-R
- POLSEC-ADD-100U-1Y-R
- CONSEC-ADD-250U-3Y
- POLSEC-ADD-25U-2Y-R
- CONSEC-ADD-500U-3Y-R
- POLSEC-ADD-5000U-3Y
- CONSEC-ADD-1000U-1Y
- POLSEC-ADD-1000U-3Y-R
- CONSEC-ADD-2000U-1Y-R

**NOTE:** With CONSEC and POLSEC licenses, virtual appliances will be now be able to use the corresponding perpetual flavors. The restriction on subscription only licensing for virtual appliances is now removed with the introduction of role specific licensing.

**Related Documentation**

- About License Management
- Configuring a Device as a License Server
- Configuring a Device as a License Client
CHAPTER 2 License Overview

- About Subscription Licenses
- Capacity-Derived Licenses and Client Platform Compatibility
- License Leasing With and Without the LICENSE-MBR License
- About Cluster Licenses

About Subscription Licenses

Subscription licenses and renewal licenses (identified by a -R appended to the license name) have a start and end date embedded within them. Customers initially purchase a subscription license that is valid until a specified date. When the license expiration date nears, customers can renew their licenses.

When the license is installed, the start and end date are interpreted relative to the local time and time zone on the machine. The start date begins at 12:00 am; the end date ends at midnight of the end date (12:00 am of the following day). If the start date is in the future, the subscription or renewal license is not activated till the start date. A renewal license is automatically activated only if there is a corresponding expired subscription license.

A subscription license can only be renewed by a corresponding renewal license and a renewal can be activated only by the expiration of a corresponding subscription or renewal license.

Available Subscription Licenses

The following subscription licenses are available (X and Z will be replaced by the appropriate number of user and/or year count):

- ACCESS-RDP-XU-ZYR—Embedded RDP applet
- ACCESS-PRM-xU-zYR—Patch remediation management
- ACCESS-XU-ZYR—Concurrent user count subscription
- ACCESS-SUB-SVR-ZYR—Allows a device to be a license server

NOTE: With Connect Secure 7.1 and later software, you can use either the ACCESS-LICENSE-SVR or the ACCESS-SUB-SVR-ZYR to identify a license server. With Connect Secure 7.0 and earlier software, you must use the ACCESS-SUB-SVR-ZYR.

Both capacity-based licenses (such as ACCESS-EES) and time-base licenses (such as ACCESS-SUB) stack. For example:

- If you purchase two ACCESS-EES-10K-1YR licenses, they stack to 20K for 1 year.
• If you purchase both a one ACCESS-10K-1YR license and one ACCESS-ESS-10K-2YR license, they do not stack. They must be of the same type. For example, two ACCESS-10K-1YR licenses stack.

• If you purchase both an ACCESS-SUB-SVR-1YR and an ACCESS-SUB-SVR-2YR licenses, they stack to a three year license.

Note the following:

• ACCESS-SUB-SVR licenses have a maximum of 3 years. LMS will reject requests that stack ACCESS-SUB-SVR licenses to more than 3 years.

• Renewal licenses must match the license being renewed. For example, if your ACCESS-ESS-10K-1YR licenses is about to expire, you can only renew another ACCESS-ESS-10K-1YR-R license. You cannot renew it with an ACCESS-ESS-10K-2YR-R license.

Related Documentation

• Configuring License Options

**Capacity-Derived Licenses and Client Platform Compatibility**

Capacity derived licenses can be leased only to the same platform family (x000, x500). For example, an IC4000-ADD-100E capacity derived license can be leased to an SA6000 but not to an IC4500. Capacity derived from a CONSEC-ADD-1000U license can be leased to any x500 device.

**NOTE:** x500 licenses cannot be directly installed onto an x600 license server and vice versa.

Non-platform or non-family-specific licenses can be leased to any platform. For example, capacity derived from an ACCESS-1000U-1YR license can be leased to any CS or PS gateway.

Related Documentation

• About License Management

**License Leasing with and without the LICENSE-MBR License**

It is not necessary for license clients to have the LICENSE-MBR license in order to connect with a license server. However, clients without the LICENSE-MBR license can only lease capacity associated with ACCESS subscription licenses.

The LICENSE-MBR license is required for:

• Surrendering permanent Concurrent Users and Meeting licenses.

• Leasing capacity associated with permanent Concurrent Users and Meeting licenses.

**NOTE:** The LICENSE-MBR license must be installed on all nodes in a cluster for LICENSE-MBR functionality to be enabled in the cluster.
Usage Scenario 1: No LICENSE-MBR License

Assume an SA6500 license server with the following licenses installed:

- ACCESS-1000U-1YR
- SA6500-ADD-1000U

Total licenses available for VA-SPE: 1000
Total licenses available for SA2500/4500/6500: 2000

Node A is an SA6500 with no LICENSE-MBR license. It is configured with the following settings on the license server:

- Reserved = 2000
- Increment = 300
- Maximum = 4000

When Node A contacts the license server, it informs the license server that it does not have the LICENSE-MBR license. Since it does not have the member license, it can only gain access to the capacity available to VA-SPEs (1000.) But since it is configured to have a reserved count of 2000, the license server will deny its lease request.

Now assume Node A is an SA6500 with no LICENSE-MBR license. It is configured with the following settings on the license server:

- Reserved = 1000
- Increment = 300
- Maximum = 4000

When Node A contacts the license server, the license server will be able to grant its lease request for 1000 users. However, any subsequent incremental requests will be denied.

**NOTE:** The reserved count will be updated as shown above, but this is a configuration number only. This value is not the maximum concurrent users allowed. To see how many users can log in simultaneously, view the Maximum Concurrent Users number located near the top of the License page.

Usage Scenario 2: 2-Node Cluster with Only One LICENSE-MBR License

Assume an SA6500 license server with the following licenses installed:

- ACCESS-1000U-1YR
- SA6500-ADD-1000U

Total licenses available for VA-SPE: 1000
Total licenses available for SA2500/4500/6500: 2000

Node A and Node B form an SA6500 2-node cluster. Node A has a LICENSE-MBR license while Node B does not.
Node A is configured with the following settings on the license server:

- Reserved = 1000
- Increment = 300
- Maximum = 4000

Node B is configured with the following settings on the license server:

- Reserved = 1000
- Increment = 300
- Maximum = 4000

In this scenario, Node A is granted 1000 from the VA-SPE pool but Node B is not granted a lease because there are no licenses left in the VA-SPE pool. If both nodes have a LICENSE-MBR license, their initial lease requests is granted because the cluster has access to the full available counts for a SA6500 device.

Now assume Node A is configured with the following settings on the license server:

- Reserved = 1500
- Increment = 350
- Maximum = 4000

Node B is configured with the following settings on the license server:

- Reserved = 500
- Increment = 350
- Maximum = 4000

In this scenario, Node A is denied any licenses and Node B receives 500 licenses drawn from the ACCESS-1000U-1YR pool.

**Usage Scenario 3: License Server with Only Permanent Licenses Installed**

Assume an SA6500 license server with two SA6500-ADD-1000U licenses installed.

Total licenses available for VA-SPE: 0

Total licenses available for SA2500/4500/6500: 2000

Node A and Node B form an SA6500 2-node cluster. Node A has a LICENSE-MBR license while Node B does not.

Node A is configured with the following settings on the license server:

- Reserved = 1000
- Increment = 300
- Maximum = 4000

Node B is configured with the following settings on the license server:
• Reserved = 1000
• Increment = 300
• Maximum = 4000

When this cluster tries to lease licenses, the license server denies the lease request because both nodes in the cluster do not have the LICENSE-MBR license.

**NOTE:** The reserved count will be updated as shown above, but this is a configuration number only. This value is not the maximum concurrent users allowed. To see how many users can log in simultaneously, view the Maximum Concurrent Users number located near the top of the License page.

**Related Documentation**

• About License Management

### About Cluster Licenses

The licenser server can lease licenses to both standalone clients and clustered clients. Note the following for leasing licenses to clustered clients:

• Only one cluster member, identified by the Connect Secure or Policy Secure software, makes lease requests on behalf of all cluster members. This member can query, renew, and increment licenses for other cluster members when the members are connected to the cluster.

• In order to lease from platform or platform-family specific permanent licenses or to surrender installed licenses, each cluster member participating in license leasing must have the LICENSE-MBR license installed. Otherwise, the LICENSE-MBR license is not required.

When setting up the cluster license information, it is not necessary to enter the cluster configuration at the license server. This information is retrieved dynamically as each client reports its own cluster affiliation to the server and is displayed in the license server admin console.

The initial communication between the cluster to the license server retrieves the reserved counts for all cluster members registered with the license server. Incremental requests are the sum of all members in the cluster that are not at their maximum configured capacity.

For example, suppose a cluster has 2 nodes configured as follows:

node 1: reserved=50, maximum=100, incremental=10
node 2: reserved=50, maximum=100, incremental=10

The initial query retrieves 50+50=100 licenses. Each incremental lease request increments the current lease by 10+10=20 licenses up to a maximum of 100+100=200 licenses.

**Related Documentation**

• About License Management
PART 2 License Keys

- Obtaining Your License Keys
CHAPTER 3 Obtaining Your License Keys

- Obtaining, Entering, and Upgrading Your License Keys
- Configuring License Options
- Activating and Deactivating Emergency Mode

Obtaining, Entering, and Upgrading Your License Keys

To take full advantage of your device you must access the License Management System, provide your licensing hardware ID and authorization code(s) to obtain your license keys, and sign in to the admin console to enter the license keys you received.

A licensing hardware ID is a unique 16-character code used to identify your particular device when generating license keys. You can find the system’s licensing hardware ID above the menu options in the serial console and at the bottom of the admin console.

An authorization code is a pass key required to generate and activate license keys you or your company have purchased for your device. You receive your authorization code(s) after you purchase your device and associated product and feature licenses. Figure 1 shows the license key generation and activation flow.
The package you download from the License Management System or the e-mail message you receive might contain different types of licenses:

- **User license keys**—Enables you to host as many users as are specified in the license key code. User license keys are additive, meaning that you can expand the number of users that can access a device by simply acquiring an additional user license key and adding it to your configuration. For example, if you initially purchase a 100 user license and then purchase another 100 user license in the future, your device can accommodate up to 200 users.
- **Access feature license keys**— Allows you to enable system access methods. These keys are available for a variety of access methods including Network Connect and Secure Application Manager, Pulse Collaboration, and advanced access feature licenses.

- **In Case of Emergency (ICE) license keys**—Allows you to activate the emergency mode, and provides licenses for additional users on a device and Pulse MAG Series device for up to eight weeks for periodic testing and transitioning to permanent licenses, if necessary. The ICE license does not include optional features.

- **Evaluation license keys**—Allows you to enable and roll out the latest functionality for a limited time before deciding whether or not to purchase license keys and enable the new functionality on a permanent basis. Evaluation license keys are valid for one, two, or four weeks.

You can use the System > Configuration > Licensing tab to enter the license keys for your site, to view their expiration dates, and to delete them (if needed).

Ensure that you read the license agreement, which is accessible from the Licensing tab, before submitting your license key. The license agreement available from the Licensing tab is the same text displayed in the serial console during the initial setup.

**Related Documentation**

- Configuring License Options
- Activating and Deactivating Emergency Mode

**Configuring License Options**

Use the License Management System to create and enter new license keys or to transfer license keys to replace a device. Detailed instructions are located on the License Management System located at https://www.juniper.net/generate_license.

**Related Documentation**

- Obtaining, Entering and Upgrading Your License Keys
- Activating and Deactivating Emergency Mode

**Activating and Deactivating Emergency Mode**

The emergency mode feature allows you to temporarily enable a system for a large number of users.

To activate the user license key enables you to host as many users as are specified in the license key code. User license keys are additive, meaning that you can expand the number of users that can access the device by simply acquiring an additional user license key and adding it to your configuration. For example, if you initially purchase a 100 user license and then purchase another 100 user license in the future, your device can then accommodate up to 200 users. In emergency mode, you must first install an In Case of Emergency (ICE) license using the standard system license installation procedure. Then, when the emergency occurs, you can easily activate emergency mode through the system’s web console. When your emergency has passed, you should then deactivate the emergency mode.
NOTE: The ICE license is permanent until you activate emergency mode. Activating emergency mode switches the ICE license to a temporary license and only enables you to operate in emergency mode for 8 weeks. Once the ICE license expires, all features disappear and your users can no longer access the device using the emergency mode.

To activate or deactivate emergency mode:

1. In the Web console, select **System > Configuration > Licensing**.
2. Find the In Case of Emergency License entry in the license list. Sample ICE license names include:
   - MAGX600-ICE
   - ACCESS-ICE-25PC
3. Click the **Enable** link on the right side of the license column to activate emergency mode or click **Disable** to deactivate it.

When you enable and disable emergency mode, the system decrements the corresponding license in 5 minute intervals.

**Related Documentation**

- Obtaining, Entering and Upgrading Your License Keys
- Configuring License Options
PART 3 Using Licenses without a License Server

- Configuring a Standalone License Device
CHAPTER 4 Configuring a Standalone License Device

- Configuring a License Client Without a License Server

Configuring a License Client without a License Server

If you do not use a license server, then you install the appropriate licenses on each device. Without a license server, you manage each device’s entitlements individually.

The steps in this topic assume that you have already performed the license key generation and activation steps.

After you download or receive your license keys by using email:

1. In the admin console, choose System > Configuration > Licensing > Licensing Summary.
2. Click on the license agreement link. Under Installed License Details, read the license agreement and, if you agree to the terms, continue to the next step.
3. Enter your license key(s) and click Add.
4. Click Save Changes.

An example of the client’s License Summary tab is shown in Figure 2.
Figure 2: Client Window After Installing Member License

A license server has not been configured. Please configure a license server.

Related Documentation

- Licensing Changes with This Release
PART 4 Using Licenses with a License Server

- Configuring the License Server
- Configuring the License Client
- Automatic Downloading, Surrendering and Recalling Licenses
CHAPTER 5 Configuring the License Server

When using a license server in your environment, you must configure a device as the server and then configure the handshake between each client and that server. This section describes the procedures for setting up a license server.

- About License Allocations
- Configuring a Device as a License Server

About License Allocations

Before a device can lease licenses from the license server, you must first allocate licenses to that particular device. License allocation information consists of the following:

- License client ID—You must assign a unique ID to each license client to identify that client. The client identifies itself with the license server using the client ID.

- User count license properties—
  - Reserved user count (RUC)—The number of user count licenses reserved for this client. A license leased to this client cannot be less than the RUC number.
  - Maximum user count (MUC)—The maximum number of user count licenses this client is allowed to request. This number must be greater than or equal to the RUC. Requests for licenses greater than the RUC are granted only if the license server has additional licenses available at the time of the request.
  - Incremental lease quantum (ILQ)—Clients can request an increase or decrease to its user count lease only in multiples of this number. The ILQ must be at least 25 unless the difference between the MUC and the RUC is less than 25. The ILQ must also be at least 10% of the difference between the MUC and the RUC. This restriction eases excessive protocol traffic.
  - Expiration date—The date when the client configuration expires. When the client configuration expires, the server no longer accepts lease requests from the client. You can use this, for example, to define a 2 year service to a customer.

As you allocate licenses, the license server does not allow the sum total of the reserved user count to exceed the total license count installed on the license server.

Related Documentation

- About License Management
Configuring a Device as a License Server

The following outlines the steps to configuring a device as a license server. These steps assume that you have already performed the license key generation and activation steps.

NOTE: For MAG Series Pulse Secure gateways, you must use the Connect Secure personality as the license server.

Virtual appliances cannot be configured as a license server.

After you download or receive your license keys by using email:

1. In the admin console of the license server, choose System > Configuration > Licensing > Licensing Summary.
2. Click on the license agreement link. Read the license agreement and, if you agree to the terms, continue to the next step.
3. Enter your license key(s) and click Add.
4. Click the Configure Clients tab.
5. Select the Enable Licensing server checkbox.
6. (optional) Click Advanced Settings and enter the following values:
   - Incremental Lease Duration
   - Lease Renewal Interval
7. Click Save Changes.

An example of the summary section after you configure your clients is shown in Figure 3.
Figure 3: Configured License Server With No Clients

<table>
<thead>
<tr>
<th>Feature</th>
<th>Total</th>
<th>Reserved</th>
<th>Leased</th>
<th>Client</th>
<th>Auto-leasing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concurrent Users</td>
<td>2000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Enhanced Endpoint Security</td>
<td>1000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Embedded RDP Applet</td>
<td>1000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>PDM</td>
<td>1000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Then:

1. In the admin console of the license server, choose System > Configuration > Licensing > Configure Clients.

2. Click New Client.

3. Enter the Client ID. The ID is defined on the client device under System > Configuration > Licensing > Configure Server.

4. Enter the client password and confirm it. The password is defined on the client device under System > Configuration > Licensing > Configure Server.

5. (optional) Enter the client configuration expiration date.

6. Select the client’s platform from the list.

7. For each feature you want to lease to this client, enter:
   - **Reserved Count** — the number of licenses to reserve for this client. The reserve count must be less than the available amount displayed.
   - **Incremental Count** — the incremental number of licenses to grant when the client requests more licenses. If the number of licenses on the client plus this incremental value is greater than the maximum count, no additional licenses are granted.
   - **Maximum Count** — the maximum number of licenses a client can receive for this feature. This value must be equal to or greater than the reserved count.
Available counts are updated as you configure the client. For example, see Figure 4.

8. Click Save Changes.

The License clients table displays the client information you entered. If the client is a member of a cluster, the cluster name is also displayed after the client contacts the server.

Figure 4: Available Counts Are Updated As Clients Are Configured

Related Documentation

- Configuring a Device as a License Client
- Configuring the Automated Downloading of License Keys
- Disabled Features on a License Server
CHAPTER 6 Configuring the License Client

- Configuring a Device as a License Client

Configuring a Device as a License Client

The following procedure assumes that you have already performed the license key generation and activation steps.

After you download or receive your license keys by using email:

1. In the admin console, choose System > Configuration > Licensing > Licensing Summary.
2. Click on the license agreement link. Under Installed License Details, read the license agreement and, if you agree to the terms, continue to the next step.
3. Enter your license key(s) and click Add.
4. Click Save Changes.

An example of the client’s License Summary tab is shown in Figure 5.

NOTE: Pulse Connect Secure (PCS) / Pulse Policy Server (PPS) acting as License clients, running 8.1R1 /5.1R1 and above respectively will not be able to lease licenses from License Servers running on 8.0R1 to 8.0R4. If you plan to upgrade PCS / PPS License clients to 8.1R1/5.1R1 and above versions, you would have to upgrade your License Servers to 8.0R5 and above. See KB40095 for more information.
To configure this device as a license server client:

1. In the admin console, choose **System > Configuration > Licensing > Configure Server**.

2. Enter the name of the license server. You can specify the IP address or hostname.

3. Enter a unique ID for this client. This ID is used to communicate and verify this client with the license server.

   IDs can contain alphanumeric characters. There is no restriction on the number of characters.

   You will need to enter this ID on the license server when adding clients.

4. Enter and confirm a password for this client.

   You will need to enter this password on the license server when adding clients.

5. Select the network to communicate with the license server from the **Preferred Network** menu.

   If the preferred network is configured correctly and enabled, it is used. Otherwise, the internal network is used.

6. Select the **Verify SSL Certificate** checkbox if you want the client to verify the server’s SSL certificate when establishing communication with it.
If this client is part of a cluster, you can change configuration information for this node or any node within the same cluster by selecting the node name from the pull-down menu. You can also select *Enter cluster* to update general cluster configuration information.

**Related Documentation**

- Configuring a Device as a License Server
- Configuring the Automated Downloading of License Keys
CHAPTER 7 Automatic Downloading, Surrendering and Recalling Licenses

- Configuring the Automated Downloading of License Keys
- Surrendering and Recalling Licenses

Configuring the Automated Downloading of License Keys

Administrators are given the option to automatically download license keys from the LMS server using the Download and Install button on the Download Licenses page. This feature is applicable for all license keys (subscription-based, capacity-based, and so forth.) Communication is done via https.

The automated download process uses the following schedule for contacting the LMS server:

- Once every 3 months if there are no expiring licenses.
- Once a month if a license is expiring within the next 3 months
- Once a week if a license is expiring within the next 2 weeks
- Once a day if a license grace period is expiring within the next week

To configure the device for automated query and downloading of license keys from the LMS system:

1. In the admin console, choose System > Configuration > Licensing > Download Licenses.
2. Select the preferred network to communicate with the LMS system.
3. Select Enabled if you want to automate the downloading of license keys.
4. Click Save Changes.

You can, at any time, click Download and Install to immediately query the LMS server and download updated license keys.

Related Documentation

- Configuring a Device as a License Server
- Configuring a Device as a License Client

Surrendering and Recalling Licenses

Surrendering and recalling licenses can be done only at the license client. You can surrender only installed user count licenses and meeting licenses (ACCESSX600-MTG.)

To surrender user count licenses:
1. In the admin console, choose **System > Configuration > Licensing > License Summary**.

2. Under Installed License Details, select the check box next to the license you want to surrender and click **Surrender**.

The Installed License Details table displays the license as being surrendered along with the date it was surrendered. When the client has successfully communicated the surrender status to the server, the License Summary page on the license server displays the surrendered license and the client that surrendered the license. Figure 6 and Figure 7 show the license details page on a license client and license server.

*Figure 6: Surrendered Licenses on a Client*
To recall user count licenses:

1. In the admin console, choose System > Configuration > Licensing > License Summary.
2. Under Installed License Details, select the check box next to the license you want to recall and click Recall.

Related Documentation

- Configuring a Device as a License Client
PART 5 Disabled Features

- Disabled Features
Appendix A Disabled Features

Disabled Features on a License Server

The following windows and features are disabled in the administrator console when a device is configured as a license server:

- System > Status > Meeting Schedule
- System > Status > Virtual Desktop Sessions
- System > Configuration > Secure Meeting
- System > Configuration > User Record Synchronization
- System > Configuration > Sensors
- System > Configuration > Virtual Desktops
- System > Configuration > NCP
- System > Network > Network Connect
- System > Clustering
- System > Virtual Systems
- System > IF-MAP Federation
- System > Log/Monitoring > Sensors
- System > Log/Monitoring > User Access
- System > Log/Monitoring > Client Logs
- Maintenance > Push Config
- Maintenance > Troubleshooting > Monitoring > Cluster
- Maintenance > Troubleshooting > User Session
- Maintenance > Archiving > Secure Meetings
- Maintenance > Import/Export > IVS

In addition, the following services are halted on the license server:

- Mail proxy services
- Meeting processes
- Agentman daemon
- Federation server
- Federation client
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