Pulse Connect Secure
Pulse Policy Secure
License Management Guide
Pulse Secure, LLC
2700 Zanker Road, Suite 200
San Jose, CA 95134

This product includes the Envoy SNMP Engine, developed by Epilogue Technology, an Integrated Systems Company. Copyright © 1986-1997, Epilogue Technology Corporation. All rights reserved. This program and its documentation were developed at private expense, and no part of them is in the public domain.

This product includes memory allocation software developed by Mark Moraes, copyright © 1988, 1989, 1993, University of Toronto.

This product includes FreeBSD software developed by the University of California, Berkeley, and its contributors. All of the documentation and software included in the 4.4BSD and 4.4BSD-Lite Releases is copyrighted by the Regents of the University of California. Copyright © 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994. The Regents of the University of California. All rights reserved.

GateD software copyright © 1995, the Regents of the University. All rights reserved. Gate Daemon was originated and developed through release 3.0 by Cornell University and its collaborators. Gated is based on Kirtan's EGP, UC Berkeley's routing daemon (routed), and DCN's HELLO routing protocol. Development of Gated has been supported in part by the National Science Foundation. Portions of the GateD software copyright © 1988, Regents of the University of California. All rights reserved. Portions of the GateD software copyright © 1991, D. L. S. Associates.

This product includes software developed by Maker Communications, Inc., copyright © 1996, 1997, Maker Communications, Inc.

Pulse Secure, Pulse and Steel-Belted Radius are registered trademarks of Pulse Secure, LLC. in the United States and other countries. The Pulse Secure Logo, the Pulse logo, and PulseE are trademarks of Pulse Secure, LLC. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Pulse Secure assumes no responsibility for any inaccuracies in this document. Pulse Secure reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Products made or sold by Pulse Secure or components thereof might be covered by one or more of the following patents that are owned by or licensed to Pulse Secure: U.S. Patent Nos.: 5,473,599, 5,905,725, 5,909,440, 6,192,051, 6,333,650, 6,359,479, 6,406,312, 6,429,706, 6,459,579, 6,493,347, 6,538,518, 6,538,899, 6,552,918, 6,567,902, 6,578,186, and 6,590,785.

Pulse Connect Secure / Pulse Policy Secure License Management Guide

Revision History

2016—Rebranded to Pulse Secure template.

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

END USER LICENSE AGREEMENT

The Pulse Secure product that is the subject of this technical documentation consists of (or is intended for use with) Pulse Secure software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at https://www.pulsesecure.net/support. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.
Does the behavior of the license server change in PCS/PPS version 8.0R5 /5.0R5?

Are there any changes to the EULA upon license reversal?

Will there be any operational impact to production devices upon upgrade to PCS/PPS version 8.0R5 /5.0R5?

Does the behavior of the license server change in PCS/PPS version 8.0R5 /5.0R5?

Is it mandatory for a customer to buy licenses if he/she is running PCS/PPS 8.0RX (where X<=4)?
What are the newly introduced role specific licenses? ................................................................. 47
PART 6 ............................................................................................................................................. 48
INDEX ............................................................................................................................................. 48
About This Guide

- Audience
- Document Conventions
- Documentation Feedback
- Requesting Technical Support

Audience

This guide is designed for network administrators who are configuring and maintaining Pulse Connect Secure or Pulse 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>
</tr>
</thead>
<tbody>
<tr>
<td>🔄</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>
</tr>
<tr>
<td>💡</td>
<td>Best practice</td>
<td>Alerts you to a recommended use or implementation.</td>
</tr>
</tbody>
</table>
Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation at https://www.pulsesecure.net/techpubs/. You can provide feedback by using one 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 https://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: https://www.pulsesecure.net/services/overview/
- Search for known bugs: https://www.pulsesecure.net/support
- Find product documentation: https://www.pulsesecure.net/techpubs
- Find solutions and answer questions using our Knowledge Base: https://www.pulsesecure.net/support
- Download the latest versions of software and review release notes: https://www.pulsesecure.net/support
- Search technical bulletins for relevant hardware and software notifications: https://www.pulsesecure.net/support
- Open a case online in the CSC Case Management tool: https://www.pulsesecure.net/support
- To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: https://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 https://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 https://www.pulsesecure.net/support.
PART 1

Overview

- License Management Overview
- License Overview
CHAPTER 1

License Management Overview

- License Management
- License Servers
- License Clients
- Auto-Leasing
- Updating Client Configuration
- Importing and Exporting Configuration Files
- Licensing Virtual Appliances

License Management

Pulse Connect Secure software and Pulse Policy Secure software include a Pulse Secure Licensing and Software Download Center @ https://my.pulsesecure.net, that lets you configure the Connect Secure device (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.

The following are the various types of licenses:

- ACCESS Subscription license
- CONSEC Subscription license
- POLSEC Subscription license
- Feature licenses
- ACCESS-X600 Permanent license
- CONSEC Permanent license
- POLSEC Permanent license

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

- License Servers
- License Clients
License Servers

If you choose to use license servers, the license server software can be run on the MAG and PSA NGHW models running the Pulse 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. It also leases concurrent meeting user licenses and Advanced Mobile Licenses – Onboarding.

**Figure 1:** List of Configured Clients and Licenses Leased by Them

- 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.

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

Related Documentation

- [License Management](#)
- [Disabled Features on a License Server](#)
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.

A LICENSE-MBR license (for example, MAG2600-LICENSE-MBR, SM360-LICENSE-MBR, PSA-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. The client will be considered out of compliance without an MBR license.

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.

**NOTE:** The license you are using is out of compliance as there is no MBR license installed on this device. Please ignore this message if you are using subscription license or reach out to your account manager for corrective steps.

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, in quanta of incremental count, until the maximum user count (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 will renew their licenses based on lease renewal interval as configured in the license server. 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.
Figure 2: Flow Diagram for Leasing Licenses from a License Server

<table>
<thead>
<tr>
<th>License Server</th>
<th>Leasable to</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESS Subscription License (Example: ACCESS-1000U-1YR)</td>
<td>MAG (SA/IC), PSA (SA/IC), VA_SPE (SA/IC)</td>
</tr>
<tr>
<td>CONSEC Subscription License (Example: CONSEC-5000U-1YR)</td>
<td>MAG (SA), PSA (SA), VA_SPE (SA)</td>
</tr>
<tr>
<td>POLSEC Subscription License (Example: POLSEC-500U-1YR)</td>
<td>MAG (IC), PSA (IC), VA_SPE (IC)</td>
</tr>
<tr>
<td>CONSEC Permanent License (Example: CONSEC-ADD-2000U)</td>
<td>MAG (SA), PSA (SA), VA_SPE (SA)</td>
</tr>
<tr>
<td>POLSEC Permanent License (Example: POLSEC-ADD-100U)</td>
<td>MAG (IC), PSA (IC), VA_SPE (IC)</td>
</tr>
<tr>
<td>ACCESS-X600 Permanent License (Example: ACCESSX600-ADD-1000U)</td>
<td>MAG (SA/IC) with MBR license installed in license client</td>
</tr>
</tbody>
</table>

Related Documentation
- License Management

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 ACCESSX600-ADD-1000U license because that license is tied to the MAG 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. 30% of 1400 is 420. 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 or concurrent users) are added to the license server, the penalty period expires immediately.

Related Documentation

- 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 will treat the licenses as if they were installed directly on the server.

**Figure 3: Flow Diagram for Surrendering Licenses to a License Server**

- **Consec Permanent License**
  - Example: CONSEC-ADD-2000U
  - can be surrendered by
  - Leasable to
    - MAG (SA), PSA (SA)
    - MAG (IC), PSA (IC)
    - MAG (SA/IC)

- **Polsec Permanent License**
  - Example: POLSEC-ADD-100U
  - can be surrendered by
  - Leasable to
    - MAG (SA), PSA (SA), VA_SPE (SA)
    - MAG (IC), PSA (IC), VA_SPE (IC)
    - MAG (SA/IC) with MBR license
      - Installed in license client

**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, PSA-MTG-100U) and duration-based licenses (for example, CONSEC-1000U-1YR) licenses.

Surrendered licenses have a duration of 10 days. The client automatically contacts the license server every 1 hour 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.
For the license surrendering procedure, see “Surrendering and Recalling Licenses”.

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.

For the license recalling procedure, see “Surrendering and Recalling Licenses”.

Downloading License Keys Automatically

Administrators are given the option to automatically download license keys from the Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net. 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 Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net:

- 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

For the automatic downloading procedure, see “Configuring the Automated Downloading of License Keys”.

Related Documentation

- License Management
- Surrendering and Recalling Licenses
- Configuring the Automated Downloading of License Keys
CHAPTER 1: License Management Overview

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 Pulse Connect Secure 8.0 or Pulse 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

- 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

- License Management
CHAPTER 2

License Overview

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

**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-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 licenses (such as ACCESS-SUB) stack. For example:

- If you purchase two ACCESS-RDP-50U-1YR licenses, they stack to 100U for 1 year.
- If you purchase both a one ACCESS-10K-1YR license and one ACCESS-RDP-50U-1YR 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. Pulse Secure Licensing and Software Download Center @ https://my.pulsesecure.net 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-MTG-500U-1YR licenses is about to expire, you can only renew another ACCESS-MTG-500U-1YR-R license. You cannot renew it with an ACCESS-MTG-500U-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.

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 PCS or PPS gateway.

Related Documentation

- 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 MAG platform and its licenses installed:

- ACCESS-1000U-1YR
- ACCESSX600-ADD-1000U

Total licenses available for VA-SPE: 1000

Total licenses available for MAG-2600/MAG-4610/MAG-SM160/MAG-SM360

Node A is a MAG-SM360 with no LICENSE-MBR license. It is configured with the following settings on the license server:

- Reserved = 2000
- Increment = 500
- 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 a MAG-SM360 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 MAG platform and its licenses installed:

- ACCESS-1000U-1YR
- ACCESSX600-ADD-1000U

Total licenses available for VA-SPE: 1000
Total licenses available for MAG-2600/MAG-4610/MAG-SM160/MAG-SM360

Node A and Node B form a MAG-SM360 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 MAG-SM360 device.

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

- Reserved = 1500
- Increment = 500
- 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 MAG platform with its two licenses installed.

Total licenses available for VA-SPE: 0

Total licenses available for MAG-2600/MAG-4610/MAG-SM160/MAG-SM360

Node A and Node B form a MAG-SM360 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, either view the Maximum Concurrent Users number located near the top of the License page or view System > Status > Overview page.

Related Documentation
- License Management

Cluster Licenses

The license 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 clusters 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 two 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

- 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 Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net, 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 receive from Pulse Secure.

A licensing hardware ID is a unique 16-character code Pulse Secure uses 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 4 shows the license key generation and activation flow.
The package you download from the Pulse Secure Licensing and Software Download Center or the e-mail message you receive from Pulse Secure 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 Secure devices 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 eight weeks also. For example: “POLSEC-EVAL-8W”.

---

**Figure 4:** License Key Generation and Activation
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 Pulse Secure Licensing and Software Download Center to create and enter new license keys or to transfer license keys to replace a device. Detailed instructions are located on the Pulse Secure Licensing and Software Download Center located at [https://my.pulsesecure.net](https://my.pulsesecure.net).

**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.

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
   - PSA-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 minutes 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 5.
### Figure 5: Client Window After Installing Member License

<table>
<thead>
<tr>
<th>License Role</th>
<th>Available</th>
<th>Licensed</th>
<th>Installed</th>
<th>Active Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concurrent Users</td>
<td>1000</td>
<td>0</td>
<td>48259</td>
<td>3</td>
</tr>
<tr>
<td>Remote Desktop Users</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Concurrent Sharing Users</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**License Details:**

This will contact the License server and fetch the latest set of licenses installed on this client.

**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.

- License Allocations
- Configuring a Device as a License Server

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 two 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

- 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 check box.
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 6.
CHAPTER 5: Configuring The License Server

Figure 6: Configured License Server With No Clients

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. The list includes the latest PCS hardware devices like PSA 7000.
7. Select the product type to be configured to (PCS or PPS).
8. 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 7.
9. 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 7: Available Counts are Updated as Clients are Configured**

![License Clients Table](image)

**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 8.
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.
6. If the preferred network is configured correctly and enabled, it is used. Otherwise, the internal network is used.
7. Select the **Verify SSL Certificate** check box if you want the client to verify the server's SSL certificate when establishing communication with it.
Figure 9: Licenses Applicable for Specific Platform Groups

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 Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net. 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 Pulse Secure Licensing and Software Download Center:

- 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 Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net:

1. In the admin console, choose System > Configuration > Licensing > Download Licenses.
2. Select the preferred network to communicate with the Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net.
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 Pulse Secure Licensing and Software Download Center at https://my.pulsesecure.net and download the 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 permanent licenses.

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 10 and Figure 11 show the license details page on a license client and license server.

Figure 10: Surrendered Licenses on a Client
CHAPTER 7: Automatic Downloading, Surrendering and Recalling Licenses

Figure 11: Surrendered Licenses on a License Server

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

Appendix

• Disabled Features
• FAQs
Appendix A

Disabled Features

- [Disabled Features on a License Server](#)

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
Appendix A: Disabled Features

- Federation server
- Federation client
Appendix B

FAQs

Pulse Licensing Enforcement Update and FAQ

Pulse Secure, LLC temporarily removed software-based license enforcement in its Pulse mobility products in Pulse Connect Secure 8.0 and Pulse Policy Secure 5.0 in December 2014 as part of evaluating a new licensing initiative. Pulse Secure, LLC reinstated software-based license enforcement in these products in Pulse Connect Secure 8.0R5 and Pulse 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 PCS/PPS version 8.0/5.0). This was implemented in PCS/PPS 8.0R5 /5.0R5, respectively.

What is Pulse Secure's guidance to customers regarding upgrading to PCS/PPS 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 EULAs 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. Pulse Connect Secure 8.0 and Pulse 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 the maximum 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 maximum number of sessions on a PCS or PPS 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 gateways, an upgrade to 8.0R5 will cause the maximum session count to fall back to the system default of two users until such time that a license is entered to open up more concurrent sessions. In addition, virtual CSs 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 PCS/PPS 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.

Does the behavior of the license server change in PCS/PPS 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 PCS/PPS 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 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

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

A
allocating licenses .......................................................... 32
C
cluster licenses .............................................................. 21
configuring
automated downloading of license keys .................................. 39
license client ................................................................. 29, 36
license options ............................................................... 26
license server ................................................................. 33
standalone license device .................................................... 29
contacting Pulse Secure technical support .............................. 7
D
downloading license keys ................................................... 15
E
emergency mode
activating ............................................................................ 26
deactivating ........................................................................ 26
exporting configuration files ................................................. 16
F
FAQs
enforcement vs entitlement .................................................. 45
Pulse licensing enforcement .................................................. 45
I
importing configuration files ................................................ 16
L
leasing scenarios ............................................................... 18
license keys
downloading automatically .................................................. 15
entering .............................................................................. 24
obtaining ............................................................................. 24
types .................................................................................. 25
upgrading ............................................................................ 24
license management overview .............................................. 9
license reversal ................................................................. 46
license server
disabled features .............................................................. 43
overview ............................................................................. 10
licenses
allocating ............................................................................ 32
auto-leasing .......................................................................... 12
recalling .............................................................................. 15, 39
surrendering ........................................................................ 14, 39
licensing virtual appliance ................................................... 16
O
obtaining license keys ........................................................ 24
P
Pulse licensing enforcement update ....................................... 45
Pulse Secure Global Support Center ....................................... 7
R
recalling licenses .................................................................. 15, 39
role-specific licenses .......................................................... 47
S
subscription licenses .......................................................... 17
surrendering licenses ........................................................ 14, 39
U
upgrading
client configuration ........................................................... 13
guidance .............................................................................. 45
license keys .................................................................... 24