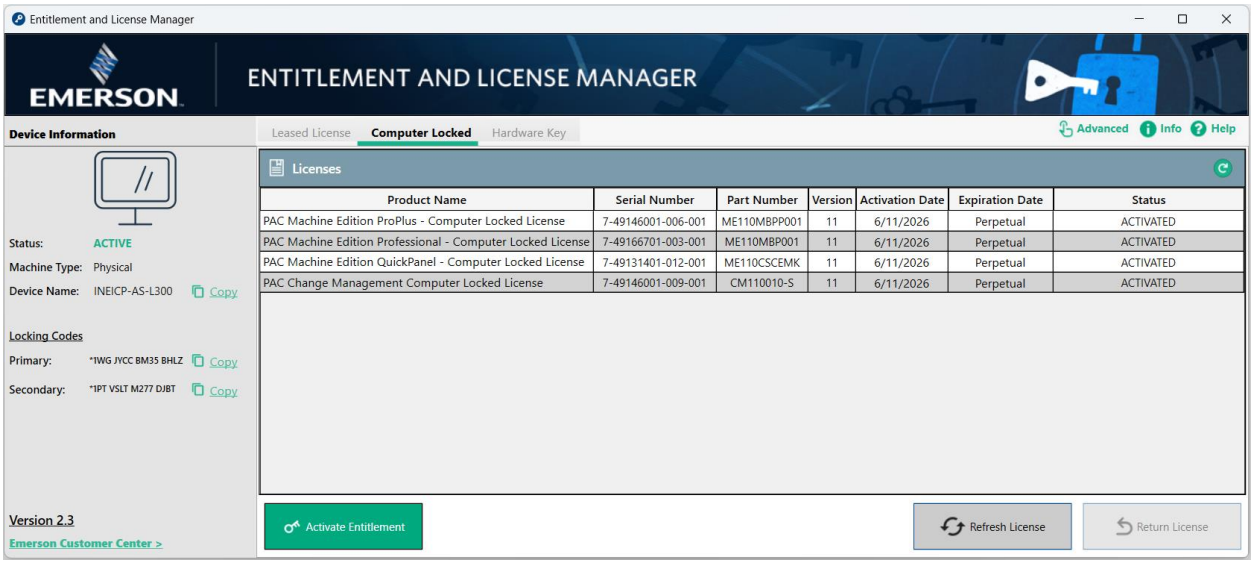
Entitlement and License Manager

USER MANUAL

Version 2.3



Contents

Section 1 About This Manual 5

1.1 Glossary 5
1.2 Differences Between Computer-locked Licenses and Leased License 6
1.3 Versioning 6
1.4 Revision History 7
1.5 Software Fulfillment 10
1.5.1 Order Fulfillment Email 11
1.6 Electronic Software Download and Install 11
1.7 Activating Entitlements 12
1.7.1 Overview of Activation Options 12

Section 2 Entitlement and Licensing Manager Overview and Installation 13

2.1 Entitlement and Licensing Manager Overview 13
2.2 Entitlement and Licensing 14
2.3 Minimum Installation Requirements 14
2.4 Other System Requirements 15
2.5 Installing Entitlement and Licensing Manager 15
RMS 15
2.6 Reviewing Types of Licenses 16

Section 3 Activating Computer-Locked Entitlements 17

3.1 Activating Entitlement Explanation 17
3.2 Automatic Entitlement Activation 18
3.3 Manual Entitlement Activation 19
3.3.1 Requirements 20
3.3.2 Instructions 20
3.4 Licensing through PAC Machine Edition 23
3.5 Unable to Activate Entitlements 24
3.5.1 Verify that the Sentinel RMS License Manager is Running 24
3.5.2 Virtual Machine Time Differs from Host Machine 24

3.5.3 Verify that the Correct License File was Uploaded to the Entitlement and License Manager 24
3.5.4 Accessing Log Files for Customer Support 25
3.5.5 Verify that the Locking Codes Match 25
3.5.6 Verify that the Entitlement IDs Match 25
3.6 Checking Computer-Locked License Serial and Part Number 25
3.7 Unable to Return Corrupted Computer-Locked Licenses or Lease Licenses 26
3.7.1 Computer-Locked Licenses or Leased Licenses Corrupted 26

Section 4 Sharing Application Computer-Locked Licenses 29

4.1 Opening Multiple Instances with the Same License 29
4.2 Returning a Shared License 29

Section 5 Returning a Computer-Locked License 30

5.1 Automatic License Returns 30
5.1.1 Requirements 30
5.2 Instructions 30
5.3 Manually Returning a License 31
5.3.1 Requirements 32
5.3.2 Manually Returning Licenses 32
5.4 Finding the Return Confirmation Summary 36
5.5 Unable to Return Entitlements 36

Section 6 Leasing a License 38

6.1 Leasing License on the License Server 38
6.1.1 Server-Side Settings 38
6.1.2 Client-Side Settings 39
6.1.3 Checking Available Licenses on the License Server 39
6.1.4 Fetching Leased Licenses on Local Machine 39
6.1.5 Fetch Available Licenses on Server Screen 40
6.2 Creating a Leased License 41
6.3 Renewing a Leased License 42
6.4 Checking Lease Expiration Date and Automatic Renewal 43

6.5 Ending a Lease 43

Section 7 Licensing with a Hardware License Key 45

7.1 Identifying Licenses on Hardware License Keys 45
7.2 Reviewing Licenses on a Hardware License Key 46
7.3 Using a Hardware License Key on a PC 47

Section 8 Refreshing and Reflashing License Keys 48

8.1 Software License Key Refreshing 48
8.1.1 Automatically Refreshing Licenses 48
8.1.2 Manually Refreshing Licenses 49
8.2 Hardware License Key Reflashing 51

Section 9 Reference Architectures 54

Appendix A:Secure Deployment Guide 55

A.1 What is Security? 55
A.2 General Security Recommendations 55
A.3 Secure Deployment and Hardening 56
A.4 Entitlement and License Manager Services List 56

Appendix B:Licensing PAC Software on Virtual Machines 58

B.1 Type 1 Hypervisor with Leased Software Key 58
B.2 Type 2 Hypervisor with a Software Key (VMware Workstation Running on a Local Machine) 59
B.3 Licensing and Application Running on a Type 2 Hypervisor with a Hardware License Key 63
B.4 Setting System Environment Variables 66

Warnings and Caution Notes as Used in this Publication

⚠ WARNING

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

⚠ CAUTION

Caution notices are used where equipment might be damaged if care is not taken.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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Section 1 About This Manual

1.1 Glossary

Activation Code – An activation code is used to convert a customer's entitlement to a software license.

Device Locking Code – A device locking code binds a license to a specific device.

Entitlement – An entitlement is a purchased right to use a software application for a specified period or in perpetuity. An entitlement is activated on a supported device for use. An activated entitlement results in a license that is bound to a device.

Environment Variable – An environment variable is a device-wide variable that is configured outside of an application. Users can specify a name and value for the environment variable that can be referenced by any number of applications.

Exclusive Licensing – a licensing method where activation will replace an old license with a new license. This licensing method is used with computer-locked and hardware key licenses. For example, if a customer has an entitlement with multiple activations for the same product, then activating the same product twice on the same device will result in one active license based on the last activation.

Lease – A temporary license, usually for between 1 and 60 days, is taken from the available pool of licenses on the PAC License Server. The lease gives the client exclusive rights to use that license during the lease period.

License – A license results from activating an entitlement onto a supported device. A license enables customers to use the software on the device to which it is bound. In the case of a hardware key the device is the hardware key itself. The hardware key enables customers to use the software on the machine that the hardware key is attached to.

PAC License Server – a dedicated server where a pool of entitlements are activated and the resulting licenses are made available to clients to lease from the server.

Type 1 Hypervisor Virtual Machines – A Type 1 Hypervisor (or a bare-metal hypervisor) is installed directly on a physical host server in place of an operating system.

Type 2 Hypervisor Virtual Machines – A Type 2 hypervisor (or hosted virtual machine) is a virtual machine manager that is installed as a software application on a host operating system.

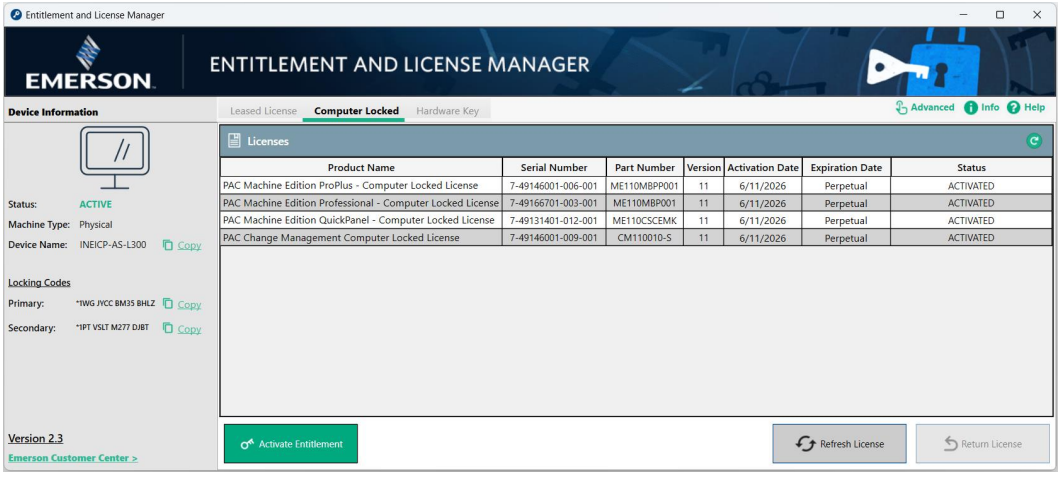
1.2 Differences Between Computer-locked Licenses and Leased License

Computer-locked License	Leased License
A license results from activating an entitlement onto a supported device. A license enables customers to use the software on the device to which it is bound.	A leased license results from activating an entitlement on a PAC License Server. A leased license can be leased from the PAC License Server by a client for as long as the client needs the license. The lease will expire in 60 days if the lease is not returned before then or if automatic lease renewal is not turned on.
A computer-locked license behaves such that if two software entitlements for the same product are activated on the same machine then the last activation will result in the license to be enforced by the product. This referred to exclusive licensing.	Leased licenses behave such that when multiple entitlements of the same product are activated on the server the licenses will aggregate together resulting in a pool of licenses available for clients to lease. This is different from exclusive licensing used for computer-locked licenses.

1.3 Versioning

The version number for ELM is visible in the lower-left corner of the Device Information tab. Clicking on the version number displays more information about the application.

Figure 1: Clicking on the Version Number on the Device Information Tab



1.4 Revision History

Revision	Date	Description
K	Jun 2026	**What's New in ELM Version 2.3** • Modified the Manual Activation dialog to display Primary and Secondary Locking Codes separately. • Corrected UI alignment in the Device Information tab.
J	Apr 2026	**What's New in ELM Version 2.2** • Enable **PME/PPS/PCM v11.0 License** Support Across All ELM Tabs • Display Expired Licenses on the "Computer Locked" Tab to Enable OEM/SP License Refresh via ELM
H	Oct 2025	• **Easier license visibility** – View available lease licenses on any server by simply entering its hostname or IP address. • **Clearer tracking** – See all leased licenses directly on the Leased License on Machine screen. • **Flexible license creation** – Create new lease licenses with configurable durations, including support for UUID-based locking. • **Simple license management** – Renew or end leases with just a few clicks on the Leased License on Machine screen. • **Built-in guidance** – Access the Software Licensing Reference Architecture PDF instantly from the Info icon. • **Complete cleanup tools** – Remove outdated or unused items with enhanced cleanup options in ELM. • **Improved usability** – Copy and paste device names and locking codes on the Device Information tab. • **Faster updates** – Refresh the Computer Locked tab grid to get the latest information immediately.
G	Jan 2024	• Adds support for ELM 2.0 • Serial numbers and part numbers are now included in computer-locked licenses and hardware key licenses. • The client applications now allow users to find leases licenses by IP address • Client application (i.e., ELM) now retain the last entered license server information. • Added fixed heights and widths to certain tabs in the UI.
F	Jan 2023	Adds support for ELM 1.5:

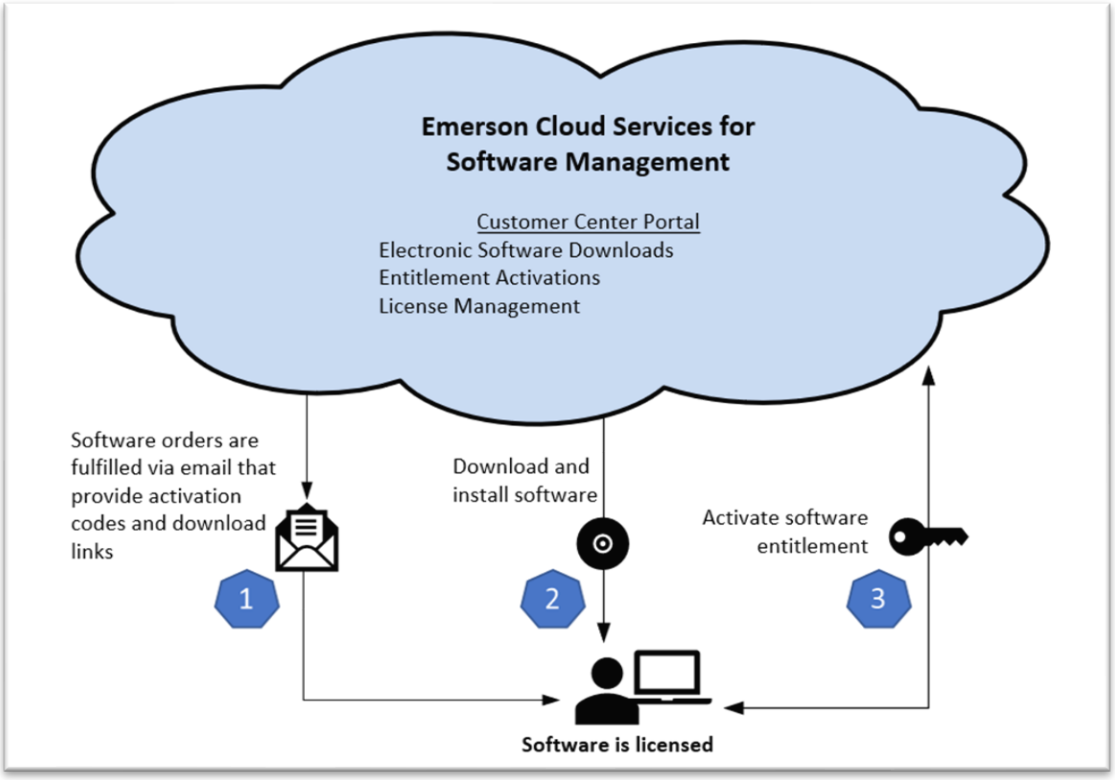
Revision	Date	Description
		• ELM no longer needs to be run as an administrator to access leased licenses. • ELM 1.5 introduced auto renew functionality to renew leased licenses automatically. • Added status symbols to denote how long a leased license has remaining before expiration. Parts of the UI now operate using fixed heights and widths to prevent overlap in smaller windows. • Order numbers are now visible in the Computer-locked and Hardware Key Grid.
E	April 2022	Adds support for ELM version 1.4: • Users can activate, renew, and end lease licenses using Entitlement and License Manager • Users can lease licenses for 30 days. Documentation support for ELM 1.3 and higher • Licenses can only be returned when PME software is not running • When a host connects to VPN, PME within the VM variable must be pointing to the VPN IP Address
D	Feb 2022	Adds support for ELM 1.3: • License refresh can be performed through Entitlement and License Manager. • Automatic Refresh - PCs with an internet connection can refresh Emerson software licenses. • Manual Refresh - Licenses on PCs without an internet connection can be manually refreshed by downloading the updated license file from the Customer Center portal. • ELM now has a more intuitive user interface that shows users what licenses are installed and their status. • Hardware key-based licensing reflash is now supported for PAC Machine Edition 9.8 software product through the Entitlement and License Manager. • Contextual help access allows users to find information more conveniently. • Information on the device information that the license is bound to be readily available so that tracking licenses between the Customer Center portal and the device that they are deployed on is possible.
C	Mar 2021	▪ Hardware License Keys compatible with ELM 1.2 or later ▪ Instructions for using Hardware License Keys with virtualization ▪ ELM splash screen to display the locking device information and the Emerson Customer Center link ▪ The automatic license activation process now activates entitlements with the host computer name ▪ The manual activation process allows users to customize

Revision	Date	Description
		the device name ▪ ELM is used to read licenses from Hardware License Key ▪ The activation process allows users to share a license for up to three instances of an application on the same computer ▪ Troubleshooting section expanded
B	May 2020	▪ Instructions for activating entitlements ▪ Instructions for returning entitlements ▪ Addition of the troubleshooting section ▪ Updates to screenshots ▪ Adds firewall and proxy issues to the Appendix ▪ Adds further instruction on licensing in a Type 2 hypervisor environment to the Appendix (B1)
A	Jan 2020	Initial Release

1.5 Software Fulfillment

Emerson provides cloud services to allow end-users to manage their investment in Machine Automation Solutions software. These services start with the fulfillment of the ordered software where an end-user receives an email on how to download the ordered software and activate it. End-users can use services to download the ordered software anywhere in the world – no need to wait for the software to be delivered by mail. Once installed, the cloud services allow end-users to activate the entitled software. Services are flexible to allow software activation on devices that are connected to the internet or not connected to the internet.

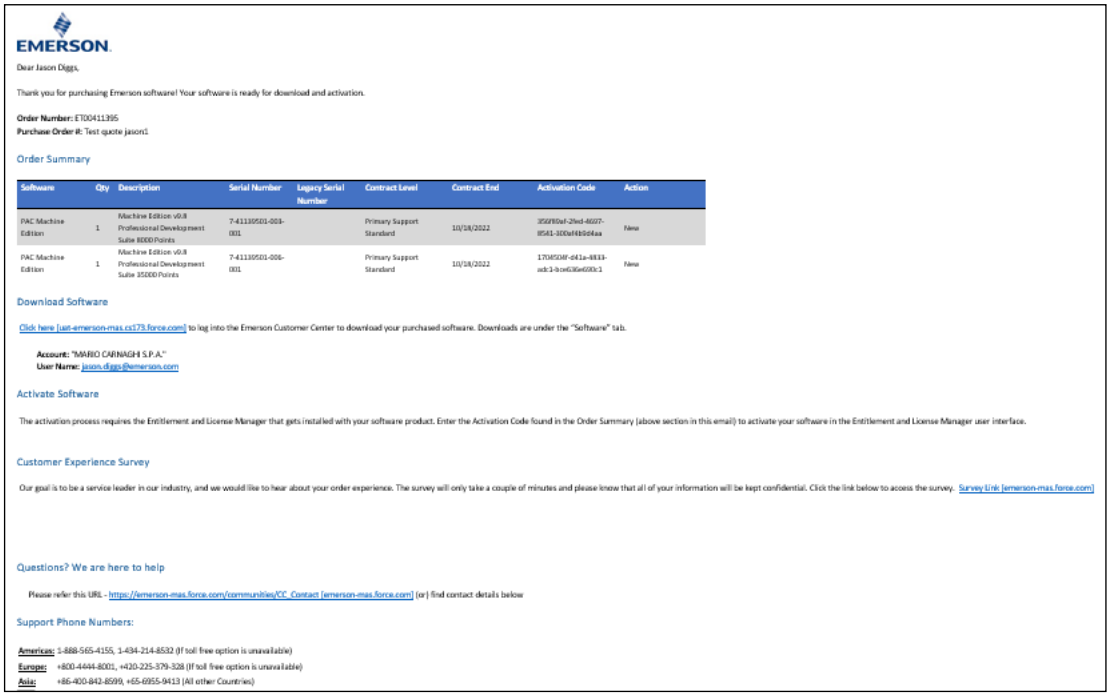
Figure 2: Emerson Software Licensing Overview



1.5.1 Order Fulfillment Email

Once an order for Emerson software has been placed, customers will receive an order fulfillment email with a link to the Emerson Customer Center (Figure 3). This email will provide the customer with their activation code, account number, username, and temporary password. Follow the links provided in the email to continue to the Emerson Customer Center.

Figure 3: Order Fulfillment Email Example



EMERSON

Dear Jason Diggs,

Thank you for purchasing Emerson software! Your software is ready for download and activation.

Order Number: ET00411395
Purchase Order #: Test quote jason1

Order Summary

Software	Qty	Description	Serial Number	Legacy Serial Number	Contract Level	Contract End	Activation Code	Action
PAC Machine Edition	1	Machine Edition v9.8 Professional Development Suite 8000 Points	7-41130501-003-001		Primary Support Standard	10/18/2022	3560f80af-2fed-4607-8541-300af4b9d4aa	New
PAC Machine Edition	1	Machine Edition v9.8 Professional Development Suite 35000 Points	7-41130501-006-001		Primary Support Standard	10/18/2022	1704504f-d41a-4833-adc3-bce636e690c1	New

Download Software

Click here [uat-emerson-mas.cs173.force.com] to log into the Emerson Customer Center to download your purchased software. Downloads are under the "Software" tab.

Account: "MARIO CARNAGHI S.P.A."
User Name: jason.diggs@emerson.com

Activate Software

The activation process requires the Entitlement and License Manager that gets installed with your software product. Enter the Activation Code found in the Order Summary (above section in this email) to activate your software in the Entitlement and License Manager user interface.

Customer Experience Survey

Our goal is to be a service leader in our industry, and we would like to hear about your order experience. The survey will only take a couple of minutes and please know that all of your information will be kept confidential. Click the link below to access the survey. Survey Link [emerson-mas.force.com]

Questions? We are here to help

Please refer this URL - https://emerson-mas.force.com/communities/CC_Contact [emerson-mas.force.com] (or) find contact details below

Support Phone Numbers:

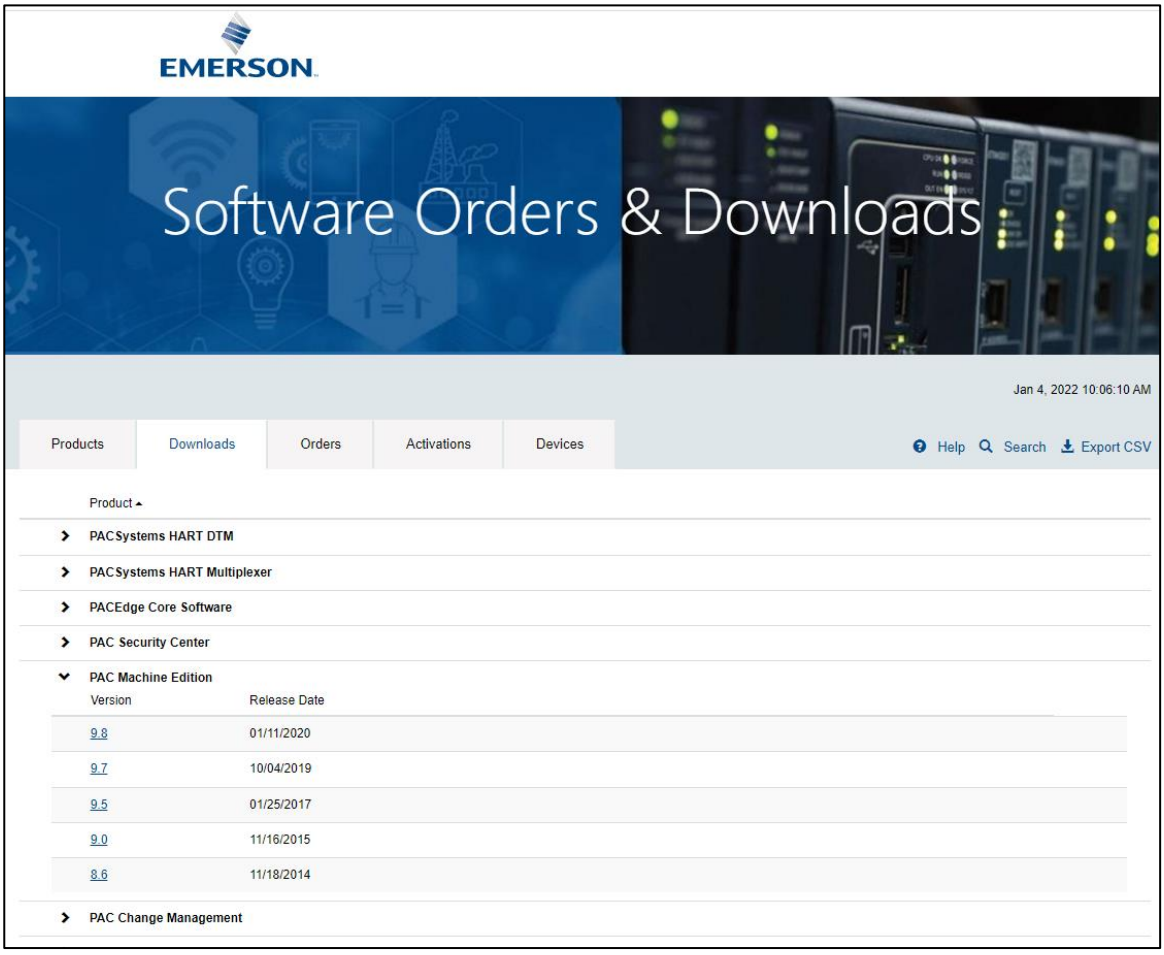
Americas: 1-888-565-4155, 1-434-214-8532 (If toll free option is unavailable)
Europe: +800-4444-8001, +420-225-379-328 (If toll free option is unavailable)
Asia: +86-400-842-8599, +65-6955-9413 (All other Countries)

1.6 Electronic Software Download and Install

Note: This section references the second heptagon in Figure 2.

Customers may visit the Emerson Customer Center to download the ordered software. The ordered software will be displayed in the **Orders** tab in (Figure 4).

Figure 4: Download Software



1.7 Activating Entitlements

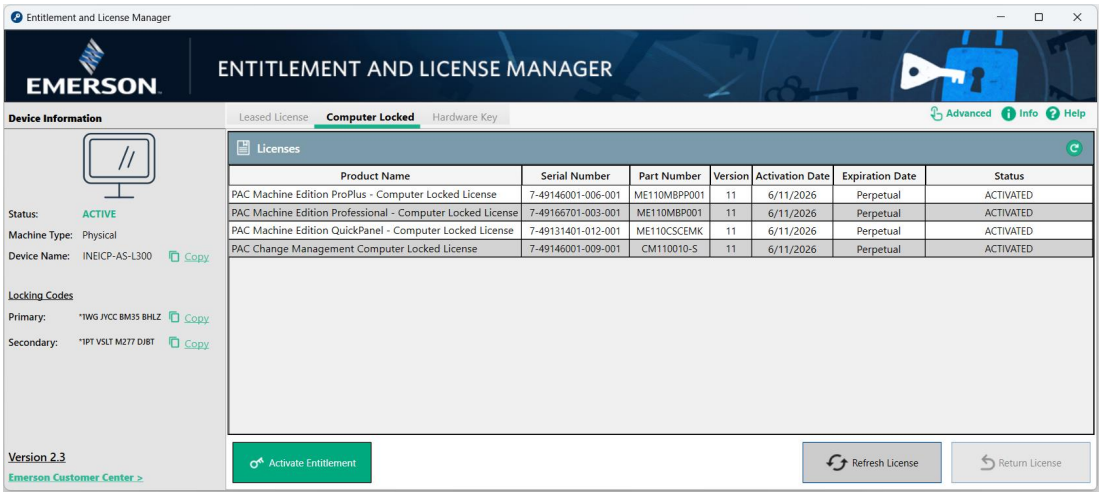
Note: This section references the third heptagon in Figure 2

1.7.1 Overview of Activation Options

Customers can activate software entitlements automatically and manually using Entitlement and License Manager and Emerson's Customer Center.

Note: The license management methods discussed at length in this user manual presume that the user is licensing software on a physical machine. For information on entitlement activation on a virtual machine, please see Appendix B*: Licensing PAC Software on Virtual Machines.*

Section 2 Entitlement and Licensing Manager Overview and Installation



2.1 Entitlement and Licensing Manager Overview

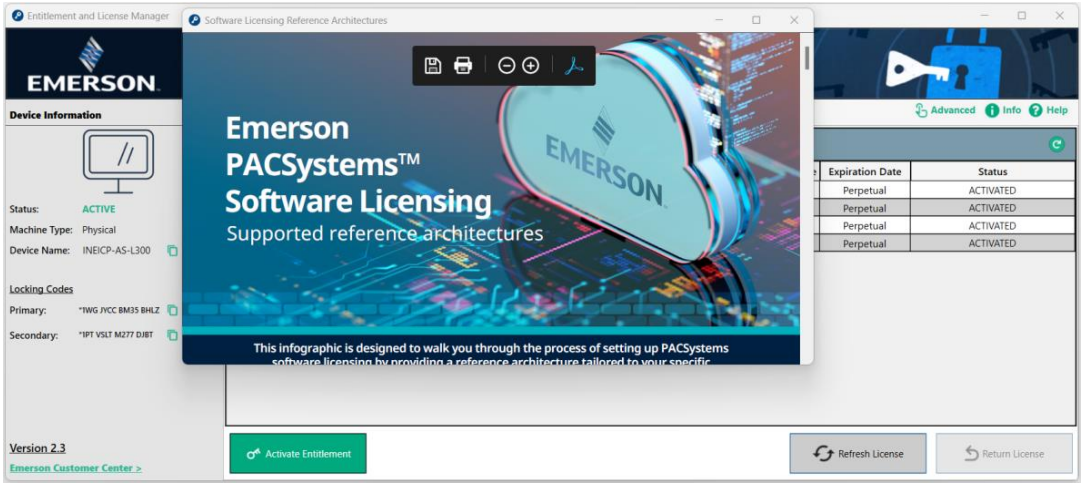
Emerson provides a cloud-based entitlement and license management solution for all PAC and PACSystems™ software products designed to aid End User License Contacts (EULC) to activate, refresh and return licenses to devices in their administrative domain.

Customers will have the opportunity to manage the following entities using Emerson cloud services:

- Products
- Downloads
- Orders
- Activations
- Devices

The ELM application includes a software licensing infographic designed to walk the user through the process of setting up PACSystems software licensing by providing a reference architecture tailored to their specific needs. To access the infographic, please click the Info icon in the top-right corner of the application.

Figure 5: Infographic Walk Through



2.2 Entitlement and Licensing

The Entitlement and Licensing Manager (ELM) is a desktop application that is distributed with Machine Automation Solutions software products like PAC Machine Edition. It acts as a client application to the Emerson cloud services and allows customers to easily interface with those services. It is used to activate entitlements on supported devices resulting in a license bound to the device. It can also manage licenses by returning them to the cloud: making the associated entitlement available to be activated onto another device. For example, a license is returned from a laptop that is being retired so that the associated entitlement can be activated onto a new laptop.

2.3 Minimum Installation Requirements

System Requirements for the ELM Suite:

- Minimum processors (for small to medium-sized projects):
  - Intel® Core® i5
  - AMD FX® or Phenom® II X6
- Recommended processors for large projects or when using multi-instance:
  - Intel quad-core Core i7
  - AMD higher FX or Phenom II X6 models
- Microsoft® Server 2016, Microsoft Server 2019, Microsoft Server 2025, Windows® 10, Windows 10 IoT Enterprise, or Windows 11
- At least 2 GB of Disk Space
- At least 4 GB of RAM, 8 GB recommended
- Minimum recommended display resolution of 1920x1080 pixels

2.4 Other System Requirements

ELM Software (Required)

- Entitlement and License Manager (ELM)

System Requirements for Application Software

- Specific to the application software being used, the application may reside on a physical or virtual machine

Internet Access Requirements for Online Activation/Refresh/Return of Licenses

- Internet access is required for online activation and license return from the ELM software using HTTPS protocol on TCP port 443.
- VolumeID Requirements for Type 1 Hypervisor Leased Licensing
- Type 1 Hypervisor clients require a unique VolumeID to receive a leased license from a PAC License Server. If created virtual machines have the same VolumeID (cloning or copying virtual machines from a template can result in this), please see https://learn.microsoft.com/en-us/sysinternals/downloads/volumeid to properly change the VolumeID.

Recommended Regional Format

- English (US) and English (Australia)

2.5 Installing Entitlement and Licensing Manager

The ELM software can be installed in one of two ways: with its installer as a stand-alone application or as part of the installation of an application software product; e.g. PAC Machine Edition.

Launch the installer file for Entitlement and License Manager and follow the installation wizard prompts.

RMS License Server Error

In some cases, users may experience issues with the license server file after installation. To ensure functionality, it is recommended to stop the license manager service and remove the license server file. This will allow the application to rebuild the file and resume functionality. Please contact technical support at the number listed at the end of this document for instruction.

Troubleshooting

Windows Update Required

If a user is experiencing issues installing the Entitlement and License Manager software, verify that Windows is up-to-date. Installing the latest Windows and the Microsoft Windows C++ redistributable 2015 and 2015-2022 updates should fix the issue.

Troubleshooting

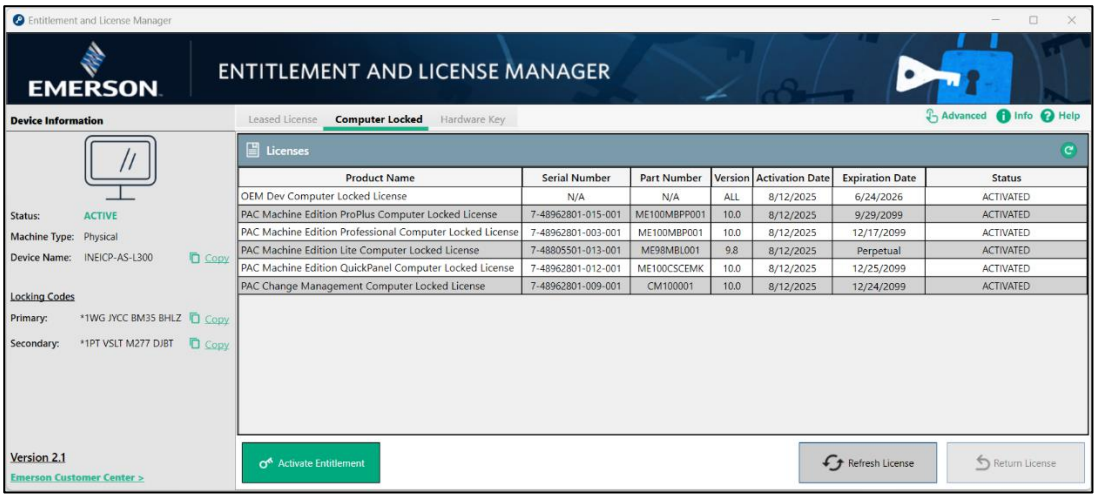
PDF Protected Mode Required

If a user is experiencing issues accessing the Help PDF, open *Acrobat Reader* > *Edit* > *Preferences* > *Security (Enhanced)* > *Toggle on Enable Protected Mode at startup.*

2.6 Reviewing Types of Licenses

Users can use ELM to check the type of licenses that are activated or leased on their machine. In some cases, users may notice the presence of demo or test licenses on their PCs. To confirm whether a license is a demo or test license, users can go to the Leased License or Computer-locked tab and check the Expiration Date column. If the expiration date is not perpetual and shows a specific date, it means that the license is a demo or test license .

Figure 6: Expiration Date



Section 3 Activating Computer-Locked Entitlements

Emerson makes it easy for customers to activate entitlements and return licenses. The Entitlement and Licensing Manager uses an intuitive interface to activate entitlements and return and refresh licenses. On the Computer-Locked screen, users can find a list of computer-locked entitlements with details to help the user identify them.

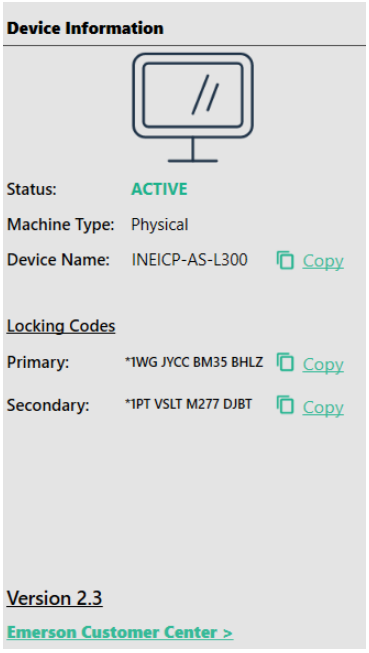
Note: Hardware License Keys are configured-to-order in the factory. They do not require activation.

3.1 Activating Entitlement Explanation

By clicking the **Activate Entitlement** button, the ELM software will detect whether the target device has access to Emerson Cloud Services via the internet. If there is access, the software will prompt the user for their activation code and attempt to license the software automatically. If the target device does not have internet access, then users will need to copy or document their device locking code and manually activate their device from a second device with internet access.

The device's primary locking code, secondary locking code, and name can all be accessed from the left panel on the home screen (Figure 7).

Figure 7: Device Locking Information



Note: If for some reason the computer equipment was damaged or destroyed and a manual return of a license is not feasible, the customer may call technical support to recover a license. Please find the technical support numbers provided at the end of this document. Please be sure to have your license activation code ready upon request.

3.2 Automatic Entitlement Activation

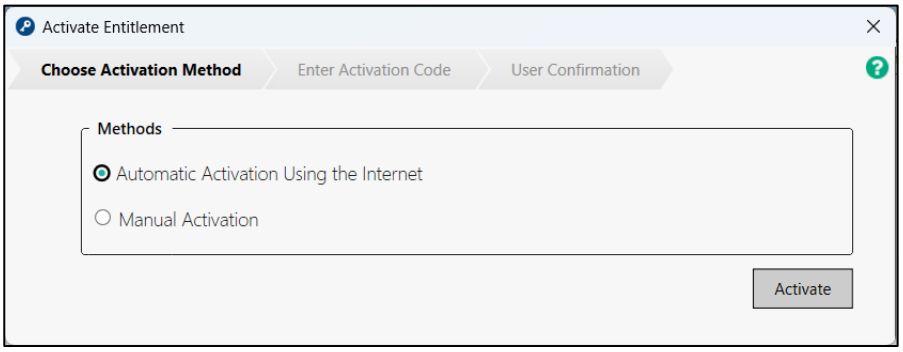
Customers can activate an entitlement on a target device using two methods: automatic or manual

Note: The target device is where the entitlement will be licensed. The license can be used to exercise the rights to use the software on that device.

If the target machine has direct internet access, the automatic activation method can be used by executing the following steps.

1. Click on the **Activate Entitlement** button located on the screen shown in .
2. Select Automatic Activation Using the Internet. Click Next.

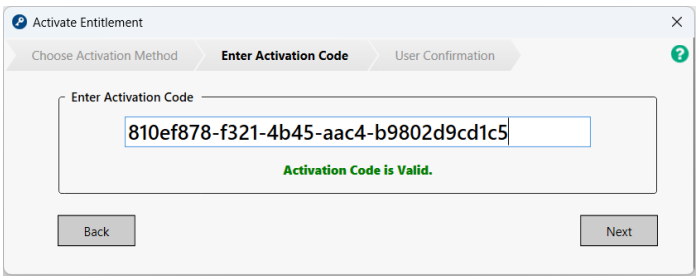
Figure 8: Automatic Using the Internet



3. Enter the Activation Code found in the order fulfillment email as described in *Section 1.5*. The message **Activation Code is Valid** will display if the activation code is entered correctly. Click **Next.**

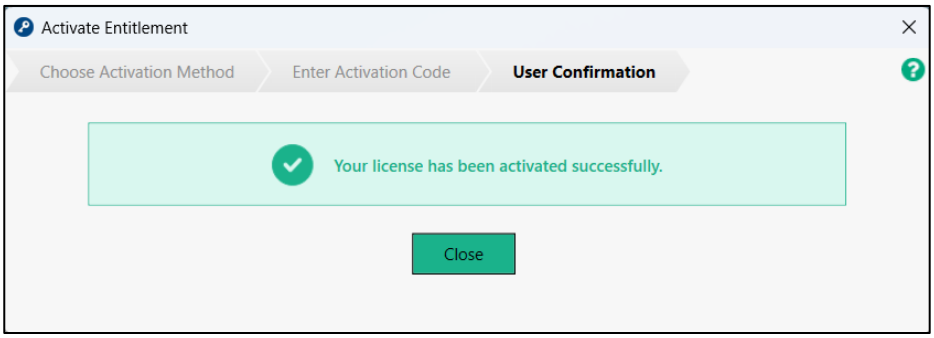
Note: If you no longer have access to the order fulfillment email, you may locate the activation code on the **Order** screen of Emerson Customer Center as described in Section 1.5.

Figure 9: Activation Code



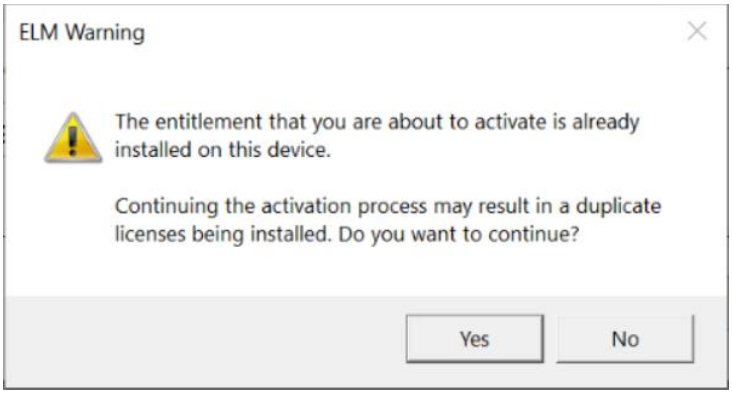
4. **Your License is Activated Successfully** will display if the activation code is accepted. Click **Close** to return to the previous screen.

Figure 10: Successfully Activated



Note: If the user has already previously activated the license, they may receive the following dialog that proceeding with a duplicate license.

Figure 11: Duplicate Entitlement Activation Confirmation Prompt



3.3 Manual Entitlement Activation

The process of activating an entitlement requires communication between the Entitlement and License Manager and Emerson's Customer Center. The manual activation method starts in the Entitlement and License Manager application but requires some steps to be done in the Emerson Customer Center. Since internet accessibility might not be available on the target device, the user will need to ensure they have access to a second device with internet access and a transferable storage device (USB drive). The steps in the manual activation method that takes place in Customer Center result in a downloadable license file to use on the target device. When the license file is stored on the target device, the process is complete.

Note: When possible, Emerson strongly recommends connecting to the internet for automatic activation as it requires fewer steps.

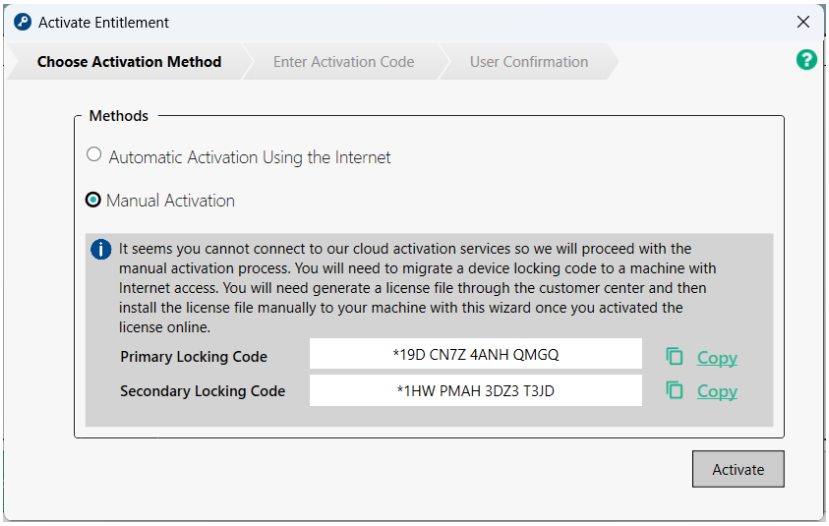
3.3.1 Requirements

- A second device with internet access
- Transferable Storage Device (such as USB drive)

3.3.2 Instructions

1. On the device where the license will be installed, click on the **Activate Entitlements** on the home screen.
2. Select the **Manual** option and the wizard will provide a **Device Locking Code**.
3. Copy the Device Locking Code so it can be used to manually activate an entitlement in the Customer Center on a second device. The Device Locking Code is necessary to generate a license file that will bind to this device.

Figure 12: Locking Code



From a second machine with internet access, open a browser and enter the following URL: *https://emerson-mas.my.site.com/communities/*

4. Sign into the Customer Center and click the **Software** tab located on the navigation menu. A new tab will open to display the **Software Orders & Downloads** portal. This section will display all of the available entitlements associated with the user that logged on.

Figure 13: Navigation to Software Portal

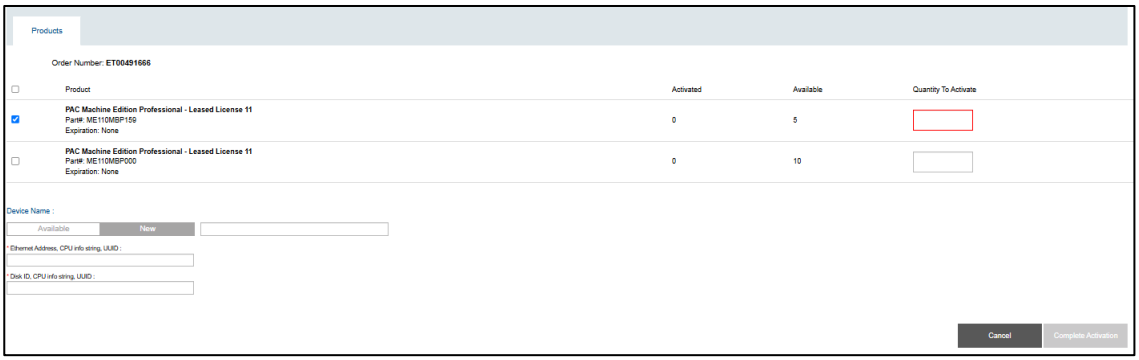
@

5. From the **Software Orders and Downloads** portal, select the **Orders** tab to locate your entitlement.
6. Click the **Activate Manually** button next to the appropriate entitlement to proceed. The Emerson Customer Center will request the **Device Locking Code** that was noted down in Step 3.

Figure 14: Activate Manually

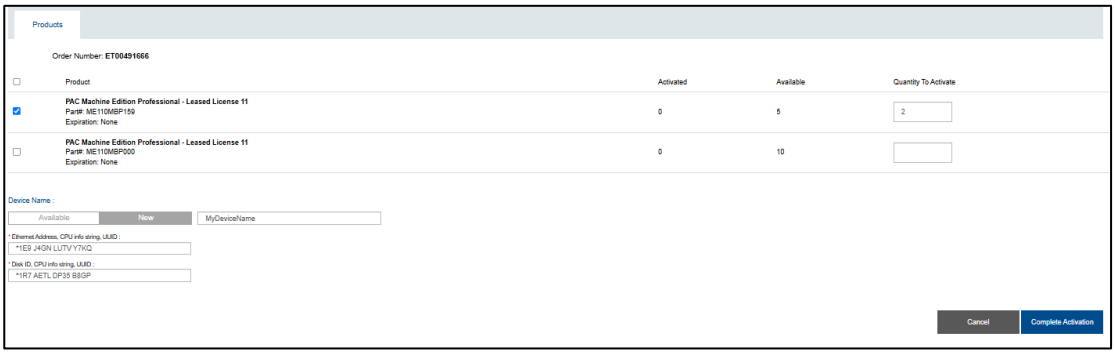
7. In the Device Locking Code field, enter or paste the Device Locking Code.

Figure 15: Device Locking Code



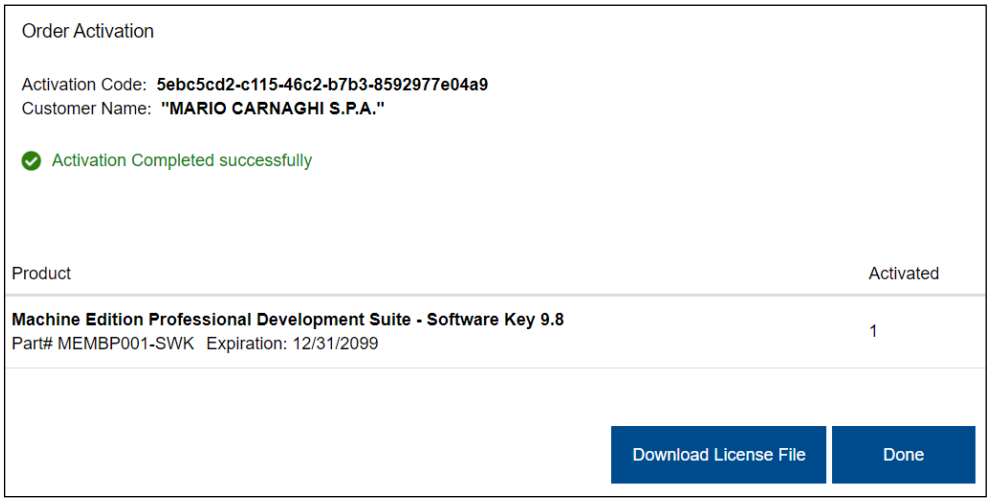
8. Click the **Complete Activation** button.

Figure 16: Enter the Device Locking Code and Complete Activation



9. The screen will display **Activation Completed successfully**. Click the **Download License File** button. The file will be called **license.zip**.

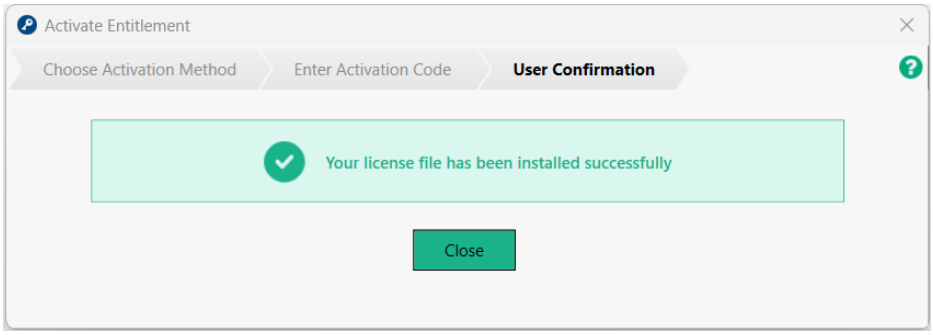
Figure 17: Download the License File



10. Copy **license.zip** onto a USB flash drive or CD/DVD and return it to the target device running the Entitlement and License Manager. **Note:** Extraction of the zip file is not necessary. Note: Read-only media such as a CD/DVD can be used where an USB flash drive is not allowed due to security reasons.
11. Insert the USB flash drive into the target device and click **Next** in ELM in Step 2.
12. Click the **Browse** button and select the unzipped license file from the USB flash.
13. Click Install License.

A screen will display to alert the user that the license file was installed successfully.

Figure 18: Activated Successfully



Note: If for some reason the computer equipment was damaged or destroyed and a manual return of a license is not feasible, the customer may call technical support to recover from an activated license. Please find the technical support numbers provided at the end of this document. Please be sure to have your license activation code ready upon request.

3.4 Licensing through PAC Machine Edition

Customers can launch Entitlement and License Manager using commands in PAC Machine Edition.

Located in the **Help** menu, the customer can click **Activate** or **Remove** to launch an instance of Entitlement and License Manager. However, the commands cannot be carried out through PAC Machine Edition. The customer will need to go through the routine actions using the Entitlement and License Manager.

The **License Report** command will display the license active on the local machine.

The **Reload** command will force PAC Machine Edition to reload license(s) stored on the local machine.

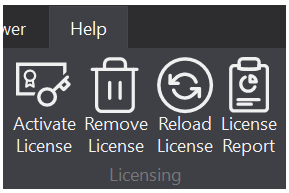
Note: PAC Machine Edition must be closed to return a license.

Important

Refreshing a license is done by the Entitlement and License Manager to refresh the license based on changes made on the cloud. Reload forces PME to attempt to locally check for updates to a previously checked out license.

For example, if a customer refreshes their SP/OEM subscription makes their expiration date change or they upgraded their PME version from 9.8 to 10.0, this is done with Entitlement and License Manager. If the change happens while PME is open, they can use the Reload button to check for changes to that license without exiting PME.

Figure 19: Activation by App



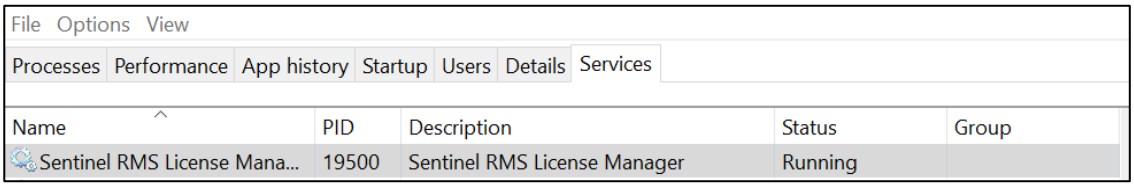
3.5 Unable to Activate Entitlements

If the entitlement does not activate successfully, verify/retry the following:

3.5.1 Verify that the Sentinel RMS License Manager is Running

This is done by opening Window's Task Manager and clicking the Services tab. If there is no communication between the ELM application and the license manager, it may result in an error.

Figure 20: Sentinel RMS License Manager



3.5.2 Virtual Machine Time Differs from Host Machine

Users have experienced difficulty licensing applications when their virtual machine date and time differs from the date and time on the host machine. Issues may arise if both operating systems are not synced to observe daylight savings changes. If users report that recent licenses have dropped, verify that the times on both the virtual machine and the host PC are the same.

3.5.3 Verify that the Correct License File was Uploaded to the Entitlement and License Manager

If the wrong license file (license.zip) is uploaded or is not valid, the manual activation may not be successful.

3.5.4 Accessing Log Files for Customer Support

Technical Support may require log files. Log files are located at the following location:

C:\Users\{USER NAME}\AppData\Local\Emerson\Entitlement and License Manager\Logs\ELM.log

3.5.5 Verify that the Locking Codes Match

Verify that the license record selected on Emerson Customer Center has the same Locking Code as the Primary Locking Code seen on ELM. This information is in the **Device Information** panel located on the left side of the home screen.

If necessary, the primary and secondary locking codes can be copied and pasted in version 2.1 or later.

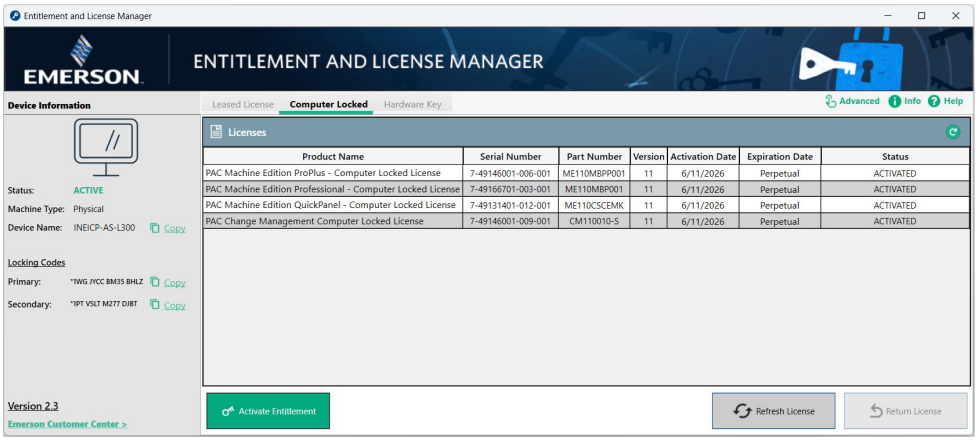
3.5.6 Verify that the Entitlement IDs Match

Verify that the license record selected on Emerson Customer Center has the same Activation Code as the Activation Code seen on ELM. This is in the **Activation Code** column of activated devices.

3.6 Checking Computer-Locked License Serial and Part Number

The serial and part number of a license can be found under the **Computer-locked** and **Hardware Key** tabs.

Figure 21: Serial and Part Number Column



3.7 Unable to Return Corrupted Computer-Locked Licenses or Lease Licenses

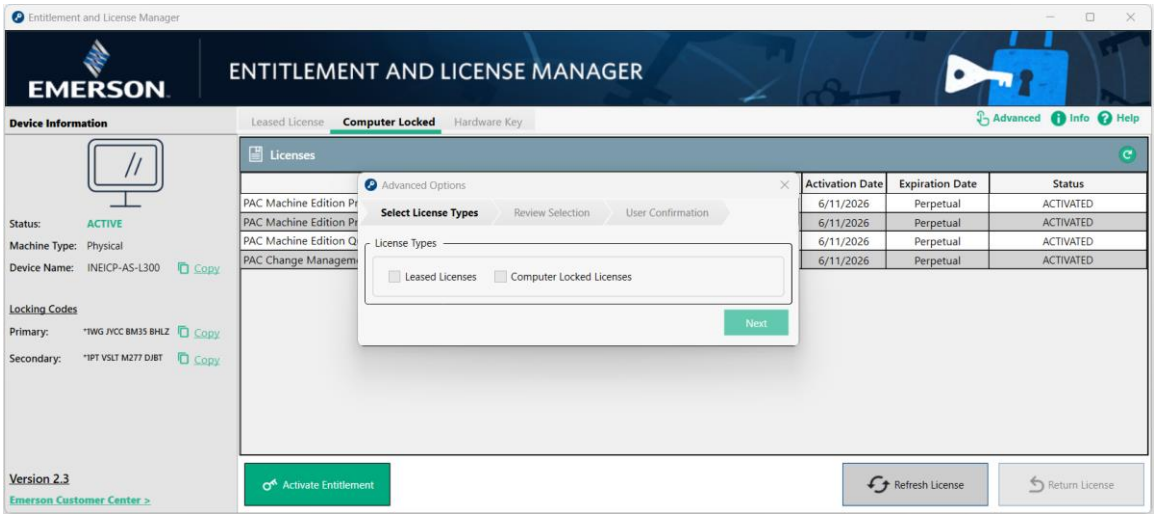
If the license does not return successfully, verify/retry the following:

3.7.1 Computer-Locked Licenses or Leased Licenses Corrupted

If a user is trying to end a lease and receives a **210014** or **210070** error code or notices that an expected lease license is no longer listed in the license grid of ELM, it may mean that the license has been corrupted, but still exists on the machine.

1. As a solution, ELM 2.1 or later allows users to use the **Advanced Options** button in the upper-left corner of the **Leased License** or **Computer-locked** tabs.
2. After clicking on **Advance Options**, you can select license type and click **Next**.

Figure 22: Advanced Options Dialog Opened



4. Review your license type and then click on **Next** button.

Figure 23: Confirm the Selected License Type

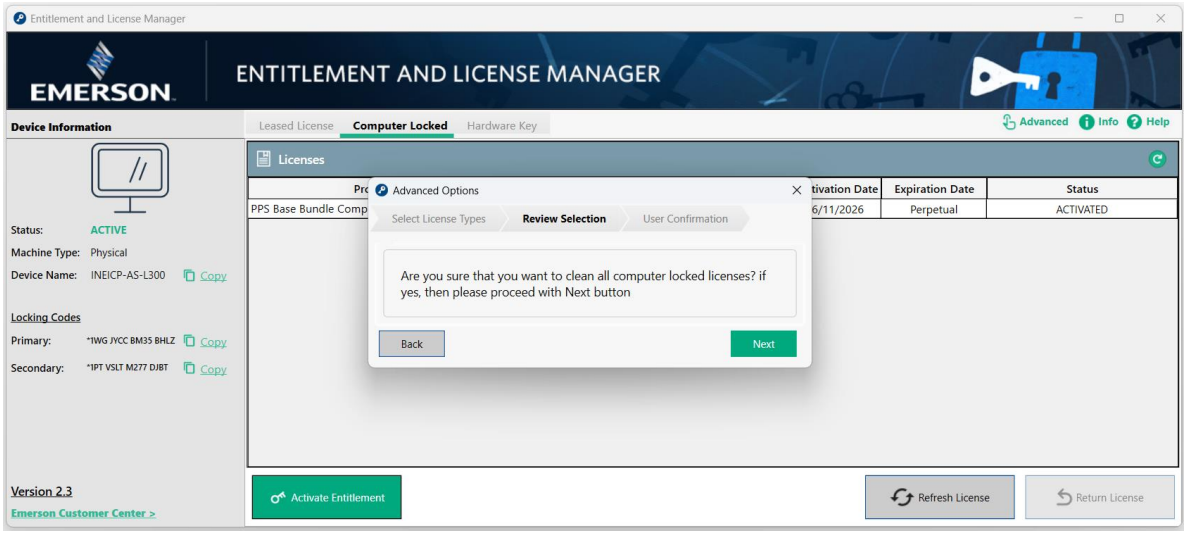
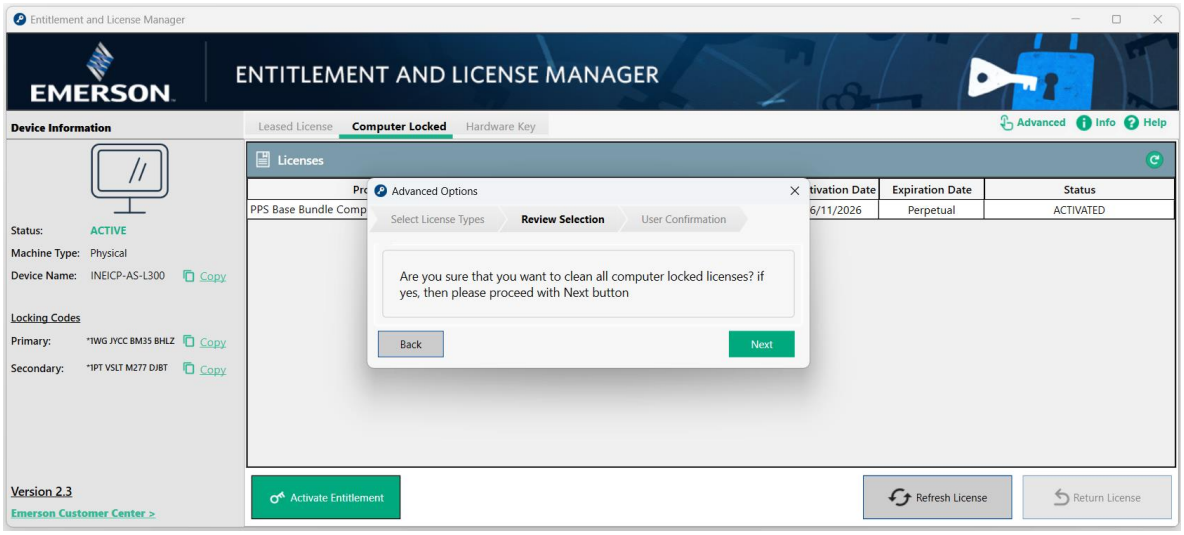
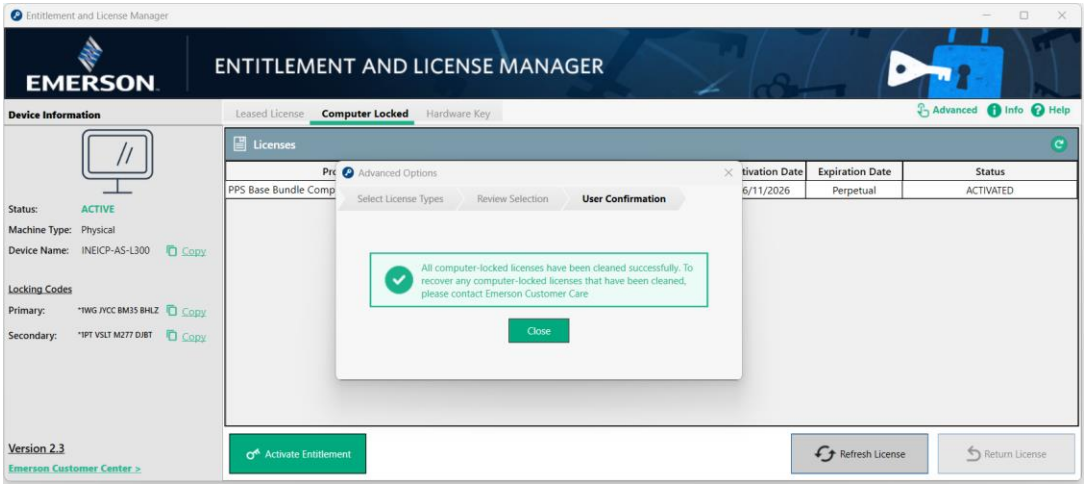


Figure 24: Review Selection



6. A screen will display to show that the corrupted license has been successfully returned.

Figure 25: All Licenses Cleaned Successfully



Section 4 Sharing Application Computer-Locked and Lease-Locked Licenses

4.1 Opening Multiple Instances with the Same License

To share a license across multiple instances, simply launch the application from the executable again. The second and tenth instances of the application will use the same licensing key.

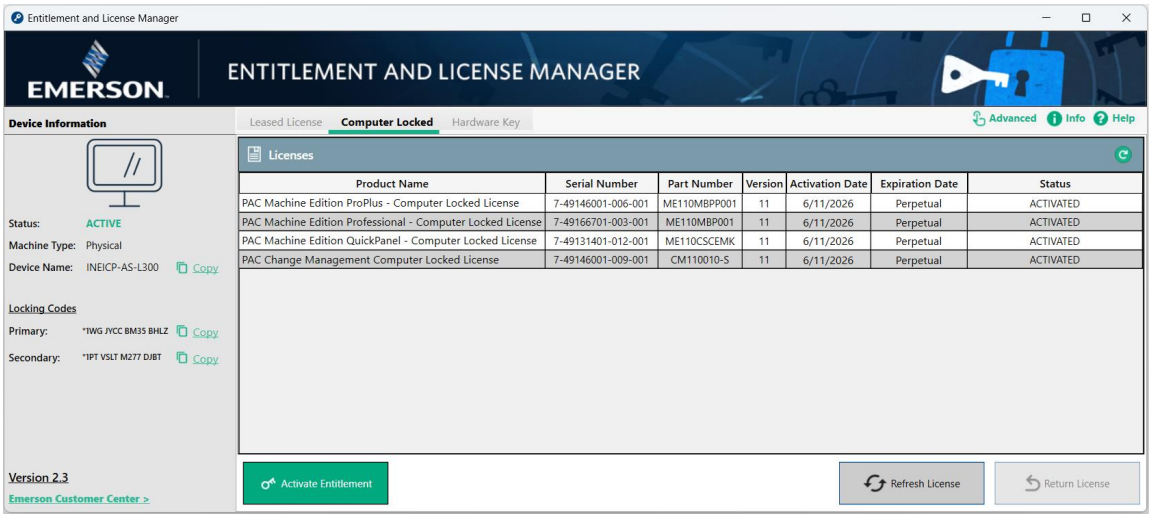
Note: Sharing the same licensing on different computers is not supported, nor can licenses be shared on different terminal sessions on the same computer with different usernames supported (such as with RDP on a Windows Server). This is true for both computer-locked and lease-locked licenses.

4.2 Returning a Shared License

When a program is closed cleanly, the license is returned immediately. If the program is abruptly closed (for example, using the force quit command in the task manager), it is possible that the licensing software can take up to five minutes to make another copy available. This timeout will never exceed five minutes.

Section 5 Returning a Computer-Locked License

Returning a license will allow users to return a license so that it can be activated on another device.



5.1 Automatic License Returns

5.1.1 Requirements

- Internet connection to the Emerson Customer Center
- ELM is live and operational
- Activated licenses available for return
- Licenses can only be returned when PME software is not running

5.2 Instructions

Before completing this process, please ensure that all applications using the Emerson license are closed before returning the license.

1. Select **Automatic Return Using the Internet** and click **Next**. If the license is valid, the process will be complete.

Figure 26: Select Return Method

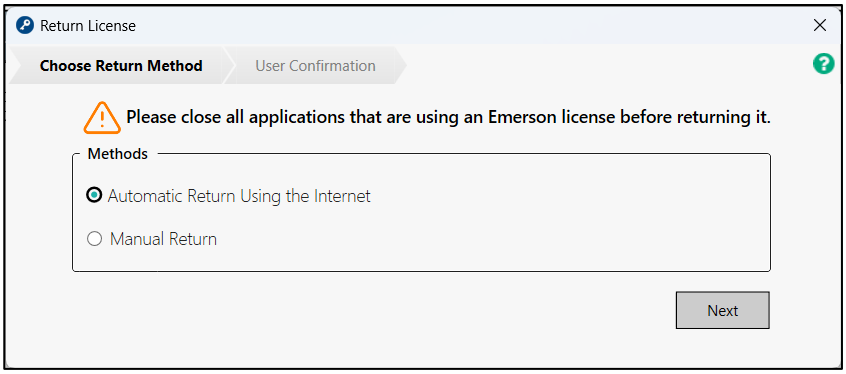
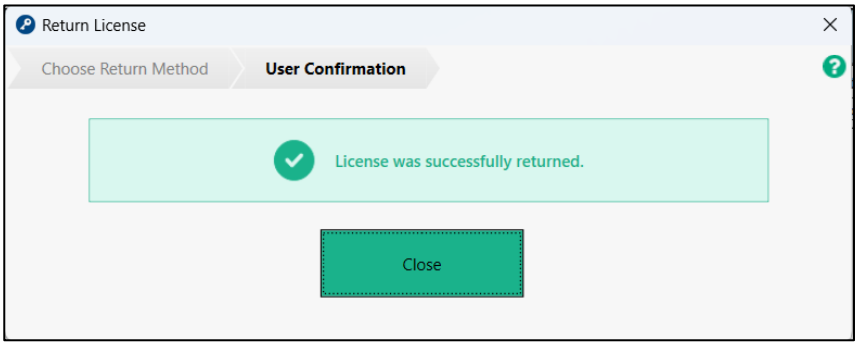


Figure 27: License Return Successful



5.3 Manually Returning a License

The process of returning licenses requires communication between the Entitlement and License Manager and Emerson Customer Center. The manual license return method is initiated in the ELM application, but some steps will be done in the Emerson Customer Center. Since Internet access may be impossible on the target device, the user will need to ensure they have access to a second device with internet access and a transferable storage device (USB drive). The manual activation procedure that is begun on ELM will produce a Return Confirmation file that will need to be uploaded to Emerson Customer Center. After the Return Confirmation file is uploaded, the return license method completes.

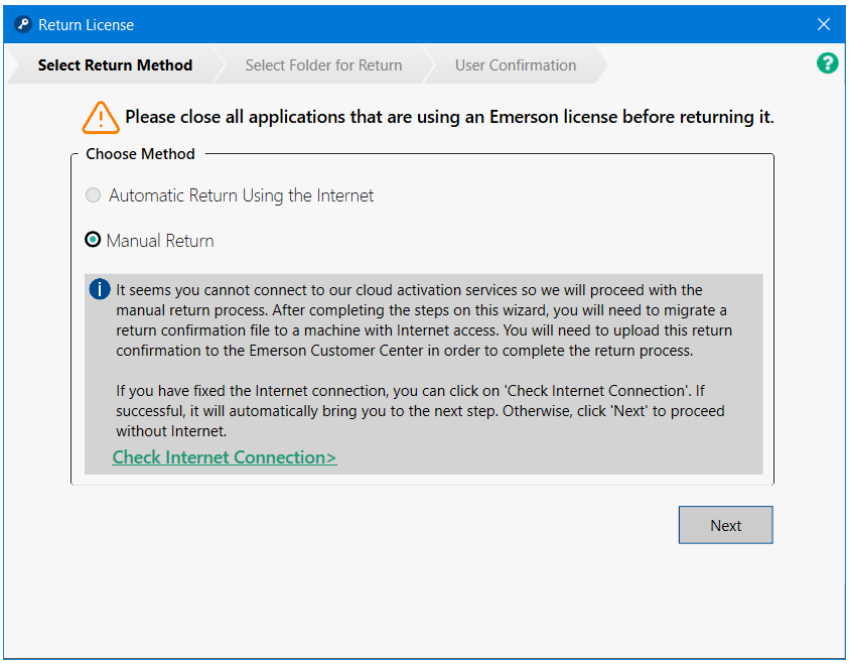
5.3.1 Requirements

- A second device with Internet access
- Transferable storage device (such as a USB drive)
- Licenses available to return
- Ability to transfer files from one computer to another computer
- Administrator rights are required to save the return confirmation file

5.3.2 Manually Returning Licenses

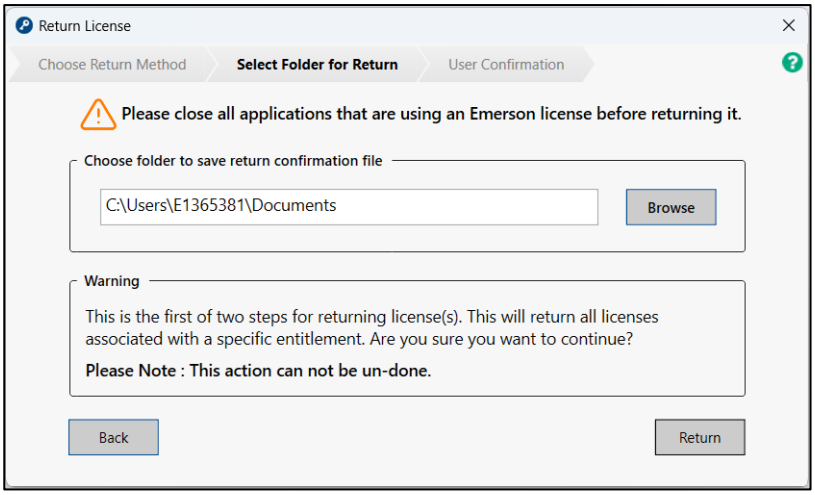
1. Open Entitlement License Manager with administrative privileges.
2. From the home screen, click the **Return Licenses** button.
3. Select **Manual Return** and click **Next.**

Figure 28: Select the Manual Return Method



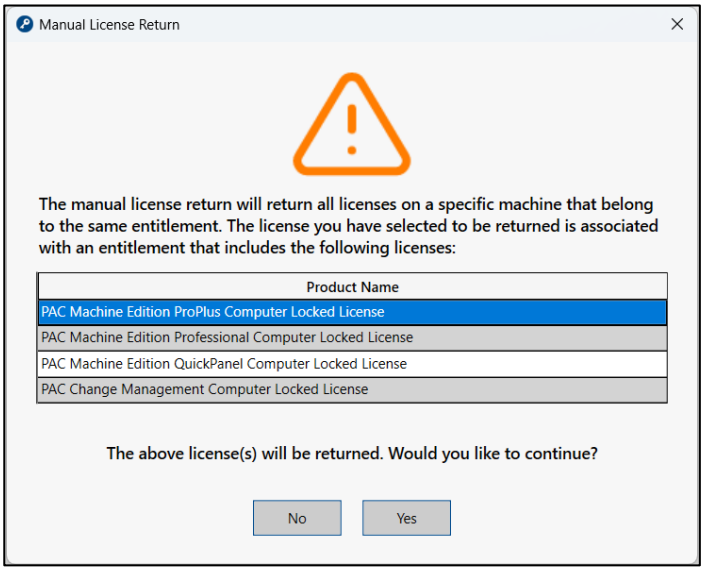
4. **Browse** to choose a path to save the Return Confirmation file and click **Return**. This file will need to be accessed to upload to Emerson Customer Center.

Figure 29: Choose Path for Return Confirmation File



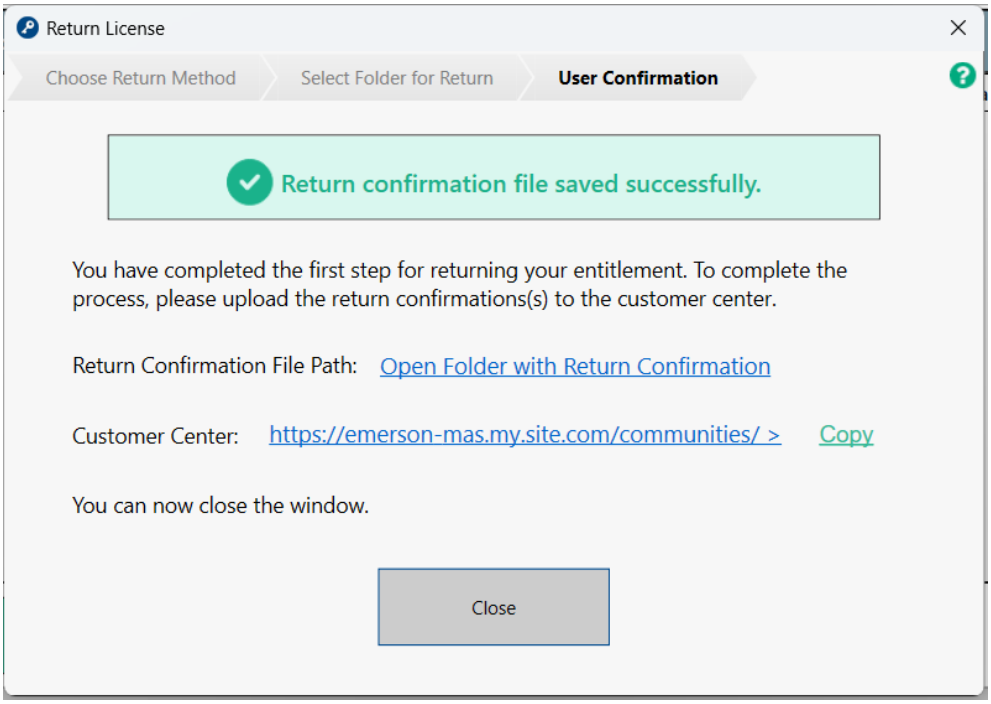
5. If you have multiple licenses that belong to the same Entitlement, then a confirmation screen will display. If the user confirms, then the listed licenses will be returned.

Figure 30: Choose Path for Return Confirmation File



6. If successful, ELM will display the **Return confirmation file saved successfully.**

Figure 31: Saved Successfully



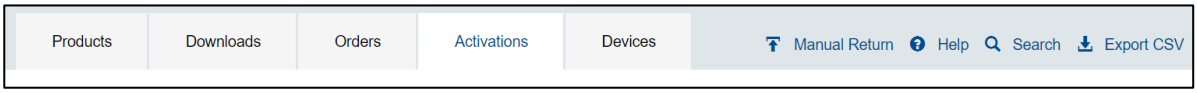
7. Click **Close** and proceed to the next section to complete the upload of the return confirmation file.

Uploading Return Confirmation Files to the Emerson Customer Center

The manual return method that began in ELM should have produced a Return Confirmation file that will need to be uploaded to Emerson Customer Center. After the Return Confirmation file is uploaded, the return method completes.

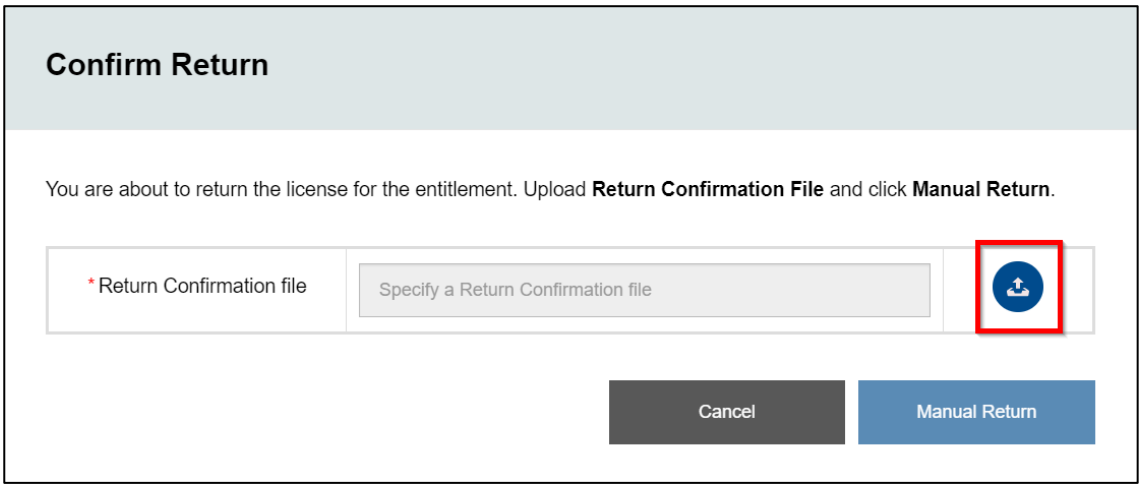
1. Login to the Emerson Customer Center (https://emerson-mas.my.site.com/communities/)
2. Click the **Activations** tab and confirm that the activated entitlements are listed (Figure 31).

Figure 32: Activations Tab



3. Click on the **Manual Return** button on the top-right navigation panel and a **Confirm Return** dialog box will pop up.
4. Click the browse button below to locate and upload the Return Confirmation file. Click on the **Manual Return** button.

Figure 33: Confirm Return



5.4 Finding the Return Confirmation Summary

When returning an entitlement manually, along with the Return Confirmation file, a Return Confirmation summary file is also generated and placed in the same folder as the Return Confirmation. The naming convention of the Return Confirmation summary file is **returnconfirmation_lockingcode_XXX_XXXX_XXXX_XXXX**. The first line of the file will give you the status code at the end of the return operation along with the completion time. Each of the following lines will be the name of the Return Confirmation file that can be used to complete the return process in the Emerson Customer Center. Most entitlements should only generate a single Return Confirmation, but there are some cases where multiple may be generated, in which case **all of them must be uploaded to the Customer Center to complete the process.**

When returning entitlement automatically, a Return Confirmation file and a Return Confirmation summary file are generated as a backup. They have placed in */%AppData%/Emerson/Entitlement and License Manager/ folder*, in a subfolder associated with the specific entitlement that the return attempt failed. The Return Confirmations in the folder will have the same file naming convention.

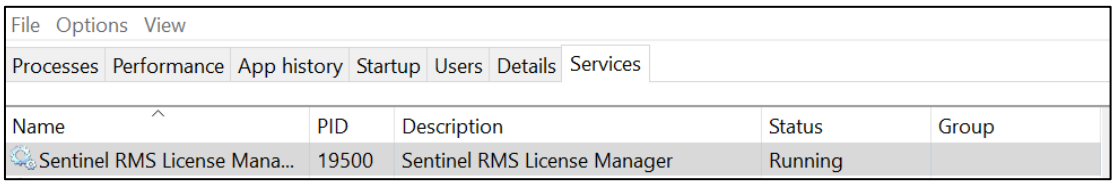
5.5 Unable to Return Entitlements

Many factors ensure parity between the Entitlement and License Manager and Emerson Customer Center. If the license does not return successfully, verify/retry the following:

Verify that the Sentinel RMS License Manager is Running

This is done by opening Window's Task Manager and clicking the Services tab. If there is no communication between the ELM application and the license manager, it may result in an error.

Figure 34: Sentinel RMS License Manager



Verify Whether the Correct Return Confirmation File was Uploaded to Emerson Customer Center

If the wrong license file is uploaded or is not valid, the manual return method will not be successful.

Verify that the Locking Codes Match

Verify that the license selected on Emerson Customer Center has the same Locking Code as the Primary Locking Code seen on ELM. This information is in the **Device Information** panel located on the left side of the home screen.

If necessary, the primary and secondary locking codes can be copied and pasted in version 2.1 or later.

Unable to Locate Returnable Entitlements

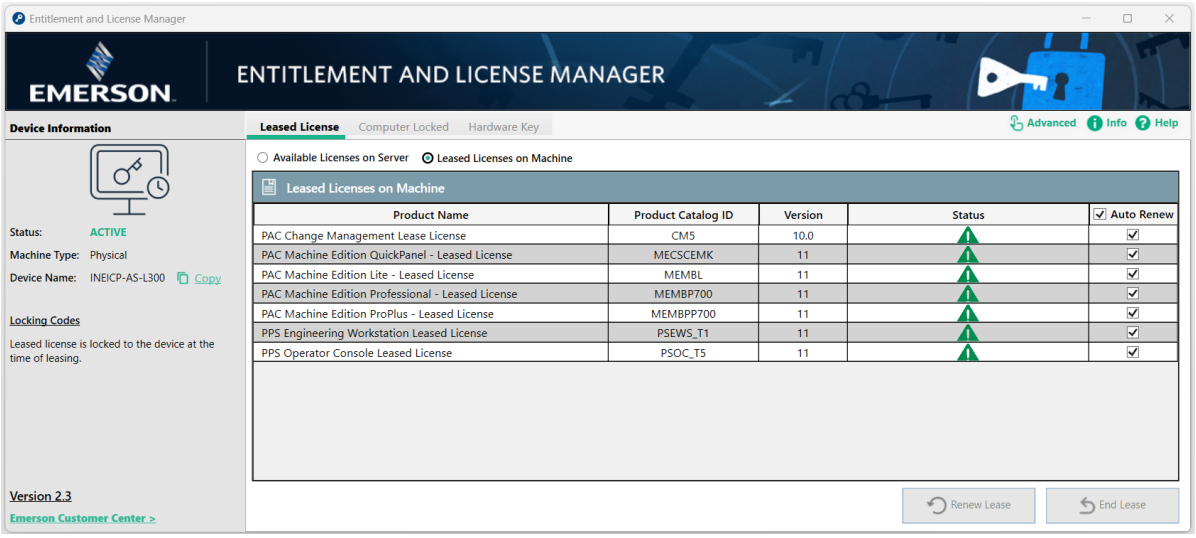
Please contact the technical support team. Contact information is available at the end of this document.

Section 6 Leasing a License

Emerson allows users to lease a license using Entitlement and License Manager. From the **Leased License** tab, users can check for available licenses on the license server by selecting the **Available Licenses on the Server** radio button or check active leases on machine by selecting the **Activated Leases on Machine** radio button.

Note: User needs to put the license server's IP address or host name. The default port number is 5093.

Figure 35: Leased License Screen



ELM software will remember the last entered license server information even when closed and reopened, not just when switching tabs in the current section. In versions 2.0 or later, the user is able to fetch lease licenses from the PLSA application using the IP address of PLSA installed on the machine. Previously, users were only able to fetch lease licenses by providing the server host name.

6.1 Leasing License on the License Server

6.1.1 Server-Side Settings

To lease a license in a server environment, RMS Sentinel Service will need to be added to the server's firewall approval list.

1. For Windows, follow this path to System Properties:
   Control Panel > All Control Panel Items > Windows Defender Firewall > Allowed Apps
2. Add Sentinel RMS License Manager to the Allowed Apps List.

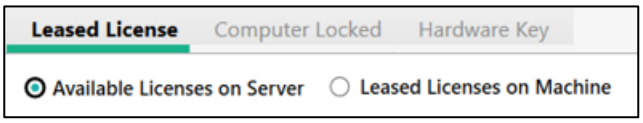
6.1.2 Client-Side Settings

To lease a license in a server environment, the server's IP and System Name need to be updated in the client's host files found in C:\Windows\System32\drivers\etc.

6.1.3 Checking Available Licenses on the License Server

1. Begin by ensuring that the **Available Licenses on Server** radio button is selected (Figure 36).

Figure 36: Available Licenses on Server Option



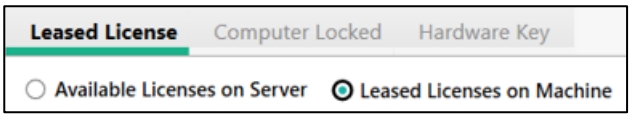
2. Enter the license server hostname and port number and click **Available Licenses on Server.**

   A list of available licenses will display, providing the product name on the data grid.
3. Select one of the available licenses in the grid that you wish to lease and click **Create Lease**.

6.1.4 Fetching Leased Licenses on Local Machine

1. Begin by ensuring the **Activated Licenses on Machine** radio button is selected (Figure 37).

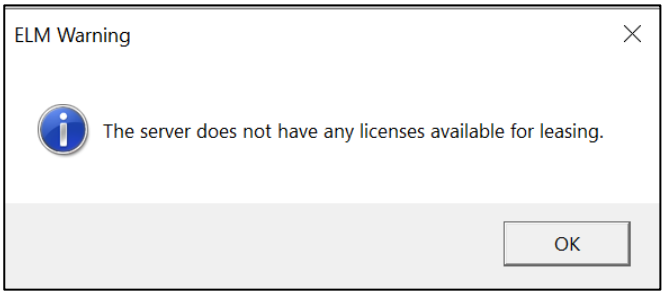
Figure 37: Activated Leases on Machine



2. A list of available licenses will display, providing the product name and lease status on the data grid.

   If no licenses are available, the user will receive a notification (Figure 38).

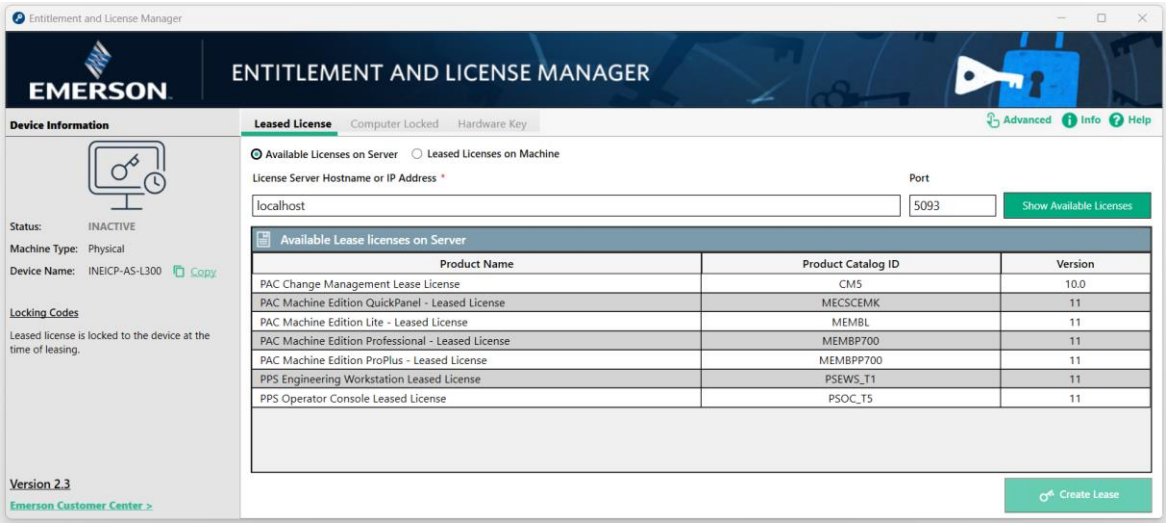
Figure 38: No Licenses Available for Leasing



6.1.5 Fetch Available Licenses on Server Screen

The Entitlement and License Manager allows users to view both available and currently leased licenses from the license server. By navigating to the **Leased License** tab and selecting the **Available Licenses on the Server** radio button, users can check which licenses are available on the server.

Figure 39: Get Available Licenses on Server

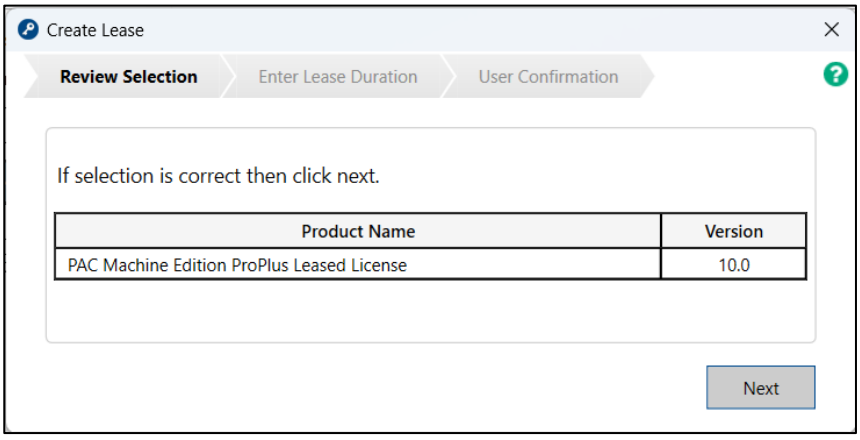


After Clicking Show Available License, we will get all the available licenses from the server based on the ip address / host name provided.

6.2 Creating a Leased License

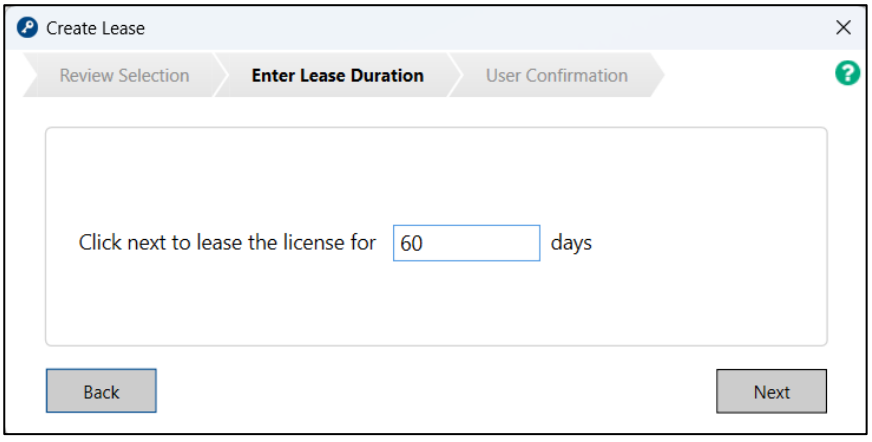
1. From the Leased License tab, click **Create Lease**. The application will ask for user confirmation.
2. ELM will display a confirmation page asking if the user wants to proceed.

Figure 40: Creating a Lease License



3. Input the lease duration required. The minimum lease duration is one day; the maximum is 60 days.

Figure 41: Lease License Duration



Note: Leasing a license requires a connection to the local PAC License Server. The connection is only needed when creating, ending, or renewing a lease—it does not need to be continuous.

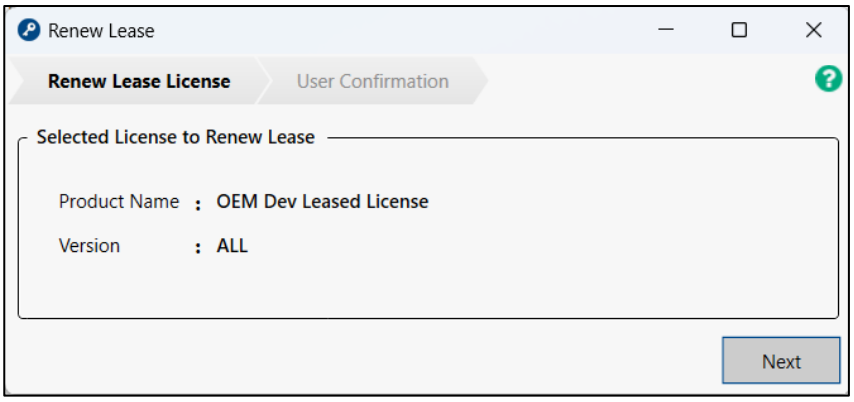
Note: Users cannot create a leased license if the computer already has computer-locked licenses. The user must return all computer-locked licenses before leasing a license.

6.3 Renewing a Leased License

1. From the Leased License tab, highlight a valid leased license for renewal and click the **Renew Lease** button.
2. A confirmation window will be displayed to verify that you have chosen the correct record. Click **Next** to begin the process. To decline, click the X to close out the window.

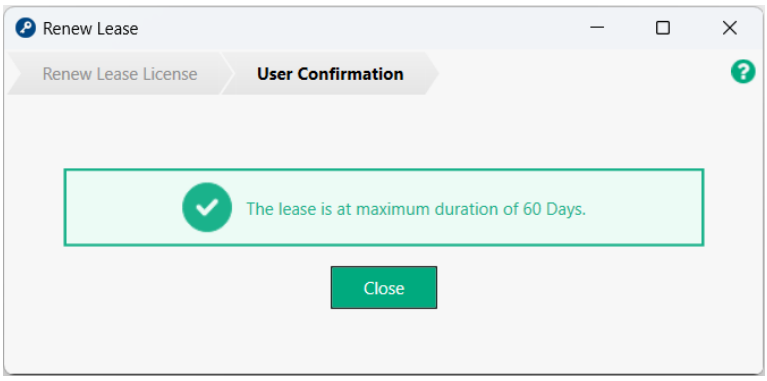
   Note: Renewing a leased license extends it for the same duration as the original lease.

Figure 42: Renew Leased License



3. A confirmation window will appear to validate that the license was renewed successfully.

Figure 43: License Renewed Successful



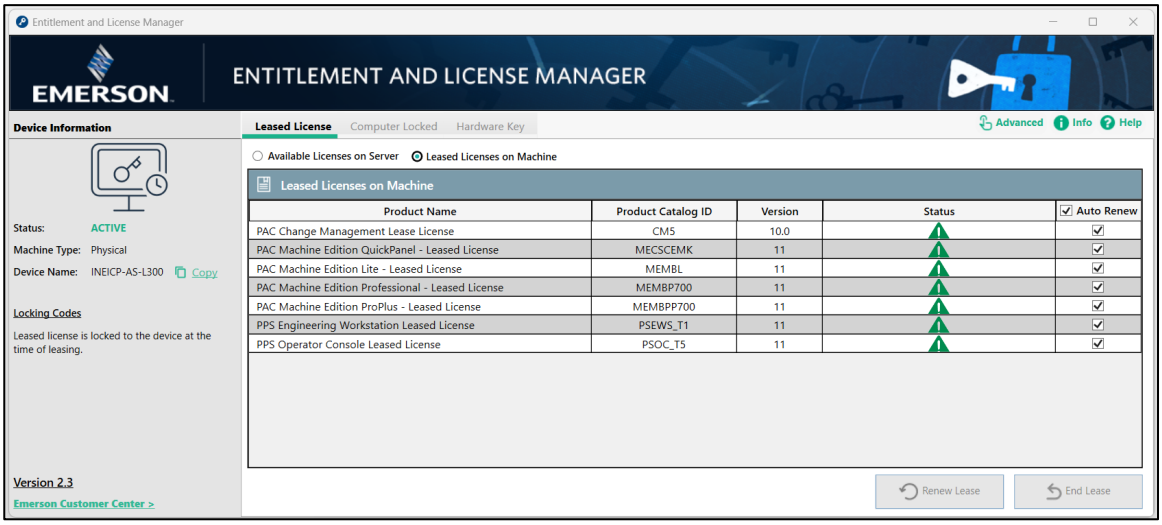
6.4 Checking Lease Expiration Date and Automatic Renewal

To review the number of days remaining before expiration, place the cursor over the record's status icon to reveal the number of days left on the lease.

Time remaining for licenses are color coded:

- **Green**: 16 to 60 days remaining.
- **Yellow**: 6 to 15 days remaining.
- **Red**: 5 or less days remaining.

Figure 44: Checking for Expiration Date



The **Auto Renew** box can be checked to renew all licenses at once or individually. All can be manually renewed with the **Renew Lease** button

The **Auto Renew** function runs every four hours and renews the checked leased licenses

Note: The option to renew a lease will only be available only after a valid lease is created.

Note: Leased licenses may only be renewed automatically with a connection to the license server.

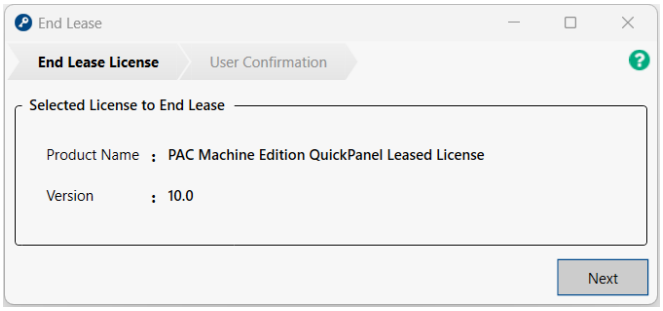
6.5 Ending a Lease

If the leased license is no longer needed, then the user can end the lease on the machine with the End Lease functionality.

1. From the Leased License tab, highlight a valid leased license to the end the lease and click the **End Lease** button.

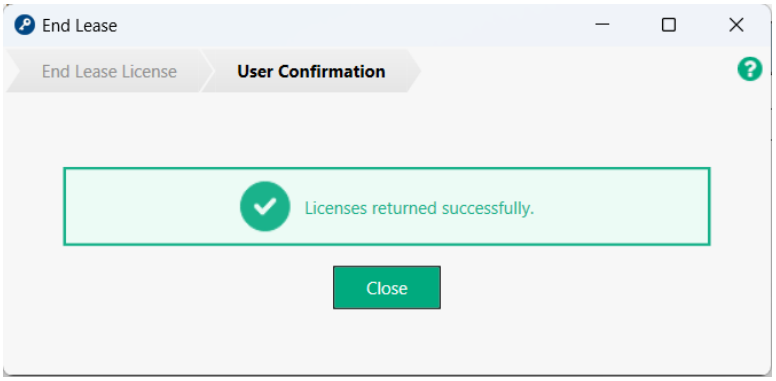
2. A confirmation window will display to verify that you have chosen the correct record. Click **Next** to begin the process. To decline, click the X to close the window.

Figure 45: Lease Confirmation



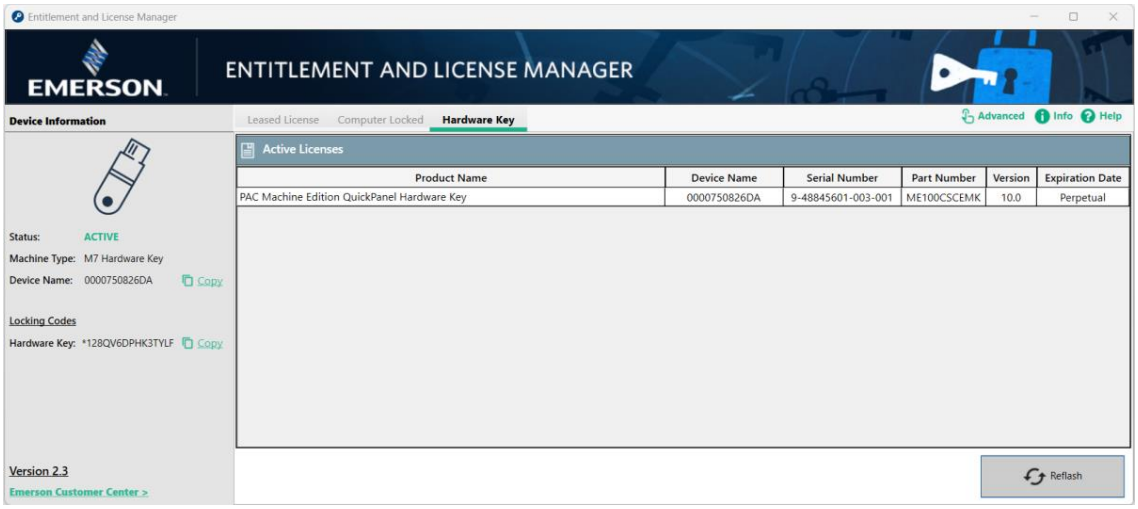
3. A status window will display if the leased license has ended successfully.

Figure 46: End Lease License Successful



Note: Leases may only be ended with the license server.

Section 7 Licensing with a Hardware License Key



For ELM versions 1.2 or later, Emerson provides customers with the optional ability to license an application with a USB device called a Hardware License Key. The Emerson Hardware License Key is a preconfigured USB key that contains the activated license for the desired software. The user does not need to activate the key to begin using the software.

Emerson's hardware license key also supports application licensing on bare-metal PCs and Type 2 Hypervisor virtual machines. For information on using Hardware License Keys with virtual machines, please see Appendix B.3 *Licensing and Application Running on a Type 2 Hypervisor with a Hardware License Key.*

Note: Administrator level access is required to access a hardware key.

7.1 Identifying Licenses on Hardware License Keys

Emerson hardware license keys are configured on red Emerson USB drives. These keys are sometimes referred to by the part number which is M7.

Note: Other hardware keys are not supported on ELM 1.3.

Figure 47: Emerson Hardware Keys (M7) for ELM 1.2 and Later

7.2 Reviewing Licenses on a Hardware License Key

Users can look up the licenses configured on each Hardware License Key by the Device Name

Hardware keys will feature a white label with the Device Name Serial Number (SN) indicated. The serial number will specify which software licenses are configured on the Hardware License Key.

Note: Customers are also able to find this information from their order details in their email.

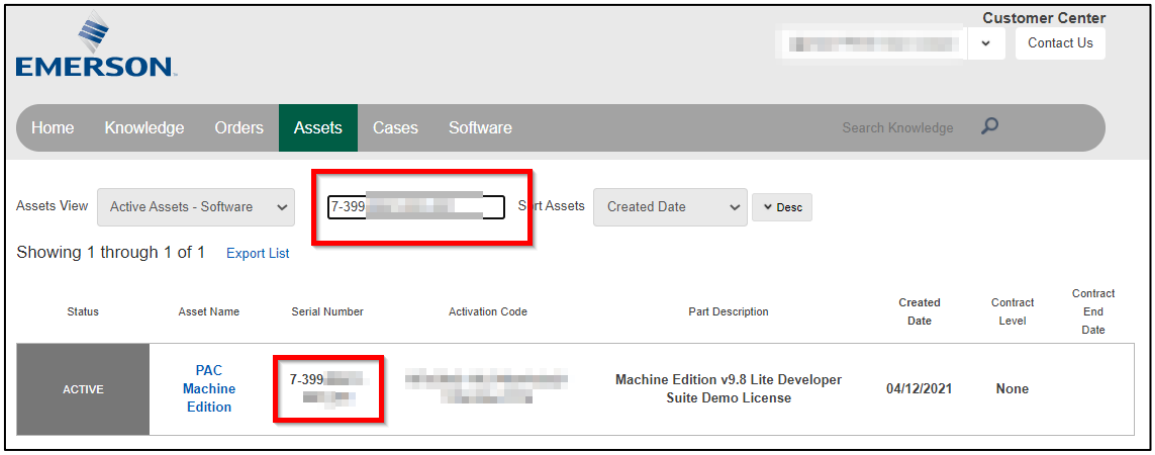
Figure 48: Device Name Located on Box Label

Customers can then use this information to locate their licenses at the Emerson Customer Center.

1. Navigate to https://emerson-mas.my.site.com/communities/
2. Select the **Assets** tab from the top menu.

3. Enter the **Device Name Serial Number** visible on the label of the Hardware License Key. Customer Center will match the Serial Number on file and the user will see the Licenses available under the **Part Description** field (Figure 49).

Figure 49: Serial Number Lookup



7.3 Using a Hardware License Key on a PC

The activated license is stored on the Hardware License Key. Once inserted into the computer, the user can launch and use the application without further action. The application will periodically check for the Hardware License Key. If the key is removed, the application will become unlicensed and the user will be unable to save changes, risking data loss.

1. Insert the Hardware License Key into the physical machine.
2. Wait one minute for the key to be detected by ELM.
3. Launch the application licensed with the Hardware License Key.

Section 8 Refreshing and Reflashing License Keys

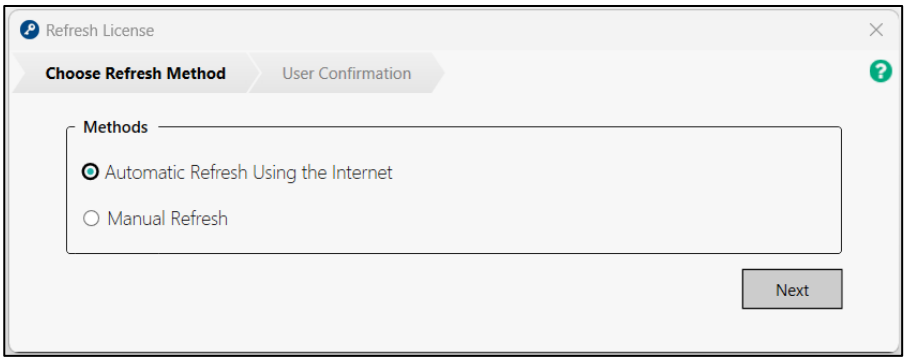
8.1 Computer-Locked License Key Refreshing

Refreshing licenses can be performed through Entitlement and License Manager.

8.1.1 Automatically Refreshing Licenses

1. From the home screen, highlight the licenses to refresh and select the **Refresh Licenses** button.

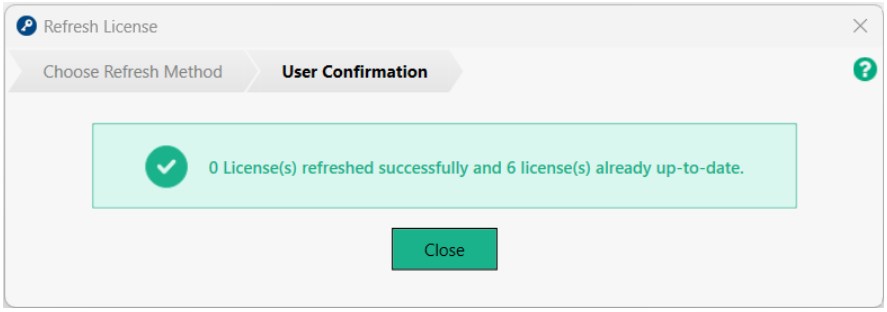
Figure 50: Automatic License Refresh



2. Click **Next**.

A green success screen should indicate that the refresh was successful.

Figure 51: Automatic License Refresh - User Confirmation

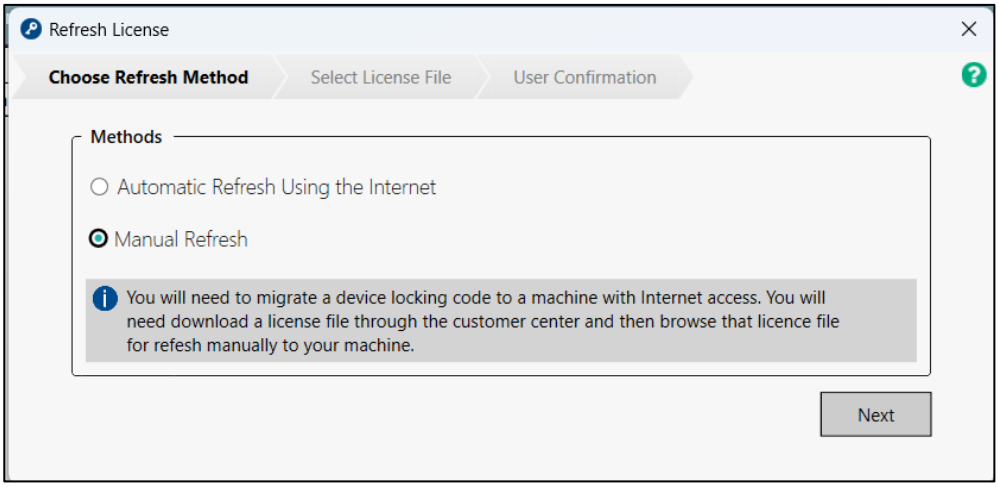


8.1.2 Manually Refreshing Licenses

Users on PCs without an internet connection can manually refresh licenses by downloading the updated license file from Emerson Customer Center.

1. From the home screen, highlight the license you wish to refresh and click on **Refresh Licenses.**
2. Select the **Manual Refresh** method.

Figure 52: Manual Refresh Method



3. Select the **Copy** link next to the **Device Locking Code.** This code will be used on Emerson Customer Center to generate a license file. If the user is accessing the code from another computer, the code will need to be written down.
4. From a second machine with internet access, open a browser and enter the following URL: https://emerson-mas.force.com/communities/

5. From the **Software Orders and Downloads** portal, select the **Activations** tab to locate your license. The license eligible for renewal will be marked with a **Renewal Pending** status. Click **Refresh.**

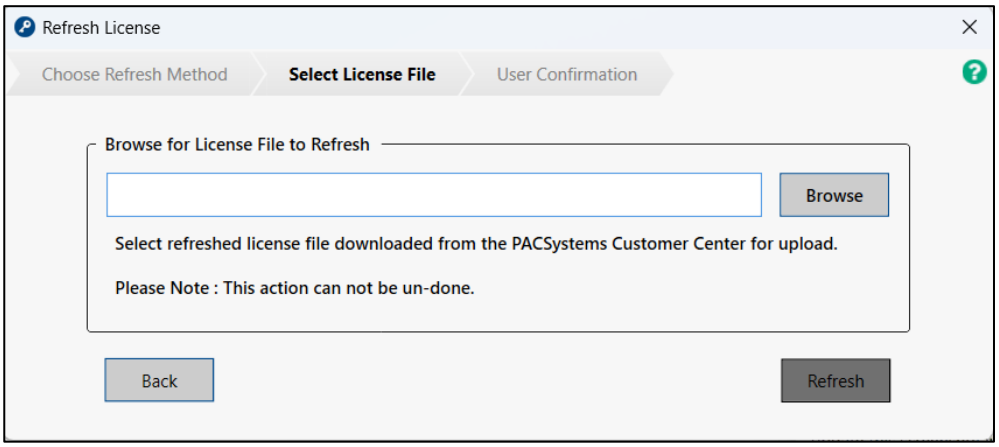
Figure 53: Refresh the License Pending Renewal

6. Select the **Devices** tab and select click the **Download** button. The license file should begin to download.

Figure 54: Download License

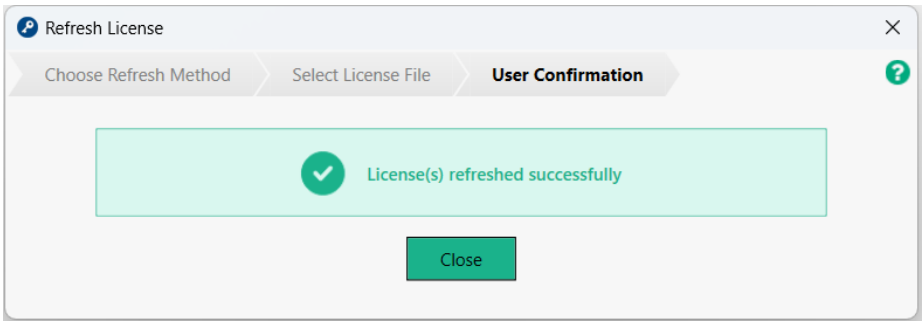
7. Return to the Entitlement and License Manager on the target machine and upload the previously downloaded license file.

Figure 55: Refresh License



8. Click **Refresh**. A green success screen should indicate that the refresh was successful.
9. The screen will display whether the licenses have been refreshed successfully (Figure 56).

Figure 56: Refreshed Successfully

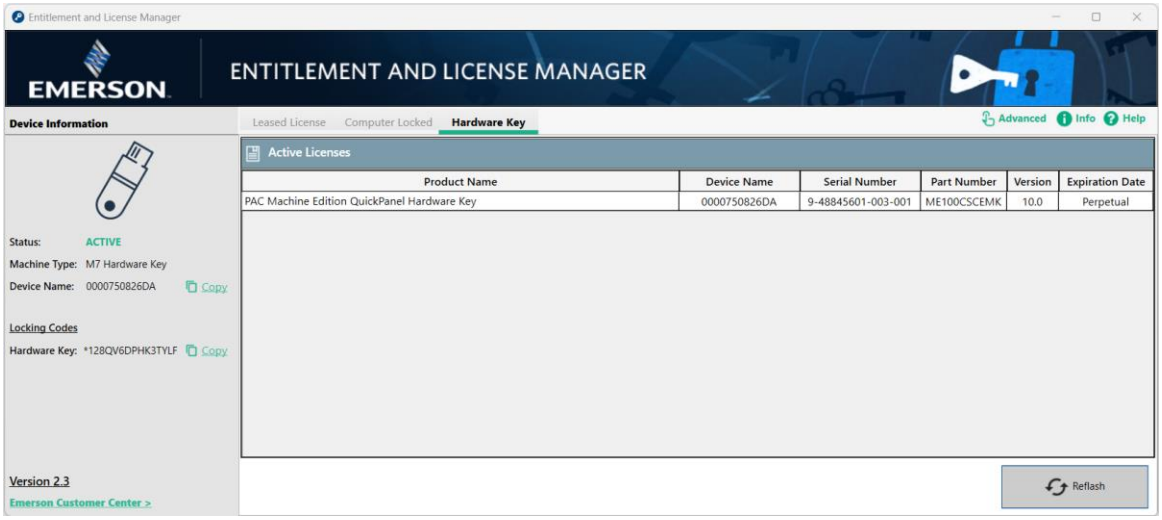


8.2 Hardware License Key Reflashing

Reflashing a hardware license key can be performed with the Entitlement and License Manager and the Emerson Customer Center.

1. Using Entitlement and License Manager, select the **Hardware Key** tab located at the top of the dashboard.
2. Click the **Reflash** button.

Figure 57: Hardware Key View



3. From a PC with an internet connection, open a browser and navigate to Emerson Customer Center: https://emerson-mas.my.site.com/communities/
4. Sign into the Customer Center and click the **Software** tab located on the navigation menu. A new tab will open to display the **Software Orders & Downloads** portal. This section will display all of the customer's available software licenses.

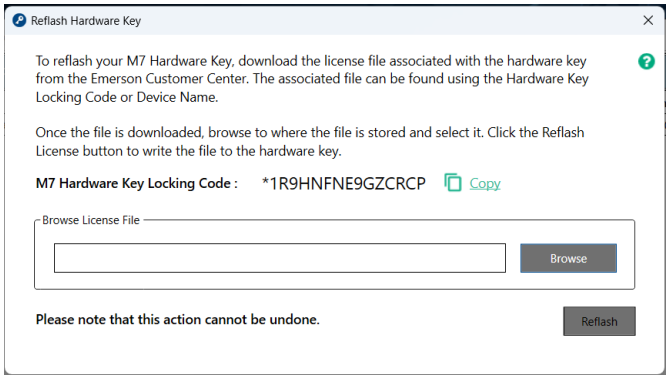
Figure 58: Navigation to Software Portal

5. From the **Software Orders and Downloads** portal, select the **Devices** tab to locate your license.
6. A dropdown list will appear with a list of device names with activated licenses. Click the **>** next to the device name to reveal the license record and click the **Download** button.

Figure 59: Download License

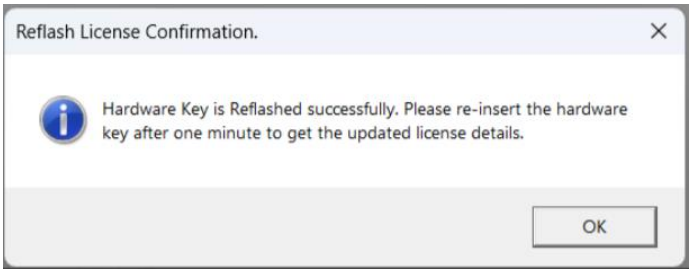
7. Return to the Entitlement and License Manager and upload the license file previously downloaded.

Figure 60: Browse and Upload the License Downloaded from Emerson Customer Center



8. Click **Reflash License**. The Entitlement and License Manager will ask you if you would like to continue. Click **Yes.** A green success screen should indicate that the reflash was successful.

Figure 61: Reflash Successful



9. After reflashing the hardware key, the user may remove the device. Please wait two minutes before plugging the hardware key back into the PC.

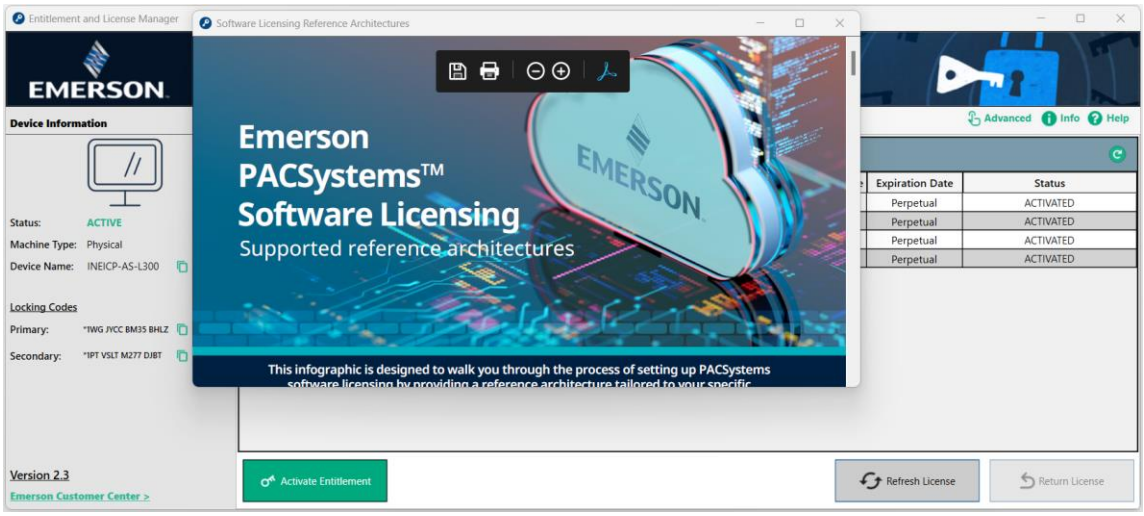
Section 9 Reference Architectures

Managing software licenses can present challenges for organizations large and small. Emerson's licensing tools remove the complexity of managing licenses and provide a unified solution for managing your organization's PACSoftware licenses. Emerson's licensing tools provide several deployment options that support all PACSoftware license types (computer-locked, leased licenses, and hardware keys) and activation methods (online or manual activation). With Emerson's licensing solution, users can work uninterrupted and spend less time managing licenses.

Emerson's Entitlement and License Manager and PAC License Server Administrator can be used to strengthen cybersecurity. The following setup details are intended for customers, application engineers, and system integrators.

The ELM application includes a software licensing infographic designed to walk the user through the process of setting up PACSystems software licensing by providing a reference architecture tailored to their specific needs. To access the infographic, please click the Info icon in the top-right corner of the application.

Figure 62: Infographic Walk Through



Appendix A: Secure Deployment Guide

This section introduces the fundamentals of security and secure configuration and deployment.

A.1 What is Security?

Security is the process of maintaining the confidentiality, integrity, and availability of a system:

- Confidentiality: Ensure only the people you want to see the information can see it.
- Integrity: Ensure the data is what it is supposed to be.
- Availability: Ensure the system or data is available for use.

Emerson recognizes the importance of building and deploying products with these concepts in mind and encourages customers to take the appropriate care in securing their Emerson products and solutions.

A.2 General Security Recommendations

Emerson product users are recommended to follow the following general security recommendations:

- Harden system configurations by enabling/using the available security features, and by disabling unnecessary ports, services, functionality, and network file shares.
- Apply all of the latest Emerson product security updates, Software Improvement Modules (SIMs), and other recommendations.
- Apply all of the latest operating system security patches to control systems PCs.
- Use anti-virus software on control systems PCs and keep the associated anti-virus signatures up-to-date.
- Use whitelisting software on control systems PCs and keep the whitelist up-to-date.
- Limit the installation and usage of software to necessary user groups.
- Firewall: To use the ELM system with Emerson Cloud, allow all outbound traffic at TCP port 443 to URL intelliplatform.prod.sentinelcloud.com. Be sure to allow replies to connections as well.
- Proxy: When running ELM on a machine that connects to the internet via a proxy, ELM uses system proxy settings when communicating with the Emerson cloud to conduct activations and returns.

A.3 Secure Deployment and Hardening

Recommendations for setting up the Entitlement and License Manager include:

1. Implement the necessary ACL restrictions such that only users with an Administrator-level of privilege can run the Entitlement and License Manager.
2. Configure a local firewall to allow HTTPS traffic to reach out to the internet through port 443.
3. Configure a local firewall to allow incoming UDP port 5093, unless the default port has been changed.

A.4 Entitlement and License Manager Services List

Entitlement and License Manager uses the following services in the background. If users encounter persistent issues with ELM, please make sure these services are running in the background.

1. Sentinel RMS License Manager
2. MSD Impot Service
3. Lease Auto Renew Service

Figure 63: Sentinel RMS License Manager

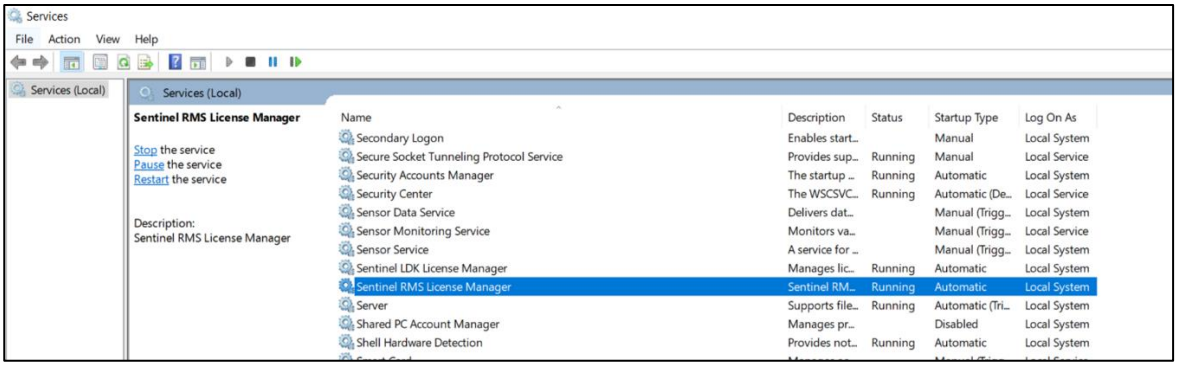


Figure 64: MSD Import Service

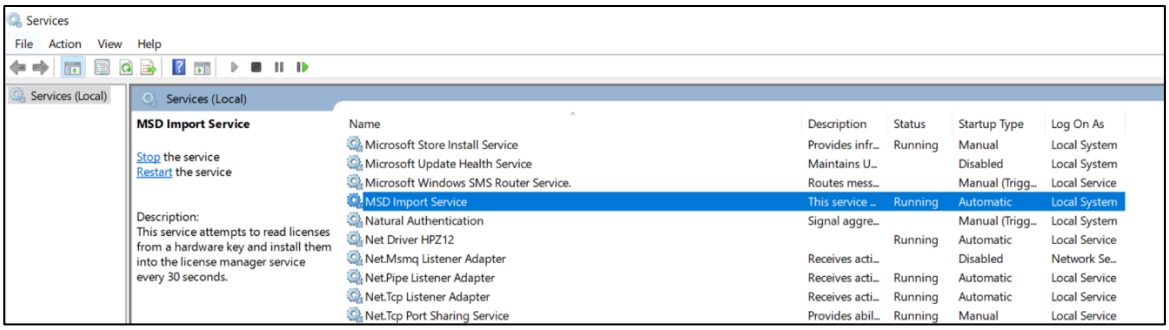
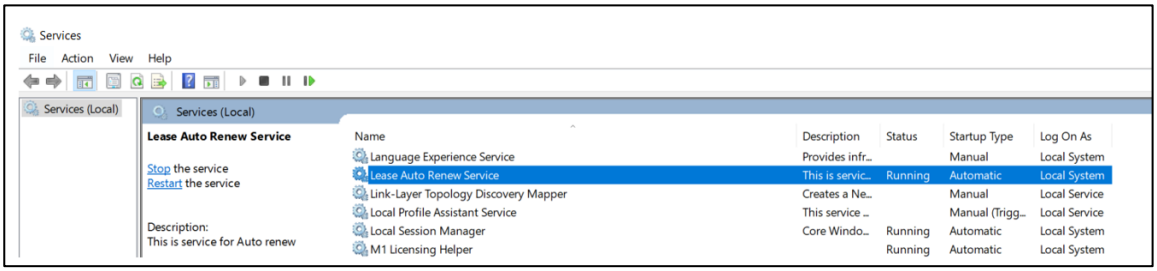


Figure 65: Lease Auto Renew



Appendix B: Licensing PAC Software on Virtual Machines

This section covers common license management scenarios along with the recommended management software deployment strategies that accompany them.

For individual licenses (not intended to be shared across a network):

- Type 2 Hypervisor (Hosted Hypervisor)
- **Note:** Emerson only supports the use of one Hardware License Key per physical machine. Only one virtual machine on a physical machine may use a Hardware License Key at a time.

Important

For the client to fetch licenses from the server, both should have the same subnet mask.

B.1 Type 1 Hypervisor with Leased Software Key

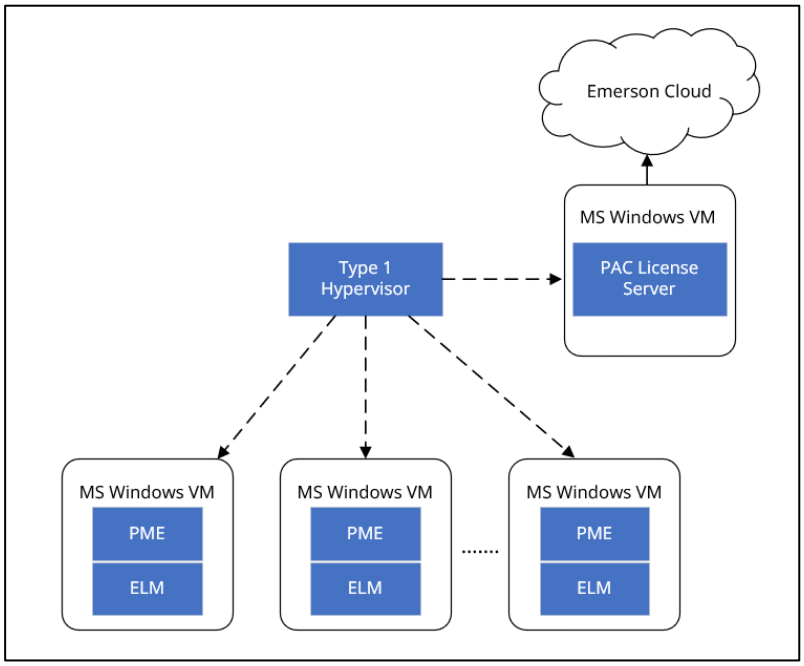
To use Emerson Software Licensing in a Type 1 hypervisor environment, ELM is installed and runs on a virtual machine. The PAC License Server runs on the virtual or a physical machine that is within the same network with the virtual machines running on the Type 1 hypervisor. Activation and return of entitlements can be performed using the PAC License Server utility automatically or manually. Leasing the license is performed via ELM in the virtual machine. Existing lease(s) on the virtual machine can be ended or renewed through ELM.

The figure below depicts a scenario in which a user has PAC Machine Edition on a virtual machine running on a Type 1 hypervisor. The deployment strategy is to install PAC License Server on one virtual machine and ELM on the other virtual machines that run PAC Machine Edition software.

Important

Type 1 Hypervisor clients require a unique VolumeID to receive a leased license from a PAC License Server. If created virtual machines have the same VolumeID (cloning or copying virtual machines from a template can result in this), please see https://learn.microsoft.com/en-us/sysinternals/downloads/volumeid to properly change the VolumeID.

Figure 66: Type 1 Hypervisor



B.2 Type 2 Hypervisor with a Software Key (VMware Workstation Running on a Local Machine)

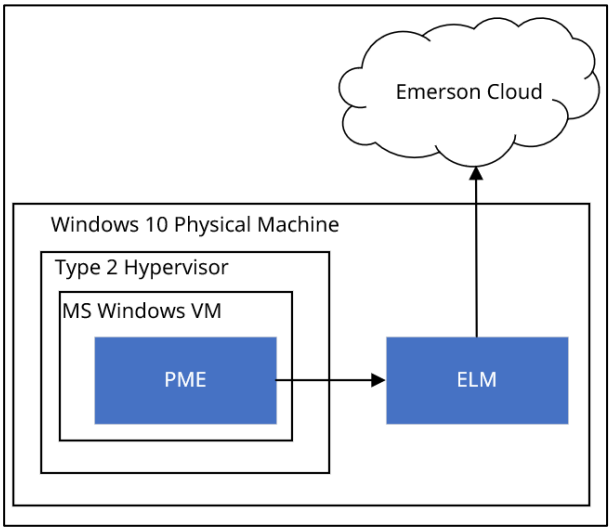
To use Emerson Software Licensing in a Type 2 Hypervisor environment, ELM is installed and runs on the same physical machine as the hypervisor software. Activation and return of entitlements can be performed using the ELM utility automatically or manually on the physical machine itself, but not within any virtual machines running on the Type 2 hypervisor.

Figure 67 depicts a scenario in which a user has PAC Machine Edition on a virtual machine hosted on a Windows 10 physical machine. The deployment strategy is to install ELM on the physical machine that is hosting the hypervisor software.

Important

When licensing an application on a virtual machine with a software key, ELM must be installed on the physical machine. (By contrast, when licensing an application on a virtual machine with a Hardware License Key, ELM must be installed on the virtual machine.)

Figure 67: Type 2 Hypervisor



Licensing in a Type 2 hypervisor Environment

To use Emerson Software Licensing in a Type 2 hypervisor environment, it is recommended that an independent virtual network adapter be created and connected to the host-only network that exists on the host operating system. This will ensure that the network connection to the Entitlement and Licensing Manager software is uninterrupted. The following instructions assume that the operating systems involved are Microsoft Windows 10 and the virtualization software is VMWare Workstation Pro.

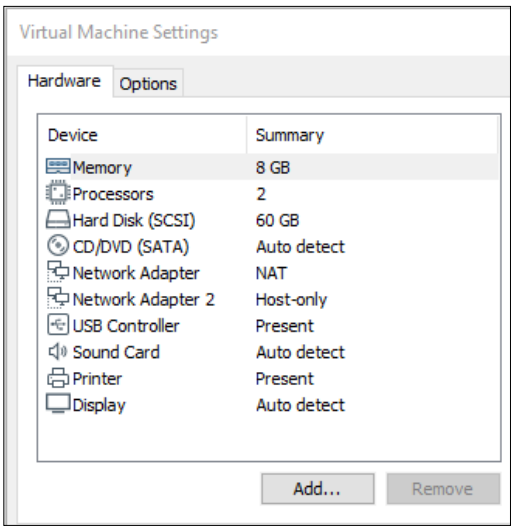
Creating a Network Adapter

Upon installation, VMWare Workstation Pro will create a host-only virtual network, typically labeled as "VMnet1." To add a second host-only virtual network adapter[1] to the virtual machine running applications such as PAC Machine Edition or PAC Productivity Suite, follow these instructions:

1. Power down the virtual machine.
2. Edit the virtual machine settings and add a second Network Adapter by clicking **Add...** button and selecting **Network Adapter** (Figure 68).

[1] Only one network adapter is required to create licenses.

Figure 68: VM Settings



3. Click **Finish** to add a new adapter to the Device List.
4. Select the new adapter and click the radio button labeled **Host-only: A private network shared with the host** to finalize the configuration of the network adapter.
5. Power on the virtual machine.

To verify that the new adapter is properly configured, record the IP address of the network adapter on the host operating system:

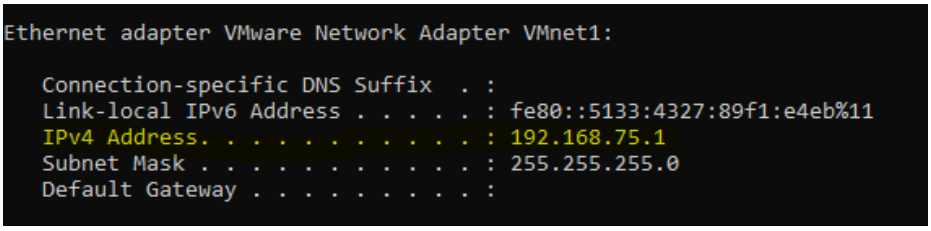
1. Launch the Command Prompt.

   Type **ipconfig** and press enter.
2. Inspect the results to find the adapter labeled **Ethernet adapter VMWare Network Adapter VMnet1** and record the IPv4 address.

Note:

- Users should record the IPv4 address of the *adapter* VMnet1, not the VMWare Network by the same name.
- The IPv4 address on your computer may differ from the address shown in the screenshot below.

Figure 69: Host Network IP



From the virtual machine, ensure that the host-only network is reachable:

1. Launch the command prompt.
2. Type **Ping xxx.xxx.xxx.xxx**, where the Xs are replaced with the IPv4 address of the adapter for VMnet1, and press enter.

Emerson Software Licensing on the virtual machine can be configured to use the host physical machine's virtual network adaptor that is assigned to the host-only virtual network through the **LSFORCEHOST** system environment variable.

Please note that it is possible that the Virtual Network settings have been configured in a non-default way, in this case, the Virtual Network Editor tool will be needed to identify or configure a host-only virtual network for the specific environment in use. For further instructions on how to configure VMware Workstation virtual networking, please see the VMware documentation and support available at https://www.vmware.com.

Setting Environment Variables

When ELM must activate an entitlement for an application that is installed on a Type 2 Hypervisor, the user may also need to perform the following configuration steps on the virtual machine with the application.

Use the instructions in the following section *Setting Variable Definitions* to set the VM's environment variables to the values displayed in the table below:

Environment Variable	Value
LSFORCEHOST	IP Address of Host (see Figure 77) **Note:** The LSFORCEHOST variable is not available to use with a Hardware License Key. This setting is only used with software keys.
LSPORT	5093
LSFORCE_BROADCAST_INTERVAL	3
LSFORCE_NETWORK_TIMEOUT	3

Note: If the user creates or changes this environment variable after installing the application, the user may need to restart the application. With a restart, the value specified by the environment variable will not be used.

Note: When a host connects to VPN, PME within the VM variable must be pointing to the VPN IP Address

B.3 Licensing and Application Running on a Type 2 Hypervisor with a Hardware License Key

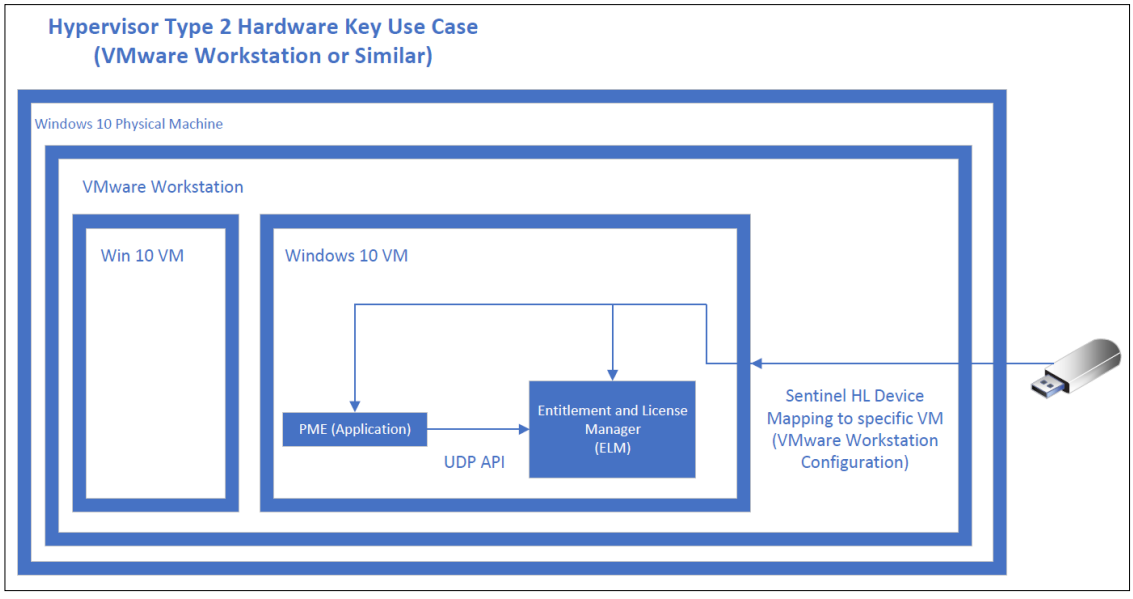
An Emerson hardware license key is a preconfigured removable media key that allows users to run applications without activating a license first. The activated license is stored on the removable media giving customers a plug-and-play experience.

Figure 76 illustrates a common configuration that would allow the Hardware License Key to be mapped to the VM and allow users to run licensed applications.

Important

When licensing an application on a virtual machine with a Hardware License Key, ELM must be installed on the virtual machine. (By contrast, when licensing an application on a virtual machine with a software key, ELM must be installed on the physical machine)

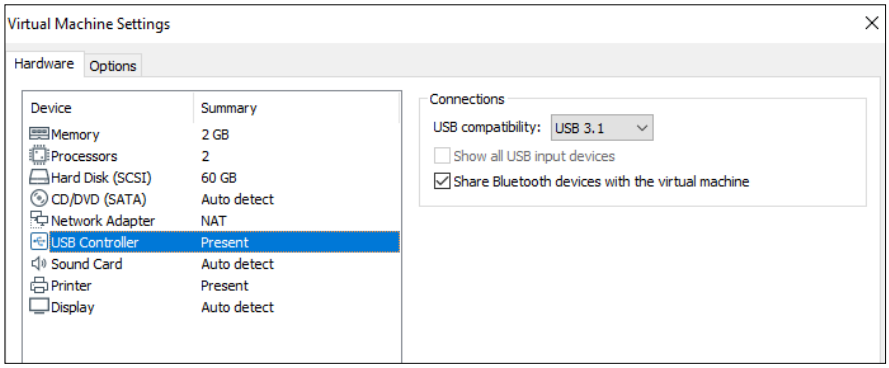
Figure 70: Overview of Hypervisor 2 Configuration for Hardware Key Activation



The following example uses Workstation 15.5 and a virtual machine with Windows 10 64-Bit installed.

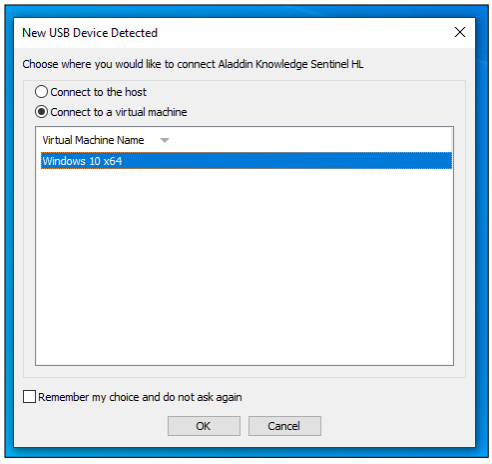
1. The USB controller must be present (configured in the VM settings)

Figure 71: Virtual Machine Settings



2. Plug the Hardware License Key into the physical machine and Windows will announce **New USB Device Detected** (Figure 72).
3. Select **Connect to a virtual machine** and then select the virtual machine by its name. Click **OK.**

Figure 72: Connect a Virtual Machine

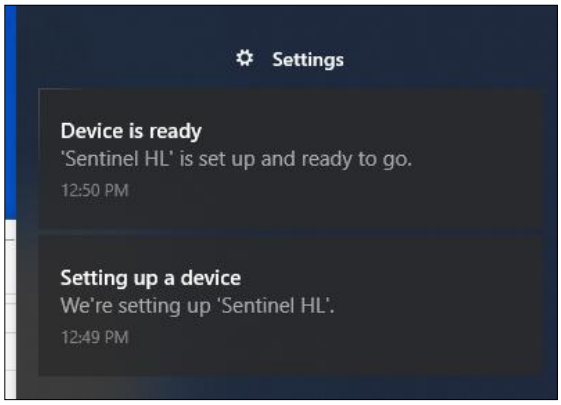


Important

The operating system will recognize the Hardware License Key as *two USB devices*. Thus, the dialog box in Figure 72 will appear once for each device. **Both devices must be connected to the same virtual machine for the Hardware License Key to function properly.**

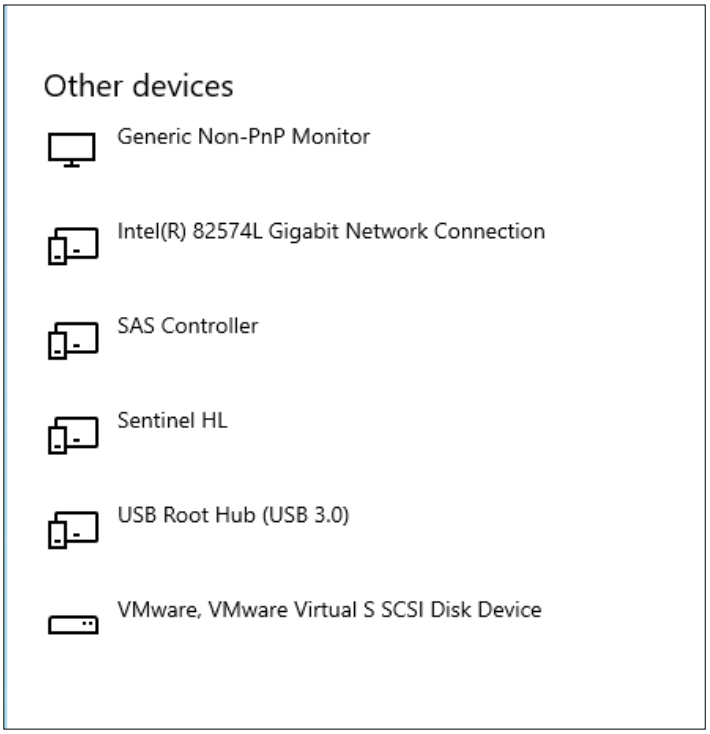
4. Windows 10 on the VMWare Workstation will detect the device and announce that the device is ready (Figure 73).

Figure 73: Device is Ready



5. The new device will be listed as an available device on the VM.

Figure 74: Sentinel HL Available



B.4 Setting System Environment Variables

Administrator privileges are required to create the following setting environment settings. Each environment variable should be added as a system variable (as opposed to a user variable).

Note: Environment variable **LSFORCEHOST** is ignored when using a Hardware License Key. The user will only need to configure the environment variable for software key configurations.

3. For Windows, follow this path to System Properties:
   Control Panel > System > Advanced System Settings > Environment Variables
4. On the **Advanced** tab under **System Properties,** click the **Environment Variables** button (Figure 75).
5. Click the **New** button from the **System Variables** section (
6. Figure 76).
7. Provide a system variable name and an IP address (Figure 77).

Note: The IP address should be the IP address of the host machine (not the VM).

8. Click **OK.** Repeat these steps for any additional variables that must be configured.

Figure 75: Setting Environment Variables

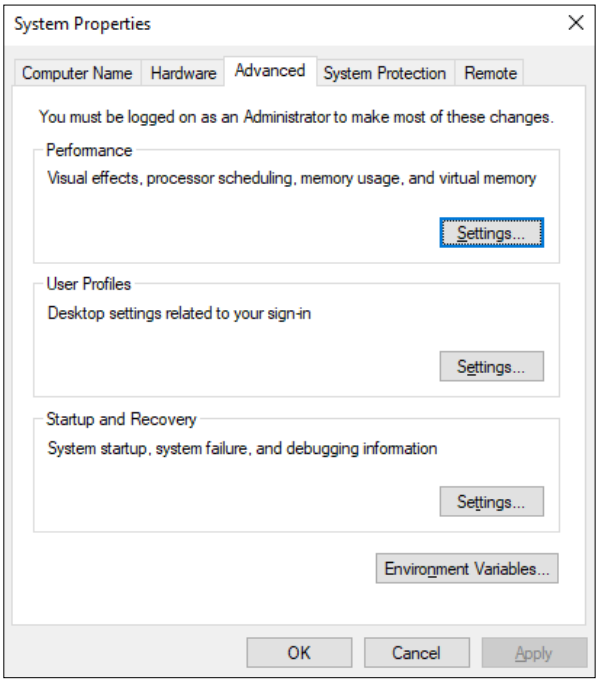


Figure 76: Adding New System Variables

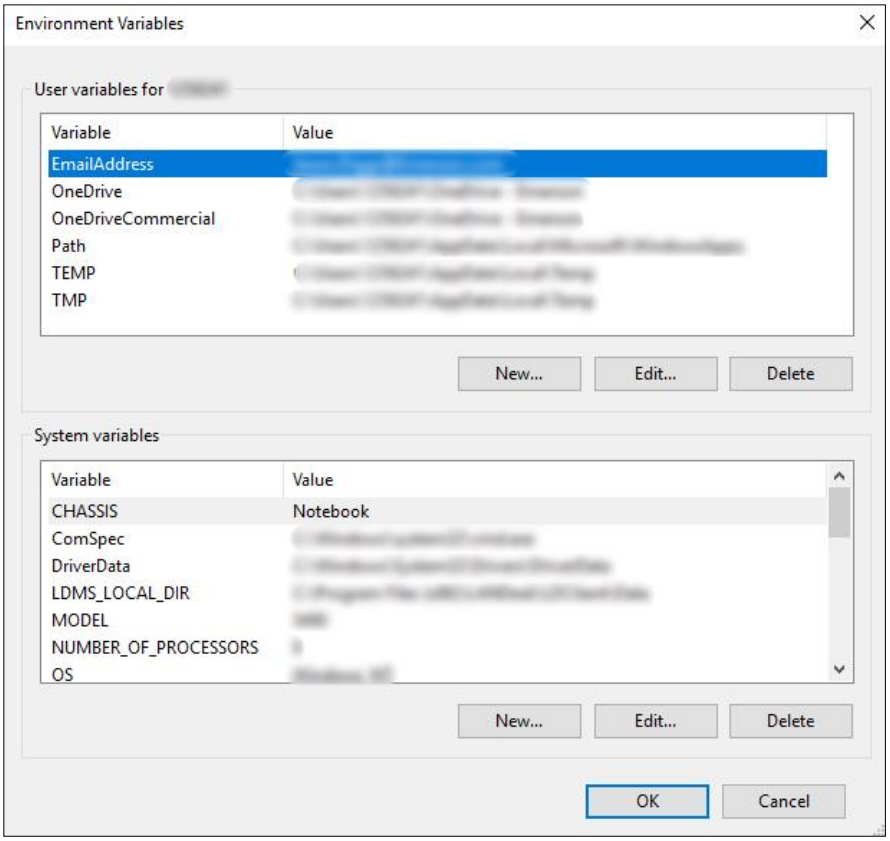
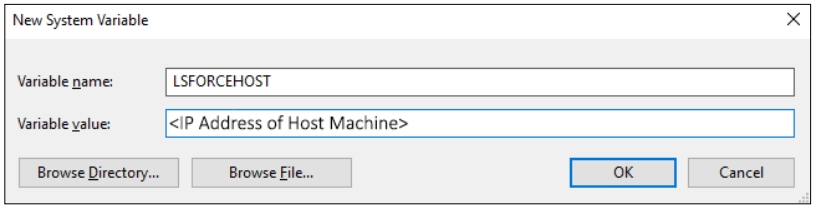


Figure 77: New System Variable



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