Proficy HMI/SCADA - CIMPLICITY 2022

Getting Started

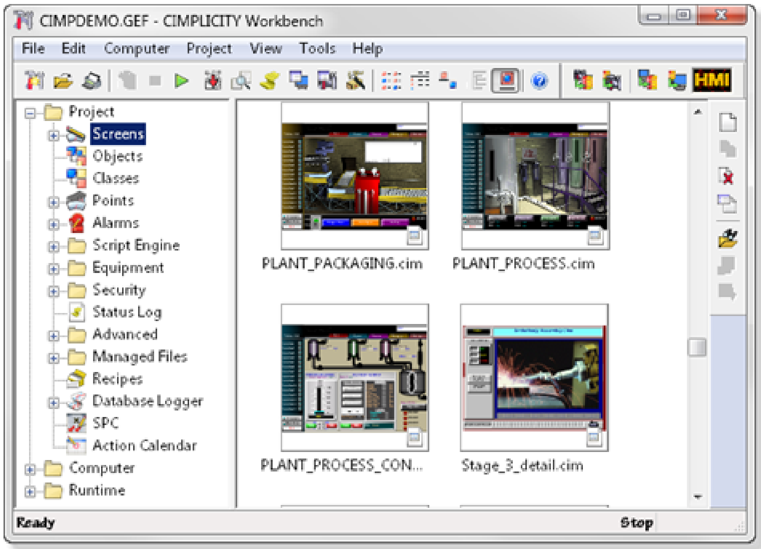
We want to hear from you. If you have any comments, questions, or suggestions about our documentation, send them to the following email address:

doc@ge.com

Chapter 1. HMI/SCADA CIMPLICITY Introduction

About HMI/SCADA CIMPLICITY

This section contains information on customer and technical support, the basic CIMPLICITY architecture, a tutorial describing CIMPLICITY applications, and some information on optimal usage of the CIMPLICITY online help system.



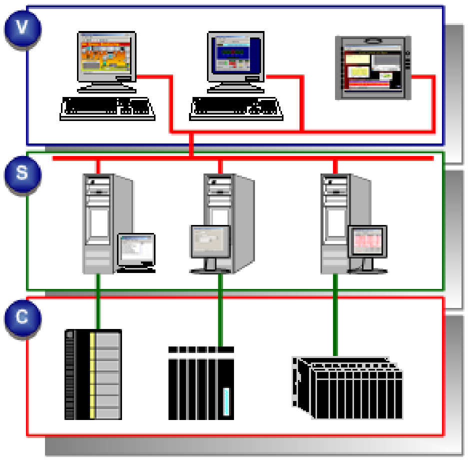
Customer and Technical Support Contact Information

For information on how to contact our Technical Support team, see digitalsupport.ge.com.

System Architecture Overview

System Architecture Overview

CIMPLICITY software is scalable from a Human Machine Interface to a fully networked Supervisory Control and Data Acquisition (SCADA) system. The networking capabilities inherent at all levels within the product line let you achieve levels of integration that virtually eliminate redundant configuration within a network.



rect 3, 2, 273, 88 *(page 6)*
rect 6, 90, 273, 182 *(page 6)*
rect 4, 183, 274, 269 *(page 6)*

V	Viewer	Connects to Server
		Status monitoring and control
		Viewer options available
		Development configuration
		Graphics configuration
S	Server	Connects to Viewer
		Status monitoring and control
		Development configuration
		Graphics configuration
		Data collection
		Server options available
C	Industrial controllers	N/A

CIMPLICITY is based on a client–server architecture consisting of Servers and Viewers. Servers are responsible for the collection and distribution of data. Viewers connect into Servers and have full access to the collected data for viewing and control actions.

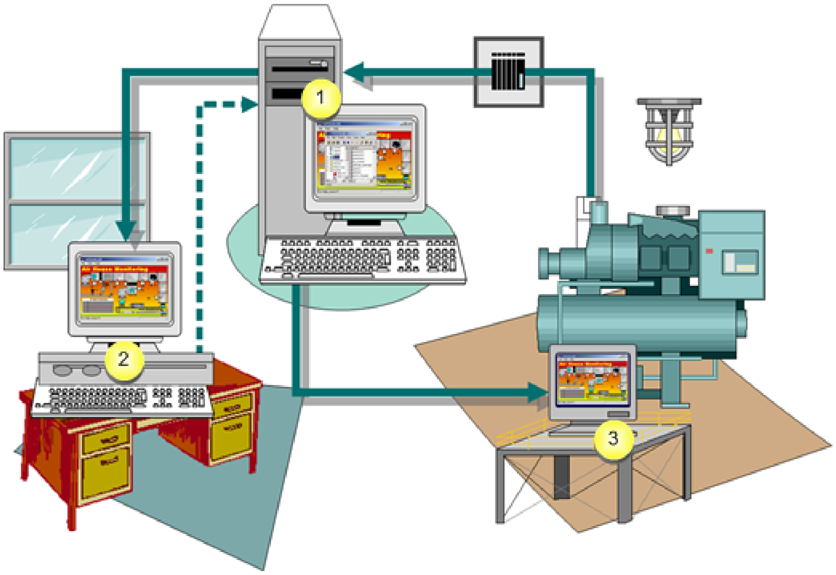
Servers and Viewers can be easily networked together to seamlessly share data without the need to replicate your point database from node to node. For example, points are configured once and only once on a server. Screens can be developed and stored in a single location on the network and accessed by any other CIMPLICITY display on the network.

CIMPLICITY provides the flexibility to build a larger system through multiple smaller nodes without forcing you to purchase large and expensive server hardware to service multiple users.

CIMPLICITY Server and Viewer Defined

HMI/SCADA CIMPLICITY provides the following three options. The server or viewer's license determines which option it will use.

Options are:



1	CIMPLICITY Server	Receives data from the PLC.
		Stores data.
		Provides CIMPLICITY configuration tools.
		Performs calculations.
		Displays data through Viewers
		Displays data
2	Viewer	Enables configuration on the server from a separate computer.
		Displays data from the server.
		Displays data from the server.
3	Web Client	N/A

You have to install at least one CIMPLICITY server. The total number of servers and viewers you can install depends on your licensing agreement.

Tip: CIMPLICITY also provides numerous options *(page 14)* for remotely interacting with your CIMPLICITY projects.

Contact your sales representative *(page 4)* with questions about purchase options.

Chapter 2. CIMPLICITY Applications Tour

CIMPLICITY Applications Tour

CIMPLICITY provides an extraordinary selection of features that enable you to configure comprehensive and robust projects.

Once you have installed CIMPLICITY this quick tour will guide you through the order for configuring a basic project.

This tour provides links to the related subject in the documentation. Once you think you understand the basic concepts about the subject, you can come back to the tour at any time.

The tour is divided into five parts that provide links to documentation that describes:

CIMPLICITY APPLICATIONS TOUR	
Part 1 *(page 9)*	How to set up the foundation for your system goals.
Part 2 *(page 10)*	How to set up points and alarms.
Part 3 *(page 11)*	How to create powerful applications that can graphically deal with system data for whoever has access privileges.
Part 4 *(page 12)*	Many other powerful tools.
Part 5 *(page 14)*	CIMPLICITY options.

Part 1. CIMPLICITY Tour

Part 1 of the CIMPLICITY tour provides links to documentation that describes how to set up the foundation for your system goals.

Part 1 of CIMPLICITY Tour	
Step 1.	Open the CIMPLICITY Workbench. The Workbench is at the center of your CIMPLICITY project.
Step 2.	Create a new project. A project contains the configuration that defines what CIMPLICITY will do for your system and how it will work.
Step 3.	Look over the Workbench. The Workbench provides the power you need to view, configure, organize, and manage every component of your project through one easy to use window.

Part 1 of CIMPLICITY Tour	
Step 4.	Configure a device including: • A port, which is a communication socket, connects one or more factory devices such as PLC's to the computer • A device is anything that can communicate point data to CIMPLICITY software. CIMPLICITY software can read data from and write data to devices. Examples of devices are programmable controllers such as the Series 90. The *Quick Device Setup* in the documentation gives you quick start for both.
Step 5.	Define security and routing including: • Resources are the physical or conceptual units that comprise your facility. • A user is an individual person working with a CIMPLICITY project. • A role specifies what privileges its users have when they work in CIMPLICITY.

Part 2. CIMPLICITY Tour

Part 2 of the CIMPLICITY tour provides links to documentation that describes how to set up points and alarms.

Note: CIMPLICITY collects or calculates point data that it distributes to:

- CimView screens
- Alarm Viewer screens
- Alarm printers
- Logging tables
- Other CIMPLICITY software options

The collection and distribution of point data is handled by the Point Management subsystem.

Part 2 of CIMPLICITY Tour	
Step 6.	Create points including: • A device point communicates back and forth with a device that is attached to the server for monitoring and control purposes. • A virtual point provides you with the ability to calculate and report data that is independent of any one device.

Part 2 of CIMPLICITY Tour	
Step 7.	Configure alarms. • Point alarms alert users when points are in a defined alarm states. You create and modify point alarms in the Point Properties dialog box or the Alarm Definition dialog box through the Alarms folder. • System event alarms alert users for alarm states such as device failures, program terminations, system startups, and system shutdowns. You create and modify system event alarms in the Alarm Definition dialog box through the Alarms folder.
Step 8.	Test your configuration in the Point Control Panel. • The Point Control Panel provides you with a forum in which you can easily review and change point values and status during runtime.

Part 3. CIMPLICITY Tour

Part 3 of the CIMPLICITY tour provides links to documentation that describes how to create powerful applications that graphically deal with system data for whoever has access privileges.

Part 3 of CIMPLICITY Tour	
Step 9.	• Configure a CimEdit screen. • CimEdit combines the features commonly found in high-powered graphics applications, with an abundant number of state of the art configuration tools. They all help you take advantage of CIMPLICITY's extensive runtime capabilities. Consequently, you can create CimView screens that are clear, easy, and robust. • CimEdit Screens provide you with several diverse features and capabilities that you can use at any time during your screen design session. Some, but not all of the capabilities include: ◦ Preliminary Layout CimEdit offers you a wide assortment of objects and object types to place on your CimEdit screen. Consequently, you can place objects that deal with data from any source you specify and display the data or evaluation results in a manner that is most effective for your project's runtime requirements. ◦ Inanimate Visual Features enable you to modify the appearance of an object. They range from modifying its size so it will fit where you want it go, to displaying a several similar objects that represent similar but independent functions. ◦ Runtime movement and Animation provides several choices to create activity on your screens that makes it easy for a CimView user to quickly determine the status of a point or expression. ◦ Points report specific conditions in the system. Points are the result of detailed configuration, which is done in the Point Properties dialog box. As with other CIMPLICITY applications, when you are in CimEdit, you can find and use any point that is already in any broadcasting project on your network. In addition, you can create new points by opening the Point Properties dialog box through CimEdit. ◦ Variables can be used in an expression to represent different types of values ◦ Events trigger a procedure or call a script. CimEdit provides a long list of events from which you can choose the best one for your requirements. ◦ Procedures contain one or more actions that are triggered in the specified order when an event occurs and while the screen is displayed in CimView. CimEdit provides several actions from which a screen designer can easily compile a meaningful list.
Step 10.	Test your configuration through CimView. • CimView is a runtime, interactive graphical user interface through which you can monitor and control your facility. CimView displays screens that were created in CimEdit for specific applications.

Part 4. CIMPLICITY More Features

CIMPLICITY is so powerful that you will constantly discover new possible solutions as you continue to use it.

Part 4 provides links to documentation for CIMPLICITY's many other powerful tools. Which tools you use depend on your system needs. (Some of the tools are options that you can purchase through your CIMPLICITY representative.)

Feature	Description
Alarm Management	• Alarm Classes are groups of Alarms with similar characteristics. • Alarm Strings name alarm states. An alarm displays the string for its alarm state when **%State** is included in the alarm message. • The Stand-alone Alarm Viewer, AMV, is useful for a user to quickly monitor and responds to alarms anywhere in the system. • The Alarm Viewer Control is an ActiveX object that you embed in a CimEdit screen. The AMV Control provides a powerful tool for you to fully integrate the Alarm Viewer capability with your other CimEdit screens. • Database Logging provides you with a seamless way to analyze your system processes and equipment performance by logging data to and reporting data from a wide variety of ODBC (Open Database Connectivity)-compliant databases. • Trend Control is an ActiveX Control that enables you to review, evaluate and log point values over time. • Historical Alarm Viewer Control is an ActiveX control through which you can easily review logged alarm data through CimView in an easy-to-read table format and print one or more pages of the display at any time during a session.
Basic Control Engine	The Basic Control Engine option consists of three main components: • Program Editor provides a set of sophisticated development tools that let you create programs with a Visual Basic compliant programming language. These programs can then be executed as actions in response to events. The programming language has a rich set of nearly 500 standard Basic functions, and also provides an object interface to CIMPLICITY points, alarms and the Status Logger, further enriching the language. • Event Editor enables you to define actions to take in response to events that occur in a process. An event can be defined as a changing point, alarm state, or even a particular time of day. One event may invoke multiple actions, or one action may be invoked by many events. • Basic Control Engine monitors for events and executes the configured actions. The Basic Control Engine is based on a multi-threaded design that allows the system to invoke and execute multiple Visual Basic programs concurrently. • Classes enable you to do the basic configuration once and use it over and over instead of repeating configuration, which may include creating complex CimEdit/CimView screens, for several objects that have similar requirements. • Class Objects provide an easy way to do complex configuration for one or more objects that are similar. Class objects, which are based on a Class template, can include pre-configured attributes, points, events, actions and scripts. • Dynamic Graphic Replay is a powerful tool to help you troubleshoot problems that have occurred in your processes. • XY Plot provides you with the ability to visually represent values in relation to each other. For example, you can plot real data vs. calculated date, or elements such pressure vs. temperature. • Remote Projects need to be defined when a project starts, the Point Bridge or Point Data Logger need to get points from projects on other computers running CIMPLICITY projects. • Recipes enable you to create and manage recipe data for your production processes. The Recipes interface consists of a spreadsheet format in which you enter the configuration data for each of your recipes. This format allows you to group similar products together.

Feature	Description
Object Model	Interfaces into components (e.g. objects, services, CimEdit screens both configuration and runtime, Project configuration Trend control, XY Plot control) that enable a developer to manipulate the components from a programming or scripting language, such as CIMPILICITY Basic, VB, C++, VBA, VBScript. • CIMPLICITY Configuration Object Model • CimEdit/CimView Object Model • CIMPLICITY XY Plot Object Model • CIMPLICITY Safe Array Object Model • CIMPLICITY Historical Data Connector Object Model

Part 5. CIMPLICITY Options

Option	Description
Options	• CIMPLICITY OPC Server provides a standards-based interface to some form of run-time data. The data may come from a specific physical device (e.g. a PLC) or from a Distributed Control System. The OPC Server conforms to the OLE for Process Control (OPC) 2.0 Data Access standards, a technology standard initially developed by a group of automation industry companies and now managed by the not-for-profit organization called the OPC Foundation. • Server Redundancy in automated systems, provides for switchover of functionality to a backup component in case of failure of a primary component. The switchover is considered automatic if no operator intervention is required. Redundancy applies to both hardware and software, and implies minimal loss of continuity during the transfer of control between primary (active) and redundant (backup) components. • Statistical Process Control enhances your ability to manage a quality control program by addressing the four major phases of quality control: measurement, analysis, improvement, control.
Tracker	There are two distinct, yet interrelated pieces to Tracker: Production Tracking (PRT) and Routing Control Objects (RCO). • Production Tracking module monitors the progress of items through the production process. • Routing Control Objects performs routing decisions for enhanced production flow.

Option	Description
Order Execution Management	Order Execution Management provides a comprehensive addition to Tracker that enables you to track, store, categorize and sequence your customers' orders based on your configured criteria. Order Execution Management includes: • XMLT tools take raw data orders, translates them into an .xml format and enters valid data into PRT and TADB. • Directory Watcher confirms that order files have completed downloading to XMLT output directory and moves files to the POMS input directory. • Product Order Management System (POMS) can be the hub of your Order Execution Management order management system. POMS is essentially a project that contains the basic configuration on which you can build your customized system. • CimView Order Entry provides order entry screens if you find that you have to manually edit an order item. • Tracker Attribute Database (TADB) stores comprehensive data about items, including orders and product components. • Range Source Architecture (RSA) enhances the traditional RCO concept of a Tracker source (source region). • Tracker Query Engine is a powerful high level query engine that has its own syntax for forming queries. It pulls data from both the Tracker Attribute Database and the Order Execution Management runtime memory map. Queries may be named and stored for future use, or for subdividing and abbreviating complicated queries. • Order Execution Management Broadcast is the delivery of a configurable list of product related information (including at least build options, location information, other/supporting data and subsets of the unit bill of material) to plant floor devices and to suppliers. • Alarm Cast messaging engine is a standardized interface between personal communication devices and applications sending messages through either an internal paging service and/or external service providers. • Marquee Manager product family monitors manufacturing environments and sends real time, automated messages to visual and/or audible devices.

Chapter 3. Common Licensing

About Common Licensing

Common Licensing simplifies administration and support while providing more secure license activation and management.

You can use Common Licensing to:

- View current licenses for GE products on your computer.
- Choose your licensing method: Internet, local intranet, GE USB Hardware Key, file-based.
- Manage your licenses: Activate, return, refresh, and clean.

Visit the GE Customer Center web site at https://digitalsupport.ge.com to obtain information about the latest GE product offerings.

Table 1. Common Licensing documentation links to view the latest updates:

Document	Link
Common Licensing Quickstart Guide (Online)	https://www.ge.com/digital/documentation/licensing/quickstart/g_licensing_quick_start_overview.html
Common Licensing Help (Online)	https://www.ge.com/digital/documentation/licensing/index.html

The following Common Licensing software enable you to activate your GE product licenses:

1. License client
2. Local License Server (LLS)
3. License Server Tools

Note: You do not have to install all the above software in your system. The software required to activate your licenses depend on whether you are using a physical machine or a virtual machine.

To configure Common Licensing on your computer (physical machine or virtual machine), you should go through the following:

Prerequisites *(page)*| Step 1: Order Email and Downloads *(page)*| Step 2: Common Licensing Software *(page)*| | Step 3: Activating Licenses *(page)*| Step 4: Returning Licenses *(page)*

1
2
3
4
Order Email & Downloads
Common Licensing Software
Activating Licenses
Returning Licenses

Prerequisites

Use the following links to check the supported operating system requirements and virtual machines. Ensure you have enough disk space and memory.

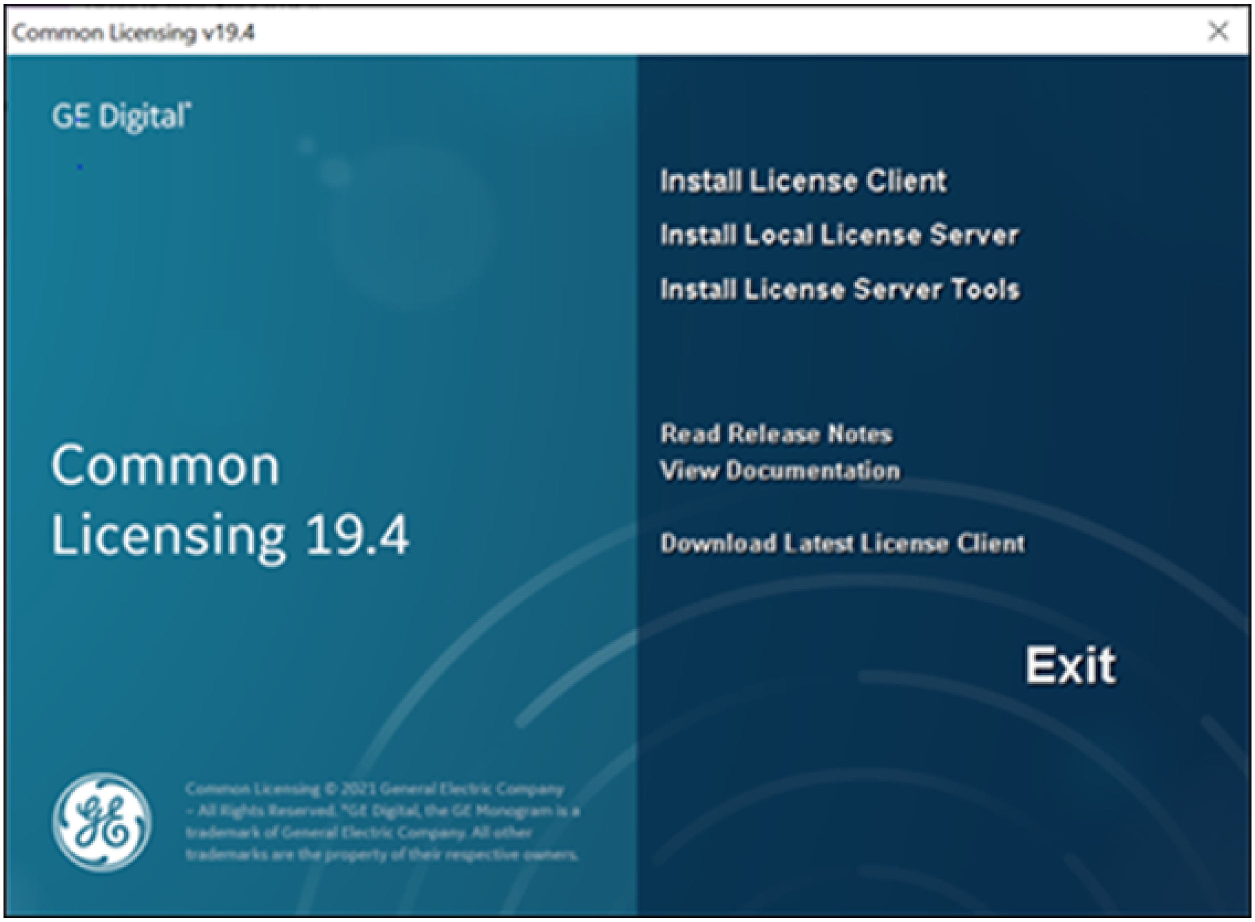
- *(page)*
- System Requirements *(page 20)*

1. Order Email and Downloads

You will receive an order e-mail from GE Digital after your successful purchase of GE products. Login to the website as specified in the order email using the same e-mail address. For more details, refer Step 1: Order Email and Downloads *(page 21)*.

2. Common Licensing Software

After you execute `CommonLicensing_<version>.exe`, you can install the software: 1) License Client, 2) Local License Server, and 3) License Server Tools



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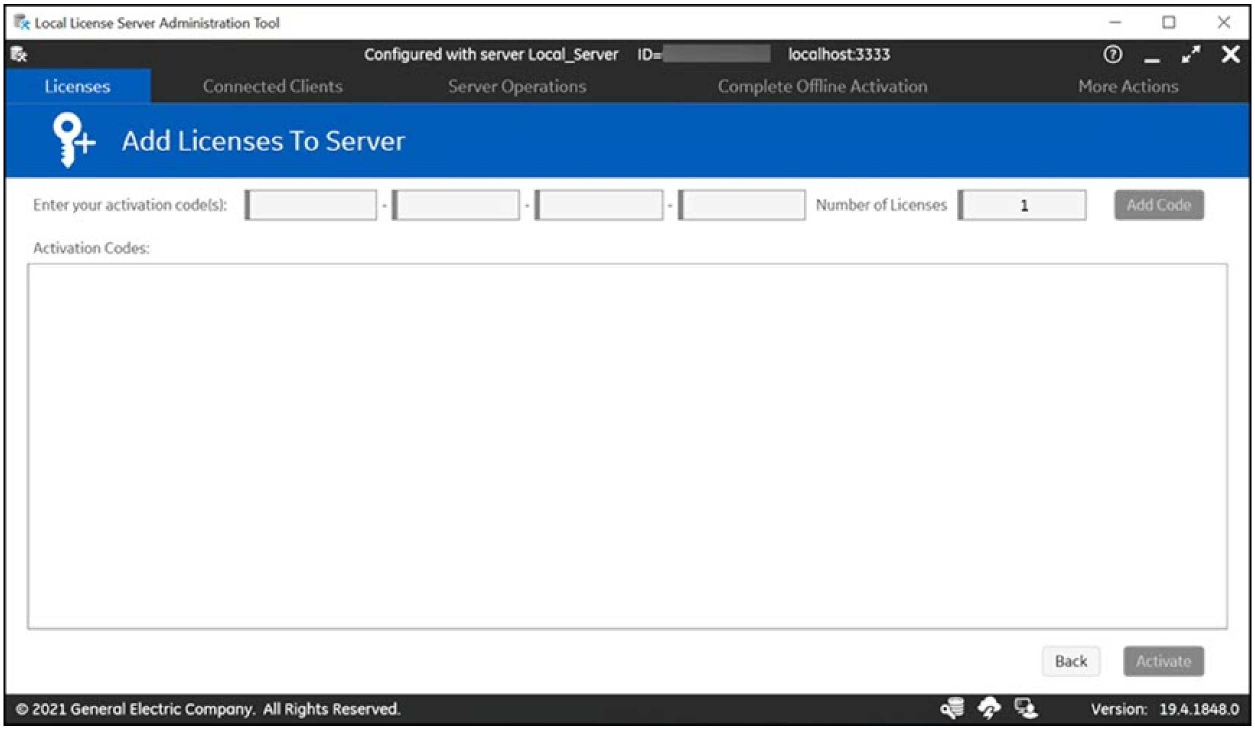
You must run `CommonLicensing_<version>.exe` as an Administrator. After installing the licensing software, restart your computer.

Download your codes using the **Local License Server Administration Tool**. Run **License Client** to activate your GE Digital software product licenses. After you complete the installation steps, confirm that all the product licenses appear in License Client. For detailed steps, refer Step 2: Common Licensing Software *(page 22)*



Configured with server Local_Server ID=[redacted] localhost:3333

Add Licenses To Server

Enter your activation code(s): - - - Number of Licenses 1

Activation Codes:

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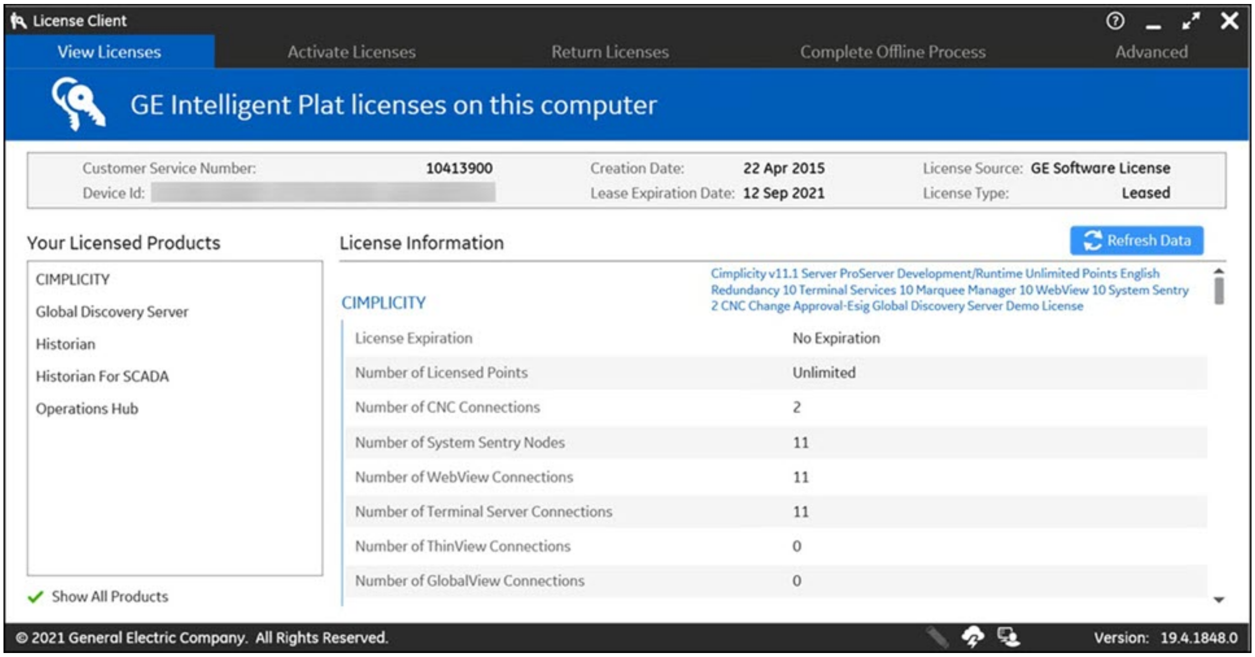

GE Intelligent Plat licenses on this computer

Customer Service Number:	10413900	Creation Date:	22 Apr 2015	License Source:	GE Software License
Device Id:	[redacted]	Lease Expiration Date:	12 Sep 2021	License Type:	Leased

Your Licensed Products

- CIMPLICITY
- Global Discovery Server
- Historian
- Historian For SCADA
- Operations Hub

License Information

CIMPLICITY — Cimplicity v11.1 Server ProServer Development/Runtime Unlimited Points English Redundancy 10 Terminal Services 10 Marquee Manager 10 WebView 10 System Sentry 2 CNC Change Approval-Esig Global Discovery Server Demo License

License Expiration	No Expiration
Number of Licensed Points	Unlimited
Number of CNC Connections	2
Number of System Sentry Nodes	11
Number of WebView Connections	11
Number of Terminal Server Connections	11
Number of ThinView Connections	0
Number of GlobalView Connections	0

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3. Activating Licenses

In License Client, the **Activate Licenses** tab provides several options for activating a license on your computer. You can select one of the options based on your system configuration. For detailed steps, refer Step 3: Activating Licenses *(page 28)*.

4. Returning Licenses

The Return Licenses tab is used to return licenses from your computer to the GE Cloud Server or a Local License Server. For detailed steps, refer Step 4: Returning Licenses *(page 42)*.

System Requirements

The following are the system requirements for Common Licensing.

Supported Operating System

GE recommends using the latest service packs for Windows operating systems. The user should have the software that support Common Licensing installers:

You must have one of the following operating systems :

- Microsoft Windows 7 SP1
- Microsoft Windows 8.1
- Microsoft Windows 10
- Microsoft Windows Server 2019 Standard
- Microsoft Windows Server 2016 Standard
- Microsoft Windows Server 2012 Standard
- Microsoft Windows Server 2012 Standard R2
- Microsoft Windows Server 2008 Standard R2 SP1

Note: Microsoft Windows 7 SP1, Microsoft Windows Server 2008 R2 SP1, and Microsoft Windows Server 2012, with Common Licensing 18.8 and higher, require the latest Windows Updates to enable TLS 1.2 as default secure protocol.

Note: Microsoft Windows XP, Microsoft Windows Server 2003, and Microsoft Windows Server 2008 are no longer supported in Common Licensing 18.4 and higher. If you are using one of these operating systems, use Common Licensing 18.3.

Supported Virtual Machines

License Client

- VMware ESXi 5.X
- Microsoft Hyper-V on Windows Server 2008 R2, 2012, 2016, or 2019

Local License Server

- VMware ESXi 5.x

- Microsoft Hyper-V 6.1, 6.3

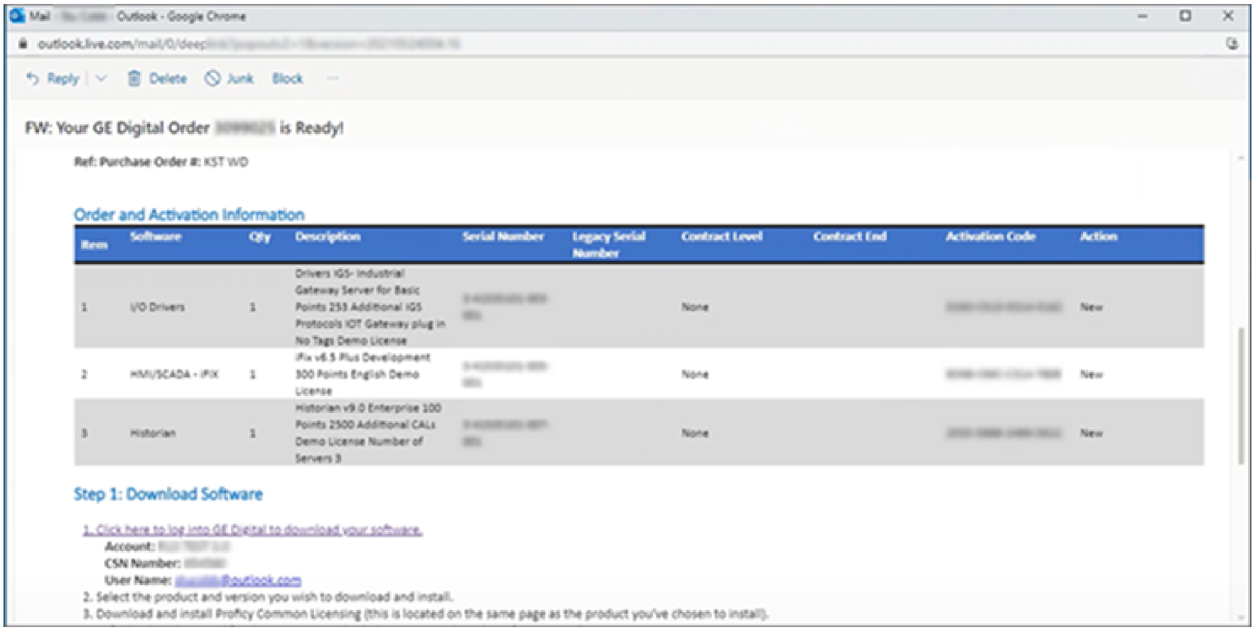
Common Licensing was tested on VMware and the Parallels virtual machine software running on a Macintosh computer.

Configure Common Licensing

Step 1: Order Email and Downloads

Order Email

After you receive an order email from GE Digital with your activation codes, similar to the one below. You can download the required products and install them on your computer (physical machine or virtual machine). After you download the required product, you will see `CommonLicensing_<version>.exe` (for example: CommonLicensing_v19_4_1848_0.exe). Use the steps that follow to accomplish the license activation task.


Mail [redacted] Outlook - Google Chrome
outlook.live.com/mail/0/deep[redacted]
Reply
Delete
Junk
Block

FW: Your GE Digital Order [redacted] is Ready!

Ref: Purchase Order #: KST WD

Order and Activation Information

Item	Software	Qty	Description	Serial Number	Legacy Serial Number	Contract Level	Contract End	Activation Code	Action
1	I/O Drivers	1	Drivers IGS- Industrial Gateway Server for Basic Points 253 Additional IGS Protocols IOT Gateway plug in No Tags Demo License	[redacted]		None		[redacted]	New
2	HMI/SCADA - iFIX	1	iFix v6.5 Plus Development 300 Points English Demo License	[redacted]		None		[redacted]	New
3	Historian	1	Historian v9.0 Enterprise 100 Points 2500 Additional CALs Demo License Number of Servers 3	[redacted]		None		[redacted]	New

Step 1: Download Software

1. Click here to log into GE Digital to download your software.
   Account: [redacted]
   CSN Number: [redacted]
   User Name: [redacted]@outlook.com
2. Select the product and version you wish to download and install.
3. Download and install Proficy Common Licensing (this is located on the same page as the product you've chosen to install).

Download Common Licensing

1. Select the link in the email from GE Digital to access the web site.
2. Login using the same e-mail address that the activation codes were sent to. After a successful login, you will be navigated to the **Software Order Download** page, that includes **Product List**, and a link to **Proficy License Installer**.
3. Select **Proficy License Installer** from **Other helpful links**. The **GE Licensing Installer** page that contains Common Licensing software appears.

4. Double-click `CommonLicensing<version>.exe` to start the licensing download.

   Note: This license install will have all the licensing functionalities that can be administrated from the same computer.

   Refer, Step 2: Common Licensing Software *(page 22)* to proceed to next steps.

Step 2: Common Licensing Software

Overview

Perform the following steps to install the required Common Licensing software on your computer:

1. Execute `CommonLicensing<version>.exe` *(page 22)*
2. Install License Client *(page 23)*
3. Install the Local License Server *(page 25)*
4. Install License Server Tools *(page 26)*

   Important: When you run `CommonLicensing_<version>.exe`, you must be logged in as an Administrator.

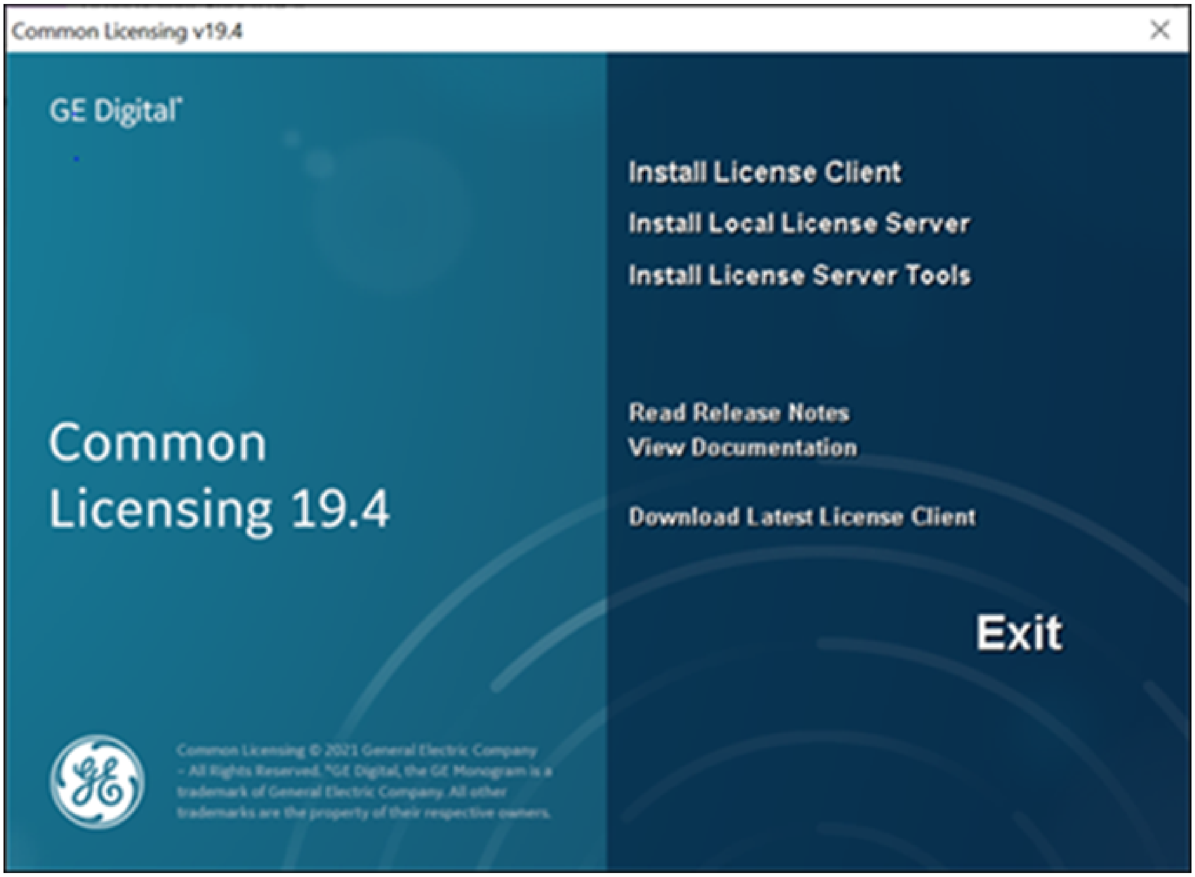
Before you begin, follow the below important notes on the Common Licensing software installation for your system configuration.

Note:

- For a physical machine, the License Client is the only software that must be configured. The physical machine can collect the GE product licenses from the GE cloud server or from the Local License Server, and then the GE products are activated through the License Client.
- For a virtual machine, all the three software: 1) License Client, 2) Local License Server, and the 3) License Server Tools must be installed. If you have a separate computer pre-installed with Local License Server, you do not have to install Local License Server in your virtual machine. The virtual machine can collect the GE product licenses from the Local License Server and then the GE products are activated through the License Client.

Execute `CommonLicensing<version>.exe`

1. Confirm that you are logged in as an Administrator.
2. Browse the folder where you downloaded the `CommonLicensing<version>.exe` file.
3. Right-click the `CommonLicensing<version>.exe` file, and select **Run as Administrator**. A message appears asking if you want to allow this application to make changes to your device.
4. Select **Yes**. The **Common Licensing** screen appears, as shown in the following figure.



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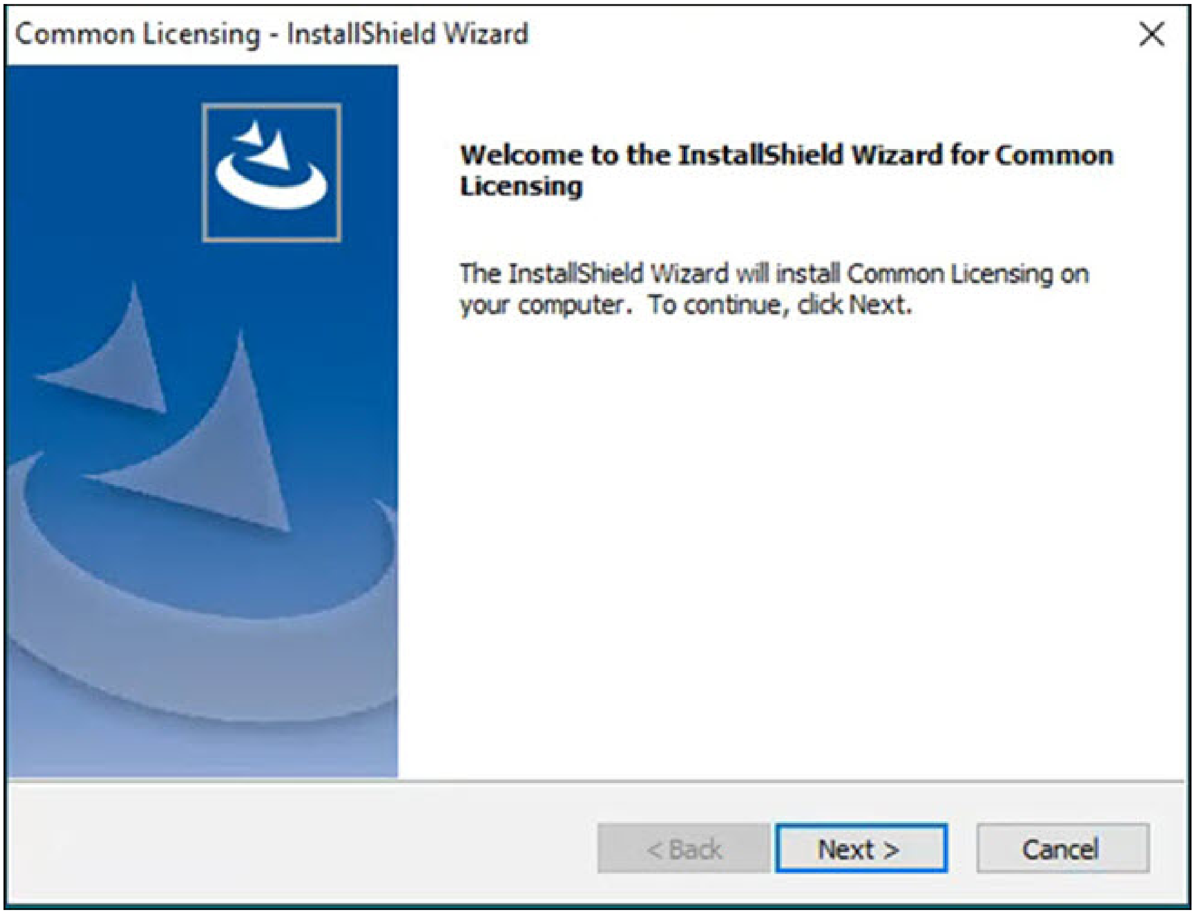
Install License Client

1. From the Common Licensing screen, select **Install License Client**.
2. The installation process may take a few moments, and may require some prerequisites to install. The following screen appears.

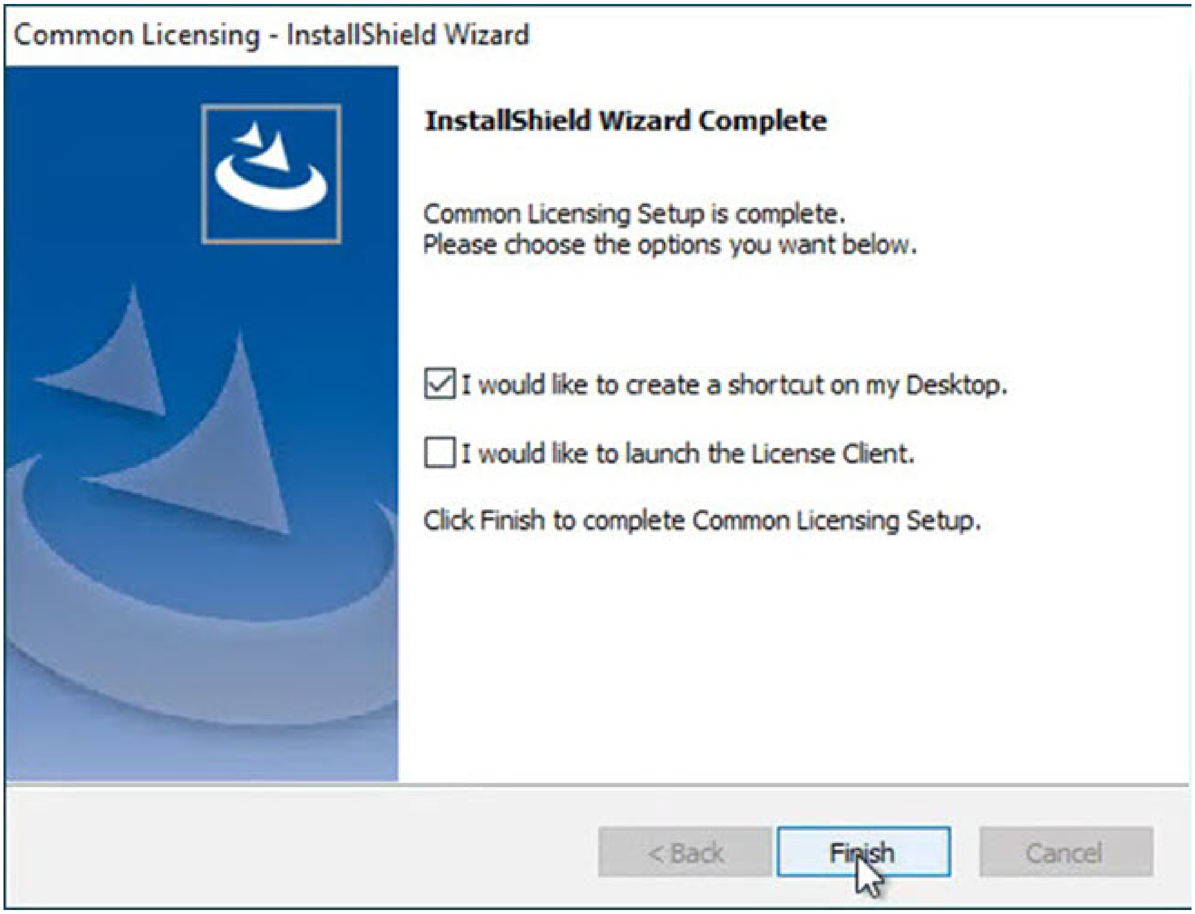


Common Licensing - InstallShield Wizard

Welcome to the InstallShield Wizard for Common Licensing

The InstallShield Wizard will install Common Licensing on your computer. To continue, click Next.

3. Select **Next**. The License Agreement appears.
4. Select **I accept the terms of this license agreement** and select **Next** to continue.
5. If a message to install USB HASP Drivers appears, leave the default (selected), and select **Next**. Otherwise, the **Ready to Install the Program** screen appears.
6. Select **Install**. When the installation completes, the **InstallShield Wizard Complete** screen appears.



Common Licensing - InstallShield Wizard

InstallShield Wizard Complete

Common Licensing Setup is complete.
Please choose the options you want below.

☑ I would like to create a shortcut on my Desktop.

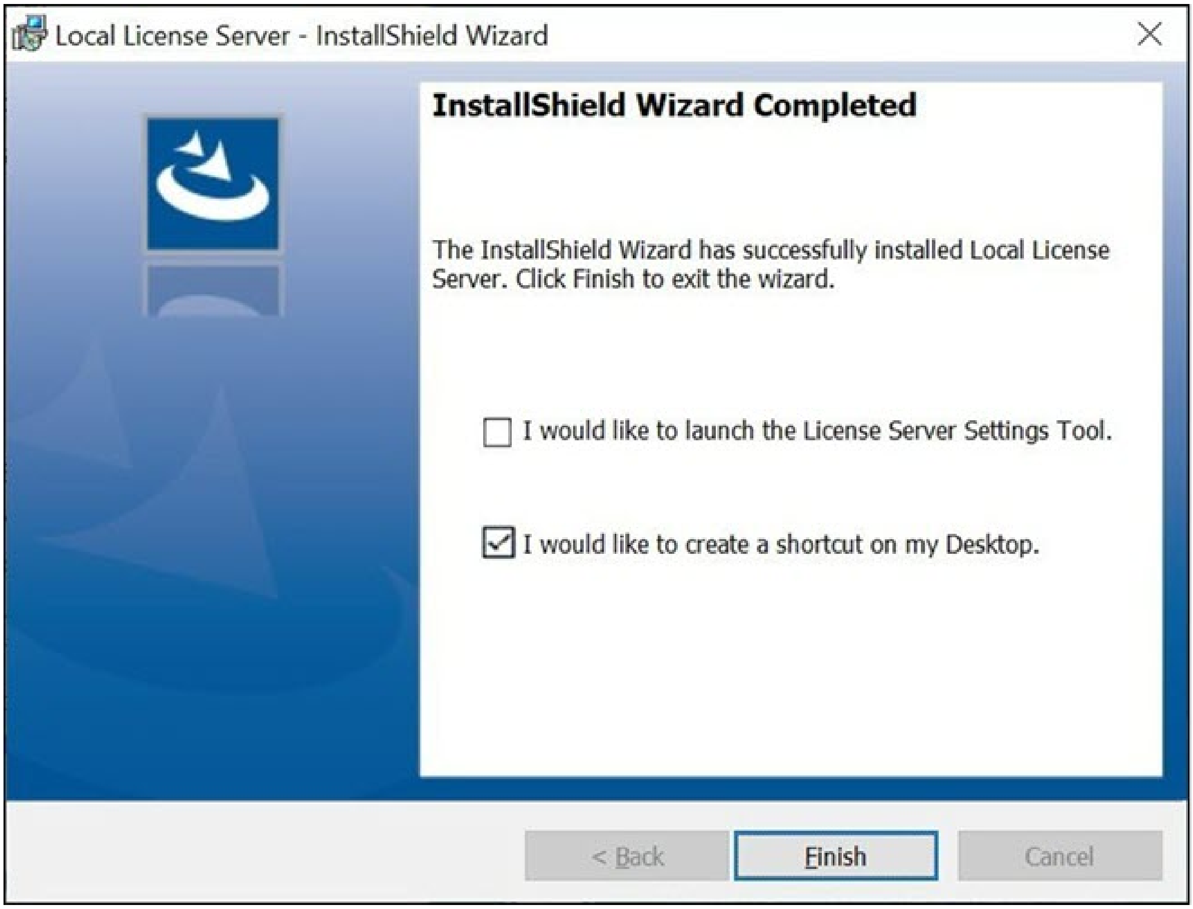
□ I would like to launch the License Client.

Click Finish to complete Common Licensing Setup.

7. Select the **I would like to create a shortcut on my Desktop** check box.
8. Select **Finish** to complete the installation.

Install Local License Server

1. From the Common Licensing screen, select **Install Local License Server** .
2. The installation process may take a few moments, and may require some prerequisites to finish the installation. When the installation completes, the **InstallShield Wizard Completed** screen appears.


Local License Server - InstallShield Wizard

InstallShield Wizard Completed

The InstallShield Wizard has successfully installed Local License Server. Click Finish to exit the wizard.

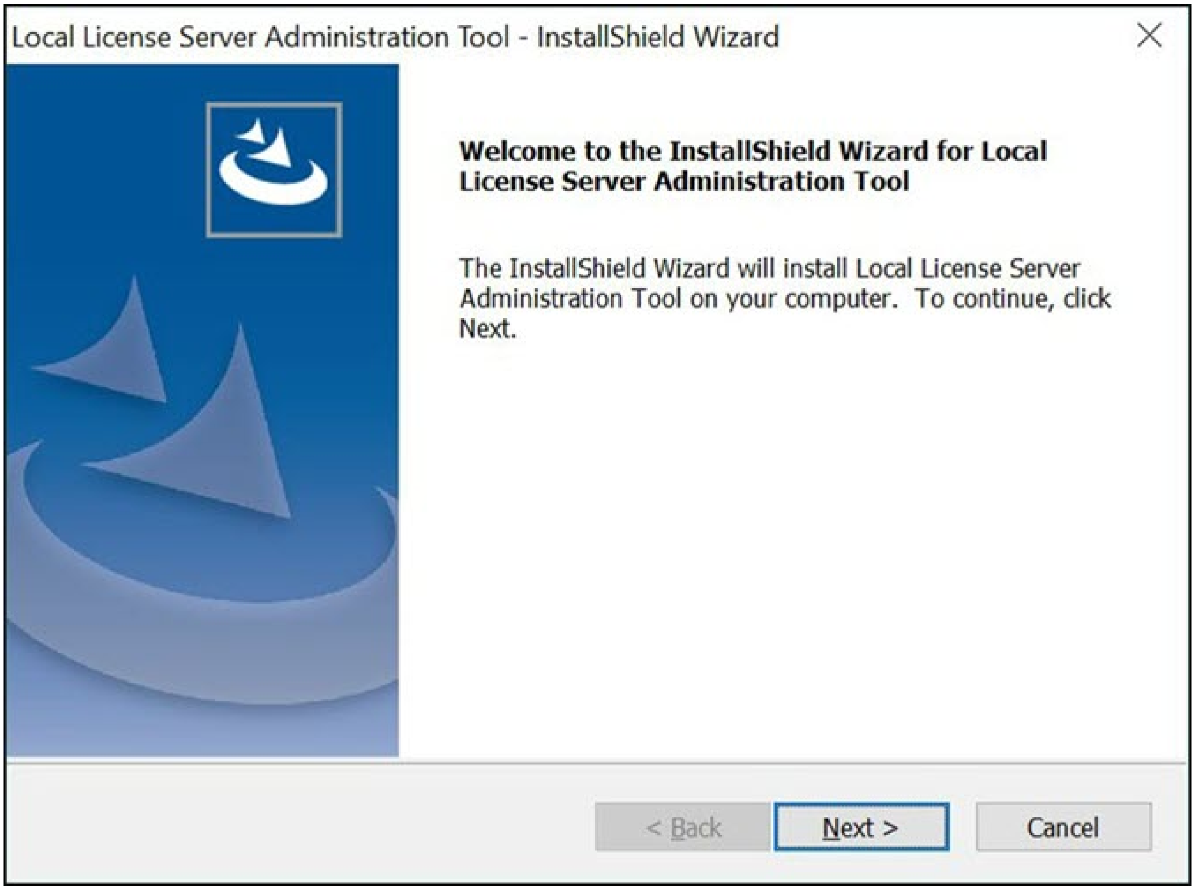
□ I would like to launch the License Server Settings Tool.

☑ I would like to create a shortcut on my Desktop.

3. Select the **I would like to create a shortcut on my Desktop** check box.
4. Select **Finish** to complete the installation.

Install License Server Tools

1. From the Common Licensing screen, select **Install License Server Tools**.
2. The installation process may take a few moments, and may require some prerequisites to install. The welcome screen appears.

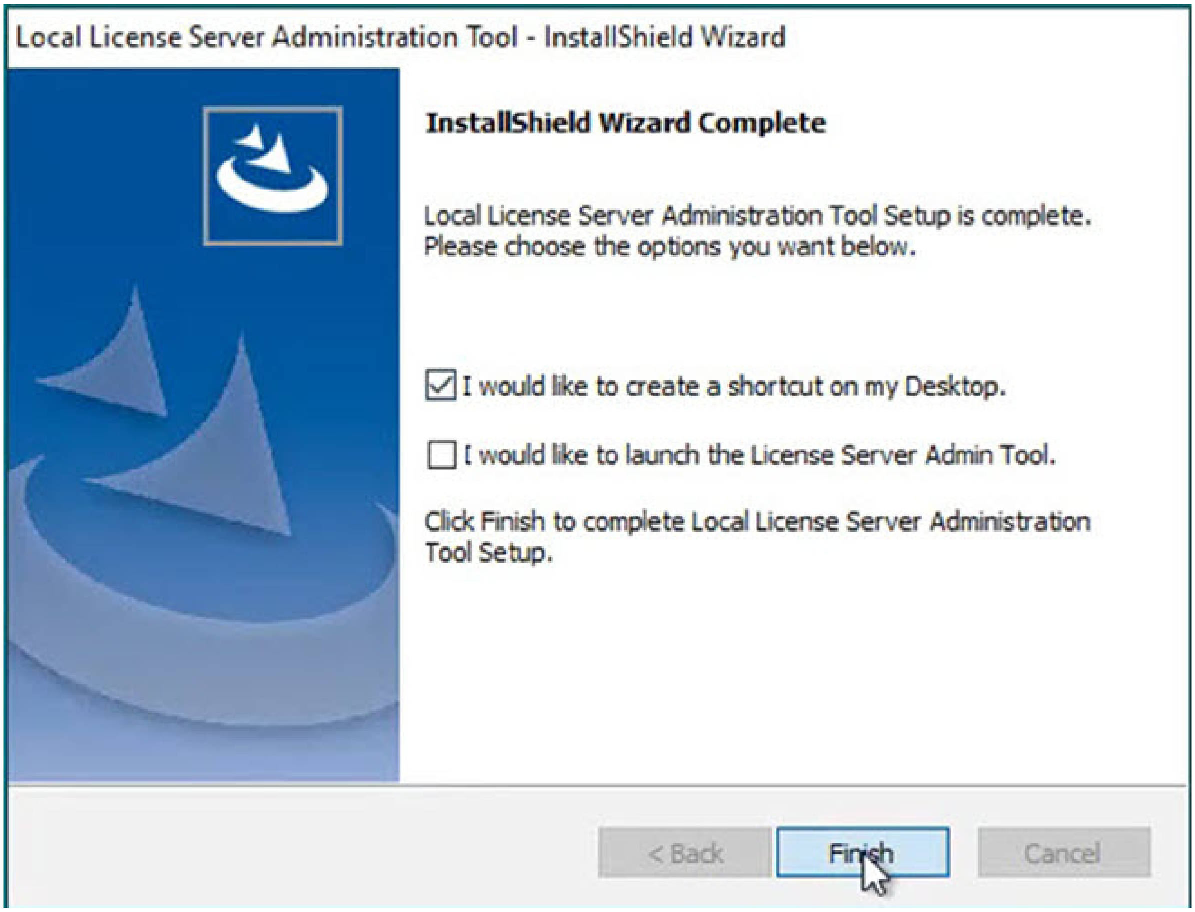


Local License Server Administration Tool - InstallShield Wizard

Welcome to the InstallShield Wizard for Local License Server Administration Tool

The InstallShield Wizard will install Local License Server Administration Tool on your computer. To continue, click Next.

3. Select **Next**. The License Agreement page appears.
4. Select **I accept the terms of this license agreement** option, and then select **Next**. The **Ready to Install the Program** page appears.
5. Select **Install**. When the installation completes, the **InstallShield Wizard Complete** screen appears.


Local License Server Administration Tool - InstallShield Wizard

InstallShield Wizard Complete

Local License Server Administration Tool Setup is complete. Please choose the options you want below.

☑ I would like to create a shortcut on my Desktop.

□ I would like to launch the License Server Admin Tool.

Click Finish to complete Local License Server Administration Tool Setup.

6. Select the **I would like to create a shortcut on my Desktop** option.
7. Select **Finish** to complete the installation.

After you have configured the software as per your system requirements from the Common Licensing screen, you can proceed to the next step, Step 3: Activating Licenses *(page 28)*.

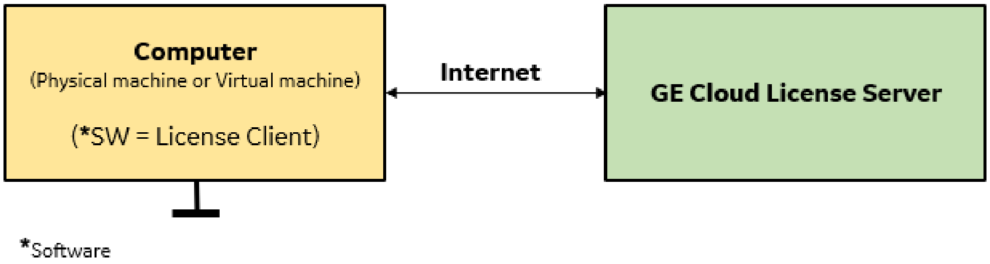
Step 3: Activating Licenses

Activating Licenses Scenarios

Following are the scenarios to activate your GE product licenses:

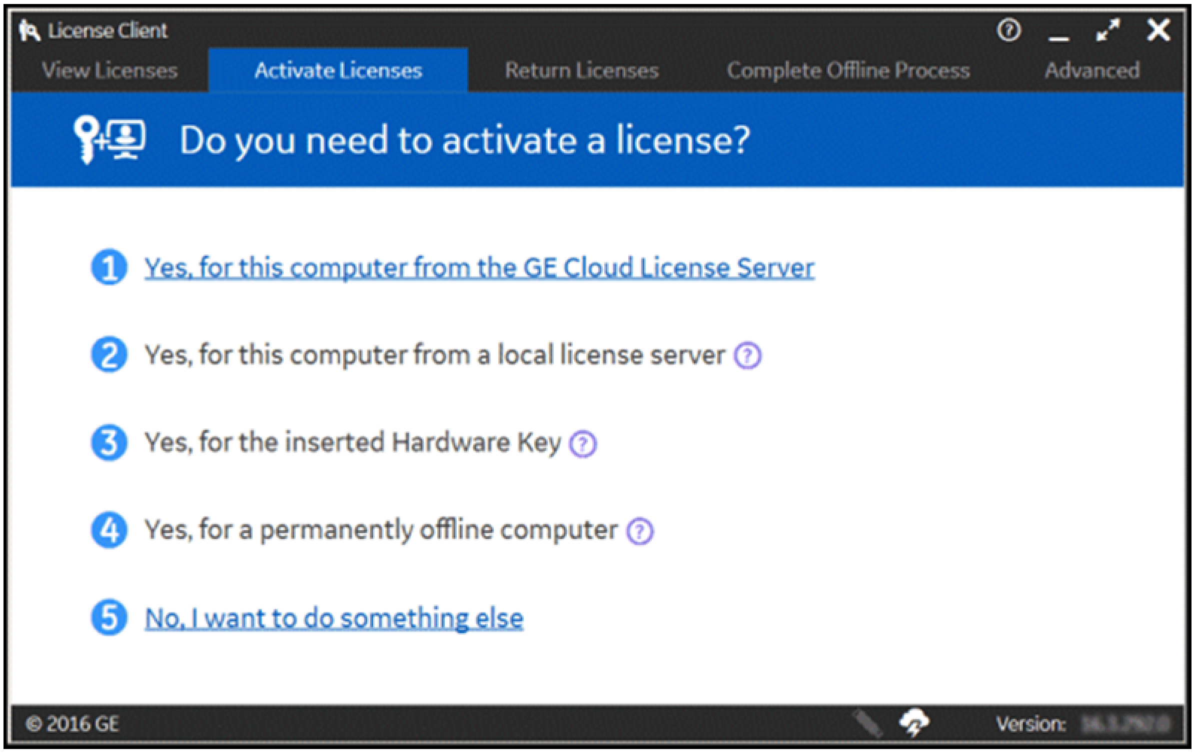
1. Computer (online) connected to the GE Cloud License Server *(page 28)*
2. Computer (online) or VM connected to a Local License Server *(page 30)*
3. Computer (offline) Licenses Activation by using GE USB Hardware Key *(page 34)*
4. Computer (offline) Licenses Activation by using Request and Response Files *(page 36)*

Scenario 1: Computer (online) connected to the GE Cloud License Server



The computer (physical machine or virtual machine) with **GE Cloud License Server** is connected to internet, the GE product licenses are collected from GE Cloud License Server and then the licenses are activated in the computer installed with License Client.

1. In License Client, select **Activate Licenses**, select the option 1, **Yes, for this computer from the GE Cloud License Server**.



Do you need to activate a license?

1 Yes, for this computer from the GE Cloud License Server

2 Yes, for this computer from a local license server

3 Yes, for the inserted Hardware Key

4 Yes, for a permanently offline computer

5 No, I want to do something else

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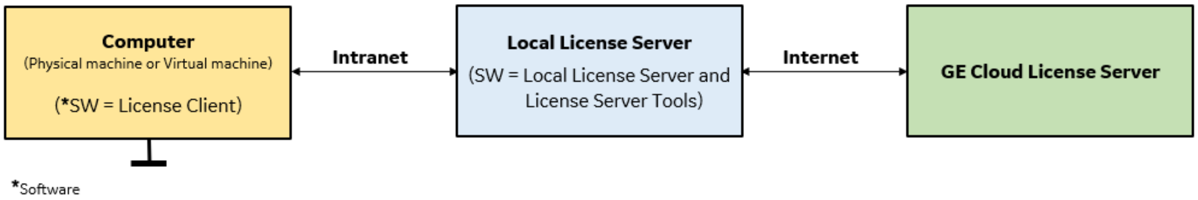
Version: [redacted]

2. The **Activate Licenses from the GE Cloud Server** page appears.

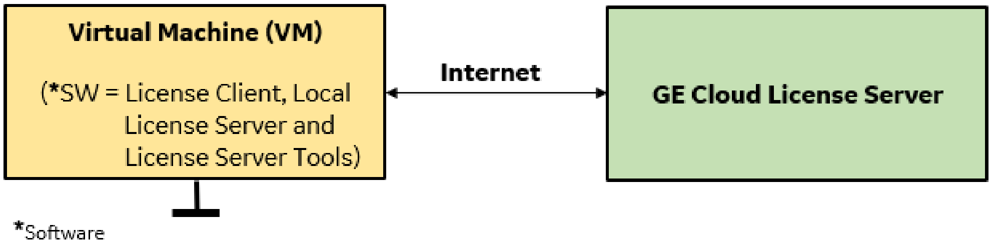
   Note: Internet connectivity is verified before this page is displayed. An error message is displayed if the GE Cloud License Server is not accessible, and the No Licenses on this Computer page is automatically displayed.

3. Enter your first activation code, and then select **Add Code**.
4. Repeat the previous step for each license you have.
5. Select **Activate**. The Licenses screen should now display all the licenses activated on the server.

Scenario 2: Computer (online) or VM connected to a Local License Server



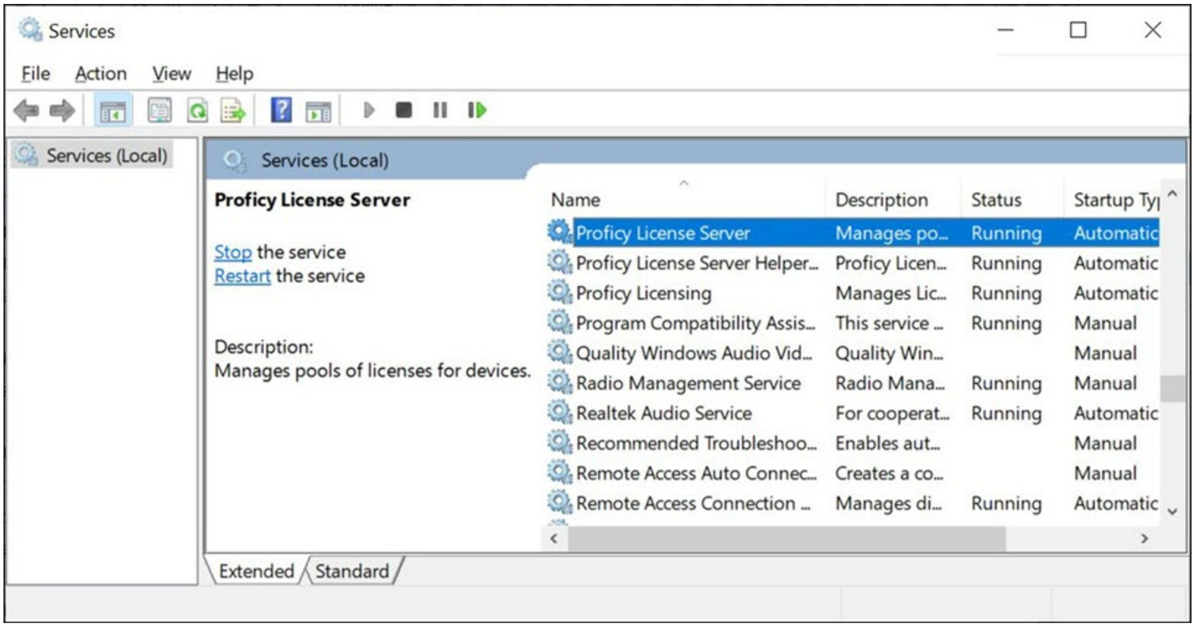
The computer (physical machine or virtual machine) with **Local License Server** is connected to internet, the GE product licenses are collected by communicating with GE Cloud License Server and then the licenses are activated in the intranet computer installed with License Client.


Virtual Machine (VM)
(*SW = License Client, Local License Server and License Server Tools)
Internet
GE Cloud License Server
*Software

The virtual machine with all the three software: 1) License Client, 2) Local License Server and the 3) License Server Tools must be installed. If you have a separate computer pre-installed with Local License Server, you do not have to install Local License Server in your virtual machine.

Follow the below steps for a physical machine or a virtual machine installed with Local License Server software:

1. From the Windows Services console (Press **Windows+R** on your keyboard, then enter **services.msc** and press the **Enter** button), confirm that the License Server is running.



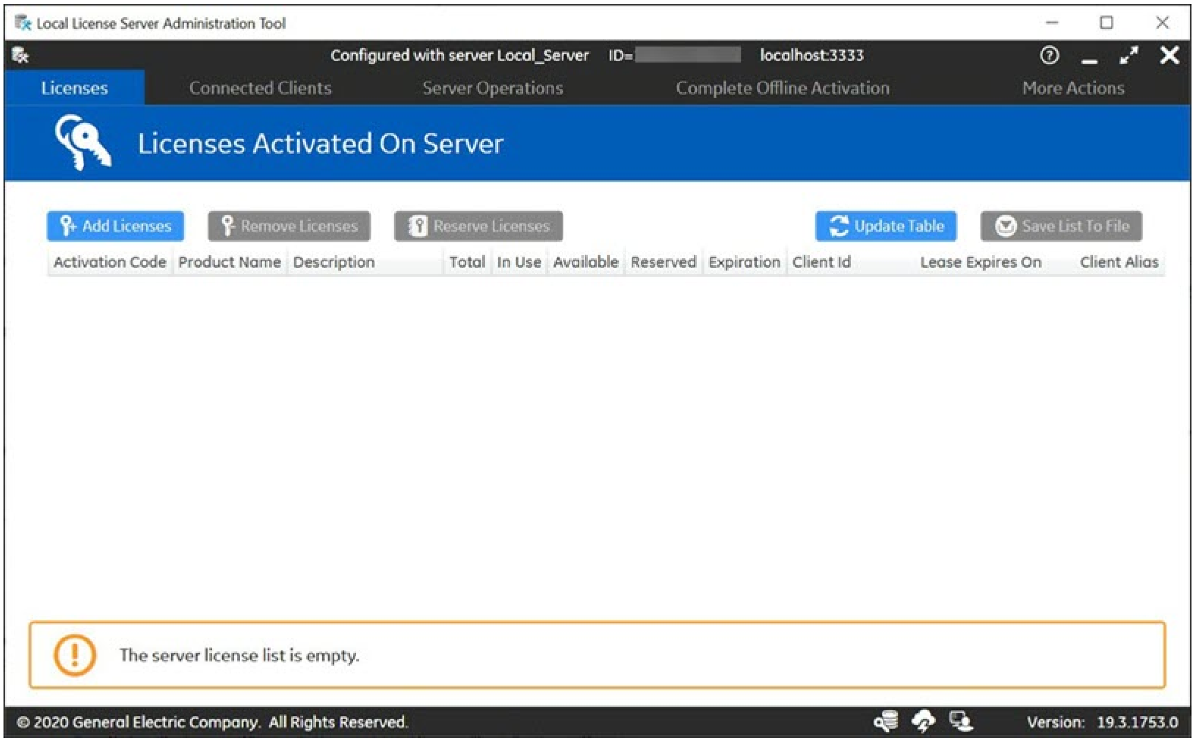
Proficy License Server

Stop the service
Restart the service

Description:
Manages pools of licenses for devices.

Name	Description	Status	Startup Ty
Proficy License Server	Manages po...	Running	Automatic
Proficy License Server Helper...	Proficy Licen...	Running	Automatic
Proficy Licensing	Manages Lic...	Running	Automatic
Program Compatibility Assis...	This service ...	Running	Manual
Quality Windows Audio Vid...	Quality Win...		Manual
Radio Management Service	Radio Mana...	Running	Manual
Realtek Audio Service	For cooperat...	Running	Automatic
Recommended Troubleshoo...	Enables aut...		Manual
Remote Access Auto Connec...	Creates a co...		Manual
Remote Access Connection ...	Manages di...	Running	Automatic

2. Navigate to `C:\ProgramData\Microsoft\Windows\Start Menu\Programs \General Electric`, and then select **Local License Server Administration Tool**. A message appears prompting you to confirm the changes.
3. Select **Yes** to continue. The **Local License Server Administration Tool** screen appears, as shown in the following figure.



Configured with server Local_Server ID=[redacted] localhost:3333

Activation Code	Product Name	Description	Total	In Use	Available	Reserved	Expiration	Client Id	Lease Expires On	Client Alias

The server license list is empty.

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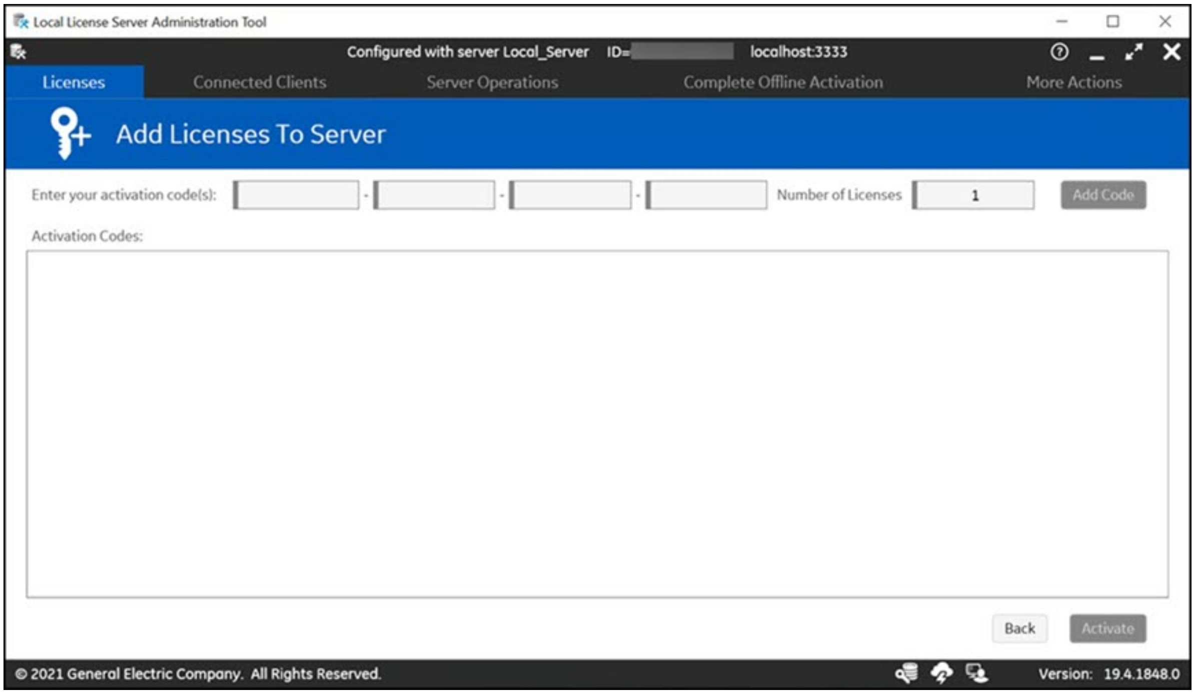
4. Select **Add Licenses**. The following screen appears.



Configured with server Local_Server ID=[redacted] localhost:3333

Enter your activation code(s): ____ - ____ - ____ - ____ Number of Licenses 1

Activation Codes:

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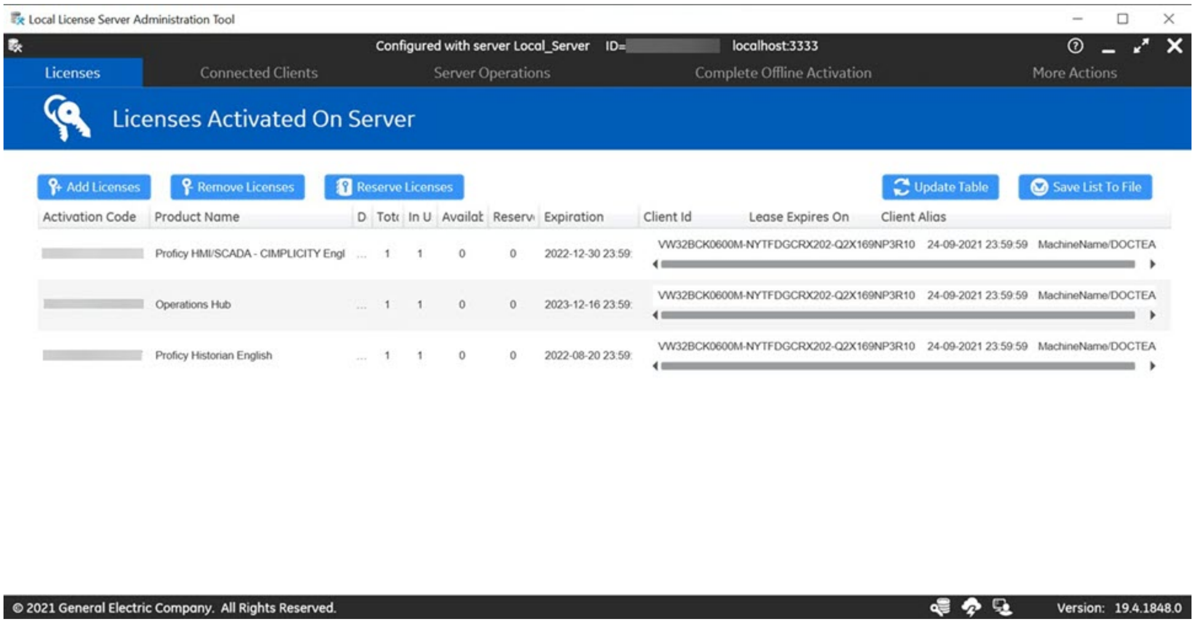
5. Enter your first activation code, and then select **Add Code**.

   Note: You can find the activation codes in your GE order e-mail.

6. Repeat the previous step for each license you have.
7. Select **Activate**. The Licenses screen should now display all the licenses activated on the server, as shown in the following figure.



Configured with server Local_Server ID=[redacted] localhost:3333

Activation Code	Product Name	D	Tot	In U	Availat	Reserv	Expiration	Client Id	Lease Expires On	Client Alias
[redacted]	Proficy HMI/SCADA - CIMPLICITY Engl	...	1	1	0	0	2022-12-30 23:59:	VW32BCK0600M-NYTFDGCRX202-Q2X169NP3R10	24-09-2021 23:59:59	MachineName/DOCTEA
[redacted]	Operations Hub	...	1	1	0	0	2023-12-16 23:59:	VW32BCK0600M-NYTFDGCRX202-Q2X169NP3R10	24-09-2021 23:59:59	MachineName/DOCTEA
[redacted]	Proficy Historian English	...	1	1	0	0	2022-08-20 23:59:	VW32BCK0600M-NYTFDGCRX202-Q2X169NP3R10	24-09-2021 23:59:59	MachineName/DOCTEA

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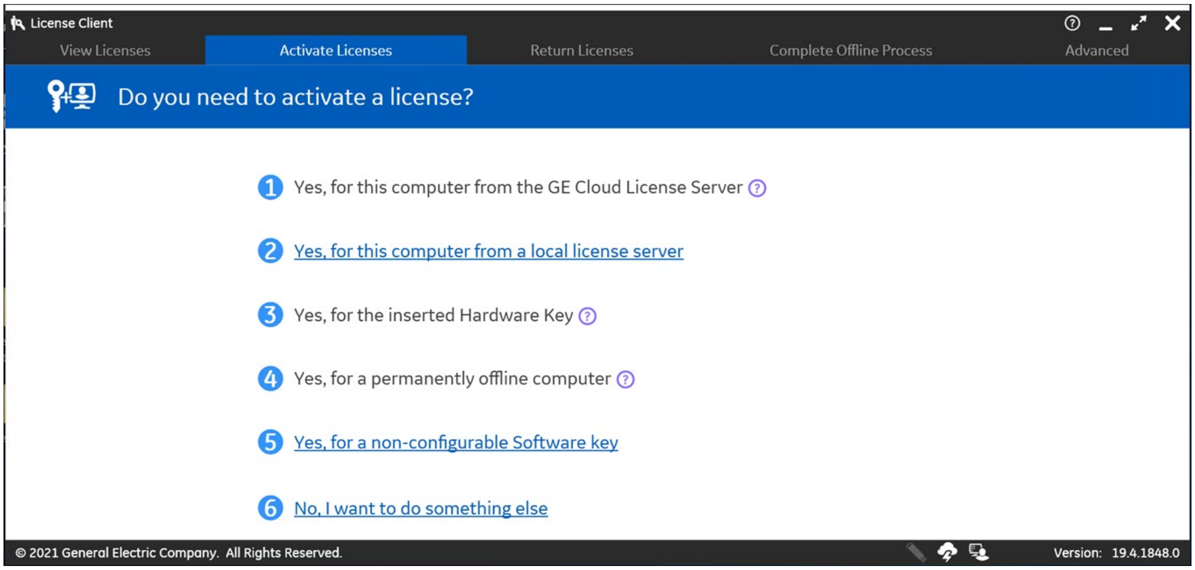
Activate your Product Licenses on License Client

1. Navigate to `C:\ProgramData\Microsoft\Windows\Start Menu\Programs\General Electric` and then select **License Client**. A message appears prompting you to confirm the changes.
2. Select **Yes** to continue. The **License Client** screen appears, as shown in the following figure.



Do you need to activate a license?

1 Yes, for this computer from the GE Cloud License Server

2 Yes, for this computer from a local license server

3 Yes, for the inserted Hardware Key

4 Yes, for a permanently offline computer

5 Yes, for a non-configurable Software key

6 No, I want to do something else

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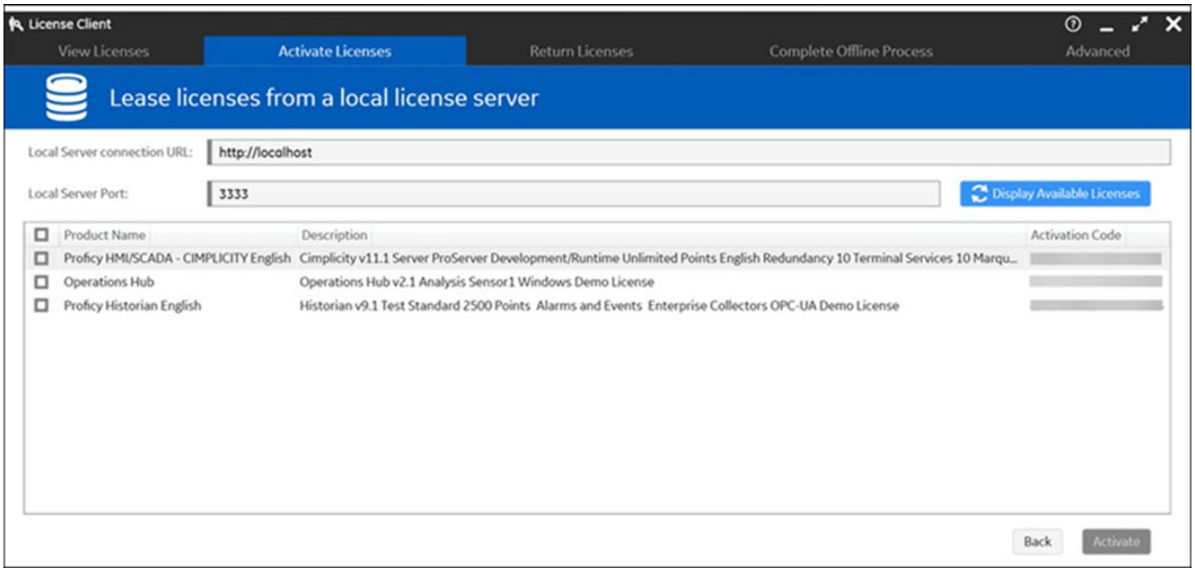
3. In License Client, select **Activate Licenses**.
4. You have the Local Licensing Server already installed on the same computer, hence select the option 2, **Yes, for this computer from a local license server** . The **Lease licenses from a local license server** screen appears, as shown in below figure.



Lease licenses from a local license server

Local Server connection URL: http://localhost

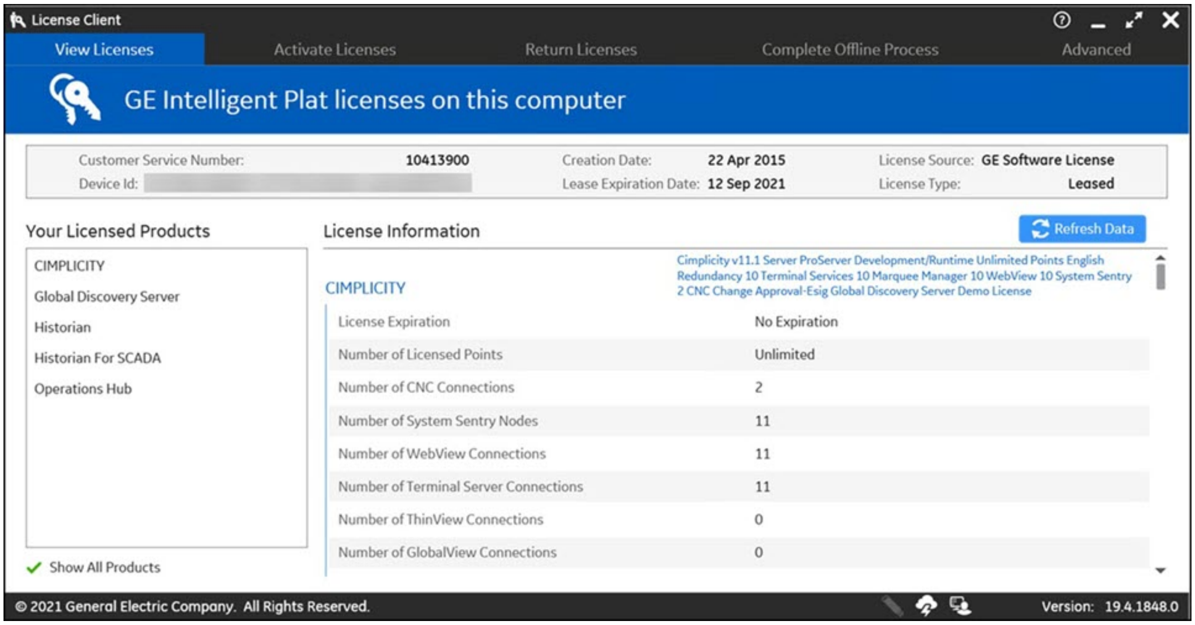
Local Server Port: 3333

□	Product Name	Description	Activation Code
□	Proficy HMI/SCADA - CIMPLICITY English	Cimplicity v11.1 Server ProServer Development/Runtime Unlimited Points English Redundancy 10 Terminal Services 10 Marqu...	[redacted]
□	Operations Hub	Operations Hub v2.1 Analysis Sensor1 Windows Demo License	[redacted]
□	Proficy Historian English	Historian v9.1 Test Standard 2500 Points Alarms and Events Enterprise Collectors OPC-UA Demo License	[redacted]

5. Select the check box for the products you want to activate, and then select **Activate**.

Confirm the License Client Displays Licenses

1. In License Client, select **View Licenses**. The activated licenses for the selected server appears, similar to the screen below. In the Licensed Products section, select the products listed to view the license information.



GE Intelligent Plat licenses on this computer

Customer Service Number: 10413900
Device Id: [redacted]
Creation Date: 22 Apr 2015
Lease Expiration Date: 12 Sep 2021
License Source: GE Software License
License Type: Leased

Your Licensed Products

- CIMPLICITY
- Global Discovery Server
- Historian
- Historian For SCADA
- Operations Hub

License Information

CIMPLICITY

Cimplicity v11.1 Server ProServer Development/Runtime Unlimited Points English Redundancy 10 Terminal Services 10 Marquee Manager 10 WebView 10 System Sentry 2 CNC Change Approval-Esig Global Discovery Server Demo License

License Expiration	No Expiration
Number of Licensed Points	Unlimited
Number of CNC Connections	2
Number of System Sentry Nodes	11
Number of WebView Connections	11
Number of Terminal Server Connections	11
Number of ThinView Connections	0
Number of GlobalView Connections	0

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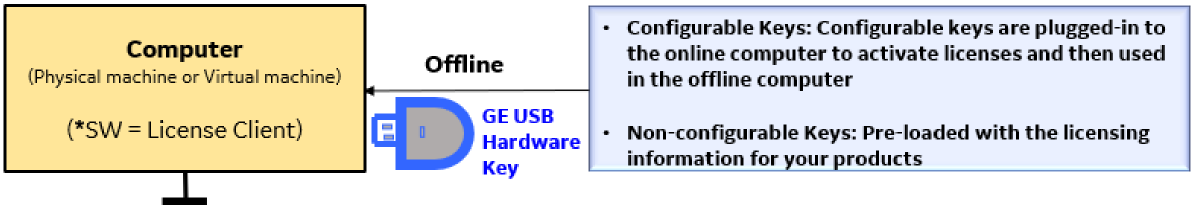
Version: 19.4.1848.0

2. Confirm that your license information appears correctly for each product you activated.

Scenario 3: Computer (offline) Licenses Activation by using GE USB Hardware Key



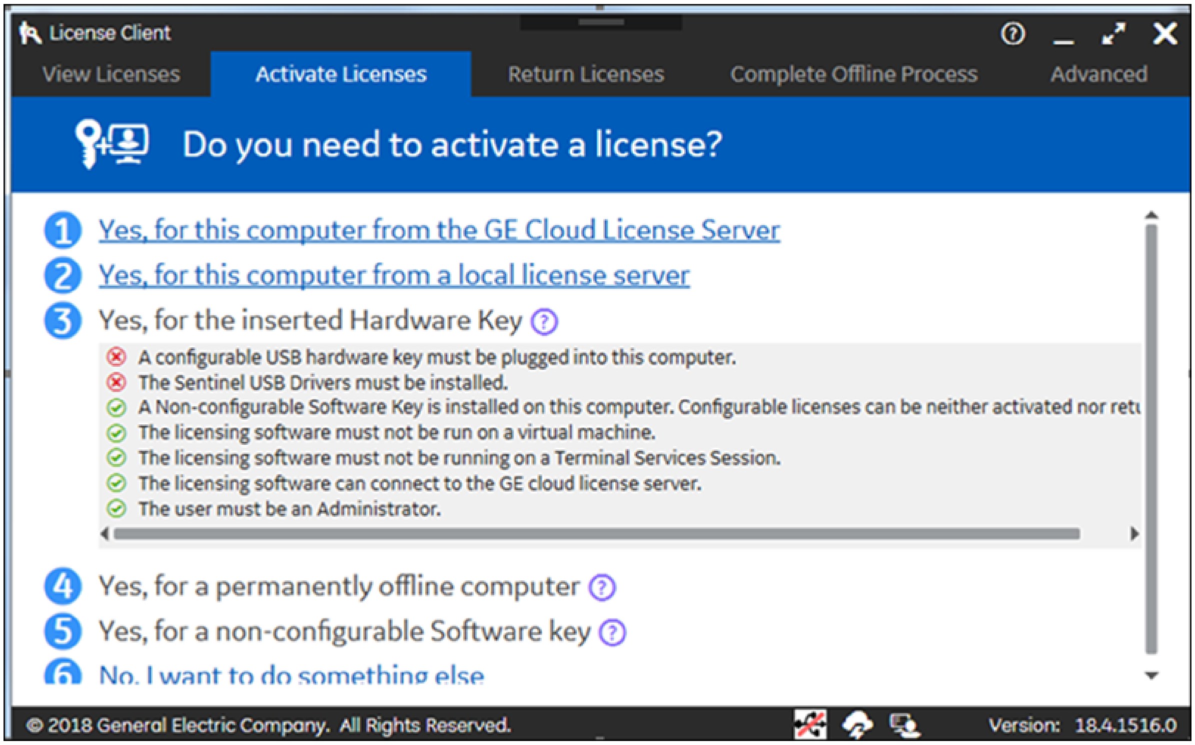
- Configurable Keys: Configurable keys are plugged-in to the online computer to activate licenses and then used in the offline computer
- Non-configurable Keys: Pre-loaded with the licensing information for your products

*Software

- Configurable GE USB Hardware Keys: Configurable keys are plugged-in to a computer with internet to activate licenses and then used in the computer that does not have internet.
- Non-configurable GE USB Hardware Keys: Pre-loaded with the licensing information for your products.

1. Insert the GE USB Hardware Key to your online computer (physical machine or a virtual machine).
2. In License Client, select **Activate Licenses**, select the option 3, **Yes, for the inserted Hardware key**.

Note: If you did not install the Sentinel USB drivers, error messages appear and the disabled USB icon appears in the footer.



Do you need to activate a license?

1 Yes, for this computer from the GE Cloud License Server

2 Yes, for this computer from a local license server

3 Yes, for the inserted Hardware Key ?

- ⊗ A configurable USB hardware key must be plugged into this computer.
- ⊗ The Sentinel USB Drivers must be installed.
- ✓ A Non-configurable Software Key is installed on this computer. Configurable licenses can be neither activated nor retu
- ✓ The licensing software must not be run on a virtual machine.
- ✓ The licensing software must not be running on a Terminal Services Session.
- ✓ The licensing software can connect to the GE cloud license server.
- ✓ The user must be an Administrator.

4 Yes, for a permanently offline computer ?

5 Yes, for a non-configurable Software key ?

6 No, I want to do something else

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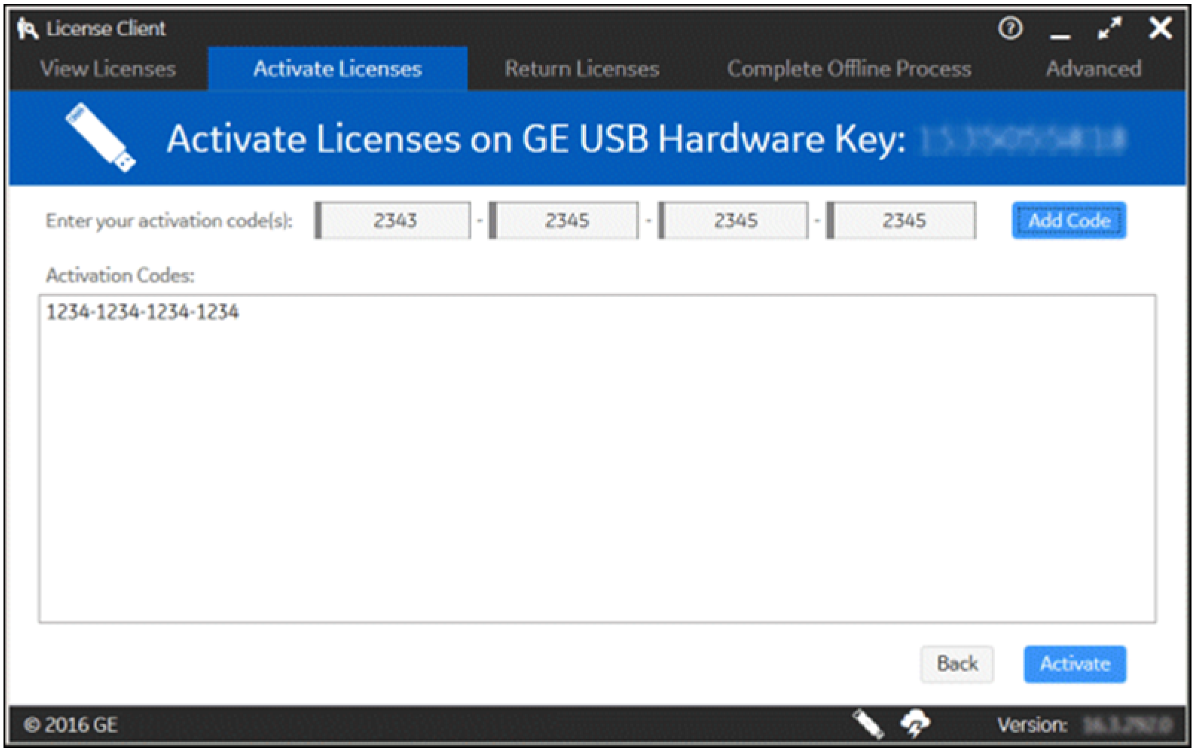
Version: 18.4.1516.0

If you did install the Sentinel USB drivers, the License Client detects and reads the GE USB Hardware Key (up to two minutes), and then the **Activate Licenses on GE USB Hardware Key** page appears, as shown below.



Activate Licenses on GE USB Hardware Key: [redacted]

Enter your activation code(s): 2343 - 2345 - 2345 - 2345

Activation Codes:

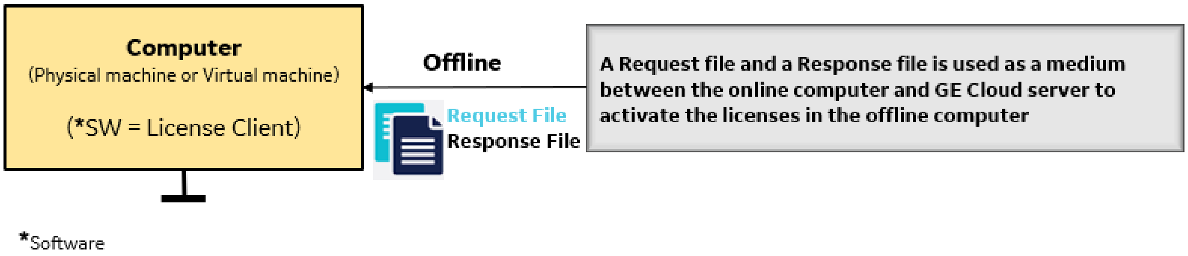
1234-1234-1234-1234

© 2016 GE

Version: [redacted]

3. Enter your first activation code, and then select **Add Code**.
4. Repeat the previous step for each license you have.
5. Select **Activate**. The Licenses screen should now display all the licenses activated on the server.
6. Remove the GE USB Hardware Key from your online computer and plug-in to the offline computer.

Scenario 4: Computer (offline) Licenses Activation by using Request and Response Files



A Request file and a Response file is used as a medium between the online computer and GE Cloud server to activate the licenses in the offline computer

A **Request file** and a **Response file** is used as a medium between a computer having internet and GE Cloud server to activate the licenses in the offline computer.

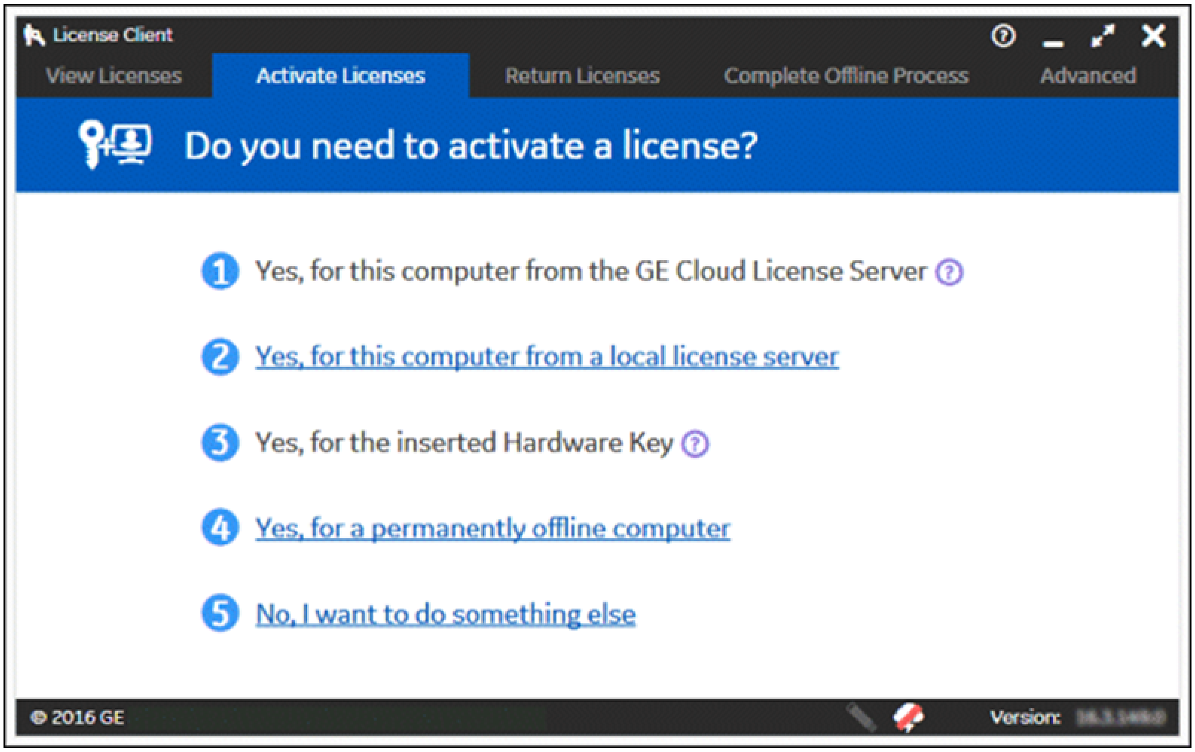
In License Client, select **Activate Licenses**, to activate licenses on client computers that are not connected to the internet. Activating licenses on an offline computer includes the following steps:

1. Generate a request file from the offline computer. Send the request file to the online computer.

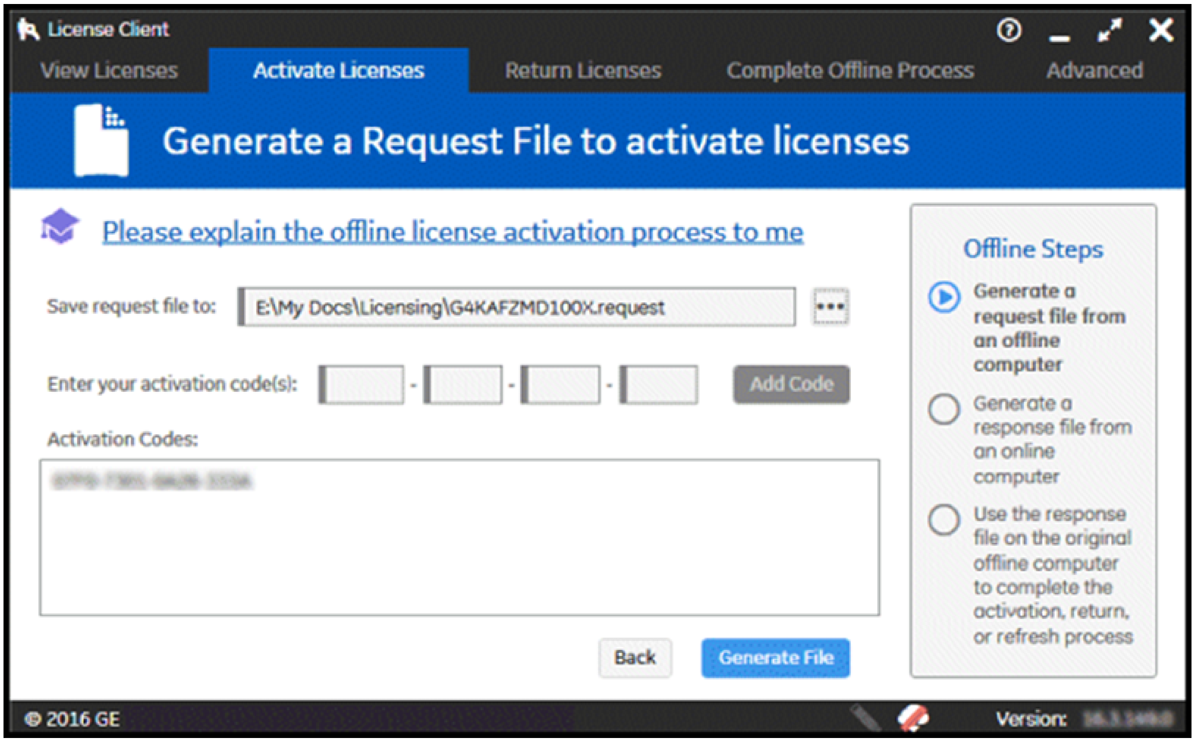
2. From an online computer, send the request file to the GE cloud license server and generate a response file.
3. Send the response file to the offline computer and activate the licenses.

Generating a Request File

1. From License Client, select the **Activate Licenses** tab. The License Client detects that the client computer is not connected to the internet. The "Do you need to activate a License?" page appears.


License Client
View Licenses
Activate Licenses
Return Licenses
Complete Offline Process
Advanced
Do you need to activate a license?
1 Yes, for this computer from the GE Cloud License Server
2 Yes, for this computer from a local license server
3 Yes, for the inserted Hardware Key
4 Yes, for a permanently offline computer
5 No, I want to do something else
© 2016 GE
Version: [redacted]

2. Select **Yes, for a permanently offline computer**. The **Generate a Request File to activate licenses** page appears.



Generate a Request File to activate licenses

Please explain the offline license activation process to me

Save request file to: E:\My Docs\Licensing\G4KAFZMD100X.request

Enter your activation code(s): ____ - ____ - ____ - ____

Activation Codes: [redacted]

Offline Steps

- ● Generate a request file from an offline computer
- ○ Generate a response file from an online computer
- ○ Use the response file on the original offline computer to complete the activation, return, or refresh process

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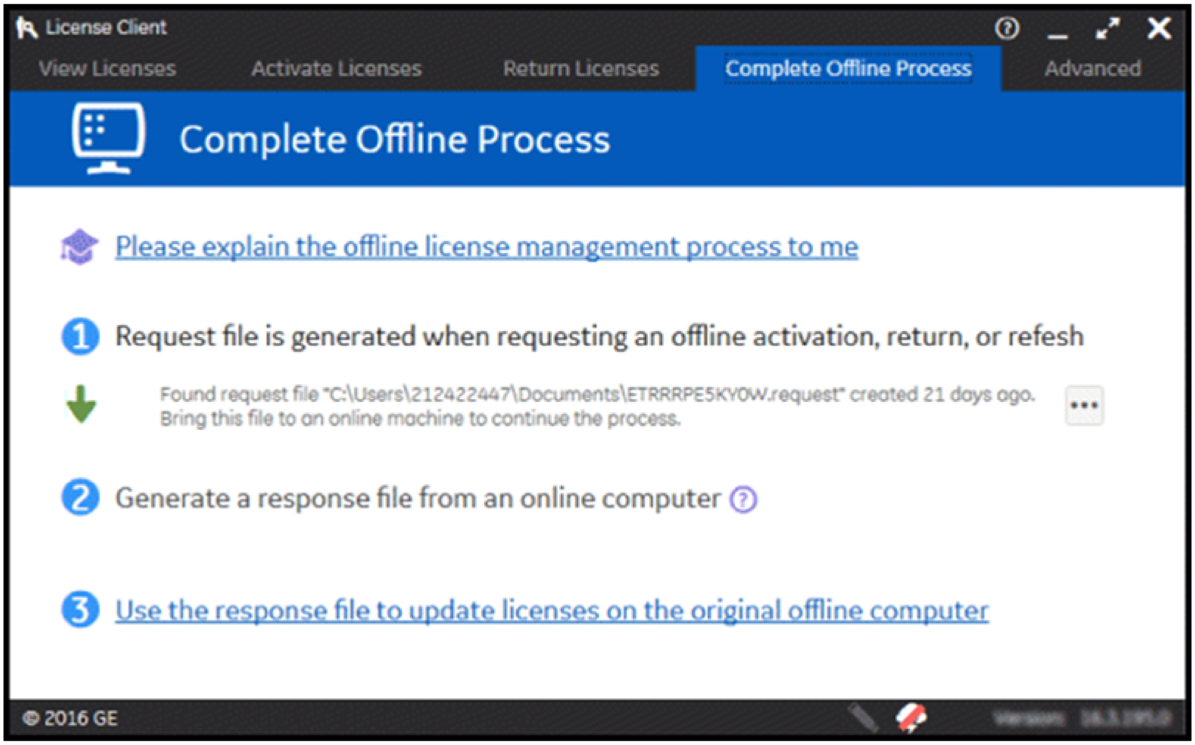
Version: [redacted]

3. Browse to the media device or the network location where the request file is saved.
4. Enter each activation code and select **Add Code** to add it to the Activation Codes area.

Note: You can find the activation code(s) in your GE order e-mail.

5. Select **Generate File** to create and save a request file to the specified location.
6. The **Complete Offline Process** page appears. A message appears indicating the request file location and when it was created.



Complete Offline Process

Please explain the offline license management process to me

1 Request file is generated when requesting an offline activation, return, or refesh

Found request file "C:\Users\212422447\Documents\ETRRRPE5KY0W.request" created 21 days ago.
Bring this file to an online machine to continue the process.

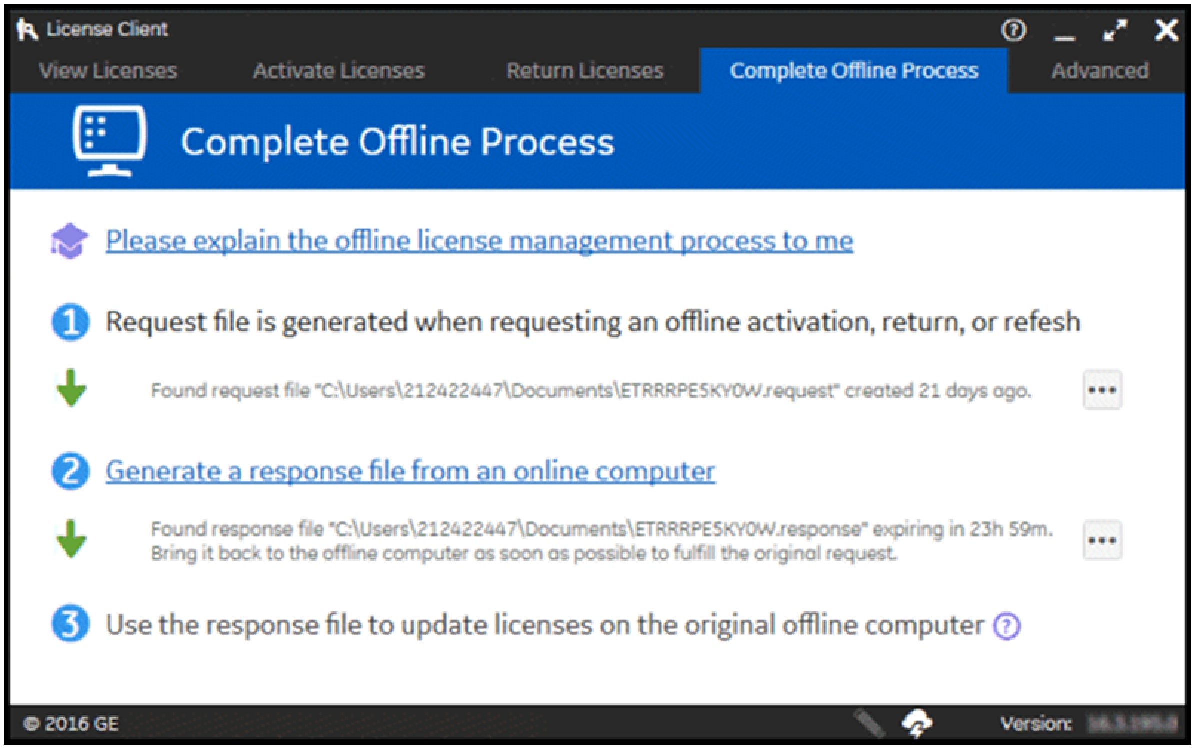
2 Generate a response file from an online computer

3 Use the response file to update licenses on the original offline computer

Generating a Response File

Collect the request file from the offline computer and then generate a response file from an online computer.

1. Select **Complete Offline Process**. The **Complete Offline Process** page appears. A message appears indicating the response file location and when it expires.



Complete Offline Process

Please explain the offline license management process to me

1 Request file is generated when requesting an offline activation, return, or refesh

Found request file "C:\Users\212422447\Documents\ETRRRPESKY0W.request" created 21 days ago.

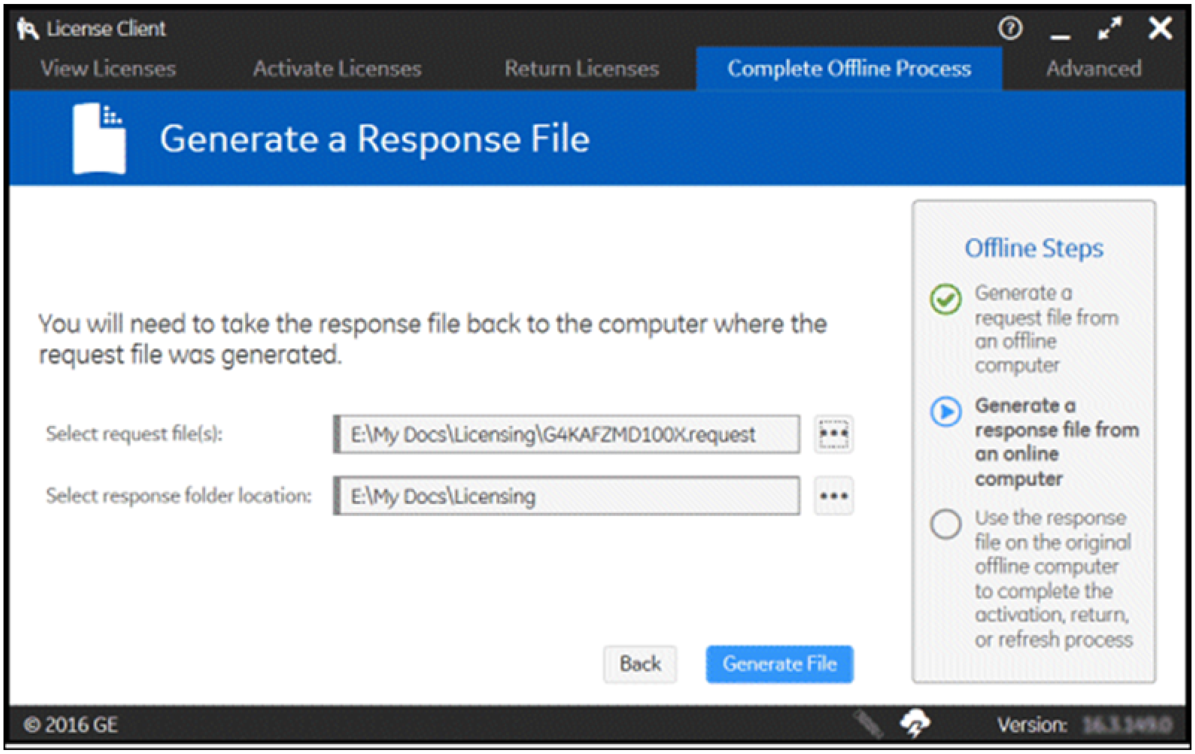
2 Generate a response file from an online computer

Found response file "C:\Users\212422447\Documents\ETRRRPESKY0W.response" expiring in 23h 59m. Bring it back to the offline computer as soon as possible to fulfill the original request.

3 Use the response file to update licenses on the original offline computer

Version: [redacted]

2. Select **Generate a response file from an online computer**. The **Generate a Response File** page appears.



Generate a Response File

You will need to take the response file back to the computer where the request file was generated.

Select request file(s): E:\My Docs\Licensing\G4KAFZMD100X.request

Select response folder location: E:\My Docs\Licensing

Offline Steps

- Generate a request file from an offline computer
- **Generate a response file from an online computer**
- Use the response file on the original offline computer to complete the activation, return, or refresh process

Version: [redacted]

3. If necessary, insert the media device into the computer.

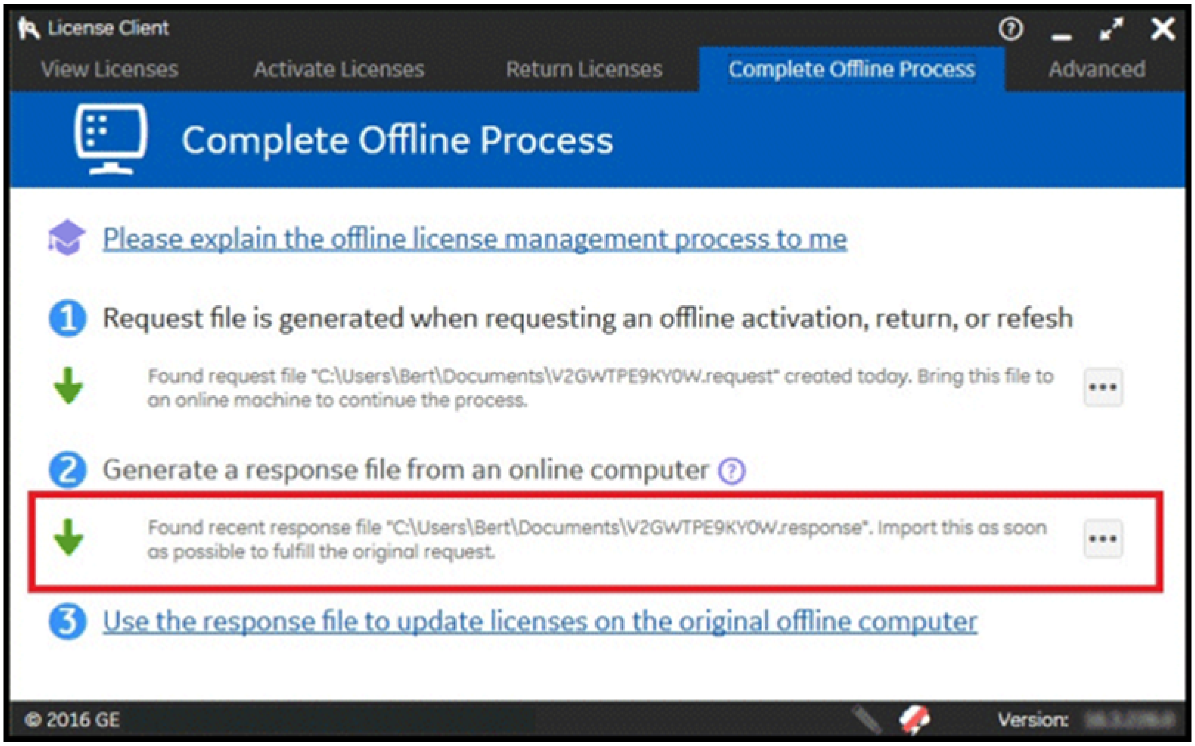
4. Select the request file and response folder location, then select **Generate File**. The response file is generated and saved to the specified location on a media device or network drive that can be accessed by the offline computer.

   Note: The response file expires 24 hours after being created. The application indicates the time remaining before the response file expires.

Activating Licenses

After generating a request file from your offline computer and a response file from an online computer, you can activate licenses on the offline computer.

1. On the **Complete Offline Process** page, select **Use the response file to update licenses on the original offline computer**.



1 Request file is generated when requesting an offline activation, return, or refesh

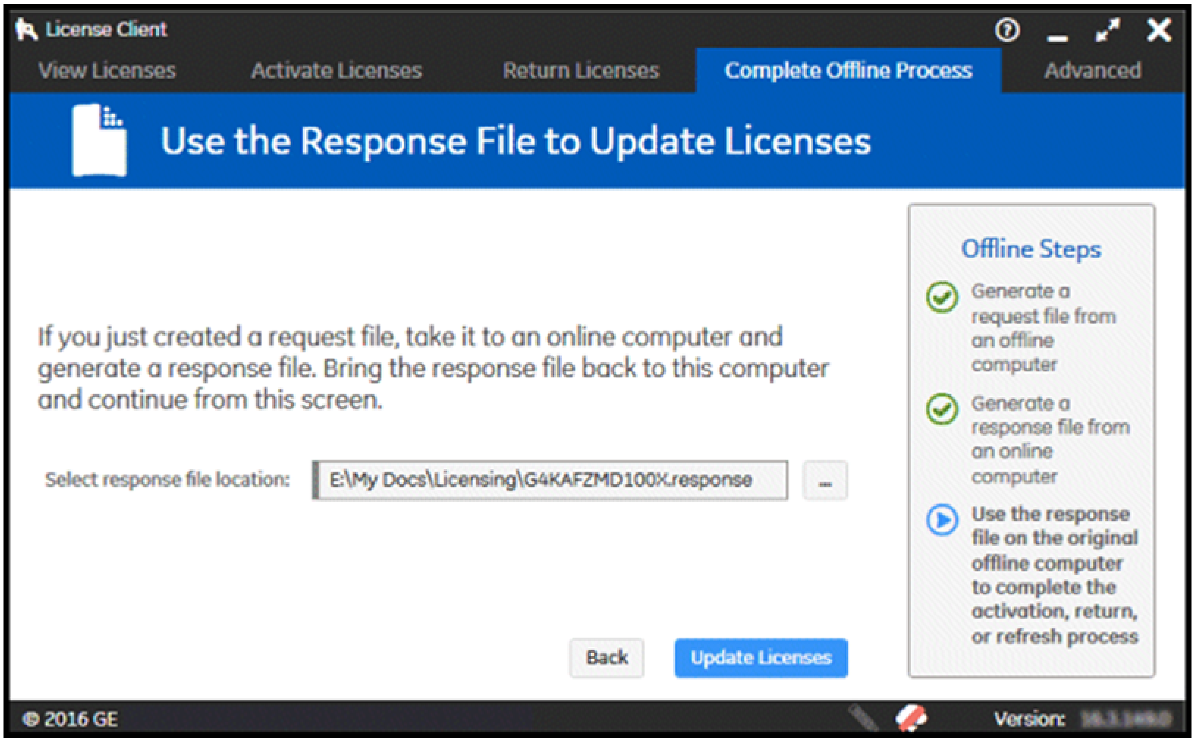
Found request file "C:\Users\Bert\Documents\V2GWTPE9KY0W.request" created today. Bring this file to an online machine to continue the process.

2 Generate a response file from an online computer

Found recent response file "C:\Users\Bert\Documents\V2GWTPE9KY0W.response". Import this as soon as possible to fulfill the original request.

3 Use the response file to update licenses on the original offline computer

The **Use the Response File to Update Licenses** page appears.


License Client
View Licenses
Activate Licenses
Return Licenses
Complete Offline Process
Advanced
Use the Response File to Update Licenses
Offline Steps
Generate a request file from an offline computer
Generate a response file from an online computer
Use the response file on the original offline computer to complete the activation, return, or refresh process
...
Back
Update Licenses
© 2016 GE
Version: [redacted]

If you just created a request file, take it to an online computer and generate a response file. Bring the response file back to this computer and continue from this screen.

Select response file location: E:\My Docs\Licensing\G4KAFZMD100X.response

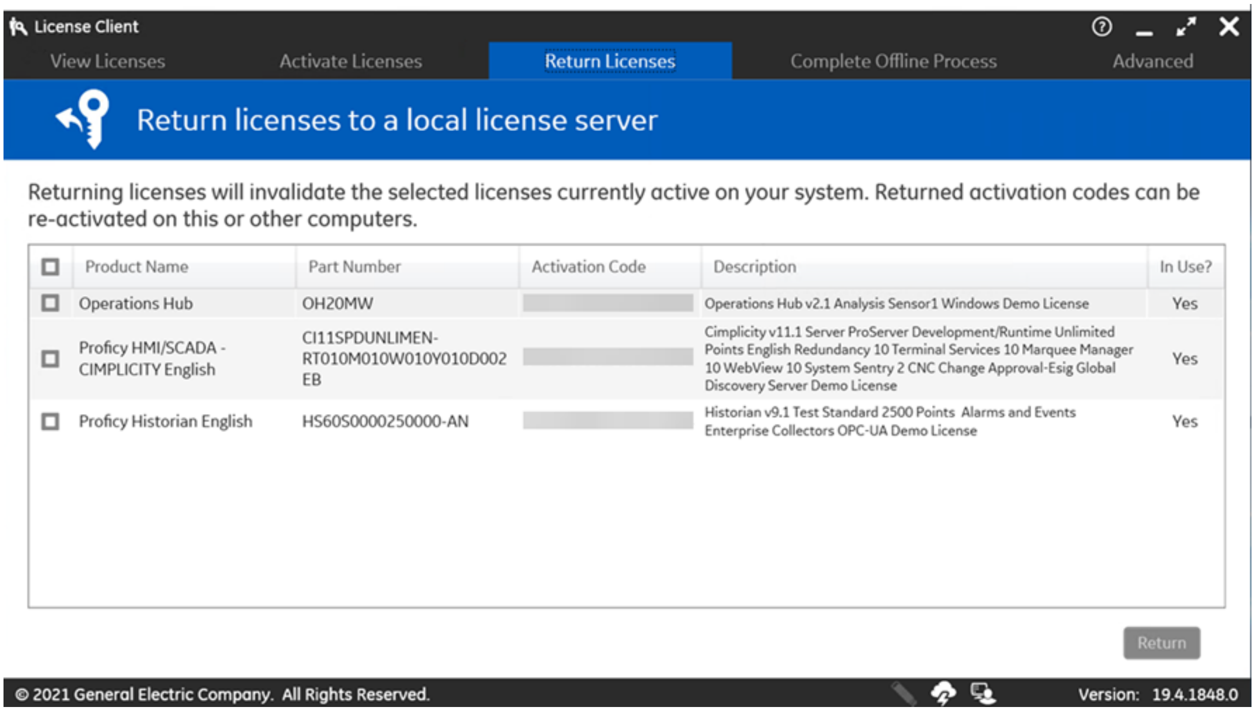
2. If necessary, insert the media device with the response file into the computer.
3. Browse to the location of the response file, and select the file.
4. Select **Update Licenses**.

Note: After the response file is imported, the response file extension is modified to "response_imported".

Step 4: Returning Licenses

You can return your licenses for time being and re-activate them later. You can also re-active your licenses on a different computer using License Client.

The **Return Licenses** tab in License Client is used to return licenses from your computer (physical machine or virtual machine).



Return licenses to a local license server

Returning licenses will invalidate the selected licenses currently active on your system. Returned activation codes can be re-activated on this or other computers.

□	Product Name	Part Number	Activation Code	Description	In Use?
□	Operations Hub	OH20MW	[redacted]	Operations Hub v2.1 Analysis Sensor1 Windows Demo License	Yes
□	Proficy HMI/SCADA - CIMPLICITY English	CI11SPDUNLIMEN-RT010M010W010Y010D002EB	[redacted]	Cimplicity v11.1 Server ProServer Development/Runtime Unlimited Points English Redundancy 10 Terminal Services 10 Marquee Manager 10 WebView 10 System Sentry 2 CNC Change Approval-Esig Global Discovery Server Demo License	Yes
□	Proficy Historian English	HS60S0000250000-AN	[redacted]	Historian v9.1 Test Standard 2500 Points Alarms and Events Enterprise Collectors OPC-UA Demo License	Yes

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Version: 19.4.1848.0

Following are the steps for returning your licenses if your computer is connected to a Local License Server, or to the GE Cloud License Server, or a computer with a GE USB Hardware key:

1. In License Client, select **Return Licenses**.
2. The return licenses server page displays information for each license on your computer.
3. Select the check box for each license to return, and then select **Return**.

Note: The **Activate Licenses** tab appears, indicating that licenses have been successfully returned to your respective license server.

Following are the steps for returning your licenses if your computer is offline, that is your computer is not connected to the internet:

1. Generate a request file from the offline computer. Send the request file to the online computer.
2. From an online computer, send the request file to the GE cloud license server and generate a response file.
3. Send the response file to the offline computer and return the licenses.

Generating a Request File

Note: Generate a request file from an online computer before returning licenses from an offline computer.

1. On the offline computer, in License Client, select the **Return Licenses** tab. The License Client detects that the client computer is not connected to the internet.
2. The **Generate a Request File to return licenses** page appears.

3. Select the licenses to be returned.
4. Browse the location where you want to save the request file.
5. Save the license request file to a device or network drive that can be accessed by the online computer.
6. If you are using a portable media device, remove it and return to the online computer.

Generating a Response File

Note: Generate a response file from an online computer before returning licenses from an offline computer.

1. Select **Complete Offline Process**. The **Complete Offline Process** page appears. A message appears indicating the response file location and when it expires.
2. Select **Generate a response file from an online computer**. The **Generate a Response File** page appears.
3. If necessary, insert the media device into the computer.
4. Select the request file(s) and response folder location, then select **Generate File**. The response file is generated and saved to the specified location on a media device or network drive that can be accessed by the offline computer.

   Note: The response file expires 24 hours after being created. The application indicates the time remaining before the response file expires.

5. If you are using a portable media device to store the response file, remove it and return to the offline computer.

Returning a License

After generating a request file from your offline computer and a response file from an online computer, you can return licenses from the offline computer.

1. On the **Complete Offline Process** page, select **Use the response file to update licenses on the original offline computer**. The **Use the Response File to Update Licenses** page appears.
2. If necessary, insert the media device with the response file into the computer.
3. Browse the location of the response file, and select the file.
4. Select **Return License**.

   Note: After the response file is imported, the response file extension is modified to "response_imported".

Reconcile Device ID with Tolerant ID

Reconcile Device ID with Tolerant ID

If your device ID changes, you may face some issues with your GE product licenses. You must perform the reconcile operation to make your device ID tolerant against any further changes to the device ID.

Follow the below important notes on Common Licensing software version requirements.

Note:

- If you are installing Common Licensing software for the first time in your computer, then your device ID will be tolerant when you install Common Licensing version 19.4 or higher and reconcile operation is not required.
- If you are already using Common Licensing software in your computer, you must upgrade to Common Licensing version 19.4 or higher, and run the reconcile operation to make your device ID tolerant.

The reconcile operation is required to:

- Avoid any license issues when the device ID changes
- Run your activated licenses seamlessly and more efficiently.

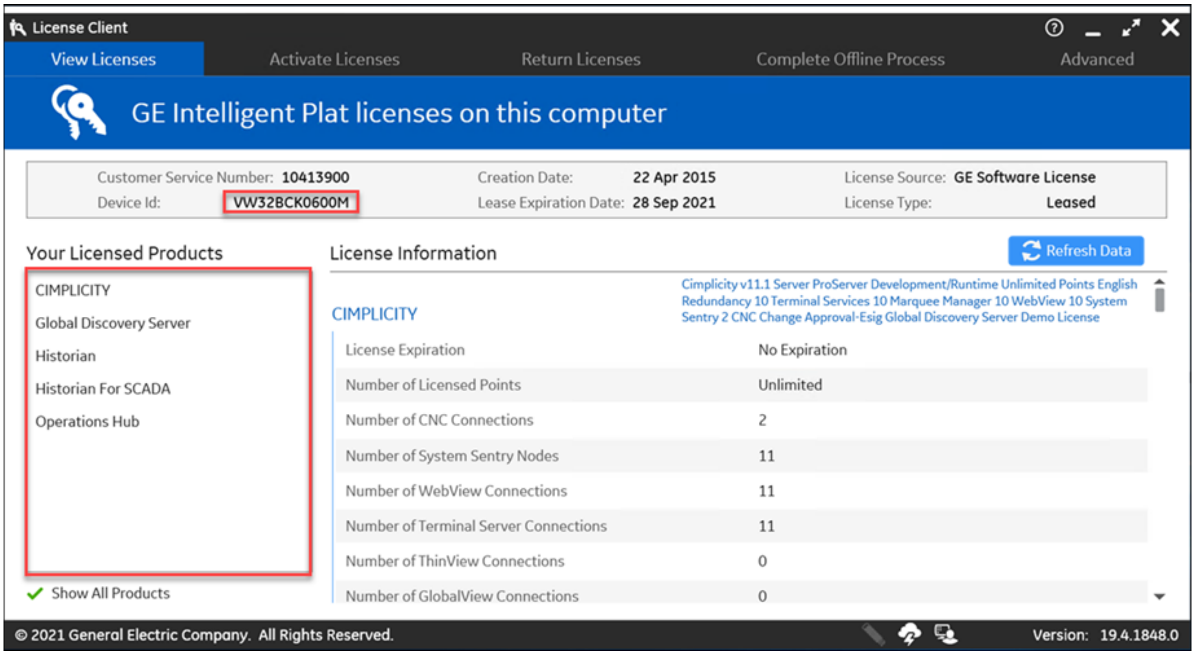
Note: Perform the reconcile operation, to ensure your device ID is tolerant even if your computer device ID is intact and not changed.

Before you begin with your reconcile operation:

- You must not use the GE products while reconciling the device ID.
- If you are not connected to GE Cloud Server, you must return the existing licenses offline before the reconcile operation. However, if you are connected to GE Cloud Server, the existing licenses are automatically returned when you reconcile the device ID.

Following are the steps for reconciliation of your device ID with new tolerant device ID:

1. In License Client, select **View Licenses** tab. The activated licenses are already mapped to 12 characters device ID.



GE Intelligent Plat licenses on this computer

Customer Service Number: 10413900
Device Id: VW32BCK0600M
Creation Date: 22 Apr 2015
Lease Expiration Date: 28 Sep 2021
License Source: GE Software License
License Type: Leased

Your Licensed Products

CIMPLICITY
Global Discovery Server
Historian
Historian For SCADA
Operations Hub

License Information

CIMPLICITY

Cimplicity v11.1 Server ProServer Development/Runtime Unlimited Points English Redundancy 10 Terminal Services 10 Marquee Manager 10 WebView 10 System Sentry 2 CNC Change Approval-Esig Global Discovery Server Demo License

License Expiration	No Expiration
Number of Licensed Points	Unlimited
Number of CNC Connections	2
Number of System Sentry Nodes	11
Number of WebView Connections	11
Number of Terminal Server Connections	11
Number of ThinView Connections	0
Number of GlobalView Connections	0

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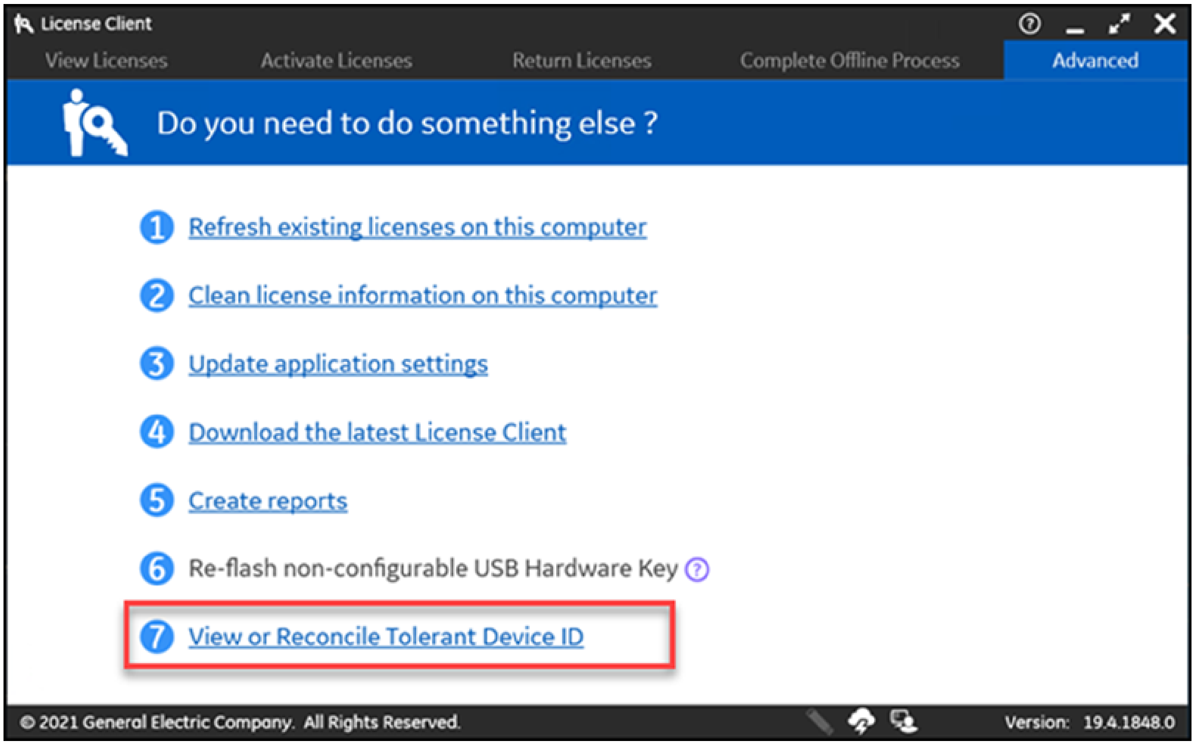
2. Select **Advanced** tab, and then select **View or Reconcile Tolerant Device ID**.



Do you need to do something else ?

1 Refresh existing licenses on this computer
2 Clean license information on this computer
3 Update application settings
4 Download the latest License Client
5 Create reports
6 Re-flash non-configurable USB Hardware Key
7 View or Reconcile Tolerant Device ID

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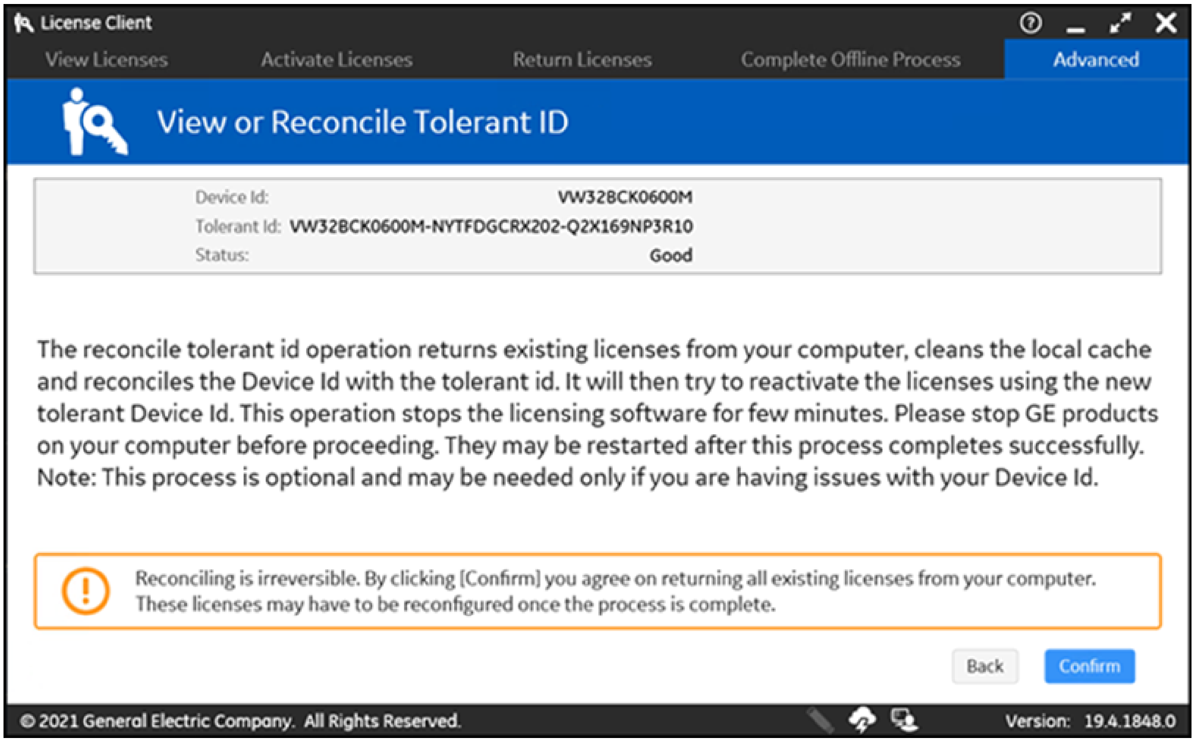
Version: 19.4.1848.0

3. Select the **Confirm** button to start your reconciling operation.



View or Reconcile Tolerant ID

Device Id: VW32BCK0600M
Tolerant Id: VW32BCK0600M-NYTFDGCRX202-Q2X169NP3R10
Status: Good

The reconcile tolerant id operation returns existing licenses from your computer, cleans the local cache and reconciles the Device Id with the tolerant id. It will then try to reactivate the licenses using the new tolerant Device Id. This operation stops the licensing software for few minutes. Please stop GE products on your computer before proceeding. They may be restarted after this process completes successfully. Note: This process is optional and may be needed only if you are having issues with your Device Id.

Reconciling is irreversible. By clicking [Confirm] you agree on returning all existing licenses from your computer. These licenses may have to be reconfigured once the process is complete.

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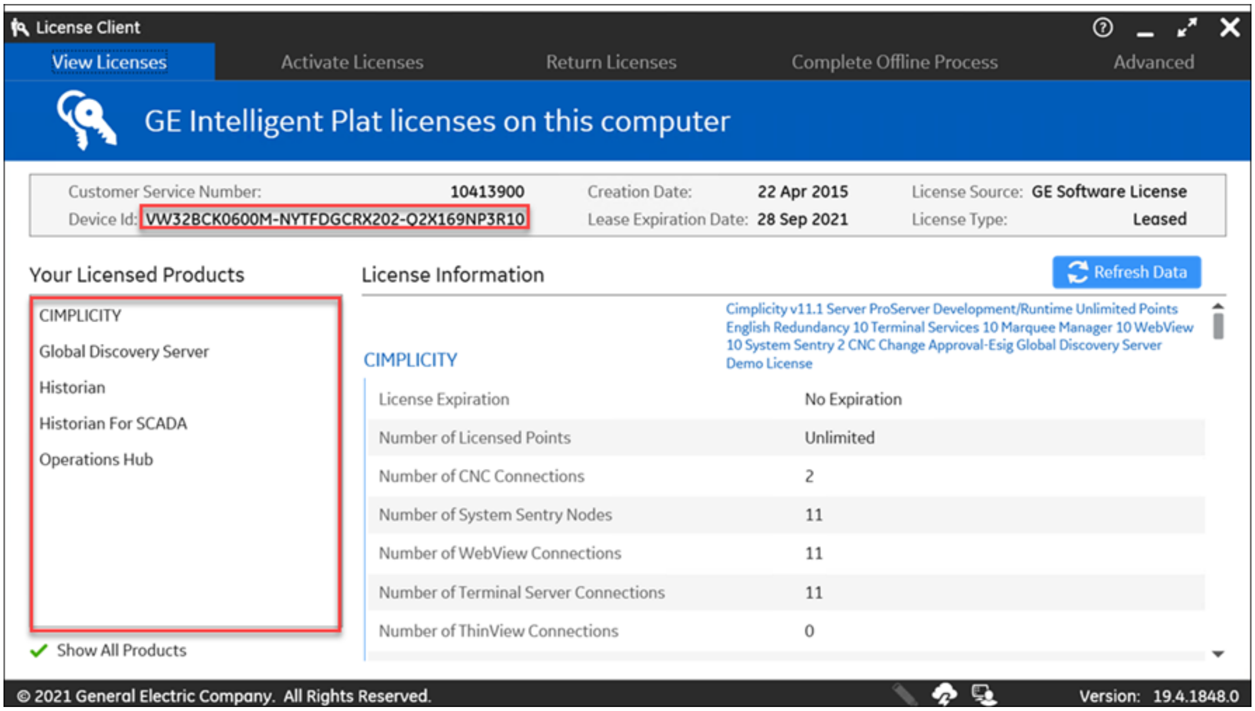
Note: After the reconcile operation, the 12 characters of existing device ID will change to 36 characters.

In the **View Licenses** tab, you will see that your licenses are still valid and are now mapped to 36 characters device ID.



GE Intelligent Plat licenses on this computer

Customer Service Number: 10413900
Device Id: VW32BCK0600M-NYTFDGCRX202-Q2X169NP3R10
Creation Date: 22 Apr 2015
Lease Expiration Date: 28 Sep 2021
License Source: GE Software License
License Type: Leased

Your Licensed Products

- CIMPLICITY
- Global Discovery Server
- Historian
- Historian For SCADA
- Operations Hub

✓ Show All Products

License Information

CIMPLICITY

Cimplicity v11.1 Server ProServer Development/Runtime Unlimited Points English Redundancy 10 Terminal Services 10 Marquee Manager 10 WebView 10 System Sentry 2 CNC Change Approval-Esig Global Discovery Server Demo License

License Expiration	No Expiration
Number of Licensed Points	Unlimited
Number of CNC Connections	2
Number of System Sentry Nodes	11
Number of WebView Connections	11
Number of Terminal Server Connections	11
Number of ThinView Connections	0

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Chapter 4. SCADA Web Configuration

About CIMPLICITY SCADA Web Configuration

You can use SCADA Web Configuration to discover the address space of an OPC UA Server and automatically create points from the address space.

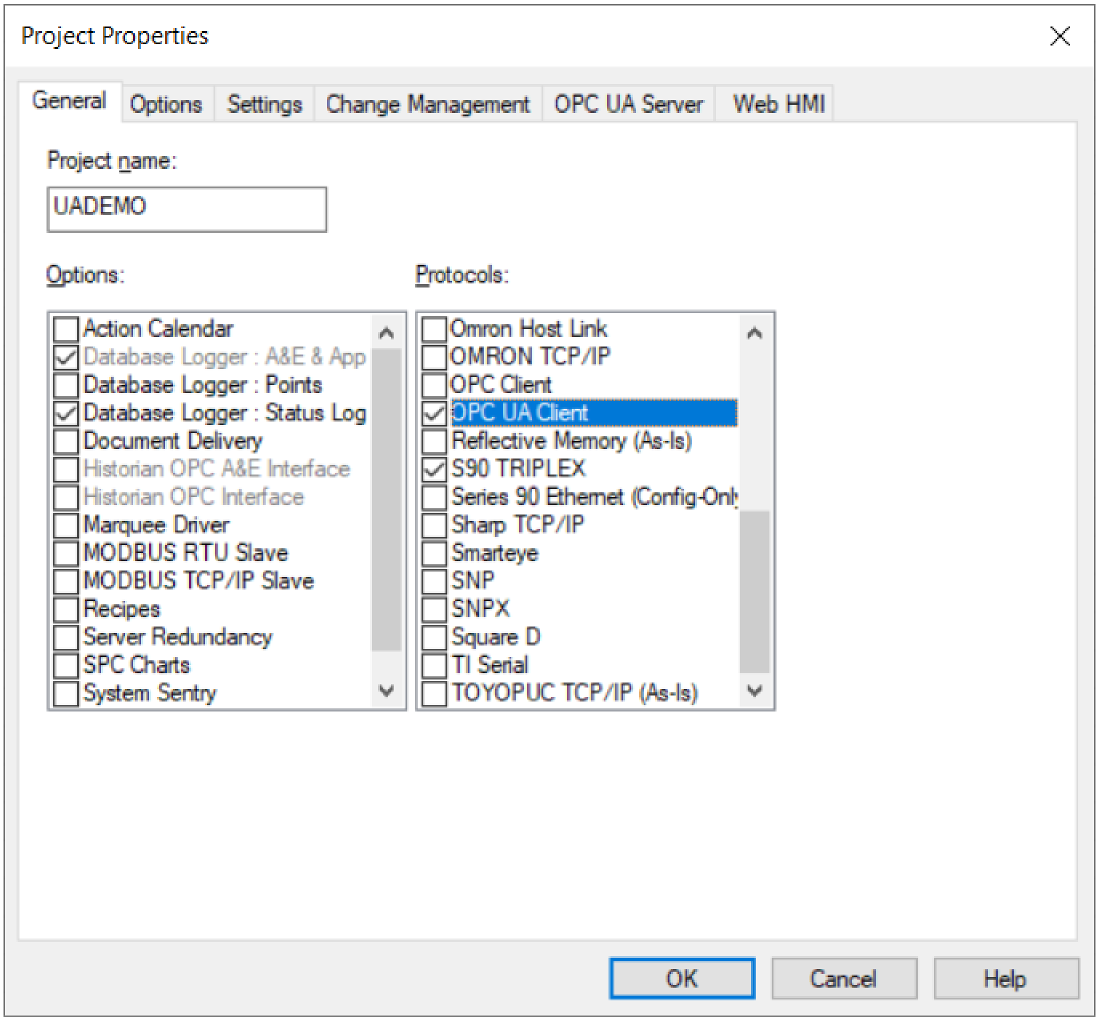
You are provided with access to a web application where you can browse through the OPC UA Servers configured in a project and create CIMPLICITY points.

Enable, Launch, and Log in to SCADA Web Configuration

Enable, Launch, and Log in to SCADA Web Configuration

Before you enable, launch, and log in to SCADA Web Configuration, perform the following steps:

1. In Workbench, create a new project or access an existing project.
2. Access the Project Properties window, select the General tab, and under Protocols, select the OPC UA Client check box.



Project name: UADEMO

Options:

- □ Action Calendar
- ☑ Database Logger : A&E & App
- □ Database Logger : Points
- ☑ Database Logger : Status Log
- □ Document Delivery
- □ Historian OPC A&E Interface
- □ Historian OPC Interface
- □ Marquee Driver
- □ MODBUS RTU Slave
- □ MODBUS TCP/IP Slave
- □ Recipes
- □ Server Redundancy
- □ SPC Charts
- □ System Sentry

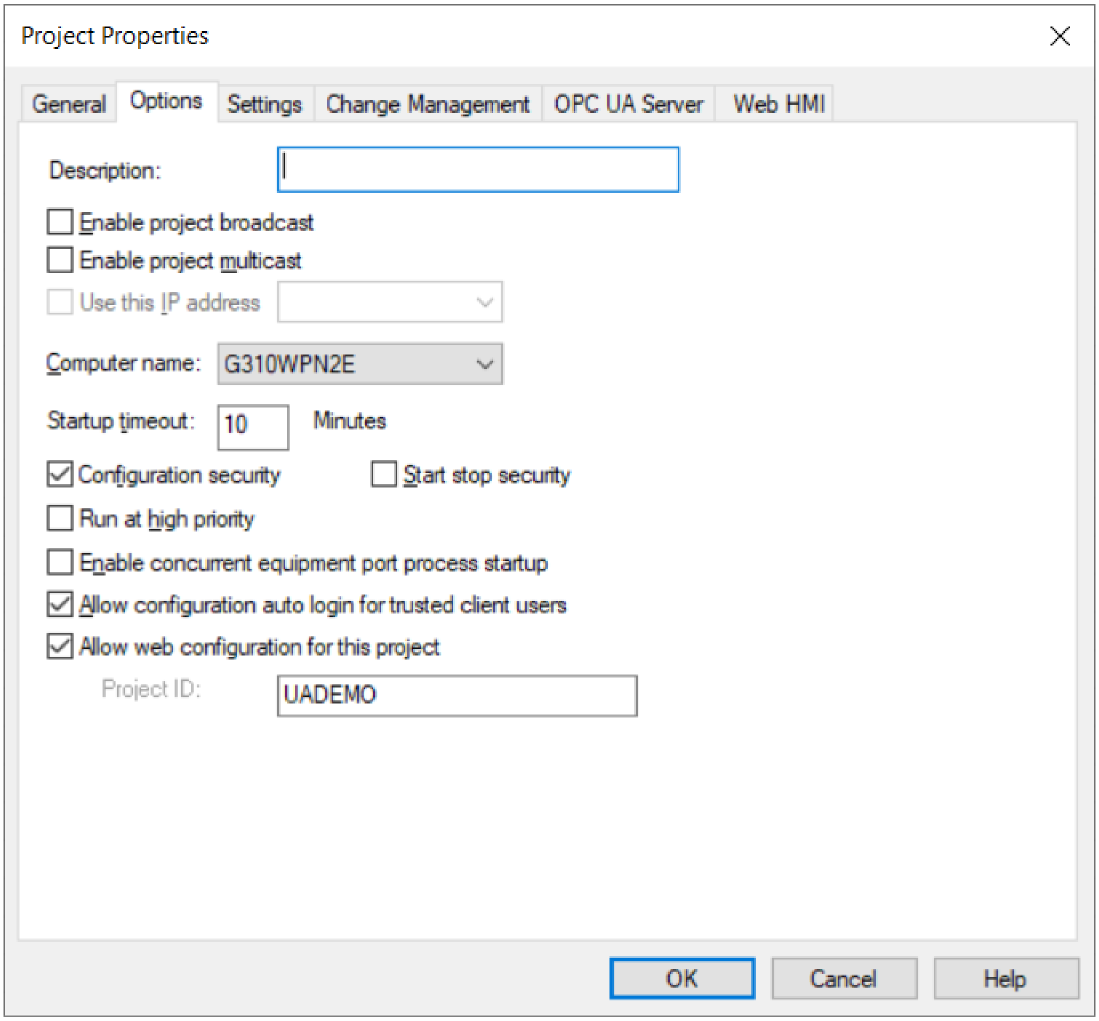
Protocols:

- □ Omron Host Link
- □ OMRON TCP/IP
- □ OPC Client
- ☑ OPC UA Client
- □ Reflective Memory (As-Is)
- ☑ S90 TRIPLEX
- □ Series 90 Ethernet (Config-Onl
- □ Sharp TCP/IP
- □ Smarteye
- □ SNP
- □ SNPX
- □ Square D
- □ TI Serial
- □ TOYOPUC TCP/IP (As-Is)

3. Select OK.
4. Create a device for each OPC UA Server and configure the device.

Enable SCADA Web Configuration

To enable web configuration for a project, in **Workbench**, access the **Project Properties** window, select the **Options** tab, and then select the **Allow web configuration for this project** check box.



Description:

□ Enable project broadcast

□ Enable project multicast

□ Use this IP address

Computer name: G310WPN2E

Startup timeout: 10 Minutes

☑ Configuration security □ Start stop security

□ Run at high priority

□ Enable concurrent equipment port process startup

☑ Allow configuration auto login for trusted client users

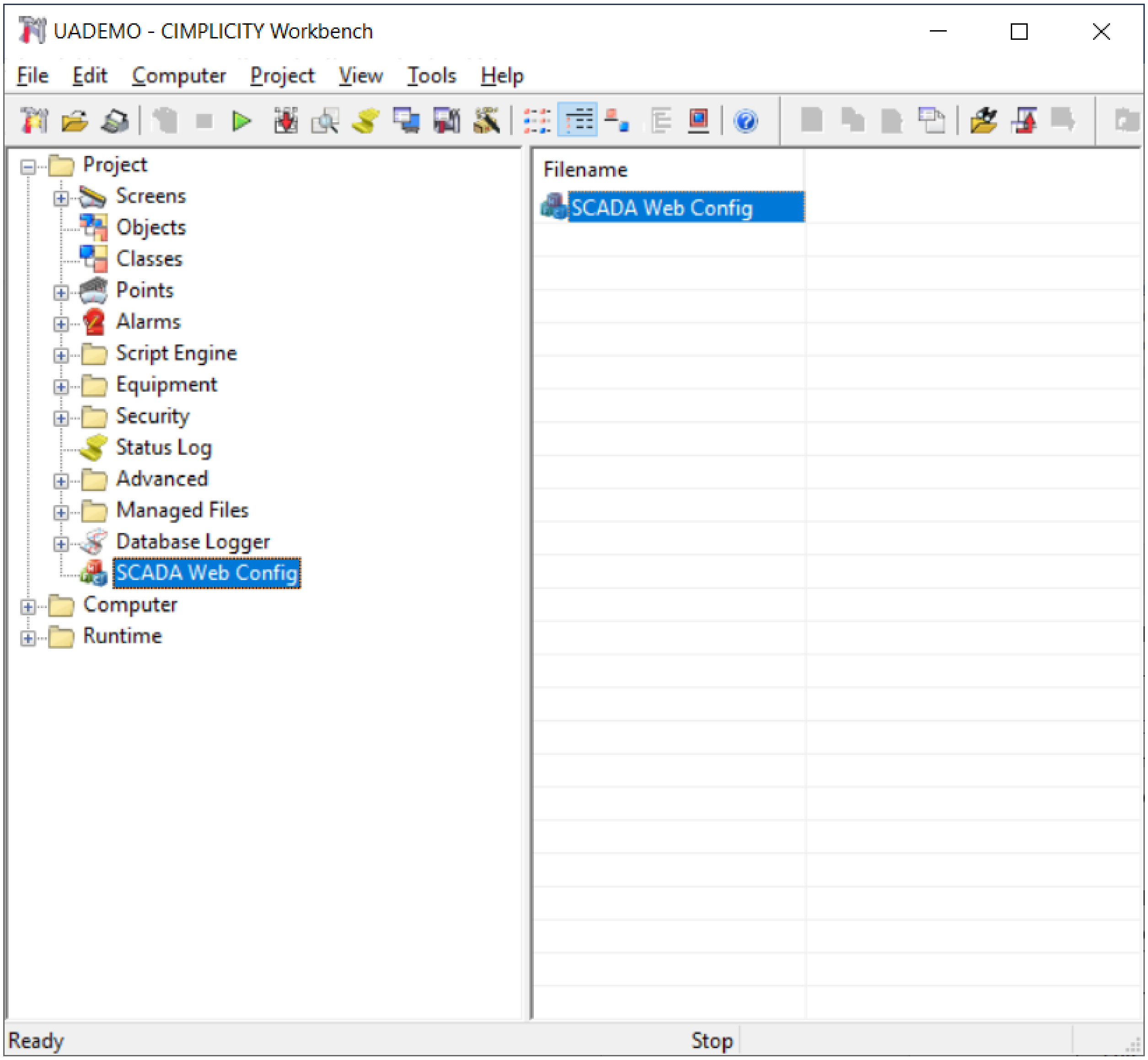
☑ Allow web configuration for this project

Project ID: UADEMO

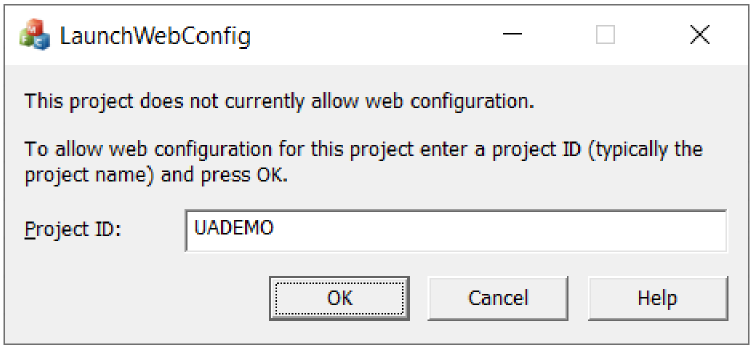
Note: If you do not enable web configuration for a project as mentioned above, you can enable it when you launch SCADA Web Config.

Launch SCADA Web Configuration

To launch SCADA Web Configuration, in **Workbench**, select **SCADA Web Config**, and double-click the SCADA Web Config file.



Note: If web configuration was not enabled for the project, a **LaunchWebConfig** window appears, prompting you to enable web configuration for the project. Select **OK**.

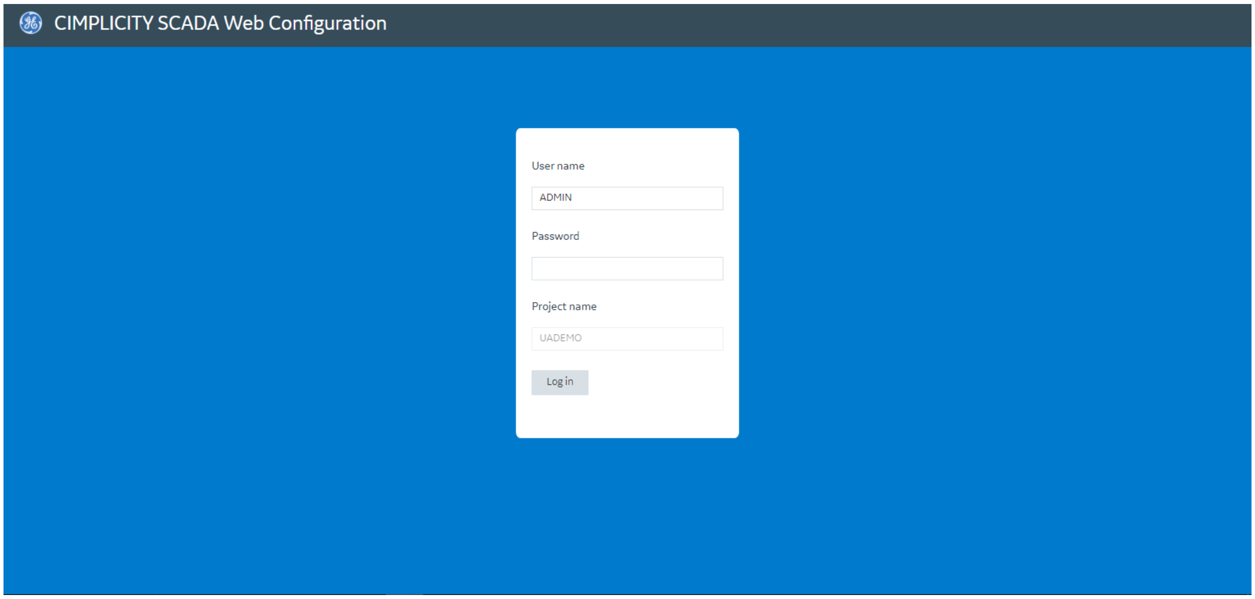


This project does not currently allow web configuration.

To allow web configuration for this project enter a project ID (typically the project name) and press OK.

Project ID: UADEMO

The **CIMPLICITY SCADA Web Configuration** web page appears.



CIMPLICITY SCADA Web Configuration

User name: ADMIN

Password:

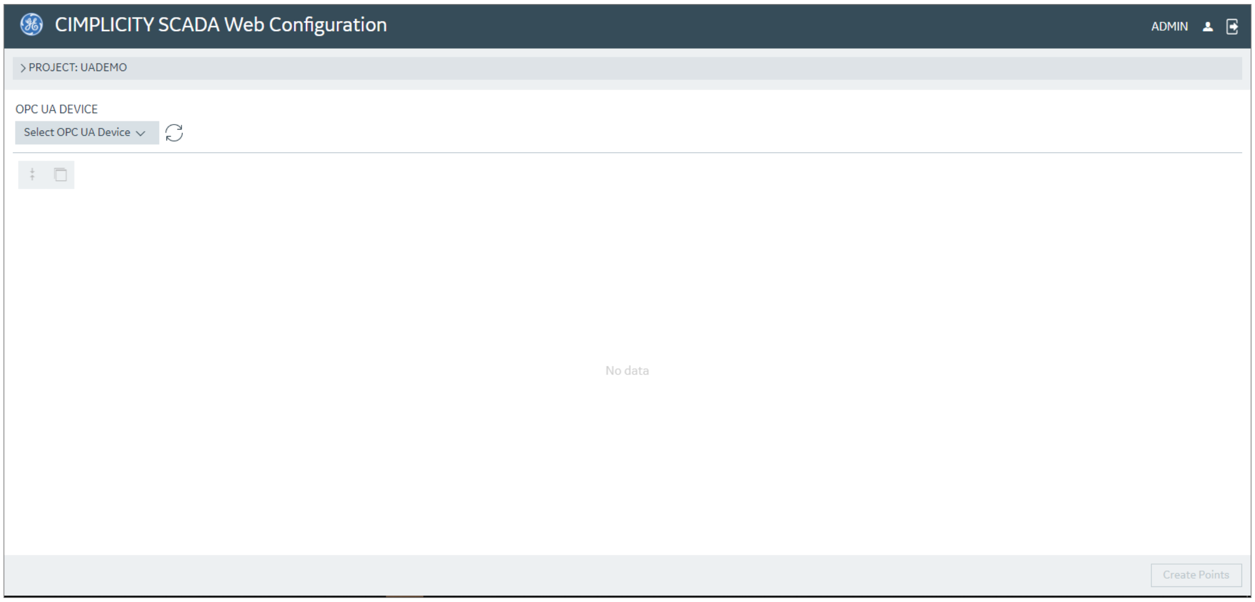
Project name: UADEMO

To view the list of OPC UA Devices that your project contains, you must log in to SCADA Web Configuration.

Log in to SCADA Web Configuration

On the **CIMPLICITY SCADA Web Configuration** webpage, enter the username and password from the project configuration, and then select **Log in**.

The **OPC UA Device** selection webpage appears.



CIMPLICITY SCADA Web Configuration

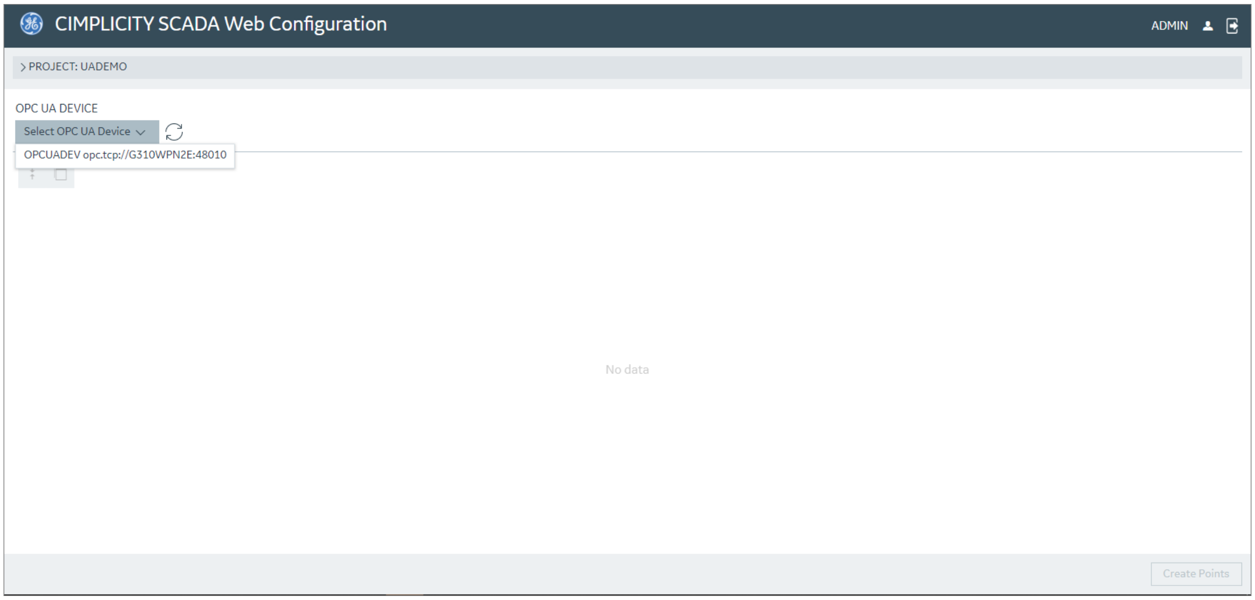
ADMIN

> PROJECT: UADEMO

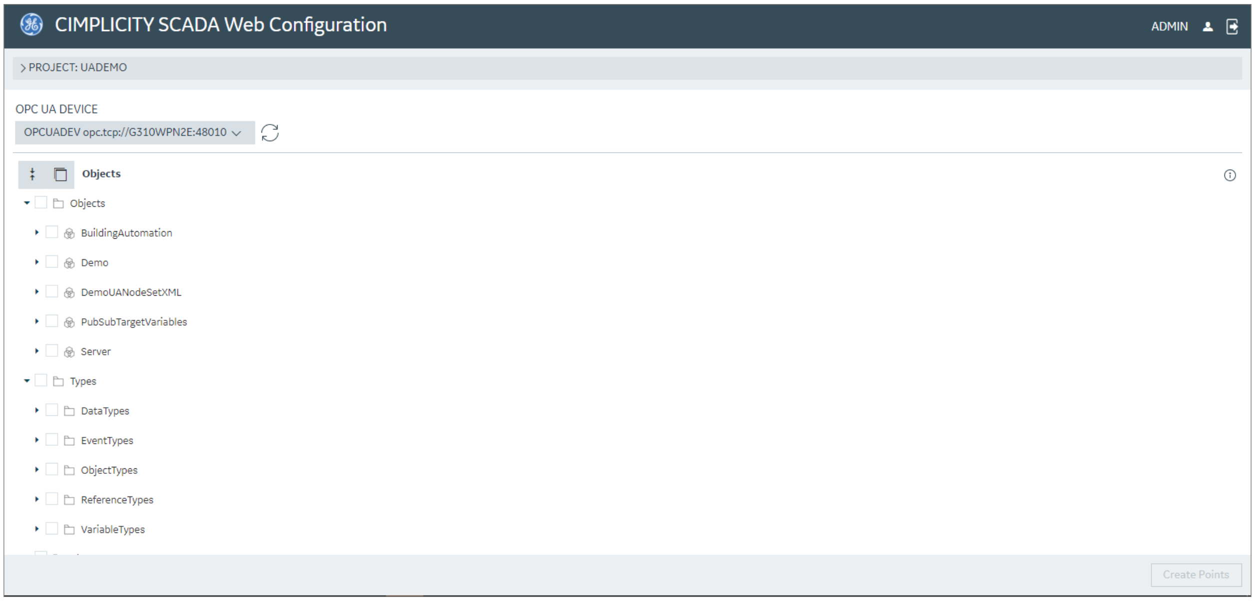
OPC UA DEVICE

Select and Browse an OPC UA Device

The **Select OPC UA Device** list displays the list of devices that have been configured for OPC UA Servers in your project. Select an OPC UA Device.



All the nodes in the OPC UA Device are displayed. You can browse through them.



Create SCADA Points

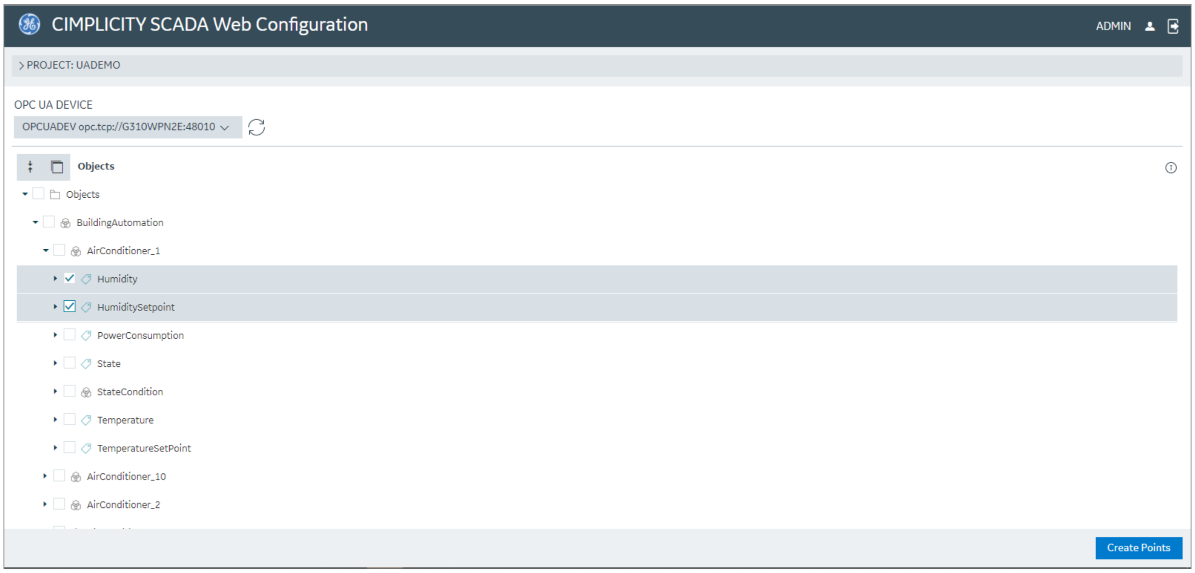
You can create SCADA points from the objects displayed for the selected OPC UA Device.

To create SCADA points:

1. Select the objects.

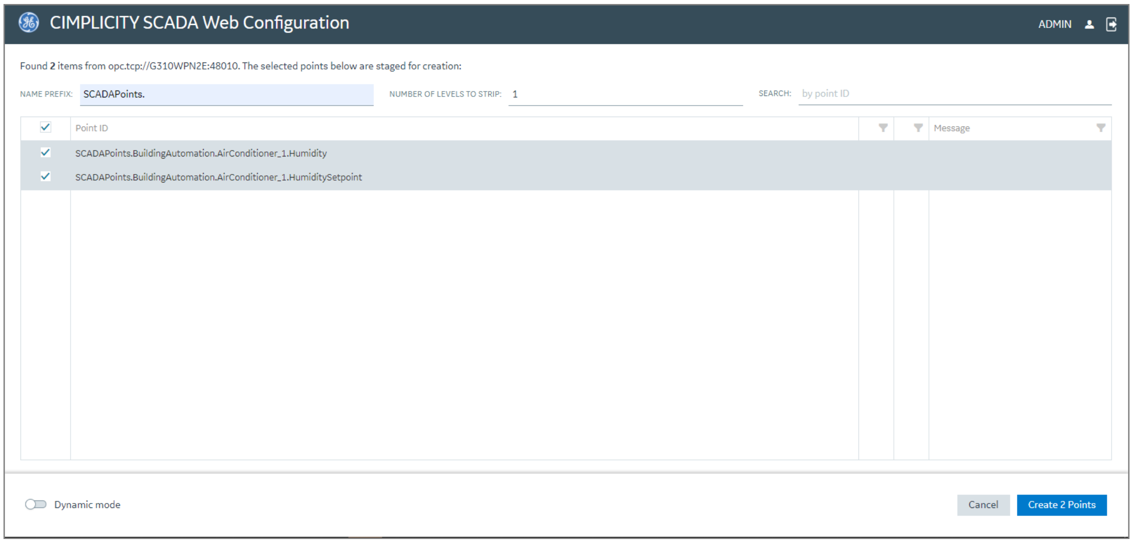
   Note: To select the children of a node, right-click the node, and then select Select all children. Alternately, to select the children of a node, you can double-click the node.

   To clear the children of a node, right-click the node, and then select Clear children selection. Alternately, to clear the children of a node, you can press and hold Alt, and double-click the node.
2. Select Create Points.



OPC UA DEVICE: OPCUADEV opc.tcp://G310WPN2E:48010

3. (Optional) You can use the following fields to perform specific actions:
   - NAME PREFIX: Enter a prefix to the name of the points that will be created.
   - NUMBER OF LEVELS TO STRIP: Enter the number of levels in the namespace to be stripped off from the beginning of the point IDs.
   - SEARCH: Enter text to display point IDs that contain the entered text.



Found **2** items from opc.tcp://G310WPN2E:48010. The selected points below are staged for creation:

NAME PREFIX: SCADAPoints. NUMBER OF LEVELS TO STRIP: 1 SEARCH: by point ID

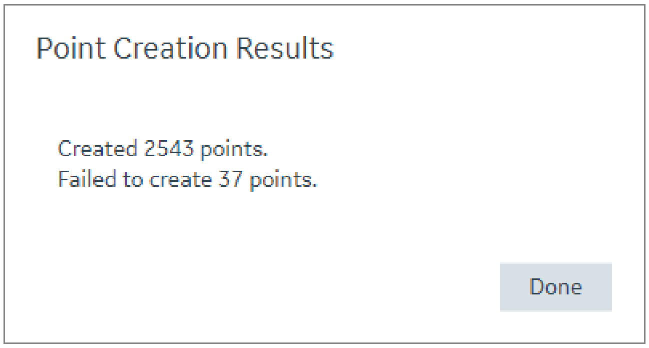
☑	Point ID			Message
☑	SCADAPoints.BuildingAutomation.AirConditioner_1.Humidity			
☑	SCADAPoints.BuildingAutomation.AirConditioner_1.HumiditySetpoint			

When the project is running, if you turn on the Dynamic mode toggle key, the points that are created will be available immediately. If you turn off the Dynamic mode toggle key, the points that are created will become available only after the project restarts.

Note: In a redundant system, for dynamic configuration to work, the CIMPLICITY Configuration Microservice should run as the same user with the same password configured in the redundant pair of systems.

4. Select Create (number of points selected) Points.

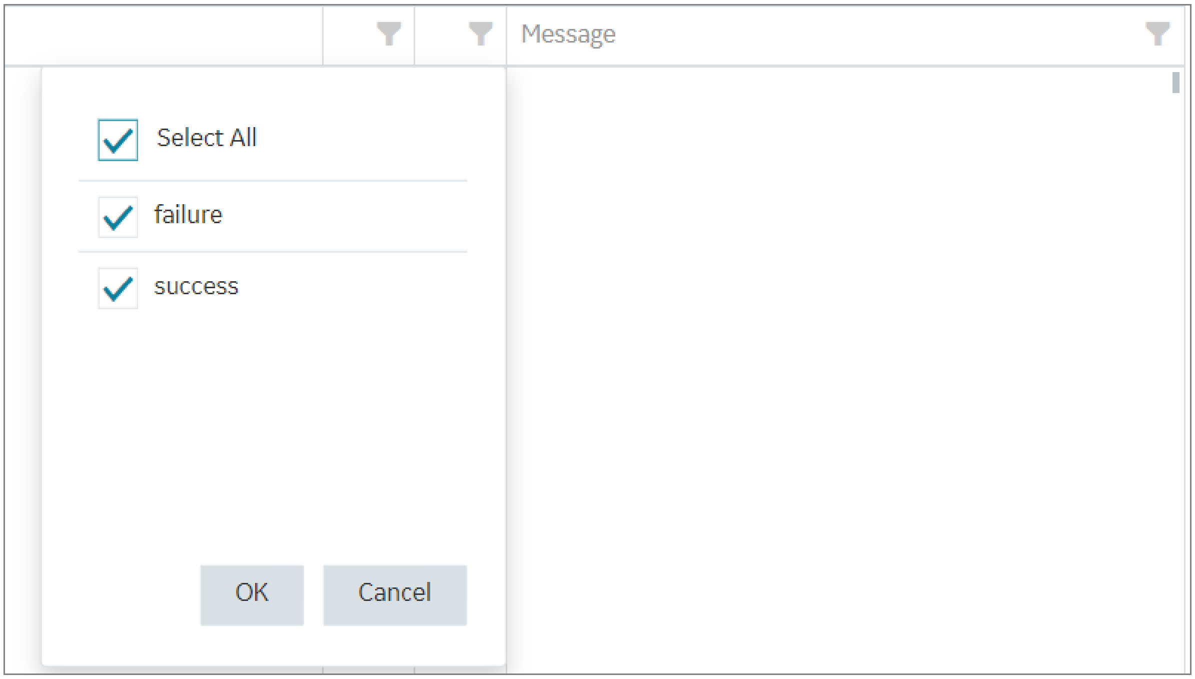
   The points are created, and the results are displayed.



Point Creation Results

Created 2543 points.
Failed to create 37 points.

You can view the points that were not created by filtering the results based on the icon associated with the points.

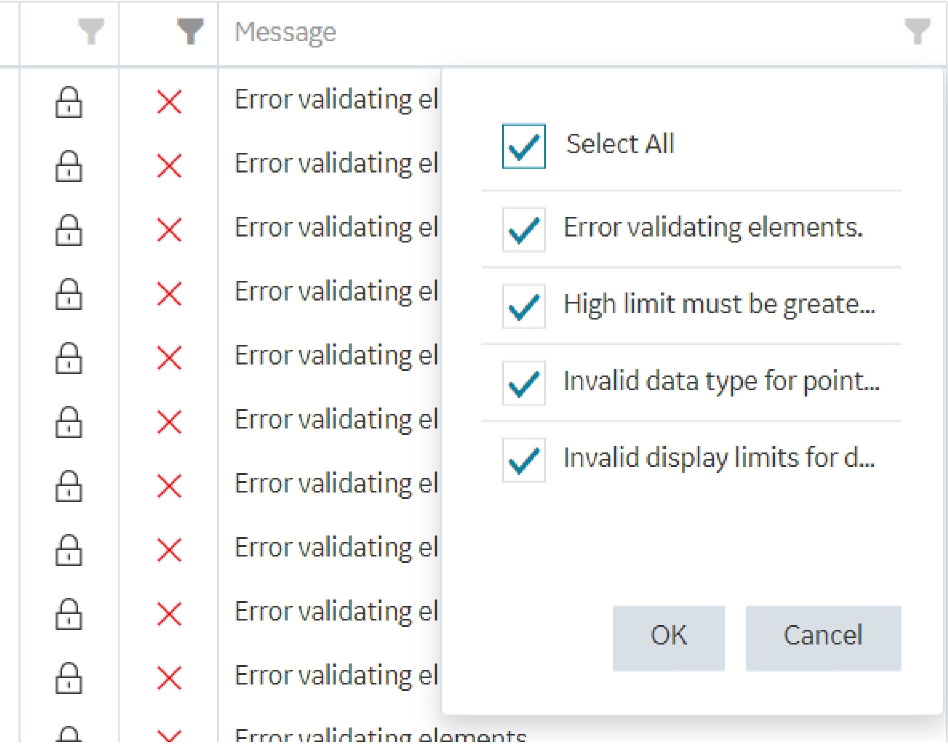


☑ Select All

☑ failure

☑ success

You can filter the failed points based on the type of failure associated with each point.



☑ Select All

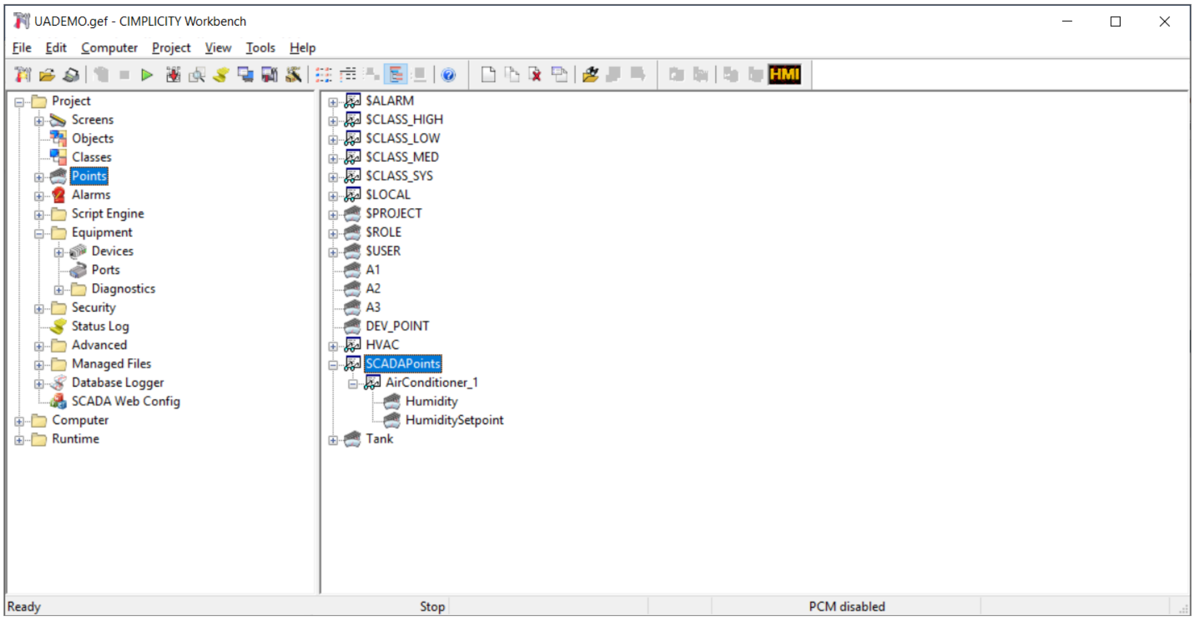
☑ Error validating elements.

☑ High limit must be greate...

☑ Invalid data type for point...

☑ Invalid display limits for d...

Note: You can view the created points in Workbench under the Points section.



Generate SSL Certificate to secure SCADA Web Configuration

Generate SSL Certificate to secure SCADA Web Configuration

The SCADA Web Configuration is secured through an SSL certificate.

The SSL certificate is generated through the config_service_cert batch file, which is executed during the CIMPLICITY installation process.

Note: When you launch SCADA Web Configuration, the browser validates the domain name provided in the URL with the value of the USERDNSDOMAIN environment variable.

If the USERDNSDOMAIN environment variable is unavailable, the connection to SCADA Web Configuration is not secure. To make the connection secure, replace the domain name in the URL with the computer name.

This section provides information to help you to:

- Using an External Certificate Authority *(page 58)*
- Update validity of SSL Certificate *(page 60)*

Using an External Certificate Authority

Following are the three main steps required to get an SSL certificate from an external Certificate Authority (CA) and use it with CIMPLICITY. Follow these steps when requesting the initial certificate and when renewing the certificate when it expires.

1. Generate the Certificate Signing Request (CSR)
2. Send the CSR to the CA and get the resulting server SSL certificate
3. Process the SSL certificate for use in CIMPLICITY

To manually execute the batch files **Generate_CSR.bat** and **process_server_cert.bat**, the following parameters must be known:

- InstallationPath - The path where CIMPLICITY is installed.
- ConfigServicePortNumber , UABrowseServicePortNumber, and WsmServicePortNumber - The port numbers where micro services are running (WSM is the webspace-session-manager).
- KeyPassPhraseFilePath(optional) - The file path that contains a password that protects the private key (without the .crt/.key extension).
- ServerCertificateName - The name of the server certificate file (without the .crt/.key extension)..

  Note: The default value of ServerCertificateName is server_cert. To use a different file name, also update the variables ssl_certificate and ssl_certificate_key in nginx.conf file with the new values and restart the CIMPLICITYNGINX service.

- PfxPassPhrase - The password to protect the generated .pfx server certificate.

To regenerate the SSL certificate, perform the following steps:

1. **Generate CSR**
   a. In the command prompt, navigate to the path where **Generate_CSR.bat** is saved.
   b. Enter the following command in the command prompt.

```
Generate_CSR.bat <InstallationPath> <CSRCertificateName>
 <PassPhraseFilePath(optional)>
```

```
Example: Generate_CSR.bat “c:\Program Files (x86)\Proficy
 CIMPLICITY” server_cert
```

   c. Optional: To secure the private key with a password, add a password to a text file and save the file. Provide the file path in the command.

```
Example: Generate_CSR.bat “c:\Program Files (x86)\Proficy
 CIMPLICITY” server_cert “c:\Passwords\password.txt”
```

d. If the certificate signing request (.crt) file or the private key (.key) file already exists in the specified folder, you are notified and prompted to delete the files. Select Y to delete the existing files and create new files. Select N to exit.

e. Enter the following details:

   Enter the required details Country Name (2 letter code) [AU]:

   State or Province Name (full name) [Some-State]:

   Locality Name (eg, city) []:

   Organization Name (eg, company) [Internet Widgits Pty Ltd]:

   Organizational Unit Name (eg, section) []:

   Common Name (e.g. server FQDN or YOUR name) []:

   Email Address []:

   Please enter the following 'extra' attributes to be sent with your certificate request

   A challenge password []:

   An optional company name []:

f. Press Enter. The certificate signing request (.crt) file and the private key (.key) file are generated in the ScadaConfigPki folder in the installation path. (Example: C:\Program Files (x86)\Proficy\Proficy CIMPLICITY\ScadaConfigPki).

2. **Obtain SSL Certificate**

   a. Send the certificate signing request (.csr) file to an external Certificate Authority (CA), such as VeriSign or DigiCert, and request for a CA certificate.

   b. Save the certificate in the **ScadaConfigPki** folder.

3. **Process SSL certificate**

   a. In the command prompt, navigate to the path where **process_server_cert.bat** is saved.

   b. Enter the following command in the command prompt.

```
process_server_cert.bat <InstallationPath> <CrtFileName>
 <ConfigServicePortNumber> <UABrowseServicePortNumber>
 <KeyPassPhraseFilePath> <PfxPassPhrase> <WsmServicePortNumber>
```

```
Example: process_server_cert.bat “c:\Program Files (x86)\Proficy
 CIMPLICITY” server_cert 4955 4956 c:\passwords\password.txt
 secret-pass-phrase 4957
```

   Where:

   - <CrtFileName> is the name of the crt/key files without the .crt or .key extensions. <KeyPassPhraseFilePath> contains the pass phrase protected the .key file. This is the same pass phrase file used in the Generate_CSR.bat command.
   - <PfxPassPhrase> is the pass phrase that will be used to protect the generated .pfx file. This is the pass phrase itself, not a path to a pass phrase file.

   - <KeyPassPhraseFilePath> contains the pass phrase protected the .key file. This is the same pass phrase file used in the Generate_CSR.bat command.

4. **Verify SSL certificate**
   a. Launch Scada Web Config from CIMPLICITY Workbench.
   b. Select 🔒 , and then select **Certificate**.
   c. Verify the CertificateInformation. It should match with the information provided at Step 1.

   ```
   process_server_cert.bat <InstallationPath> <CrtFileName>
    <ConfigServicePortNumber> <UABrowseServicePortNumber>
    <KeyPassPhraseFilePath> <PfxPassPhrase> <WsmServicePortNumber>
   ```

Note: If the certificate is not updated, you may have to perform the following steps and re-launch Scada Web Config:

- Delete browser cache.
- Restart the following:
  - CIMPLICITY Configuration Microservice
  - OPC UA Browser Microservice
  - Webspace Session Manager Microservice
  - CIMPLICITY NGINX Server
- Update the proxy settings to exclude the server on which the SSL certificate is hosted.

Update validity of SSL Certificate

The default validity of an SSL certificate is 2 years.

You can update the validity of the SSL certificate by applying the following steps:

1. Access the config_service_cert batch file.
2. Update the number of days for which the SSL certificate should be valid in the following occurrences in the batch file:

   ```
   REM create the rootCA certificate
   %1\OpenSSL\openssl x509 -req -sha256 -extfile %rootCfgFileName%
    -days <validity period in days> -signkey %rootKeyFileName% -in
    %rootCsrFileName% -out %rootCrtFileName%

   REM create the server certificate
   %1\OpenSSL\openssl x509 -req -sha256 -extfile %serverCfgFileName
   % -days <validity period in days> -CA %rootCrtFileName% -
   CAkey %rootKeyFileName% -CAserial %serverSerialFileName% -in
    %serverCsrFileName% -out %serverCrtFileName%
   ```

The validity of the SSL certificate is now updated.

Install SSL Certificate on a Viewer or Remote Machine

On CIMPLICITY Server:

1. Navigate to `<Installation_Path>\Proficy\Proficy CIMPLICITY \ScadaConfigPki`.
2. Copy the root certificate `CimScadaConfigRootCA.crt` from CIMPLICITY server to a Viewer/Remote machine. This is a manual step.

On Viewer/Remote Machine:

1. Right-click the certificate file copied from CIMPLICITY server, and select **Install Certificate**.
2. Select the **Store Location** as **Local Machine**.
3. Select **Place all certificates in the following store**. Select **Browse**, and then select **Trusted Root Certification Authorities** folder.
4. Select **OK,** and then select **Next**.
5. Select **Finish**. The certificate is imported.

Advanced Configuration Options

Advanced Configuration Options

The default settings for the SCADA Web Configuration application is sufficient for most scenarios.

This section provides information on the following advanced configuration options for the SCADA Web Configuration application:

- Configure SCADA Web Configuration Services *(page 61)*
- Configure Certificates from External Certificate Authorities for SCADA Web Configuration *(page 64)*

Configure SCADA Web Configuration Services

You can configure various parameters for the SCADA Web Configuration application.

Note: The default settings of the configuration files is sufficient for most scenarios. Update the configuration files only if absolutely necessary.

You can update the following configuration files:

- nginx.conf
- cim_config_service.json
- opcua-browse-config.json

nginx.conf

The SCADA Web Configuration application is hosted in the nginx web server. To update any parameter for nginx web server, you must edit the nginx.conf file.

You can update the following parameters in the nginx.conf file:

- **listen**: Enter the port number where you want to run your server.

  Note: The default port number is 9443.

- **client_max_body_size**: Enter the maximum size (in megabytes) of a client request that goes through the nginx server.

  Note: If this value is too low and the request is too big, a 413 Payload Too Large error will occur. If this value is too high, it could cause out-of-memory errors in the services and application, and could allow attackers to occupy the services for too long.

- **proxy_read_timeout**: Enter the maximum time that the nginx server will wait for a proxied response to be returned.

  The nginx server proxies requests from a client to the CIMPLICITY Configuration service and the OPC UA Browse service. If a response isn't returned by the service within this amount of time, a 404 Not Found error will occur.

  Note: If this value is too low, when you browse or create points, 404 errors may occur. If this value is too high, it may take longer for issues with services to be discovered, and could allow attackers to occupy the services for too long.

cim_config_service.json

cim-config service is a microservice which is an intermediary between the web server and CIMPLICITY. To update any parameter in cim_config_service, you must edit the cim_config_service.json file.

You can update the following parameters in the cim_config_service.json file:

- **port**: Enter the port number on which the cim-config service is listening.

  Note: You must also update the port number for cim-config service under the reverse proxy section of the nginx.conf file.

- **maxWriteRequestObjects**: Enter the number of points that can be sent in a single request for point creation. If there are several points to create, multiple requests are sent.

  Note: If this value is too high, a 413 Payload Too Large or 404 Not Found error may occur. If this value is too low, the point creation performance will be affected.

opcua-browse-config.json

OPC UA browse service is a microservice which is an intermediary between the web server and CIMPLICITY. To update any parameter in OPC UA browse service, you must edit the opcua-browse-config.json file.

You can update the following parameters in the opcua-browse-config.json file:

- **port**: Enter the port number on which the OPC UA browse service is listening.

  Note: You must also update the port number for OPC UA browse service under the reverse proxy section of the nginx.conf file.

- **maxBrowseRequestObjects**: Enter the number of nodes that can be sent in a single request to the OPC UA Browse Service and the OPC UA server when browsing the OPC UA server.

  Note: If this value is too high, the 413 Payload Too Large error may occur. If this value is too low, the browsing and point creation performance will be affected.

- **maxBrowseResultObjects**: Enter the number of nodes that can be sent in a single response by the OPC UA Browse Service and the OPC UA server. If a request would return several nodes, multiple responses with OPC UA continuation points are returned.

  Note: If this value is too high, the 413 Payload Too Large error may occur. If this value is too low, the browsing and point creation performance will be affected.

  maxReadRequestObjects: Enter the number of nodes that can be sent in a single request to the OPC UA Browse Service and the OPC UA server when reading node attributes from the OPC UA server.

Note: If this value is too high, the 413 Payload Too Large error may occur. If this value is too low, the browsing and point creation performance will be affected.

404 and 413 Error Workaround

If you encounter a 404 error, perform either of the following actions:

- Decrease the service limits for these parameters - maxReadRequestObjects, maxBrowseRequestObjects, maxBrowseResultObjects, and maxWriteRequestObjects.
- Increase the proxy_read_timeout parameter in the Web\exe\conf\nginx.conf file.

If you encounter a 413 error, perform either of the following actions:

- Decrease the service limits for these parameters - maxReadRequestObjects, maxBrowseRequestObjects, maxBrowseResultObjects, and maxWriteRequestObjects.
- Increase the client_max_body_size parameter in the Web\exe\conf\nginx.conf file.

Configure Certificates from External Certificate Authorities for SCADA Web Configuration

You can configure certificates received from external Certificate Authorities (CA), such as VeriSign and DigiCert for the SCADA Web Configuration application.

Ensure that the certificate received from the CA can be used as an intermediate CA for signing other certificates.

To configure a certificate from an external CA:

1. Go to the path where CIMPLICITY is installed, and delete all the files in the ScadaConfigPki folder.

   Note: Before you delete the files in the ScadaConfigPki folder, prepare a backup of the files.

2. Copy the <RootCertificateName>.crt and <RootCertificateName>.key files from the CA and paste them into the ScadaConfigPki folder.
3. Access Command Prompt and enter the following command:

   ```
   cd <InstallationPath>
   ```

   For example:

   ```
   cd C:\Program Files (x86)\Proficy\Proficy CIMPLICITY
   ```

4. Enter the following command by specifying the RootCertificateName received from the CA:

   ```
   config_service_cert.bat <InstallationPath> <ConfigServicePortNumber>
    <UABrowseServicePortNumber> <RootCertificateName>
    <ServerCertificateName> <passphrase>
   ```

   For example:

   ```
   config_service_cert.bat "C:\Program Files (x86)\Proficy\Proficy
    CIMPLICITY\" 4855 4865 RootCA1 server_cert cimplicity
   ```

   A server certificate and private key is generated in the ScadaConfigPki folder and replicated to the nginx configuration folder.

5. Enter the names of the server certificate and private key in the server section of the nginx.conf file. For exanple:

   ```
   server {
    ……………………..
    ………………….
    ssl_certificate server_cert.crt;
    ssl_certificate_key server_cert.key
    }
   ```

The external CA is now used as the root authority for the SCADA Web Configuration application.