

# Harmony Edge Box HMI

## Demo Setup Guide – All-in-one



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## Preface

### (1) About this quick start guide

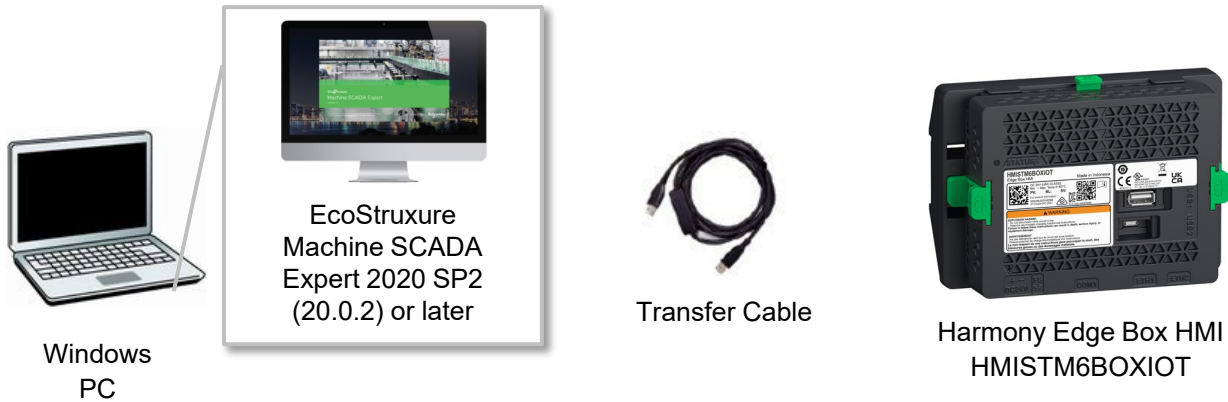
This Edge Box HMI Demo Setup Guide is intended for individuals using the Edge Box HMI and its software for demonstration purposes and not for a production environment. This publication will help you quickly configure hardware, software and cloud services.



## Preface

### (2) Building a development environment

Prepare the following environment.



#### (A) EcoStruxure Machine SCADA Expert

EcoStruxure Machine SCADA Expert is a development and runtime software that incorporates all the tools users need to create SCADA HMI applications, dashboards and OEE interfaces.

#### (B) Transfer Cable

Two ways of transferring project files



USB Cable  
(Type A – Micro-B)

Use an optional USB transfer cable or commercial USB cable (Type A to Micro-B) for transfer.



LAN Cable

Use LAN cable (Ethernet cable) for transfer.

#### (C) Harmony HMISTM6BOXIOT

Please visit <https://www.se.com> for more information on the Harmony Edge Box HMI.



Harmony Edge Box HMI  
HMISTM6BOXIOT

## Preface

### (3) How to get EcoStruxure Machine SCADA Expert

To create HMI Screen for the Edge Box HMI, the version of EcoStruxure Machine SCADA Expert needs to be V2020 SP2 or later.



You can download EcoStruxure Machine SCADA Expert Installer from the following link.

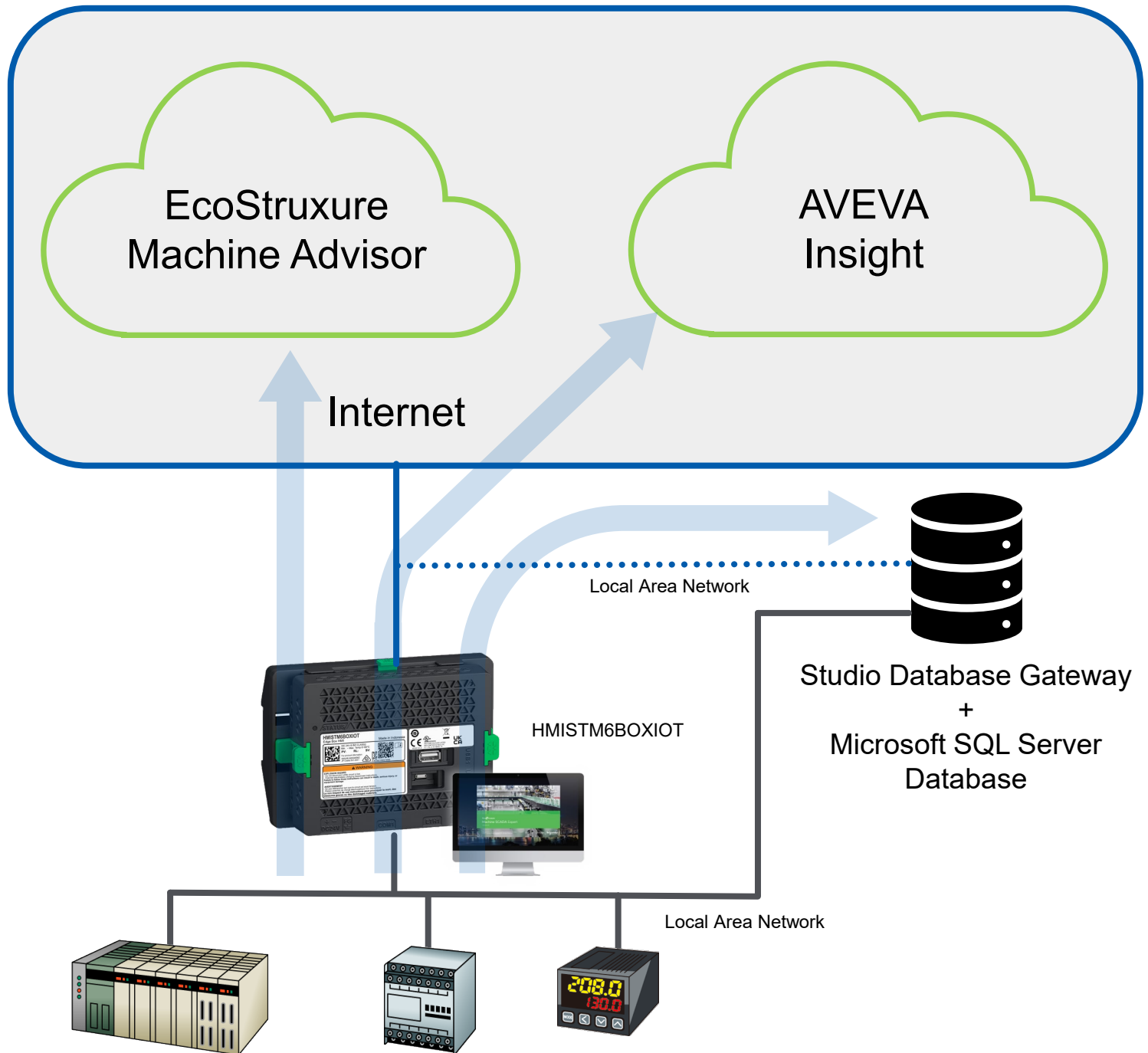
<https://www.se.com/ww/en/product-range/63734-ecostruxure-machine-scada-expert/?preferredCountry=yes#software-and-firmware>

You can use the software without a license in Evaluation Mode for 40 hours. After the evaluation period ends, the program automatically converts into Demo Mode until you apply a valid license. You cannot reactivate the Evaluation Mode even if you reinstall the software on your computer.

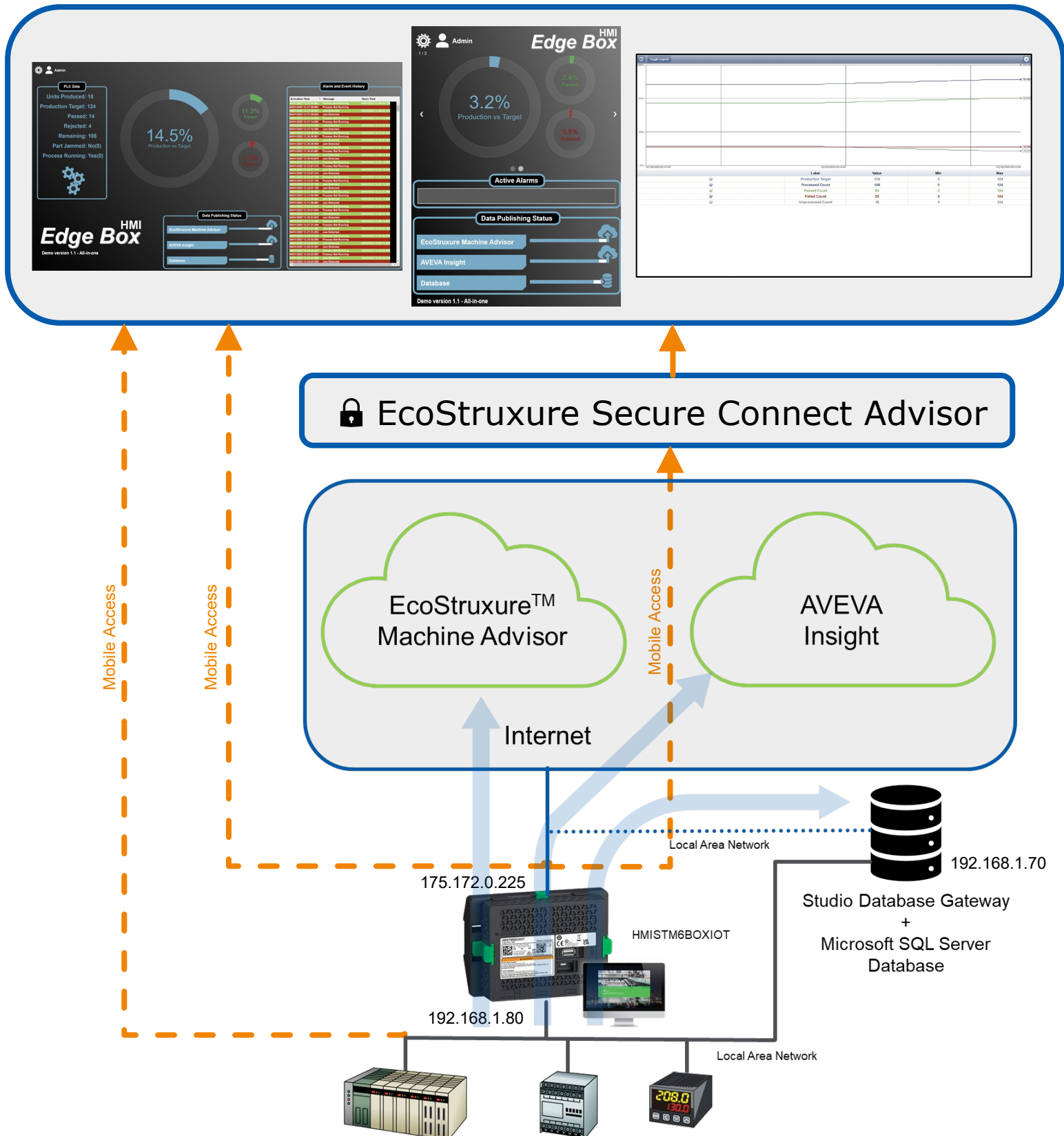
Please access the [FAQ page](#) to check how to activate EcoStruxure Machine SCADA Expert.

## 2. Harmony Edge Box HMI Demo Overview

The Harmony Edge Box HMI Demo – All-in-one demonstrates pushing data from internal tags or external devices to the cloud and a local database. EcoStruxure Machine Advisor and AVEVA Insight are used for the cloud. Microsoft SQL Server is used for the local database. Although a PLC or other device can supply data, for demonstration purposes data is internally generated.



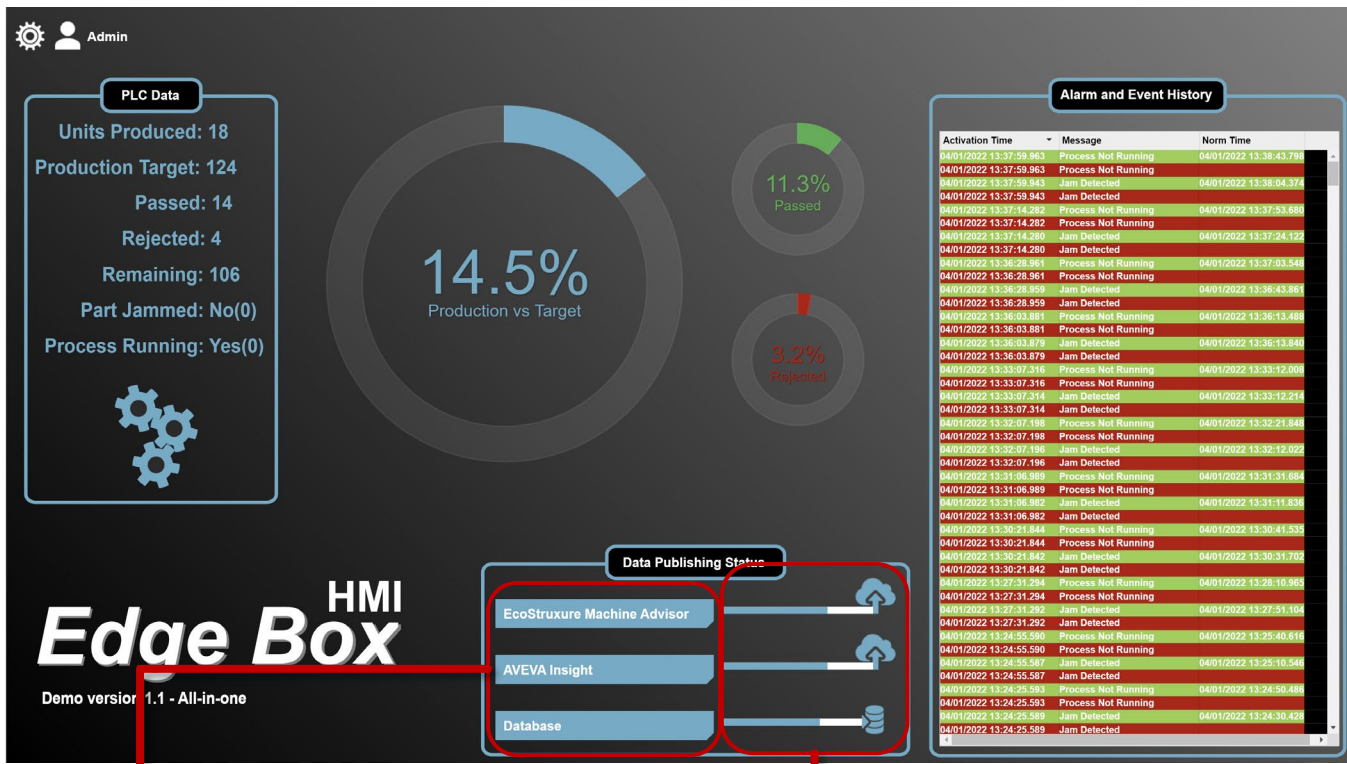
The Harmony Edge Box HMI cannot be used with an integrated display. However, you can view screens and more within a web browser using Mobile Access. Mobile Access can be used via one of the two possible IP addresses of the Edge Box HMI. For secure remote viewing utilise EcoStruxure Secure Connect Advisor + the local IP.



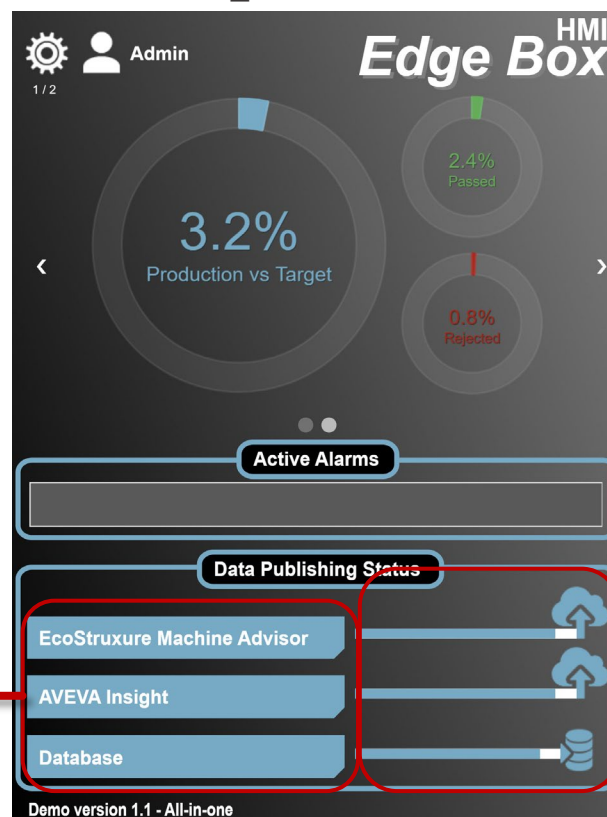
The demonstration project has two user accounts:

- Guest, password = (blank)
- Admin, password = Admin

main\_desktop screen



main\_mobile screen



Enable / Disable  
Communication

Communication Status  
and Links to Cloud Websites



### 3. Hardware Configuration



**ETH1 – OT Layer**  
Manual IP  
192.168.1.80

**ETH2 – IT Layer**  
Automatic/DHCP  
(e.g. 175.172.0.225)

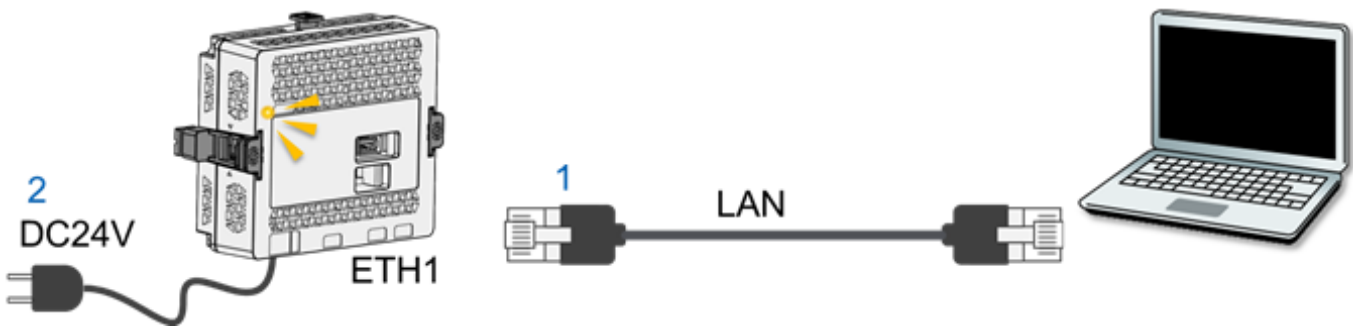
or

Manual IP, Subnet, Gateway settings that allows access to the Internet  
(e.g. IP = 175.172.0.225  
Subnet = 255.255.255.0  
Gateway = 175.172.0.1)

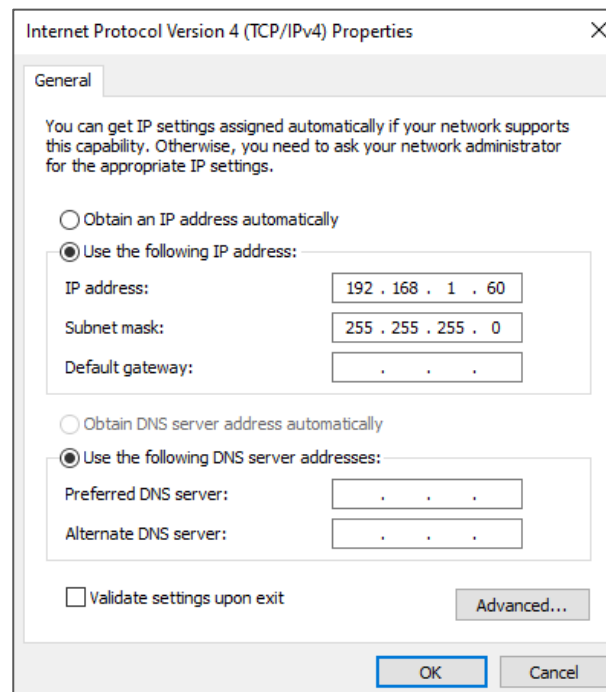
The Harmony Edge Box HMI will have two connections for demonstration purposes:

- ETH1 is primarily for the Operational Technology layer (OT) and is potentially connected to OT devices. For an easy demonstration experience a database service can also be connected to this layer. No internet connectivity on this port.
- ETH2 is primarily for the Internet Technology layer (IT) and is potentially connected to the internet via a router, Local Area Network (LAN) or other edge/IT devices. Connections to cloud services, databases and other services can be done from this port.

1. Connect a USB transfer cable (micro-B) to Edge Box HMI.  
or Connect to the same network as PC (development environment) using ETH1 port of Edge Box HMI.
2. Turn on Harmony Edge Box HMI. The status LED flashes orange.



3. Set IP address of your computer as follows:  
IP address: 192.168.1.60,  
Subnet Mask: 255.255.255.0



4. Open a web browser on your PC, and in the address bar enter the IP address of Edge Box HMI.  
 (Ethernet) <https://192.168.1.80>  
 (USB) <https://169.254.100.100>

The message “Your connection is not private” is displayed. To continue, click Advanced and then click Proceed to \*\*\* (\*\*\*) is the IP address).

5. Hardware Configuration screen is displayed.  
 Set a login password and click [Submit]. e.g. !Se12345, and click [ Submit ]  
 Note: The user name is “Admins” and cannot be changed.

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Hardware Configuration  
Version 1.0

Password is not set

User Name  
Admins

Create Password

Enter Password

Confirm Password

Submit

5

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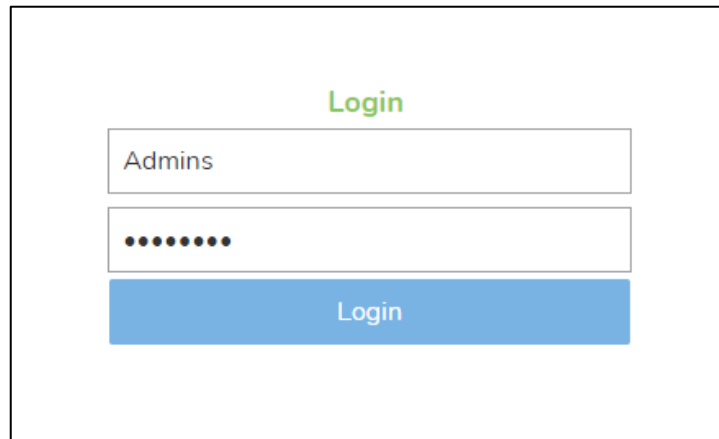
Life Is On | Schneider Electric

The password must meet the following requirements:

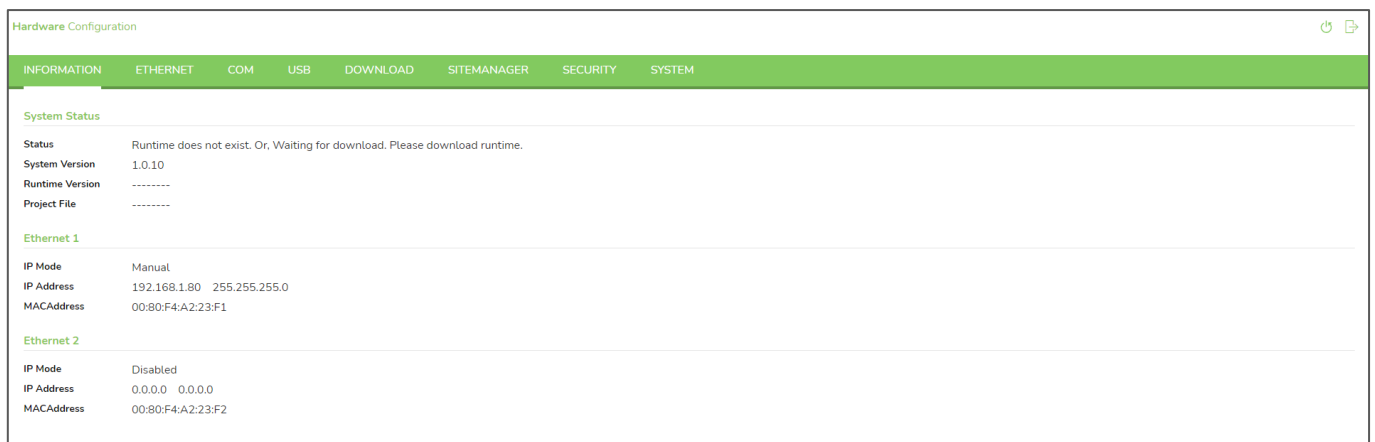
<b>Number of characters</b>	At least 8 single-byte characters, up to 64 characters
<b>Types of characters</b>	Use at least one of each of the following types of characters: <ul style="list-style-type: none"> <li>• Uppercase letter (A-Z)</li> <li>• Lowercase letter (a-z)</li> <li>• Number (0-9)</li> <li>• Symbol (special character): ! # - = _ .</li> </ul>

**Note:** If you forget the password, note that you will not be able to reset it. To restore the product to its original state (at time of purchase), contact customer support. All user data in the product will be lost.

6. Enter the User Name, Admins and the newly created password, e.g. !Se12345. Click [ Login ]



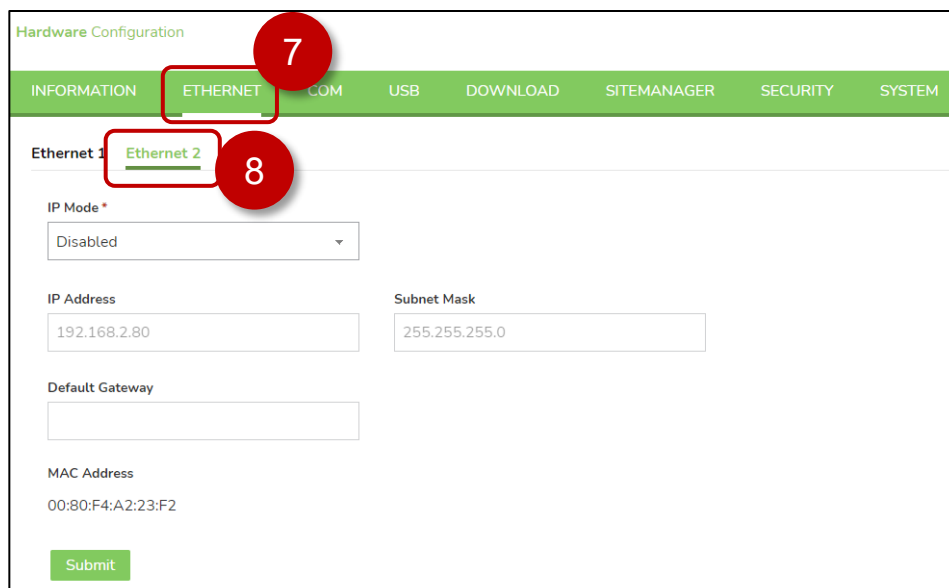
A login form with a green title "Login". It contains two input fields: the first is labeled "Admins" and contains the text "Admins"; the second is a password field with ten dots. Below the fields is a blue button labeled "Login".



The "Hardware Configuration" page with a green header bar containing tabs: INFORMATION, ETHERNET, COM, USB, DOWNLOAD, SITEMANAGER, SECURITY, and SYSTEM. The "ETHERNET" tab is selected. The page shows "System Status" and two Ethernet configuration sections. "Ethernet 1" is active, showing IP Mode: Manual, IP Address: 192.168.1.80, and MAC Address: 00:80:F4:A2:23:F1. "Ethernet 2" is shown as Disabled with IP Address: 0.0.0.0 and MAC Address: 00:80:F4:A2:23:F2.

7. Click [ ETHERNET] to display the Ethernet Settings.

8. Click [ Ethernet 2 ] to display ethernet port 2 settings.



The "Ethernet 2" configuration page. The "ETHERNET" tab in the header is highlighted with a red box and a red circle with the number 7. The "Ethernet 2" sub-tab is also highlighted with a red box and a red circle with the number 8. The configuration fields are: IP Mode (dropdown menu set to "Disabled"), IP Address (192.168.2.80), Subnet Mask (255.255.255.0), Default Gateway (empty), and MAC Address (00:80:F4:A2:23:F2). A green "Submit" button is at the bottom.

9. Set the [ IP Mode] to [ Automatic ] or [ Manual] . [ Automatic ] for DHCP or [ Manual ] to enter in the necessary settings to allow internet access.

Hardware Configuration

INFORMATION ETHERNET COM USB DOWNLOAD SITEMANAGER SECURITY SYSTEM

Ethernet 1 **Ethernet 2**

IP Mode \* 9

Automatic

IP Address Subnet Mask

192.168.2.80 255.255.255.0

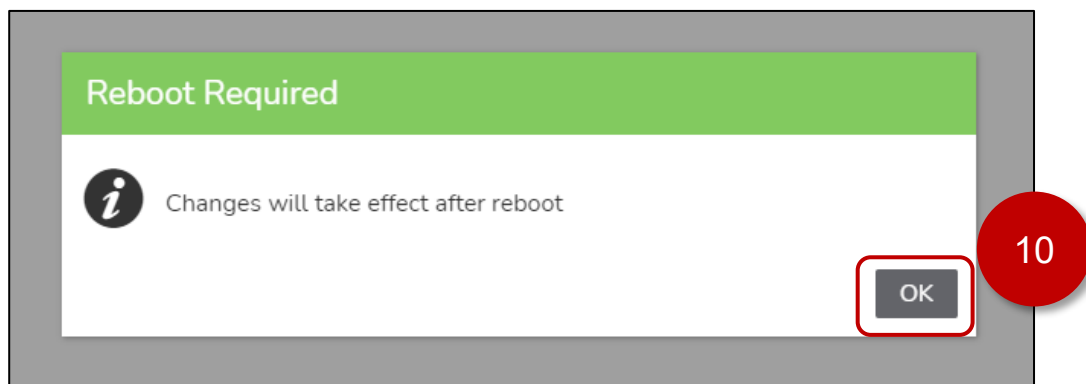
Default Gateway

MAC Address

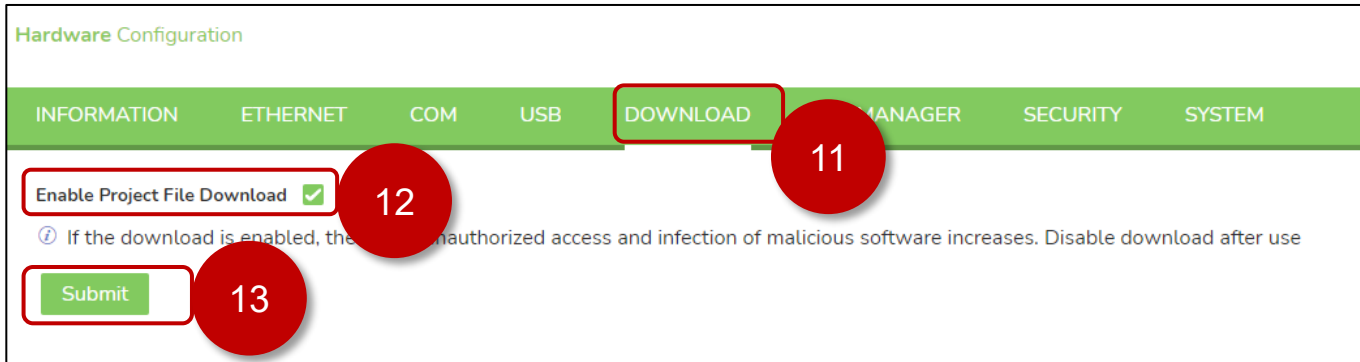
00:80:F4:A2:23:F2

**Submit** 10

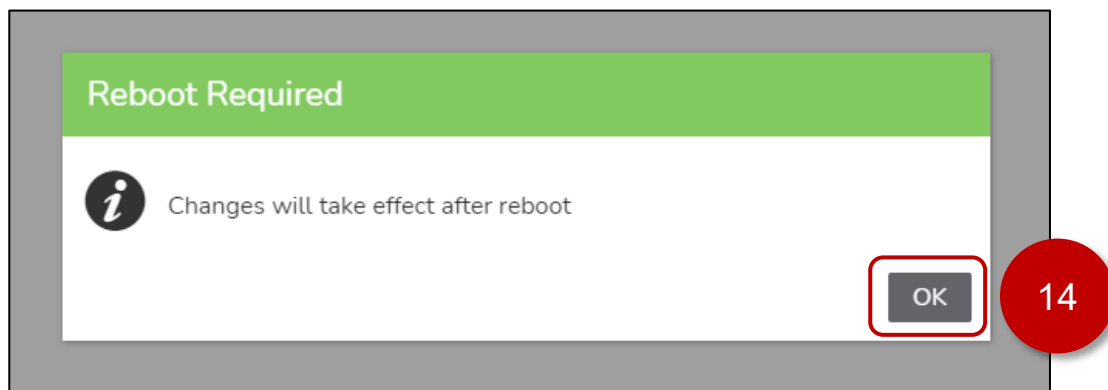
10. Click [ Submit] to apply the ethernet setting. Note that the settings will only take effect after a reboot. [ OK ] to dismiss the Reboot Required dialog.



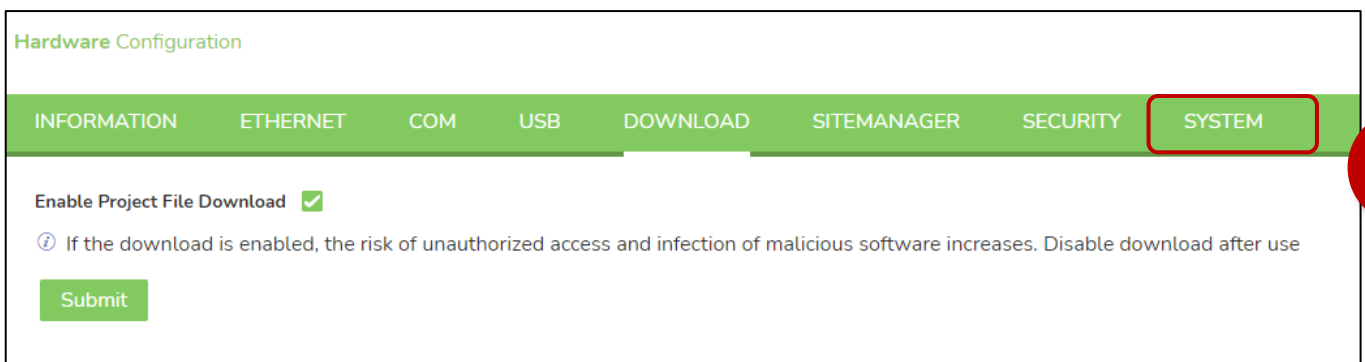
11. Click [ DOWNLOAD ].



12. Check [ Enable Project File Download ]
13. Click [ Submit ]. Changes will take effect after a reboot.
14. Click [ OK ] to accept the Reboot required message.



15. Click [ SYSTEM ]



16. Set the [ Date ], [ Time ], [ Time-zone ] for your region.

Hardware Configuration

INFORMATION ETHERNET COM USB DOWNLOAD SITEMANAGER SECURITY SYSTEM

Date and Time Firmware Update Factory Reset Backup and Restore Configuration

Date  
2022-04-12

Time  
05:56:00 PM

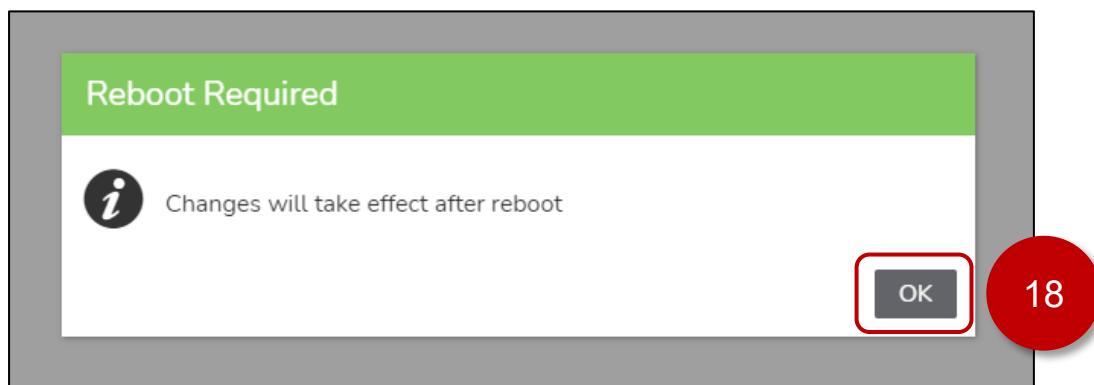
Time-zone  
(UTC-04:00) Canada/Eastern

Synchronized with NTP Server ☐

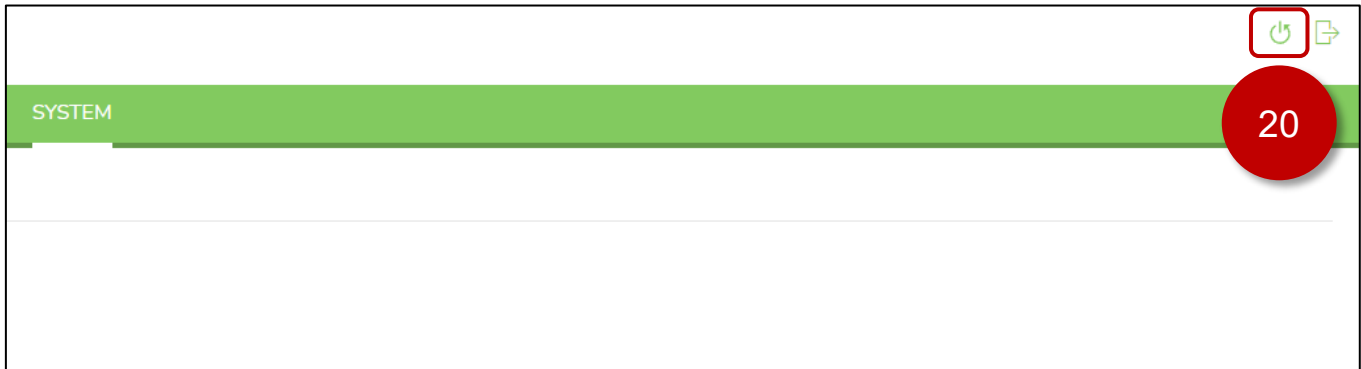
NTP Server

Submit

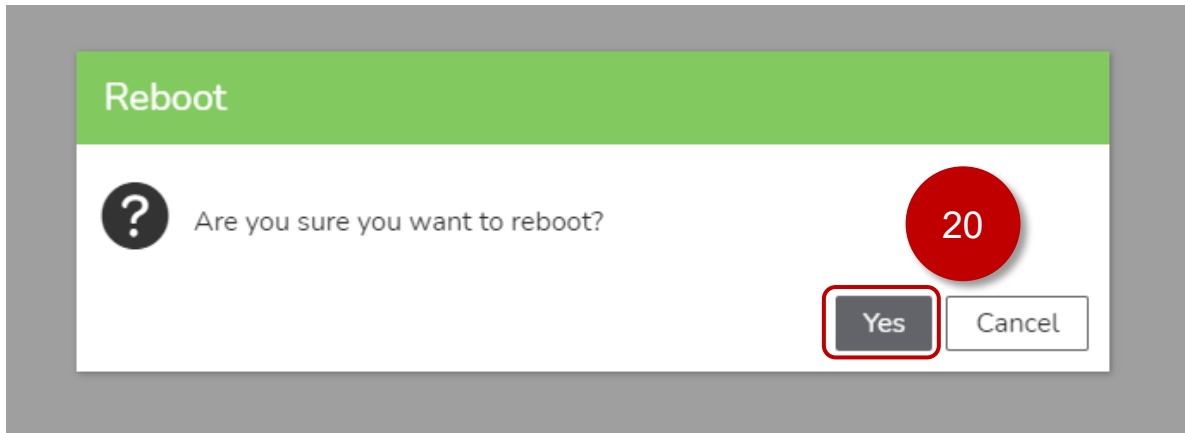
17. Click [ Submit ], changes will take effect after reboot.
18. Click [ OK ] to dismiss the Reboot Required dialog.



19. Click the [ Reboot ] icon  at the top right of the web page.



20. Click [ Yes ] in the Reboot dialog.



21. After the Edge Box HMI has rebooted. Confirm the [ Ethernet 2 ] Settings, [ Enable Project File Download ] check box, [ Date ], [ Time ], [ Time-zone ] are as previously selected.



Hardware Configuration

INFORMATION ETHERNET COM USB DOWNLOAD SITEMANAGER SECURITY SYSTEM

System Status

Status Runtime does not exist. Or, Waiting for download. Please download runtime.

System Version 1.0.10

Runtime Version -----

Project File -----

Ethernet 1

IP Mode Manual

IP Address 192.168.1.80 255.255.255.0

MACAddress 00:80:F4:A2:23:F1

Ethernet 2

IP Mode Automatic

IP Address 175.172.0.205 255.255.255.0

MACAddress 00:80:F4:A2:23:F2

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Hardware Configuration

INFORMATION ETHERNET COM USB DOWNLOAD SITEMANAGER SECURITY SYSTEM

Enable Project File Download ☒

ⓘ If the download is enabled, the risk of unauthorized access and infection of malicious software increases. Disable download after use

Submit

21

Hardware Configuration

INFORMATION ETHERNET COM USB DOWNLOAD SITEMANAGER SECURITY SYSTEM

Date and Time Firmware Update Factory Reset Backup and Restore Configuration

Date

2022-04-12

Time

05:56:00 PM

Time-zone

(UTC-04:00) Canada/Eastern

Synchronized with NTP Server ☐

NTP Server

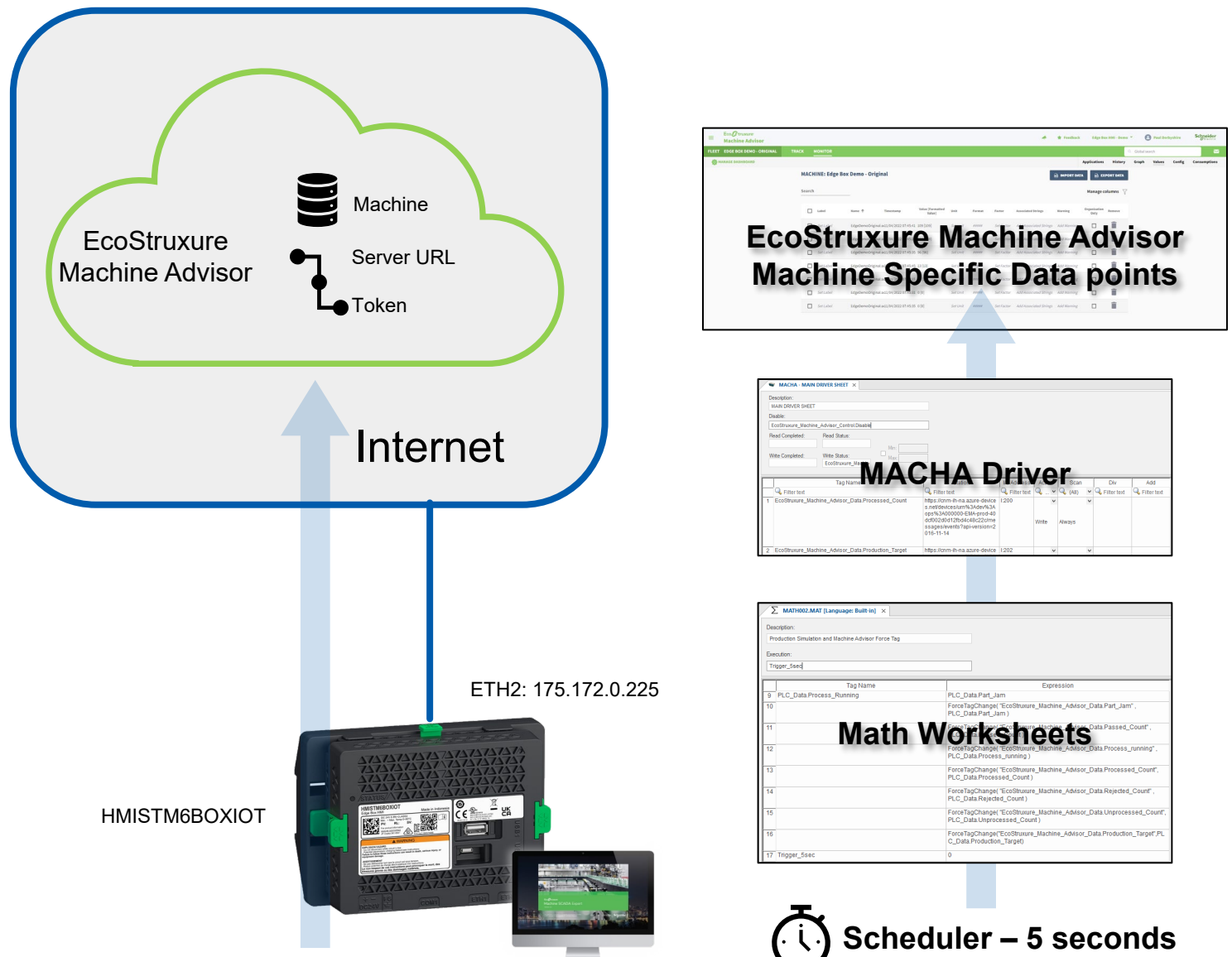
Submit

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## 4. EcoStruxure Machine Advisor Configuration

### Overview

The Harmony Edge Box HMI Demo – All-in-one uses the MACHA driver to communicate to an EcoStruxure Machine Advisor account. A machine definition created within EcoStruxure Machine Advisor is required. Data will be sent to the machine definition every 5 seconds securely using HTTPS. Normally the driver will only send data when a tag changes value. For tags to be written periodically the ForceTagChange() built-in function is used to update the tag's timestamp and value every 5 seconds based on the scheduler. Changing the timestamp triggers the MACHA worksheet to send the value even if the value has not actually changed. All data in the demo is internally generated using one or more math worksheets.

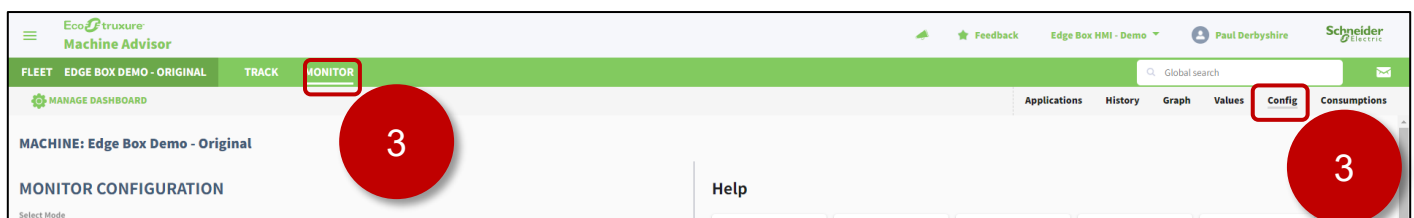
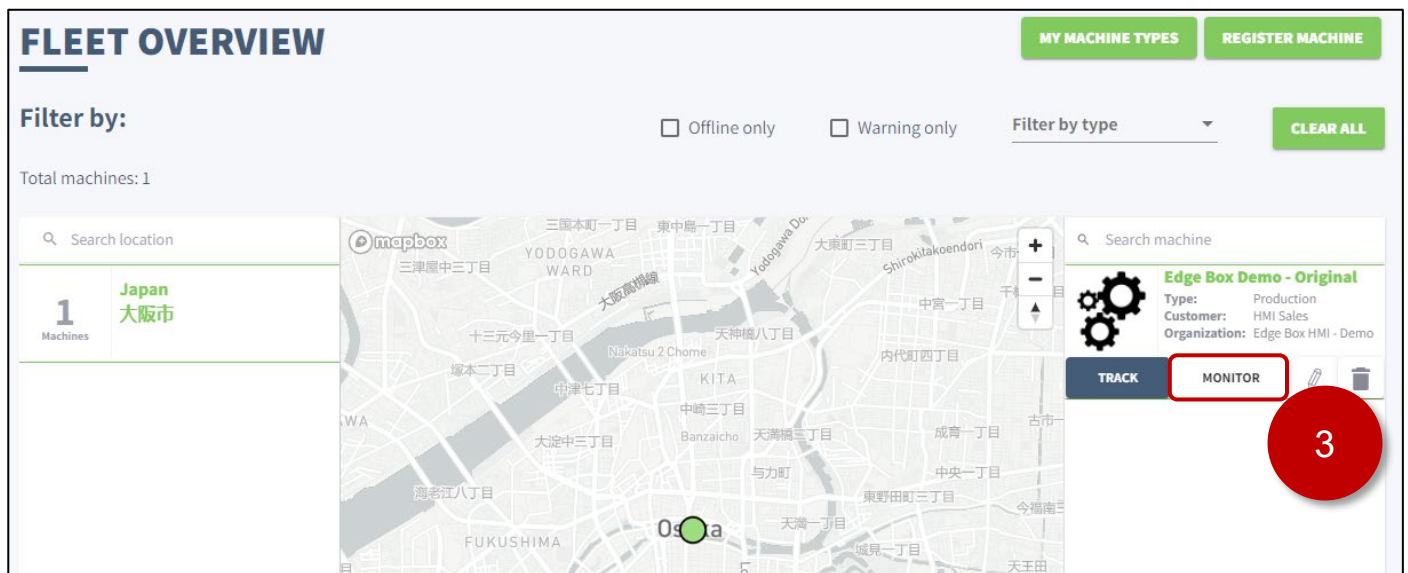


# EcoStruxure Machine Advisor Machine Connection

To establish a connection to EcoStruxure Machine Advisor you will need the following:

- EcoStruxure Machine Advisor Account
- Purchaser Configured in Organization settings.
- Registered Machine
- Server Address
- Token

1. Sign in to EcoStruxure Machine Advisor <https://ecostruxure-machine-advisor.se.app/welcome>
2. Follow the steps shown in the tutorial video to create a new Registered Machine <https://youtu.be/g4hNI0K62H0>
3. Select the machine and go to the configuration page [ Monitor ] -> [ Config ].



4. Select Mode: [ Connect your machine ]
5. Select Plan: Select your appropriate plan. For example, [ Pay As You Go ]
6. Select Gateway: [ Custom ]
7. Select Format: [ Tango ]
8. Select Transport: [ HTTPs ]

The screenshot shows the 'Ecostruxure Machine Advisor' interface. The top navigation bar includes 'FLEET', 'EDGE BOX DEMO - ORIGINAL', 'TRACK', and 'MONITOR'. The 'MONITOR' tab is active. Below the navigation bar, there's a 'MANAGE DASHBOARD' section. The main content area is titled 'MACHINE: Edge Box Demo - Original' and 'MONITOR CONFIGURATION'. It contains several dropdown menus and input fields for configuring the machine. Red circles 4 through 8 highlight the following steps: 4. Select Mode (Connect your machine), 5. Select Plan (Pay As You Go), 6. Select Gateway (Custom), 7. Select Format (Tango), and 8. Select Transport (HTTPs). The 'Generate Token' section is also visible, with fields for Protocol, Custom header, Server, and Connection string, and a '+ New Token' button.

9. Click [ +New Token ], leave the duration as default (10 years) and [ Create ] to create a new token.


The screenshot shows the 'Create a new token' dialog box. It has a title bar with a '+ New Token' button (highlighted with a red circle 9). Below the title bar, there's a 'Select duration' dropdown menu set to '10 Years'. At the bottom of the dialog, there's a 'Create' button (highlighted with a red circle 9) and two other buttons: 'Withdraw your config' and 'Remove your data'.


10. Generate new token, check the "I confirm..." check box to generate a new token and click [ Yes ].


The screenshot shows the 'Generate new token' confirmation dialog box. It has a title bar with the text 'Generate new token'. Below the title bar, there's a question: 'Are you sure that you want to generate a new token?'. Below the question, there's a checkbox labeled 'I confirm I want to generate a new token.' which is checked. At the bottom of the dialog, there are two buttons: 'No' and 'Yes' (highlighted with a red circle 10).


11. Copy the string in Server box and paste it on Notepad.
12. Copy the string in Token box and paste it on Notepad.

**Generated Configuration**

Protocol:  


Custom header 1:  

Server:  


Connection string:  


[+ New Token](#)

The last generated token is valid for 9 Years 11 Months 30 Days.

Success! 

You have successfully added a new access token. Copy the token Now!

Token:  

 Warning! Make sure you copy the above token now.  
We do not store it and you will not be able to see it again.

Notepad

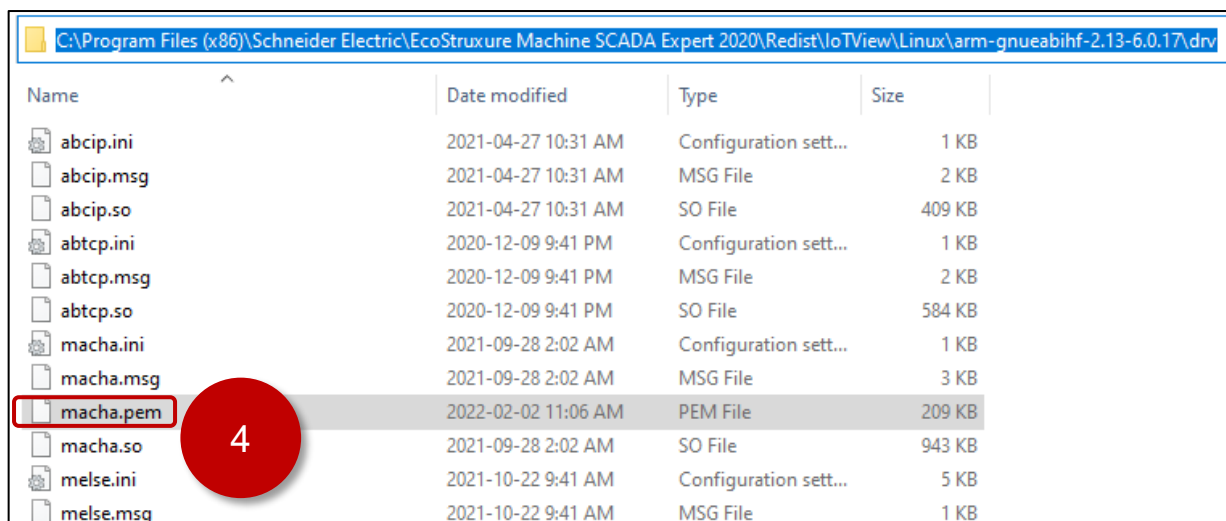
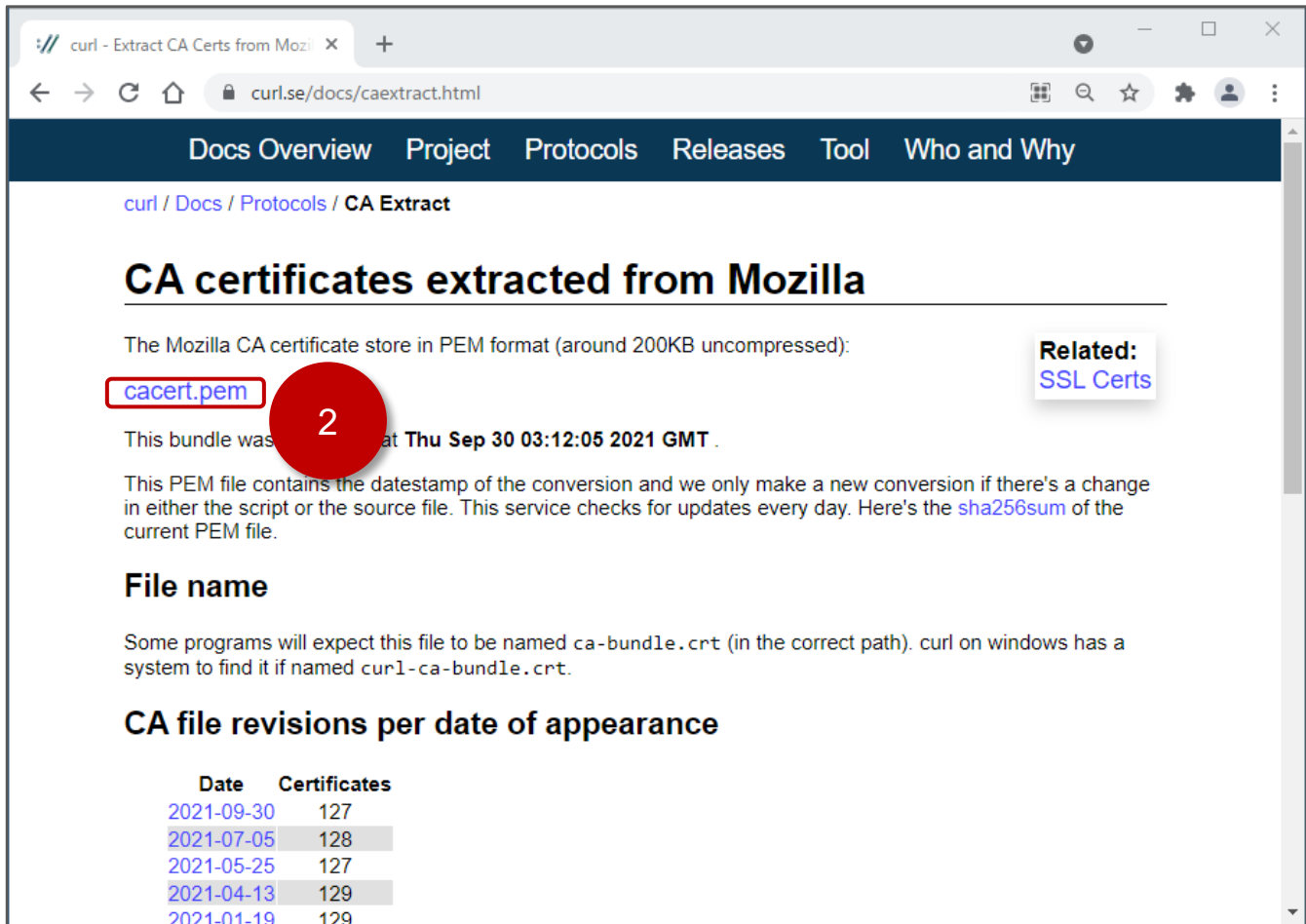
File Edit View Help

https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-XXXXXXXXXXXXXXXXXXXXX/messages/events?api-version=2016-11-14

Authorization;SharedAccessSignature sr=cnm-ih-na.azure-devices.net%2Furn%3Adev%3Aops%3A000000-EMA-prod-XXXXXXXXXXXXXXXXXXXXX&sig=XXXXXXXXXXXXXXXXXXXXX&se=XXXXXXXXXXXXX

# EcoStruxure Machine SCADA Expert Project Settings

1. Launch a Web Browser on your PC and go to <https://curl.se/docs/caextract.html>
2. Download the “cacert.pem” file.
3. Rename the file as “macha.pem”.
4. Copy “macha.pem” to the driver directory. For example for a default installation C:\Program Files (x86)\Schneider Electric\EcoStruxure Machine SCADA Expert 2020\Redist\IoTView\Linux\arm-gnueabi-hf-2.13-6.0.17\drv



5. Open the Edge Box HMI Demo v1.1 – All-in-one.app project in EcoStruxure Machine SCADA Expert
6. [ Project Explorer] -> [ Comm ] tab -> [ Drivers ] -> [ MACHA ] -> [ MAIN DRIVER SHEET ]
7. Copy the station address from notepad and overwrite the station address for rows 1 through 7 with the new Machine Station ID.
8. Save the [ MAIN DRIVER SHEET ].

Project Explorer: Project: Edge Box HMI Demo v1.1 - All-in-one.APP

Drivers

- MACHA
  - MAIN DRIVER SHEET**
  - OPC UA Client (legacy)
  - OPC UA
  - TCP/IP

MAIN DRIVER SHEET

Description: MAIN DRIVER SHEET

Disable: EcoStruxure\_Machine\_Advisor\_Control.Disable

Read Completed: Read Status

Write Completed: Write Status

	Tag Name	Station	I/O Address	Action	Scan	Div	Add
1	EcoStruxure_Machine_Advisor_Data.Processed_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	200	Write	Always		
2	EcoStruxure_Machine_Advisor_Data.Production_Target	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	202	Write	Always		
3	EcoStruxure_Machine_Advisor_Data.Passed_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	204	Write	Always		
4	EcoStruxure_Machine_Advisor_Data.Rejected_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	206	Write	Always		
5	EcoStruxure_Machine_Advisor_Data.Unprocessed_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	208	Write	Always		
6	EcoStruxure_Machine_Advisor_Data.Part_Jam	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	210	Write	Always		
7	EcoStruxure_Machine_Advisor_Data.Process_Running	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dd02d0d12fd4c48c22c/messages/events?api-version=2016-11-14	212	Write	Always		

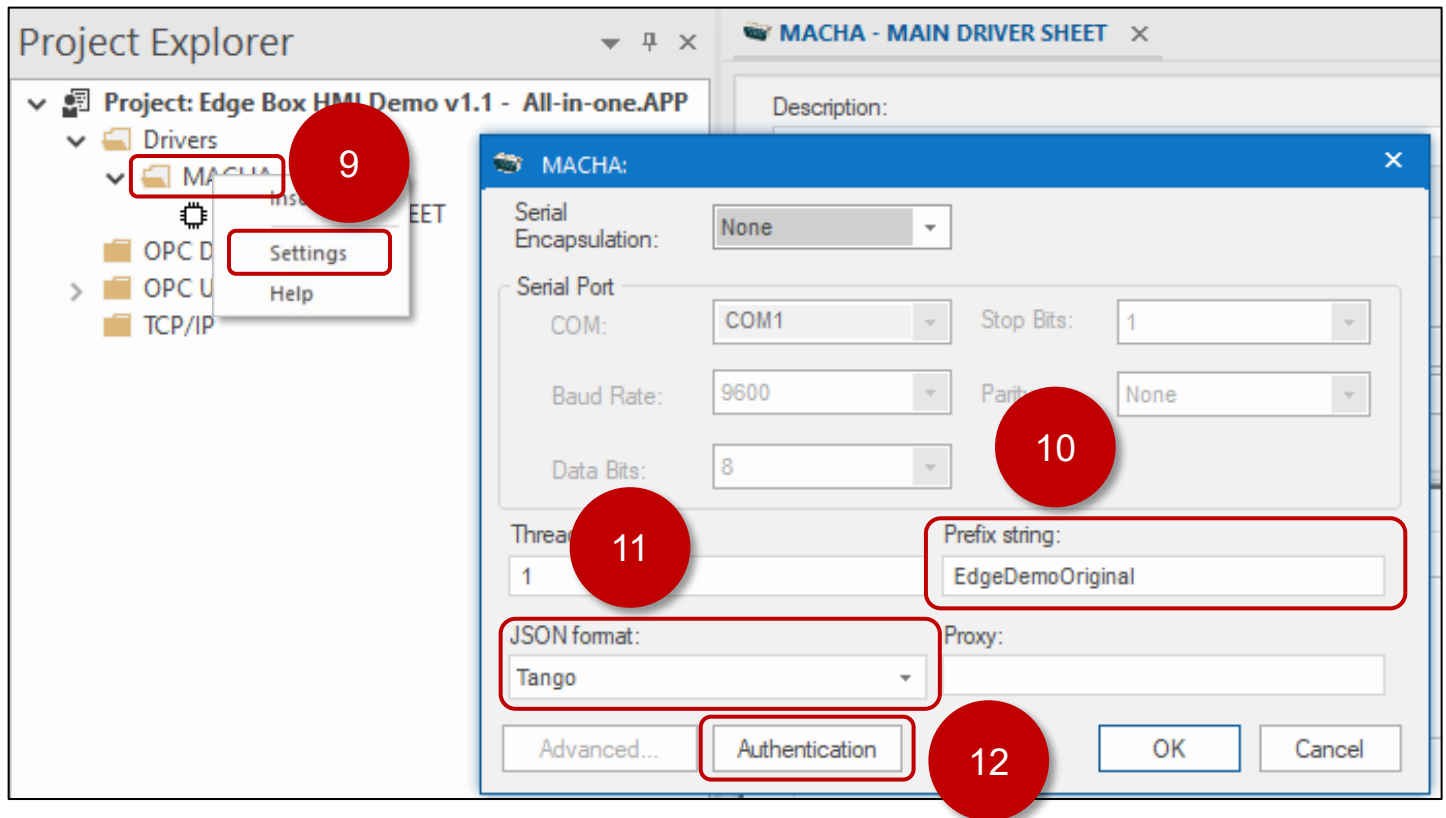
Notepad

File Edit View Help

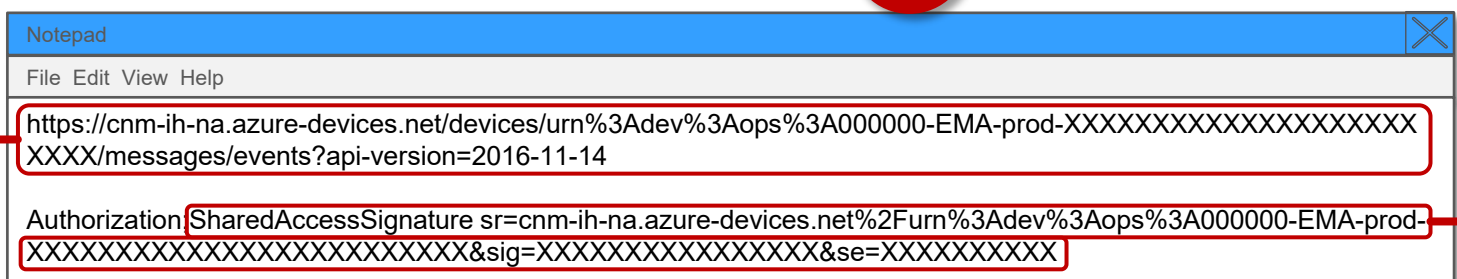
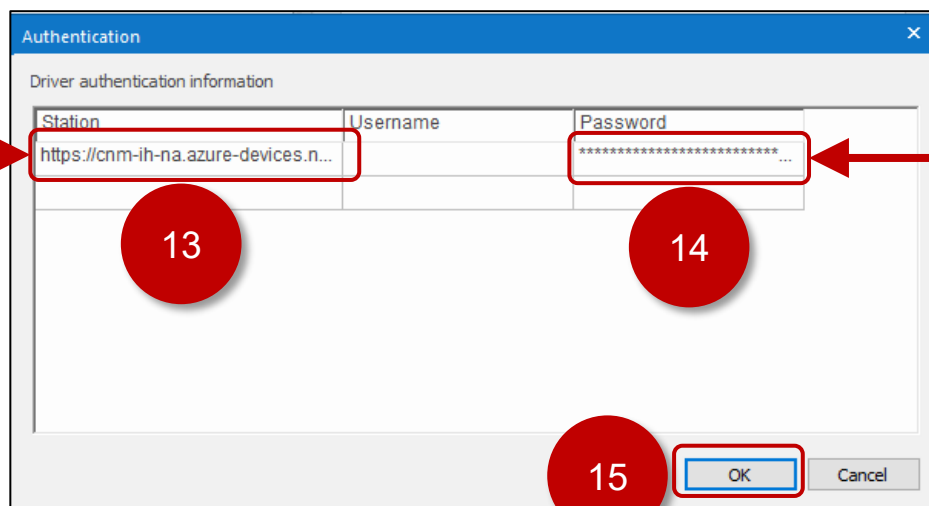
<https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-XXXXXXXXXXXXXXXXXXXXXXXXXXXX/messages/events?api-version=2016-11-14>

Authorization;SharedAccessSignature sr=cnm-ih-na.azure-devices.net%2Furn%3Adev%3Aops%3A000000-EMA-prod-XXXXXXXXXXXXXXXXXXXXXXXXXXXX&sig=XXXXXXXXXXXXXXXXXXXX&se=XXXXXXXXXXXX

9. Right Click on [ MACHA ] and Select [ Settings ].
10. Set Prefix String: ANY, e.g. EdgeDemoOriginal
11. Select JSON Format: [ Tango ]
12. Click [ Authentication ]

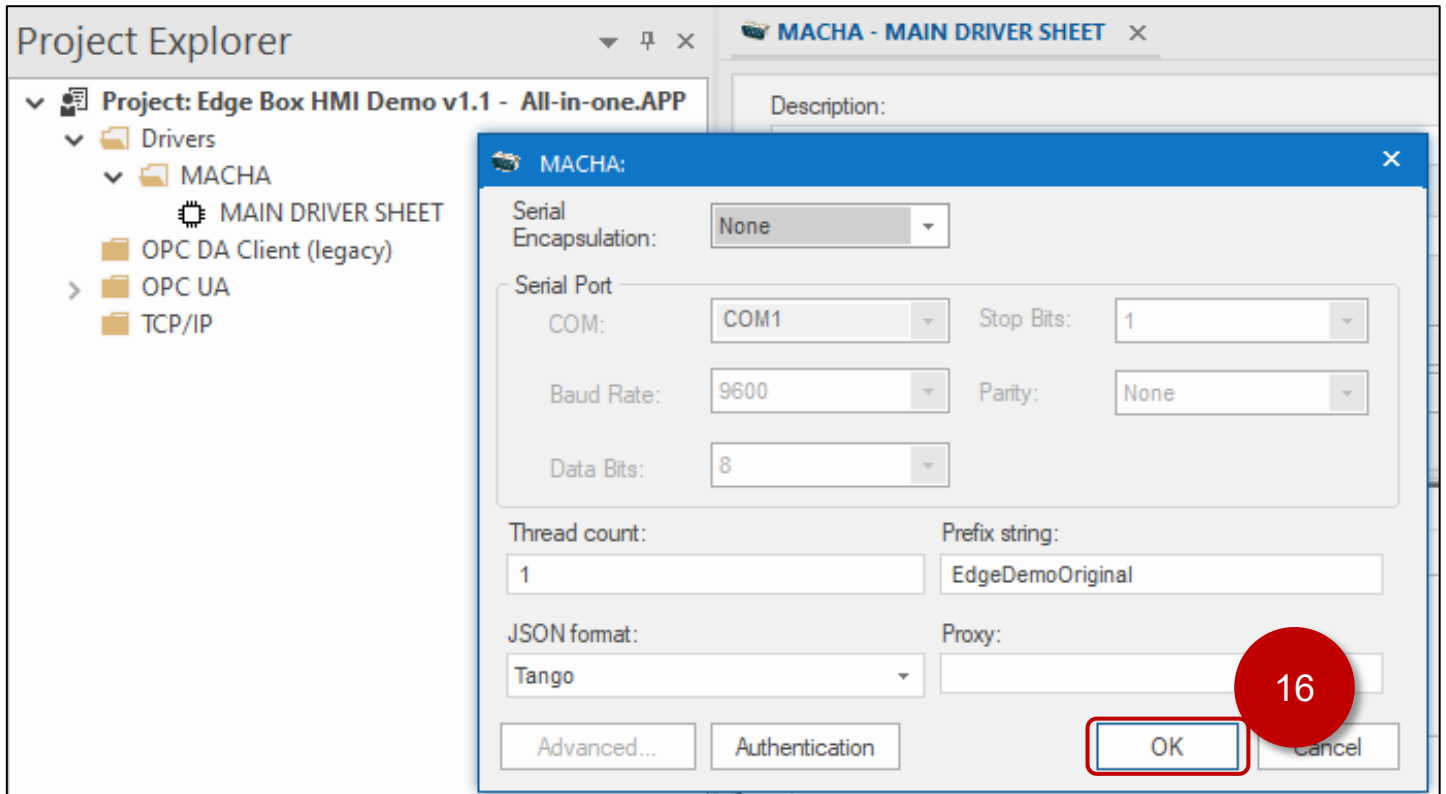


13. Copy URL and overwrite Station field.
14. Copy Token (after "Authorization;") and overwrite the Password field.
15. Click [ OK ]





16. Click [ OK ] to close the MACHA driver settings.



The Harmony Edge Box HMI Demo – All-in-one uses a Trend Logger worksheet to communicate to an AVEVA Insight account. A Data source definition is required in AVEVA Insight. Trend Logger data is logged every 5 seconds. Accumulated data is forwarded to AVEVA Insight every 15 seconds. All data in the demo is internally generated using one or more math worksheets.

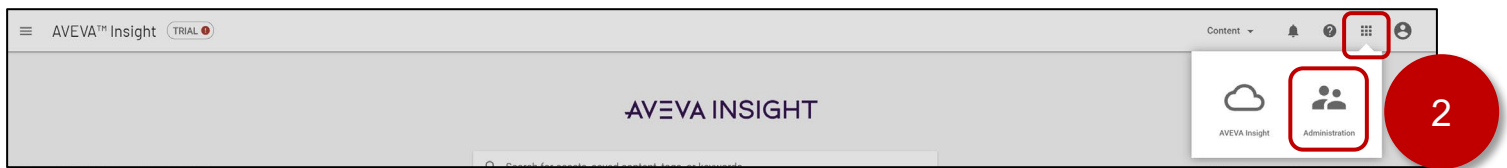


# AVEVA Insight Connection

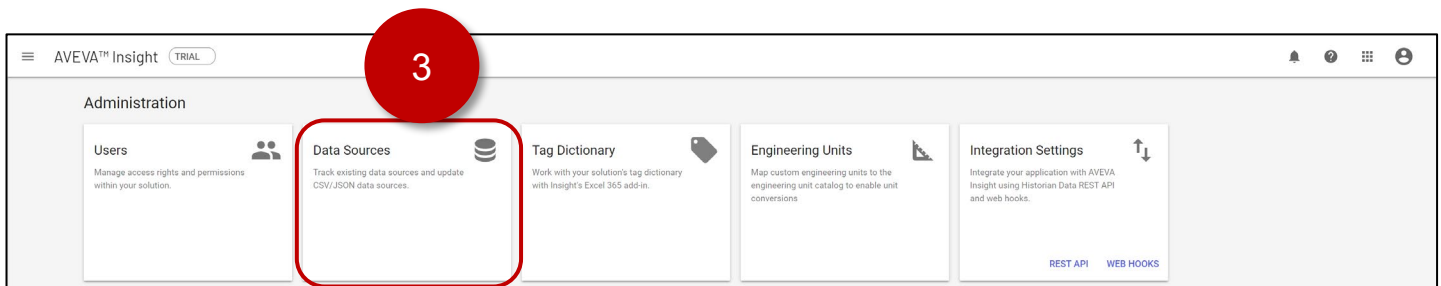
To establish a connection to EcoStruxure Machine Advisor you will need the following:

- AVEVA Insight Account and Solution
- AVEVA Insight Data Source
- Upload Endpoint
- Authentication Token

1. SIGN-IN to AVEVA Insight ( <https://insight.connect.aveva.com> ) and create a solution.
2. Navigate to AVEVA Insight Suite -> [ Administration ]



3. Navigate to [ Data Sources ]



4. Click [ + ] icon and select [ CSV/JSON ]



5. Enter Name, Location Name, etc. and click [OK]

### Add CSV/JSON Data Source

Name\*

EdgeBoxHMI1

**5**

**!** The following fields will apply to all new tags, but do not apply to existing tags.

**Location**

Select a location or type a new one

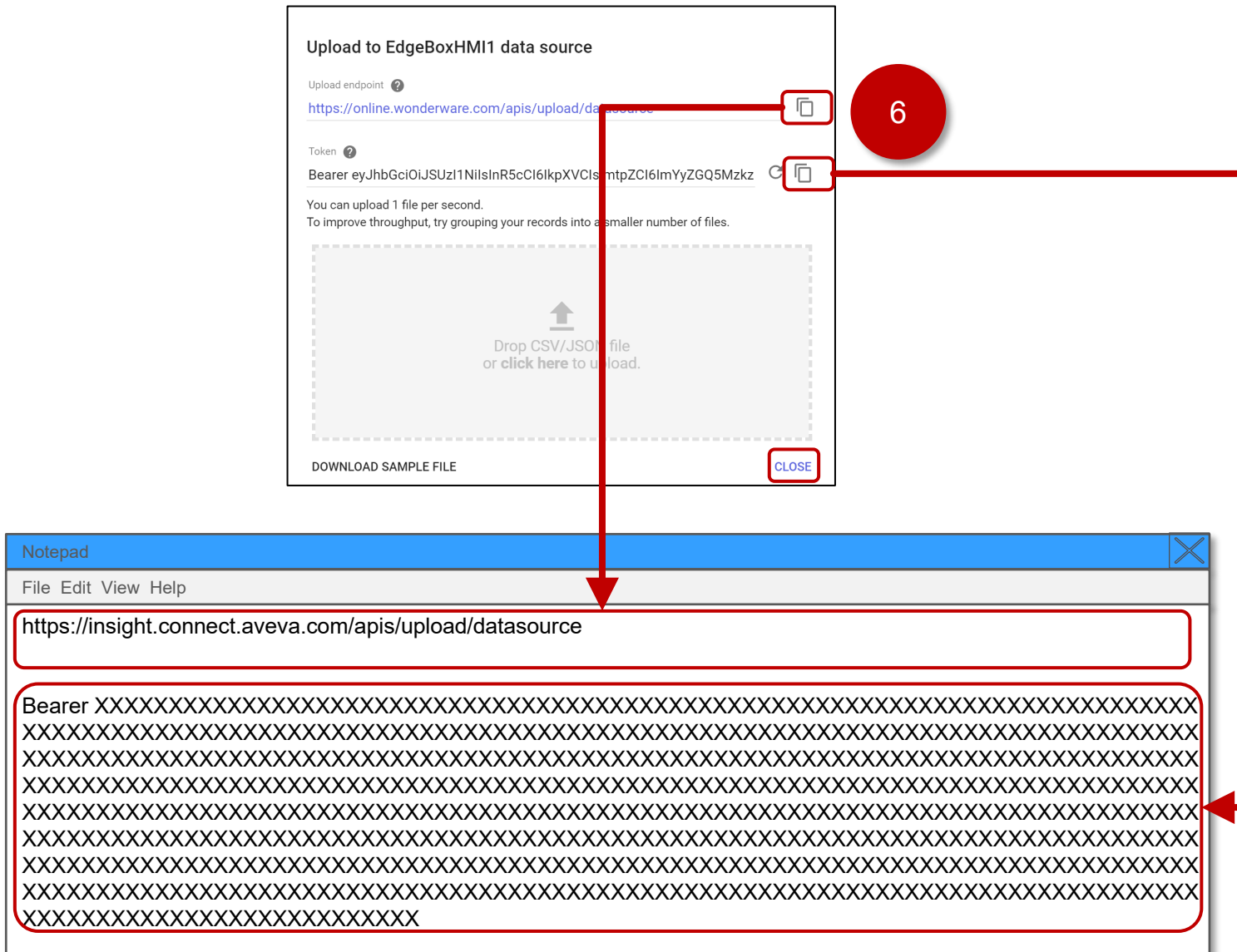
Japan

If you define a new default location, it will be created when the first new tag using this default is created.

**Geolocation Coordinates**

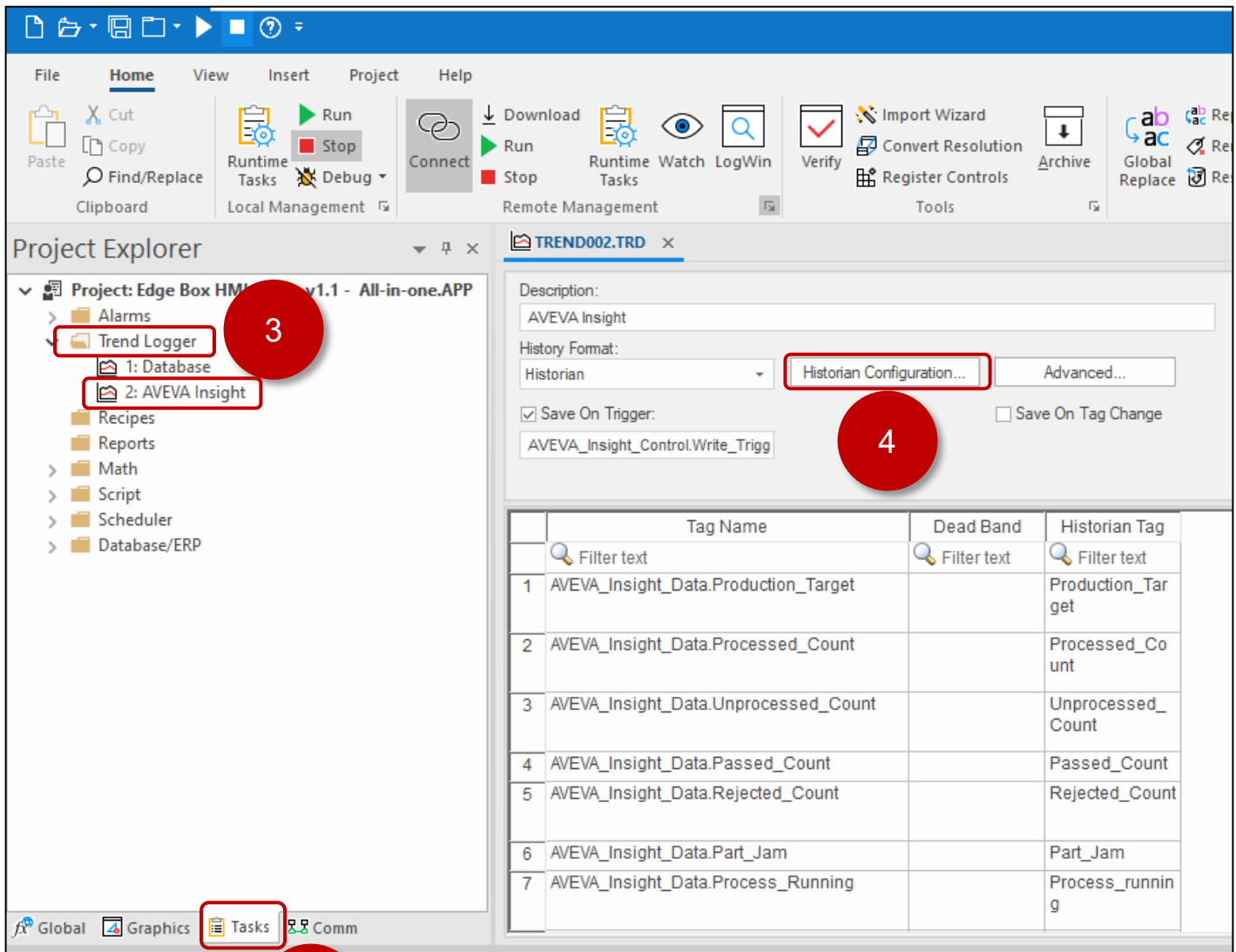
CANCEL OK

- Copy the text in "Upload endpoint" field and "Token" field and paste them into Notepad, then click [ CLOSE ]



## EcoStruxure Machine SCADA Expert Settings

1. Open the Edge Box HMI Demo v1.1 – All-in-one.app project in EcoStruxure Machine SCADA Expert
2. [ Project Explorer ] -> [ Tasks ] tab
3. [ Trend Logger ] -> [ 2: AVEVA Insight ]
4. Click [ Historian Configuration ]



5. Copy the Endpoint URL from notepad and paste overwriting the [ Upload Endpoint ]
6. Copy the Token from notepad and paste overwriting the [ Authentication Token ]
7. Click [ OK ] to accept the historian settings.

**Historian**

Connection Settings

Connection Type: AVEVA Insight (CSV/JSON)

Upload Endpoint: <https://insight.connect.aveva.com/apis/upload/datasource>

Authentication Token: Bearer eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCIsImtpZCI6Imlr

Max Forward Period: 15 seconds

Database Settings

Prefix:

Run-time

Status: AVEVA\_Insight\_Control.S Reload:

Local Storage Limits

Max File Size: 1024 KB Max Files: 5

OK Cancel

A screenshot of a Windows Notepad application window. The title bar at the top says "Notepad". Below it is a menu bar with "File", "Edit", "View", and "Help". The main text area contains two lines of text. The first line is a URL: "https://insight.connect.aveva.com/apis/upload/datasource". The second line starts with "Bearer " followed by a long string of "X" characters representing a token. Both lines of text are enclosed in red rounded rectangular boxes. A red arrow points from the left edge of the first box to the right edge of the second box, indicating a flow or relationship between them.

## 8. Save the TREND002 Sheet.

The screenshot shows the Edge Box HMI software interface. A red circle with the number '8' highlights the 'Save' icon in the top toolbar. The Project Explorer on the left shows the project structure, and the main window displays the configuration details for the trend logger.

**Project Explorer:**

- Project: Edge Box HMI Demo v1.1 - All-in-one.APP
  - Alarms
  - Trend Logger
    - 1: Database
    - 2: AVEVA Insight
  - Recipes
  - Reports
  - Math
  - Script
  - Scheduler
  - Database/ERP

**TREND002.TRD Configuration:**

Description: AVEVA Insight

History Format: Historian

Save On Trigger: ☒ Save On Trigger: AVEVA\_Insight\_Control.Write\_Trigg

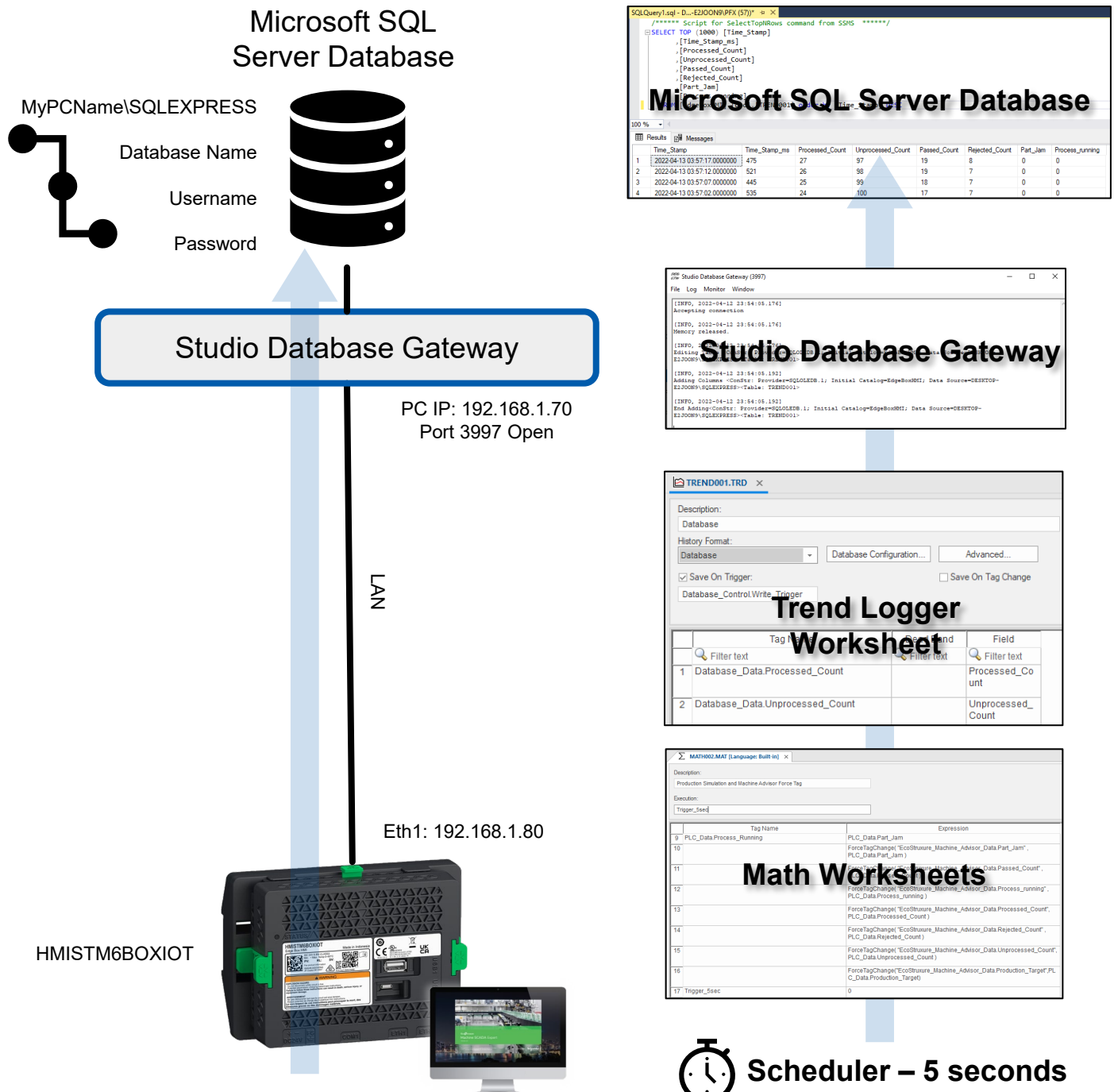
Save On Tag Change: ☐ Save On Tag Change

	Tag Name	Dead Band	Historian Tag
	Filter text	Filter text	Filter text
1	AVEVA_Insight_Data.Production_Target		Production_Tar get
2	AVEVA_Insight_Data.Processed_Count		Processed_Co unt
3	AVEVA_Insight_Data.Unprocessed_Count		Unprocessed_ Count
4	AVEVA_Insight_Data.Passed_Count		Passed_Count
5	AVEVA_Insight_Data.Rejected_Count		Rejected_Count
6	AVEVA_Insight_Data.Part_Jam		Part_Jam
7	AVEVA_Insight_Data.Process_Running		Process_runnin g

## 6. Database Configuration

### Overview

The Harmony Edge Box HMI Demo – All-in-one uses a Trend Logger worksheet to log data to a Microsoft SQL Server Database. Trend Logger data is logged every 5 seconds. Each time the trend logger sheet is triggered data is sent via the Studio Database Gateway which contains the communication driver for Microsoft SQL Server. The Studio Database Gateway establishes a connection to the database on behalf of the Edge Box HMI and logs the data to a table called TREND001.





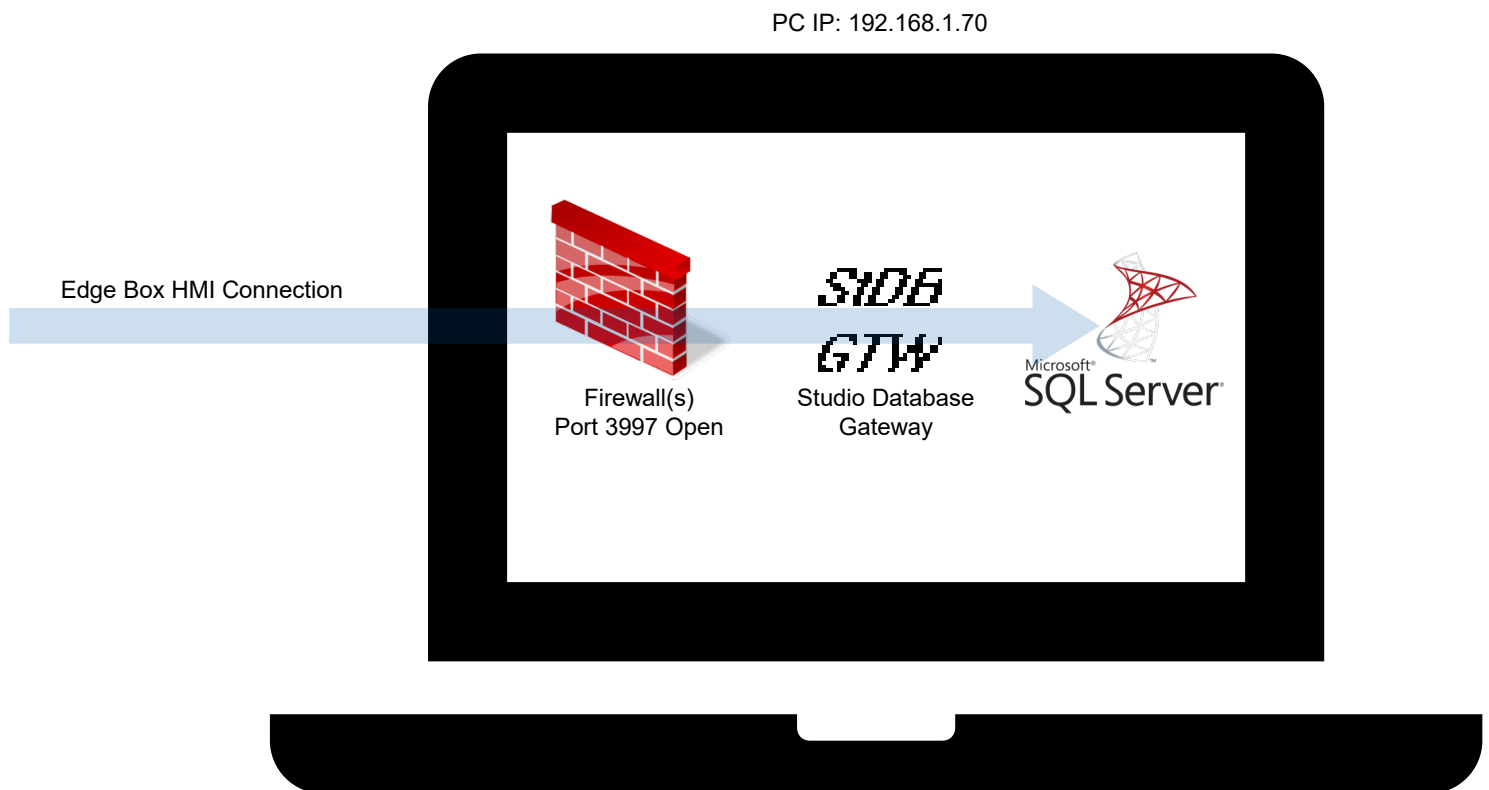
A simple configuration would have both the SQL Server instance and the Studio Database Gateway installed on the same Windows PC. The PC is configured with an IP Address of 192.168.1.70

For example, SQL Server 2019 installed on a Windows 10 PC with the following:

- Path to SQL Server = PCNAME\SQLEXPRESS
- Database name = EdgeBoxHMI
- Mixed mode authentication with a local user account as db\_Owner for the EdgeBoxHMI database and login rights
  - Username = EdgeBoxHMI
  - Password = !Se12345

On the same PC as SQL Server the Studio Database gateway is installed and running on port 3997.

PC Firewall(s) open for port 3997 for access to the Studio Database Gateway.



# Microsoft SQL Server 2019 Installation and Configuration

(requires internet connection)

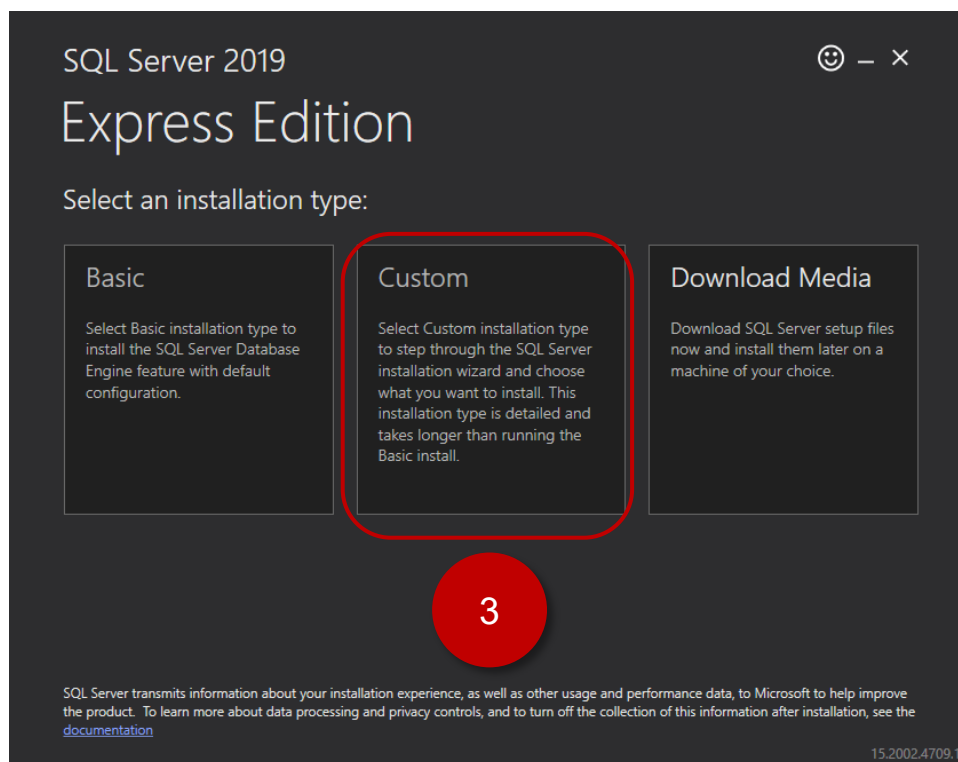
For ease of configuration both Microsoft SQL Server 2019 and Microsoft SQL Management Studio will be required. It is assumed that there is no existing Microsoft SQL Server 2019 instance and no existing Microsoft SQL Management Studio installed on the PC.

1. Download SQL Server 2019 Express installer (SQL2019-SSEI-Expr.exe or similar @ ~6MB) from the following link:

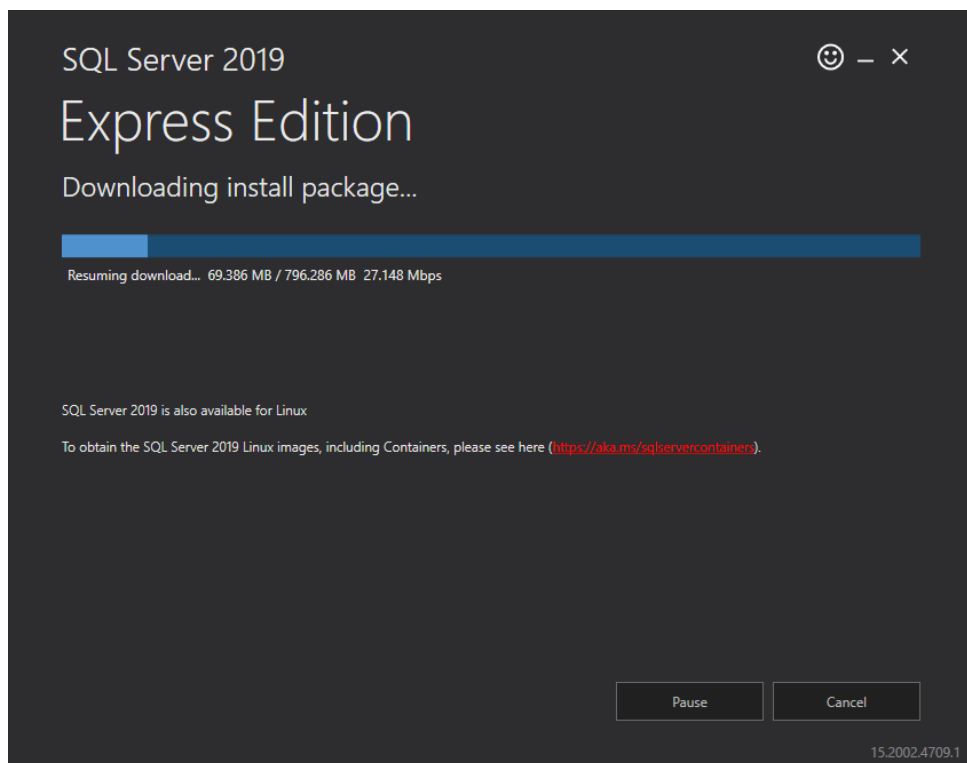
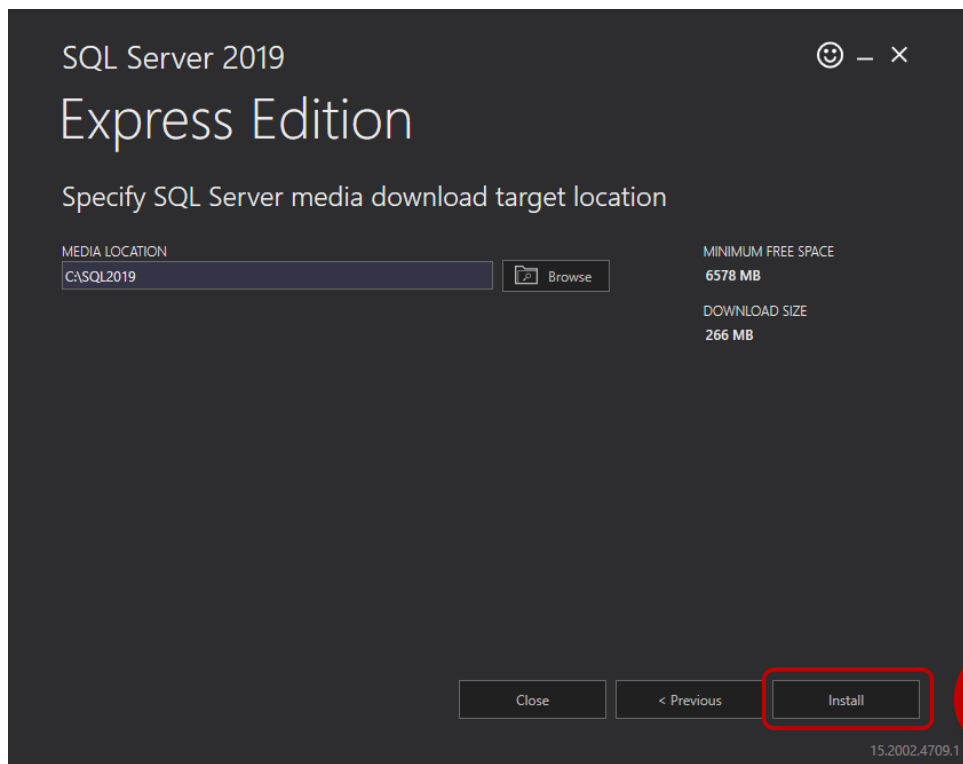
<https://www.microsoft.com/en-ca/sql-server/sql-server-downloads>

**Note:** other versions of SQL Server can be used however this procedure is specifically for SQL Server 2019 Express as of April 2022. Choose your localized language version, as necessary.

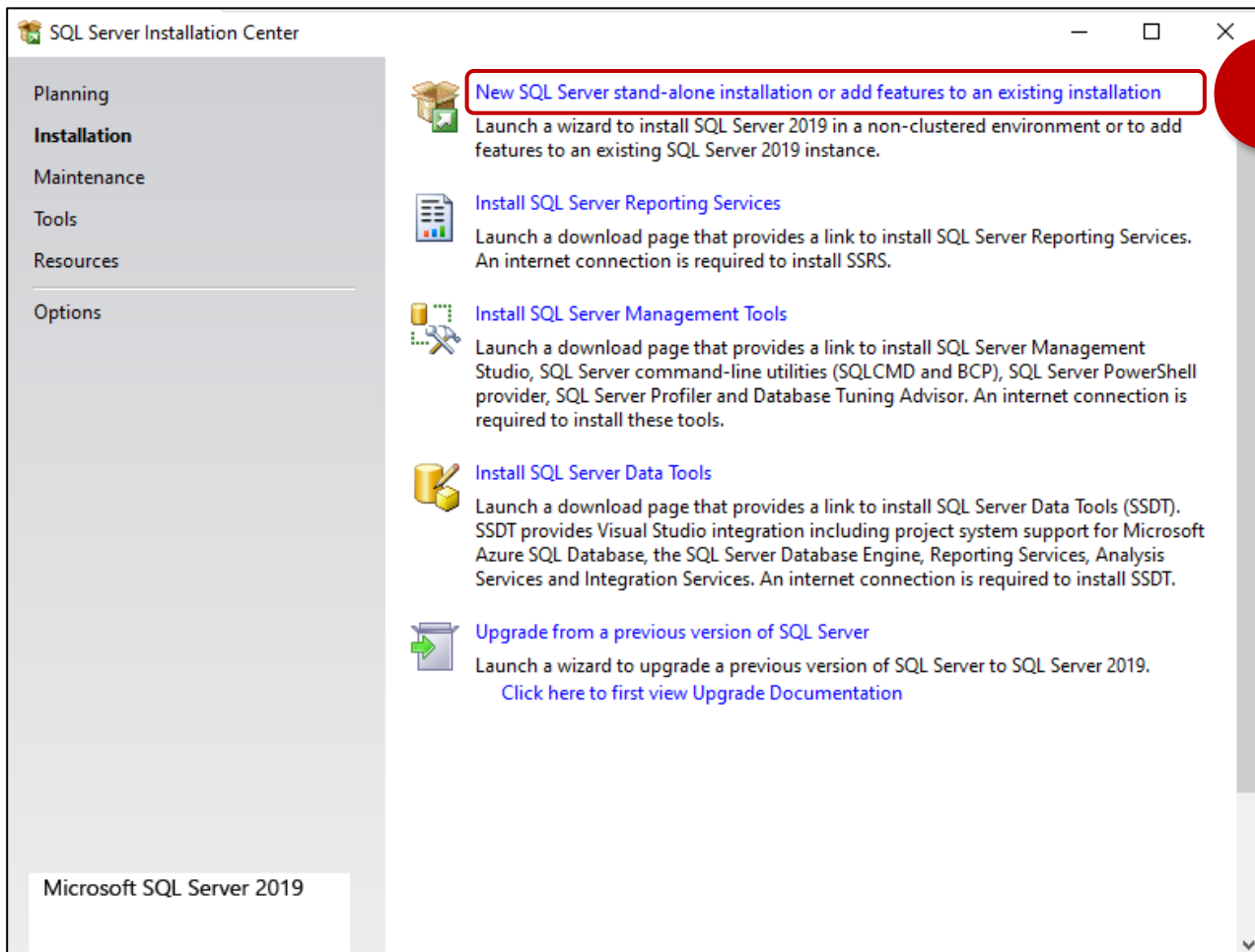
2. Run SQL2019-SSEI-Expr.exe
3. Select [ Custom ]



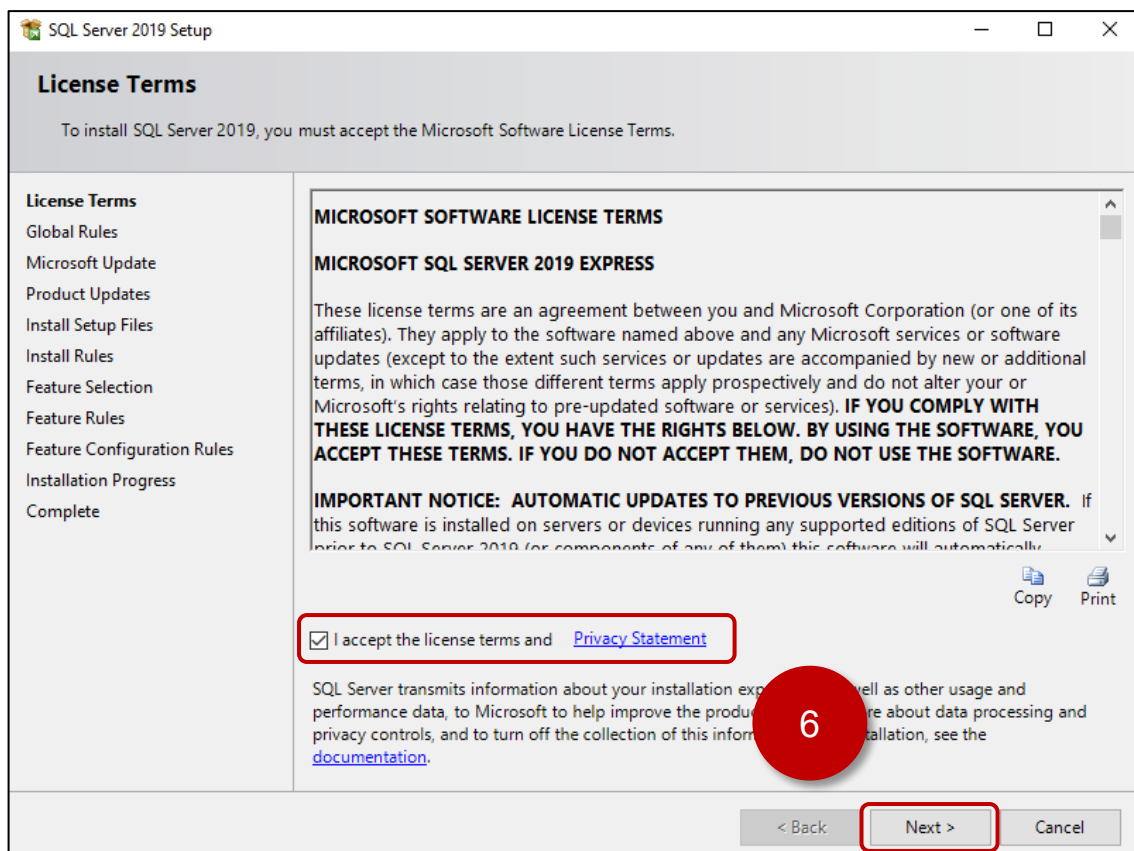
4. Confirm the download location is acceptable and there is enough free space on the drive. Click [ Install ]



5. Click [ New SQL Server stand-alone installation or add features to an exiting installation ]

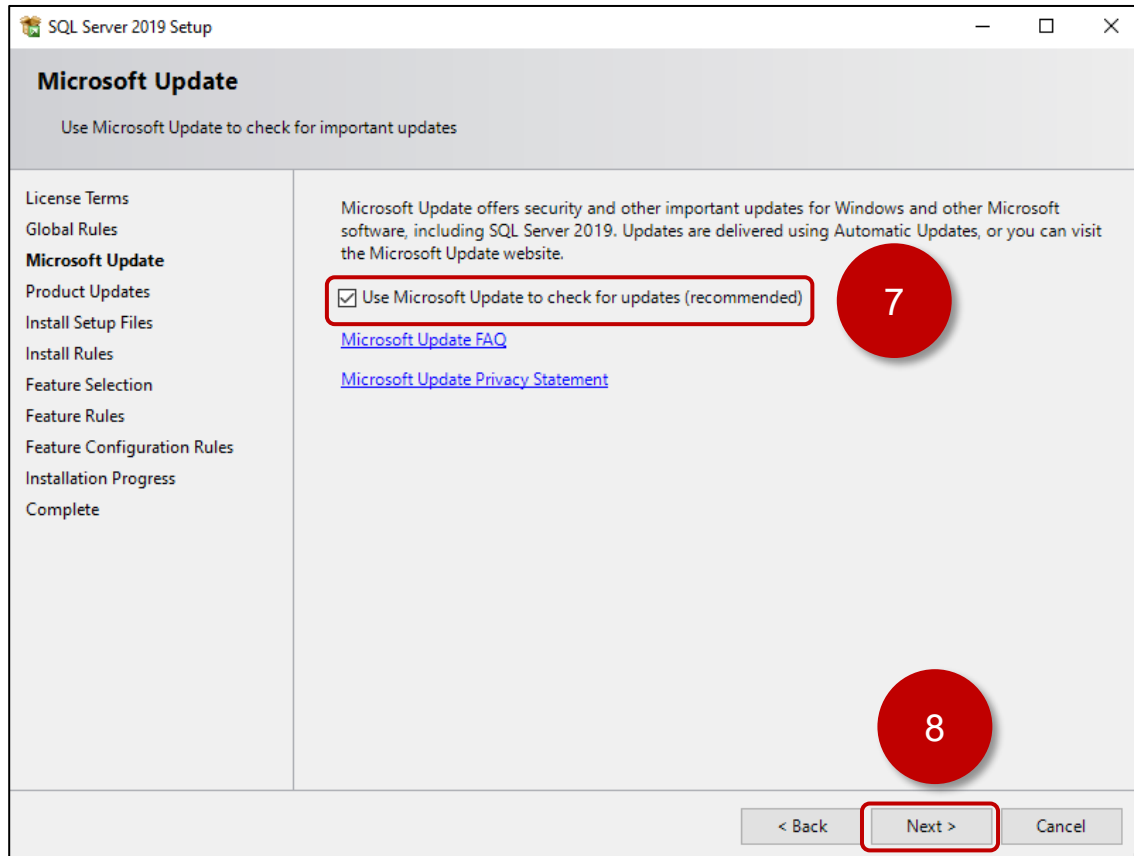


6. Check the “I accept the license terms...” checkbox and click [ Next ]



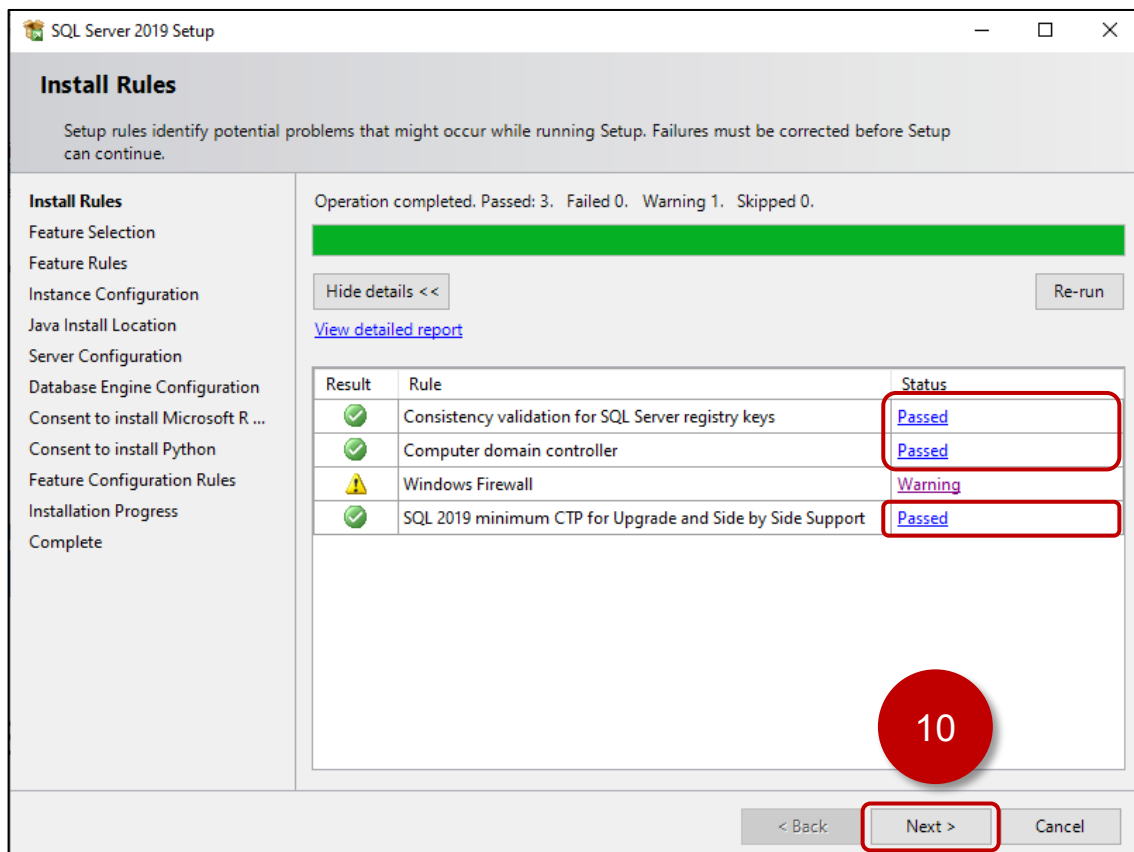
7. Optional: Check the “Use Microsoft Update to check for updates...”

8. Click [ Next ]

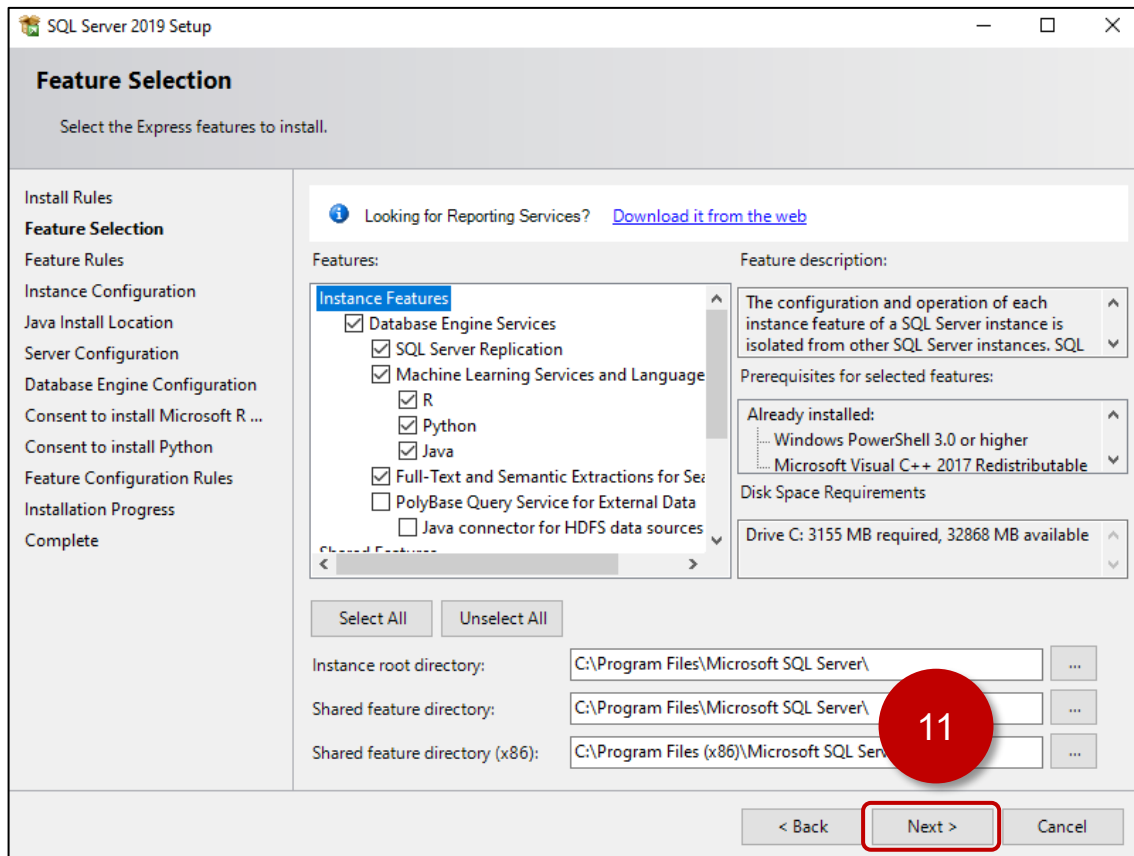


9. Confirm status is “Passed” for 3 of the 4 entries. Windows Firewall exception is option for SQL server itself for the purposes of the demo. The Studio Database Gateway cover later will require a firewall exception.

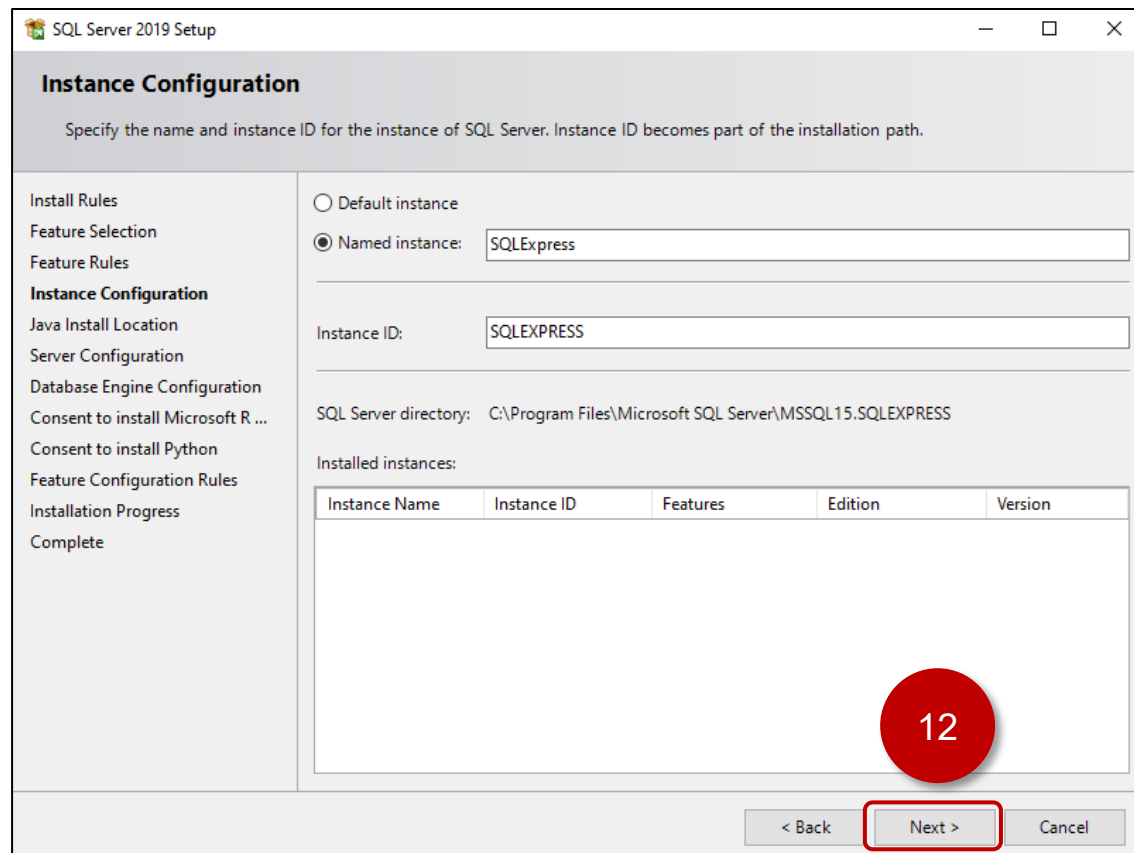
10. Click [Next]



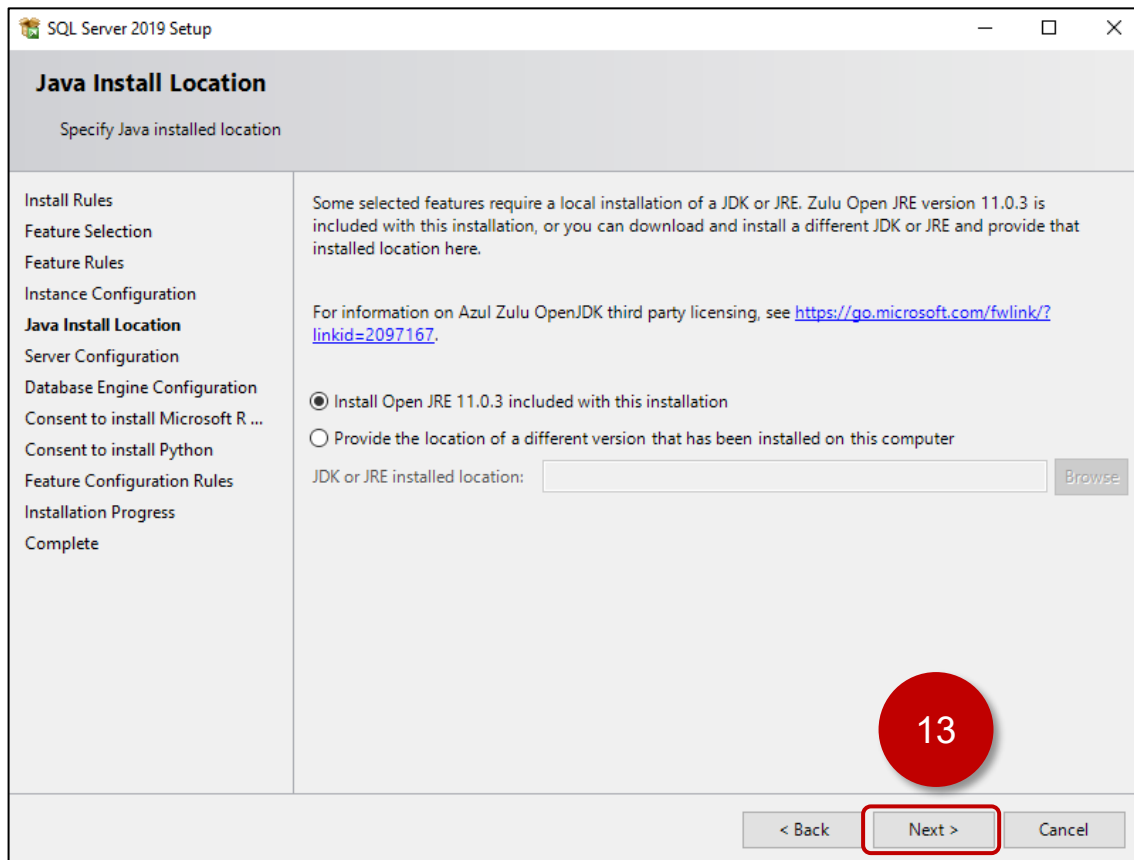
11. Leave the Feature Selection as default. Click [ Next ]



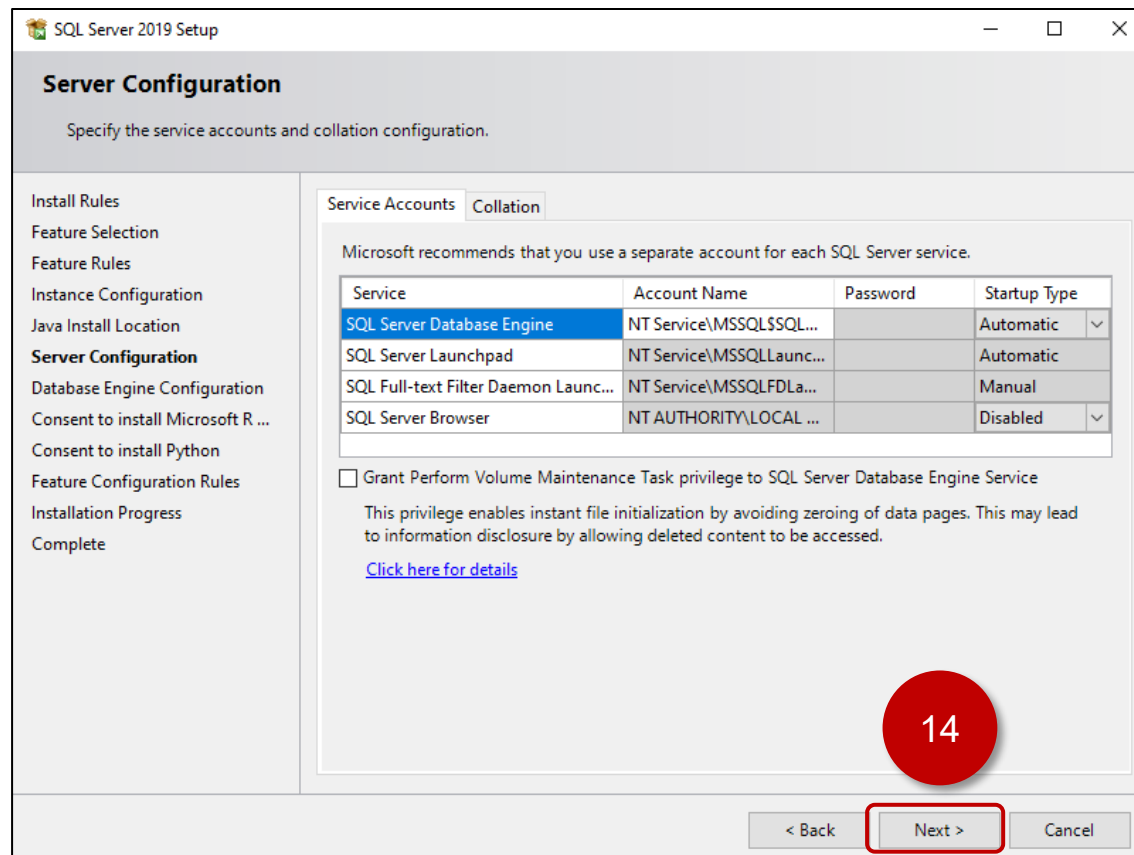
12. Leave the Instance Configuration as default. Click [ Next ]



13. Leave the Java Install as default. Click [ Next ]



14. Leave the Server Configuration as default. Click [ Next ]



15. Set the Authentication Mode to “Mixed Mode”.

16. Enter the sa account password.

17. Specify Windows accounts that will act as administrator for SQL Server. Can be left as default.

18. Click [ Next ].

SQL Server 2019 Setup

### Database Engine Configuration

Specify Database Engine authentication security mode, administrators, data directories, TempDB, Max degree of parallelism, Memory limits, and Filestream settings.

Install Rules  
Feature Selection  
Feature Rules  
Instance Configuration  
Java Install Location  
Server Configuration  
**Database Engine Configuration**  
Consent to install Microsoft R ...  
Consent to install Python  
Feature Configuration Rules  
Installation Progress  
Complete

Server Configuration | Data Directories | TempDB | Memory | User Instances | FILESTREAM

Specify the authentication mode and administrators for the Database Engine.

Authentication Mode

☐ Windows authentication mode

☒ Mixed Mode (SQL Server authentication and Windows authentication) (15)

Specify the password for the SQL Server system administrator (sa) account.

Enter password: (16)

Confirm password: (16)

Specify SQL Server administrators

DESKTOP-E2JOON9\PFX (PFX) (17)

SQL Server administrators have unrestricted access to the Database Engine.

Add Current User | Add... | Remove

< Back | Next > (18) | Cancel

19. Click [ Accept ] and click [ Next ].

SQL Server 2019 Setup

### Consent to install Microsoft R Open

Download and install necessary pre-requisite.

Install Rules  
Feature Selection  
Feature Rules  
Instance Configuration  
Java Install Location  
Server Configuration  
Database Engine Configuration  
**Consent to install Microsoft R ...**  
Consent to install Python  
Feature Configuration Rules  
Installation Progress  
Complete

Microsoft R Open is an enhanced distribution of R made available by Microsoft under the GNU General Public License v2.

R is © the R Foundation for Statistical Computing. For more information on R-related products and services, visit <http://r-project.org>.

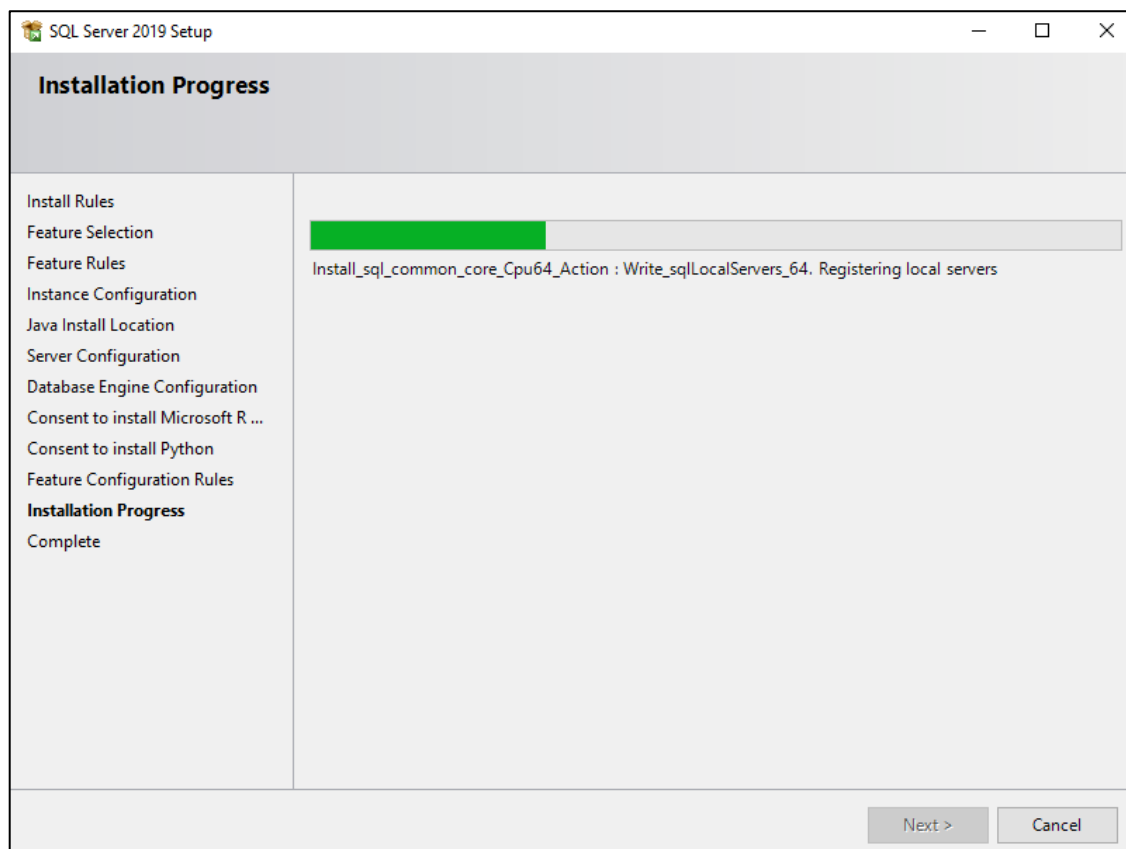
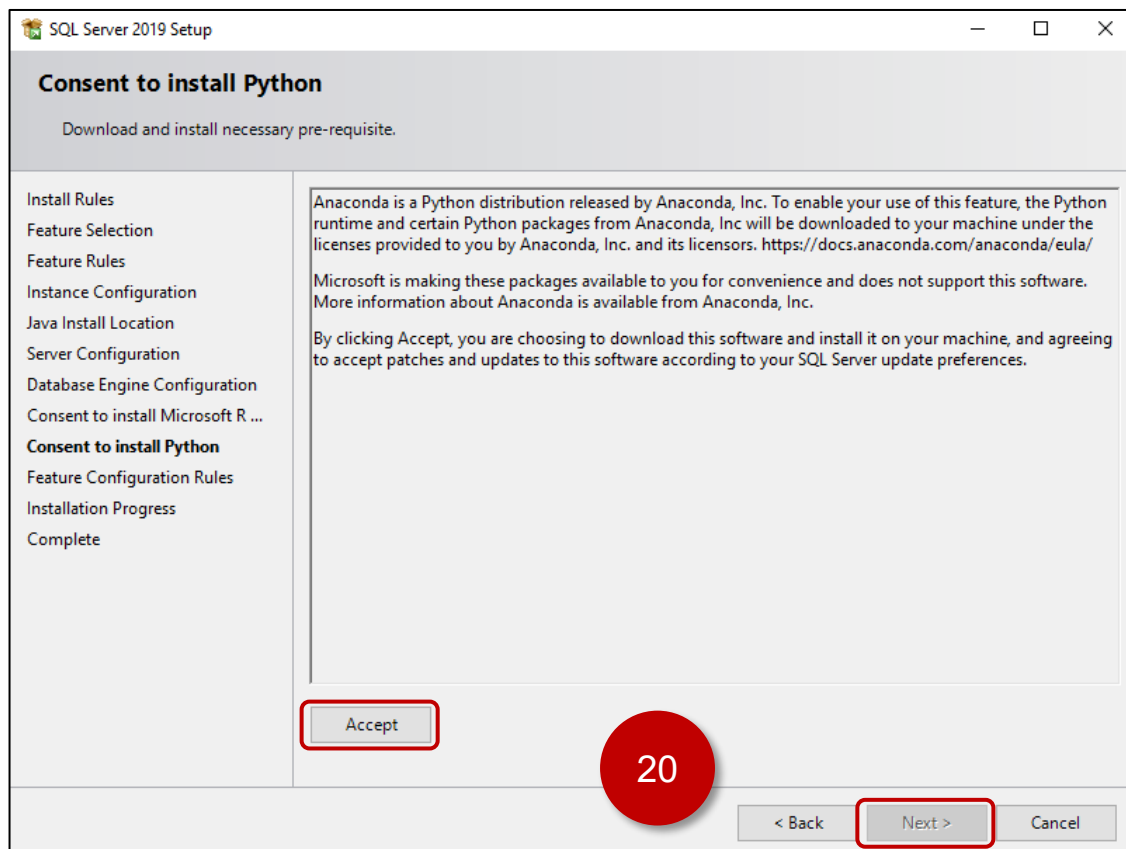
By clicking "Accept" you are choosing to download Microsoft R Open and install it on your machine, and agreeing to accept patches and updates to this software according to your SQL Server update preferences.

Accept (19)

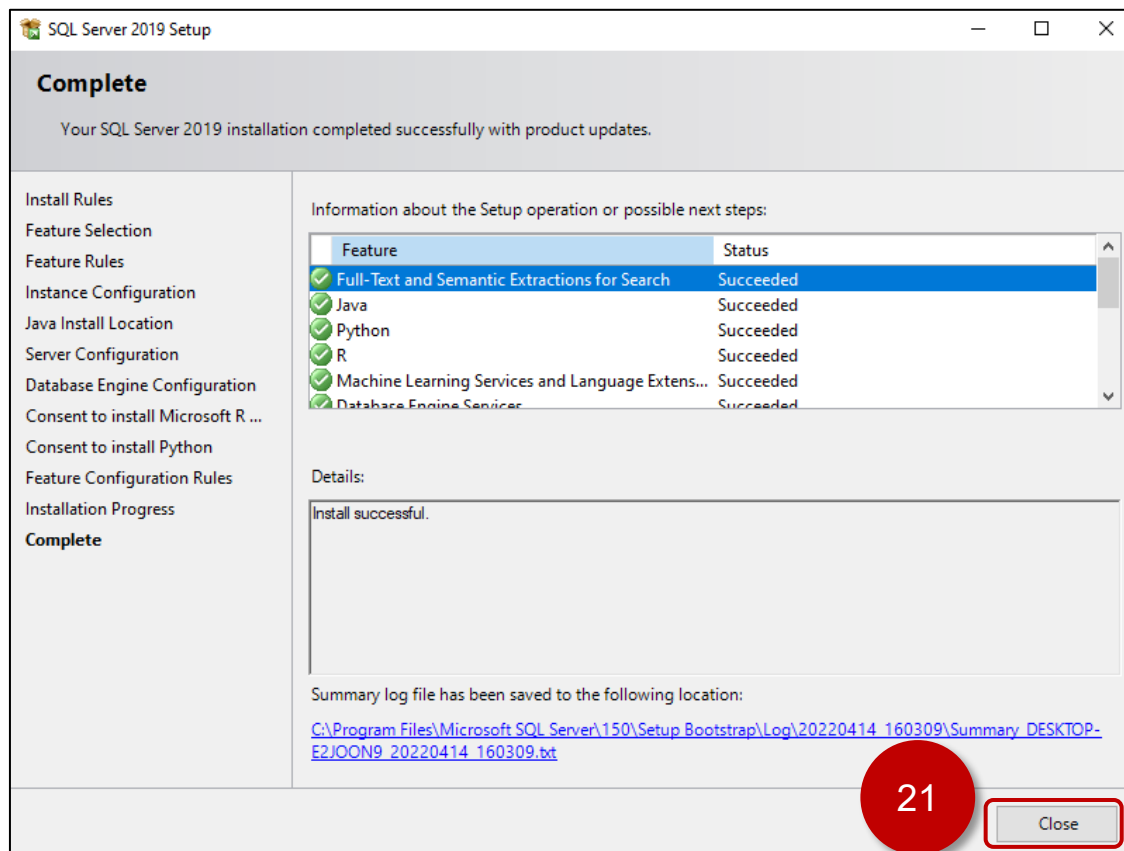
< Back | Next > | Cancel



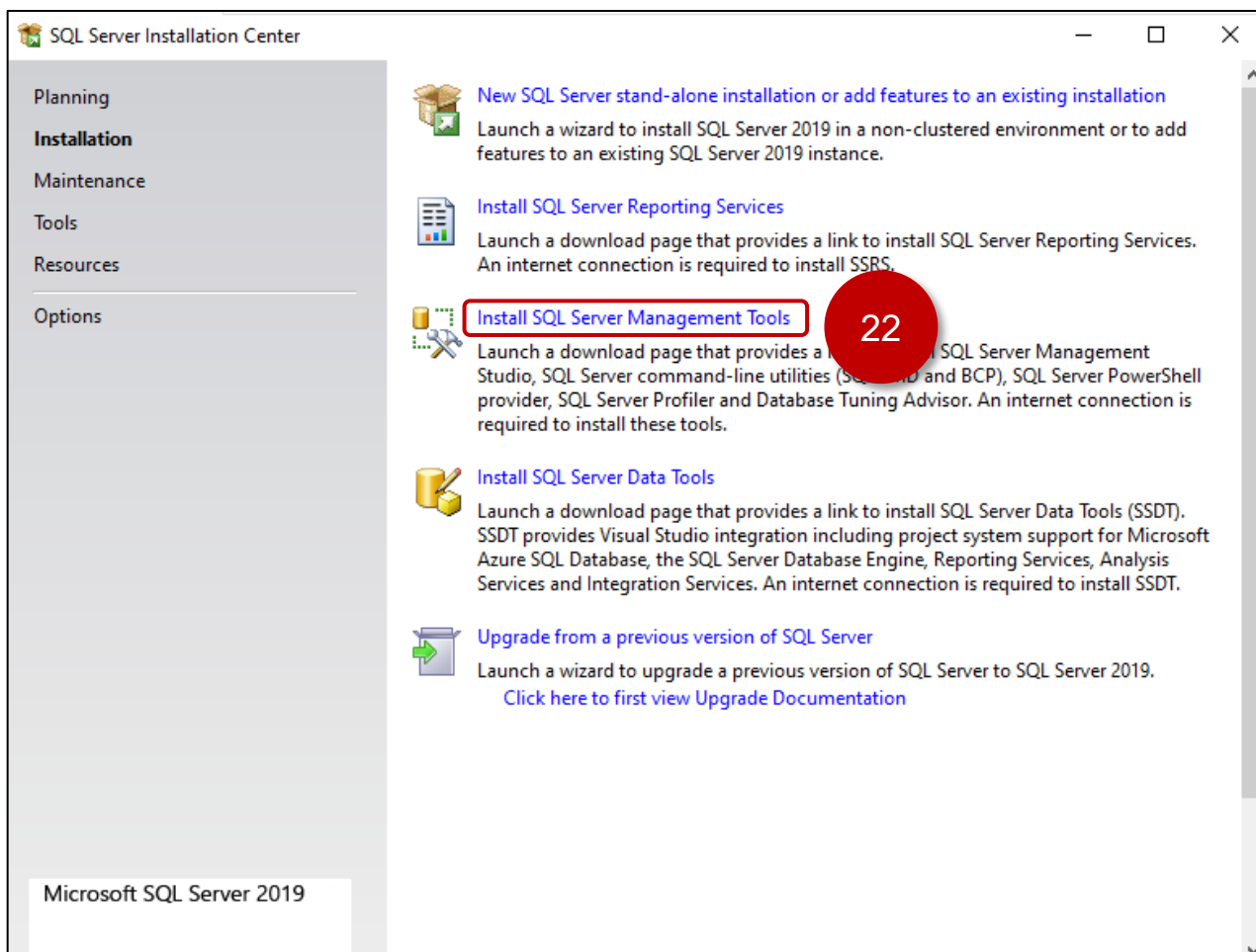
## 20. Click [ Accept ] and click [ Next ]



21. Confirm that all features show Status as “Succeeded”. Click [ Close ]



22. Click [ Install SQL Server Management Tools ].



## 23. Download the latest version of SQL Server Management Studio (~690 MB)



SQL Server Management Studio (SSMS)

- Download SSMS
- Release Notes
- Overview
- Quickstarts
- Tutorials
- Concepts
- How-to
- References
- Resources
- SqlPackage.exe
- SQL Server Profiler
- Visual Studio native helpers

### Download SSMS

[Free Download for SQL Server Management Studio \(SSMS\) 18.11.1](#)

SSMS 18.11 is the latest general availability (GA) version. If you have a previous version of SSMS 18 installed, installing SSMS 18.11.1 upgrades it to 18.11.1.

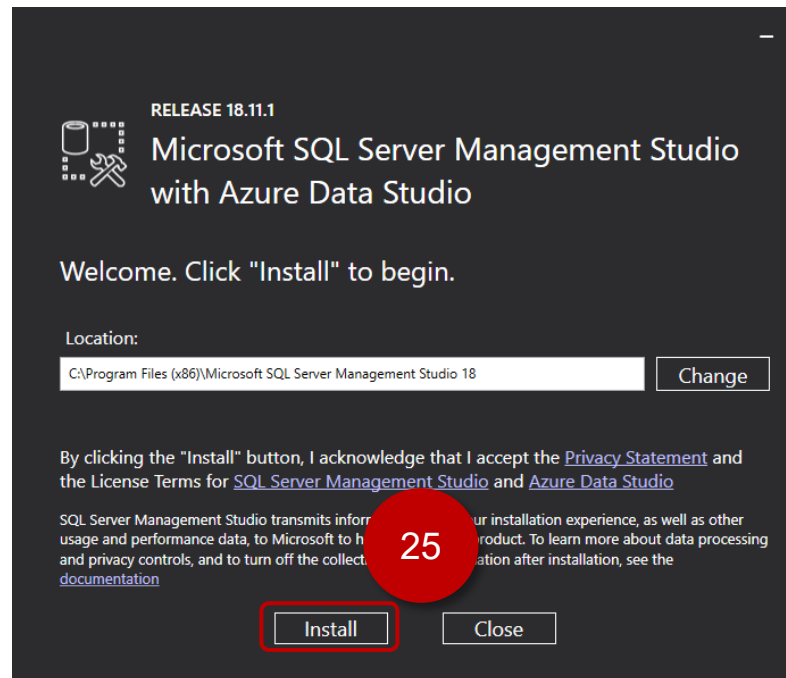
- Release number: 18.11.1
- Build number: 15.0.18410.0
- Release date: March 08, 2022

By using SQL Server Management Studio, you agree to its [license terms](#) and [privacy statement](#). If you have comments or suggestions, or you want to report issues, the best way to contact the SSMS team is at [SQL Server user feedback](#).

The SSMS 18.x installation doesn't upgrade or replace SSMS versions 17.x or earlier. SSMS 18.x installs side by side with

## 24. Run the SSMS-SETUP\_ENU.exe or similar installer that was downloaded.

## 25. Click [ Install ].



RELEASE 18.11.1

Microsoft SQL Server Management Studio with Azure Data Studio

Welcome. Click "Install" to begin.

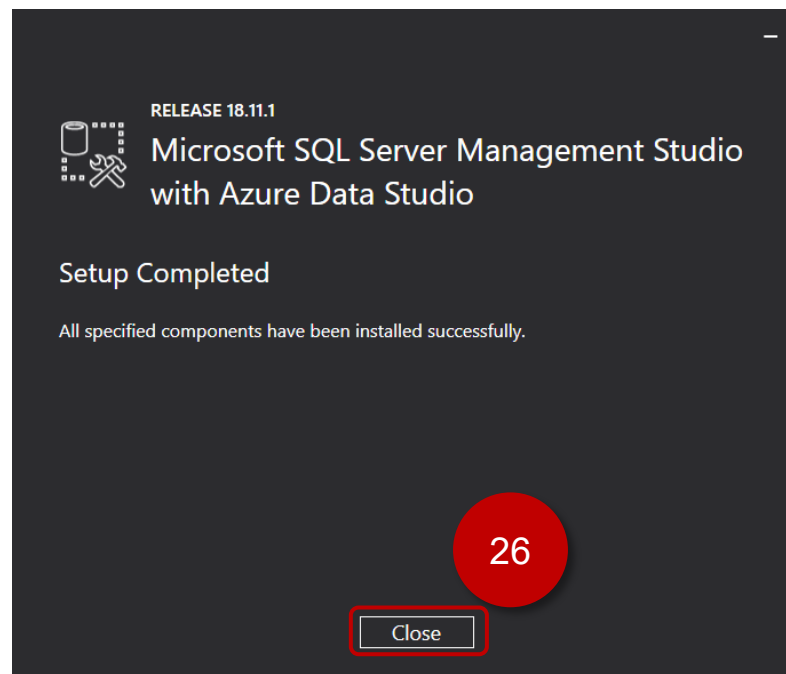
Location: C:\Program Files (x86)\Microsoft SQL Server Management Studio 18 [Change](#)

By clicking the "Install" button, I acknowledge that I accept the [Privacy Statement](#) and the License Terms for [SQL Server Management Studio](#) and [Azure Data Studio](#)

SQL Server Management Studio transmits information about your installation experience, as well as other usage and performance data, to Microsoft to help improve our product. To learn more about data processing and privacy controls, and to turn off the collection of this information after installation, see the [documentation](#)

[Install](#) [Close](#)

## 26. Click [ Close ]



RELEASE 18.11.1

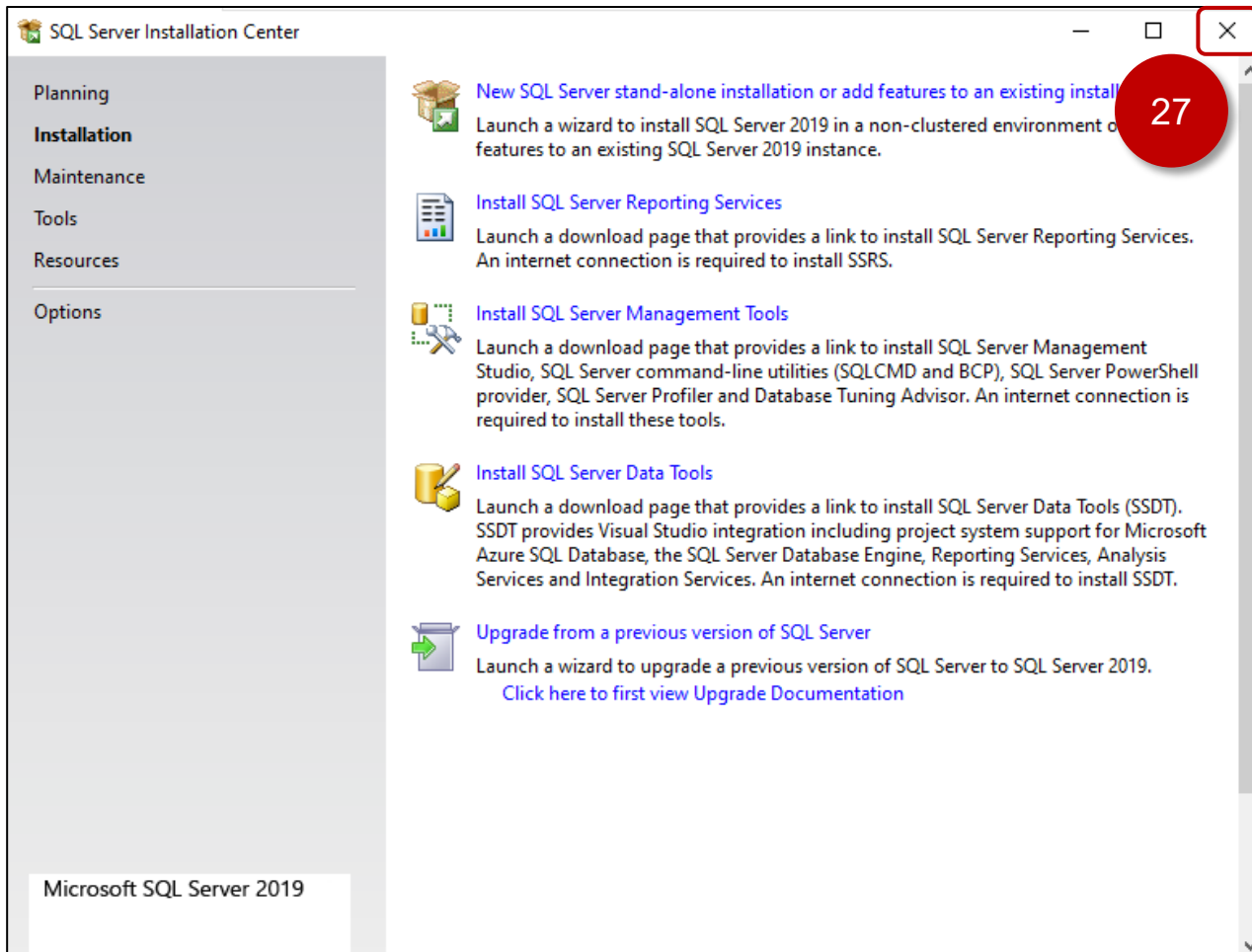
Microsoft SQL Server Management Studio with Azure Data Studio

Setup Completed

All specified components have been installed successfully.

[Close](#)

27. Close the “SQL Server Installation Center” window.

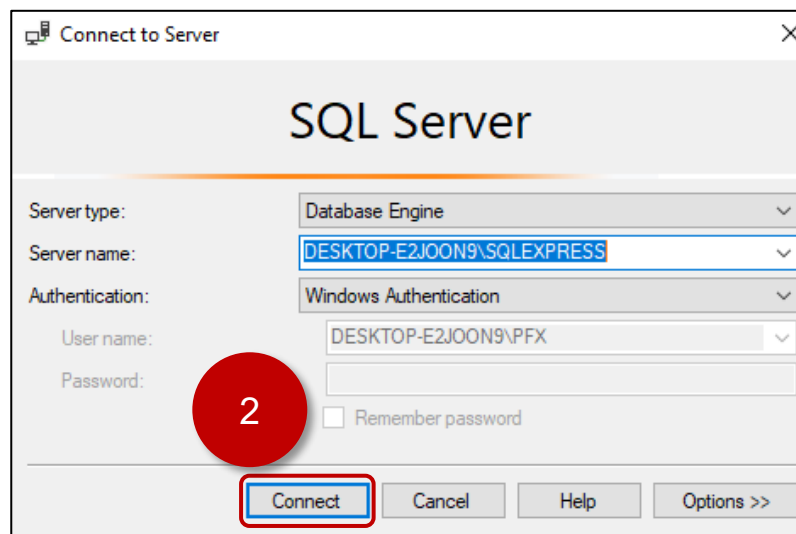


## Create a SQL Database

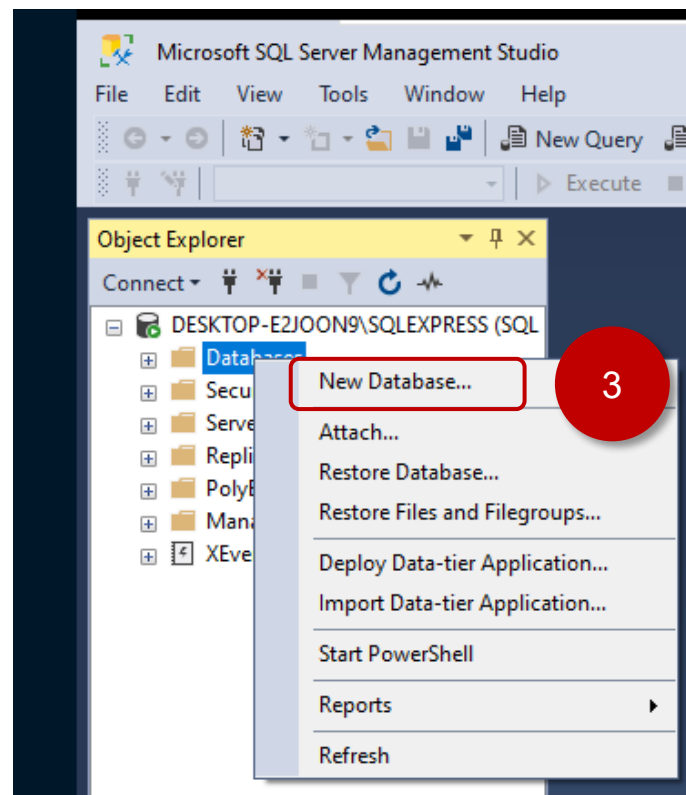
This procedure assumes there is not an existing database for use with the project.

**This database setup is for demonstration purposes only. Please ensure the appropriate security measures are taken before deploying any database in a production environment.**

1. Start [ Microsoft SQL Management Studio]
2. If you followed the previous section's instructions and the current Windows user account is an administrator for SQL, leave the [ Connect to Server ] dialog settings as default and click [ Connect ]. If not, enter the correct Server name and Authentication details.

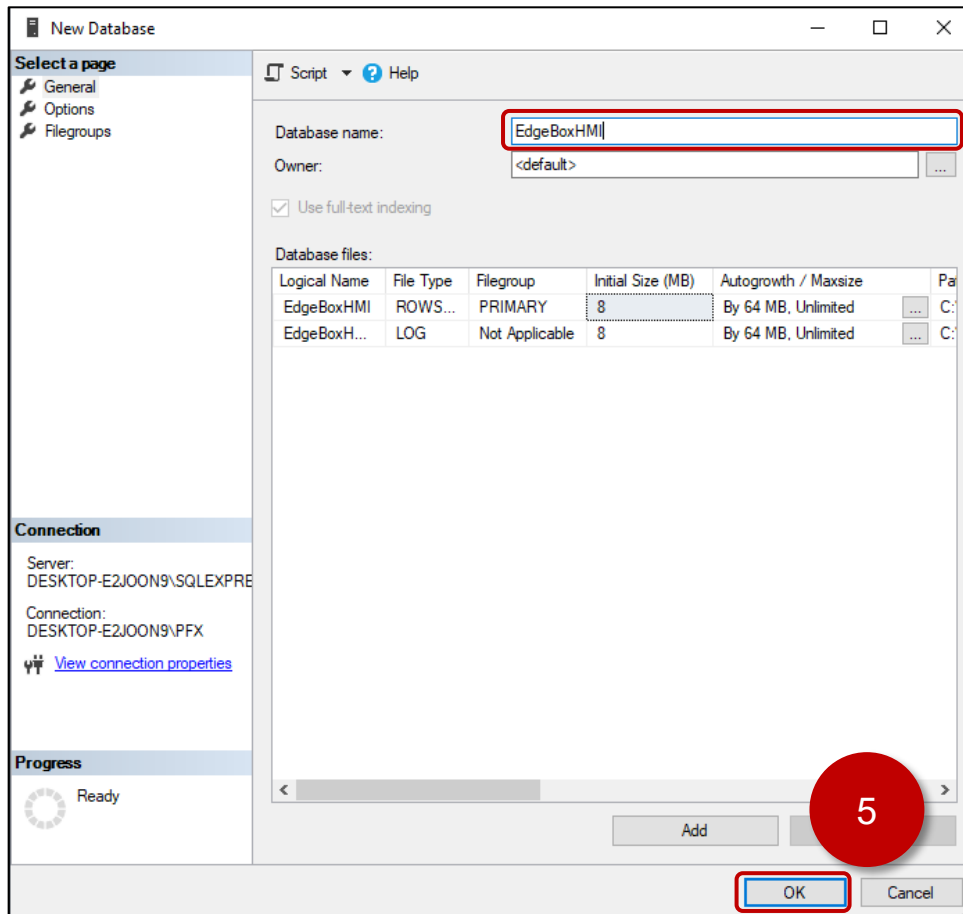


3. [ Object Explorer ] -> [ Databases ] right-click [ Databases ] and click [ New Database... ].

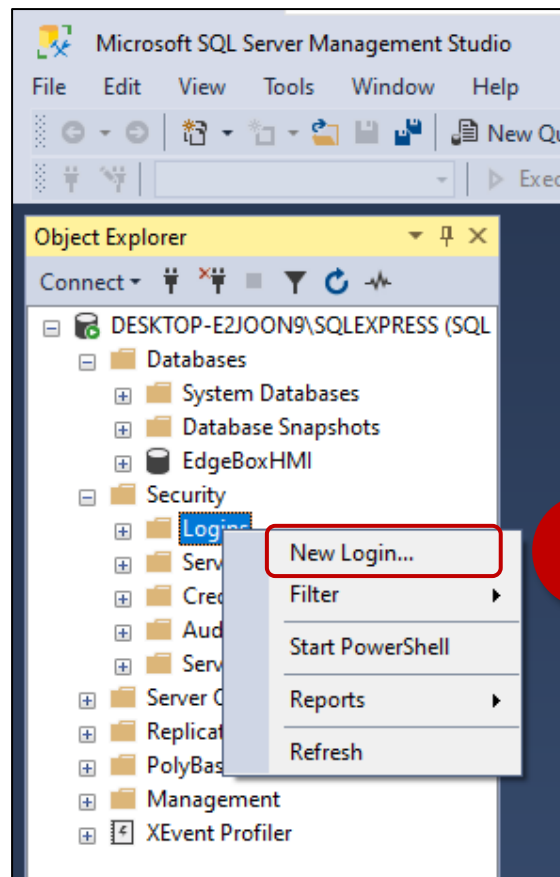


4. Enter the Database name as “EdgeBoxHMI”

5. Click [ OK ]



6. [ Object Explorer ] -> [ Security ] -> [ Logins ] right-click [ Logins ], click [ New Login... ]



7. Enter a Login Name: EdgeBoxHMI
8. Select [ SQL Server Authentication ]
9. Enter a password and confirm the password: !SE1234
10. Uncheck [ Enforce password policy ]
11. Change the [ Default Database ] to [ EdgeBoxHMI ]
12. Select the [ User Mapping ] page.

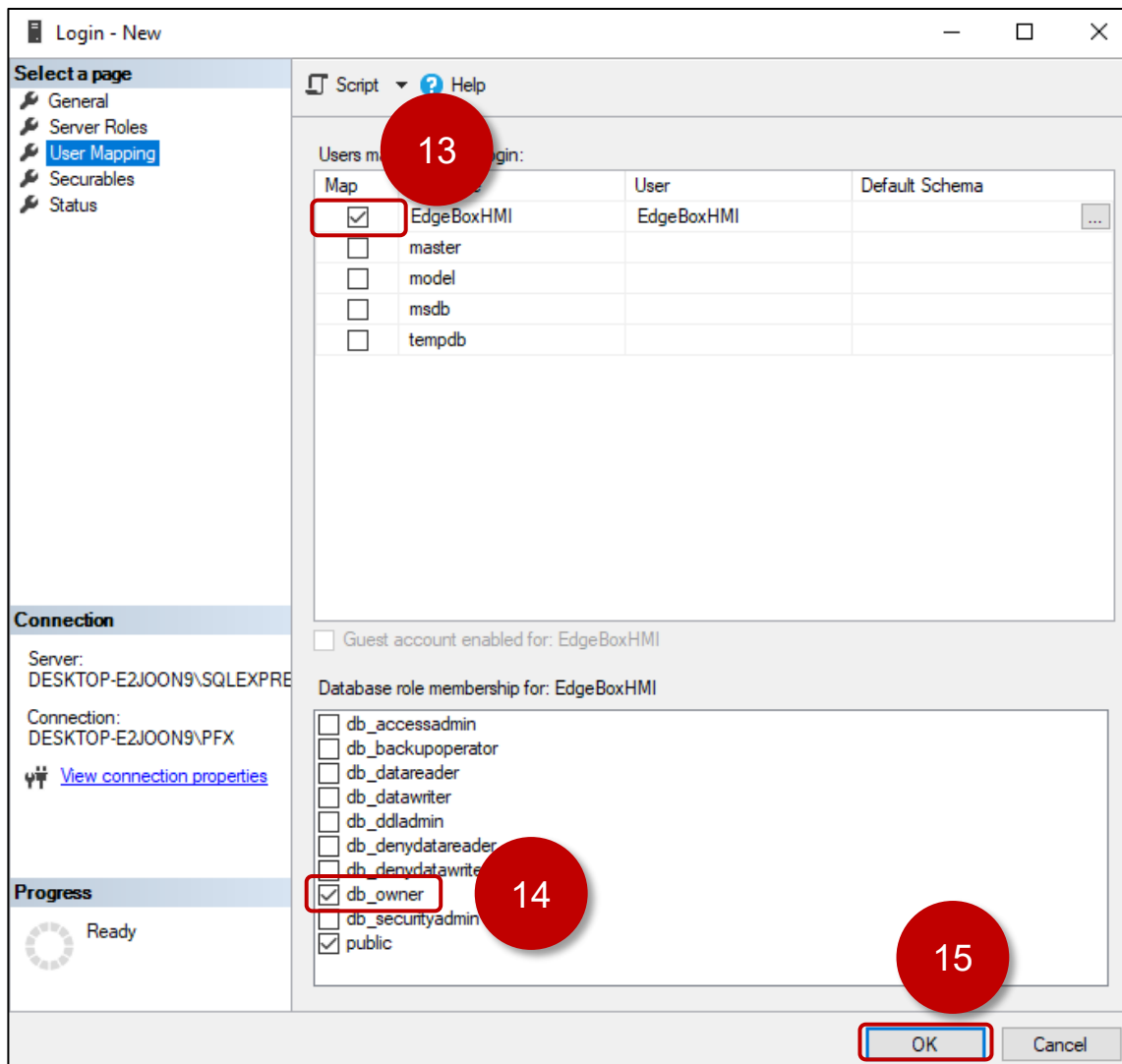
The screenshot shows the 'Login - New' dialog box with the following configuration:

- Select a page:** User Mapping (12)
- Authentication:** SQL Server authentication (8)
- Login name:** EdgeBoxHMI (7)
- Password:** \*\*\*\*\* (9)
- Confirm password:** \*\*\*\*\* (9)
- Enforce password policy:** Unchecked (10)
- Default database:** EdgeBoxHMI (11)
- Progress:** Ready

13. Check [ Map ] for the [ EdgeBoxHMI ] database

14. Check [ db\_owner ]

15. Click [ OK ]





## Studio Database Gateway Installation

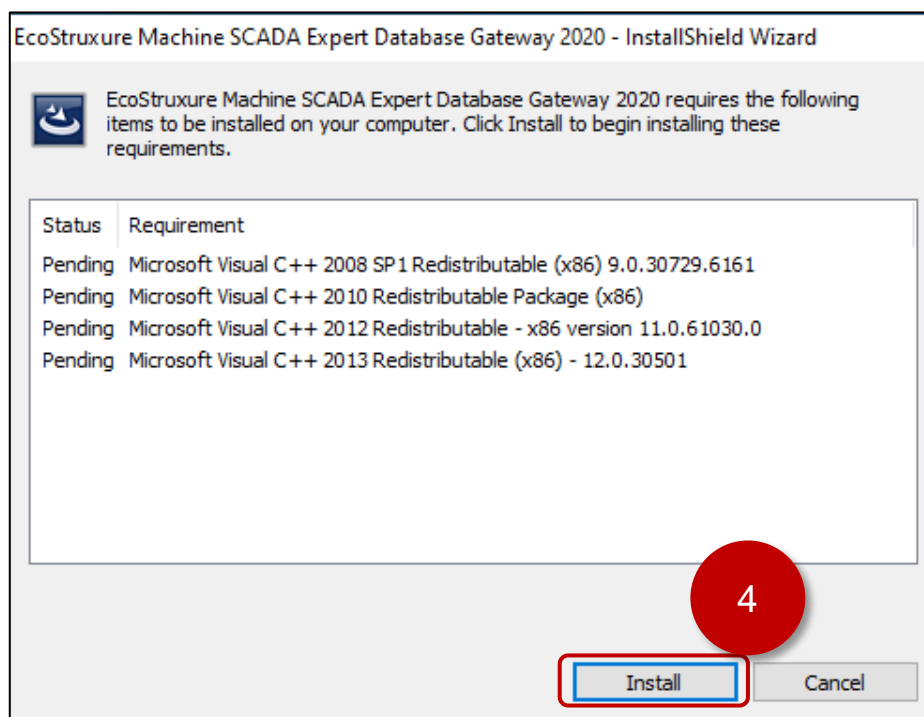
To allow the HMI runtime running on the Edge Box HMI to communicate with SQL Server the Studio Database Gateway needs to be installed on a Windows PC on the same network as the Microsoft SQL Server. For an easy demonstration configuration, install the Studio Database Gateway on the same Windows PC as the Microsoft SQL Server Database.

If EcoStruxure Machine SCADA Expert is already installed on the Windows PC, the Studio Database Gateway is already installed in the EcoStruxure Machine SCADA Expert BIN directory. The default path would be:

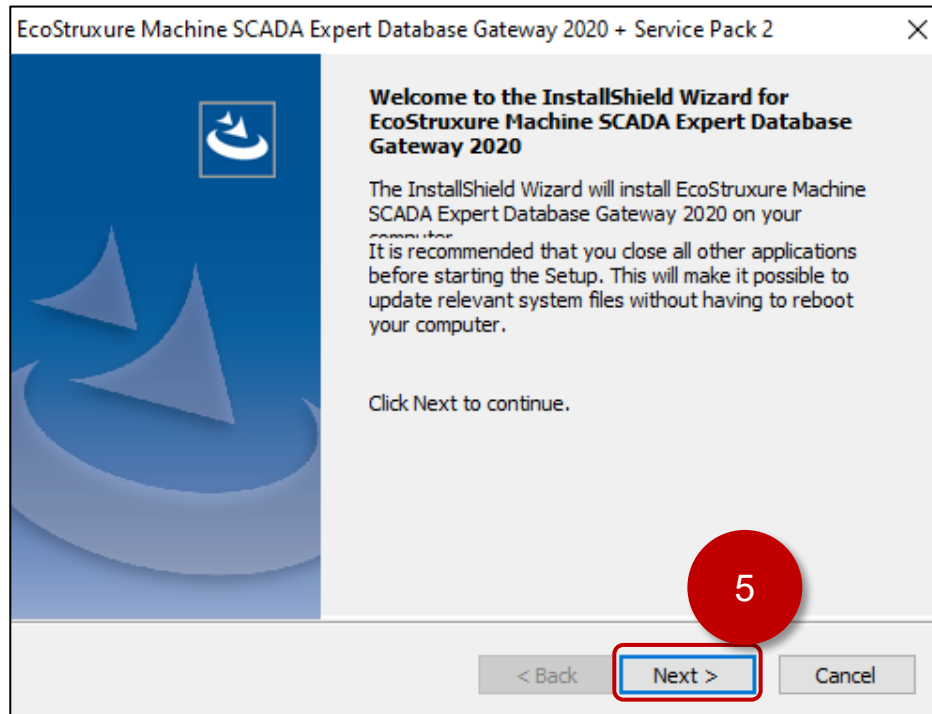
**C:\Program Files (x86)\Schneider Electric\EcoStruxure Machine SCADA Expert 2020\Bin\DatabaseGateway\StADOSvr.exe**

Skip to **STEP 11** if EcoStruxure Machine SCADA Expert is already installed. Otherwise install the Studio Database gateway by starting at **STEP 1**.

1. If not already installed on the Microsoft SQL Server Windows PC, install .NET Framework 3.5 via [Turn Windows features on or off ].
2. On the EcoStruxure Machine SCADA Expert development PC copy the [ GatewaySteup.exe ] from **C:\Program Files (x86)\Schneider Electric\EcoStruxure Machine SCADA Expert 2020\Redist\DatabaseGateway\GatewaySetup.exe** to the Windows PC that has Microsoft SQL Server installed.
3. Run the GatewaySetup.exe
4. If prompted to install redistributables, click [ Install ]

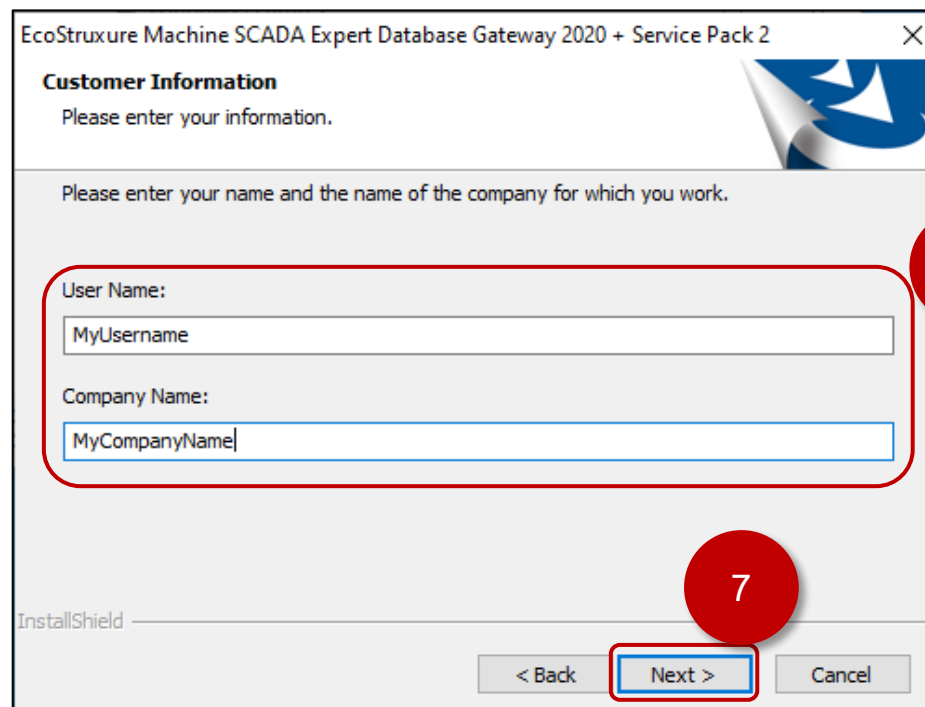


5. Click [ Next ].

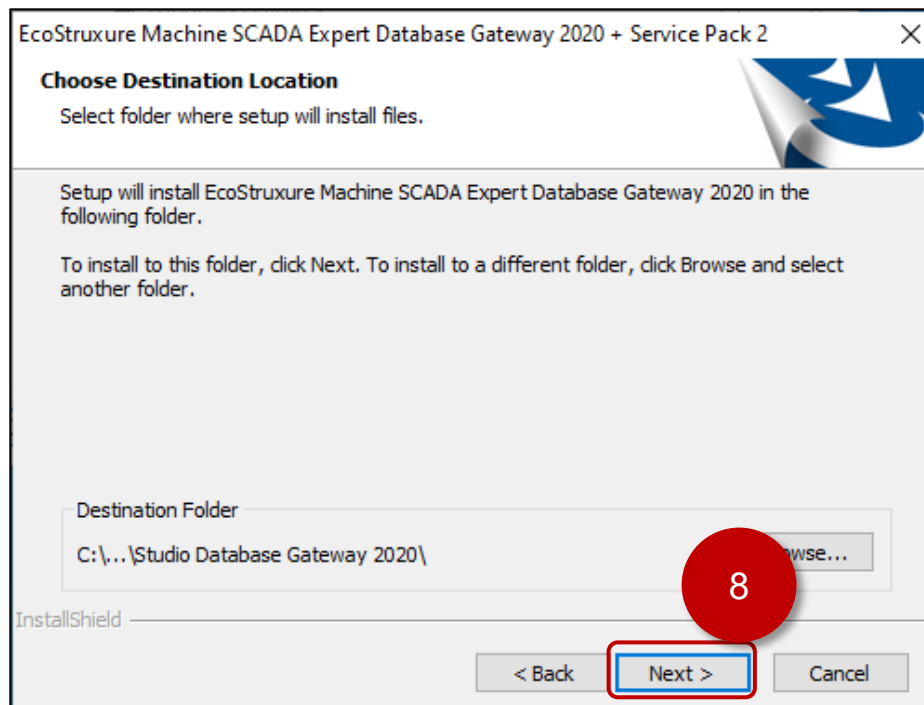


6. Enter a [ User Name ] and [ Company Name ]

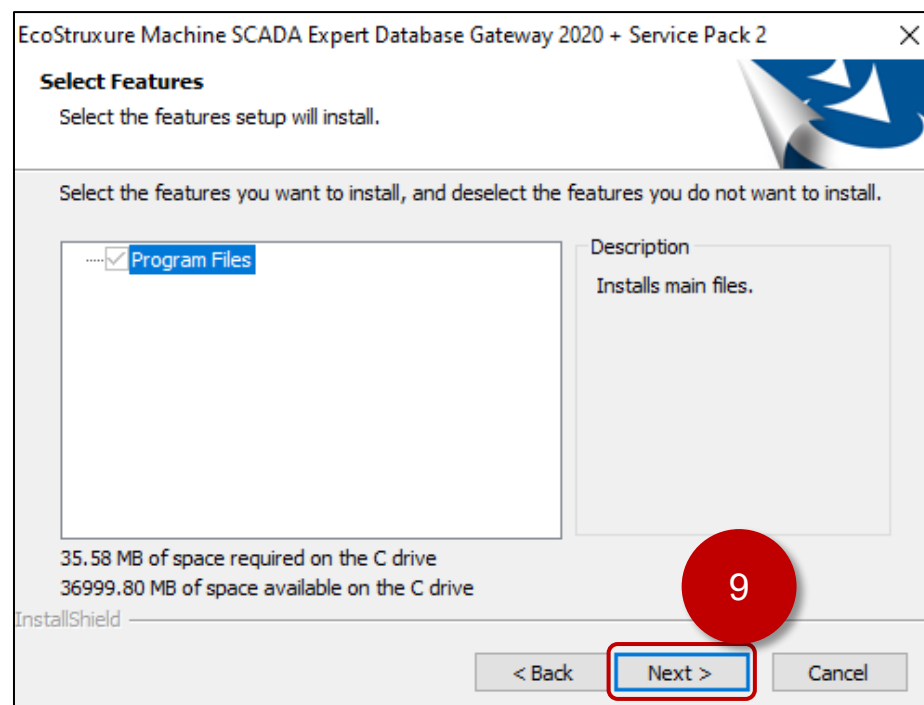
7. Click [ Next ]



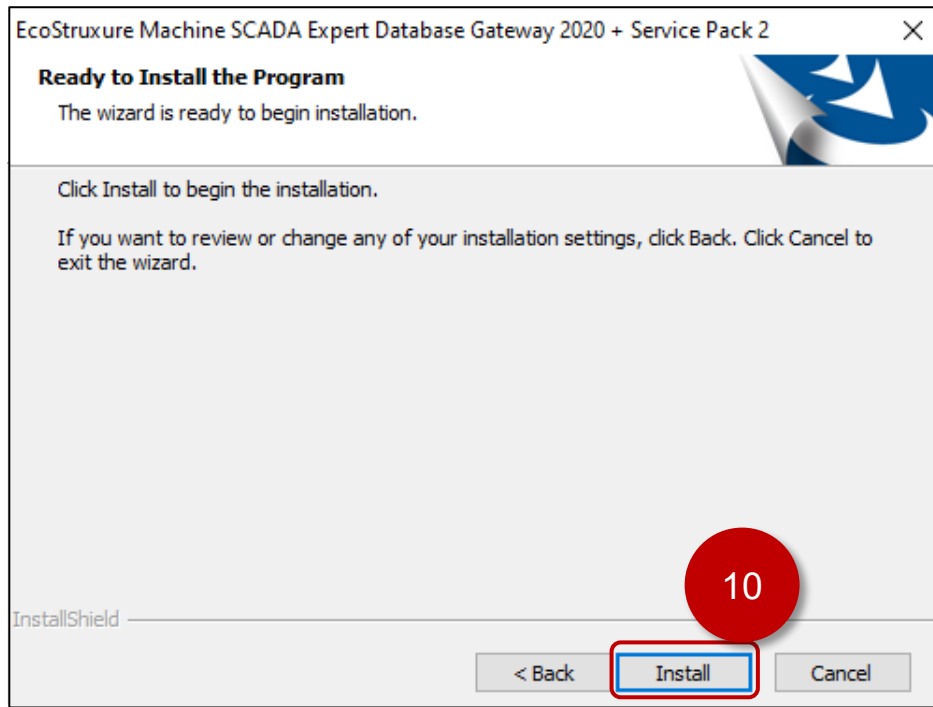
8. Click [ Next ].



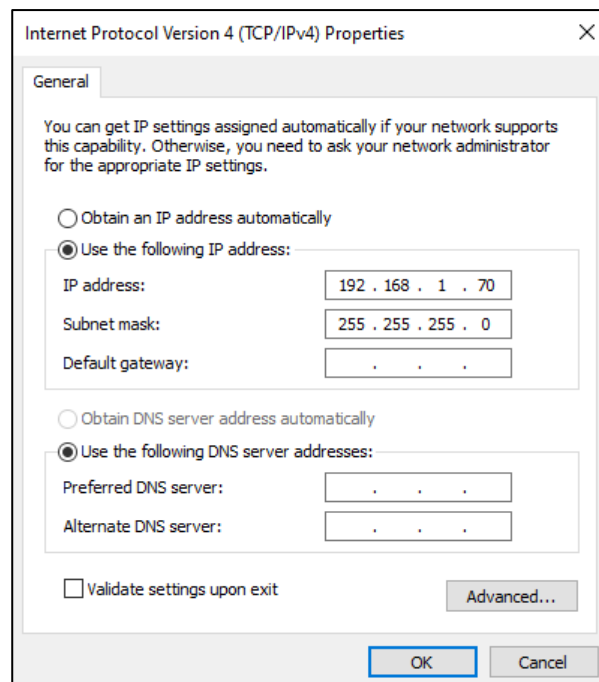
9. Click [ Next ].



10. Click [ Install ].



11. Create a firewall exception for the Studio Database gateway which uses port 3997. For example configure Microsoft Windows Defender Firewall and any other security software that would block communication.
12. Set the IP Address of the Windows PC that is running the Studio Database Gateway to 192.168.1.70

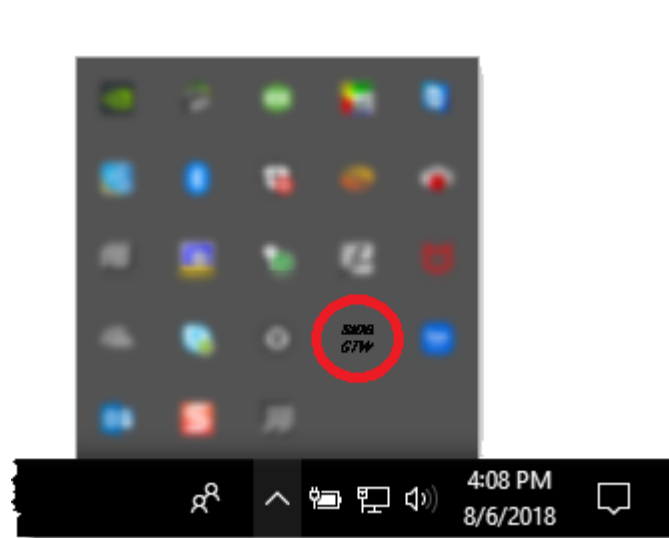


13. Start the Studio Database Gateway Manually or set the program to autostart on Windows log in using a shortcut in the startup folder, task scheduler, registry or other method to auto start a program in Windows.

To manually start the Studio Database Gateway on a Windows PC without EcoStruxure Machine SCADA Expert installed, execute: **C:\Program Files (x86)\Studio Database Gateway 2020\StADOSvr.exe**

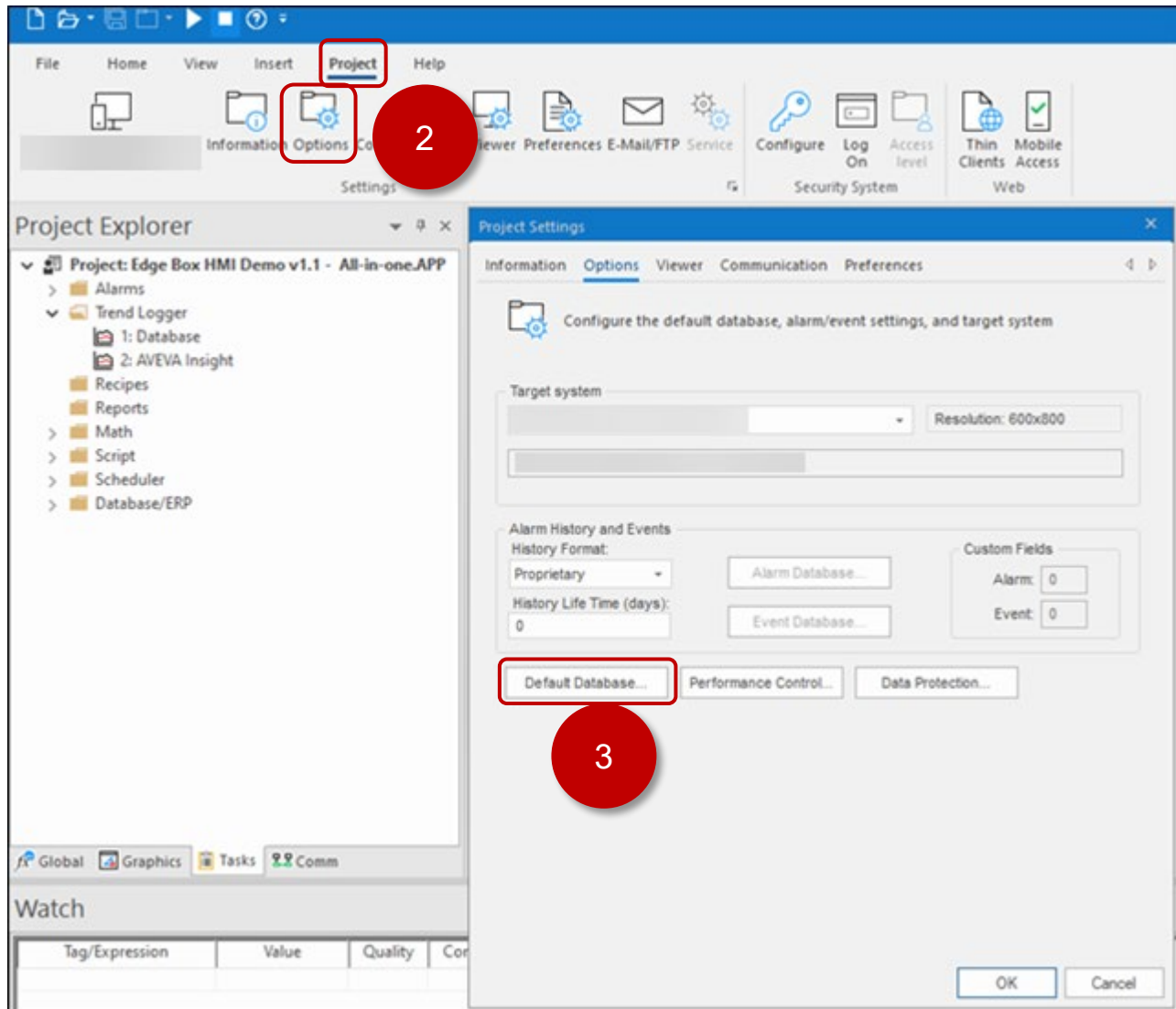
To manually start the Studio Database Gateway on a Windows PC with EcoStruxure Machine SCADA Expert installed, execute: **C:\Program Files (x86)\Schneider Electric\EcoStruxure Machine SCADA Expert 2020\Bin\DatabaseGateway\StADOSvr.exe**

14. Confirm the Studio Database Gateway is running by checking for the Icon in the notification area of the taskbar.

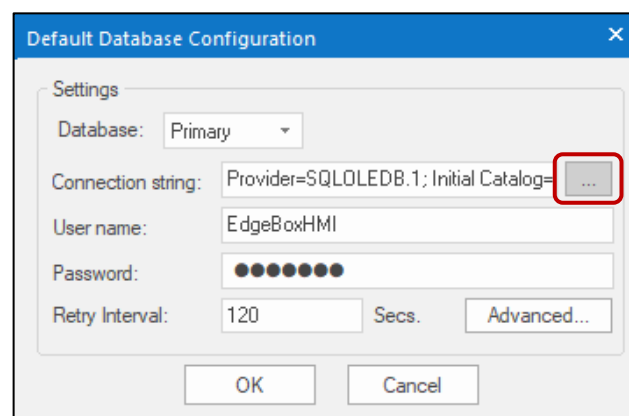


## EcoStruxure Machine SCADA Expert Project settings

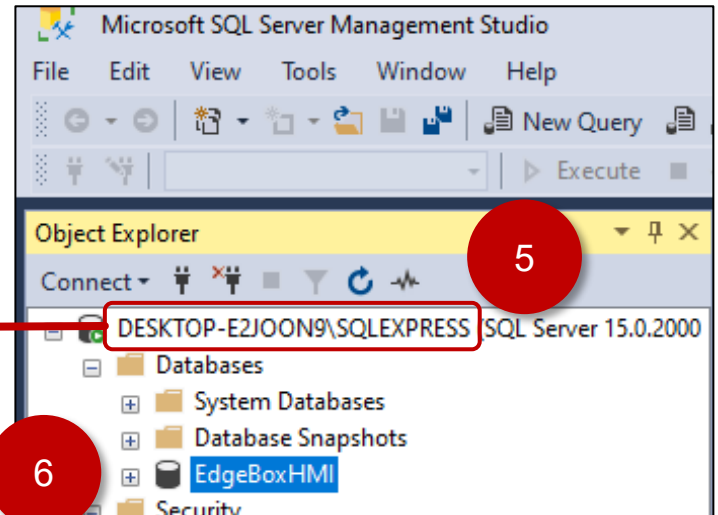
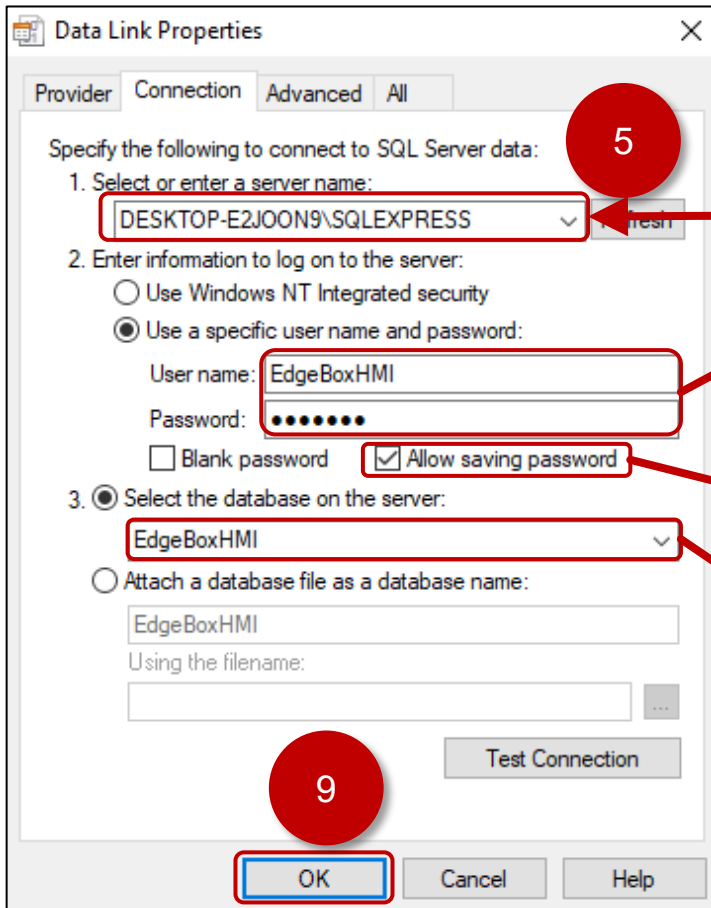
1. Open the Edge Box HMI Demo v1.1 – All-in-one.app project in EcoStruxure Machine SCADA Expert
2. [ Project ] menu -> [ Options ]
3. Click [ Default Database ]



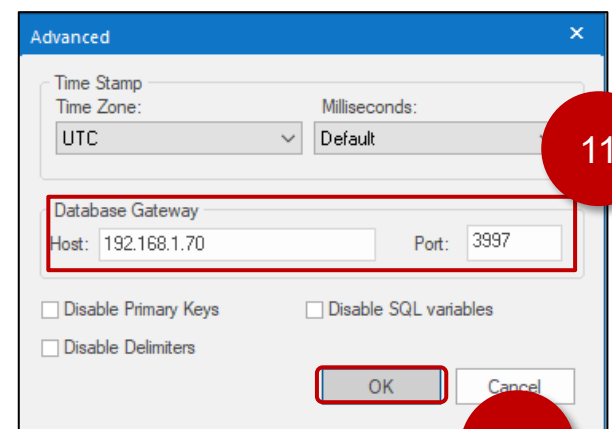
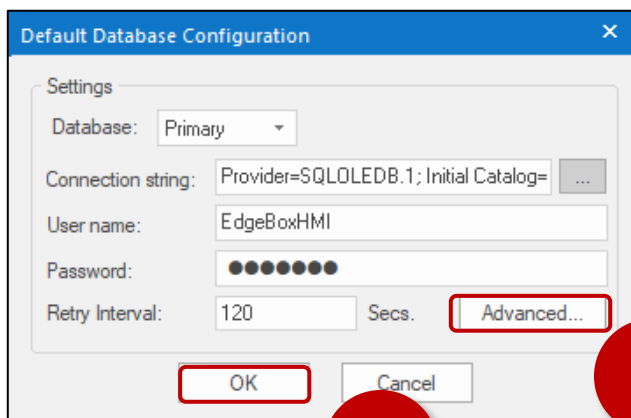
4. Click [ ... ]



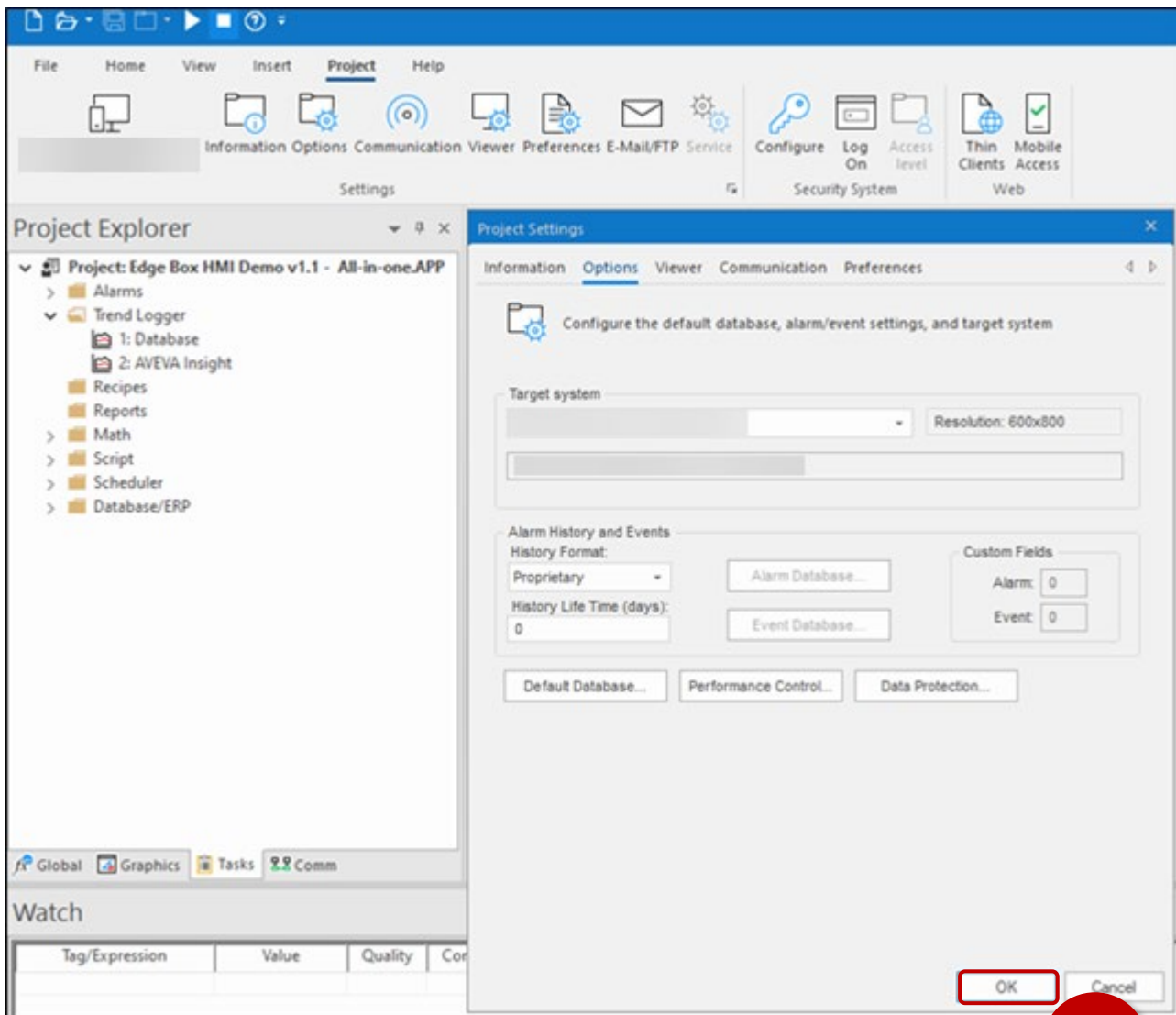
5. Enter the server name so that it matches the SQL server instance name.
6. Enter the user name and password if different (user name = EdgeBoxHMI, password = !SE1234)
7. Check [ Allow saving password ]
8. Enter the database if different (EdgeBox HMI)
9. Click [ OK ]



10. Click [ Advanced ]
11. Enter the Database Gateway Host and Port if different (Host = 192.168.1.70, Port = 3997)
12. Click [ OK ]
13. Click [ OK ]



## 14. Click [ OK ]

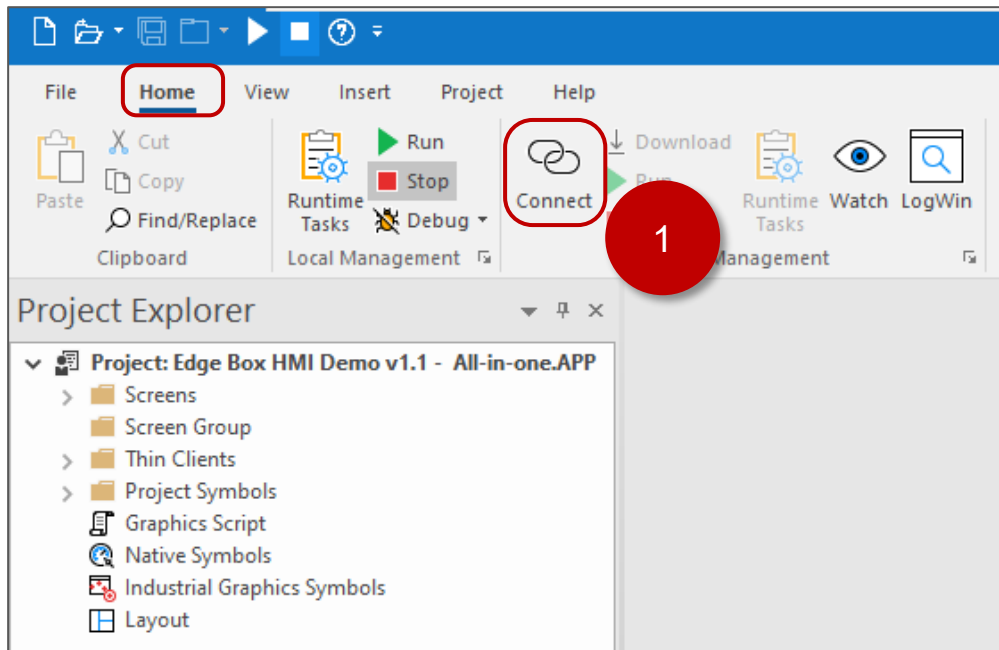


14

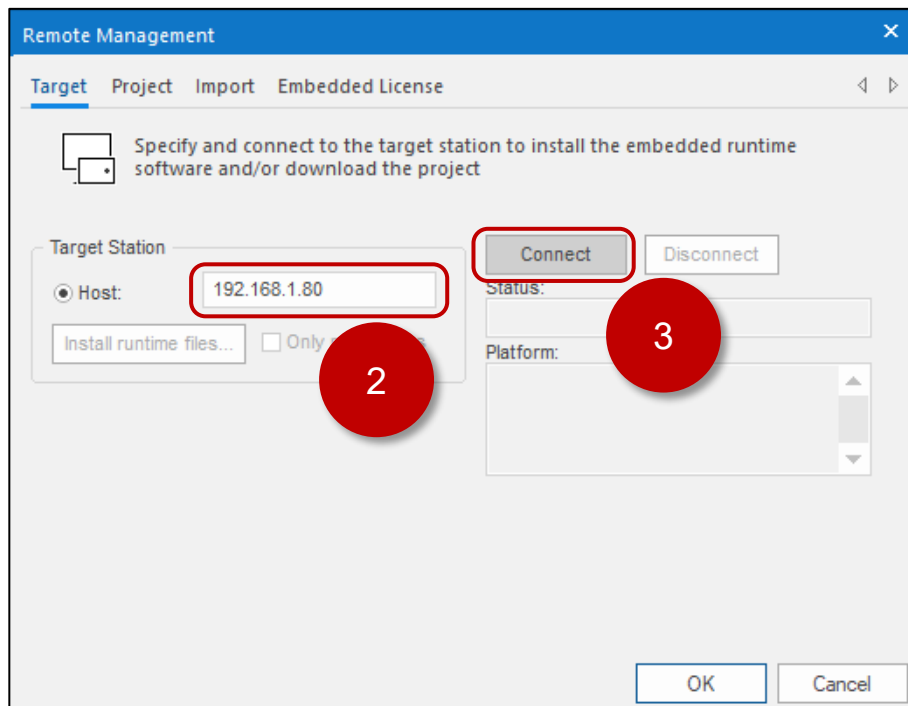


## 7. Transfer Runtime and Project Files

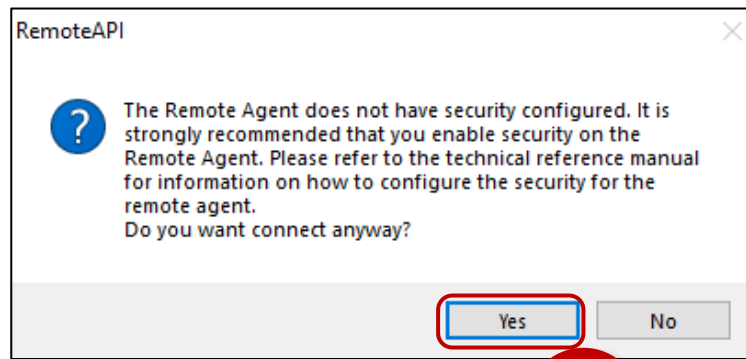
1. [ Home ] tab and Click [Connect] in Remote Management.



2. Set the IP Address of your Edge Box HMI e.g. 192.168.1.80
3. Click [Connect]

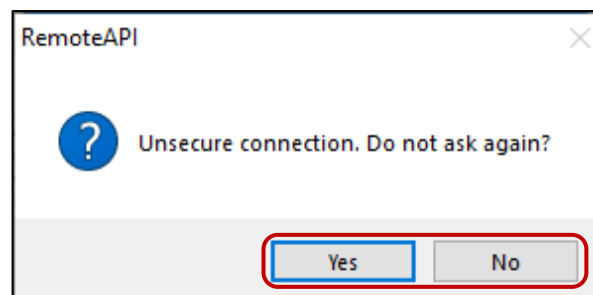


4. If prompted about Remote Agent, click [ Yes ]



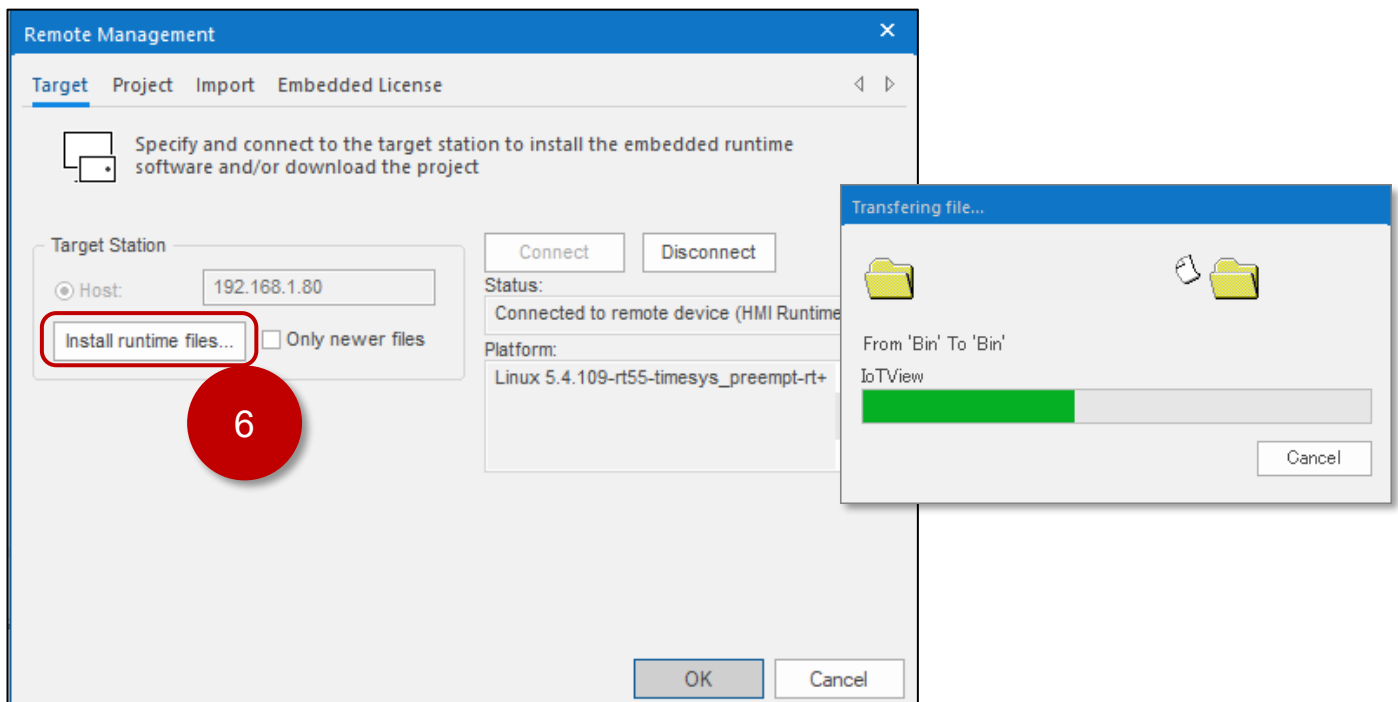
4

5. Answer the question by clicking [ Yes ] or [ No ] as appropriate.



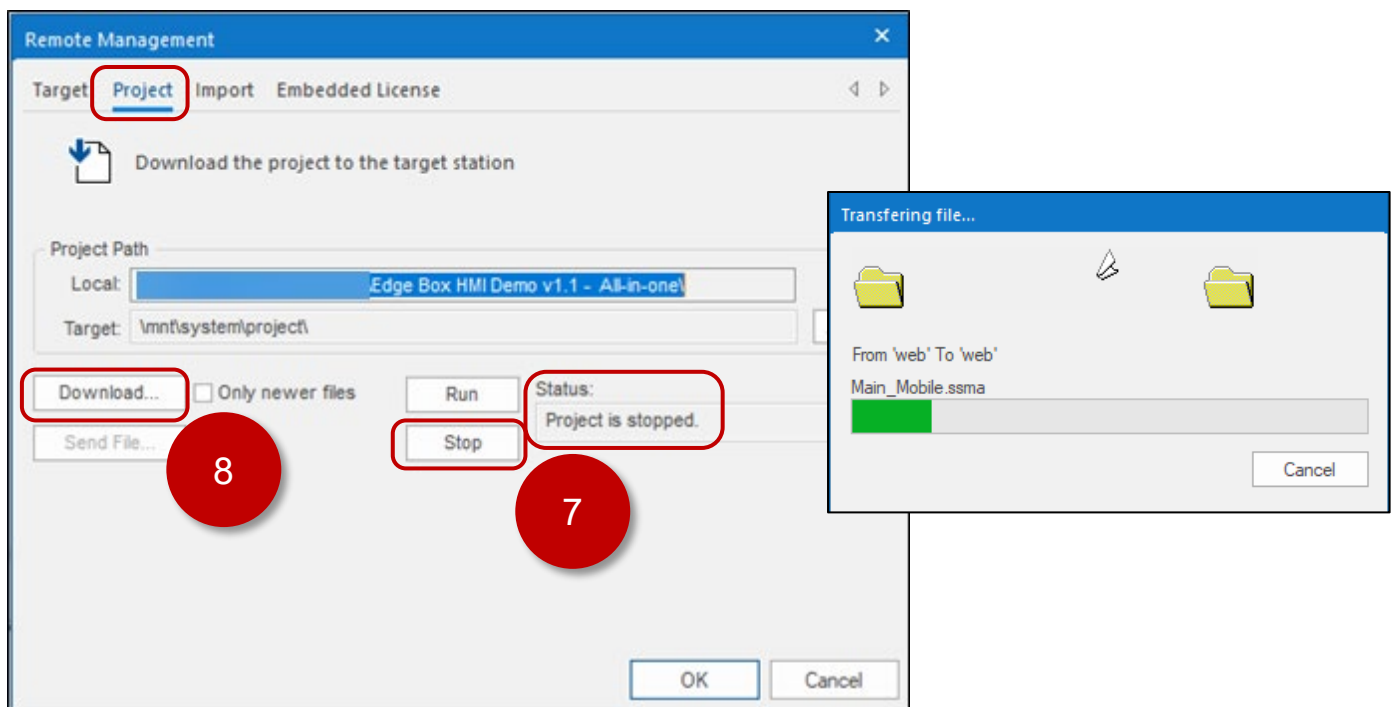
5

6. Click [Install Runtime Files]

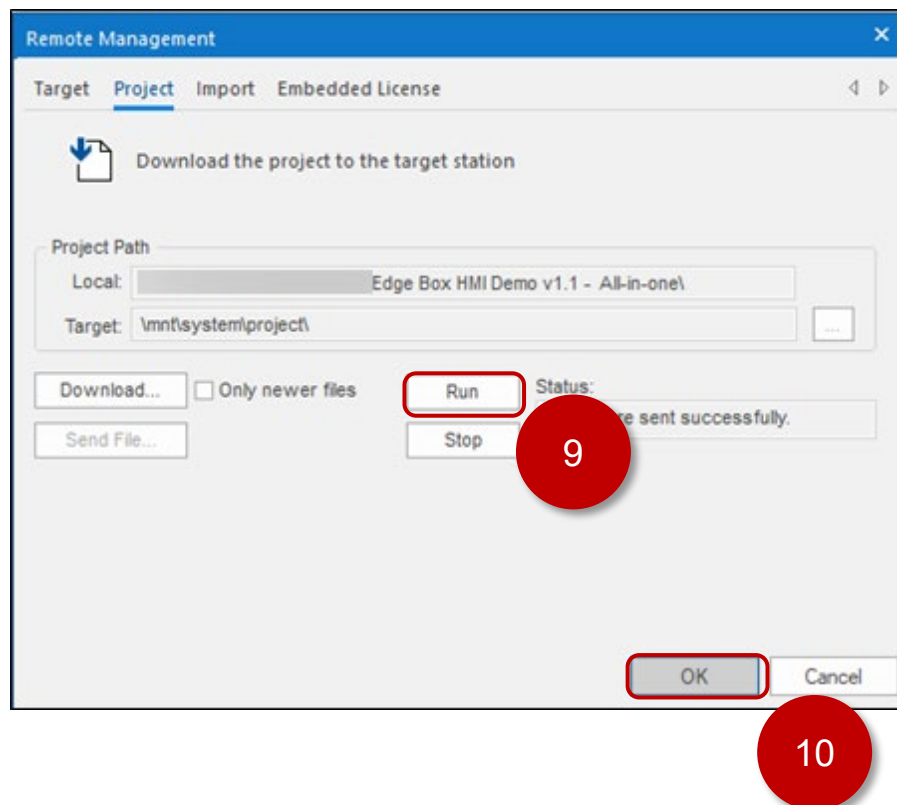


6

7. [ Project ] tab, confirm that the Status is stopped. If running, click [ Stop ]
8. Click [ Download ]



9. Click [ Run ]
10. Click [ OK ]



## 8. Mobile Access

Mobile access is used for both local and remote viewing of Edge Box HMI. You can use either ETHERNET 1 or ETHERNET 2 as the IP address for mobile access.

There are a several mobile access URL options to view the Edge Box HMI.

- Mobile Access Generic Interface
- Mobile Access Direct to screen access
- Mobile Access Watch screen Access

Web Browser URL Examples for the Edge Box HMI Demo:

Link	Description
<a href="https://192.168.1.80/MA">https://192.168.1.80/MA</a>	Generic Interface login prompt
<a href="https://192.168.1.80/MA/#guestuser=1">https://192.168.1.80/MA/#guestuser=1</a>	Generic Interface auto login as Guest
<a href="https://192.168.1.80/MA/#user=Admin&amp;password=Admin">https://192.168.1.80/MA/#user=Admin&amp;password=Admin</a>	Generic Interface auto login as Admin
<a href="https://192.168.1.80/MA/#screen=main_desktop">https://192.168.1.80/MA/#screen=main_desktop</a>	Direct to main_desktop screen login prompt
<a href="https://192.168.1.80/MA/#screen=main_desktop&amp;guestuser=1">https://192.168.1.80/MA/#screen=main_desktop&amp;guestuser=1</a>	Direct to main_desktop screen auto login as Guest
<a href="https://192.168.1.80/MA/#screen=main_desktop&amp;user=Admin&amp;password=Admin">https://192.168.1.80/MA/#screen=main_desktop&amp;user=Admin&amp;password=Admin</a>	Direct to main_desktop screen auto login as Admin
<a href="https://192.168.1.80/MA/#screen=main_mobile">https://192.168.1.80/MA/#screen=main_mobile</a>	Direct to main_mobile screen login prompt
<a href="https://192.168.1.80/MA/#screen=main_mobile&amp;guestuser=1">https://192.168.1.80/MA/#screen=main_mobile&amp;guestuser=1</a>	Direct to main_mobile screen auto login as Guest
<a href="https://192.168.1.80/MA/#screen=main_mobile&amp;user=Admin&amp;password=Admin">https://192.168.1.80/MA/#screen=main_mobile&amp;user=Admin&amp;password=Admin</a>	Direct to main_mobile screen auto login as Admin
<a href="https://192.168.1.80/MA/#watch=1">https://192.168.1.80/MA/#watch=1</a>	Watch screen login prompt Guest access denied
<a href="https://192.168.1.80/MA/#watch=1&amp;guestuser=1">https://192.168.1.80/MA/#watch=1&amp;guestuser=1</a>	Watch screen auto login as Guest Guest access denied
<a href="https://192.168.1.80/MA/#watch=1&amp;user=Admin&amp;password=Admin">https://192.168.1.80/MA/#watch=1&amp;user=Admin&amp;password=Admin</a>	Watch screen auto login as Admin