

STM6000 Edge Box HMI

Demo Setup Guide – EcoStruxure™ Machine Advisor



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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.



Advice

Any problems?

Please refer to manuals when having a problem with Edge Box HMI.

(Hardware)

STM6000 hardware manual:

<https://www.proface.com/en/product/hmi/stm6000/download>

(Software)

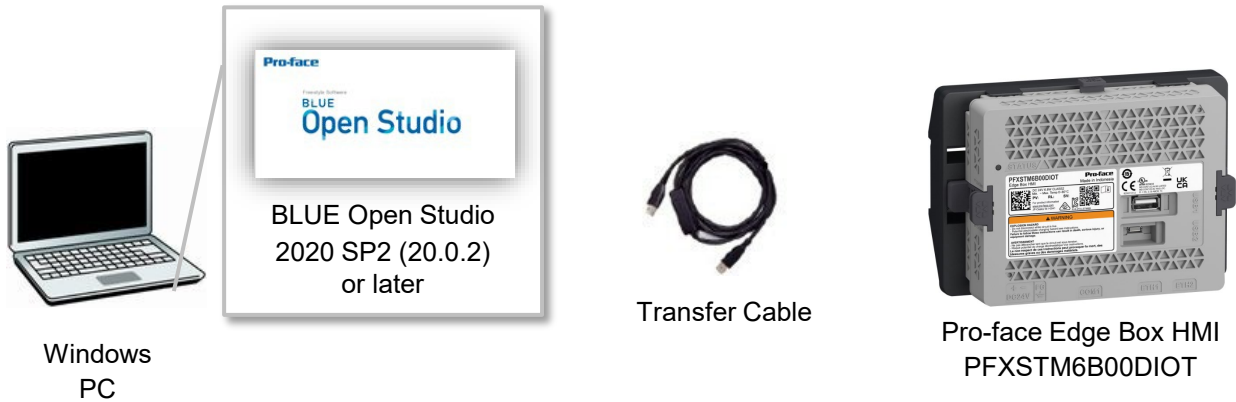
BLUE Open Studio Support /Downloads:

<https://www.proface.com/en/product/soft/blue-os/download>

1. Preface

(2) Building a development environment

Prepare the following environment.



(A) BLUE Open Studio

BLUE Open Studio 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) Pro-face Edge PFXSTM6B00DIOT

Please visit <https://www.pro-face.com> for more information on the Pro-face Edge Box HMI.



Pro-face Edge Box HMI
PFXSTM6B00DIOT

Preface

(3) How to get BLUE Open Studio

To create HMI Screen for the Edge Box HMI, the version of BLUE Open Studio needs to be V2020 SP2 or later.



You can download BLUE Open Studio Installer from the following link.

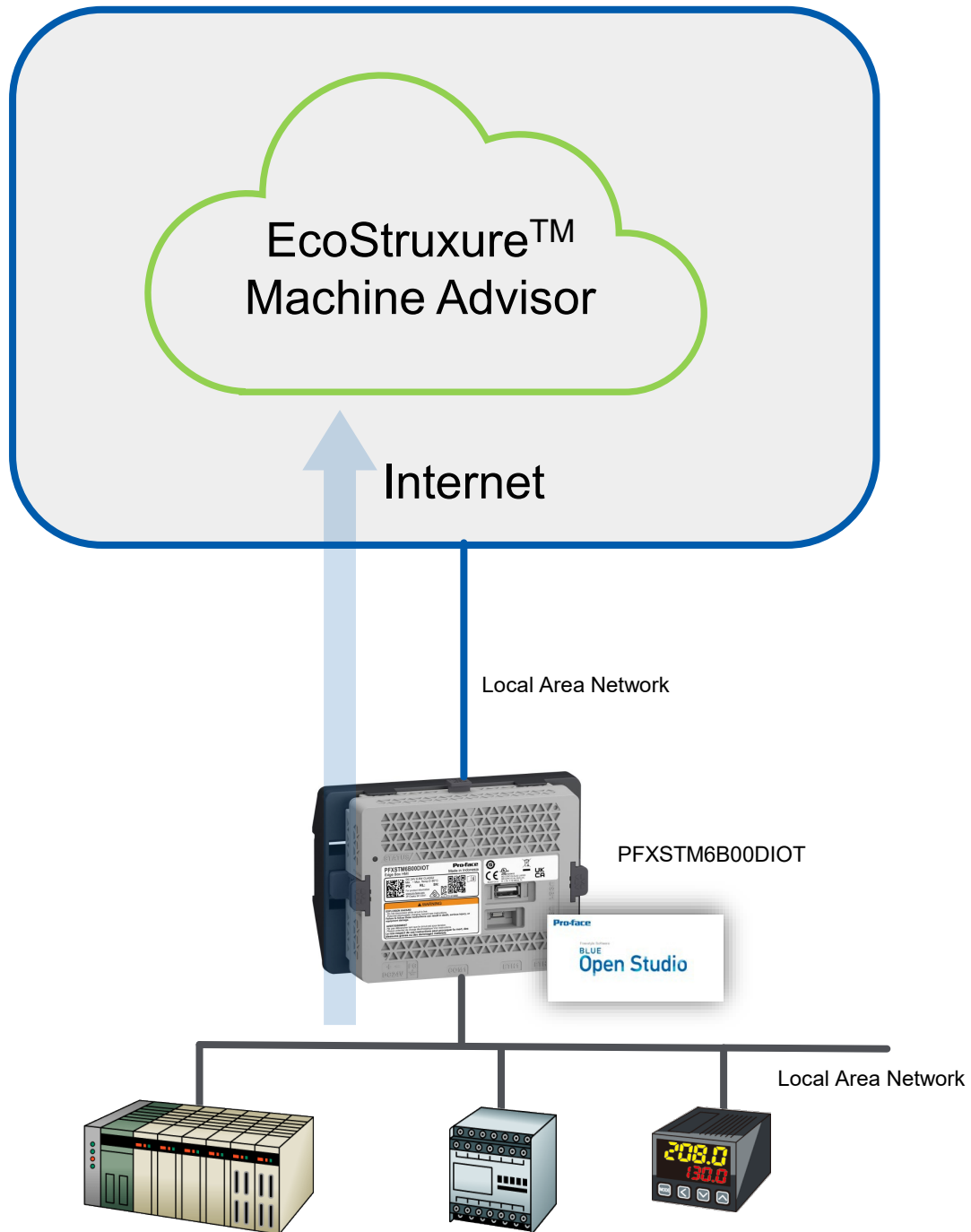
<https://www.proface.com/en/service#/page/installer/bos>

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 [activation page](#) to check how to activate BLUE Open Studio.

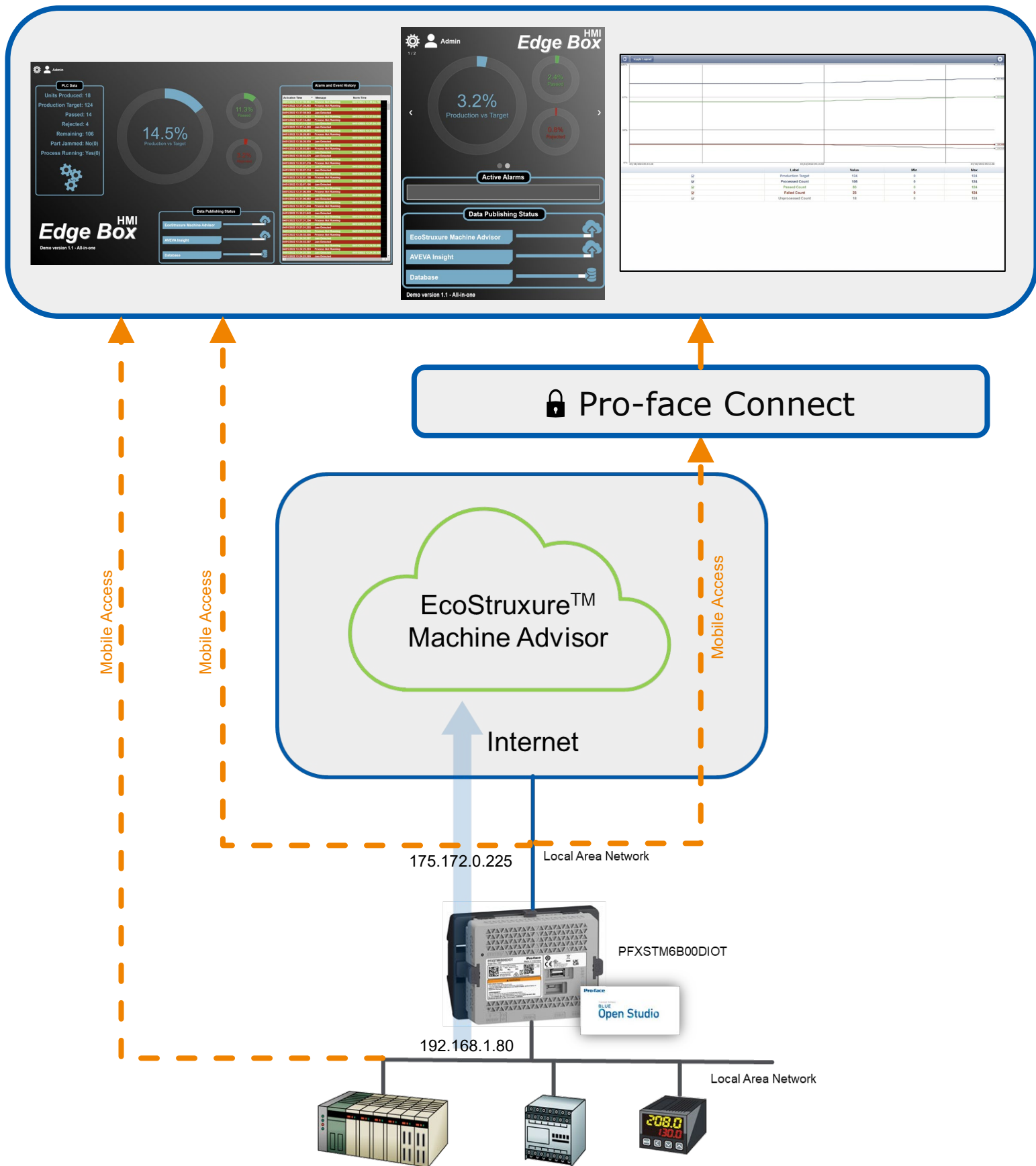
2. STM6000 Edge Box HMI Demo Overview

The STM6000 Edge Box HMI Demo – EcoStruxure Machine Advisor demonstrates pushing data from internal tags or external devices to the cloud: EcoStruxure Machine Advisor. Although a PLC or other device can supply data, for demonstration purposes data is internally generated.



STM6000 Edge Box HMI – Demo Setup Guide – EcoStruxure™ Machine Advisor

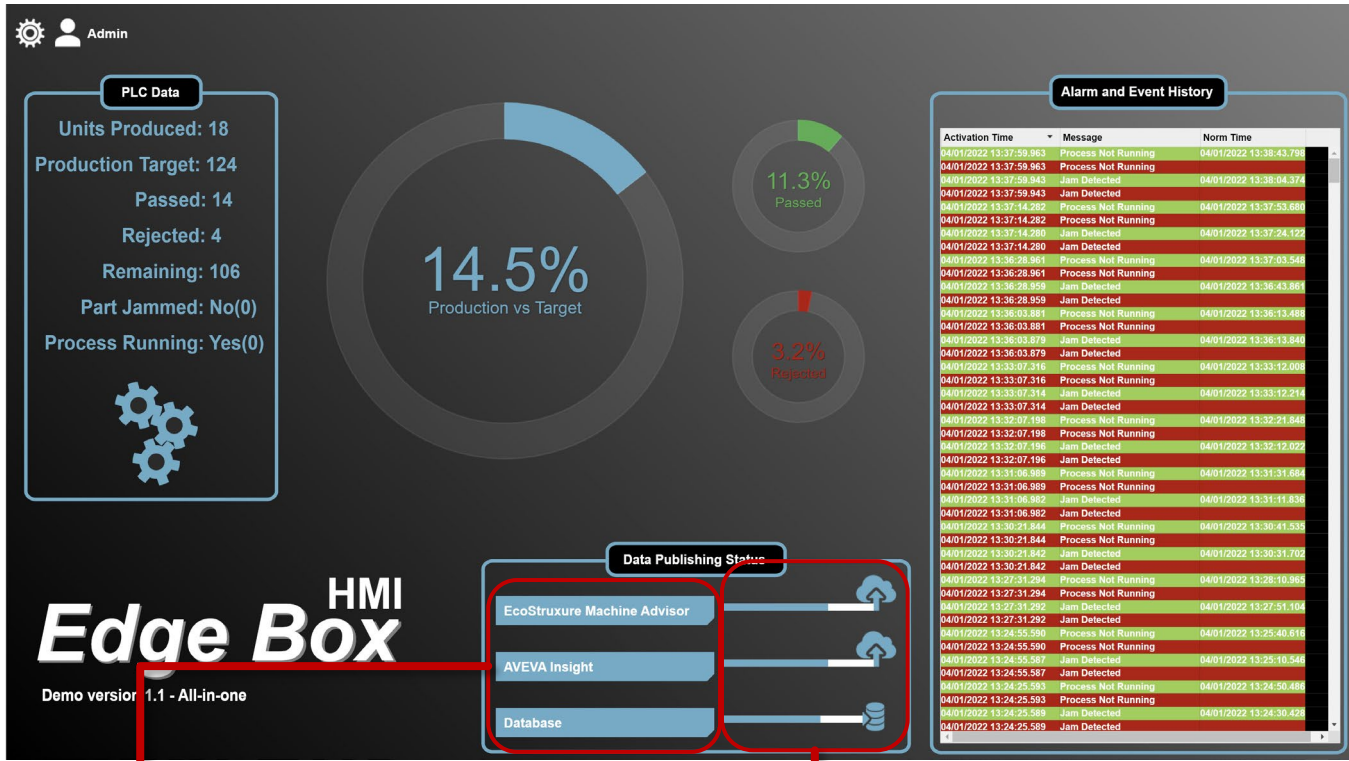
The STM6000 Edge Box HMI cannot be used with an integrated display. However, you can view screens and more within a web browser using Mobile Access. Mobile Access can be used via one of the two possible IP addresses of the Edge Box HMI. For secure remote viewing utilise Pro-face Connect + the local IP.



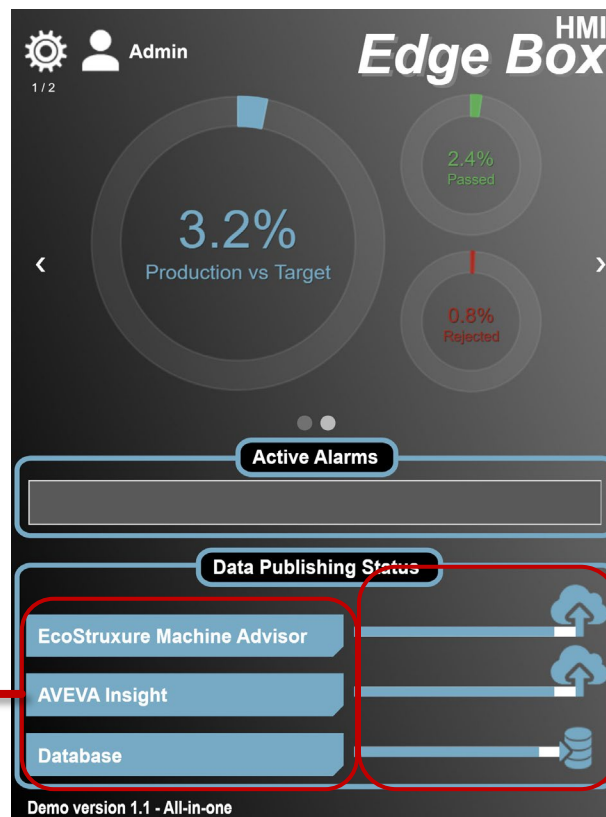
The demonstration project has two user accounts:

- 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



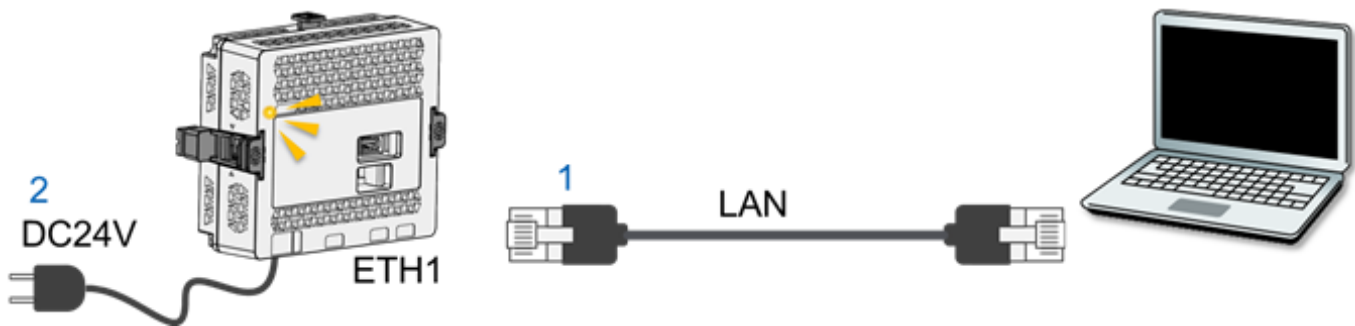
ETH1 – OT Layer
Manual IP
192.168.1.80

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)

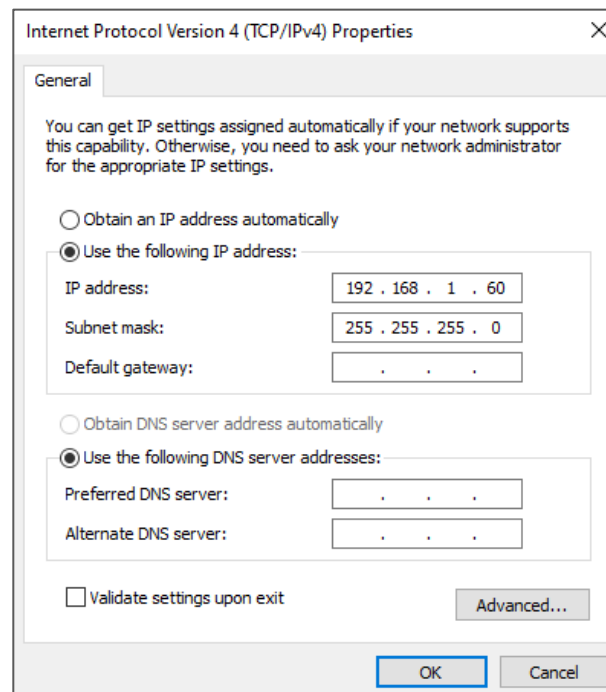
The STM6000 Edge Box HMI will have two connections for demonstration purposes:

- 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 STM6000 Edge Box HMI. The status LED flashes orange.



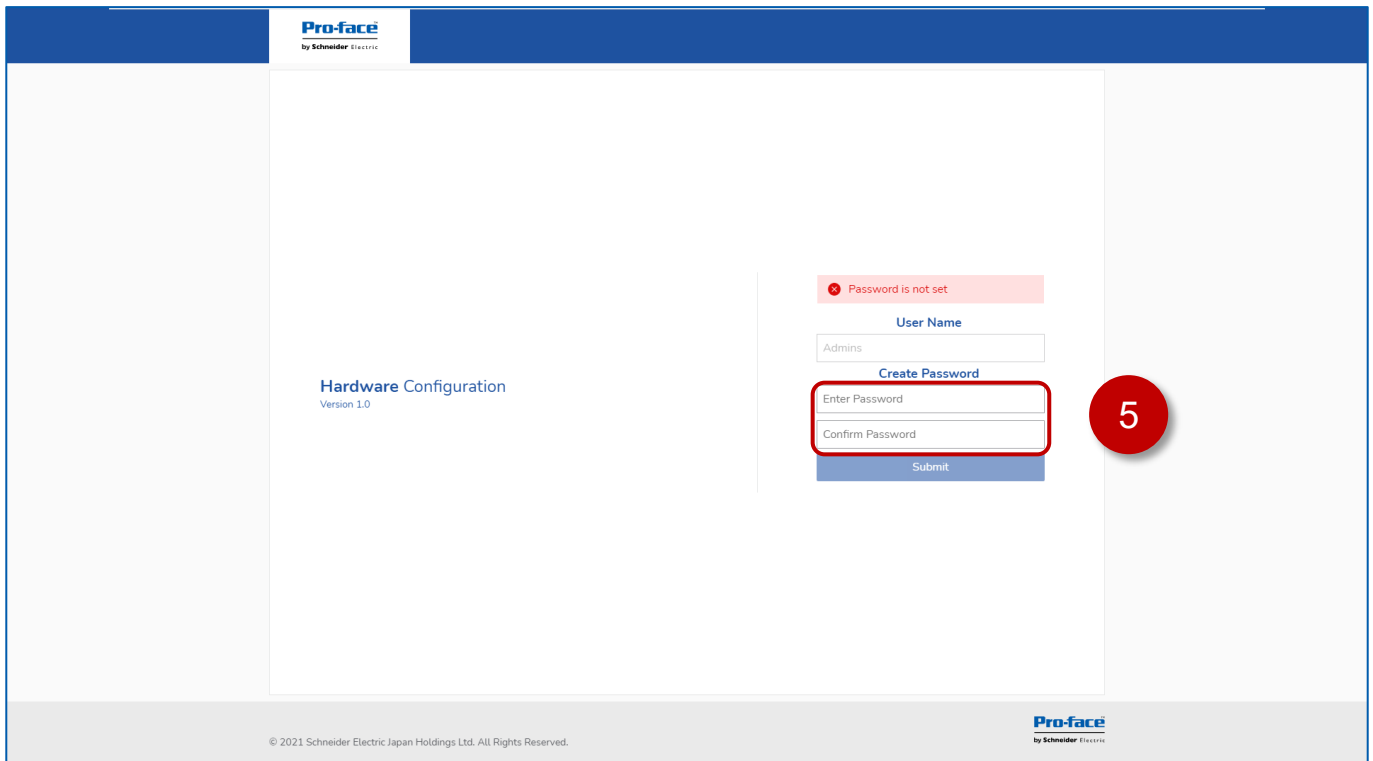
3. Set IP address of your computer as follows:
IP address: 192.168.1.60,
Subnet Mask: 255.255.255.0



- 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).

- Hardware Configuration screen is displayed.
 Set a login password and click [Submit]. e.g. !Proface1234, and click [Submit]
 Note: The user name is “Admins” and cannot be changed.

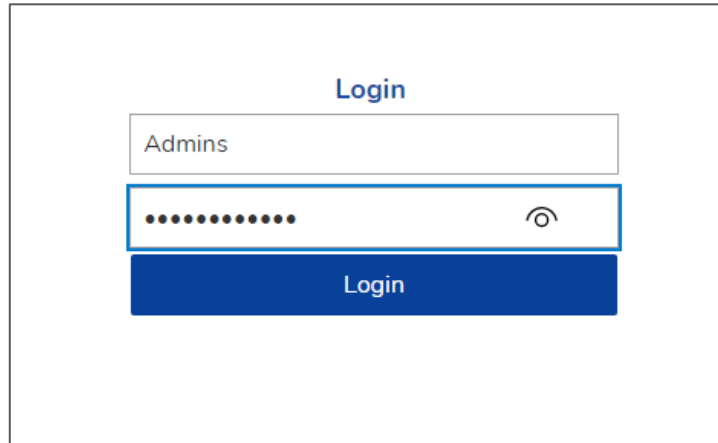


The password must meet the following requirements:

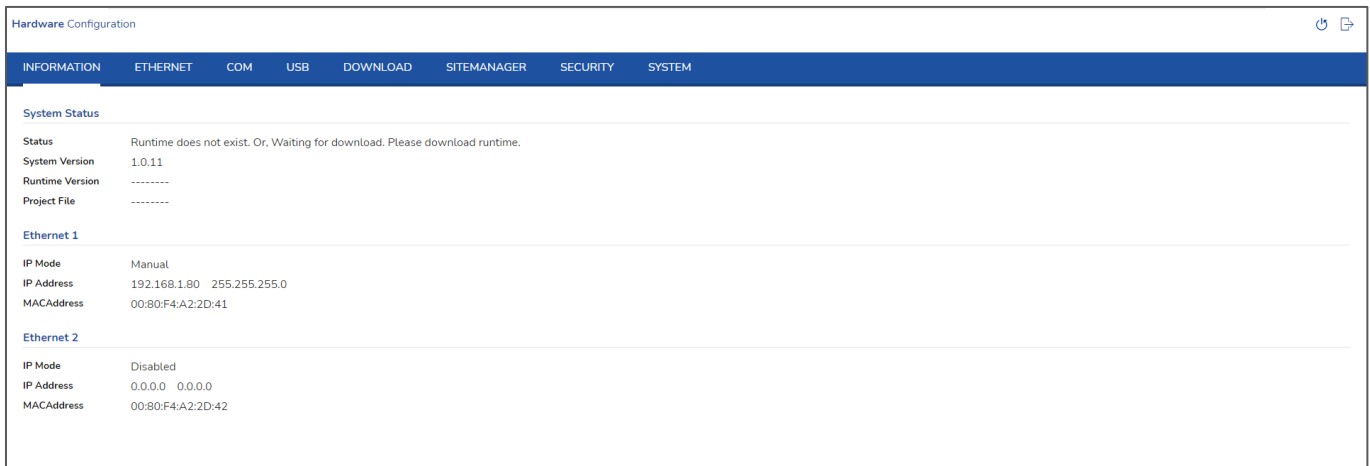
Number of characters	At least 8 single-byte characters, up to 64 characters
Types of characters	Use at least one of each of the following types of characters: <ul style="list-style-type: none"> • Uppercase letter (A-Z) • Lowercase letter (a-z) • Number (0-9) • Symbol (special character): ! # - = _ .

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.

5. Enter the User Name, Admins and the newly created password, e.g. !Proface1234. Click [Login]

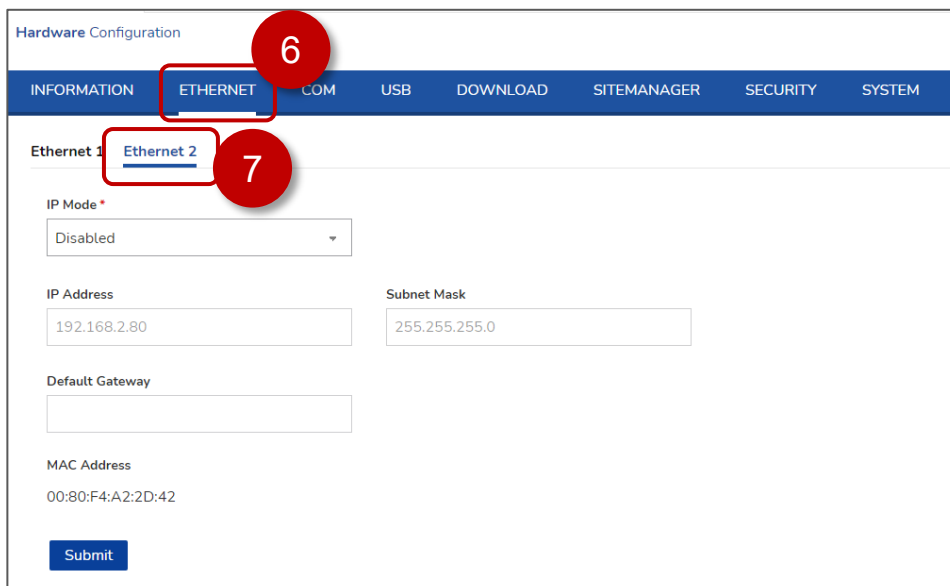


A screenshot of a login interface. At the top, the word "Login" is centered in blue. Below it is a text input field containing the text "Admins". Underneath that is a password input field with a series of black dots and a small eye icon on the right. At the bottom of the form is a blue button with the text "Login" in white.



A screenshot of the "Hardware Configuration" web interface. The page has a blue header with navigation tabs: INFORMATION, ETHERNET, COM, USB, DOWNLOAD, SITEMANAGER, SECURITY, and SYSTEM. The "ETHERNET" tab is selected. The main content area shows "System Status" with fields for Status, System Version (1.0.11), Runtime Version, and Project File. Below that are sections for "Ethernet 1" and "Ethernet 2", each with fields for IP Mode, IP Address, and MACAddress.

6. Click [ETHERNET] to display the Ethernet Settings.
7. Click [Ethernet 2] to display ethernet port 2 settings.



A screenshot of the "Hardware Configuration" web interface, similar to the previous one, but with red annotations. A red circle with the number "6" is placed over the "ETHERNET" tab in the navigation bar. Another red circle with the number "7" is placed over the "Ethernet 2" sub-tab. The "Ethernet 2" settings are displayed, including a dropdown for "IP Mode" set to "Disabled", input fields for "IP Address" (192.168.2.80) and "Subnet Mask" (255.255.255.0), a "Default Gateway" field, and a "MAC Address" field (00:80:F4:A2:2D:42). A blue "Submit" button is at the bottom.

- 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* **8**
Automatic

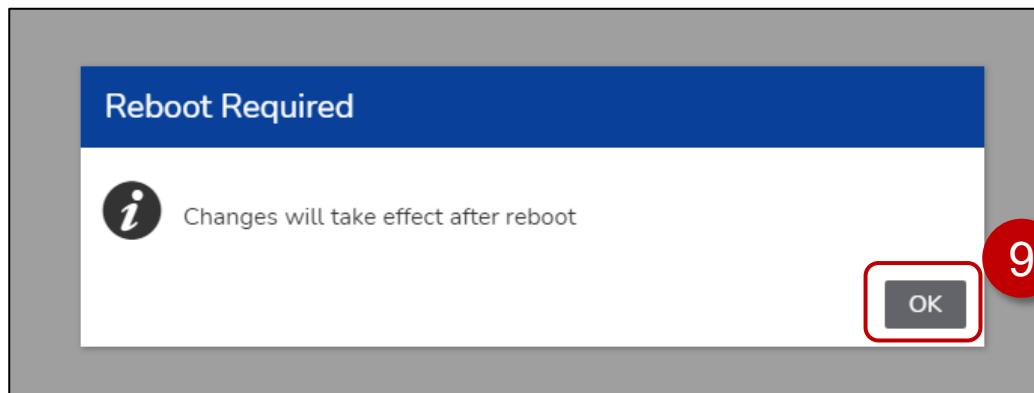
IP Address: 192.168.2.80 Subnet Mask: 255.255.255.0

Default Gateway

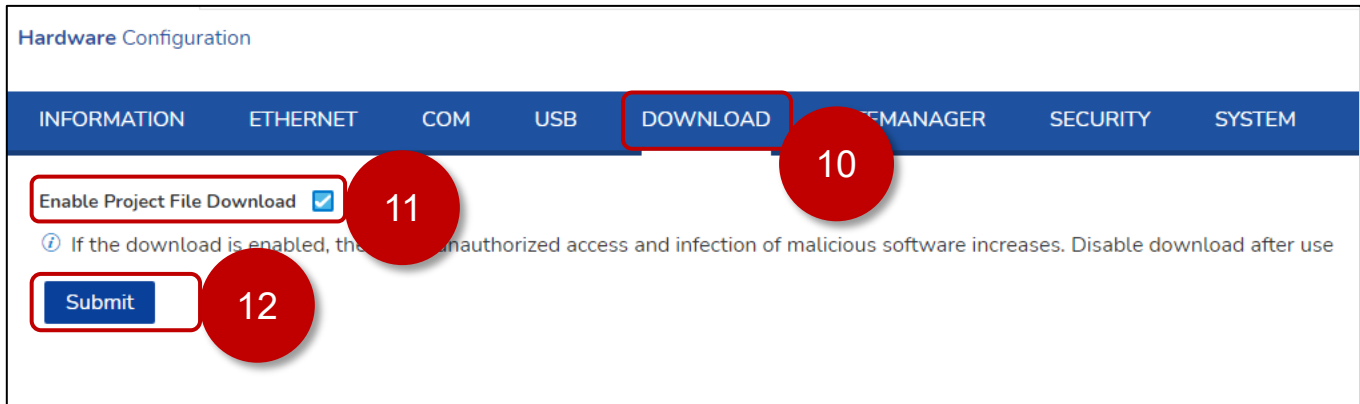
MAC Address: 00:80:F4:A2:2D:42

Submit **9**

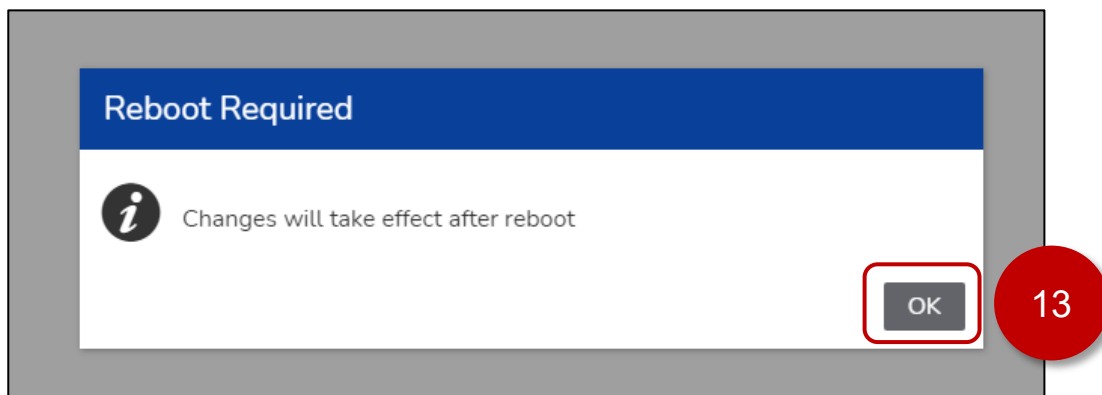
- Click [Submit] to apply the ethernet setting. Note that the settings will only take effect after a reboot. [OK] to dismiss the Reboot Required dialog.



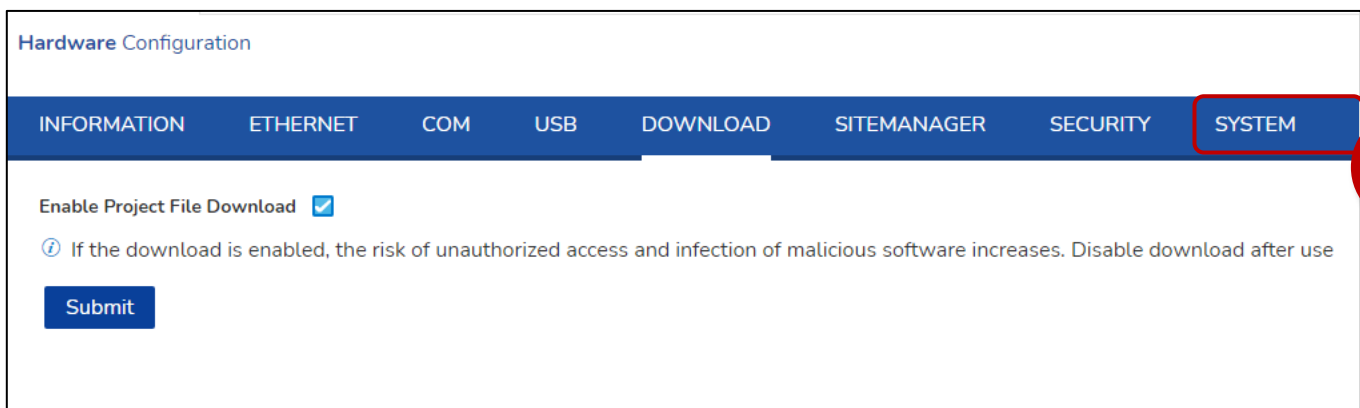
10. Click [DOWNLOAD].



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



14. Click [SYSTEM]



15. 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

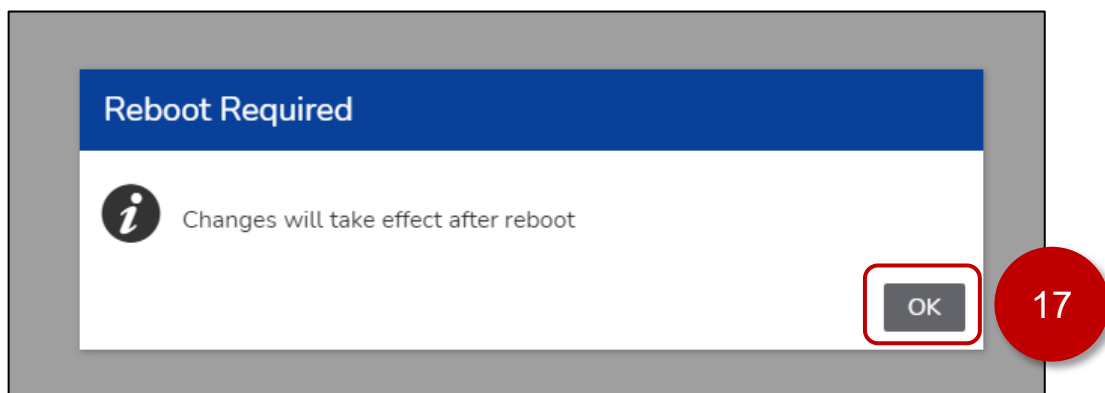
Time-zone
(UTC-04:00) Canada/Eastern

Synchronized with NTP Server

NTP Server

Submit

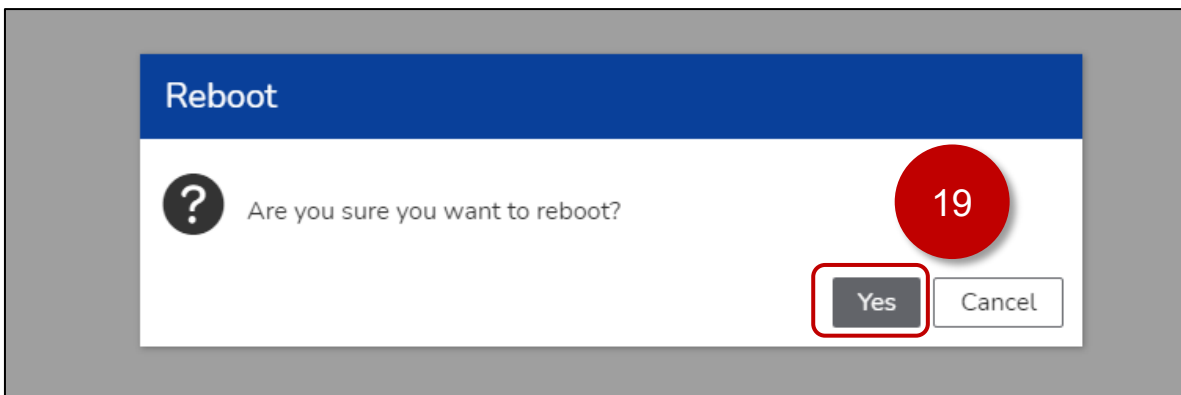
16. Click [Submit], changes will take effect after reboot.
17. Click [OK] to dismiss the Reboot Required dialog.



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



19. Click [Yes] in the Reboot dialog.



20. 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 1.0.11
 Runtime Version -----
 Project File -----

Ethernet 1

IP Mode Manual
 IP Address 192.168.1.80 255.255.255.0
 MACAddress 00:80:F4:A2:2D:41

Ethernet 2

IP Mode Automatic
 IP Address 175.172.0.225 255.255.255.0
 MACAddress 00:80:F4:A2:2D:42

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

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

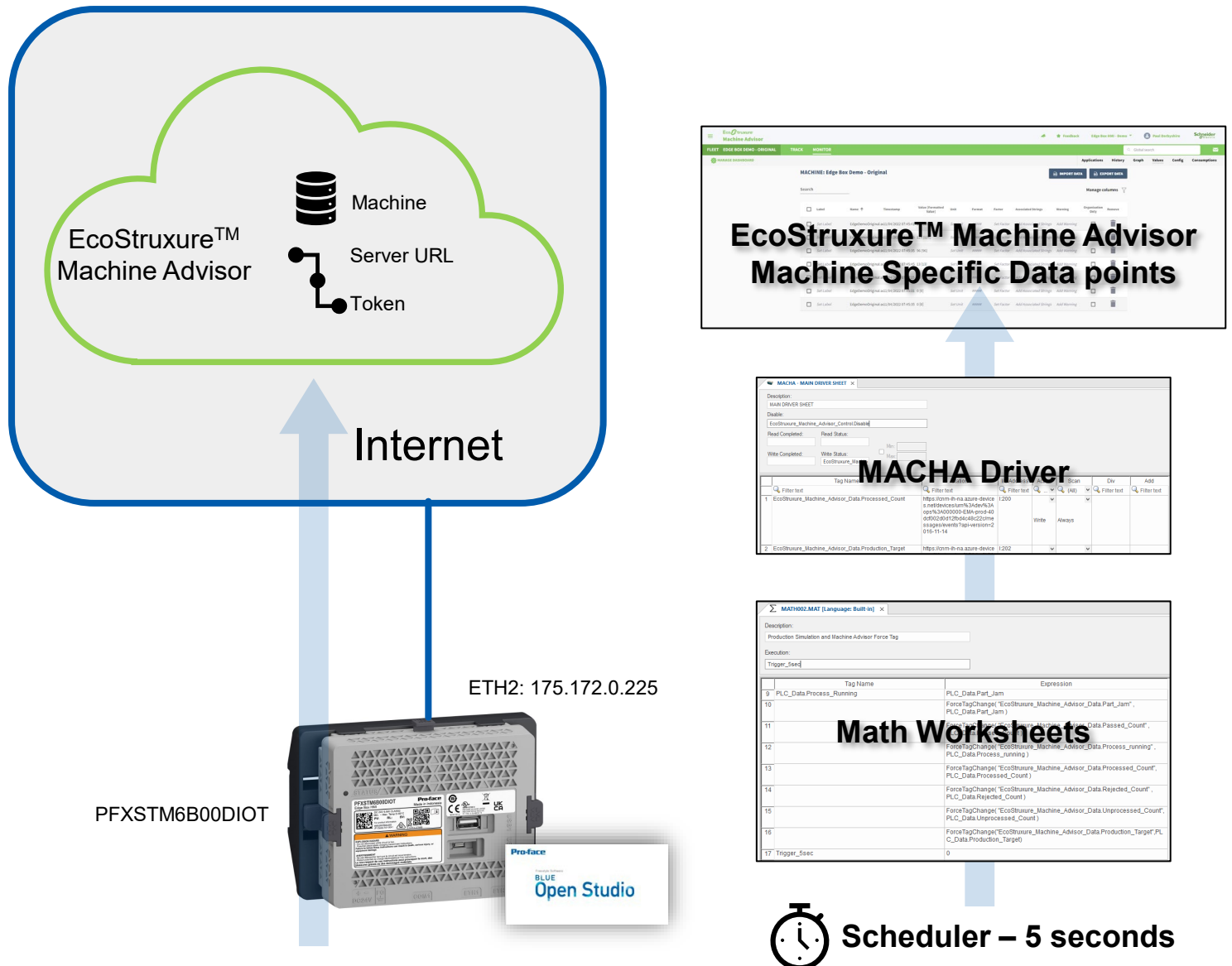
NTP Server

Submit

4. EcoStruxure Machine™ Advisor Configuration

Overview

The STM6000 Edge Box HMI Demo – EcoStruxure Machine Advisor 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 Organisation 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].

FLEET OVERVIEW

MY MACHINE TYPES REGISTER MACHINE

Filter by: Offline only Warning only Filter by type CLEAR ALL

Total machines: 1

Search location

1 Machines Japan 大阪市

Search machine

Edge Box Demo - Original
Type: Production
Customer: HMI Sales
Organization: Edge Box HMI - Demo

TRACK MONITOR

3

EcoStruxure Machine Advisor

Feedback Edge Box HMI - Demo Paul Derbyshire Schneider Electric

FLEET EDGE BOX DEMO - ORIGINAL TRACK MONITOR

MANAGE DASHBOARD Applications History Graph Values Config Consumptions

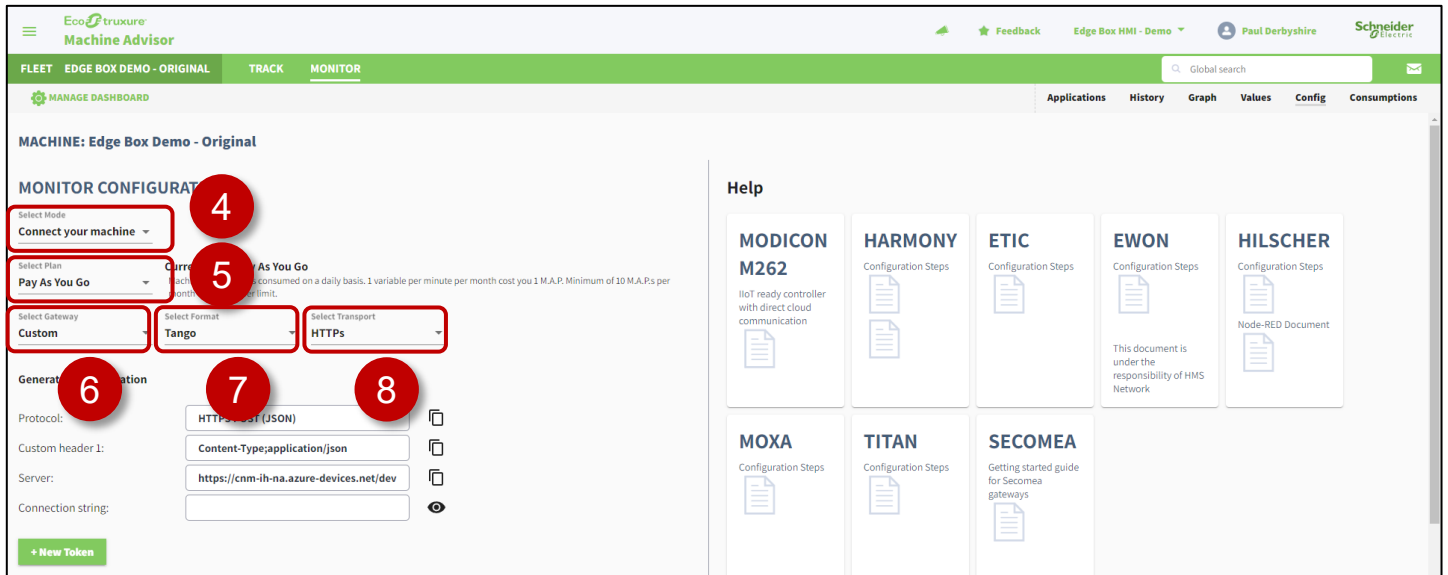
MACHINE: Edge Box Demo - Original

MONITOR CONFIGURATION Help

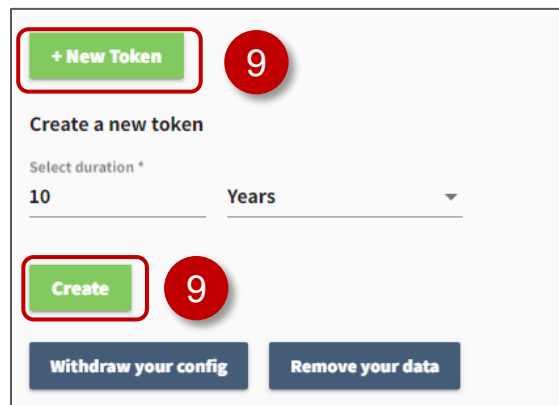
3

3

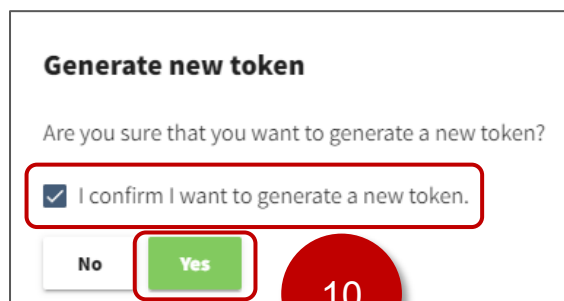
4. Select Mode: [Connect your machine]
5. Select Plan: Select your appropriate plan. For example, [Pay As You Go]
6. Select Gateway: [Custom]
7. Select Format: [Tango]
8. Select Transport: [HTTPs]



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





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





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:  11


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:  12

 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

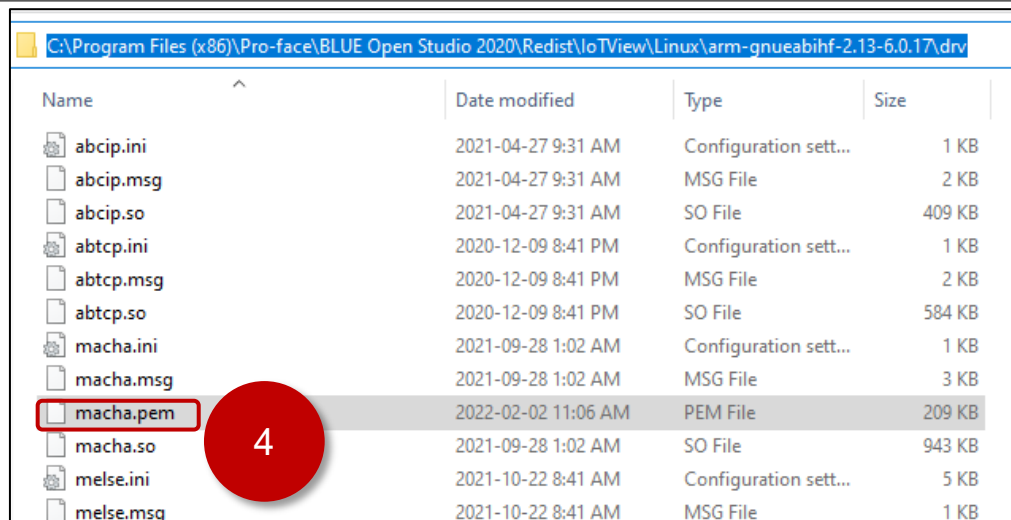
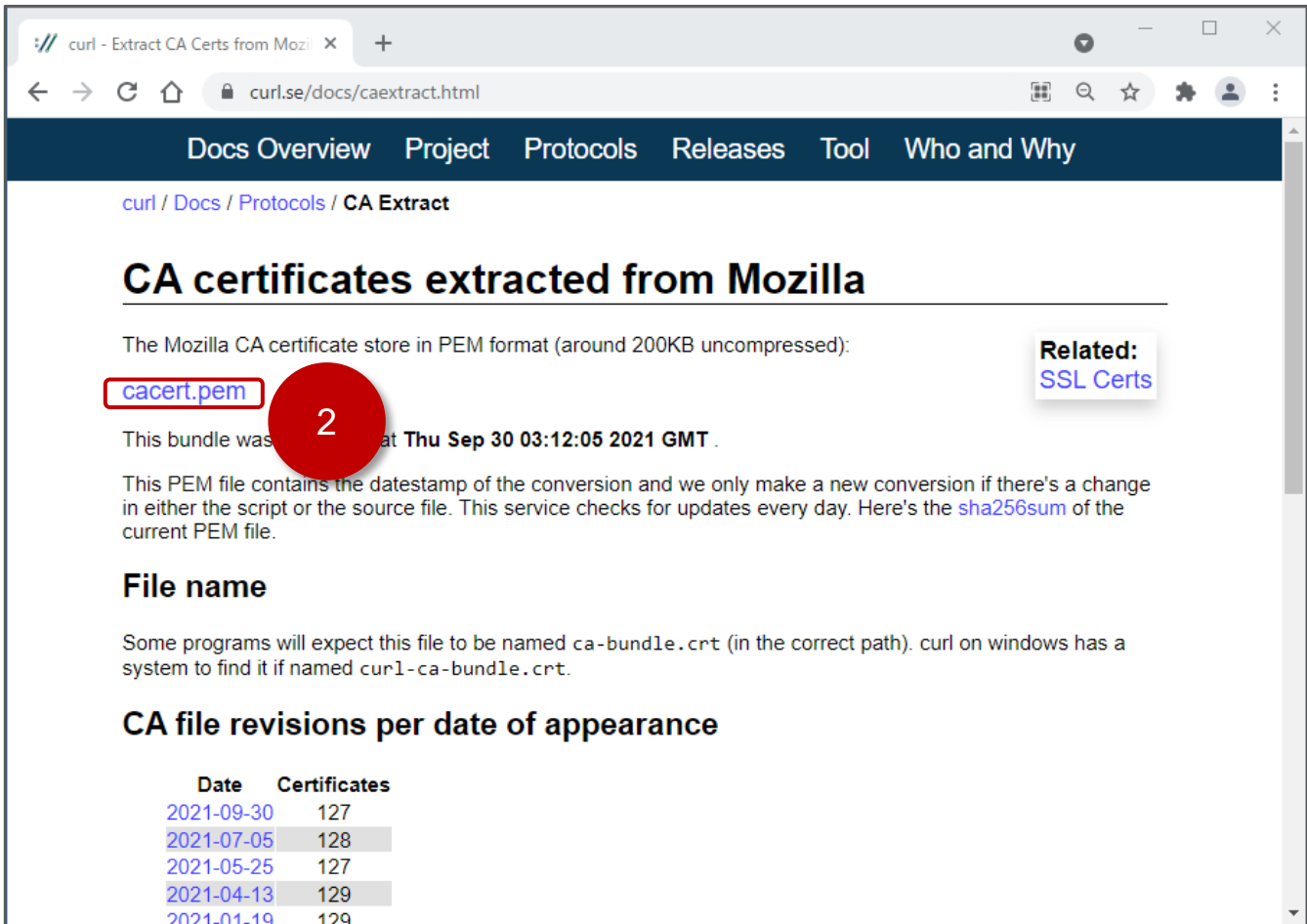
```

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

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

BLUE Open Studio 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)\Pro-face\BLUE Open Studio 2020\Redist\IoTVView\Linux\arm-gnueabi-hf-2.13-6.0.17\drv



5. Open the Edge Box HMI Demo v1.1 – EcoStruxure Machine Advisor project in BLUE Open Studio
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].

Tag Name	Station	I/O Address	Action	Scan	Div	Add
EcoStruxure_Machine_Advisor_Data.Processed_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	200	Write	Always		
EcoStruxure_Machine_Advisor_Data.Production_Target	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	202	Write	Always		
EcoStruxure_Machine_Advisor_Data.Passed_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	204	Write	Always		
EcoStruxure_Machine_Advisor_Data.Rejected_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	206	Write	Always		
EcoStruxure_Machine_Advisor_Data.Unprocessed_Count	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	208	Write	Always		
EcoStruxure_Machine_Advisor_Data.Part_Jan	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	210	Write	Always		
EcoStruxure_Machine_Advisor_Data.Process_Running	https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-40dcf002d0d12fd4c48c22c/messages/events?api-version=2016-11-14	212	Write	Always		

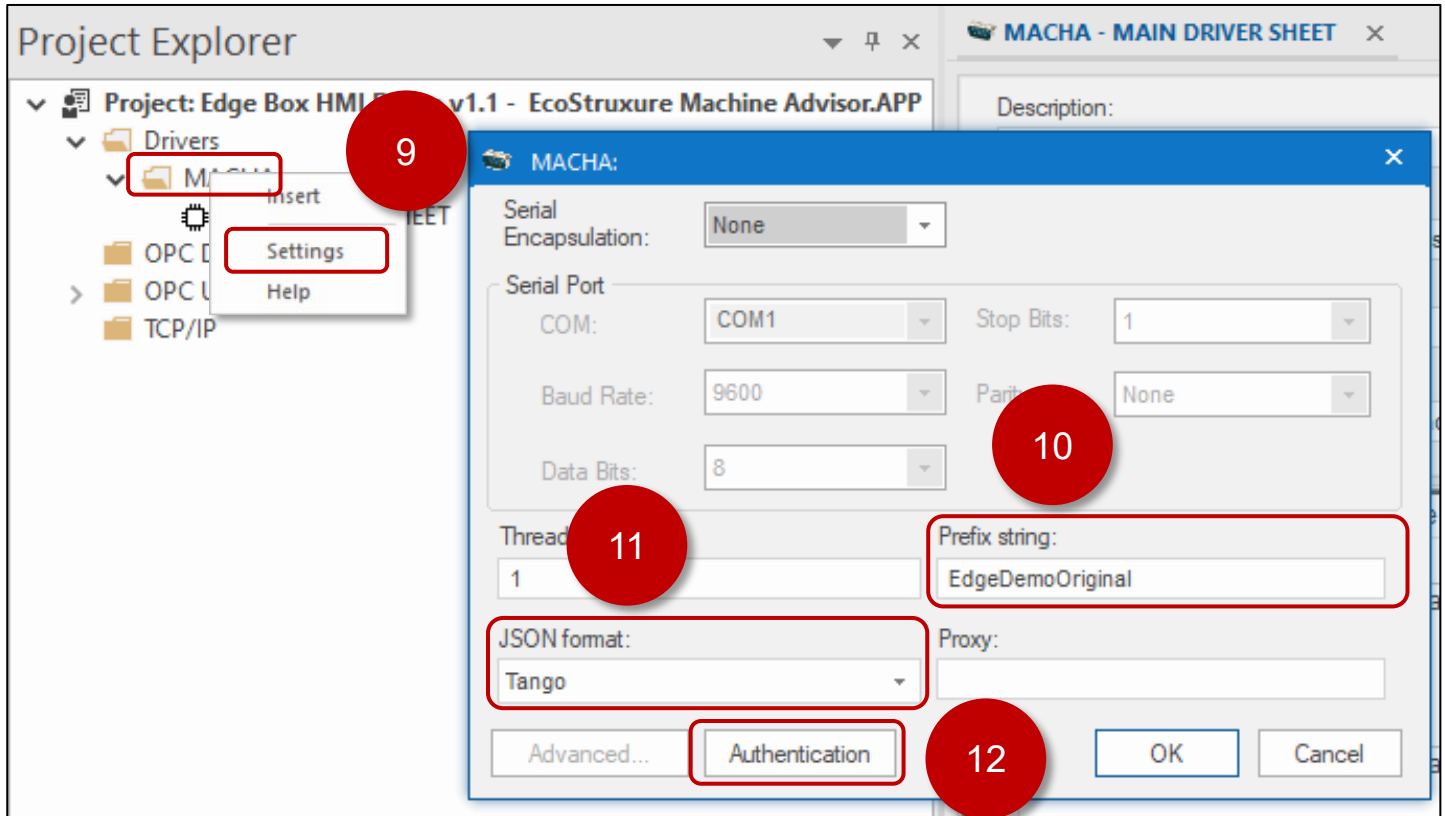
Notepad

File Edit View Help

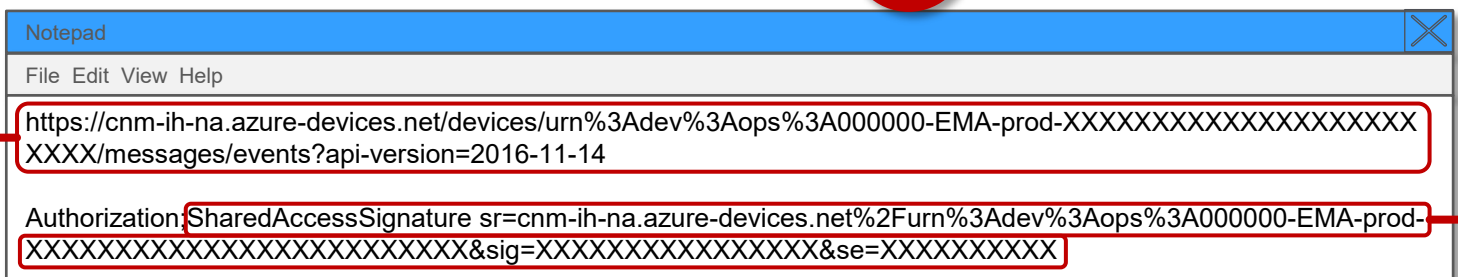
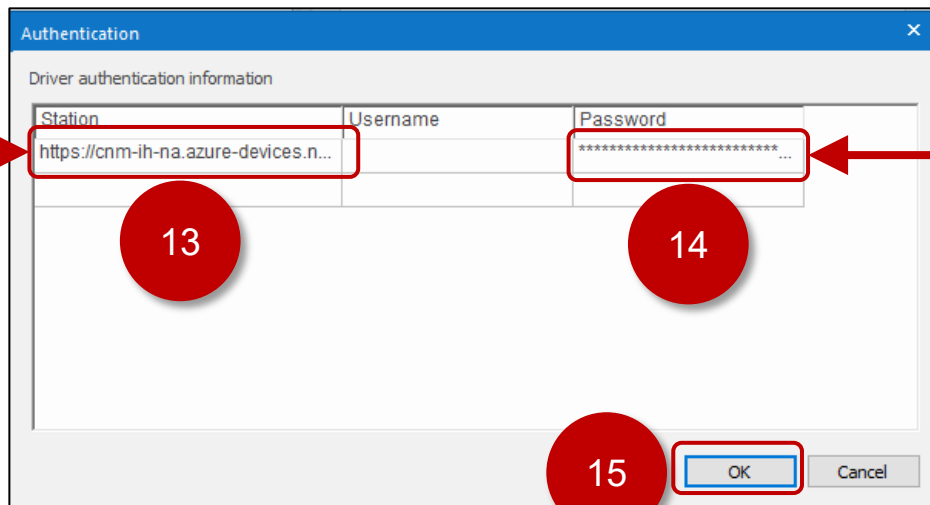
https://cnm-ih-na.azure-devices.net/devices/urn%3Adev%3Aops%3A000000-EMA-prod-XXXXXXXXXXXXXXXXXXXXXXXXXXXX/XXXXXXXXXXXXXXXXXXXXXXXXXXXX/messages/events?api-version=2016-11-14

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

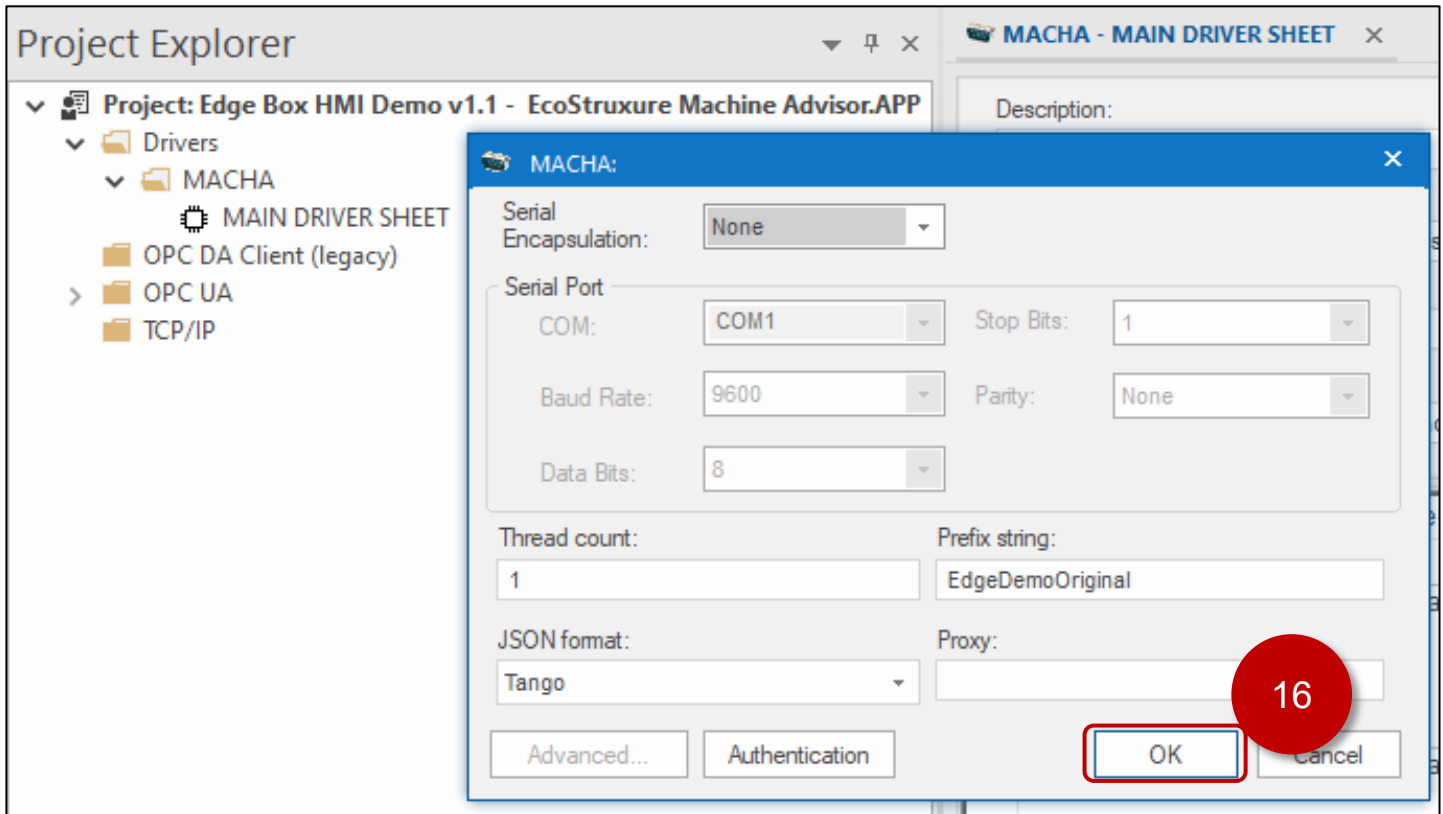
9. Right Click on [MACHA] and Select [Settings].
10. Set Prefix String: ANY, e.g. EdgeDemoOriginal
11. Select JSON Format: [Tango]
12. Click [Authentication]



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

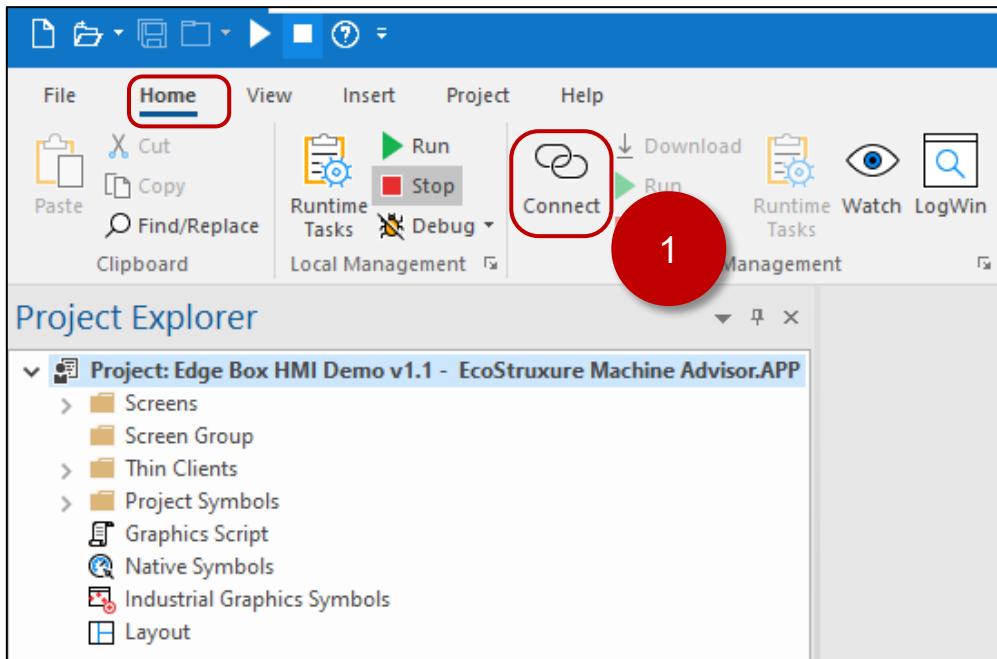


- Click [OK] to close the MACHA driver settings.

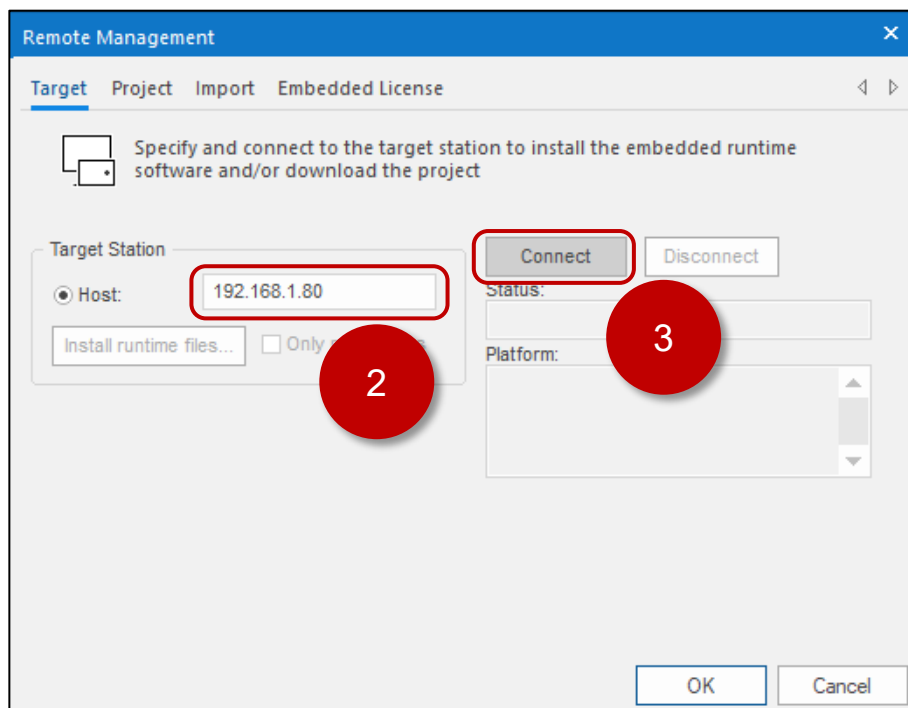


5. Transfer Runtime and Project Files

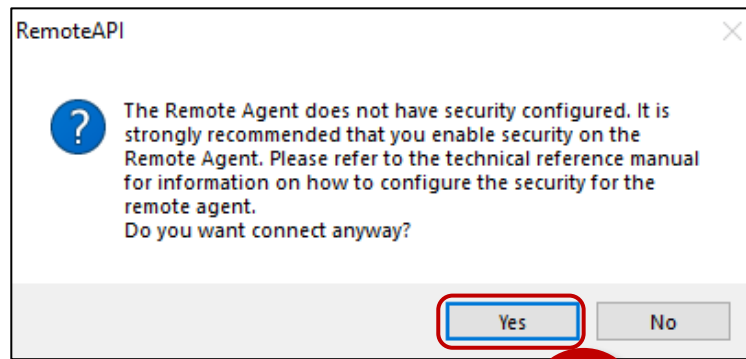
1. [Home] tab and Click [Connect] in Remote Management.



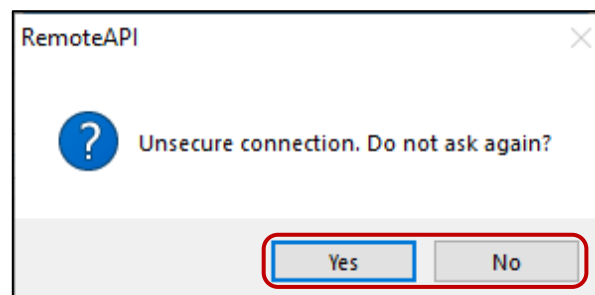
2. Set the IP Address of your Edge Box HMI e.g. 192.168.1.80
3. Click [Connect]



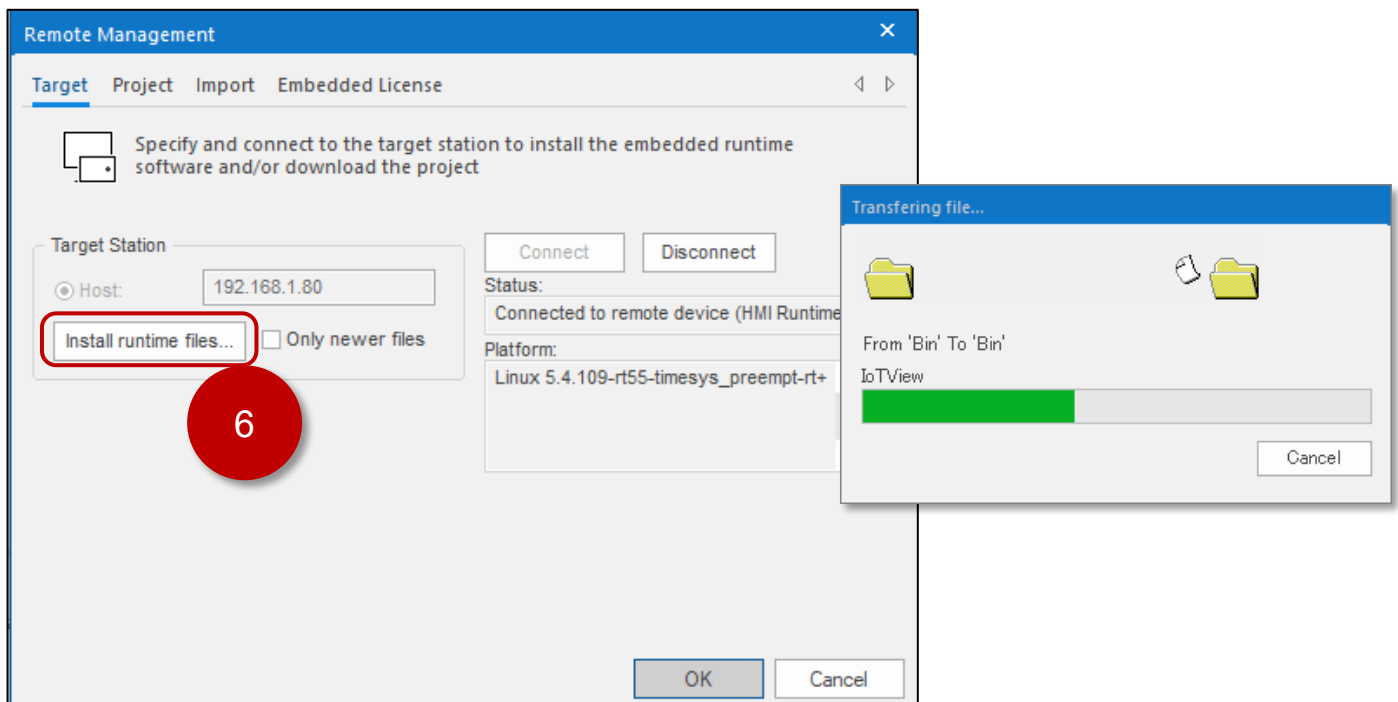
- If prompted about Remote Agent, click [Yes]



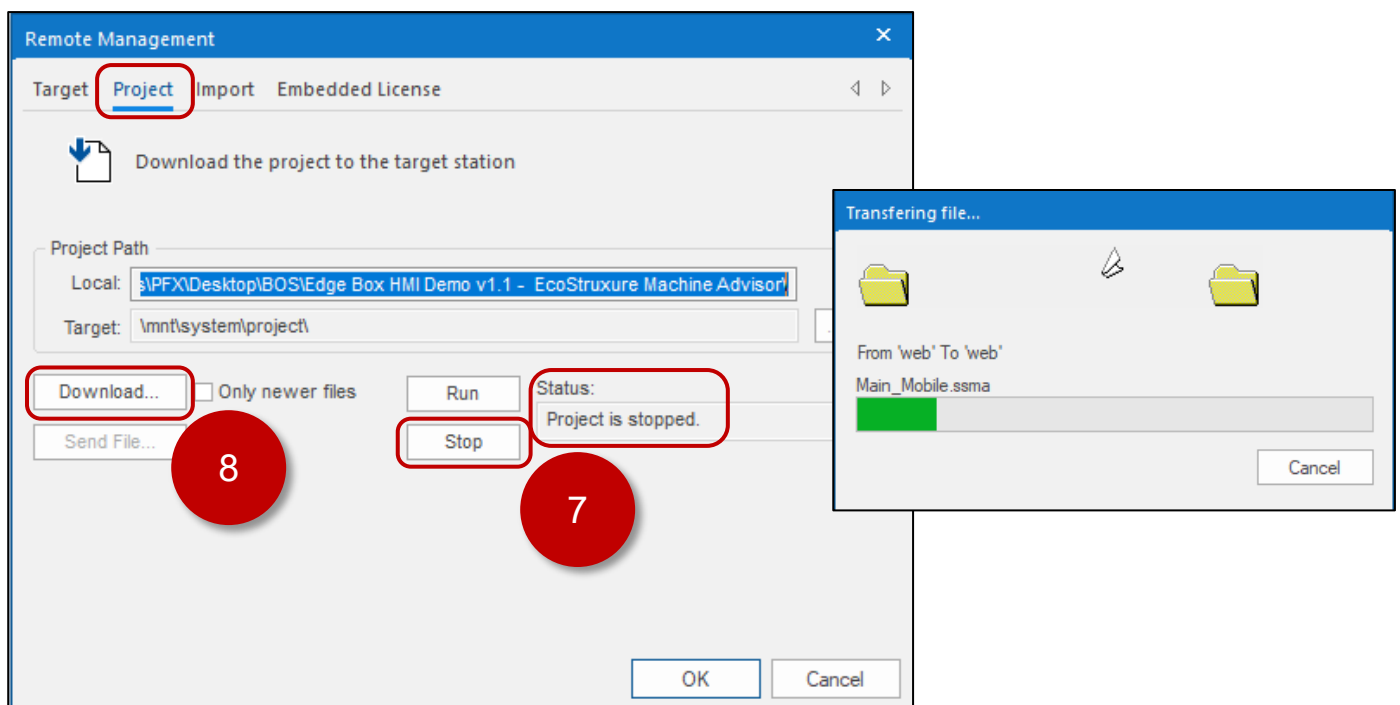
- Answer the question by clicking [Yes] or [No] as appropriate.



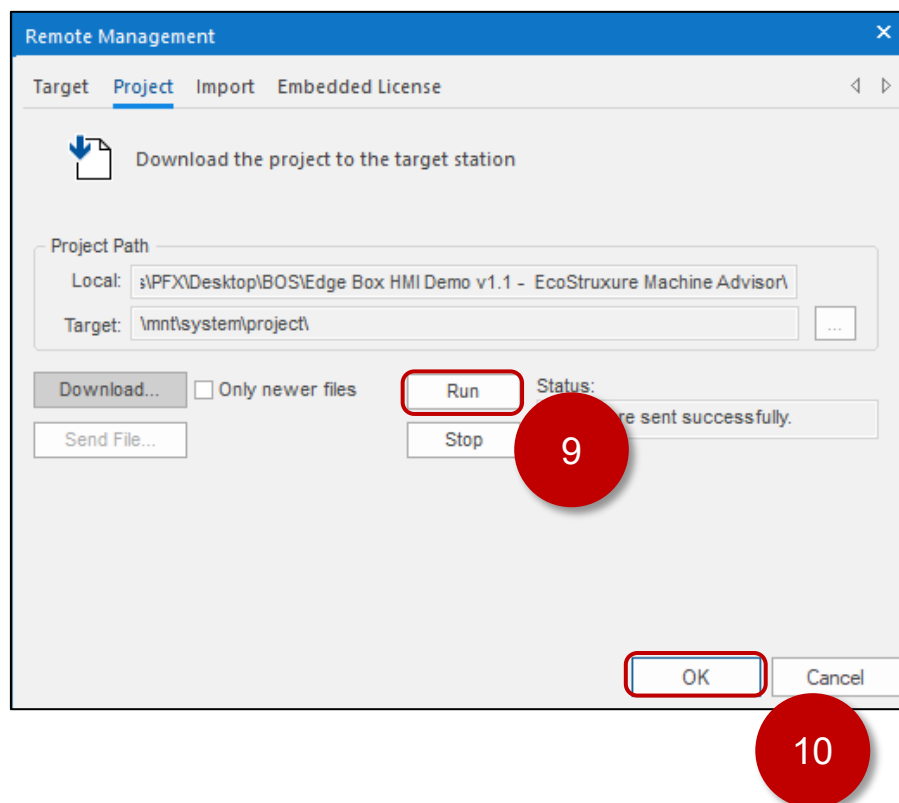
- Click [Install Runtime Files]



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



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



6. 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
https://192.168.1.80/MA	Generic Interface login prompt
https://192.168.1.80/MA/#guestuser=1	Generic Interface auto login as Guest
https://192.168.1.80/MA/#user=Admin&password=Admin	Generic Interface auto login as Admin
https://192.168.1.80/MA/#screen=main_desktop	Direct to main_desktop screen login prompt
https://192.168.1.80/MA/#screen=main_desktop&guestuser=1	Direct to main_desktop screen auto login as Guest
https://192.168.1.80/MA/#screen=main_desktop&user=Admin&password=Admin	Direct to main_desktop screen auto login as Admin
https://192.168.1.80/MA/#screen=main_mobile	Direct to main_mobile screen login prompt
https://192.168.1.80/MA/#screen=main_mobile&guestuser=1	Direct to main_mobile screen auto login as Guest
https://192.168.1.80/MA/#screen=main_mobile&user=Admin&password=Admin	Direct to main_mobile screen auto login as Admin
https://192.168.1.80/MA/#watch=1	Watch screen login prompt Guest access denied
https://192.168.1.80/MA/#watch=1&guestuser=1	Watch screen auto login as Guest Guest access denied
https://192.168.1.80/MA/#watch=1&user=Admin&password=Admin	Watch screen auto login as Admin