EcoStruxure Building Operation

EVCE SmartConnector

Installation & User Guide

February 2025

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1 Functional Overview

The EVCE Smart Connector interface is a middleware application that enables communication between EVCE REST API service with EcoStruxure Building Operation via EcoStruxure Web Services (EWS).

The Smart Connector EVCE interface communicates with the EVCE REST API to get information about the Zones, Stations, and Connectors. Data is periodically updated and stored within EcoStruxure Web Services (EWS).

The EVCE Smart Connector Interface communicates with EcoStruxure Building Operation to SET the Zone Reduction and Validity for each Zone and SET the availability of the Connector.

The EVCE Smart Connector Interface creates History Items to log the active energy, total active power, average rms current and overall consumption for each phase at Station and Zone level. Alarms are also created for each Station and will be triggered for various connector statuses with corresponding priority and category.

The processor leverages the SmartConnector Service framework and details of the application (release history, installation notes etc.) are available separately and are not covered in this manual.

The SmartConnector application is licensed on a single server basis but may also be configured to connect to both Automation Server (AS-P) devices as well as Enterprise Servers (ES).

2 Restrictions & Limitations

2.1 SmartConnector Service Version

The processors have been configured to operate with the SmartConnector version 2.5.5.40 or greater, use with any other version of the SmartConnector framework is not supported.

2.2 EWS Supported Systems

The processors can support EcoStruxure systems operating with the EcoStruxure Web Services (EWS) protocol v1.1 and v1.2.

2.3 EVCE Supported System

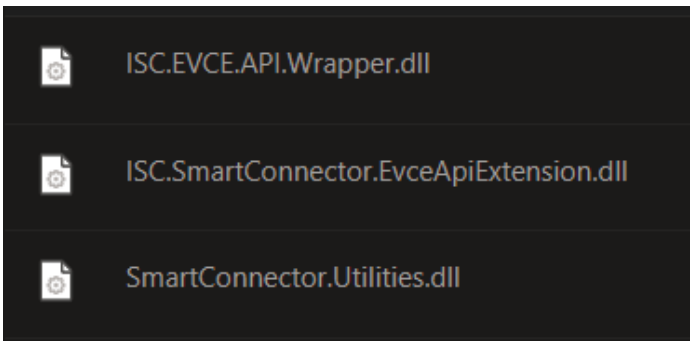
The SmartConnector has been tested and validated against the EVCE REST API V6.

Other versions may cause issues and are not supported. Please check with your supplier.

3 Installation

Please refer to the SmartConnector Installation and Configuration Guide.pdf for guidance on SmartConnector installation.

To deploy the EVCE SmartConnector assembly, copy the files,



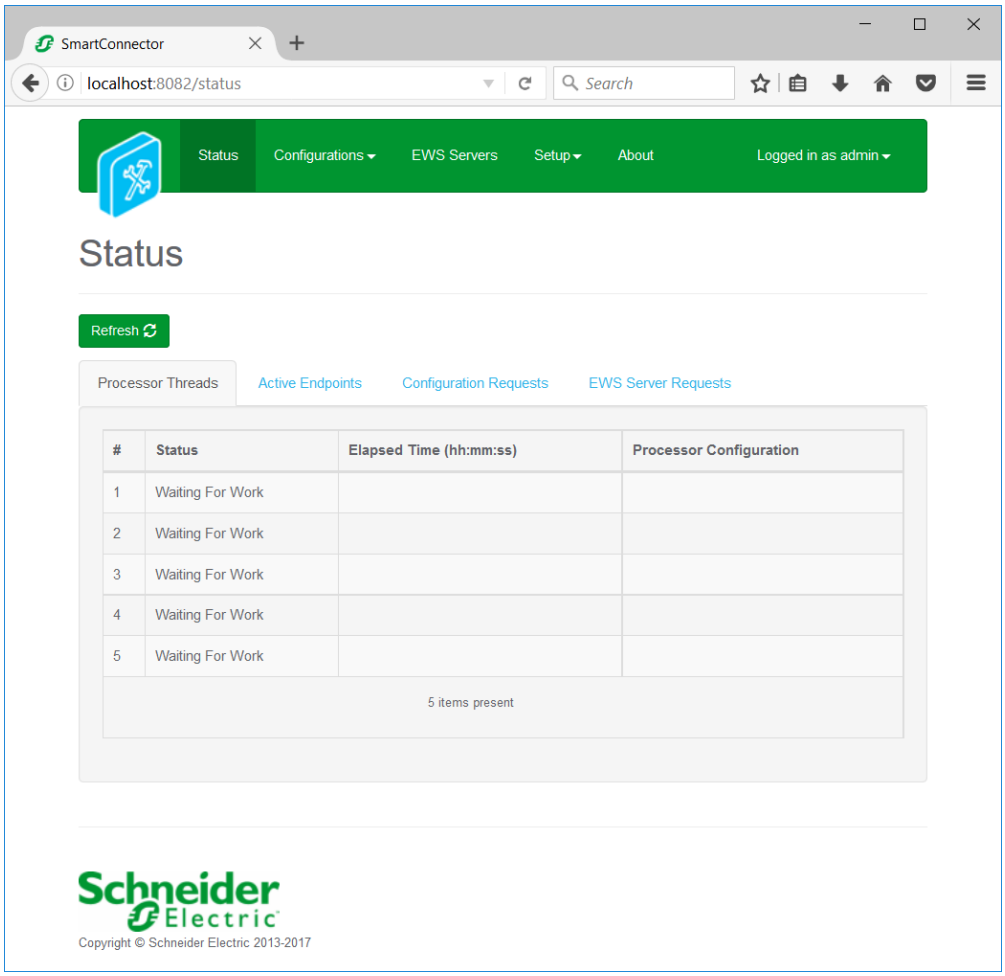
into the service installation directory. Normally “C:\Program Files (x86)\Schneider Electric\SmartConnector”

4 Configuration & Settings

4.1 Processor Configuration

With a default installation of Smart Connector, the configuration pages for the server can be reached at the following address on the server the service has been installed on:

http://localhost:8082/



4.2 Adding the Custom Assembly to the Service

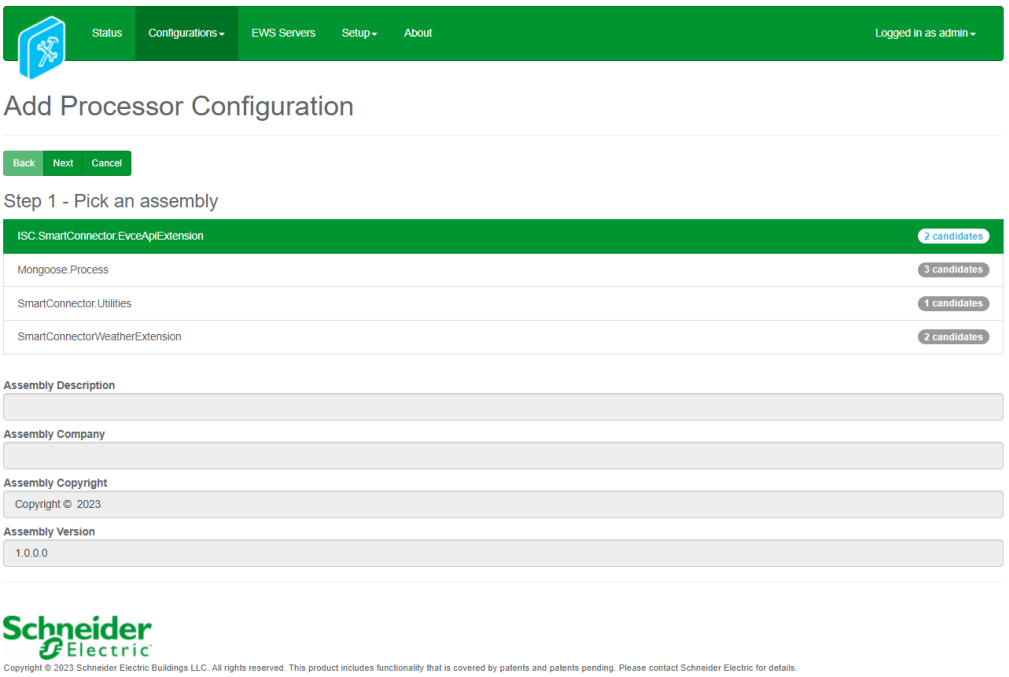
1) Switch to the Configurations tab and select Processor and click on Add New +

2) There are three Processors that needs to be added for the EVCE Smart Connector Extension.

First Processor-

At the Add Configuration window

1) Pick an assembly, select the reference to "**ISC.SmartConnector.EvceApiExtension**" (this will be highlighted green when selected)



2) Select Next

3) Choose a Class

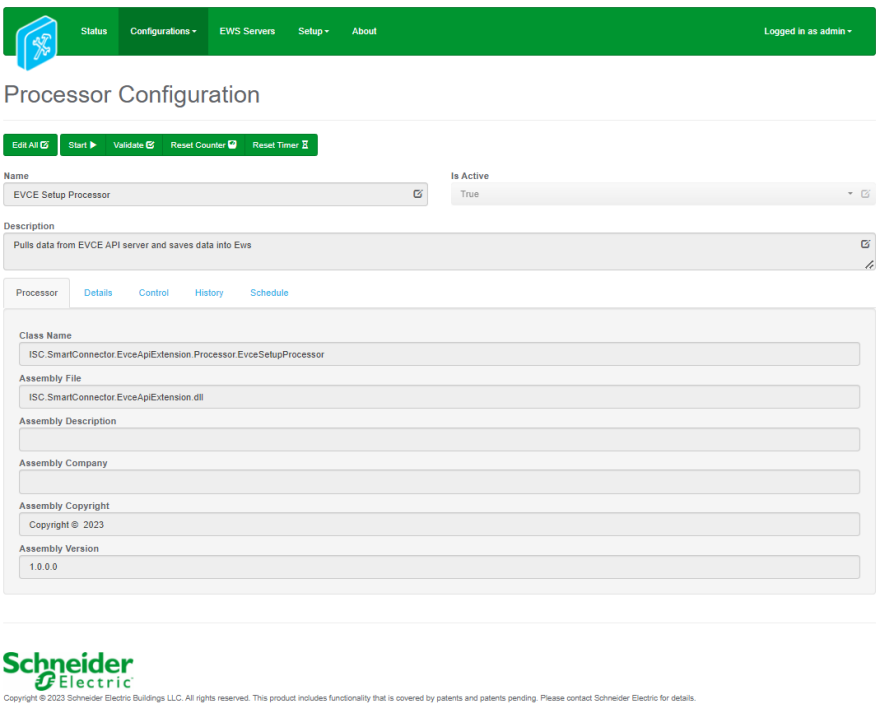
4) Ensure the class “**ISC.SmartConnector.EvceApiExtension.Processor.EvceSetupProcessor**” is selected first

5) Select Next and proceed to

6) Name Configuration

   Enter a meaningful name and description for the Processor which will enable you to identify this process in the configuration window later.

7) Select Finish and proceed to the Configuration screen.



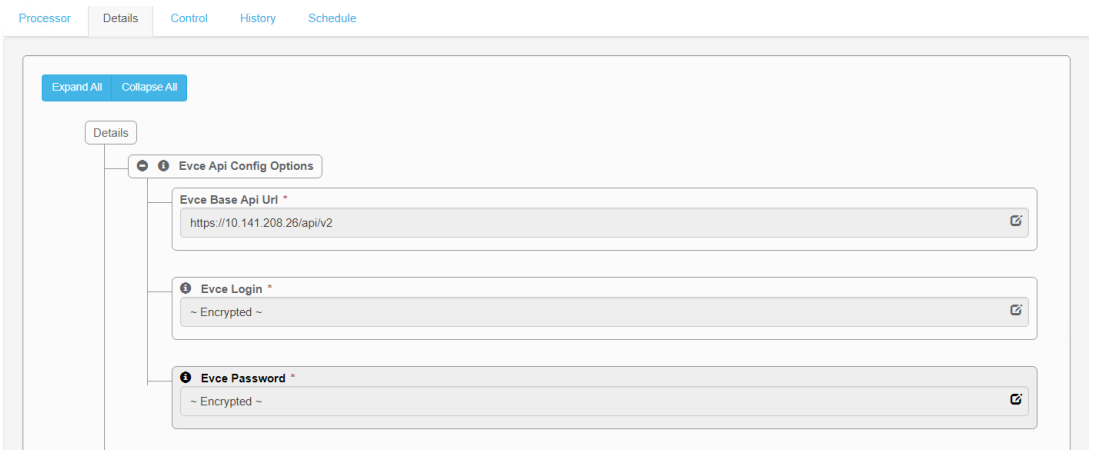
8) In the configuration window select the Details Tab, you will then be presented with the screen to enter the configuration information. Much of the configuration has default options however, they should be checked and validated for the installation. Edit the applicable fields as follows.

Expand EVCE API Config Options field-

EVCE Base API URL
The Base URL to connect to the EVCE REST API. By Default, it is https://<EVCE IP:PORT>/api/v2 .
Note: EVCE API uses port 80 and 443 as standard. So can be left blank.

EVCE Login
Username needed to access the EVCE API.
Note: Credentials/Users are configured within the EVCE Charge controller.

EVCE Password
Password needed to access the EVCE API.



Expand EVCE EWS Server field

Ews Address
This property should be set to the full address required to access the EWS Server being hosted. This is normally in the case of an EcoStruxure ES or AS device as follows:
http://<IPADDRESS>:<PORT(8093)>/EcoStruxure/DataExchange

***Note that the address is case sensitive!**

Realm
Realm for the EWS Server.

Server Name
This property is just a friendly text name field to allow you to easily identify the specific Endpoint you are configuring.

Username
This property is required to allow the EWS server connection to be authenticated.

Password
As above, this is the password related to the user credentials.

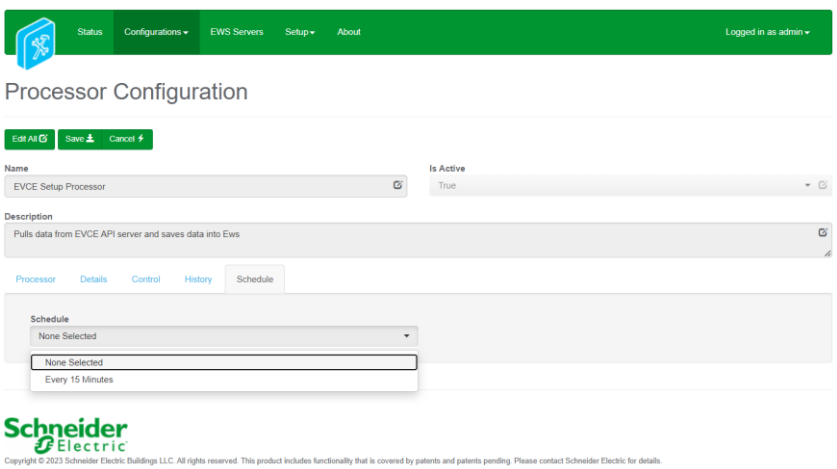
In the configuration window select the Control Tab, you will then be presented with several options to define the Processor's default behavior. It is recommended to set the following:

Runs On Start – Yes (To enable the Processor to automatically start with the machine)

Manually Startable – Yes (To allow a user to start through the configuration window

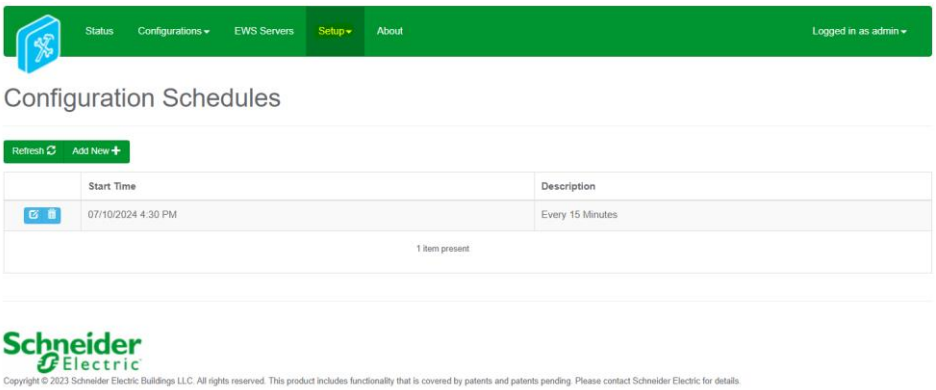
Manually Stoppable – Yes

If this processor needs to be ran in scheduled interval, navigate to the 'Schedule' tab and in the dropdown select the time interval for which this processor needs to be executed.



Adding Custom Schedule Time Interval

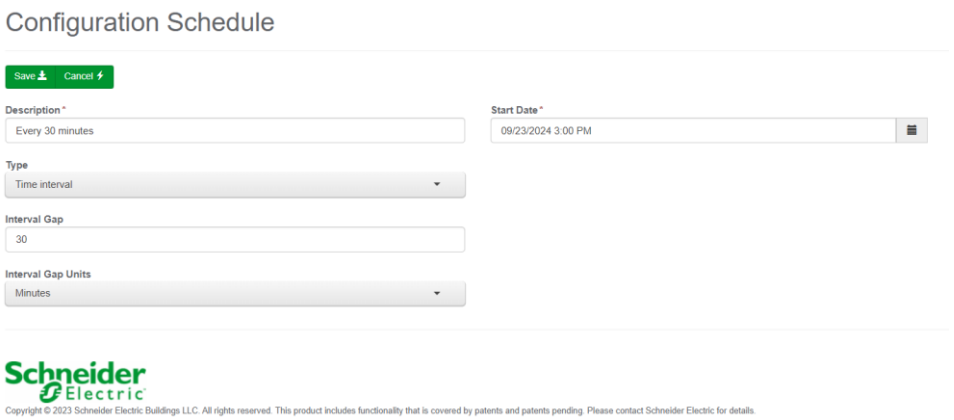
1) To Add custom time interval, click on ‘Setup’ dropdown, and select ‘Configuration Schedules’.



2) Click on ‘Add New’.

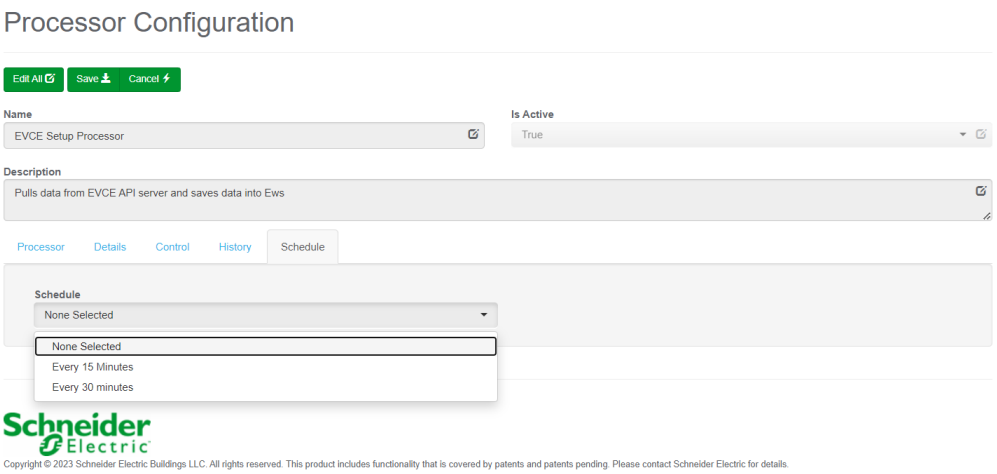
3) Fill the details –

Description - The time interval to be created.
Type - Time Interval, Weekly, Monthly or Cron
Interval Gap – If Time Interval is selected in ‘Type’, mention the gap.
Interval Gap Units – Specify the ‘Interval Gap’ value if its minutes, seconds, hours, or days.



4) Click on Save Button.

After adding the custom scheduler, navigate back to the processor edit screen and click on schedule tab. The custom scheduler should be seen in the dropdown.

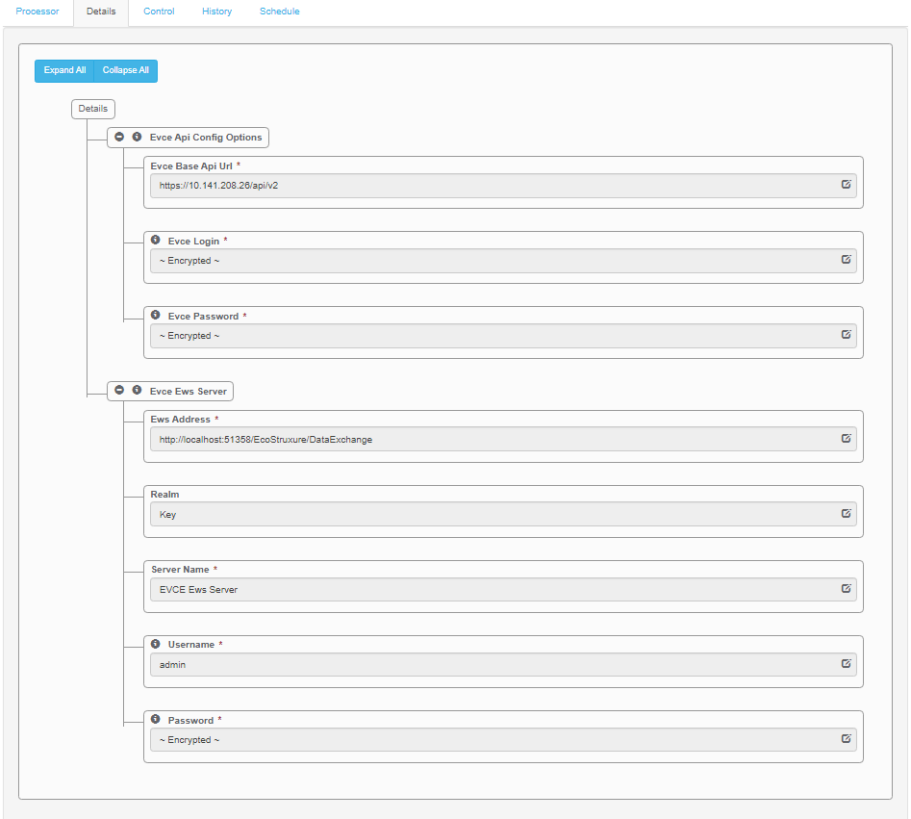


Select the schedule interval and click on Save.

Navigate to Control Tab and set '**Runs on Schedule**' to True. This should schedule the Processor to run on scheduled interval.

The Save Button allows the process configuration to be saved to the database.

A complete configuration will appear as follows:



Data Points updated only on Setup Processor:

Zone Level:

- ZoneId
- ZoneName
- ZoneNumberOfStations

Station Level:

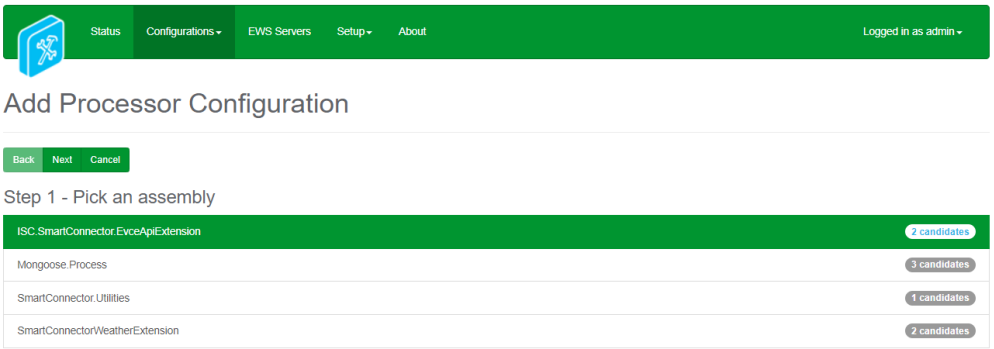
- StationType
- StationOCPPIdentifier
- StationSerialNumber
- StationModel
- StationVersion
- StationIPAddress
- StationCpoUrl
- IsAcceptedByCpo
- StationFriendlyName

Connector Level:

- LogicalConnector
- ConnectorIsFixedSetPoint
- ConnectorIsDC
- ConnectorMaxCurrentorPower
- ConnectorPhaseConnection

Second Processor -

1) After adding the first Processor, navigate back to Processor screen to add the second Processor, click on ‘Add New’ and Select “**ISC.SmartConnector.EvceApiExtension**” (this will be highlighted green when selected)

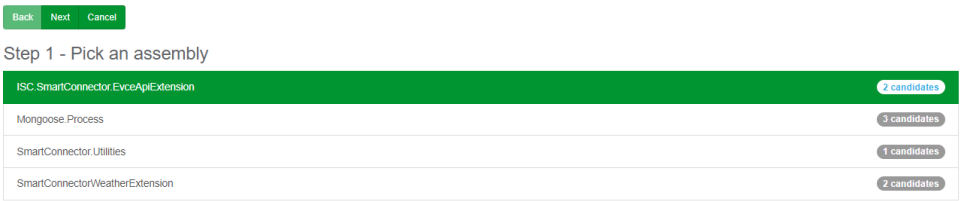


2) Click on Next and select the processor “**ISC.SmartConnector.EvceApiExtension.Processor.EvceProcessor**” . This is a long running processor, so we need not set the schedule interval.

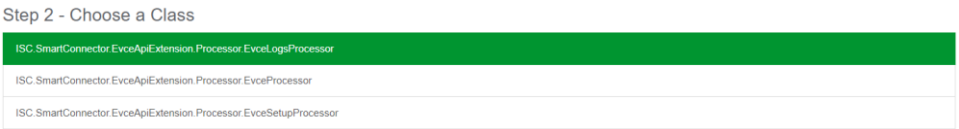
3) Click on Next and select Finish. Please provide the same EVCE API configuration details and EWS server details, that has been provided to the processor – “**ISC.SmartConnector.EvceApiExtension.Processor.EvceSetupProcessor**”.

Third Processor -

1) Navigate back to Processor screen to add the third Processor, click on ‘Add New’ and Select “**ISC.SmartConnector.EvceApiExtension**” (this will be highlighted green when selected)

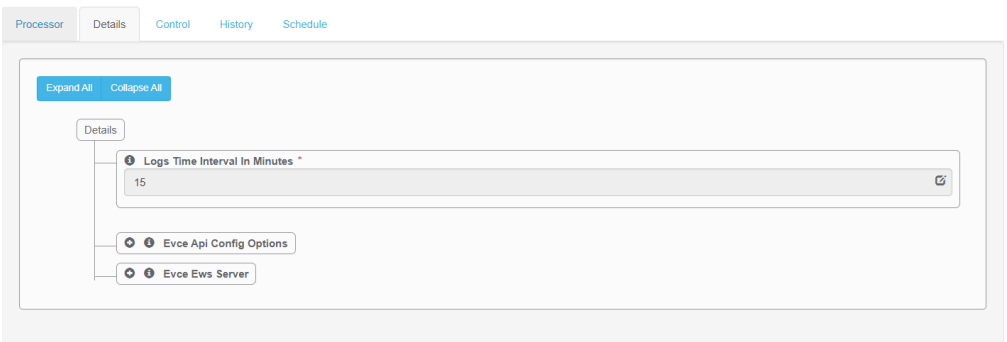


2) Click on Next and select the processor “**ISC.SmartConnector.EvceApiExtension.Processor.EvceLogsProcessor**”. This is a long running processor, so we need not set the schedule interval.



3) Click on Next and select Finish. Please provide the same EVCE API configuration details and EWS server details, that has been provided to the processor – “**ISC.SmartConnector.EvceApiExtension.Processor.EvceSetupProcessor**”.

4) There is a configuration field for the processor – **EvceLogsProcessor,** to set the Time Interval for Logging in Minutes. By default, this value is set to 15 minutes.



5) After Adding all the three processors, first step is to run the setup processor – “**ISC.SmartConnector.EvceApiExtension.Processor.EvceSetupProcessor**” only.

6) After Setup processor is executed, we can execute the other two processors –
"**ISC.SmartConnector.EvceApiExtension.Processor.EvceProcessor**"
and
"**ISC.SmartConnector.EvceApiExtension.Processor.EvceLogsProcessor**"

7) **ISC.SmartConnector.EvceApiExtension.Processor.EvceProcessor** – this is long running processor and will update the statuses of zones, stations, and connectors every 15-30 seconds.

8) **ISC.SmartConnector.EvceApiExtension.Processor.EvceLogsProcessor** – this is long running processor which will log the Active Energy, Total Active Power and Average Rms Current values at Zone/Station level for the given time interval.

Data Points Smart Connector Calculates:

Connector Level

- ConnectorOverallActivePowerTotal
  [Connector active Power (Phase1 + Phase2 + Phase3)]
- ConnectorOverallRmsCurrentAverage
  If Tri-Phase [rms current (Phase1 + Phase2 + Phase3)/3]
  If Mono [rms current Phase1]

Station Level

- StationOverallRmsCurrentPhase1
  [sum of all connector's rms current phase1 present in the station]
- StationOverallRmsCurrentPhase2
  [sum of all connector's rms current phase2 present in the station]
- StationOverallRmsCurrentPhase3
  [sum of all connector's rms current phase3 present in the station]
- StationOverallActivePowerPhase1
  [sum of all connector's active power phase1 present in the station]
- StationOverallActivePowerPhase2
  [sum of all connector's active power phase2 present in the station]
- StationOverallActivePowerPhase3
  [sum of all connector's active power phase3 present in the station]
- StationActiveEnergy
  [sum of all connector's active energy present in the station]
- StationOverallSetPointCurrent
  [sum of all connector's set point current present in the station]

- StationOverallActivePowerTotal
  [sum of all connector's active power(phase1+phase2+phase3) present in the station]
- StationOverallRmsCurrentAverage
  [sum of all connector's average rms current present in the station]
- StationNumberOfConnectors
  [sum of the connectors present in the station]

Zone Level:

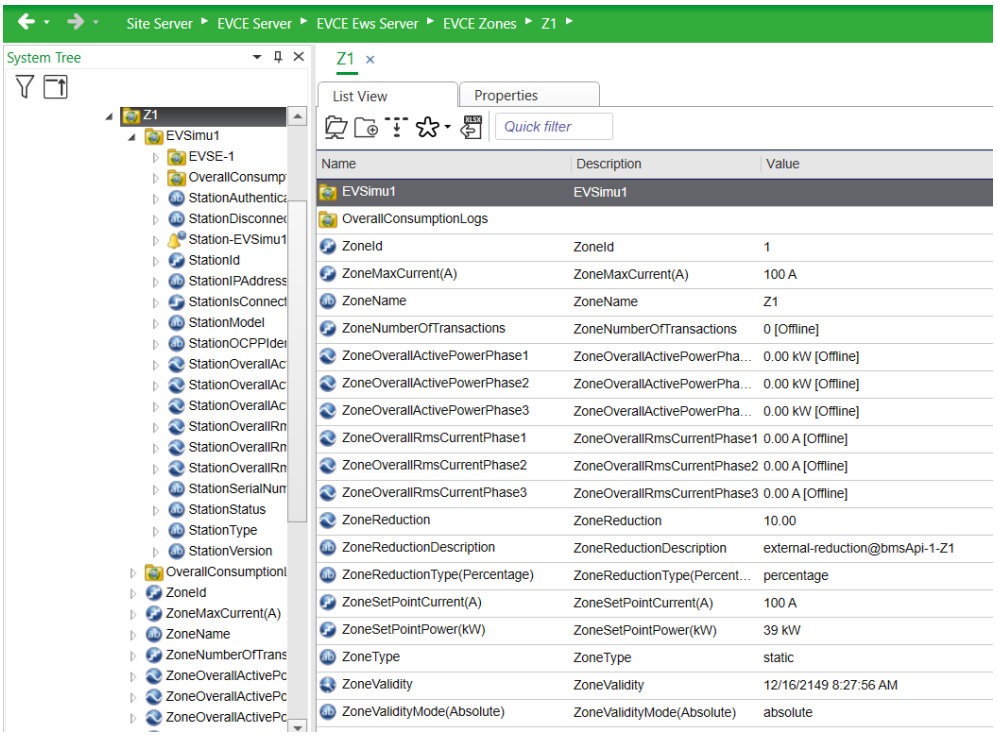
- ZoneOverallRmsCurrentPhase1
  [sum of all station's rms current phase1 present in the zone]
- ZoneOverallRmsCurrentPhase2
  [sum of all station's rms current phase2 present in the zone]
- ZoneOverallRmsCurrentPhase3
  [sum of all station's rms current phase3 present in the zone]
- ZoneOverallActivePowerPhase1
  [sum of all station's active power phase1 present in the zone]
- ZoneOverallActivePowerPhase2
  [sum of all station's active power phase2 present in the zone]
- ZoneOverallActivePowerPhase3
  [sum of all station's active power phase3 present in the zone]
- ZoneActiveEnergy
  [sum of all station's active energy present in the zone]
- ZoneOverallSetPointCurrent
  [sum of all station's set point current present in the zone]
- ZoneOverallActivePowerTotal
  [sum of all station's active power total present in the zone]
- ZoneOverallRmsCurrentAverage
  [sum of all station's average rms current present in the zone]
- ZoneNumberOfConnectors
  [sum of all the station's connectors present in the zone]

Site Level:

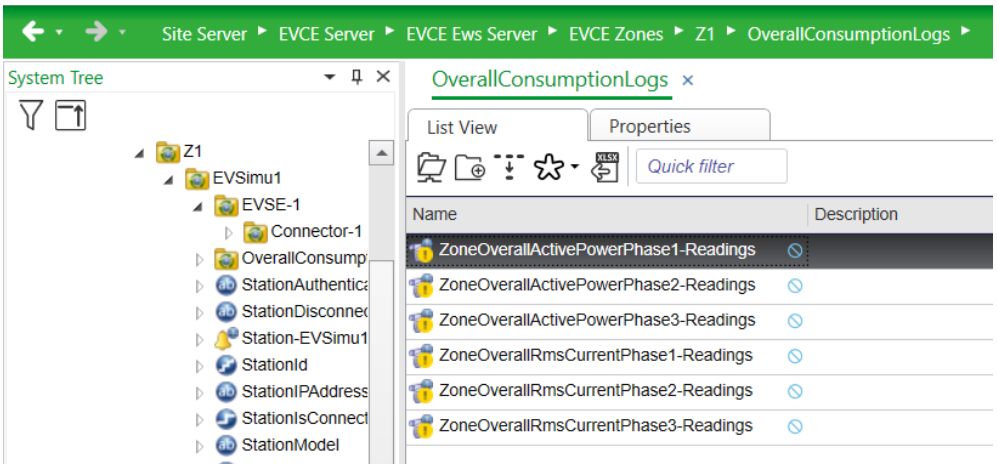
- SiteOverallActivePowerTotal
  [sum of all zone's active power total]
- SiteSetPointPower(kW)
  [sum of all zone's set point power total]
- SiteNumberOfStations
  [sum of all stations present on site]
- SiteNumberOfConnectors
  [sum of all connectors present on site]
- SiteNumberOfZones [sum of all zones present on site]

Once the Smart Connector EWS Server Interface has been hosted in EcoStruxure Building Operation, the details related to zones, stations, and connectors will be displayed as follows:

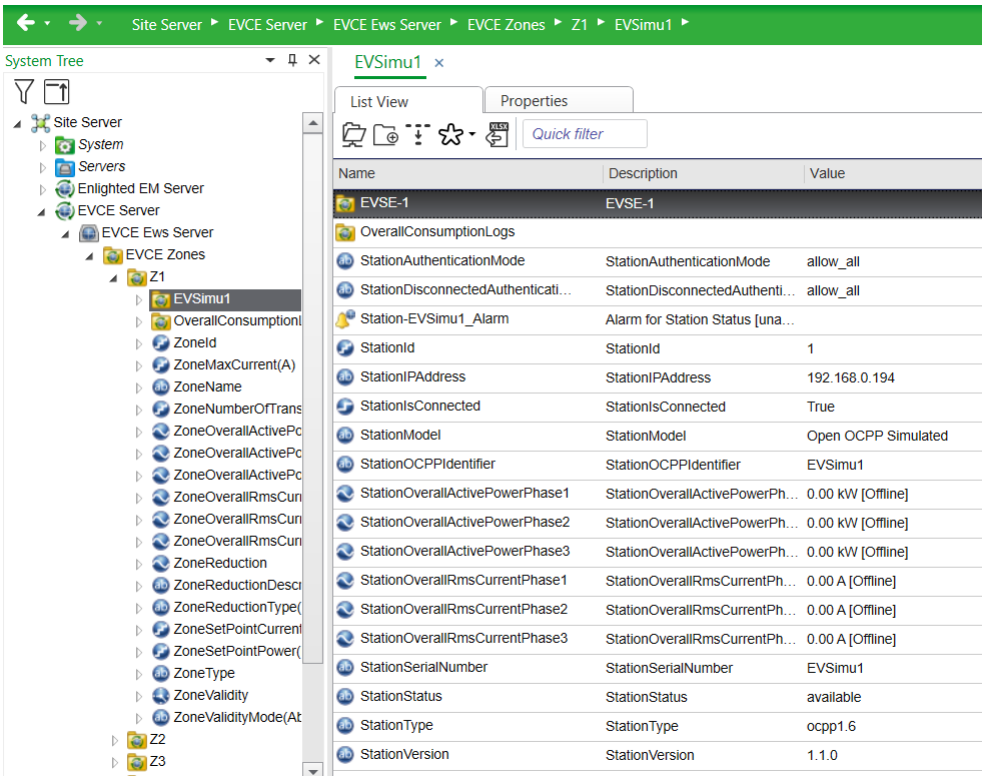
Zone Values



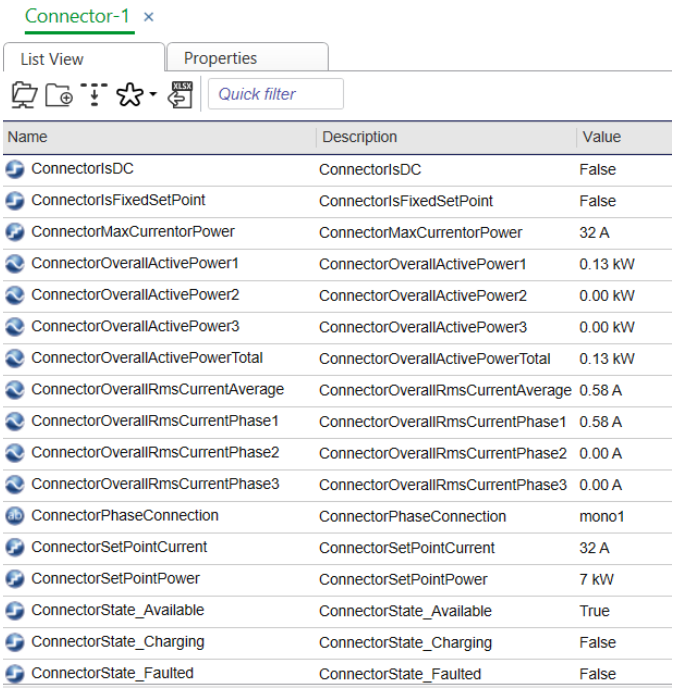
Zone History Items



Station Values



Connector Values

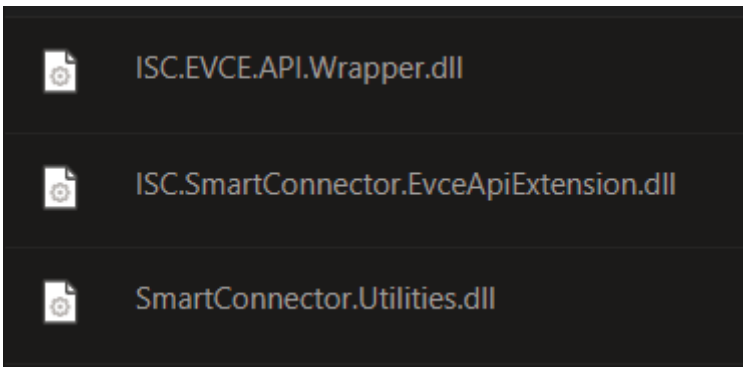


Name	Description	Value
ConnectorIsDC	ConnectorIsDC	False
ConnectorIsFixedSetPoint	ConnectorIsFixedSetPoint	False
ConnectorMaxCurrentorPower	ConnectorMaxCurrentorPower	32 A
ConnectorOverallActivePower1	ConnectorOverallActivePower1	0.13 kW
ConnectorOverallActivePower2	ConnectorOverallActivePower2	0.00 kW
ConnectorOverallActivePower3	ConnectorOverallActivePower3	0.00 kW
ConnectorOverallActivePowerTotal	ConnectorOverallActivePowerTotal	0.13 kW
ConnectorOverallRmsCurrentAverage	ConnectorOverallRmsCurrentAverage	0.58 A
ConnectorOverallRmsCurrentPhase1	ConnectorOverallRmsCurrentPhase1	0.58 A
ConnectorOverallRmsCurrentPhase2	ConnectorOverallRmsCurrentPhase2	0.00 A
ConnectorOverallRmsCurrentPhase3	ConnectorOverallRmsCurrentPhase3	0.00 A
ConnectorPhaseConnection	ConnectorPhaseConnection	mono1
ConnectorSetPointCurrent	ConnectorSetPointCurrent	32 A
ConnectorSetPointPower	ConnectorSetPointPower	7 kW
ConnectorState_Available	ConnectorState_Available	True
ConnectorState_Charging	ConnectorState_Charging	False
ConnectorState_Faulted	ConnectorState_Faulted	False

5 Revision History

Version	Assembly File Details	Date
1.2.0.6	ISC.SmartConnector.EvceApiExtension.dll	12th February 2025

Assembly files required:



6 References

SmartConnector Installation and Configuration Guide.pdf
(TDS-M-INSTALLCONFIG-US.BU.N.EN.12.2017.2.30.CC)

SmartConnector Version 2.2 Release Notes.pdf
(TDS-M-RELEASENOTES-US.BU.N.EN.12.2017.2.30.CC)

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