

EcoStruxure Building Operation

EVCE SmartConnector

Installation & User Guide

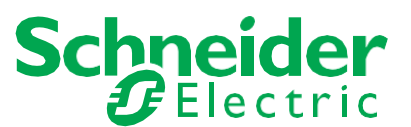
February 2025



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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

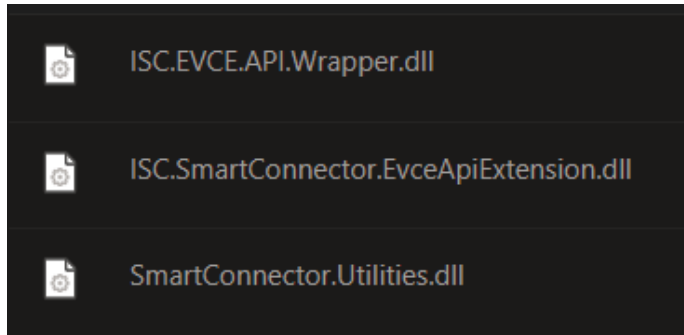
The SmartConnector has been tested and validated against the EVCE REST API V6.

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,



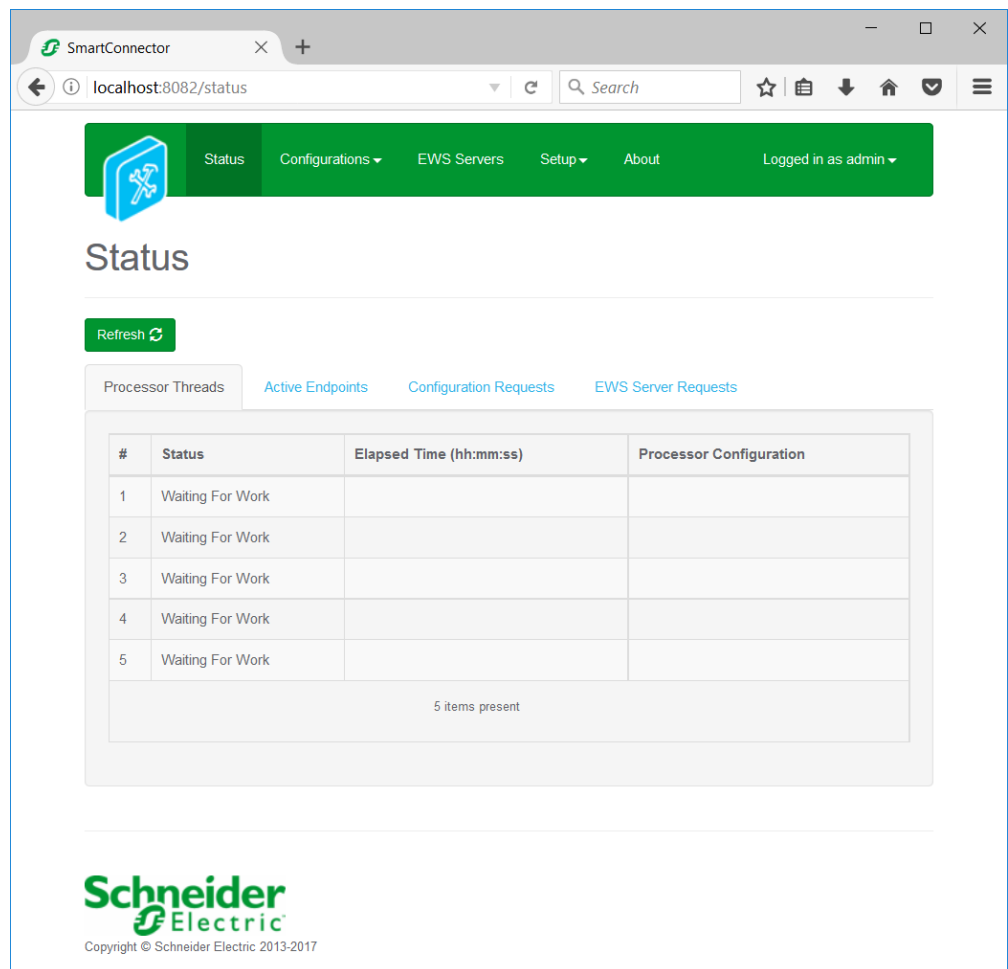
into the service installation directory. Normally “C:\Program Files (x86)\Schneider Electric\SmartConnector”

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/>



The screenshot shows a web browser window with the URL `localhost:8082/status`. The page has a green header with a navigation menu containing: Status, Configurations, EWS Servers, Setup, About, and Logged in as admin. Below the header is a 'Status' section with a 'Refresh' button. There are four tabs: Processor Threads (selected), Active Endpoints, Configuration Requests, and EWS Server Requests. A table displays the status of five processor threads, all of which are 'Waiting For Work'. The table has columns for '#', 'Status', 'Elapsed Time (hh:mm:ss)', and 'Processor Configuration'. At the bottom of the table, it indicates '5 items present'. The Schneider Electric logo and copyright information (© Schneider Electric 2013-2017) are visible at the bottom of the page.

#	Status	Elapsed Time (hh:mm:ss)	Processor Configuration
1	Waiting For Work		
2	Waiting For Work		
3	Waiting For Work		
4	Waiting For Work		
5	Waiting For Work		

4.2

Adding the Custom Assembly to the Service

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

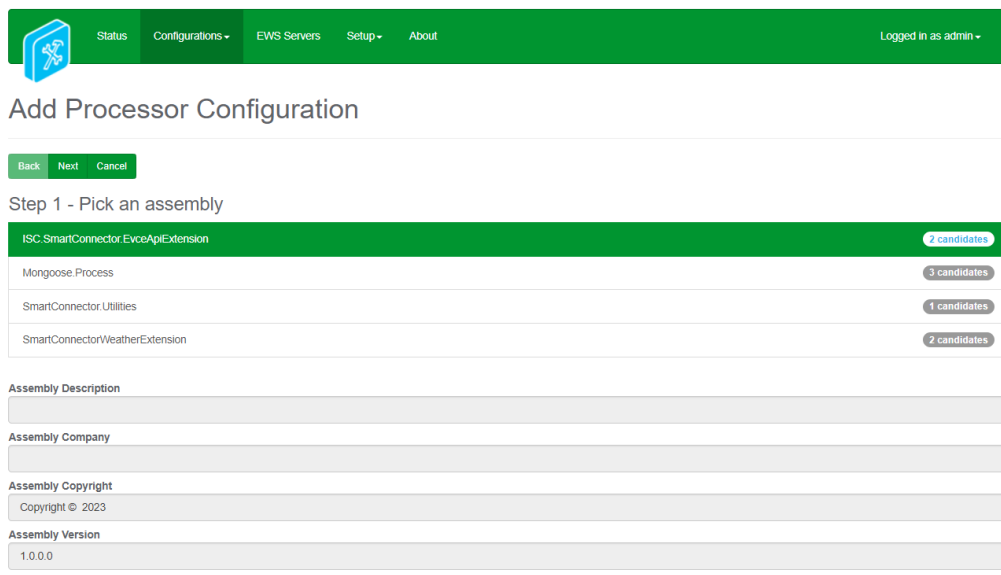


- 2) There are three Processors that needs to be added for the EVCE Smart Connector Extension.

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)

A screenshot of a web application interface for adding a processor configuration. The top navigation bar is green with a blue gear icon, "Status", "Configurations -", "EWS Servers", "Setup -", "About", and "Logged in as admin -". The main heading is "Add Processor Configuration". Below it are "Back", "Next", and "Cancel" buttons. The current step is "Step 1 - Pick an assembly". A table lists four assemblies: "ISC.SmartConnector.EvceApiExtension" (2 candidates, highlighted green), "Mongoose Process" (3 candidates), "SmartConnector.Utilities" (1 candidate), and "SmartConnector.WeatherExtension" (2 candidates). Below the table are input fields for "Assembly Description", "Assembly Company", "Assembly Copyright" (with "Copyright © 2023" pre-filled), and "Assembly Version" (with "1.0.0.0" pre-filled).

- 2) Select Next
- 3) Choose a Class

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

Step 2 - Choose a Class

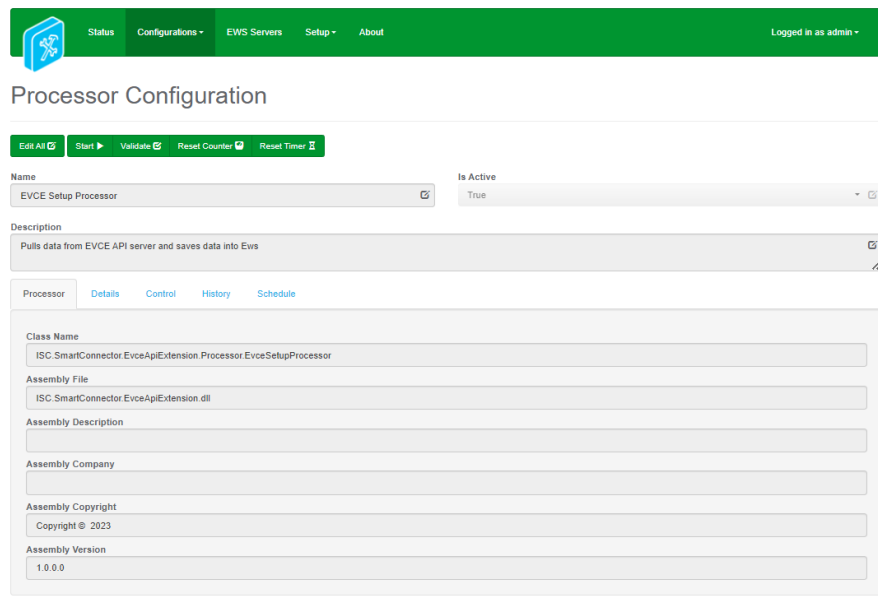
ISC.SmartConnector.EvceApiExtension.Processor.EvceLogsProcessor
ISC.SmartConnector.EvceApiExtension.Processor.EvceProcessor
ISC.SmartConnector.EvceApiExtension.Processor.EvceSetupProcessor

- 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.



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- 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.

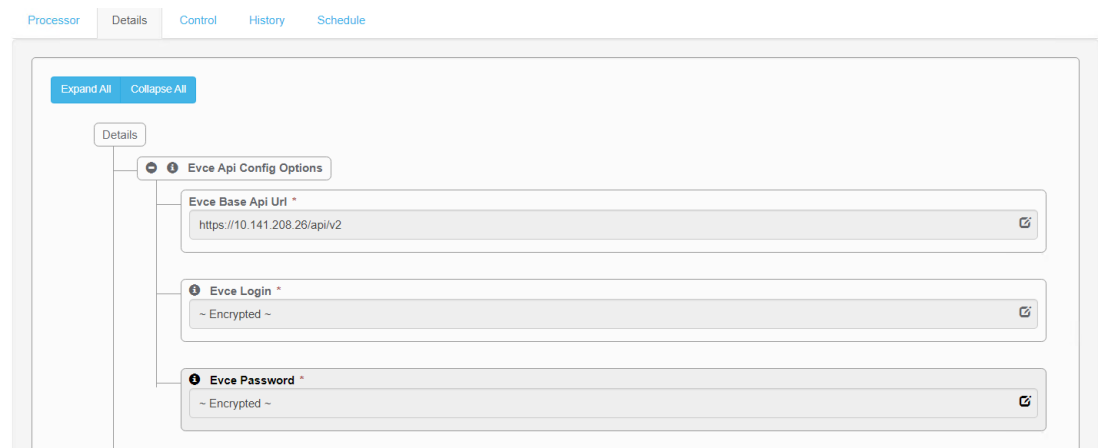
EVCE Login

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](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.



The screenshot shows a configuration window titled "Evce Ews Server". It contains five input fields, each with a copy icon on the right:

- Ews Address ***: http://localhost:51358/EcoStructure/DataExchange
- Realm**: Key
- Server Name ***: EVCE Ews Server
- Username ***: admin
- Password ***: ~ Encrypted ~

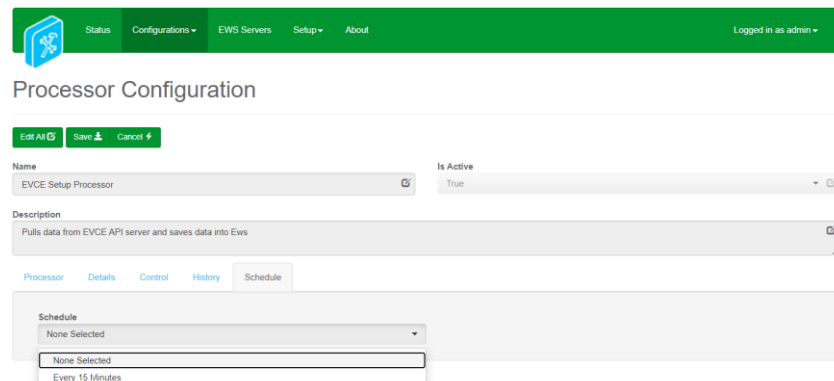
In the configuration window select the Control Tab, you will then be presented with several options to define the Processor's default behavior. It is recommended to set the following:

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.



The screenshot shows the "Processor Configuration" window. The "Schedule" tab is selected, and a dropdown menu is open showing the following options:

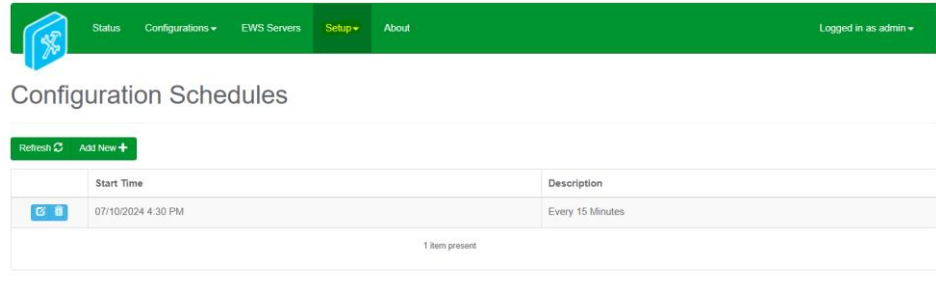
- None Selected
- None Selected
- Every 15 Minutes



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Adding Custom Schedule Time Interval

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



The screenshot shows the top navigation bar with 'Setup' highlighted. Below it, the 'Configuration Schedules' page is displayed. It features a table with one entry: '07/10/2024 4:30 PM' with a description of 'Every 15 Minutes'. There are 'Refresh' and 'Add New' buttons at the top of the table area.

Start Time	Description
07/10/2024 4:30 PM	Every 15 Minutes



- 2) Click on 'Add New'.
- 3) Fill the details –

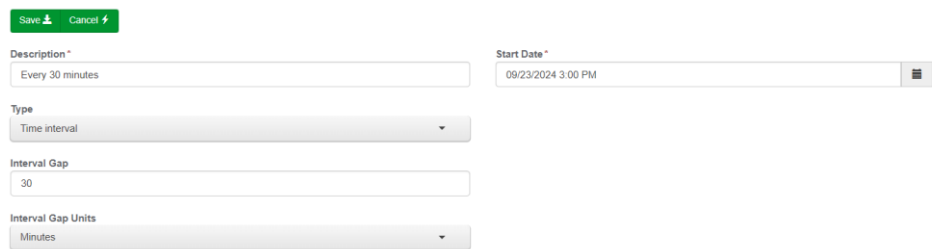
Description - The time interval to be created.

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.

Configuration Schedule



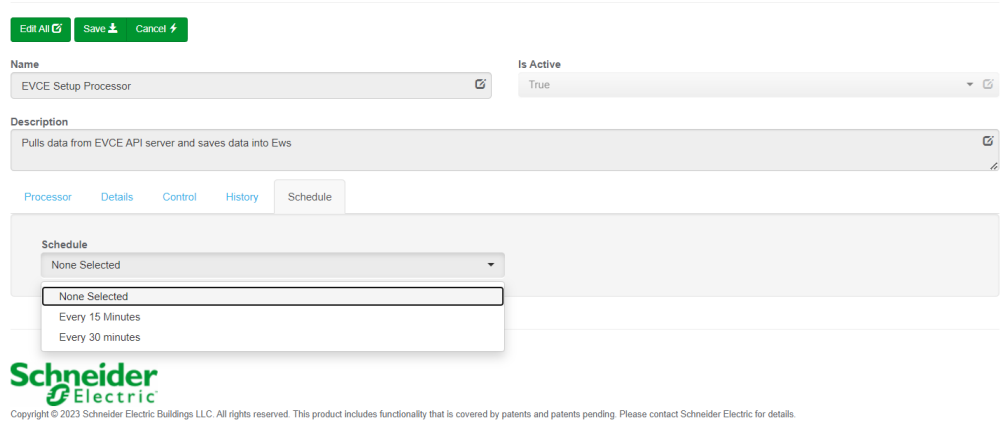
The screenshot shows the 'Configuration Schedule' form. It includes fields for 'Description' (Every 30 minutes), 'Start Date' (09/23/2024 3:00 PM), 'Type' (Time interval), 'Interval Gap' (30), and 'Interval Gap Units' (Minutes). There are 'Save' and 'Cancel' buttons at the top.



- 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.

Processor Configuration



Processor Configuration interface showing the Schedule tab selected. The Name field is "EVCE Setup Processor", Is Active is "True", and Description is "Pulls data from EVCE API server and saves data into Ews". The Schedule dropdown menu is open, showing options: "None Selected", "Every 15 Minutes", and "Every 30 minutes".

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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:

The screenshot displays a configuration interface with a top navigation bar containing 'Processor', 'Details', 'Control', 'History', and 'Schedule'. Below this, there are 'Expand All' and 'Collapse All' buttons. The main content area is titled 'Details' and contains two expandable sections:

- EvcE Api Config Options:**
 - EvcE Base Api Uri *:** https://10.141.208.28/api/v2
 - EvcE Login *:** ~ Encrypted ~
 - EvcE Password *:** ~ Encrypted ~
- EvcE Ews Server:**
 - Ews Address *:** http://localhost:51358/EcoStructure/DataExchange
 - Realm:** Key
 - Server Name *:** EVCE Ews Server
 - Username *:** admin
 - Password *:** ~ Encrypted ~

Data Points updated only on Setup Processor:

Zone Level:

ZoneId
ZoneName
ZoneNumberOfStations

Station Level:

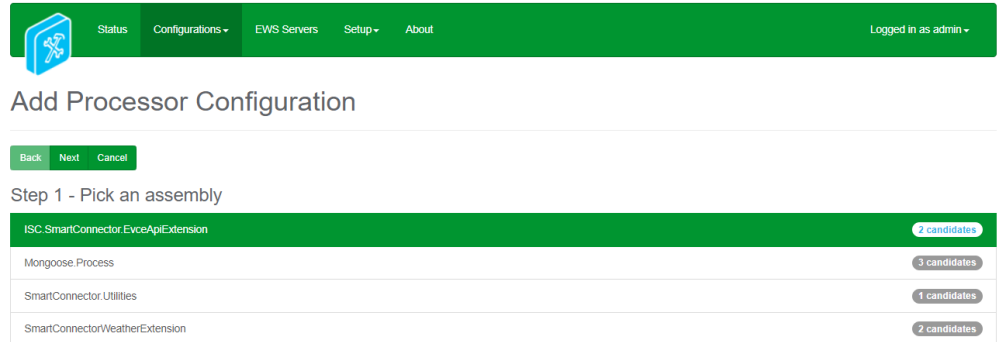
StationType
StationOCPPIdentifier
StationSerialNumber
StationModel
StationVersion
StationIPAddress
StationCpoUrl
IsAcceptedByCpo
StationFriendlyName

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)



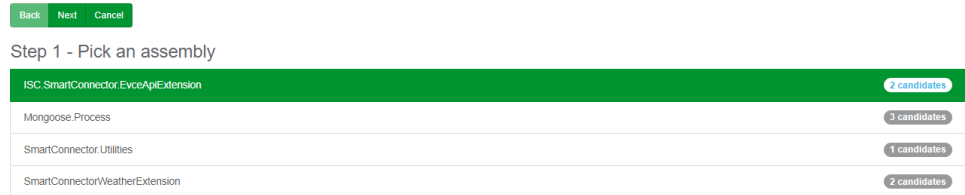
- 2) Click on Next and select the processor **"ISC.SmartConnector.EvceApiExtension.Processor.EvceProcessor"**. This is a long running processor, so we need not set the schedule interval.



- 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 -

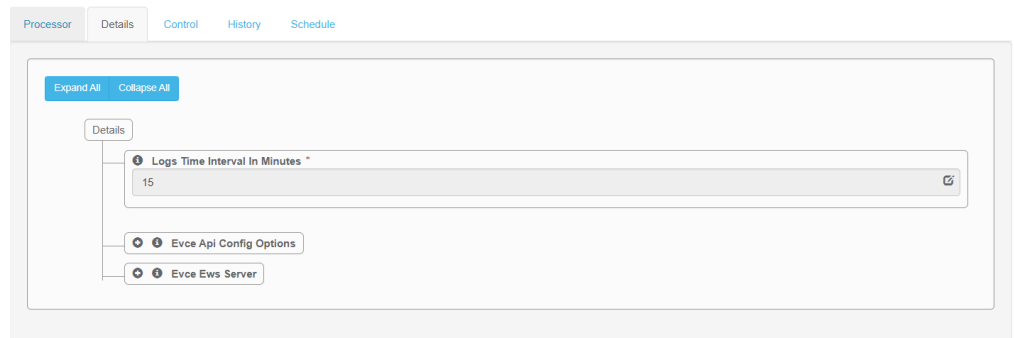
- 1) Navigate back to Processor screen to add the third Processor, click on 'Add New' and Select "**ISC.SmartConnector.EvceApiExtension**" (this will be highlighted green when selected)



- 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

Name	Description	Value
EVSimu1	EVSimu1	
OverallConsumptionLogs		
ZoneId	ZoneId	1
ZoneMaxCurrent(A)	ZoneMaxCurrent(A)	100 A
ZoneName	ZoneName	Z1
ZoneNumberOfTransactions	ZoneNumberOfTransactions	0 [Offline]
ZoneOverallActivePowerPhase1	ZoneOverallActivePowerPhase1	0.00 kW [Offline]
ZoneOverallActivePowerPhase2	ZoneOverallActivePowerPhase2	0.00 kW [Offline]
ZoneOverallActivePowerPhase3	ZoneOverallActivePowerPhase3	0.00 kW [Offline]
ZoneOverallRmsCurrentPhase1	ZoneOverallRmsCurrentPhase1	0.00 A [Offline]
ZoneOverallRmsCurrentPhase2	ZoneOverallRmsCurrentPhase2	0.00 A [Offline]
ZoneOverallRmsCurrentPhase3	ZoneOverallRmsCurrentPhase3	0.00 A [Offline]
ZoneReduction	ZoneReduction	10.00
ZoneReductionDescription	ZoneReductionDescription	external-reduction@bmsApi-1-Z1
ZoneReductionType(Percentage)	ZoneReductionType(Percentage)	percentage
ZoneSetPointCurrent(A)	ZoneSetPointCurrent(A)	100 A
ZoneSetPointPower(kW)	ZoneSetPointPower(kW)	39 kW
ZoneType	ZoneType	static
ZoneValidity	ZoneValidity	12/16/2149 8:27:56 AM
ZoneValidityMode(Absolute)	ZoneValidityMode(Absolute)	absolute

Zone History Items

Name	Description
ZoneOverallActivePowerPhase1-Readings	
ZoneOverallActivePowerPhase2-Readings	
ZoneOverallActivePowerPhase3-Readings	
ZoneOverallRmsCurrentPhase1-Readings	
ZoneOverallRmsCurrentPhase2-Readings	
ZoneOverallRmsCurrentPhase3-Readings	

Station Values

Site Server > EVCE Server > EVCE Ews Server > EVCE Zones > Z1 > EVSimu1

System Tree

- Site Server
 - System
 - Servers
 - Enlighted EM Server
 - EVCE Server
 - EVCE Ews Server
 - EVCE Zones
 - Z1
 - EVSimu1
 - OverallConsumptionLogs
 - ZoneId
 - ZoneMaxCurrent(A)
 - ZoneName
 - ZoneNumberOfTrans
 - ZoneOverallActivePc
 - ZoneOverallActivePc
 - ZoneOverallActivePc
 - ZoneOverallRmsCur
 - ZoneOverallRmsCur
 - ZoneOverallRmsCur
 - ZoneReduction
 - ZoneReductionDescr
 - ZoneReductionType
 - ZoneSetPointCurrent
 - ZoneSetPointPower
 - ZoneType
 - ZoneValidity
 - ZoneValidityMode(At
 - Z2
 - Z3

EVSimu1 x

List View Properties

Quick filter

Name	Description	Value
EVSE-1	EVSE-1	
OverallConsumptionLogs		
StationAuthenticationMode	StationAuthenticationMode	allow_all
StationDisconnectedAuthenticati...	StationDisconnectedAuthenti...	allow_all
Station-EVSimu1_Alarm	Alarm for Station Status [una...	
StationId	StationId	1
StationIPAddress	StationIPAddress	192.168.0.194
StationIsConnected	StationIsConnected	True
StationModel	StationModel	Open OCPP Simulated
StationOCPPIdentifier	StationOCPPIdentifier	EVSimu1
StationOverallActivePowerPhase1	StationOverallActivePowerPh...	0.00 kW [Offline]
StationOverallActivePowerPhase2	StationOverallActivePowerPh...	0.00 kW [Offline]
StationOverallActivePowerPhase3	StationOverallActivePowerPh...	0.00 kW [Offline]
StationOverallRmsCurrentPhase1	StationOverallRmsCurrentPh...	0.00 A [Offline]
StationOverallRmsCurrentPhase2	StationOverallRmsCurrentPh...	0.00 A [Offline]
StationOverallRmsCurrentPhase3	StationOverallRmsCurrentPh...	0.00 A [Offline]
StationSerialNumber	StationSerialNumber	EVSimu1
StationStatus	StationStatus	available
StationType	StationType	ocpp1.6
StationVersion	StationVersion	1.1.0

Connector Values

Connector-1 x

List View Properties

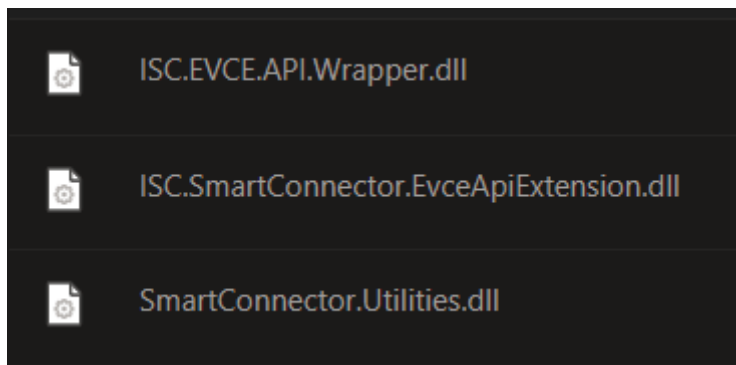
Quick filter

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	12 th 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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