OCPP 1.6 Driver for Niagara N4

User Guide

Contents

1   Introduction to OCPP

The Open Charge Point Protocol (OCPP) is an application protocol for communication between EV Charging Points (CP) and Central System (CS), also known as a charging station network.

The driver is designed to enable communication between an electric vehicle charging point and Tridium Niagara system working as a Central System. It provides an integrated solution for building management systems and electric vehicle infrastructure.

- *Authorization Cache* – A Charge Point may implement an Authorization Cache that autonomously maintains a record of previously presented identifiers that have been successfully authorized by the Central System.

- *Central System* – Charge Point Management System: the Central System that manages Charge Points and has the information for authorizing users for using its Charge Points.

- *Charge Point* – Charge Point is a physical system where an electric vehicle can be charged. Each Charge Point has one or more connectors.

- *Connector* – The term "Connector" refers to an independently operated and managed electrical outlet on a Charge Point. This usually corresponds to a single physical connector, but in some cases a single outlet may have multiple physical socket types and/or tethered cable/connector arrangements to facilitate different vehicle types (e.g. four-wheeled EVs and electric scooters).

- *EV* – Electric vehicle.

- *Transaction* – The part of the charging process that starts when all relevant preconditions (e.g. authorization, plug inserted) are met, and ends at the moment when the Charge Point irrevocably leaves this state.

- *Feature Profiles* – In OCPP 1.6 features and associated messages are grouped in profiles. Depending on the required functionality, implementers can choose to implement one or more of the following profiles.

- *Control Pilot signal* – Signal used by a Charge Point to inform EV of maximum Charging power or current limit.

Driver Supported Feature Profiles

Profile name	Description
Core	Basic Charge Point functionality
Smart Charging	Support for basic Smart Charging, for instance using a control pilot.
Remote Trigger	Support for remote triggering of Charge Point initiated messages.

2   Requirements

- Niagara N4 4.4[1] or later powered device such as Jace 3 / 6 / 8000, Supervisor and their OEM and EDGE versions
- OCPP Charge Point that supports OCPP-J 1.6 (OCPP via JSON over WebSocket)
- OCPP driver license

3   Charge Point Configuration

The Open Charge Point Protocol communication is different compared to conventional BMS protocols. Typically in BMS protocols the communication is initiated by Niagara. However, in OCPP the communication is initiated and the majority of the messages are sent by the Charging Point (CP). It implies that Charge Point should be able to connect to Central System, i.e. Central System IP address should be accessible.

The following configuration parameters have to be set in the CP in order to enable the communication. Please note, the parameter names may vary depending on Charge Point manufacturer:

- *URL of the Backend* – You Niagara IP address in the following format ws://ipAddress:port (e.g. ws://192.168.1.2:8887) or wss://ipAddress:port (please see Network section to see how to enable SSL support).
- *OCPP Mode* – Please select OCPP-J 1.6
- *Charge Point Identifier* – Desired identification name in Niagara

4   Installation

1. Install **ocpp-wb.jar** and all dependent modules via Software Manager in both WorkPlace and JACE. Restart both.

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[1]If support for older Niagara versions is required, please contact the vendor.

5   Network

To start communication between Tridium Niagara and Charge Points, make sure that Niagara server is accessible by the Charge Point via the network. Firewall, router settings or incorrect Jace network configuration are typical network connectivity causes.

1. Start the station and add a new **OCPP Network**

2. In the network **Properties** enter the license code and press **Save**

OCPP Network contains many standard Niagara properties, as well as few driver-specific ones: OCPP Logger, Authorize, OCPP Network Configuration and **License**.

Normally only **License** property should be changed.

5.1   Logger

Property is used to configure driver logging capabilities. Driver is using several ways to log the data: Niagara histories and debug logs (can be used for technical support). It has the following parameters:

- *History Config* – standard Niagara history configuration parameter for all the OCPP driver logs (e.g. status notification, boot notification, etc.). See OCPP General History section.
- *Transaction History Config* – standard history configuration parameter for all the OCPP driver transaction logs. See OCPP Transaction History section.
- *Filter System Logs By Name* – parameter could be used for debugging purposes to filter only logs for a specific charger ID. Empty line means that filtering is disabled.

5.2   General History

General history is automatically created under under *Station -> History -> OCPP -> General_Log*.
It stores general OCPP communication logs.
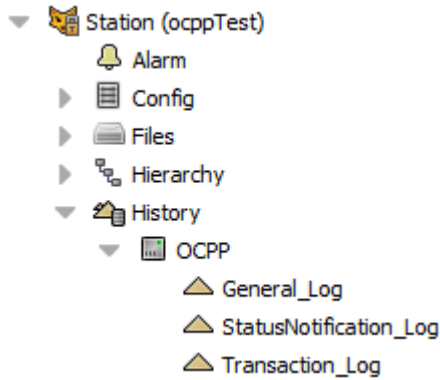
History has the following columns:

- *Timestamp* – Standard message timestamp.
- *Identifier* – See Charge Point Configuration section.
- *Message Type* – OCPP protocol message type.
- *Message* – Message related information.

5.3   Transaction History

Transaction history is automatically created under under *Station -> History -> OCPP -> Transaction_Log.* It stores all Charge Point charging session transactions. Data could be exported to the excel for further analysis or Niagara BQL could be used to extract the data.

History has the following columns:

- *Timestamp* – Standard message timestamp.
- *Identifier* – See Charge Point Configuration section.
- *Connector Id* – See Connector # section.
- *Id Tag* – See Authorize # section.
- *Start Meter Value* – This contains the meter value in Wh for the connector at the start of the transaction.
- *Stop Meter Value* – This contains the meter value in Wh for the connector at the stop of the transaction.
- *Total Meter Value* – This contains total consumed value in Wh for the connector during the period of transaction.
- *Start Time* – This contains the date and time on which the transaction is started.
- *Stop Time* – This contains the date and time on which the transaction is stopped.
- *Minutes Charged* – This contains total minutes charged during the period of transaction.
- *Transaction Id* – This contains the transaction id.

Timestamp	Device Name	Connector Id	Id Tag	Start Meter Value	Stop Meter Value	Total Meter Value	Start Time	Stop Time	Minutes Charged	Transaction Id
14-Jan-20 2:54:31 PM GMT	ocppTESTCP1	1	23F532C35	0	0	0	14-Jan-20 2:54:23 PM GMT	null	0	1579013671
14-Jan-20 2:56:35 PM GMT	ocppTESTCP1	1	23F532C35	0	0	0	14-Jan-20 2:56:39 PM GMT	null	0	1579013795
19-Feb-20 9:49:07 AM GMT	EVIS001	1	1	1063	2337	1274	19-Feb-20 9:49:07 AM GMT	19-Feb-20 9:53:00 AM GMT	3	1582105747
19-Feb-20 9:58:44 AM GMT	EVIS001	1	GW-1	2337	3800	1463	19-Feb-20 9:58:42 AM GMT	19-Feb-20 10:03:01 AM GMT	4	1582106324
19-Feb-20 10:48:09 AM GMT	bytesnap	1	1	0	0	0	19-Feb-20 10:48:17 AM GMT	19-Feb-20 10:51:42 AM GMT	3	1582109289
19-Feb-20 11:20:28 AM GMT	bytesnap	1	12345678	0	20000	20000	19-Feb-20 11:20:26 AM GMT	19-Feb-20 11:43:43 AM GMT	23	1582111228
20-Feb-20 9:20:11 AM GMT	ELAADTEST1	1	040637AAE25F85	90	90	0	20-Feb-20 9:20:09 AM GMT	20-Feb-20 9:22:53 AM GMT	2	1582190411
20-Feb-20 9:31:50 AM GMT	ELAADTEST1	1	040637AAE25F85	90	90	0	20-Feb-20 9:23:20 AM GMT	20-Feb-20 9:26:17 AM GMT	2	1582191110
20-Feb-20 9:39:52 AM GMT	ELAADTEST1	1	040637AAE25F85	90	90	0	20-Feb-20 9:26:34 AM GMT	20-Feb-20 9:29:31 AM GMT	2	1582191592
20-Feb-20 9:48:34 AM GMT	ELAADTEST1	1	040637AAE25F85	90	100	10	20-Feb-20 9:33:10 AM GMT	20-Feb-20 9:34:39 AM GMT	1	1582192114
20-Feb-20 9:54:39 AM GMT	ELAADTEST1	1	040637AAE25F85	100	100	0	20-Feb-20 9:35:34 AM GMT	20-Feb-20 9:35:58 AM GMT	0	1582192479
20-Feb-20 9:57:18 AM GMT	ELAADTEST1	1	040637AAE25F85	100	100	0	20-Feb-20 9:38:58 AM GMT	20-Feb-20 9:39:33 AM GMT	0	1582192638
20-Feb-20 10:00:42 AM GMT	ELAADTEST1	1	040637AAE25F85	100	0	0	20-Feb-20 9:39:50 AM GMT	null	0	1582192842
20-Feb-20 11:45:28 AM GMT	CP01	1	4321	0	0	0	20-Feb-20 11:45:14 AM GMT	20-Feb-20 11:48:28 AM GMT	3	1582199128
20-Feb-20 4:04:58 PM GMT	EVIS001	1	GW-1	6156	0	0	20-Feb-20 4:05:03 PM GMT	20-Feb-20 4:06:55 PM GMT	1	1582214698
20-Feb-20 4:17:45 PM GMT	EVIS001	1	GW-1	0	4332	4332	20-Feb-20 4:17:45 PM GMT	20-Feb-20 4:28:56 PM GMT	11	1582215465
20-Feb-20 4:45:30 PM GMT	Undefined	1	GW-1	4332	5750	1418	20-Feb-20 4:45:23 PM GMT	20-Feb-20 4:49:37 PM GMT	4	1582217130
20-Feb-20 11:01:27 PM GMT	49839108034579556	1	3	0	0	0	20-Feb-20 11:01:15 PM GMT	20-Feb-20 11:03:32 PM GMT	2	1582239687
20-Feb-20 11:04:06 PM GMT	49839108034579556	1	IDTAG	0	0	0	20-Feb-20 11:03:50 PM GMT	20-Feb-20 11:03:53 PM GMT	0	1582239846
20-Feb-20 11:05:16 PM GMT	49839108034579556	1	4	0	0	0	20-Feb-20 11:05:08 PM GMT	20-Feb-20 11:05:28 PM GMT	0	1582239916
21-Feb-20 4:25:09 PM GMT	49839108034579556	1	IDTAG	0	0	0	21-Feb-20 4:25:07 PM GMT	21-Feb-20 4:25:49 PM GMT	0	1582302309
03-Mar-20 9:21:08 AM GMT	49839108034579556	1	test1	0	0	0	03-Mar-20 9:21:05 AM GMT	03-Mar-20 9:21:10 AM GMT	0	1583227268
03-Mar-20 12:30:33 PM GMT	49839108034579556	1	IDTAG	0	0	0	03-Mar-20 12:30:40 PM GMT	03-Mar-20 1:39:56 PM GMT	69	1583238633
03-Mar-20 1:40:27 PM GMT	49839108034579556	1	IDTAG	0	0	0	03-Mar-20 1:39:56 PM GMT	03-Mar-20 1:39:59 PM GMT	0	1583242827

5.4   Authorize

When a Charge Point needs to charge an electric vehicle, it needs to authenticate the user first before the charging can be started. If the user is authorized the Charge Point informs the Central System that it has started with charging. Property is used to configure a Central System response to the Charge Point authorization request. It has the following parameters:

- *Authorize Type* – there are several parameters to choose from. **Authorize all** will authorize any charger request. **Authorize none** will not authorize any charger request. **Authorize all with exception** will authorize all charger requests except the IDs listed in the **Black List**. **Authorize none with exception** will not authorize any charger requests except the IDs listed in the **White List**.
- *White List* – folder containing white listed of ID Tags (idTag). To add IDs please right click on the folder and add a String Writable. Please enter the ID as a name of the String Writable. The value of String Writable is not used by the driver.
- *Black List* – folder containing black listed ID Tags.
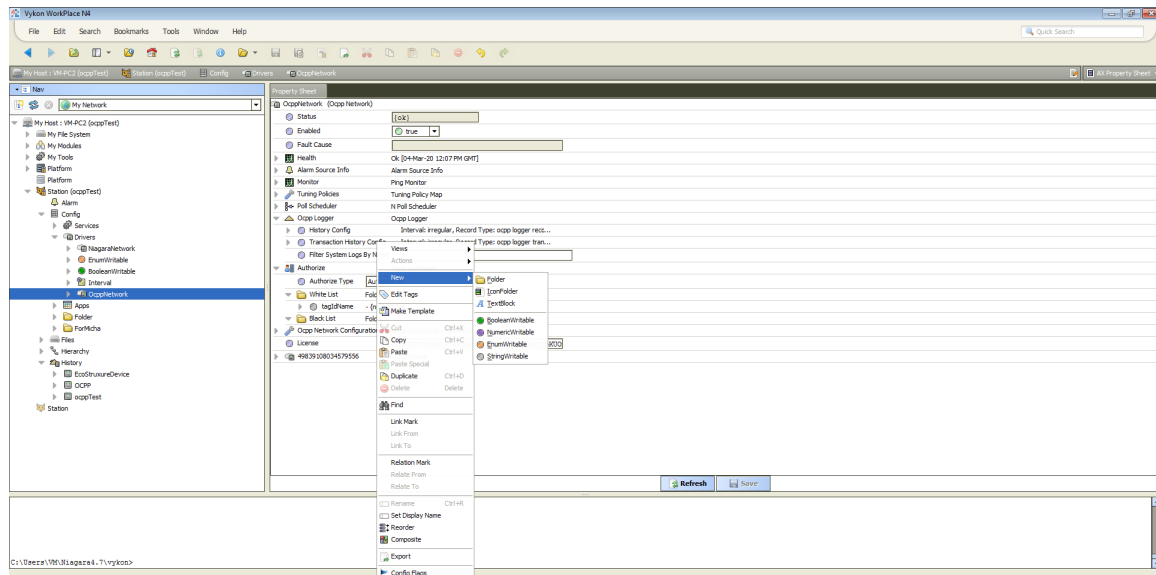
5.5   Network Configuration

Property is used to configure driver parameters. It has the following parameters:

- *Response For Guest Chargers* – Registration status send to Charge Point when it is connected to Niagara but not added to the device database. Following options available: **Accepted**, **Pending** or **Rejected**. **Accepted** means that any new Charge Point is accepted by Central System. **Pending** means that Central System is not yet ready to accept new Charge Points. **Rejected** means that new Charge Points are not accepted by Central System. This will only happen when the Charge Point id is not known by Central System. When the system is fully commissioned and no new Charge Points are expected to connect it is recommended to change the parameter to **Rejected**.
- *Guest Charger Reconnection Interval Sec* – If the Central System returns something other than Accepted Registration status, the value of the interval field indicates the minimum wait time before Charge Point can attempt to reconnect.
- *Web Socket Lost Connection Fault* – If the parameter is set to **True** closed WebSocket connection will be treated as device ping fault. Otherwise the device ping fault will be relying only ping timeout due to no messages received from the Charge Point.
- *Enable SSL* – When parameter is enabled the Secure Socket Layer will be enabled and all the communication will be encrypted. Please note that Central System URL will have to be set to: wss://ipAddress:port. Please restart the station after the SLL option is enabled or disabled.
- *Host Address* – The physical address of a computer in a network. On the Internet, a host address is the IP address of the machine. In most configurations the default option can be used.
- *Response Timeout Sec* – Message response timeout.

6　Devices

Open the **Device Manager** and press **Discover** button. List of all the Charge Points that tried to connect to Niagara station since the last station restart will be shown. Please note that even if the Charge Point is discovered it potentially could be already offline at the time when it is added to the station.

Press **Add** button to add them to Niagara station.
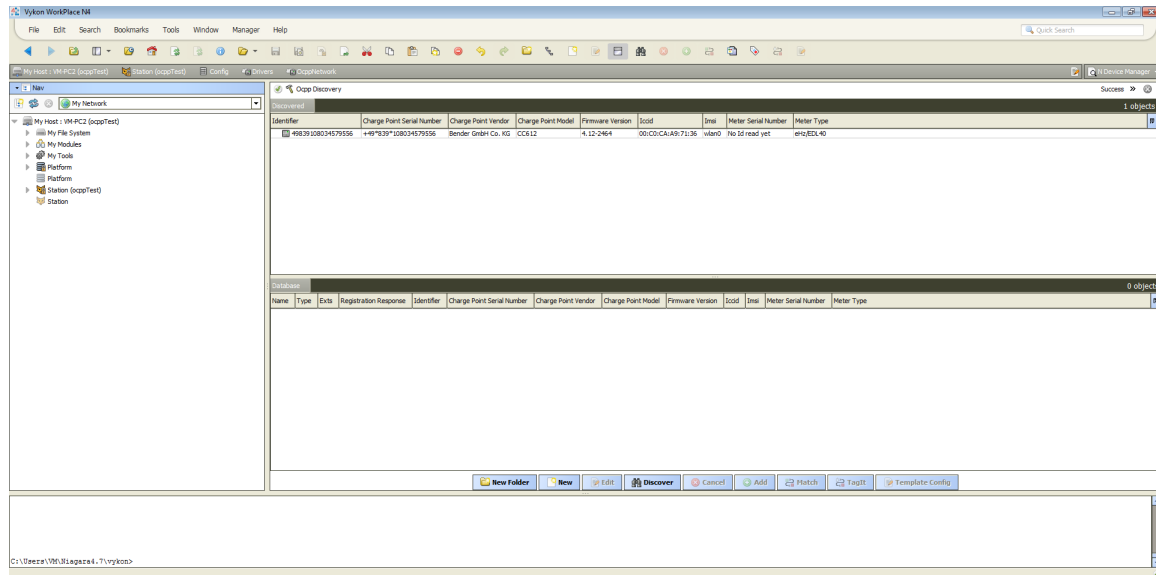
Each **OCPP Device** has the following properties:

- **Registration Response** – Registration status sent to Charge Point when it is connected to the Niagara and added to the device database. The property could be used to temporarily reject communication with specific chargers.
- **Identifier** – Unique Charge Point identifier, property is required for the communication. See Charge Point Configuration section.
- **Charge Point Serial Number** – This contains a value that identifies the serial number of the Charge Box inside the Charge Point. The property is optional and is used for information only.
- **Charge Point Vendor** – This contains a value that identifies the vendor of the Charge Point. The property is used for information only.
- **Charge Point Model** – This contains a value that identifies the model of the Charge Point. The property is used for information only.
- **Firmware Version** – This contains the firmware version of the Charge Point. The property is optional and is used for information only.
- **Iccid** – This contains the ICCID of the modem's SIM card. The property is optional and is used for information only.
- **Imsi** – This contains the IMSI of the modem's SIM card. The property is optional and is used for information only.
- **Meter Serial Number** – This contains the serial number of the main power meter of the Charge Point. The property is optional and is used for information only.
- **Meter Type** – This contains the type of the main power meter of the Charge Point. The property is optional and is used for information only.
- **Connector #** – See Connector # section.
- **Charge Point** – See Charge Point section.

49839108034579556 (Ocpp Device)

○	Status	{unackedAlarm}
○	Fault Cause	
▶ 黜	Health	Ok [06-Mar-20 9:05 AM GMT]
▶ 🔔	Alarm Source Info	Alarm Source Info
○	Registration Response	Accepted ▾
○	Identifier	49839108034579556
○	Charge Point Serial Number	+49*839*108034579556
○	Charge Point Vendor	Bender GmbH Co. KG
○	Charge Point Model	CC612
○	Firmware Version	4.12-2464
○	Iccid	00:C0:CA:A9:71:36
○	Imsi	wlan0
○	Meter Serial Number	No Id read yet
○	Meter Type	eHz/EDL40
▶ ⚡	Smart Charging	Disabled
○	Poll Frequency	Normal ▾
▶ 🌑	Points	Ocpp Point Device Ext
▶ 🔧	Connector 1	Charging	No Error [06-Mar-20 9:05 AM GMT]
▶ 🔧	Charge Point	Available	No Error [06-Mar-20 9:05 AM GMT]

Each **OCPP Device** has the following actions:

- **Clear Cache** – Request for a Charge Point to clear its **Authorization Cache**.

- **Reset** – Request for a Charge Point reset. The are two reset types: **soft** and **hard**. **Soft** - return to initial status, gracefully terminating any transactions in progress. **Hard** - full reboot of Charge Point software.

6.1   Connector

The term "Connector" refers to an independently operated and managed electrical outlet on a Charge Point. This usually corresponds to a single physical connector, but in some cases a single outlet may have multiple physical socket types and/or tethered cable/connector arrangements to facilitate different vehicle types (e.g. four-wheeled EVs and electric scooters). Driver will automatically create number (#) of connectors under the device when they are reported by the Charge Point for the first time. ID of the first connector is always set to 1.

Each **Connector #** has the following properties:

- **Id** – Connector ID (e.g. 1).
- **Error Code** – Contains the error code reported by the Charge Point. See Appendix 1: Charging Point Error Codes for detailed description.
- **Info** – Optional. Additional free format information related to the error.
- **Status** – Contains the current status of the Charge Point. See Appendix 2: Charging Point Status for detailed description.
- **Last Update** – Timestamp of the last update.
- **Smart Charging** – See Smart Charging section.

Each **Connector #** has the following actions:

- **Unlock Connector** – Request for Charge Point to unlock a connector. The purpose of this action: Help EV drivers that have problems unplugging their cable from the Charge Point in case of malfunction of the Connector cable retention. When a EV driver calls the help-desk, an operator could manually trigger the sending of an action to the Charge Point, forcing a new attempt to unlock the connector. Hopefully this time the connector unlocks and the EV driver can unplug the cable and drive away.
- **Remote Start** – Request for Charge Point to start a transaction. The action needs to contain an identifier (idTag), which Charge Point shall use, if it is able to start a transaction. Typical use cases for action it to allow operator to help an EV driver that has problems starting a transaction or use in the mobile apps.
- **Remote Stop** – Request for Charge Point to stop a transaction by sending an identifier of the **Remote Start** transaction.
- **Disable Connector** – Request to change Charge Point connector availability to inoperative.
- **Enable Connector** – Request to change Charge Point connector availability to operative.

6.2 Charge Point

The Charge Point is the physical system where an electric vehicle can be charged. A Charge Point has one or more connectors. It is also referred as connector 0. Please note that not all of the Charge Points implement **Charge Point** or Connector 0 functionality, especially the ones with only one connector.

Each **Connector #** has the same properties as **Connector #** and has no actions.

6.3 Smart Charging

With Smart Charging a Central System gains the ability to limit the charging power or current of a specific EV, or the total allowed energy consumption on an entire Charge Point / a group of Charge Points, for instance, based on a grid connection, energy availability on the grid or the circumstances of a building. Influencing the charge power or current is based on energy transfer limits at specific points in time. Those limits are combined in a Charging Profile. Please note that not all the charging points support smart charging feature. Please refer to the manufacturer documentation.

Smart Charging has the following properties:

- **Send Status** – Status of the last Smart Charging write attempt by the Driver.
- **Enable** – Property is used to enable or disable Smart Charging.
- **Unit Type** – Unit in which a charging schedule is defined, **Watts** (power) or **Amperes** (current).
- **Limit** – Power or current limit during the schedule period.
- **Charging Profile** – Indicates the kind of schedule. **Absolute** - schedule periods are relative to a fixed point in time defined in the schedule. **Recurring** - the schedule restarts periodically at the first schedule period. **Relative** - schedule periods are relative to a situation specific start point (such as the start of a session) that is determined by the Charge Point.
- **Charging Profile Purpose** – Defines the purpose of the schedule. **Charge Point Max Profile** - configuration for the maximum power or current available for an entire Charge Point. **Tx Default Profile** - default profile to be used for new transactions. **Tx Profile** - Profile with constraints to be imposed by the Charge Point on the current transaction. A profile with this purpose shall cease to be valid when the transaction terminates.
- **Profile Id** – Unique identifier for this profile.
- **Stack Level** – Value determining level in hierarchy stack of profiles. Higher values have precedence over lower values. Lowest level is 0.

Smart Charging has the following actions:

- **Set Charging Profile** – Action write the charging profile with the listed below properties. Action is executed every time when smart charging is **enabled** and any of the properties below has been changed.
- **Clear Charging Profile** – Action clears charging profile with the listed below properties. Action is executed when smart charging is **disabled**.

7   Points

OCPP points could be of two types: **configuration points** and **meter points**. **Configuration points** can be read from the Charge Point and contain configuration parameters. **Meter points** are meter values sent by the Charge Point and they will be discovered only after the Charge Point will send them for the first time. Charge Point could be configured to send the meter values during the transaction, periodically or both.

Every OCPP point extension contain the following properties:

- **Parameter** – Unique configuration point identified. See Appendix 3: Standard Configuration Points for detailed description.

- **Connector Id** – Parameter determines applicable connector and is only relevant for meter values.

- **Config Type** – Parameter determines if the point is of the configuration type.

The points can be automatically discovered by clicking **Discover** button. After all required points are discovered, they can be added to the station by selecting them and clicking on **Add** button.

The points type (Numeric, String and Read only, Writable) will be automatically selected and, where possible, numeric precision and physical units will be assigned.

8   Troubleshooting table

Problem observed	Possible reason	Solution
Charge Point is not discovered	Incorrect Charge Point settings	See Charge Point Configuration section.
Charge Point is not discovered	Central System is not accessible for the Charge Points over the network	Please make sure that Charge Point could connect to the Central System over the network. Use windows ping command to check the connection from your local machine to both Charge Point and Central System
Charge Point is not discovered	Central System server is not operational	Please try to open the *URL of the Backend* that was used in the Charge Point Configuration section via the web browser (e.g. if the URL was ws://192.168.1.2:8887 please navigate to http://192.168.1.2:8887). If you will see *404 WebSocket Upgrade Failure* that proves that Central System is up and running as expected. However, if the address is inaccessible that proves that either URL is incorrect or the driver is not running, in that case please refer to the Niagara Application Director for more debugging logs
Charge Point is periodically disconnected	Charge Point is disconnected due to is using WebSocket Ping Interval timeout	Please set the **WebSocketPingInterval** configuration parameter to 0. See Appendix 3: Standard Configuration Points for detailed description
Charge Point points are not discovered	Charge Point is offline	Please check if the Charge Point is online
Charge Point meter values are not updated	Charge Point is not sending updated values	By default Charge Point is sending meter values only during the transaction. However, it could be configured to send the values periodically, see Appendix 3: Standard Configuration Points for detailed description
WorkPlace is closing unexpectedly	WorkPlace certificate is not imported	See Installation section step 2.

9   Appendix 1: Charging Point Error Codes

Value	Description
ConnectorLockFailure	Failure to lock or unlock connector.
EVCommunicationError	Communication failure with the vehicle, might be Mode 3 or other communication protocol problem. This is not a real error in the sense that the Charge Point doesn't need to go to the faulted state. Instead, it should go to the SuspendedEVSE state.
GroundFailure	Ground fault circuit interrupter has been activated.
HighTemperature	Temperature inside Charge Point is too high.
InternalError	Error in internal hard or software component.
LocalListConflict	The authorization information received from the Central System is in conflict with the LocalAuthorizationList.
NoError	No error to report.
OtherError	Other type of error.
OverCurrentFailure	Over current protection device has tripped.
OverVoltage	Voltage has risen above an acceptable level.
PowerMeterFailure	Failure to read power meter.
PowerSwitchFailure	Failure to control power switch.
ReaderFailure	Failure with idTag reader.
ResetFailure	Unable to perform a reset.
UnderVoltage	Voltage has dropped below an acceptable level.
WeakSignal	Wireless communication device reports a weak signal.

10   Appendix 2: Charging Point Status

Status	Condition
Available	When a Connector becomes available for a new user.
Preparing	When a Connector becomes no longer available for a new user but no charging session is active. Typically a Connector is occupied when a user presents a tag, inserts a cable or a vehicle occupies the parking bay. (Operative)
Charging	When the contactor of a Connector closes, allowing the vehicle to charge. (Operative)
SuspendedEVSE	When the contactor of a Connector opens upon request of the EVSE, e.g. due to a smart charging restriction. (Operative)
SuspendedEV	When the EVSE is ready to deliver energy but contactor is open, e.g. the EV is not ready.
Finishing	When a charging session has stopped at a Connector, but the Connector is not yet available for a new user, e.g. the cable has not been removed or the vehicle has not left the parking bay. (Operative)
Reserved	When a Connector becomes reserved as a result of a Reserve Now command. (Operative)

11   Appendix 3: Standard Configuration Points

Name	Description
AllowOfflineTxForUnknownId	If this key exists, the Charge Point supports Unknown Offline Authorization. If this key reports a value of true, Unknown Offline Authorization is enabled.
AuthorizationCacheEnabled	If this key exists, the Charge Point supports an Authorization Cache. If this key reports a value of true, the Authorization Cache is enabled.
AuthorizeRemoteTxRequests	Whether a remote request to start a transaction in the form of a RemoteStartTransaction.req message should be authorized beforehand like local action to start a transaction.
BlinkRepeat	Number of times to blink Charge Point lighting when signalling.
ClockAlignedDataInterval	Size (in seconds) of the clock-aligned data interval. A value of "0" is to be interpreted to mean that no clock-aligned data should be transmitted.
ConnectionTimeOut	Interval (from successful authorization) until incipient charging session is automatically canceled due to failure of EV user to correctly insert the charging cable connector(s).
GetConfigurationMaxKeys	Maximum number of requested configuration keys in a GetConfiguration.
HeartbeatInterval	Interval of inactivity (no OCPP exchanges) with central system after which the Charge Point should send a Heartbeat.
LightIntensity	Percentage of maximum intensity at which to illuminate Charge Point lighting.
LocalAuthorizeOffline	Whether the Charge Point, when offline, will start a transaction for locally authorized identifiers.
LocalPreAuthorize	Whether the Charge Point, when online, will start a transaction for locally authorized identifiers without waiting for or requesting an Authorize from the Central System.
MaxEnergyOnInvalidId	Maximum energy in Wh delivered when an identifier is invalidated by the Central System after start of a transaction.
MeterValuesAlignedData	Clock-aligned measurand(s) to be included in a MeterValues, every ClockAlignedDataInterval seconds.
MeterValuesAlignedDataMaxLength	Maximum number of items in a MeterValuesAlignedData Configuration Key.
MeterValuesSampledData	Sampled measurands to be included in a MeterValues, every MeterValueSampleInterval seconds.
MeterValuesSampledDataMaxLength	Maximum number of items in a MeterValuesSampledData Configuration Key.
MeterValueSampleInterval	Interval between sampling of metering (or other) data, intended to be transmitted by "MeterValues".
MinimumStatusDuration	The minimum duration that a Charge Point or Connector status is stable before a

Name	Description
NumberOfConnectors	The number of physical charging connectors of this Charge Point.
ResetRetries	Number of times to retry an unsuccessful reset of the Charge Point.
ConnectorPhaseRotation	The phase rotation per connector in respect to the connectors energy meter (or if absent, the grid connection).
ConnectorPhaseRotationMaxLength	Maximum number of items in a ConnectorPhaseRotation Configuration Key.
StopTransactionOnEVSideDisconnect	When set to true, the Charge Point SHALL administratively stop the transaction when the cable is unplugged from the EV.
StopTransactionOnInvalidId	Whether the Charge Point will stop an ongoing transaction when it receives a non- Accepted authorization status in a StartTransaction for this transaction.
StopTxnAlignedData	Clock-aligned periodic measurand(s) to be included in the TransactionData element of StopTransaction.req MeterValues for every ClockAlignedDataInterval of the charging session.
StopTxnAlignedDataMaxLength	Maximum number of items in a StopTxnAlignedData Configuration Key.
StopTxnSampledData	Sampled measurands to be included in the TransactionData element of StopTransaction, every MeterValueSampleInterval seconds from the start of the charging session.
StopTxnSampledDataMaxLength	Maximum number of items in a StopTxnSampledData Configuration Key.
SupportedFeatureProfiles	A list of supported Feature Profiles.
SupportedFeatureProfilesMaxLength	Maximum number of items in a SupportedFeatureProfiles Configuration Key.
TransactionMessageAttempts	How often the Charge Point should try to submit a transaction-related message when the Central System fails to process it.
TransactionMessageRetryInterval	How long in seconds the Charge Point should wait before resubmitting a transaction related message that the Central System failed to process.
UnlockConnectorOnEVSideDisconnect	When set to true, the Charge Point SHALL unlock the cable on Charge Point side when the cable is unplugged at the EV.
WebSocketPingInterval	Only relevant for websocket implementations. 0 disables client side websocket Ping/Pong.
LocalAuthListEnabled	Whether the Local Authorization List is enabled.
LocalAuthListMaxLength	Maximum number of identifications that can be stored in the Local Authorization List.
SendLocalListMaxLength	Maximum number of identifications that can be send in a single SendLocalList.
ReserveConnectorZeroSupported	If this configuration key is present and set to true: Charge Point support reservations on connector 0.

Name	Description
ChargeProfileMaxStackLevel	Max StackLevel of a ChargingProfile. The number defined also indicates the max allowed number of installed charging schedules per Charging Profile Purposes.
ChargingScheduleAllowedChargingRateUnit	A list of supported quantities for use in a ChargingSchedule. Allowed values: 'Current' and 'Power'.
ChargingScheduleMaxPeriods	Maximum number of periods that may be defined per ChargingSchedule.
ConnectorSwitch3to1PhaseSupported	If defined and true, this Charge Point support switching from 3 to 1 phase during a charging session.
MaxChargingProfilesInstalled	Maximum number of Charging profiles installed at a time.