OCPP 1.6 Driver for Ignition
User Guide

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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).

The driver is designed to enable communication between an electric vehicle charging point and Inductive Automation's Ignition as a SCADA system working as a Central System. It provides an integrated solution for building management systems and electric vehicle infrastructure.

2 Terminology

- **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.

3 Driver Supported Feature Profiles

Profile name	Description
Core	Basic Charge Point functionality
Remote Trigger	Support for remote triggering of Charge Point initiated messages.

4 Requirements

- Ignition 8 or later
- OCPP Charge Point that supports OCPP-J 1.6 (OCPP via JSON over WebSocket)

5 Charge Point Configuration

Communication using the Open Charge Point Protocol differs from that of traditional automation system protocols, where it is usually the automation system that initiates the communication. However, in OCPP the communication is initiated and the majority of the messages are sent by the Charging Point (CP). It implies that the Charge Point should be able to connect to the Central System, i.e., the 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 the Charge Point manufacturer:

- **URL of the Backend** – Your Ignition IP address in the following format `ws://ipAddress:port` (e.g., `ws://192.168.1.2:8889`).
- **OCPP Mode** – Please select OCPP-J 1.6
- **Charge Point Identifier** – Desired identification name

6 Installation

1. Install **OCPP-Driver-signed.modl** via **Modules** under **Config** section.
2. Purchase a license by sending a request to orders@baudrate.io

7 Quick Start

To start communication between Ignition and Charge Points, make sure that the Ignition server is accessible by the Charge Point via the network. Firewall and router settings are typical network connectivity causes.

1. Navigate to **Config** -> **OPC UA Device Connections**,
2. Click **Create new Device** and select **OCPP Server**, click **Next**
3. Enter **Name** and **Description** (these could be anything). Note the port address. You can leave other setting as default.
4. Click **Create New Device**. Now OCPP server will be running at the selected port.

Figure 1: OCPP Server Configuration

Note: only one OCPP server must be added.

8 Charge Point

When a new charging point will connect to the server the driver will automatically create a new device under **OPC UA Device Connections**. The device name will be equal to the *Charge Point*

Identifier entered in the charge point.

Each OCPP Device will have multiple parameters, however, these might not be always filled. These parameters are only filled when the charge point is sending a *BootNotification* message after the reboot.

General	
Name	BGS_5338
Description	OCPP Device
Enabled	☑ (default: true)

OCPP Settings	
OCPP Identifier	BGS_5338 Unique identified of the Charge Station
Serial Number	ACE0208004 Unique serial number of the device.
Vendor	Alfen BV Vendor of the device.
Model	NG910-60573 Model designation of the device.
Firmware Version	6.5.0-4217 Software version installed on the device.
ICCID	 Integrated Circuit Card Identifier for the device's SIM card.
IMSI	 International Mobile Subscriber Identity of the device's SIM card.
Meter Serial Number	 Unique serial number of the metering device.
Meter Type	 Type or model of the metering device.

Save Changes

Figure 2: OCPP Logger

9 Data Points

Data Points for each device will be available via OPC UA. Under the device folder, you will typically find the following methods and folders.

9.1 Methods:

- **Clear Cache** – Clears the local cache of identifications that have been authorized, forcing a reauthorization from the Central System when needed.
- **Hard Reset** – Immediately terminates all current transactions and reboots the Charge Point hardware.
- **Soft Reset** – Gracefully restarts a Charge Point, ending any ongoing charging transactions in an orderly manner before resetting the hardware or software. It does not disrupt power to the

Charge Point like a hard reset, but rather allows the system to shut down smoothly, ensuring data integrity and a clean startup sequence.

Please refer to this guide on how to use Ignition methods.

9.2 Folders:

- **ConfigurationPoints** – This folder will consist of different configuration points for charge point.
- **Connectors** – Under this folder, you will typically find several connectors. Connector 0 refers to the whole charge point. Connector # refers to a specific connector.

9.3 Connector Folder:

- **Disable Connector** – Temporarily disables a connector to prevent use.
- **Enable Connector** – Re-enables a previously disabled connector.
- **Unlock Connector** – Releases the connector lock, typically used after an EV has finished charging.
- **Error Code** – Displays any fault codes related to the connector or charging session. See Appendix 1.
- **Info** – Provides detailed information about the connector's specifications and status.
- **Status** – Indicates the current operational state of the connector (Available, Occupied, Faulted, etc.). See Appendix 2.

Metering information and additional status updates are available under each connector if transmitted by the Charge Point.

10 Troubleshooting table

Problem observed	Possible reason	Solution
Charge Point is not discovered	Incorrect Charge Point settings	Refer to Charge Point Configuration.
Charge Point is not discovered	Network accessibility issues	Ensure Charge Point can connect to Central System (use ping).
Charge Point is not discovered	Server not operational	Open Backend URL; if "OCPP-J Websocket OK" seen, server is operational. Check driver logs otherwise.
Meter values not updated	No updates from Charge Point	Defaults to update during transaction. For periodic updates, refer to Appendix 3.

11   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.

12 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)

13   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.