QOCPP-CSMS - OCPP Stack

Accelerate and make charging station deployements more reliable

Date   : 2023-01-25
Version : 5

Trialog is working on EV charge since more than 10 years and had several opportunities to develop a strong expertise on Electro-Mobility charge protocols like IEC 61851-1, DIN 70121, ISO 15118 and OCPP 1.6/2.0.
In this context, Trialog has developed several communication stacks and and validation tools.

QOCPP-CSMS, the OCPP Communication Stack for EVSE supervisor is one of these stacks. It provides a robust and reliable communication stack to monitor and control a charging station over **OCPP 1.6** or **OCPP 2.0.**

Supported Features

Supported versions

- OCPP 1.6 WS/JSON
- OCPP 2.0.1

OCPP 1.6 Supported Features

All OCPP 1.6 messages are supported.

Functional Block	Current state	Details
HTTP/SOAP		Not supported. Not planned.
WebSocket/JSON	100%	
Core	100%	
Firmware Management	100%	*Message will be exchanged but actual firmware update is out of the scope of the stack.*
Local Auth List Management	100%	
Reservation	100%	
SmartCharging	100%	
Remote Trigger	100%	
Cybersecurity whitepaper	100%	

OCPP 2.0 Supported Messages

All OCPP 2.0.1 messages are supported.

Functional Block	Current state	Details
WebSocket/JSON	100%	
A. Security	100%	
B. Provisionning	100%	
C. Authorization	100%	
D. Local Auth List Management	100%	
E. Transactions	100%	
F. RemoteControl	100%	
G. Availability	100%	
H. Reservation	100%	
I. TariffAndCost	100%	
J. MeterValues	100%	*J03 is not yet really usable as defined in OCPP*
K. SmartCharging	100%	
L. FirmwareManagement	100%	*Message will be exchanged but actual firmware update is out of the scope of the stack.*
M. ISO 15118 CertificateManagement	100%	
N. Diagnostics	100%	*Message will be exchanged but actual FTP exchange is out of the scope of the stack.*
O. DisplayMessage	100%	
P. DataTransfer	100%	

OCPP 2.x support for bidirectional charge is currently under implementation in a prototype demonstrator. When ready, it will become available as a licence option in QOCPP-CSMS.

Technical Details

The QOCPP-CSMS stack is developed as a C/C++ programs using Qt libraries. Linux based OS, C++11 and Qt5.6 are minimal requirements.

Mutli-platform: It has been fully validated on Linux bases OS and the Windows platform. Multi-architecture: It is compatible with at least Intel and ARM architectures.

The QOCPP-CSMS stack is proposing two functional modes, both usable in parallel:

- **Message mode:** control the stack message per message, for a complete control of the stack behaviour, the API is therefore different between OCPP 1.6 and 2.0.

- **Use Case mode**: control the stack based on use case, which provides the same API for OCPP 1.6 and 2.0.

Using Use Case modules accelerate developments even more than the Message mode. However, no existing stack in the World will ever cover each specific existing business logics. That is why Trialog has developed only the main relevant existing use cases. In case they fit your requested business logics, you can use them directly. Otherwize, you can use them as an example and a starting point to development your custom implementation.

Available use case modules:

Modules	1.6	2.0.1
Database handler	Yes	Yes
BootNotification	Yes	Yes
Authorization	Yes	Yes
AutoSender	Yes	Yes
Firmware Update	Yes	No added into roadmap yet. Please contact Trialog in case you urgently need these use cases for 2.0.1.
Diagnostic	Yes	

Validation and Interoperability

The QOCPP-CSMS stack is ready to use, fully validated with Trialog's expertise and currently deployed into several supervisors for industrial exploitation and pilots. The stack has also participated to all offical OCPP plugfests organised by the OCA since 2018 in order to provide interoperability confidence.

From Trialog's knowledge, the QOCPP-CSMS stack is currently deployed in the following environments:

- **Operations of hundreds of AC stations in France (TRL9)**
  - OCPP 1.6
  - OCPI 2.1.1, connexion with GIREVE
  - Alfen Eve Single and Double Pro-line

- ***Sender*[1] european project, deployement in progress in Finland and Austria (TRL7)**
  - OCPP 1.6
  - Several pools of 5-10 stations each
  - ABB and Keba DC stations
- ***aVEnir*[2] french project demonstrators in France (TRL6)**
  - OCPP 1.6 and 2.0.1
  - 3 deployements of 1 or 2 stations each, including V2G demos
  - EVTronic, Schneider Electric EV Link, proto stations
- **One demonstrator in a lab in France, Paris area (TRL6)**
  - OCPP 1.6
  - Schneider Electric EV Link, Legrand
- **Operations of AC/DC stations in Trialog facilities**
  - OCPP 1.6 and 2.0.1
  - 2 deployements running continuously for testing purpose
  - Tested regularly with:
    - eNovates Wallbox double
    - Alfen Eve Single
    - Nexans Alto
    - IES Keywatt 50
    - Dozens of virtual stations
    - Other stations from our customers (AC and DC)

The interoperability with the following charging stations has for example been covered using a test environment.

Model	Protocol	Type
Alfen - Eve Single / Double Pro-line	1.6 2.0.1	AC
BP Chargemaster	2.0.1	DC
CTEK - ChargeStorm Connected	1.6	AC
DemandQ	2.0.1	AC
Enovates – Wallbox series *simple and double connectors*	1.6	AC
EVTronic/EVBox	1.6	AC
IES – Keywatt 50	1.6	AC DC
Heliox Energy – Rapid 50kW	2.0.1	DC
Legrand	1.6	AC

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1   https://cordis.europa.eu/project/id/957755
2   https://librairie.ademe.fr/recherche-et-innovation/510-avenir.html

Meras Plugins	2.0.1	AC
Nexans Alto	1.6	AC
Open Charge Alliance OCTT 2.0.1	2.0.1	AC DC
PcVue Solutions	1.6	AC
Rectifier Technologies Highbury	2.0.1	DC
Schneider EV Link	1.6 2.0.1	AC
Total EV Charge	1.6	AC
Vector Informatik vSECC	2.0.1	DC
Venema	2.0.1	AC
Woodswallow Bluebird 7300	2.0.1	AC
Yesil otomasyon	2.0.1	
Zapinamo ZPN Hubz	2.0.1	DC

Contact us

*For more information about **QOCPP-CSMS, the OCPP Communication Stack for EVSE supervisors**, please contact us: emobilitysales@trialog.com.*