OPEN CHARGE ALLIANCE

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OCPP goes to the next level

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Agenda

- Introducing the Open Charge Alliance
- Overview of OCPP 2.0
- News

OCPP in a nutshell (What you may already know)

- OCPP is an abbreviation for Open Charge Point Protocol
- OCPP is an open and free communication standard between charging stations and central systems
- OCPP was initiated in 2009 by the E-Laad Foundation
- OCPP has become the protocol of choice in 50 countries, is used to manage over 10,000 charge stations
- In the European market OCPP has become the de facto standard
- E-Laad established the OCPP Forum as a community supporting the development and maintenance of OCPP

OCPP Forum becomes the Open Charge Alliance (OCA)

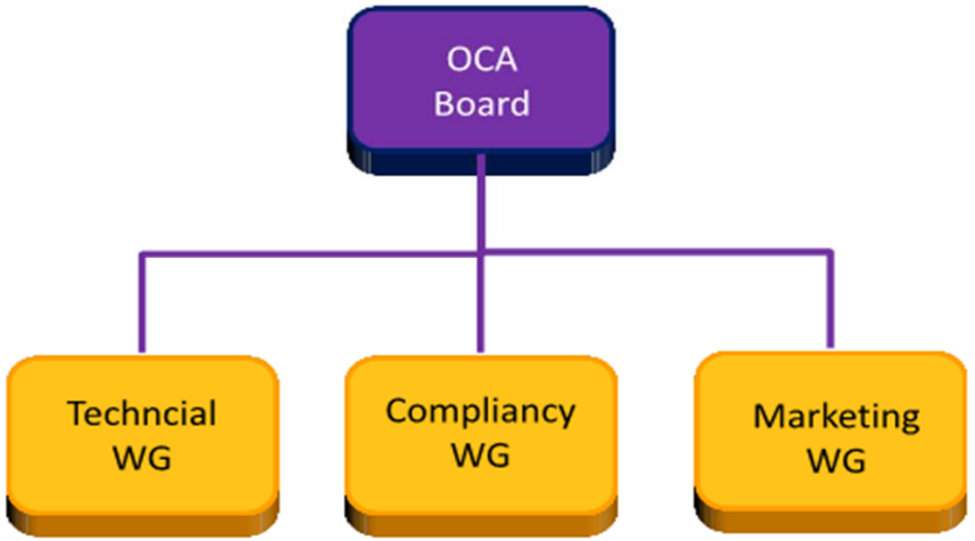
- OCA is the successor to the OCPP Forum
- OCA maintains the same vision, mission, and principles
  - A fundamental commitment to *open* processes and products
  - *Free* to use: no constraints on the use of the standard
  - Development is *market driven* to meet existing and emerging technical and business requirements
  - *Pragmatic* approach leverages knowledge and experience of experts in EV charging infrastructure
  - Uphold OCPP as a *vital* standard, with implementations widely adopted and deployed

Why a new name and organization?

- Indicates we're taking the protocol to the next level, to support growth in stakeholder types, number, and market geographies
- Emphasizes and marks a new level of maturity with OCA
  - Formalized "open and free" IPR Policy (RANDz)
  - Stronger governance structure and organization
  - More rigorous requirements management and traceability
  - Clearer working and decision processes, timelines and release cycles
  - Welcoming new and different types of users and stakeholders
  - Publication of OCPP 2.0, covering recent market requirements
  - Protocol compliancy: testing, tools, and formal certification
  - Worldwide adoption of OCPP

Governance and structure

- Three Originating Members (E-Laad, ESB and Greenlots) comprise the initial OCA Board.
- "In 2014 the OCA Board will grow its membership to welcome other leading EV industry players who can help OCA meet its strategic objectives."



OCA Membership benefits

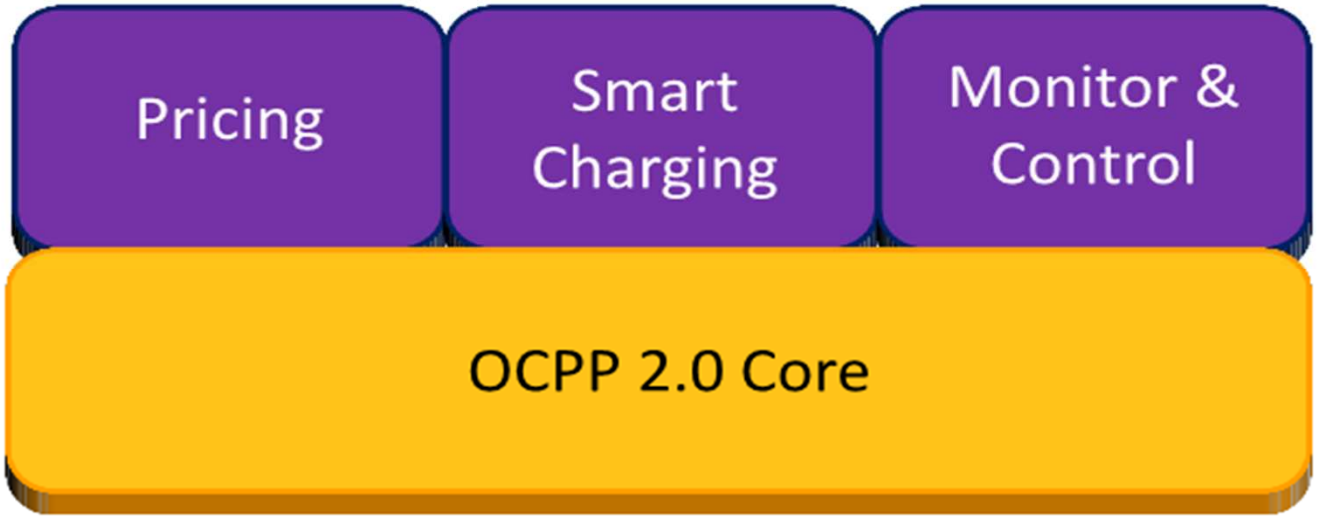
- Influence and shape current and future versions of OCPP
- Full participation in WG proceedings (telecons, workshops)
- Full document access for “work in progress”
- Eligibility for WG Chair and Vice Chair, OCA Board membership
- Full voting rights at WG and OCA levels
- Compliancy tools, processes, and events (“plug-fests”)
- Ability to gain formal OCA certification

What are OCA Membership categories

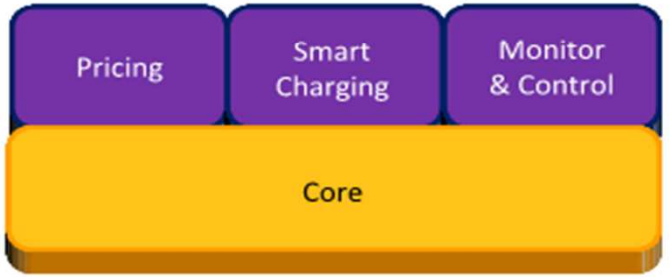
Participant Category	*Description*	*Participation Fee (2014)*
Adopter	An organization that deploys EV charging networks utilizing OCA Standards (e.g., OCPP).	Revenue ($/€)* Annual Fee < 1M €750 / $1000 1M < 10M €1875 / $2500 10M < 50M €3750 / $5000 50M+ €6275 / $7500
Implementer	A vendor that offers hardware and/or software products that implement the OCA Standards, or that offers technical services in support of such vendors.	
Individual	An individual who has a professional interest in the development, distribution, installation, maintenance, or use of the OCA Standards.	€225 / $300
Institutional	An organization with an institutional interest in OCPP (other than Adopters or Implementers), e.g. research or consulting groups, laboratories, regulatory bodies.	€750 / $1000
Liaison	A standard setting or defining organization (SSO, SDO) that has a supportive interest in OCA Standards.	free

OCPP 2.0 Release Candidate (preview)

- OCPP 2.0 Core – basic chargin functioality as in v1.2/v1.5
- OCPP 2.0 Extensions are optional, may contain multiple “feature sets”. E.g. smart charging contains ISO/IEC 15118 support and PWM signaling support “feature sets”.

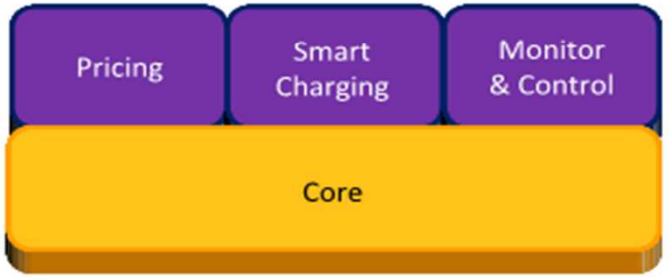


OCPP 2.0 Core



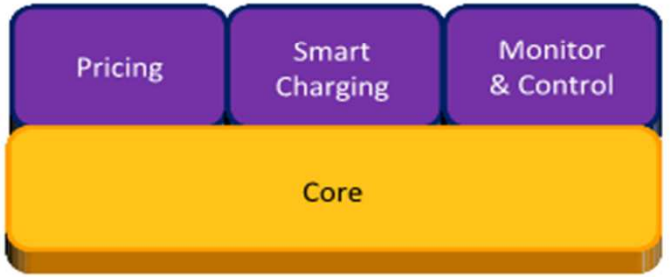
- In general, messages present in OCPP 1.5 are in OCPP 2.0 Core.
- For consistency reasons, some have been updated or renamed.
- A few v1.5 messages are in parts of v2.0 Extensions.

OCPP 2.0 Core



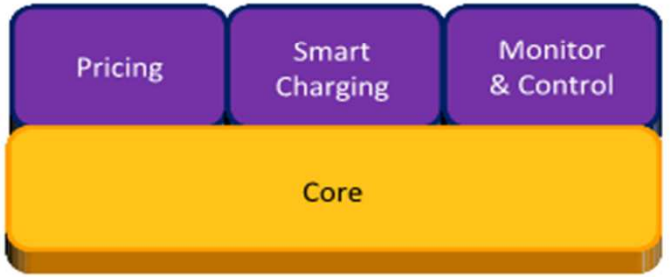
- OCPP does not specify a communications technology. Any network stack that supports TCP/IP connectivity could be used for OCPP.
- OCPP 1.5 messages are implemented using SOAP/XML over HTTP. SOAP/XML brings significant networking overhead.
  - JSON encoding for OCPP v1.5 is under discussion / protoyping.
- To reduce the size of OCPP messages and significantly lower data communication costs, OCPP 2.0 also specifies JSON encoding and Websockets.
- Both SOAP/XML and JSON/Websockets implementations of v2.0 will be supported by OCA (e.g. for compliancy).

OCPP 2.0
Pricing



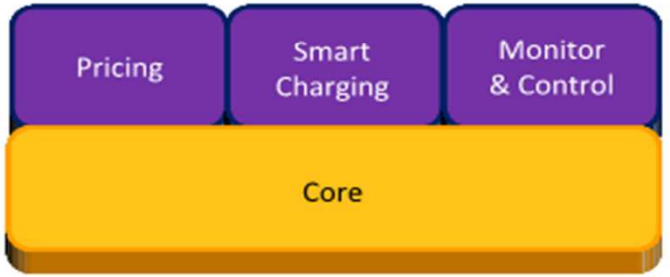
- There are potentially many different pricing models, because of differences in business models and legislation. Rather than try to create an all-encompassing pricing model, OCPP 2.0 starts small and will grow as needed.
- OCPP supports basic usage-based cost calculation on the charge point, limiting the complexity of the charge point and the amount of data to be transferred.
- Complex pricing models can be supported by the central system; pricing updates can be sent between or during charging sessions.

OCPP 2.0
Pricing



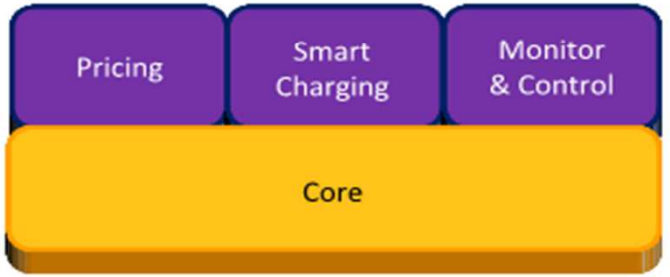
- OCPP 2.0 enables display of the charging price and accumulated cost during the charging session.
- OCPP 2.0 can offer multiple price schemes so users can select one to be used for the charging session.
- Display texts can be sent in multiple languages to explain pricing, discounts, additional costs, etc. calculated by the central system.
  - Tariff structure sent to the charge point is language independent.

OCPP 2.0
Smart Charging



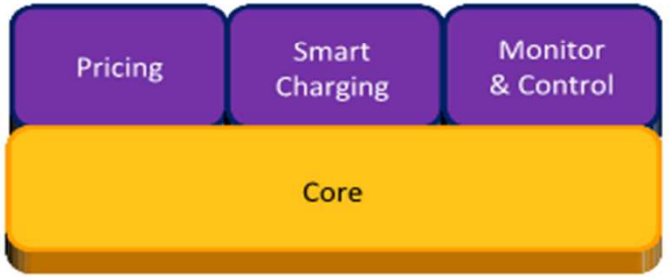
- Smart charging in OCPP 2.0 is a controlled charging process: a charge point, central system, or both can set constraints to the amount of power that is delivered during a charge session.
- OCPP can be used at a local level to limit the total amount of power that may be used by a group of charge points, e.g in a parking garage.
- OCPP can also be used on a global level to adjust the power consumption of charge points to match the power generation capability of the grid, the availability of renewable energy, etc.

OCPP 2.0
Smart Charging



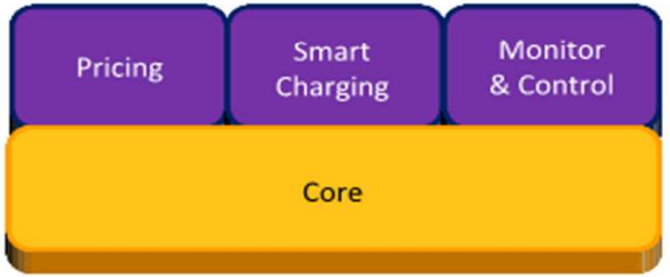
- For an EV to control the amount of power that it draws from a charge point, some form of vehicle-to-charging station / grid communication is necessary.
- It is anticipated that for the coming years, the majority of EVs will support the Mode 3 PWM signal. OCPP 2.0 supports smart charging with PWM.
- OCPP 2.0 supports more advanced smart charging as well (requiring EV-to-EVSE communications, among them e.g. ISO/IEC 15118 style smart charging.

OCPP 2.0
Monitor & Control



- Introduction of "*Device Model*" that represents a standardized logical view of the many hardware and software "*Components*" that make up a typical charge point
- Each Component has standard "*Variables*" that can be used to represent and control significant aspects of its behaviour, its current "*State*" and significant "Events"
- Overall, a Central System can monitor and control a Charge Point in a structured way to more easily diagnose
  - A charge point's state and how it is performing;
  - What has happened when something goes wrong.

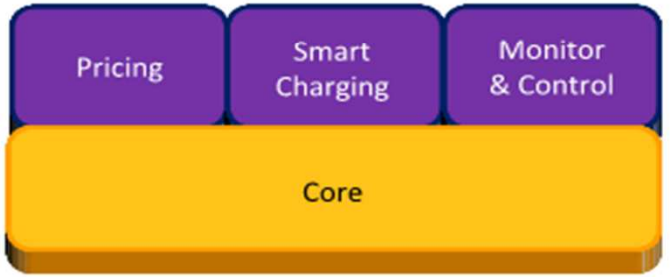
OCPP 2.0
Monitor & Control



- Helps to improve customer experience and lower maintenance costs by providing better, more structured and standardized (near) real-time diagnostics:

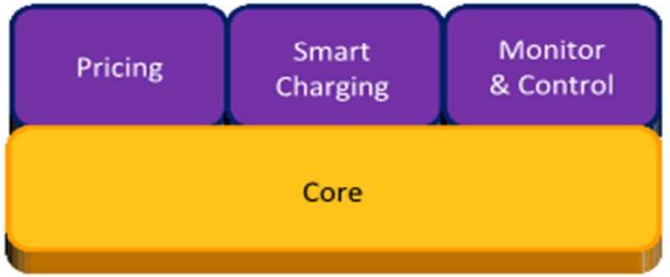
  1) prevent problems from occurring via advanced warnings;
  2) identify & solve problems remotely whenever possible
  3) potentially engage user at charge point to diagnose and if possible work around the problem
  4) ultimately, send service personnel on site after other options are exhausted

OCPP 2.0
Monitor & Control



- "Plug & Play" enrolment of new charge points can eliminate expensive, time-consuming and error prone manual data-entry
- Obtain detailed information on the charge point's current *state*
- Receive notification reports with problem and operational "events" (e.g. access door opened, temperature limit exceeded)
- Remotely change the configuration of components of a charge point to enable, disable, or modify certain functionality
- Change the monitoring configuration, to only report the events and problem values of interest

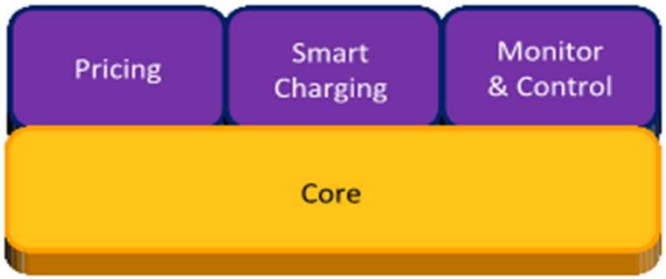
OCPP 2.0 Compliancy



- "Plug and play" capability requires rigorous compliancy tools and processes
- OCA has created a Compliancy WG to manage:
  - Providing a suite of compliancy tools, such as reference implementations, test harnesses, and test scripts
  - Developing a path to formal third-party certification
  - Administering an OCA mark for OCPP conformance
- OCA compliancy WG will cover OCPP v1.5 as well

OCPP 2.0 Summary

- OCPP 2.0 Core: all essential messages (as in v1.2/v1.5)
- Lower communication cost via JSON/Websockets.
- OCPP 2.0 Extensions: optional, may contain multiple feature sets.
  - Monitor&Control: improves customer experience, lowers OA&M costs
  - Smart Charging: possible with both PWM and ISO/IEC 15118
  - Pricing: basic usage-based cost calculation on the charge point. Complex pricing models can be supported by the central system
- Compliancy
  - "Industrial strength" compliance and certification program
  - Coverage will include OCPP v1.5 and v2.0



OCPP Timeline (indicative)

- Oct 2013: Internal release and review
- Nov 2013: OCPP 2.0 Release Candidate 1
- Q1-2014: Initial compliancy implementation
- Q1-2014: OCCP 2.0 Release Candidate 2
- Q1/Q2-2014: OCPP 2.0 Formal Publication

How can I join OCA?

www.openchargealliance.org/how-to-join

- Download and review the Participants Agreement (PA)
- Send email (join@openchargealliance.org) with your contact information and the following attachments:
  - signed copy of the PA (PDF file)
  - Purchase Order for 2014 Participation Fee

    (no charge for participation for the rest of 2013)

Join us for a free and open OCPP 2.0 Workshop!

3-4 December 2013 in Amsterdam

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