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INTERNATIONAL STANDARD

Open Charge Point Protocol 2.01

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Open Charge Point Protocol 2.01

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IEC 63584-201 has been prepared by IEC technical committee 69: Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks. It is an International Standard.

It is based on Open Charge Point Protocol 2.1 and was submitted as a Fast-Track document.

This second edition cancels and replaces IEC 63584 published in 2024. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 63584:2024:

a) introduced clarifications/improvements to requirements, use cases and sequence diagrams based on member feedback and TWG taskgroup meetings;
b) renamed all "OCTT" references in part 5 and 6 to "Test System" based on IEC feedback;
c) structural changes to the part 6 testcase descriptions to improve readability;
d) continuous improvements to part 6 testcase descriptions based on feedback from active certification program and CWG taskgroup meetings.

The text of this International Standard is based on the following documents:

Draft	Report on voting
69/1123/CDV	69/1148/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

The structure and editorial rules used in this publication reflect the practice of the organization which submitted it.

This document was developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.



OCPP 2.0.1

Part 0 - Introduction

Edition 4, 2025-12-03

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Version History

Version	Date	Description
2.0.1 Edition 4	2025-12-03	OCPP 2.0.1 Edition 4. All errata from OCPP 2.0.1 Part 0 until and including Errata 2025-11 have been merged into this version of the specification.
2.0.1 Edition 3	2024-05-06	OCPP 2.0.1 Edition 3. All errata from OCPP 2.0.1 Part 0 until and including Errata 2024-04 have been merged into this version of the specification.
2.0.1	2020-03-31	Final version of OCPP 2.0.1
2.0	2018-04-11	OCPP 2.0 April 2018 First release of this Introduction document

Chapter 1. Introduction

Electric Vehicles (EVs) are becoming the new standard for mobility all over the world. This development is only possible with a good coverage of Charging Stations. To advance the roll out of charging infrastructure, open communication standards play a key role: to enable switching from charging network without necessarily replacing all the Charging Stations, to encourage innovation and cost effectiveness and to allow many and diverse players participate in this new industry.

Additionally, the EV charging infrastructure is part of the Smart Grid, a larger and still evolving ecosystem of actors, devices and protocols. In this Smart Grid ecosystem, open communication standards are key enablers for bidirectional power flows, real time information exchange, demand control and eMobility services.

The Open Charge Point Protocol (OCPP) is the industry-supported de facto standard for communication between a Charging Station and a Charging Station Management System (CSMS) and is designed to accommodate any type of charging technique. OCPP is an open standard with no cost or licensing barriers for adoption.

1.1. OCPP version 2.0.1

This specification defines version 2.0.1 of OCPP.

After the release of OCPP 2.0, some issues were found in OCPP 2.0. Some of these issues could not be fixed issuing errata to the specification text only, as has been done with OCPP 1.6, but required changes to the protocolâ€™s machine-readable schema definition files that cannot be backward compatible.

To prevent confusion in the market and possible interoperability issues in the field, OCA has decided to name this version: 2.0.1. OCPP 2.0.1 contains fixes for all the known issues, to date, not only the fixes to the messages.

This version replaces OCPP 2.0. OCA advises implementers of OCPP to no longer implement OCPP 2.0 and only use version 2.0.1 going forward.

Any mentions of "OCPP 2.0" refers to revision 2.0.1 unless specifically stated otherwise.

1.2. Terms and abbreviations

This section contains the terminology and abbreviations that are used throughout this document.

1.2.1. Terms

Term	Meaning
Charging Station	The Charging Station is the physical system where an EV can be charged. A Charging Station has one or more EVSEs.
Charging Station Management System (CSMS)	Charging Station Management System: manages Charging Stations and has the information for authorizing Users for using its Charging Stations.
Electric Vehicle Supply Equipment (EVSE)	EVSE is considered as an independently operated and managed part of the Charging Station that can deliver energy to one EV at a time.
Energy Management System (EMS)	In this document this is defined as a device that manages the local loads (consumption and production) based on local and/or contractual constraints and/or contractual incentives. It has additional inputs, such as sensors and controls from e.g. PV, battery storage.

1.2.2. Abbreviations

Term	Meaning
CSO	Charging Station Operator
CSMS	Charging Station Management System
EMS	Energy Management System.
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
RFID	Radio-Frequency Identification

1.3. References

Table 1. References

Reference	Description
[IEC61851-1]	IEC 61851-1 2017: EV conductive charging system - Part 1: General requirements. https://webstore.iec.ch/publication/33644
[IEC62559-2:2015]	Definition of the templates for use cases, actor list and requirements list. https://webstore.iec.ch/publication/22349
[ISO15118-1]	ISO 15118-1 specifies terms and definitions, general requirements and use cases as the basis for the other parts of ISO 15118. It provides a general overview and a common understanding of aspects influencing the charge process, payment and load leveling. https://webstore.iec.ch/publication/9272
[OCPP1.5]	http://www.openchargealliance.org/downloads/
[OCPP1.6]	http://www.openchargealliance.org/downloads/

Chapter 2. New functionalities in OCPP2.0.1

OCPP 2.0.1 introduces new functionalities compared to OCPP 1.6 [OCPP1.6].
Due to improvements and new features, OCPP 2.0.1 is not backward compatible with OCPP 1.6 [OCPP1.6] or OCPP 1.5 [OCPP1.5].

2.1. Device Management

Device Management (also known as Device Model) is a long awaited feature especially welcomed by CSOs who manage a network of (complex) charging stations (from different vendors).

It provides the following functionality:

- Inventory reporting
- Improved error and state reporting
- Improved configuration
- Customizable Monitoring

This all should help CSOs to reduce the costs of operating a Charging Station network.

Charging Station Manufacturers are free to decide themselves how much details about a Charging Station they want to publish via Device Management: for example, they can decide what can be monitored, and what not.

2.2. Improvements for better handling of large amounts of transactions

2.2.1. One message for all transaction related functionalities

With the growing of the EV charging market, the number of Charging Stations and transactions that the CSMS needs to manage also grows. The structure and method for reporting transaction is unified in OCPP 2.0. In OCPP 1.x, the reporting of transaction data is split over the messages StartTransaction, StopTransaction, MeterValue and StatusNotification. With the market progressing towards more enhanced scheduling, a need is born for more sophisticated handling of transaction data. All the StartTransaction, StopTransaction, and transaction related MeterValue and StatusNotification messages are replaced by 'TransactionEvent'. The StatusNotification message still exists, but only for non-transaction related status notifications about connector availability.

2.2.2. Data reduction

With the introduction of JSON over Websockets in OCPP 1.6 [OCPP1.6] a great reduction of mobile data cost can be achieved. With OCPP 2.0, support for WebSocket Compression is introduced, which reduces the amount of data even more.

2.3. Improvements regarding cyber security

The following improvements have been added to harden OCPP against cyber attacks:

- Security profiles (3 levels) for Charging Station and/or CSMS authentication and Communication Security
- Key management for Client-Side certificates
- Secure firmware updates
- Security event log

2.4. Extended Smart Charging

In OCPP 2.0.1 Smart Charging functionality has been extended (compared to OCPP 1.6 [OCPP1.6]) to support:

- Direct Smart Charging inputs from an Energy Management System (EMS) to a Charging Station
- Improved Smart Charging with a local controller
- Support for integrated smart charging of the CSMS, Charging Station and EV ([ISO15118-1]).