Generic Document

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Use case based functional description between Charge Point and Central System based on OCPP 1.6.

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Version History

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0.1	2016-01-27	Jonel Timbergen *ElaadNL* Robert de Leeuw *IHomer*	<Generic Document>

1. Scope

This document defines the protocol used between a **Charge Point** and **Central System** in use cases. If the protocol requires a certain action or response from one side or the other, then this will be stated in this document.

The specification does not define the communication technology. Any technology will do, as long as it supports TCP/IP connectivity.

For complex systems, the use case methodology supports a common understanding of functionalities, actors and processes across different technical committees or even different organizations. Developed as software engineering tool, the methodology can be used to support the development of standards as it the analysis of requirements in relation to new or existing standards.

2. Introduction

3. Architecture

4. Terminology

This section contains the terminology that is used throughout this document.

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.
CiString	Case Insensitive String. Only printable ASCII allowed.
Charge Point	The Charge Point is the physical system where an electric vehicle can be charged. A Charge Point has one or more connectors.
Charging Profile	Generic Charging Profile, used for different types of Profiles. Contains information about the Profile and holds the Charging Schedule. In future versions of OCPP it might hold more than 1 Charging Schedule.
Charging Schedule	Part of a Charging Profile. Defines a block of charging Power or Current limits. Can contain a start time and length.
Charging Session	Part of a transaction during which the EV is allowed to request energy
Composite Charging Schedule	The charging schedule as calculated by the Charge Point. It is the result of the calculation of all active schedules and possible local limits present in the Charge Point. Also IEC 15118 limits might be taken into account.
Connector	The term “Connector”, as used in this specification, 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).
Control Pilot signal	signal used by a Charge Point to inform EV of maximum Charging power or current limit, as defined by [IEC61851-1].
Energy Transfer Period	Time during which an EV chooses to take offered energy, or return it. Multiple Energy Transfer Periods are possible during a Transaction.
Local Controller	Optional device in a smart charging infrastructure. Located on the premises with a number of Charge Points connected to it. Sits between the Charge Points and Central System. Understands and speaks OCPP messages. Controls the Power or Current in other Charge Point by using OCPP smart charging messages. Can be a Charge Point itself.
OCPP-J	OCPP via JSON over WebSocket
OCPP-S	OCPP via SOAP
Phase Rotation	Defines the wiring order of the phases between the energy meter (or if absent, the grid connection), and the Charge Point connector.
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.

String	Case Sensitive String. Only printable ASCII allowed. All strings in messages and enumerations are case sensitive, unless explicitly stated otherwise.

5. Abbreviations

CSL	Comma Separated List
CPO	Charge Point Operator
DNS	Domain Name System
DST	Daylight Saving Time
EV	Electrical Vehicle
EVSE	Electric Vehicle Supply Equipment [IEC61851-1]
FTP(S)	File Transport Protocol (Secure)
HTTP(S)	HyperText Transport Protocol (Secure)
ICCID	Integrated Circuit Card Identifier
IMSI	International Mobile Subscription Identity
JSON	Java Simple Object Notation
NAT	Native Address Translation
PDU	Protocol Data Unit
SC	Smart Charging
SOAP	Simple Object Access Protocol
URL	Uniform Resource Locator
RST	3 phase power connection, Standard Reference Phasing
RTS	3 phase power connection, Reversed Reference Phasing
SRT	3 phase power connection, Reversed 240 degree rotation
STR	3 phase power connection, Standard 120 degree rotation
TRS	3 phase power connection, Standard 240 degree rotation
TSR	3 phase power connection, Reversed 120 degree rotation
UTC	Coordinated Universal Time

6. General Requirements

ID.	Precondition	Requirement	Rationale	Note	M/O/C
FR.001		The core Profile is implemented			**M**
FR.002		The Central System shall be available			**M**
FR.003		The Charge Point is configured to communicate with the Central System.			**M**

7. Error Handling

8. Generic Data Types

8.1. CiString20Type

Class

Generic used case insensitive string of 20 characters.

Field Name	Field Type	Description
cistring20	CiString[20]	String is case insensitive.

8.2. CiString25Type

Class

Generic used case insensitive string of 25 characters.

Field Name	Field Type	Description
cistring25	CiString[25]	String is case insensitive.

8.3. CiString50Type

Class

Generic used case insensitive string of 50 characters.

Field Name	Field Type	Description
ciString50	CiString[50]	String is case insensitive.

8.4. CiString255Type

Class

Generic used case insensitive string of 255 characters.

Field Name	Field Type	Description
cistring255	CiString[255]	String is case insensitive.

8.5. CiString500Type

Class

Generic used case insensitive string of 500 characters.

Field Name	Field Type	Description
ciString500	CiString[500]	String is case insensitive.