



OPEN
CHARGE
POINT
INTERFACE

OCPI 3.0-1

Business Use Cases

<https://github.com/ocpi> & <https://evroaming.org>
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Table of Contents

1. Introduction	3
1.1. Contributors	3
1.2. Terminology and Definitions	4
1.2.1. Abbreviations	4
1.2.2. EV Charging Market Roles	5
1.2.2.1. Reference overview	5
1.2.3. Terminology	6
2. Locations	8
B1.1 - As an MSP I want to have up to date Charging Location information to be able to show this to interested actors	8
B1.2 - As an NSP I want to have up to date Charging Location information to be able to show this to interested actors	8
B1.3 - As an NAP I want to have up to date Charging Location information to be able to show this to interested actors	9
B1.4 - As a Data Aggregator I want to have up to date Charging Location information to be able to monitor and forecast charging station usage and availability	9
B1.5 - As CPO I want to be able to approve or not approve data sharing on request and on behalf of the owner	9
3. Tariffs	11
B2.1 - As an CPO I want to inform MSP's about the roaming tariff	11
B2.2 - As an CPO I want to inform NSP's about the ad-hoc tariff	11
B2.3 - As an CPO I want to inform NAP's about the ad-hoc tariff	11
B2.4 - As a CPO I want to receive the EV Driver specific tariff and related information from the MSP to be able to show this on the Charging Station	12
4. Authorization	13
B3.1 - As an MSP I want EV Drivers to be able to charging their EV using local form of authorization	13
B3.2 - As an MSP I want to migrate my EV Drivers to another MSP (platform provider)	13
B3.3 - As a Roaming Hub I want to provide whitelist Token services to MSPs and CPOs	13
B3.4 - As CPO I want to provide GDPR: 'Right of access' and 'Right to be forgotten'	14
4.1. Introduction Contract Certificate handling for plug and charge	15
B3.5 - As an MSP I want to create a Contract Certificate Bundle and make it available in the CCP	16
B3.6 - As a CCP I want to provide new signed Contract Certificate Bundle(s) to interested parties	16
5. Sessions	17
B4.1 - As an MSP I want to be informed about ongoing charging sessions by the CPO so that I can keep the EV Driver informed during charging	17
B4.2 - As MSP I want to set charging limits the charging session on certain limits so that the MSP can offer to the EV driver a pre-paid offer	17
B4.3 - As a Data Aggregator I want to be informed about ongoing charging sessions	17
B4.4 - As an MSP I want to send a message to my EV Driver at an EVSE	18
B4.5 - As a CPO I want to send a message to an EV Driver of an MSP, related to a charging session	18
6. CDRs	19
B5.1 - As an MSP I want to receive a 'receipt' after the charging session has ended, to show to the EV Driver	19
B5.2 - As an MSP I want to receive all the CDRs for invoicing purposes	19
7. Commands	20
B6.1 - As an MSP I want the EV Drivers to be able to charge their EV using my mobile app	20
B6.2 - As an MSP helpdesk agent I want to be able to help an EV Driver by remote control of an EVSE	20
B6.3 - As an MSP I want to reserve an EVSE for the EV Driver	20
8. Smart Charging	22
B7.1 - As an MSP I want to provide an optimized charging experience to the EV Driver	22
B7.2 - As an SCSP I want to influence an ongoing charging session	22
B7.3 - As an SCSP I want to be informed about ongoing charging sessions	22
B7.4 - As a Grid Operator I want to receive meter value information from Charging Locations from the CPO	23
9. Connections	24
B8.1 - As an OCPI Platform I want to have a secure connection with all other OCPI Platforms	24
B8.2 - As an OCPI Platform I want to publish an updated list of role(s)	24
B8.3 - As an OCPI Platform I want to publish an updated list of modules and/or versions	24

B8.4 - As an OCPI Platform I want to keep updated of connections to a Hub	25
B8.5 - As an OCPI Platform I want to be able to validate received OCPI data has not been altered.	25
10. Loyalty	27
B9.1 - As a CPO I want to give loyalty to EV drivers	27

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EVRoaming Foundation



OCPI is developed and managed by the EVRoaming Foundation. The EVRoaming Foundation is a contributor based organisation. Everyone can join the EVRoaming Foundation via <https://www.evroaming.org>

The EVRoaming Foundation strive to keep OCPI as free from IPR as possible. If you want to contribute by adding new functionality/features, you are required to send us the signed Contributor Agreement (CA) document before contributing. To get the CA, ask for it by send an e-mail to: info@evroaming.org.

Version History

Version	Date	Author	Description
3.0-1 Base v1.0	01-10-2021	Reinier Lamers <i>ihomer</i>	Added use cases B1.4 and B1.5 for aggregators collecting location data. Added more introduction text for Business Use Cases. Updated caption for Reference Overview diagram in Business Use Cases
3.0-1 Draft v0.7	13-09-2021	Robert de Leeuw <i>ihomer</i>	Improved use cases B2.4 and 4.2: added definition of charging limit and note that the exact limits are still being discussed. Added definition of charging session.
3.0-1 Draft v0.6	02-07-2021	Robert de Leeuw <i>ihomer</i>	Improved use case B5.2: added objective of accepting/rejecting CDR, improved description.
3.0-1 Draft v0.5	30-06-2021	Robert de Leeuw <i>ihomer</i>	Added Loyalty use case: B9.1 Added Token use cases: B3.3 and B3.4 Added A-CPO, T-CPO, D-MSP and R-MSP
3.0-1 Draft v0.4	23-06-2021	Robert de Leeuw <i>ihomer</i>	Added improvements from the list of 3.0 improvements Create a new diagram for provisioning of certificates in 4.1 Updated use case B3.3 to center it around the CCP Renamed this document to OCPI 3.0-1
3.0 Draft v0.3	10-06-2021	Robert de Leeuw <i>ihomer</i>	Added ISO15118 certificate handling use cases
3.0 Draft v0.2	28-05-2021	Robert de Leeuw <i>ihomer</i>	Added signage use case, some minor improvements, add roles diagram
3.0 Draft v0.1	26-05-2021	Robert de Leeuw <i>ihomer</i>	First draft of the Business Use Cases for OCPI 3.0
3.0 Draft 0	21-06-2019	Robert de Leeuw <i>ihomer</i>	First documentation structure for OCPI 3.0, moved all existing documentation to the new documents

Document revisions There can be multiple documentation revisions of the same version of the OCPI protocol.

The newer documentation revisions of the same protocol version can never change the content of the messages: no new fields or renaming of fields. A new revision can only clarify/fix texts/descriptions and fix typos etc.

These documentation revisions (not the first) will be named: d2, d3, d4 etc.

Examples:

- OCPI 2.1.1 is a different protocol version of OCPI then OCPI 2.1.
- OCPI 2.0-d2 is the same protocol version as OCPI 2.0, but a newer documentation revision: same protocol, newer documentation.

1. Introduction

The Open Charge Point Interface (OCPI) enables a scalable, automated EV roaming setup between Charge Point Operators and e-Mobility Service Providers. It supports authorization, charge point information exchange (including live status updates and transaction events), charge detail record exchange, remote charge point commands and, finally, the exchange of smart-charging commands between parties.

It offers market participants in EV an attractive and scalable solution for (international) roaming between networks, avoiding the costs and innovation-limiting complexities involved with today's non-automated solutions or with central roaming hubs.

As such it helps to enable EV drivers to charge everywhere in a fully-informed way, helps the market to develop quickly and helps market players to execute their business models in the best way. The main design goals are:

- A good roaming system, leaving market parties the choice of using bilateral communication or a hub
- Real-time information about location, availability and price of charging facilities
- A uniform way of data exchange before during and after a charging transaction with Notification Data Records and Charge Data Records
- Support for access to any charge station using a mobile phone without pre-registration

Starting in 2009, the e-laad foundation and the predecessor of eViolin, the industry organization for EV operators and service providers in The Netherlands, specified two standards in order to retrieve charge point details and active state. These were called the *VAS interface* and the *Amsterdam interface*. In this same period, a CDR format for the exchange of charge sessions between eViolin members was defined. This format is currently in use by the majority of eViolin members. This resulted in the development of OCPI in 2014.

An international group of over 400 companies from all over the world already supports OCPI. Initiators are EV Box, NewMotion, ElaadNL, BeCharged, GreenFlux and Last Mile Solutions. Other participants include: Next Charge, Freshmile, Plugsurfing, E55C, GIREVE, OCN, ihomer, Rexel, Stromnetz Hamburg, Enervalis, Place to plug, Plugsurfing, Ecomovement, Allego, Gronn Kontakt Norway, ENIO, Fastned, AvantIT, Chargemap, Involtum, Capitol Region Denmark, Vattenfall, EON, ECY Conseil Emeric Chardiny, Eneco Mobility, Google, Jedlix, MTC, Smartlab, Sodetrel, XXIMO, Mnemonics, Share & Charge, Service House, Alfen / ICU, PI2 Consultancy, Pitpoint, Blue Corner, Building Energy, Chargestorm, Chargepoint, ESARJ, Chargelab.co, MUVEXT, Next Green Car / Zap Map, Be Mo Tech, Parking Eagle, GraphDefined, Chargecloud, Rutgerplantengaconsulting, Everon, Tanqyou, Electric Vehicle Association Scotland (EVA NCS), EV-Tech, Plugin Power, Last Mile Solutions, BIA Power, IBIL, Gridscape, Maxem, Virta, EasyCharger, Total EV Charge, Gowithflow, EKAROS, Rexel US, Stekker App, Travelcard, Emobility Consulting. The EVRoaming Foundation, supported by the Netherlands Knowledge Platform for Charging Infrastructure (NKL), facilitates and coordinates this protocol to guarantee progress and ensure development and results.

This document contains the OCPI 3.0 business use cases. The name of this document is OCPI 3.0-1. This document describes, on high level, the functionality of OCPI 3.0. Based on these business use cases, functional use cases and specifications will be developed.

Editorial Note: As the work on OCPI 3.0 has not finished, this document may be updated during the further development of OCPI 3.0, based on new insights and input from the user community.

1.1. Contributors

The following parties participated in defining these business use cases:

- Emobility Consulting
- IBIL
- DCS
- Tandem Drive
- Fastned

- FLO
- Chargepoint
- Gireve
- EnBW
- Freshmile
- Last Mile Solutions
- Google Maps
- SemaConnect
- GreenFlux
- Optimile
- Monit Data
- IHomer

1.2. Terminology and Definitions

1.2.1. Abbreviations

Abbr.	Description
A-CPO	Administrative CPO
AGG	Data Aggregator
CCP	Contract Certificate Pool
CDR	Charge Detail Record
CP	Charge Point
CPO	Charging Point Operator
CPS	Certificate Provisioning Service
D-MSP	Driver MSP, manages the EV Driver contracts, relations and billing etc.
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
MSP	e-Mobility Service Provider
NAP	National Access Point
NSP	Navigation Service Provider
OEM	Original Equipment Manufacturer. In OCPI context: Car Manufacturer.
PCP	(OEM) Provisioning Certificate Pool
POI	Point of Interest
OCPP	Open Charge Point Protocol
R-MSP	Roaming MSP

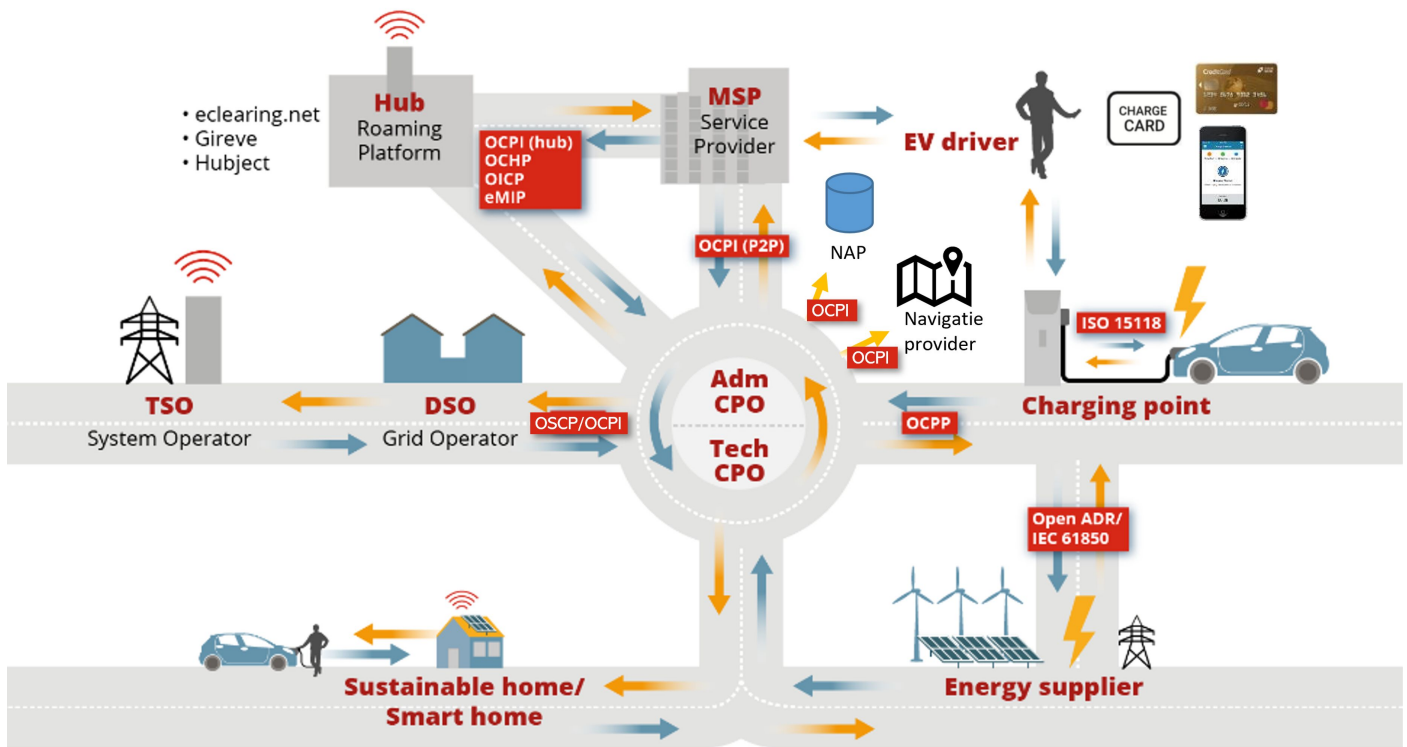
Abbr.	Description
SaaS	Software as a Service
SCSP	Smart Charging Service Provider
T-CPO	Technical CPO

1.2.2. EV Charging Market Roles

In the EV Charging landscape, different market roles can be identified.

Role	Description
A-CPO	Administrative CPO, part or the CPO role when the CPO role is split between two companies.
CCP	Contract Certificate Pool
CPO	Charging Point Operator. Operates a network of Charge Points.
CPS	Certificate Provisioning Service. Service responsible for signing Contract Certificate Bundles.
Data Aggregator	A Company/Organization that compiles statistics etc from data from different sources and provides to 3th parties.
D-MSP	Driver MSP, part or the MSP role when the MSP role is split between two companies.
MSP	e-Mobility Service Provider. Gives EV drivers access to charging services.
Hub	Can connect one or more CPOs to one or more MSPs, or other OCPI roles.
Grid Operator	Company operating the electricity grid.
NAP	National Access Point.
NSP	Navigation Service Provider.
PCP	(OEM) Provisioning Certificate Pool.
R-MSP	Roaming MSP, part or the MSP role when the MSP role is split between two companies.
Roaming Hub	See: Hub.
SCSP	Smart Charging Service Provider.
T-CPO	Technical CPO, part or the CPO role when the CPO role is split between two companies.

1.2.2.1. Reference overview



Editorial Note: This overview is the reference overview of the market en roles on high level as used by the EVRoaming Foundation at the moment of publishing of this version of the Business Use Cases. Specific roles like Smart Charging Service Providers are acknowledged but are not shown in this overview as exact position of these roles is not yet finalized.

1.2.3. Terminology

Term	Description
Administrative CPO	When the CPO role is split between two companies, this is the role that is responsible for tariff information and correct price calculation of a charging session, responsible for the authorization of charging sessions. Has the roaming contract with the MSPs. Sends OCPI information (via Roamings Hubs) to the MSPs.
Charge Point	The Charge Point is the physical system where an electric vehicle can be charged. A Charge Point has one or more EVSEs.
Charging Location	Location where one or more charging stations are located where an EV driver could go to charge his/her EV.
Charging Limit	For pre-paid charging, MSPs need to be able to set certain limits on a charging sessions: time, volume, calculated cost etc. NOTE: It is still being discussed which limits are feasible for OCPI.
Charging Session	Period an EV is connected (communicating) to a charging station and possible charged. The exact definition might vary per country/region and CPO, due to local legislation and business cases. Exact definition needs to be agreed between CPO and MSP.
Contract Certificate Pool	The CCP stores signed Contract Certificates Bundles. These are provided by the MSP and/or CPS. These can be retrieved by a CPO or OEM or other CCPs.
Driver MSP	When the MSP role is split between two companies, this is the role that manages the relation with the drivers, contract, invoices, RFID cards etc.
EVSE	Is considered as an independently operated and managed part of a Charge Point that can deliver energy to one EV at a time.

Term	Description
National Access Point	Provides a national database with all (public) charging locations. Information can be sent and retrieved from the NAP. This makes it different from a typical NSP.
Navigation Service Provider	Provides EV drivers with location information of Charge Points. Usually only interested in Location information.
OCPI Platform	A software system that provides OCPI functionality to one or more companies/roles, a Hub is also a role on a Platform.
Provisioning Certificate Pool	The PCP is a bridge between the OEMs and EMPs. OEMs can store, update and delete their vehicle certificates. All OEM Provisioning Certificates are accessible by the EMPs to encrypt their customers' contract certificate private key. The Operators can forward the OEMs and EMPs request to the other operators' PCPs if they cannot process the request, e.g., the OEM provisioning certificate could not be found in the PCP.
Roaming MSP	When the MSP role is split between two companies, this is the role that manages the roaming contracts and the technical OCPI connections with roaming partners.
Smart Charging Service Provider	Provides Smart Charging service to other parties. Might use a lot of different inputs to calculate Smart Charging
Technical CPO	When the CPO role is split between two companies, this is the role that manages the Charge Points. Forwards charging session information, without pricing information to the Administrative CPO.

2. Locations

This section contains the charging Locations/POI related business use cases. Proving MSP, NSP and others the ability to provide static and dynamic POI to EV drivers.

Editorial Note: The Business Use Cases related to locations are split in the different roles as these might have different requirements later when defining Functional Use Cases

B1.1 - As an MSP I want to have up to date Charging Location information to be able to show this to interested actors

Objective(s)	1. The MSP needs up to date charging locations information.
Description	When an EV driver is traveling to a location he/she has never been before with his/her EV. He/she wants to find a charging location that suits the needs, correct connector and (expected) charging speed, utilization (when is it busy at this location) etc. The information can also be used for validating real-time authorization, validating CDRs, or other purposes. To provide up to date charging location, migration of Charge Points from one CPO to another needs to be handled correctly.
Actors	CPO, MSP
Preconditions	
Postconditions	MSP has up to date information about all charging locations of the CPO.
Functional UC	T.B.D.
Remark(s)	

B1.2 - As an NSP I want to have up to date Charging Location information to be able to show this to interested actors

Objective(s)	1. The NSP needs up to date charging locations information.
Description	When an EV driver is traveling to a location he/she has never been before with his/her EV. He/she wants to find a charging location that suits the needs, correct connector and (expected) charging speed, utilization (when is it busy at this location) etc. To provide up to date charging location, migration of Charge Points from one CPO to another needs to be handled correctly.
Actors	CPO, NSP
Preconditions	
Postconditions	NSP has up to date information about all charging locations of the CPO.
Functional UC	T.B.D.
Remark(s)	

B1.3 - As an NAP I want to have up to date Charging Location information to be able to show this to interested actors

Objective(s)	1. The NAP needs up to date charging locations information.
Description	When an EV driver is traveling to a location he/she has never been before with his/her EV. He/she wants to find a charging location that suits the needs, correct connector and (expected) charging speed, utilization (when is it busy at this location) etc. To provide up to date charging location, migration of Charge Points from one CPO to another needs to be handled correctly.
Actors	CPO, NAP
Preconditions	
Postconditions	NAP has up to date information about all charging locations of the CPO.
Functional UC	T.B.D.
Remark(s)	

B1.4 - As a Data Aggregator I want to have up to date Charging Location information to be able to monitor and forecast charging station usage and availability

Objective(s)	1. The Data Aggregator can generate insights about EV charging infrastructure usage
Description	Owners of charging infrastructure, other stakeholders, or third parties acting on their behalf want to gather as much data as possible about how EV charging infrastructure is used in order to install, maintain and operate such infrastructure more efficiently.
Actors	CPO, AGG
Preconditions	
Postconditions	AGG has up to date location information
Functional UC	T.B.D.
Remark(s)	

B1.5 - As CPO I want to be able to approve or not approve data sharing on request and on behalf of the owner

Objective(s)	1. A CPO can comply with charge point owners' wishes and legal requirements regarding sharing data with third parties
Description	OCPI facilitates sharing of information between companies in the EV charging industry. Much of this information is directly or indirectly related to customers. As such customers will want to control how much of their data is shared and sharing this information is subject to data protection laws. OCPI has to make it possible and straightforward for the companies that use it to respect their customers' data sharing wishes and comply with applicable law.
Actors	AGG, CPO, MSP, NAP, NSP

Preconditions	
Postconditions	No location data is shared via OCPI Locations in a way that unknowingly contravenes legal regulations on data sharing
Functional UC	T.B.D.
Remark(s)	

3. Tariffs

This section contains the tariff related business use cases. These use cases provide MSP, NSP and others with information to be able to inform EV drivers with the tariff that the driver will have to pay if they charge at a certain location.

Editorial Note: The Business Use Cases related to tariffs are split in the different roles as these might have different requirements later when defining Functional Use Cases

B2.1 - As an CPO I want to inform MSP's about the roaming tariff

Objective(s)	1. Provide tariff information to the EV driver before/at the start of a charging session when the driver uses a payment/authorization method provided by the MSP.
Description	An EV Driver should be able to see the tariff he is going to be paying when he charges at a location. This can be shown on a website, a mobile app etc. This is the roaming tariff agreed between CPO and MSP. The MSP might provide a different tariff to the driver, that depends on the contract between the EV Driver and the MSP.
Actors	CPO, MSP
Preconditions	
Postconditions	The MSP is informed about the tariffs at all charging locations of a CPO that their drivers are allowed to use.
Functional UC	T.B.D.
Remark(s)	Tariffs should be possible in "classic" currencies and also cryptocurrencies. Multiple currencies should be possible on the same tariff.

B2.2 - As an CPO I want to inform NSP's about the ad-hoc tariff

Objective(s)	1. Provide ad-hoc tariff information to the EV driver. This is the tariff paid when using a payment method provided by the CPO.
Description	An EV Driver should be able to see the ad-hoc tariff he/she is going to be paying when charging at a location. This can be shown on a website, a mobile app etc. This is the tariff paid when using a local payment method like a debit/credit card terminal at the EVSE, or a mobile app provided by the CPO
Actors	CPO, NSP
Preconditions	
Postconditions	The NSP is informed about the ad-hoc tariffs at all public charging locations of a CPO.
Functional UC	T.B.D.
Remark(s)	Tariffs should be possible in "classic" currencies and also cryptocurrencies. Multiple currencies should be possible on the same tariff.

B2.3 - As an CPO I want to inform NAP's about the ad-hoc tariff

Objective(s)	1. Provide ad-hoc tariff information to the EV driver. This is the tariff paid when using a payment method provided by the CPO.
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Description	An EV Driver should be able to see the ad-hoc tariff he/she is going to be paying when charging at a location. This can be shown on a website, a mobile app etc. This is the tariff paid when using a local payment method like a debit/credit card terminal at the EVSE, or a mobile app provided by the CPO.
Actors	CPO, NAP
Preconditions	
Postconditions	The NAP is informed about the ad-hoc tariffs at all public charging locations of a CPO.
Functional UC	T.B.D.
Remark(s)	Tariffs should be possible in "classic" currencies and also cryptocurrencies. Multiple currencies should be possible on the same tariff.

B2.4 - As a CPO I want to receive the EV Driver specific tariff and related information from the MSP to be able to show this on the Charging Station

Editorial Note: is this use case a duplicate of B44?

Objective(s)	1. Show EV driver specific tariff information, provided by the MSP on the Charging Station. 2. Receive driver specific tariff and max limit information in case of pre-paid charging.
Description	<p>When a Charging Station has a display, and is capable of showing tariff information to an EV Driver The CPO might want to show the tariff the driver has to pay to his MSP.</p> <p>In such case, before charging is started, the driver will need to accept the tariff shown.</p> <p>In case of pre-paid charging the EVSE and/or CPO will need to know the tariff and limits that they have to take into account for the EV Driver for this session.</p>
Actors	CPO, MSP, EV Driver
Preconditions	Charging Station capable of showing driver specific tariffs.
Postconditions	EV Driver knows tariff he has to pay for using the Charging Station.
Functional UC	T.B.D.
Remark(s)	<p>Tariffs should be possible in "classic" currencies and also cryptocurrencies. Multiple currencies should be possible on the same tariff.</p> <p>For the pre-paid case: the types of charging limits is still being discussed which limits are feasible.</p>

4. Authorization

This section contains the authorization related business use cases.

B3.1 - As an MSP I want EV Drivers to be able to charging their EV using local form of authorization

Objective(s)	1. Enable EV drivers that have a contract with an MSP to charge their EV at an EVSE owned by a CPO by using a local form of authorization.
Description	An EV Driver should be able to start/stop a charging session using any method provided by the MSP and supported by the EVSE and the CPO. This can be RFID Tokens (also using the memory on the RFID), 15118 Plug&Charge, AutoCharge provided by the MSP etc. This can be based on a list of Tokens send to the CPO as a whitelist, but can also be using real-time authorization. Whitelisted tokens might be limited to certain countries.
Actors	CPO, MSP, EV Driver
Preconditions	Authorization method, for example RFID Token or 15118 Certificate, provided by MSP.
Postconditions	EV Driver is able to charge his vehicle using the provided authorization method.
Functional UC	T.B.D.
Remark(s)	Using a mobile app is a different use case as this uses a different route, the start sent from the mobile app via the MSP to the CPO, where in this use case the authorization is started at the EVSE.

B3.2 - As an MSP I want to migrate my EV Drivers to another MSP (platform provider)

Objective(s)	1. Enable MSPs to migrate tokens from one MSP (platform provider) to another.
Description	When an MSP migrates form one MSP platform provider to another, or when an MSP buys another MSP. The existing Tokens might need to be migrated from one OCPI platform to another. CPOs need to be made aware that the Tokens are no longer managed by the first OCPI Platform, so Sessions and CDR need to be sent to the new OCPI Platform.
Actors	MSP, CPO
Preconditions	Authorization method of the MSP known by the CPO to be provided by the original OCPI platform.
Postconditions	CPO knows the Tokens are now managed via another OCPI platform.
Functional UC	T.B.D.
Remark(s)	

B3.3 - As a Roaming Hub I want to provide whitelist Token services to MSPs and CPOs

Objective(s)	1. Enable Roaming Hubs to provide whitelist services to MSPs and CPOs. 2. Prevent CPOs from having to ask every MSP if a token is allowed to charge.
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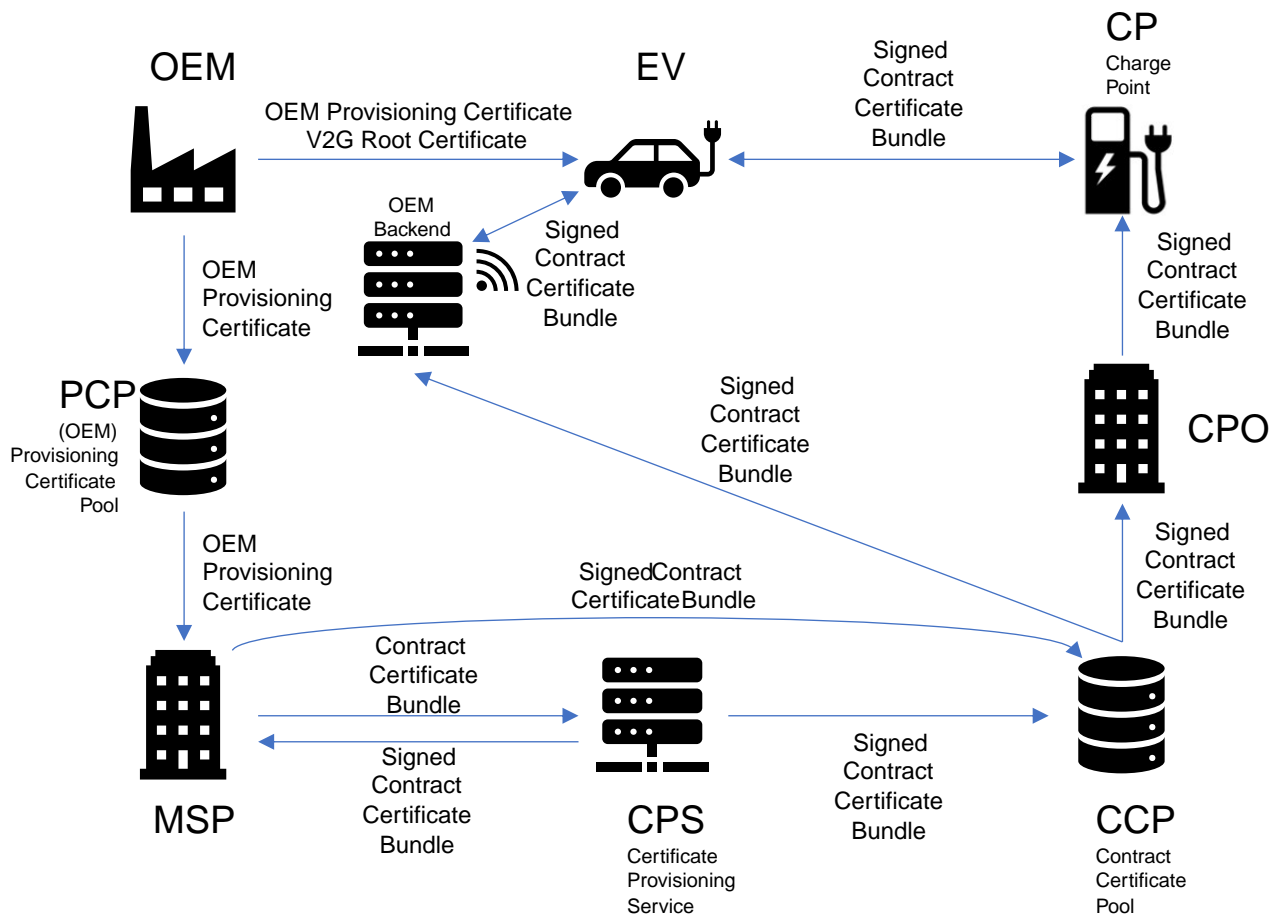
Description	All MSPs on a Roaming Hub send all their Tokens to the Roaming Hub, these Tokens are not forwarded to the CPOs. CPOs can then ask the Roaming Hub if a token used by an EV driver is allowed to charge, without having to ask this to all MSPs.
Actors	Roaming Hub, MSP, CPO
Preconditions	
Postconditions	
Functional UC	T.B.D.
Remark(s)	The Roaming Hub Whitelist Service prevents business strategic information (amount of customers) from MSPs having to be shared with CPOs.

B3.4 - As CPO I want to provide GDPR: 'Right of access' and 'Right to be forgotten'

Objective(s)	<ol style="list-style-type: none"> 1. Enable MSPs to ask CPOs for information, so they can comply to GDPR: Right of access. 2. Enable MSPs to ask CPOs to "remove" information, so they can comply to GDPR: Right to be forgotten.
Description	Companies need to comply to GDPR legislation. For this they need to provide 'Right of access' and 'Right to be forgotten' to their customers. For this they need the companies they work with to be able to provide this to them.
Actors	MSP, CPO
Preconditions	
Postconditions	
Functional UC	T.B.D.
Remark(s)	Not yet defined if this will be provided via OCPI or that MSP and CPO have to arrange how they solve this via email or another communication channel.

4.1. Introduction Contract Certificate handling for plug and charge

The following diagram shows all the services/roles involved in the ISO 15118 Contract Certificate handling.



This diagram based on work by [VDE](#): VDE-AR-E 2802-100-1.

OCPI 3.0 will support the process of exchanging ISO 15118 related certificates.

Description of the process:

1. OEMs generate a unique Provisioning Certificate for each ISO 15118 enabled vehicle they produce. These certificate will be stored, or are available via PCPs.
2. MSPs can retrieve this Provisioning Certificate by providing the vehicle unique PCID, which is probably provided by the EV driver to the MSP.
3. The MSP uses this Provisioning Certificate to create a Contract Certificate Bundle.
4. The MSP asks the CPS to sign the Contract Certificate Bundle.
5. There are two ways this signed Contract Certificate Bundle can be stored in the CCP: Either the CPS stores it in the CCP after signing it, or the MSP gets the signed Contract Certificate Bundle returned from the CPS and stores it in the CCP.
6. There are two possible path from the CCP to the EV, either via the CPO and the Charge Point to the EV, or via the OEM directly to the EV.

NOTE Certificate revocation is not part of OCPI, OCSP can be used for this.

NOTE At this time Root Certificates retrieval/installation is not seen as something were OCPI plays a role.

B3.5 - As an MSP I want to create a Contract Certificate Bundle and make it available in the CCP

Objective(s)	1. Make a new/renewal Contract Certificate Bundles available in the CCP so that it can be installed in an EV.
Description	<p>The MSP needs to retrieve a Provisioning Certificate from the PCP, this Provisioning Certificate is put in the PCP by the OEM. This is a unique certificate for every vehicle.</p> <p>This Provisioning Certificate is used to create a Contract Certificate Bundle that has to be signed by the CPS.</p> <p>The signed Contract Certificate Bundle then needs to be placed in the CCP so it is available for the CPOs and OEMs to retrieve it.</p>
Actors	MSP, PCP, CPS, CCP
Preconditions	MSP knows the PCID of the vehicle.
Postconditions	Signed Contract Certificate Bundle available in the CCP.
Functional UC	T.B.D.
Remark(s)	

B3.6 - As a CCP I want to provide new signed Contract Certificate Bundle(s) to interested parties

Objective(s)	<ol style="list-style-type: none"> 1. Make it for the CCP to provide a new/renewal Contract Certificates via the CPO and Charge Point to the EV. 2. Make it for the CCP to provide a new/renewal Contract Certificates via the OEM to the EV.
Description	<ol style="list-style-type: none"> 1. An EV can request new certificates from the Charge Point. 2. The Charge Point asks the CPO for new certificates. 3. The CPO tries to retrieve new signed Contract Certificates Bundle(s) from the CCP. 4. The CPO will send the retrieved certificates to the Charge Point. 5. The Charge Point send the new/renewal certificates to the EV. <p>OR</p> <ol style="list-style-type: none"> 1. An EV can request new certificates from the OEM. 2. The OEM tries to retrieve new signed Contract Certificates Bundle(s) from the CCP. 3. The OEM send the new/renewal certificates to the EV.
Actors	EV, CP, CPO, CCP, OEM
Preconditions	New signed Contract Certificates Bundle(s) available in the CCP for this EV.
Postconditions	New Contract Certificate(s) installed in the EV.
Functional UC	T.B.D.
Remark(s)	

5. Sessions

This section contains the charging sessions related business use cases. These use cases focus on giving MSPs the ability to provide EV drivers with information during an ongoing charging sessions.

B4.1 - As an MSP I want to be informed about ongoing charging sessions by the CPO so that I can keep the EV Driver informed during charging

Objective(s)	1. Provide information about an ongoing charging session from CPO to MSP to enable the MSP to inform the EV driver about the amount of energy, cost etc.
Description	During an ongoing charging session, started by the EV driver using an authorization method or App provided by the MSP, the CPO provides the MSP with updated information about the charging sessions, so the MSP can keep the EV driver informed. This information can also be used to limit the cost made by the driver if the MSP wants to limit this. This information can be, but not limited to: amount of energy charge, running cost, expected charge rate for the rest of the session.
Actors	CPO, MSP, EV Driver
Preconditions	Authorization method provided by the MSP
Postconditions	
Functional UC	T.B.D.
Remark(s)	

B4.2 - As MSP I want to set charging limits the charging session on certain limits so that the MSP can offer to the EV driver a pre-paid offer

Objective(s)	1. Enable MSP to set charging limits on a charging session, so the session is automatically stopped when a certain limit is reached.
Description	An EV Driver should be able to charge his/her EV using a pre-paid account. Charging should stop (before) the pre-paid account is empty.
Actors	CPO, MSP, EV Driver
Preconditions	Ongoing charging session
Postconditions	EV is charged and account is not negative
Functional UC	T.B.D.
Remark(s)	

B4.3 - As a Data Aggregator I want to be informed about ongoing charging sessions

Objective(s)	1. Provide pseudonymized charging sessions information to a Data Aggregator
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Description	A company/organization, for example site owner or research institute, wants to receive session information of all or a set of EVSEs. This data should be pseudonymized so it cannot be directly linked to a person.
Actors	CPO, Data Aggregator
Preconditions	
Postconditions	
Functional UC	T.B.D.
Remark(s)	For this data to be shared, there might need to be a contract between MSP and CPO that allows data sharing with other parties. Pseudonymized means that this data itself is anonymized, but if combined with another anonymized source the data can be linked to a person.

B4.4 - As an MSP I want to send a message to my EV Driver at an EVSE

Objective(s)	1. Show a message on the EVSE (if possible) for the EV driver
Description	There can be different reasons to show a message on the display of an EVSE for the driver. Could also be used to show the actual MSP tariff on the display of the EVSE (Charging Station)
Actors	CPO, MSP, EVSE, EV Driver
Preconditions	EVSE Support displaying of custom messages
Postconditions	Message for EV Driver shown on display of the EVSE
Functional UC	T.B.D.
Remark(s)	

B4.5 - As a CPO I want to send a message to an EV Driver of an MSP, related to a charging session

Objective(s)	1. Send a message to an EV Driver that is charging (or has a reservation) at an EVSE of this CPO.
Description	When something or some event happens during charging (or a reservation period), and the CPO wants to notify the EV driver of this, the CPO needs a way to notify the driver. The MSP can have different ways to notify a driver, notification in a mobile App, email and/or SMS etc.
Actors	CPO, MSP, EV Driver
Preconditions	
Postconditions	
Functional UC	T.B.D.
Remark(s)	

6. CDRs

This section contains the CDR related business use cases. The CDR provides to final receipt after a sessions has ended.

B5.1 - As an MSP I want to receive a 'receipt' after the charging session has ended, to show to the EV Driver

Objective(s)	1. Provide a receipt to the EV driver with the actual cost of the charging session after the session has ended.
Description	Provide the EV Driver with the actual cost of the charging sessions after the session has ended with a couple of minutes. This needs to contain the EVSE location, total cost, cost breakdown, cost per charging period, timestamp, duration, amount of energy charged, VAT: amount, percentages and VAT per cost type etc. etc. Each CDR should clearly state if it relates to: expense payment, commercial transaction or a free transactions. This data can be signed to provide support for legislation like the German Eichrecht.
Actors	CPO, MSP, EV Driver
Preconditions	Charging session from the EV driver has ended
Postconditions	EV Driver has received the 'receipt'
Functional UC	T.B.D.
Remark(s)	The MSP needs to accept or dispute a received CDR via OCPI.

B5.2 - As an MSP I want to receive all the CDRs for invoicing purposes

Objective(s)	<ol style="list-style-type: none"> 1. MSPs want to bill their EV Drivers periodically. For this, MSPs need to receive CDRs for all their EV Drivers. 2. MSPs need to be able to accept or reject every CDR. 3. MSPs want to automate the process of validating (and/or creating) invoices from/to CPOs. For this, all CDRs need to be received for all their EV Drivers at a CPO.
Description	<p>MSPs want to bill their EV Drivers periodically. For this, invoices need to be generated. MSPs need either to validate invoices received from CPO, or in case of reverse billing, need to be able to generate invoices.</p> <p>For the different invoices, all CDRs for this previous period need to be available to the MSP before the billing run starts.</p> <p>MSPs want to automate these processes as much as possible. OCPI should support this automation as much as possible.</p> <p>MSPs should be able to accept or reject/dispute a CDR. When the MSP rejects/disputes the CDR, they need to provide a reason and description, why a CDR is rejected/disputed.</p>
Actors	CPO, MSP
Preconditions	
Postconditions	MSP has received all the CDRs for a period.
Functional UC	T.B.D.
Remark(s)	

7. Commands

This section contains the remote commands related business use cases. These use cases provide MSP with the ability to send commands to Charging Station via the CPO.

B6.1 - As an MSP I want the EV Drivers to be able to charge their EV using my mobile app

Objective(s)	1. Enable Drivers to use an MSP mobile app to charge their EV.
Description	An EV Driver should be able to start/stop a charging session using the mobile App provided by their MSP.
Actors	CPO, MSP, EV Driver
Preconditions	EV Driver has registered in the MSP mobile app.
Postconditions	EV Driver was able to start/stop a charging sessions using the MSP mobile app.
Functional UC	T.B.D.
Remark(s)	

B6.2 - As an MSP helpdesk agent I want to be able to help an EV Driver by remote control of an EVSE

Objective(s)	1. Make it possible for a helpdesk agent working at the MSP to help an EV Driver that has problems charging his/her EV.
Description	When helpdesk agents of the MSP are able to help an EV Driver with problems at an EVSE, they do not have to call the CPO, this saves time and resources. Commands like: Start Session, Unlock Connector and Reset are solving most of the issues an EV driver might have.
Actors	CPO, MSP, EV Driver
Preconditions	EVSE supports remote commands
Postconditions	Helpdesk agent was app to help EV driver solve problems during a charging sessions.
Functional UC	T.B.D.
Remark(s)	

B6.3 - As an MSP I want to reserve an EVSE for the EV Driver

Objective(s)	1. Enable MSP to make a reservation of an EVSE for the EV Driver.
Description	The make sure an EV Driver has an EVSE available for charging, when he/she arrives at a destination, the MSP needs to be able to reserve an EVSE at that location for the EV Driver.
Actors	CPO, MSP, EV Driver
Preconditions	EVSE supports reservations
Postconditions	EVSE is reserved for the driver.

Functional UC	T.B.D.
Remark(s)	It should be possible to make a reservation with a start time, when supported by the CPO.

8. Smart Charging

This section contains the smart charging related business use cases. Providing SCSPs and other parties with the ability to influence the charging speed of a charging sessions.

B7.1 - As an MSP I want to provide an optimized charging experience to the EV Driver

Objective(s)	1. As an MSP I want to have influence on Smart Charging, provide information that can be used to optimize the charging process, on behalf of the EV Driver.
Description	The MSP wants to give the EV Driver the ability to influence on ongoing smart charging sessions. The EV driver needs to be given information about the charging process and expected charging rate etc. The EV driver needs to be able to provide information, so he/she knows his/her EV is charged with enough energy at the moment the vehicle is needed. This could be information like, but not limited to: departure time, needed energy, profile type (CHEAP, FAST, GREEN or REGULAR). The driver needs to be able to give or revoke permission to use V2G/V2X. The EV Driver might want to change this information when his requirements change, he/she might switch on priority charging if he/she suddenly needs to leave ASAP.
Actors	MSP, CPO, EV Driver
Preconditions	Ongoing charging sessions
Postconditions	
Functional UC	T.B.D.
Remark(s)	

B7.2 - As an SCSP I want to influence an ongoing charging session

Objective(s)	1. Give an SCSP to influence an ongoing charging session, by providing Session information to the SCSP and enabling the SCSP to send Charging Profiles via the CPO to the EVSE.
Description	SCSP need to be able to do smart charging, so sending charging profiles to the CPO to request activation on EVSE for an ongoing charging session. For this the SCSP needs to know and be updated of ongoing charging sessions on an EVSE. The SCSP needs to know if other (local) systems are influencing the charging sessions. V2G/V2X should also be possible.
Actors	CPO, SCSP, EVSE
Preconditions	Ongoing charging sessions
Postconditions	
Functional UC	T.B.D.
Remark(s)	Typical use case in a scenario where the CPO out source the smart charging profile calculation to an external company.

B7.3 - As an SCSP I want to be informed about ongoing charging sessions

Objective(s)	1. Provide (Pseudonymized) charging sessions information to a SCSP, so the SCSP can provide charging profiles to the CPO.
Description	For the SCSP to be able to influence charging session as defined in use case: B73, the SCSP needs to be made aware of new charging sessions and updates to ongoing charging sessions.
Actors	CPO, SCSP
Preconditions	
Postconditions	SCSP has up to date information of ongoing charging sessions.
Functional UC	T.B.D.
Remark(s)	

B7.4 - As a Grid Operator I want to receive meter value information from Charging Locations from the CPO

Objective(s)	1. Provide the Grid Operator with energy usage/information of charging locations
Description	For balancing the grid and local electricity markets, the Grid Operator needs to know how much energy is being used at which locations in the grid. This information can be reported every X minutes (typical 15 minutes) even when no charging sessions is ongoing. Information that can be useful to be shared: kWh values, frequency etc, taken from the grid energy meter, or if not available, the combined values of all combined meters at the location.
Actors	CPO, Grid Operator
Preconditions	
Postconditions	
Functional UC	T.B.D.
Remark(s)	

9. Connections

This section contains the connection/security related business use cases.

B8.1 - As an OCPI Platform I want to have a secure connection with all other OCPI Platforms

Objective(s)	1. Setting up a secure connection between two OCPI Platforms. 2. Maintaining a secure connection between two OCPI Platforms.
Description	The connection setup between two platforms should be secure and preferably via an industry standard protocol/framework. The connection should remain secure over time, so likely security credentials will need to be renewed every X days.
Actors	OCPI Platforms
Preconditions	
Postconditions	Connection between the two platforms is secured.
Functional UC	T.B.D.
Remark(s)	

B8.2 - As an OCPI Platform I want to publish an updated list of role(s)

Objective(s)	1. Publish to connected platforms that new role(s) are now available. 2. Publish to connected platforms that role(s) are no longer available.
Description	<p>When a new OCPI role has been setup (CPO, MSP, NSP etc) and is now available, or a role is no longer available, this should be published to connected platforms. So they can start to work with the new role.</p> <p>When an OCPI role is no longer available on a platform, the contract with a Hub might have ended, or the company started to use a different SaaS provider. This should be published, in time, to connected platforms. So they now this role is no longer available on this platform. The removal of a role may never affect ongoing charging sessions, so it should be published in time</p>
Actors	OCPI Platforms
Preconditions	Existing connection between two OCPI platforms
Postconditions	Other Platform has the updated list of role(s).
Functional UC	T.B.D.
Remark(s)	With OCPI 3.0 the goal is to also support the communication between the split CPO and MSP roles: A-CPO (Administrative CPO) to/from T-CPO (Technical CPO) and D-MSP (Driver MSP) to/from R-MSP (Roaming MSP).

B8.3 - As an OCPI Platform I want to publish an updated list of modules and/or versions

Objective(s)	<ol style="list-style-type: none"> 1. Publish to connected platforms that a new versions of OCPI has been implemented and is now available. 2. Publish to connected platforms that new modules have been implemented and are now available. 3. Publish to connected platforms that an OCPI version will no longer be available. 4. Publish to connected platforms that existing module(s) will no longer be available.
Description	<p>When a new OCPI module, or a new version of OCPI has been implemented and is now available, this should be published to connected platforms. So the new implementations can be used.</p> <p>When an OCPI version and/module is no longer available, other Platforms need to be made aware of this, in time. The removal of existing versions/module may never affect ongoing charging sessions, so it should be published in time.</p>
Actors	OCPI Platforms
Preconditions	Existing connection between two OCPI platforms
Postconditions	Other Platform has the updated list of support OCPI versions and modules.
Functional UC	T.B.D.
Remark(s)	It should be possible to have some modules of a newer version while still using an older version of others.

B8.4 - As an OCPI Platform I want to keep updated of connections to a Hub

Objective(s)	<ol style="list-style-type: none"> 1. Hubs publish the available roles of other connected platforms. 2. Hubs publish the connection status of other connected platforms.
Description	When a platform, connected to a Hub has a new role available, or connection is offline, other platforms want to learn from this, so they know if they can send information to other platforms connected via the Hub.
Actors	OCPI Platform, Hub
Preconditions	Existing connection between OCPI Platform and Hub.
Postconditions	OCPI Platform is up to date with the connection status between the Hub and all other OCPI Platforms.
Functional UC	T.B.D.
Remark(s)	

B8.5 - As an OCPI Platform I want to be able to validate received OCPI data has not been altered.

Objective(s)	<ol style="list-style-type: none"> 1. Enable OCPI Platforms to validate the received data is not altered. 2. Enable OCPI Platforms to authenticate the signature of received data.
Description	<p>When an OCPI Platform receives data in needs to be able to check if the content is not altered by a not trusted party. If data is signed by a role on a platform, the authenticity of that signature should be validated, and also the content of that data.</p> <p>Data does not always have to be signed by the source, there are valid use cases where for example a Hub enriches data. In such cases the enriching party can sign the data, if the receiving platform trusts and allows this, the platform can still check the signature of the enriching party.</p>

Actors	OCPI Platforms
Preconditions	
Postconditions	Authenticity and correctness of received data is validated.
Functional UC	T.B.D.
Remark(s)	

10. Loyalty

This section contains the loyalty related business use cases.

B9.1 - As a CPO I want to give loyalty to EV drivers

Objective(s)	1. Making it possible for CPOs to give loyalty (points) to EV drivers for charging at their Charge Points.
Description	CPO might want to be able to give loyalty (points) to EV drivers when using Charge Points.
Actors	CPO, MSP, EV Driver
Preconditions	
Postconditions	EV Drivers has received loyalty (points).
Functional UC	T.B.D.
Remark(s)	