OCPI – The Rosetta Stone of EV Roaming

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What is the Open Charge Point Interface (OCPI)?

Open Charge Point Interface is a point-to-point protocol that bridges charging networks and service providers to provide a cohesive and user-friendly EV charging experience. OCPI ensures interoperability across the EV charging ecosystem, streamlining integration and communication between charging networks, mobility service providers, and EV drivers.

In particular, it enables roaming across EV charging networks to offer EV drivers services no matter where they travel, allowing EV drivers who subscribe to a specific service provider to charge their vehicles on diverse charging networks using the familiar mobile app from their "home" Charge Point Operator (CPO).

Cross-network interoperation is key to volume and growth in the EV charging business. Seamless roaming also removes barriers to buying an electric vehicle, such as range anxiety and helps to create a transparent EV and EV charging marketplace. OCPI also facilitates the business model of a CPO-only network where all the drivers are roaming drivers.

OCPI automates live, scalable EV roaming between CPOs and EMSPs, by supporting

- Charging session authorization, ensuring that only legitimate customers are requesting electric vehicle charging services
- Sharing of charge point information such as nearest charging points
- Transaction reconciliation and clearing between CPOs and EMSPs
- Charger reservation
- Smart charging

Benefits of OCPI

Increased Interoperability and Convenience to enable "transparent roaming", via standardized communication across diverse charging networks, allowing EV drivers to use different charging networks with a single payment account.

Enhanced User Experience: The protocol's support for features like reservations, remote start/stop of charging sessions, and detailed charging session information directly improves the user experience for EV drivers. This user-centric approach encourages more people to adopt electric vehicles.

Real-Time Data Exchange shares operational information, including availability of charging points, pricing, and charging session history, providing EV drivers with up-to-date information about current and past charging sessions.

Streamlined Billing and Payment: the protocol facilitates handling of billing and payment processes among different entities (CPOs, EMSPs, EVSPs et al.), ensuring that transactions are accurately recorded and managed expeditiously.

Scalability: OCPI benefits both EV drivers and charging network operators by being scalable and easily supporting market expansion in both the number of EVs and charging stations.

Openness: the definition of OCPI by the EV Roaming Foundation is publicly available and royalty-free with multiple compatible implementations from various vendors. The protocol is business model-agnostic, fostering widespread adoption and creating opportunities for innovation in the EV charging industry. The standard itself is run as an open source project with freely available documentation, tools and examples.

Business Model Flexibility: OCPI adoption facilitates technical data exchange and charging connectivity. Deploying OCPI lets CPOs, EVSPs, and EMSPs negotiate roaming agreements among themselves, building on a system that is already in place for international clearing, enabling them to optimize their business models.

Lower Costs, Improved Margins: by facilitating direct payment and billing across networks, OCPI removes middlemen from the transaction chain (such as roaming platforms), saving EV drivers money and improving margins for CPOs.

Global Reach: While initially developed in and for European EV charging, OCPI has gained traction globally. Through global deployment, OCPI is helping to create a more unified and accessible EV charging infrastructure and ecosystem.

What does OCPI Cover?

OCPI serves as the technical "handshake" that connects charging hardware, charging station software, mobile client apps, and back-end infrastructure across charging network operators and e-mobility service providers. OCPI lets CPOs and EMSPs track clients as they roam across systems.

Information exchanged includes sending of remote commands for reservations, authorizing charging sessions, and billing. Each transaction record includes session and location information, charge detail records (CDR) for billing, and tariff details.

OCPI covers five core functional areas:

- **Identification** of EV users – ensuring that a user is a member of a participating charging network
- **Authorization** – authentication of charging user credentials and granting permission to engage a charging session
- **Recording** charging session information – logging session data, including charging time, vehicle battery status, and energy transferred to the vehicle
- **Billing** – initiating and clearing financial charges and payment for the EV charging session
- **Data Protection** – securing user data (PII and transaction data) in-transit and in-use

Note that OCPI is not the only protocol employed to handle these functions across the EV charging ecosystem, but it is the most widely deployed and the most open. Other protocols include OICP and OCHP.

Driivz and OCPI

OCPI-based Roaming ensures that EV drivers have access to the greatest number of charging options. OCPI streamlines management and processing of charges for roaming EV drivers, as well as distribution of authorization tokens, smart charging commands and other roaming enablers.

The Driivz EV charging management platform leverages the standard to handle reconciliation across all participating EMSPs, CPOs, and EVSPs. Driivz was an early adopter of OCPI technology, integrating support for OCPI into the Driivz EV charging management platform in 2015, and today supports hundreds of OCPI 2.2.1 connections in production. Support for OCPI version 3.0 is coming shortly.