



Smarter Mobility

ABB Ability™ Connected Services

To successfully run a commercial charging network in a dynamic environment it is crucial to connect EV chargers to the Internet.

The ABB Ability Connected Services platform incorporates many years of experience in connecting thousands of chargers to the Internet.

Connectivity helps EV charging network operators to:

- Remotely monitor and configure charge points**
- Service the equipment efficiently and with minimal operational effort**
- Increase charger uptime and the reliability of their charging network**
- Build a scalable and flexible charging infrastructure**
- Minimize investments in IT Infrastructure & Back-end Software**
- Up-to-date charging infrastructure with software updates**
- Support EV drivers in case they have issues**
- Adapt business and pricing models over time**

ABB's offering facilitates all above mentioned aspects and is your best choice to run a profitable EV business.

ABB Ability™ Connected Services Platform

Enabling your charging operation

Choosing ABB as a supplier for charging infrastructure means having access to best in class Connected Services to maximize the availability of chargers while ensuring seamless integration at minimal cost. This includes connectivity management, Web tools and advanced integration options using our Internet based APIs.

Digital integration of an ABB EV charger

ABB has vast experience in the operation of EV chargers and can support various digital integration models depending on customer preferences. Chargers can be operated by connecting to the ABB Ability platform via a cloud-to-cloud OCPP API or by using a direct OCPP connection from the charger directly to the customer IT system.

OCPP API Concept

The ABB Ability™ Connected Services Platform

The core of ABB's Connected Services offering is a cloud-based platform to which chargers are connected, and from which digital services are offered.

Scalability and flexibility

By using ABB's modern cloud platform as a connection point, operators limit the cost and risk related to designing and operating a scalable IT setup that must be capable of connecting large numbers of chargers with highest reliability. ABB's expertise in connecting thousands of chargers and managing IoT (Internet of Things) platforms is a great benefit to customers, who can thus avoid building up their own operations and infrastructure for such services.

Minimize investments in IT infrastructure

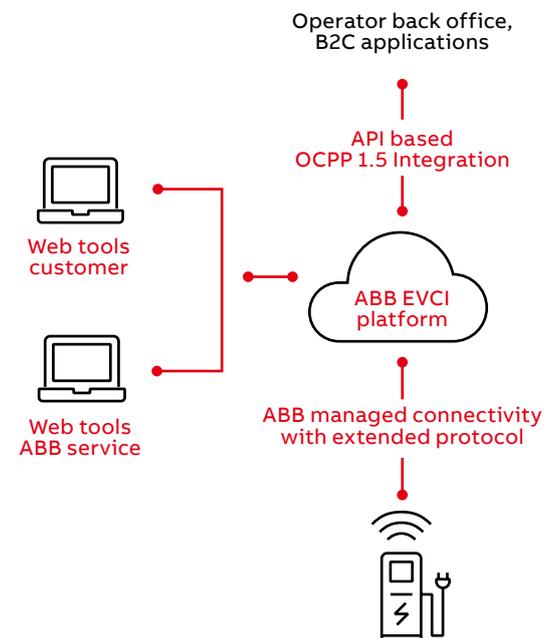
The ability to rely on ABB's service platform with extensive technical support features, allows operators to focus their back office on network monitoring and offering innovative e-mobility services such as driver access management, billing and fleet management. Advanced remote diagnostics and troubleshooting features, which are by nature hardware specific and require in depth knowhow of the equipment, can be minimized and are covered by ABB's services and Web tools.

Best in class service and support

Next to our offering of industry standard protocols such as OCPP, ABB can additionally provide very detailed real-time diagnostic data. This enables the best possible remote services, considerably reduced operations cost, and first-time right on-site support.

High uptime and reliability of Connected Services

The ABB Connected Services Platform is based on leading cloud technology with redundantly operating server environments on different geographical locations in Europe. It complies with the highest security standards. Privacy is guaranteed as ABB only processes technical charger data and anonymous user data. Advanced encryption technology ensures that data on the charger and on the platform is safe. The Platform is monitored 24/7 by the ABB Network Operation Center (NOC). This ensures professional and prompt action in case of network or platform issues.



Added Value Services from our ABB Ability Cloud

Better & Faster Support: Outperform on Total Cost of Ownership & Time to Repair with the best troubleshooting support from ABB Network Operating Center (NOC) and ABB Service.

Extended OCPP Capabilities: Extra functionality with charger specific information on top of the OCPP standard

Innovative API's: Additional value in the end customer experience and increased operational efficiency

Effortless Scalability: The required IT resources scale in our ABB Ability cloud and connectivity monitoring is done by ABB

Increased Security: Microsoft Azure based security and only one connection to your backend you have to monitor.

Direct OCPP Connection – Dual Uplink Concept

Manage the charger connectivity yourself
The dual uplink connectivity concept provides a solution for Charge Point Operators (CPO) who have the capacity to operate big IoT networks and therefore wish to directly integrate chargers with their IT system. This enables the CPO to take own responsibility for the stability and scalability of the connection of their network of EV chargers

Added Value Services from our ABB Ability Cloud
The charger remains connected to the ABB cloud to make sure that ABB Service personal can provide fast remote support. This leads to higher uptime of the charger network, minimizes the number of unplanned on-site delegations, and thus reduces costs.

Service chargers yourself using Charger Care
The web tool Charger Care provides operators the possibility to use their own resources for advanced service and support activities. CPO service personnel is trained by ABB and permit the operator to act independently. A strong own service organization that can rely on ABBs advanced technical configuration and diagnostic data from the platform will provide a strong foundation to improve the uptime of a network.

Charger Care provides the additional advantage that no expensive customization of the back-office system has to be implemented with charger hardware specific service functionality.

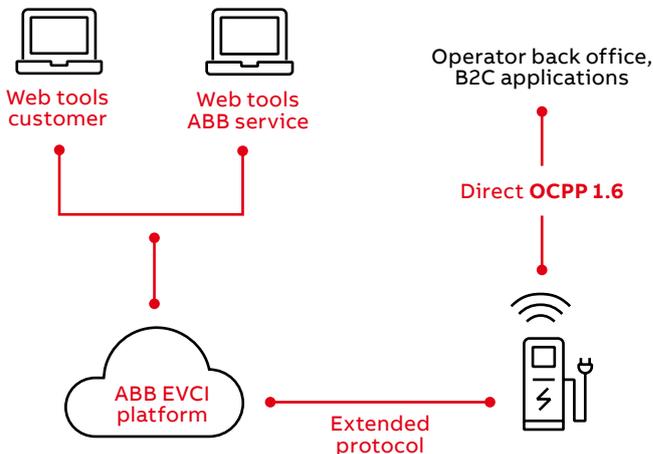


ABB Connected Services offering

Overview

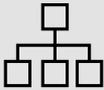
The ABB Connected Services offering comprises of four main parts:

1. **Charger Connect** giving access to the ABB Ability Connected Services Platform.
2. **APIs** for back office integration.
3. **Web tools** for monitoring and basic management of the network by simply using an Internet browser.
4. **Charger Care Service Level Agreements** for remote monitoring and diagnostics by ABB. A separate product brochure is available with more details about the ABB Charge Care offering.

Charger Connect forms the basis of all Connected Services. Customers then select from our offering of APIs, Web tools and Charger Care SLAs to best fit their needs.

Charger connect

The basis for all connected services

-  Reliable connectivity
-  24/7 network monitoring by NOC
-  Software updates
-  Activation in ABB Service Tools

+ Elective APIs, Web tools and SLAs

Enabled by the ABB Ability Connected Services Platform and tailored to the needs of the customer

APIs pg. 6

for back office integration



OCPP
OCPP API



Service API



Demand – response API

Web tools pg. 7

Browser based tools for real-time charger access



Driver Care



Payment



Charger Care

Charger Care Service Level Agreements

for remote monitoring and diagnostics by ABB



Remote Condition Monitoring



Remote Diagnostics & Troubleshooting



Other Services
(Maintenance, spares, training, etc)

A separate leaflet is available for Charger Care

APIs

Connect chargers to your back office

ABB offers standards based APIs supporting various integrations with service provider's back office systems, energy management solutions, payment services, or any other system.

ABB implements APIs based on customer needs and preferably uses industry standards. All ABB APIs have publicly available specifications. The following APIs are offered:

Open Charge Point Protocol (OCPP) API

OCPP OCPP API

The OCPP API consists of a broad set of messages, offering a wide range of functionality and possible back office integrations. The transaction based set-up of the messages makes it easy to connect to a back-end system in order to process charging sessions, to define pricing models and to handle invoicing. Other possibilities include integration with an external payment solution like a credit card payment app or a parking management system. ABB ensures the API is compatible with the latest version of the OCPP standard.

Implementation

ABB has commissioned a significant number of API links between customers' installed bases and their back office systems, or to back offices of their partners. Please see our "API implementation guide" for more information about ABB's implementation process, API specifications and technical requirements that help with a successful implementation.

Future API developments

ABB intends to keep up with interfaces to back offices, roaming platforms and payment solutions used in the EV charging industry. ABB is actively looking into API solutions for power management, smart grid and advanced demand response. With over 100 years of experience in building the world's power grids, ABB has the knowledge and expertise to realize professional solutions in this field.

Service API



When running a network of chargers it is required to professionally assist the drivers. Customer care centers need to have insight in the technical status and failure data from the chargers. The Service API is an add-on to the OCPP API and provides useful technical details for driver care centers, to improve support to EV drivers. Status messages cover details about the real-time status of the charger, the charging process, and failures; for example a message related to the connection of the cable with the vehicle.



Basic Demand Response API

The need to control the input power of a charger has increased over the last years. To meet this need ABB has introduced the Demand Response API, as an add-on to the OCPP API. With this API, a network operator can limit the total power a charger or charger site can deliver to EVs. This helps to prevent issues with the capacity of the power supply infrastructure and the grid in general.

Web tools

Monitor and manage chargers in real-time

ABB browser based Web tools are online management tools providing charging infrastructure operators with real-time status information and usage statistics to monitor and operate their equipment.

ABB Web tools are an optimal way to monitor, configure and service a charger. The tools combine data, which is typically available via OCPP in back office systems, enriched with advanced configuration features, case management, and access to ABB documentation.

Without extensive IT system customizations they enable the operator to get network insights, create reports on the usage, or even perform most advanced service activities – from the first day on, fast and reliably.

ABB offers three Web tools: Driver care, Payment management and Charger Care.

Driver care



Driver care is the optimal tool for monitoring and reporting on a charging network. It can be used by operators without a back office, or as a monitoring tool in addition to a back office system. It offers the following features:

Status



The status functionality provides a map view with real-time charger status information. It is possible to look up the actual status per charger and to see which outlets are currently available, charging, reserved, turned off, or in error.

Statistics



The statistics feature is key to gain insight in the usage of the equipment. It provides information on the number of sessions and energy delivered, state of charge at start and end of the session, and detailed stop reasons. Statistics can be viewed per charger over the last 7 days and give an excellent quick glance on how the network is being used. Data can be exported (for example to an MS Excel file) for further processing

Configuration



The configuration module allows for remotely configuring settings of a charger such as switching on or off the authorization, setting maximum charge time, remote restarting if needed and disabling or enabling chargers when desired.

Access management



Access control is a simple way to manage the access to a charger by specifying a list of accepted RFID cards or PIN codes, without having to use an extensive OCPP based backend. The module is a good option to limit access to chargers standing in a public area but only intended to be used by a smaller community such as employees or taxi drivers. All transactions related to an RFID card or PIN code can be exported for further processing.

Cases



Cases helps finding quick answers, raising a case to trigger the ABB service organization, and tracking a case to gain insight into the resolution of a problem.

Notifications



The notifications module offers your driver care center the possibility to receive an alert by e-mail in case a charger reports a certain event, for example when the emergency button is pressed.



Payment management

Payment management enables operators to configure payment options on chargers equipped with a payment terminal. Pricing per outlet can be set, and behavior of the payment terminal can be configured. The operator is provided with full insight in all payment transactions per charger, per day.



Charger Care

Charger Care is an advanced service tool for operators performing service themselves or via 3rd party resources. It enables remote diagnostics and troubleshooting, making use of a broader set of data than what can be supported by OCPP. It also allows for advanced remote repair activities, which can in many cases prevent a site delegation, thereby reducing time to repair and minimizing operational costs.

Remote monitoring and advanced diagnostics features



Real-time insights on component level such as the status of all boards, monitoring of hundreds of parameters and settings such as cabinet temperature, humidity, SW and HW versions of each board.

Access to advanced settings and remote action



Possibility to change parameters and configurations including rebooting individual boards.

How to use Charger Care

It is important to notice that the Web tool Charger Care is a very advanced tool offering vast possibilities to service engineers. The tool can only deliver its full benefit when the engineers are trained by ABB on servicing ABB chargers. Please contact the local service organization for more information on the training requirements to be certified to use Charger Care.

Spare parts



Access to spare part data and ordering instruction

Solution Library and Documentation



The tool gives access to a knowledge library containing solutions for the most common failure patterns reported by the charger. Using the error code, it is possible to get access to a related solution, which indicates troubleshooting guidelines, links to required documentation and if required to spare parts to fix the issue. The solutions are incorporating knowledge, which has been accumulated by ABB over the last years when servicing its thousands of installed chargers in the world.



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