



Product brochure

EV Charging Infrastructure

ABB Connected services

Connected services Products supporting your business

To get the most out of an EV charging network, you need to be supported by the right tools. ABB offers Internet based tools that fit a variety of EV charging infrastructure business models.

Product offering

ABB offers several Connected services, for a variety of charger networks. All available Connected services are listed in diagram 1, and briefly explained below.

Large charger networks can use one or more of the Connectivity APIs: OCPP API, Real-time status API and Support API.

Smaller networks can work with ABB Web solutions, consisting of three different modules. The Driver Care module and the Payment module are suited for publically available networks, whereas the Operator Pro module is more suited for closed community use, like fleets or office locations.

	Public use	Closed community use (fleet / office)
Large network	Connectivity APIs: OCPP API, Real-time status API, Support API	
Small network	Web solutions: Driver Care module Payment module	Web solutions: Operator Pro module

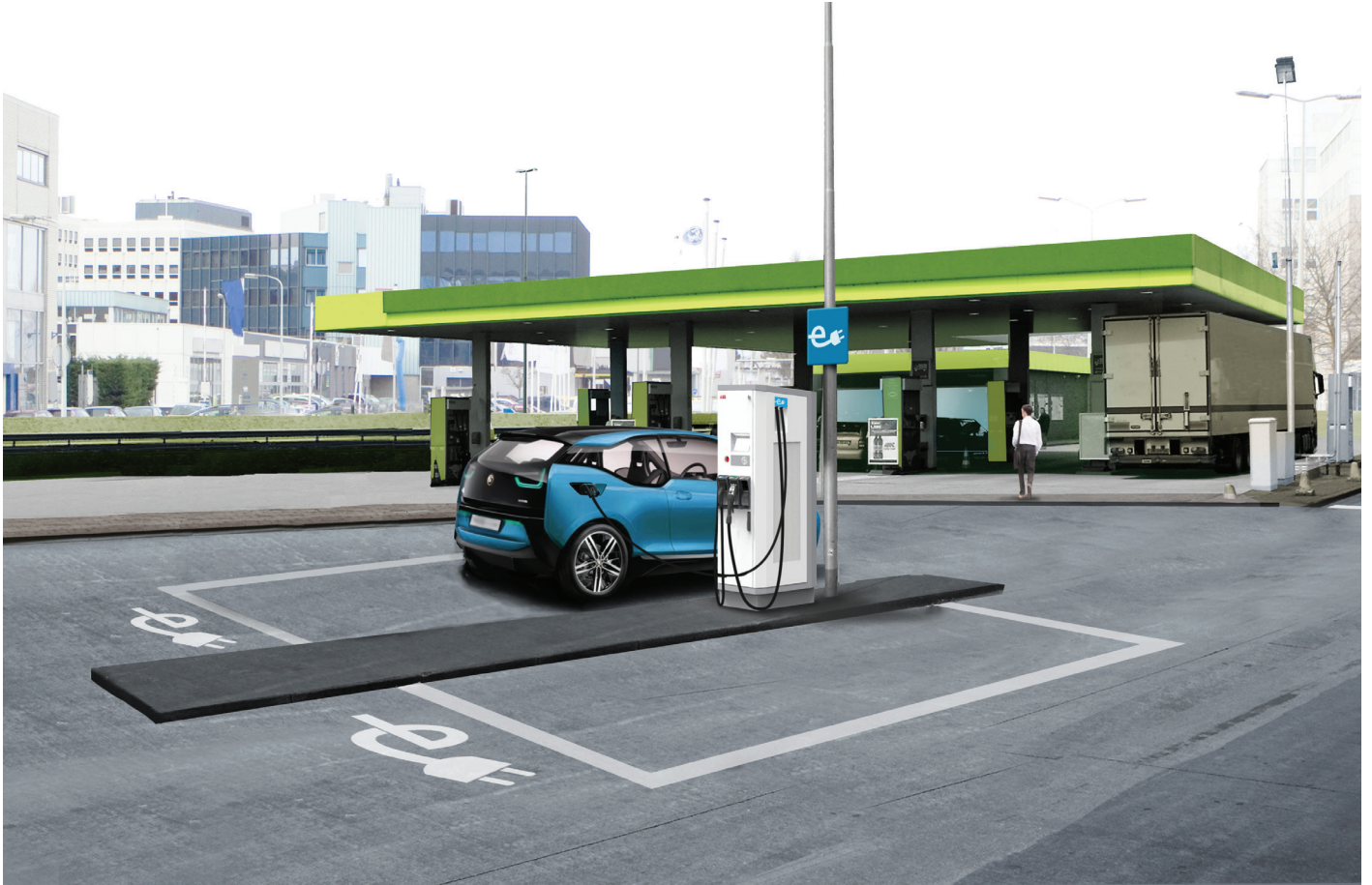
Diagram 1: ABB product offering related to the size and the goal of the charging network.

Key advantages

ABB Connected services offer 4 key advantages:

- **Flexibility** ABB Connected services are provided via the Internet and use open standards. They are compatible with any charging network, back-office, payment platform or energy management solution.
- **Upgradability** Benefit from upgrades to the latest industry standards.
- **High availability** High service availability and high uptime guaranteed.
- **Cost efficiency** Avoid development and maintenance costs of proprietary software solutions.

Internet-based charging



The electric vehicle charging industry is benefitting from Internet connectivity services such as those provided by ABB.

ABB Internet-based connectivity solutions are changing the face of electric vehicle charging. EV charging network operators run their charging networks more efficiently while maintaining maximum flexibility in a constantly evolving industry.

Connectivity, a crucial part of EV charging networks

Being the global industry leader in deploying and managing nationwide EV charging networks, ABB has made Internet connectivity a crucial part of its EV charging strategy and offering. ABB chargers are equipped with a package of connectivity-based services, including remote maintenance and diagnostics as well as interfaces to service providers. These connectivity services are all based on open industry standards.

Flexibility and cost savings

Utilizing connected services via the Internet enables operators to better serve their clients, partners and suppliers. The most important advantages are flexibility and cost savings.

With ABB Connected services, operators can access the data they need anytime and anywhere. There is no need to purchase and install software because ABB delivers its Connected services remotely, following the latest open industry standards. This generates significant cost-savings – especially because online services do not require local updates.

Because ABB Connected services are provided via the Internet and use open standards, they are compatible with any charging network, back-office system or payment and billing platform. This means that customers can simply connect to one central point to access each charger in their network.

Thanks to the use of open-standards-based interfaces, all ABB EV chargers allow for remote monitoring, proactive maintenance and functional upgrades. Also generating usage statistics and reports and real-time charger information updates are possible via the network.

Customization and future upgrades

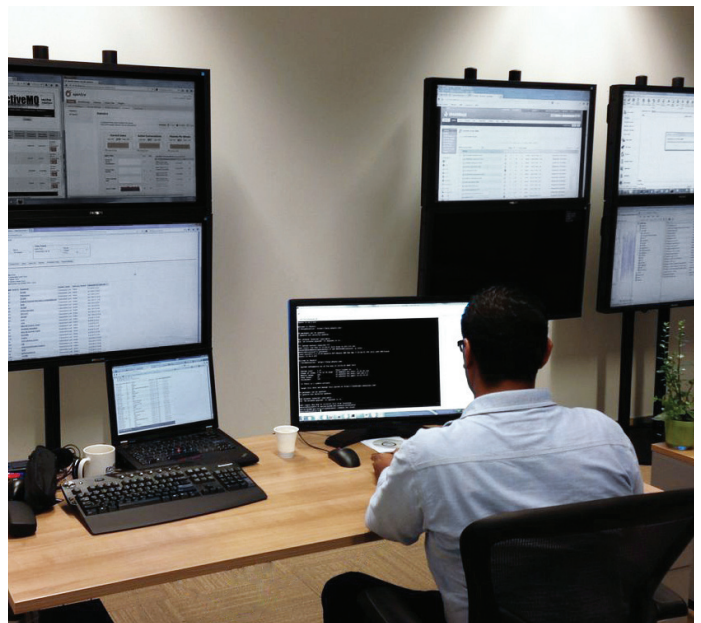
Most customer-specific configurations will be implemented via software, without changing anything to the hardware. This offers serious advantages in reliability and in service and maintenance.

The network-based configuration enables future integration of new functionalities, such as smart-grid configuration, without changing anything to the charger's hardware.

Thanks to the open standards, customers can still work with other charger suppliers who deliver stand-alone chargers.

Vehicle-to-grid and Smart Grid

As the world enters the era of vehicle-to-grid (V2G) networks, a connected charging platform is essential. ABB already has all the elements required for V2G and smart grid functionality.



Remote access to charging data is a key advantage of ABB's Internet-based offering.

ABB's connected services are accessible via the Internet. They provide a reliable, secure and cost efficient solution, based on open industry interfaces.

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Charging network open APIs

Product portfolio

The success of an EV charging network depends on integrating high quality hardware with the software solutions you have in mind. ABB offers standards based connectivity solutions supporting various business models. Increase ROI by APIs interfacing with customer registration, energy management, payment services, or any other service provider's back-office system.

Internet-based APIs

ABB charging APIs are based on commonly used Internet technology. Customers and partners only have to connect to a single point, where the APIs are available.

	Public use	Closed community use (fleet / office)
Large network	Connectivity APIs: OCPP API, Real-time status API, Support API	
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Being the global industry leader in deploying and managing nationwide EV charging networks, ABB has made Internet connectivity a crucial part of its EV charging strategy and offering. The 4 key advantages of the Internet connectivity offering are:

- Flexibility
- Upgradability
- High availability
- Cost efficiency

Flexibility

ABB connected services are provided via the Internet and use open standards. They are compatible with any charging network, payment and billing platform, or any other service provider's back-office system. This enables charging network operators to find solutions matching their business model and to rapidly engage in new business opportunities.

Upgradability

ABB is a strong promoter of international standards and actively contributes to the development of these. Therefore ABB solutions are based on the latest available versions of industry standards. By choosing ABB APIs, customers are always up-to-date with the latest standards and protocols without extra costs.

Reliability

The performance of the network and APIs is constantly monitored, providing a reliable service with a high up-time.

Cost efficiency

ABB connected services are upgraded to the latest versions of standards and protocols without any additional costs. Both hardware and software are always kept up-to-date, thereby extending the economic lifetime. It mitigates the risk of investments needed to upgrade and maintain proprietary solutions (diagram 2).

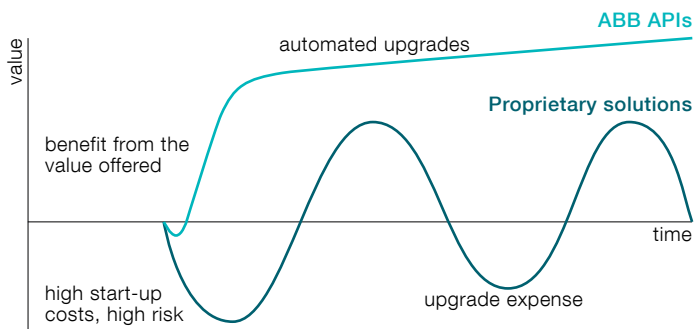


Diagram 2: ABB APIs have lower costs and lower risk over time, compared to proprietary solutions.

ABB solutions are used by many charging network operators around the world, which allows for sharing development costs. Therefore ABB can offer competitive pricing.

Available APIs

ABB implements APIs based on customer's needs and preferably uses industry standards. All ABB APIs have openly available specifications. The available API's are explained below.

Open Charge Point Protocol (OCPP) API

The OCPP API consists of a broad set of messages which offer 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 for processing charging sessions and handling (monthly) 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.

ABB has commissioned a significant number of OCPP links between customers' installed bases and their back-office systems, or to back-offices of their partners. Please see our 'OCPP implementation guide' for more information about ABB's experience and guidelines that help you with OCPP implementation in your back office.

Real-time status API

The Real-time status API contains relevant and actual status information about the use of a charger. It supports real-time status per charger, per connector type or even per group of chargers. Expected charge end-times are available, to inform new users when chargers become available. The API information complements information by Point-of-interest (POI) publishers, which in general do not show real-time charging information.

The Real-time status API is suited for POI publishers and for customers or governments desiring to show the use of chargers on their own webpage or mobile application.

Support API

If you are running a (commercial) network of chargers your service desk needs to have insight in the technical status of the chargers. The Support API provides useful technical details for driver care centers, to improve support to EV-drivers.

Home Charger API

For some ABB home chargers an API is available to remotely control the charger. The API is an ideal solution to enable remote starting a charge session, remote stopping a charge session and for programming a start/stop timer.

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 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.

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Web solutions

Product portfolio

ABB Web solutions are on-line management tools providing charging infrastructure operators with real-time status information and usage statistics on their equipment. Web solutions are intended for smaller networks without a back-office and supporting APIs.

Infrastructure providers can now gather detailed charge session statistics, configure Terra chargers on their sites according to their preferences and obtain valuable insights through charger usage statistics. All charge session data can be exported and managed directly from this Internet based application.

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Packages

An overview of the three packages and their modules is shown below. Extending a package with additional modules is possible.

Modules	Operator Pro	Driver Care	Payment
Status	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Statistics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Configuration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Advanced statistics	<input checked="" type="checkbox"/>		
Access management	<input checked="" type="checkbox"/>		
Cases		<input checked="" type="checkbox"/>	
Notifications		<input checked="" type="checkbox"/>	
Payment management			<input checked="" type="checkbox"/>

Web solutions modules

ABB offers three web solutions: Operator Pro for networks in closed communities, Driver Care and Payment for public charger networks. Each web solution consist of several modules. The functionality of these modules is described below.

Status

The status module provides viewing the real-time charger network status via a comprehensive map view. Looking up the actual status per charger or per outlet is also possible. It is even possible to see which outlets are currently charging. The status module is delivered by default when you choose for web modules based management.

<input checked="" type="checkbox"/> Operator Pro	<input checked="" type="checkbox"/> Driver Care	<input checked="" type="checkbox"/> Payment
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Statistics

The statistics module is key to gain insight in the usage of the equipment. It provides you with information on the number of sessions and kWh delivered. Statistics can be viewed over the

last 7 days per charger and give an excellent view on how the network is being used.

Operator Pro Driver Care Payment

Configuration

The configuration module allows for remotely configuring settings of a charger, remote restarting if needed and disabling or enabling chargers when desired.

Operator Pro Driver Care Payment

Advanced statistics module

The advanced statistics module enables discovering more details about your charging sessions over flexible time frames. Session data can be exported (for example to an MS Excel file) for further processing.

Operator Pro Driver Care Payment

Access management

With the access management module, consisting of either the card management module or the PIN management module, access control is made easy for the early stages of a new fast charging network.

The card management module allows for registering RFID cards whereas the PIN code management module provides registering PIN codes for accessing the charger. Of course blocking and removing expired entries is also possible.

All transactions related to an RFID card or PIN code can be exported for further processing.

Operator Pro Driver Care Payment

Cases

The cases module helps trouble solving. The module helps finding an answer to a problem quickly, raising a case to trigger the service organization and tracking a case to be able to provide the end customers full insight in the progress of a problem.

Operator Pro Driver Care Payment

Notifications

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

Operator Pro Driver Care Payment

Payment management

The payment management module is intended for chargers that are equipped with a payment terminal. The module lets the operator configure diverse payment options. Pricing per outlet and configuration of the payment terminal behavior can be set. The operator is provided with full insight in all payment transactions per charger, per day.

Operator Pro Driver Care Payment



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