EV Charging Infrastructure
ABB Connected services
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 infrastructure business models. A tool is right for you if it fits the goal and size of your charging network.

**The goal of a network**

Networks of EV chargers do not all have the same goal. Some networks serve public use (whether or not commercially), other networks serve a closed community, for example a network of company cars or members of a parking garage. A public network requires different supporting tools and solutions than a closed community network.

**Network size and growth**

ABB has experienced that many charging providers start with a limited number of chargers and expand their network over time. For each phase in this growth, ABB has matching solutions available.

Smaller networks start off with Web solutions, avoiding an early investment in an own back-office. Bigger networks extend and improve their functionality by linking their charging network to their own back-office using advanced ABB APIs.

Diagram 1 visualizes the ABB product offering related to the size and the goal of the network. More information about the product offerings shown in the diagram is available in this brochure.

<table>
<thead>
<tr>
<th>Public use</th>
<th>Closed community use (fleet / office)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large network</strong></td>
<td><strong>Connectivity APIs:</strong> OCPP API, Real-time status API, Support API</td>
</tr>
<tr>
<td><strong>Small network</strong></td>
<td><strong>Web solutions:</strong> Operator Pro, Access management (RFID)</td>
</tr>
</tbody>
</table>

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.
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**
As 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.

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

For more information please contact:

**ABB EV Charging Infrastructure**
Delftweg 65
2289 BA Rijswijk
The Netherlands
Phone: +31 70 307 6200
Fax: +31 70 307 6209

[www.abb.com/evcharging](http://www.abb.com/evcharging)
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.

<table>
<thead>
<tr>
<th>Large network</th>
<th>Connectivity APIs:</th>
<th>Public use</th>
<th>Closed community use (fleet / office)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web solutions:</td>
<td>OCPP API, Real-time status API, Support API</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Pro</td>
<td>Access management (RFID)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web solutions:</td>
<td>Operator</td>
<td>Access management (PIN)</td>
<td></td>
</tr>
</tbody>
</table>

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).
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 to 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.

For more information please contact:

ABB EV Charging Infrastructure
Delftweg 65
2289 BA Rijswijk
The Netherlands
Phone: +31 70 307 6200
Fax: +31 70 307 6209

www.abb.com/evcharging
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.

### Web module packages

ABB offers three web module packages: Operator for networks in closed communities, Operator Pro for public charger networks and Access management (RFID or PIN) for both network types. Each package consists of several web modules. The functionality of these modules is described below.

#### Status module

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.

#### Statistics module

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 several time frames and give an excellent view on how the network is being used.

#### Advanced statistics module

The advanced statistics module enables discovering more details about your charging sessions. Session data can be exported (for example to an MS Excel file) for further processing.
Configuration module
The configuration module allows for remotely configuring settings of a charger and for disabling or enabling chargers when desired.

Operator | Operator Pro | Access management

Access management module
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 | Operator Pro | Access management

Packages
An overview of the three packages and their modules is shown below. Extending a package with additional modules is possible. The station publisher is free of charge for any package.

<table>
<thead>
<tr>
<th>Modules</th>
<th>Operator</th>
<th>Operator Pro</th>
<th>Access management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>Advanced statistics</td>
<td>☑️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access management</td>
<td></td>
<td></td>
<td>☑️</td>
</tr>
</tbody>
</table>

For more information please contact:

ABB EV Charging Infrastructure
Delftweg 65
2289 BA Rijswijk
The Netherlands
Phone:  +31 70 307 6200
Fax:    +31 70 307 6209

www.abb.com/evcharging