



# ABB E-mobility

Global product portfolio

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## **Pioneering the future of e-mobility**

Delivering end-to-end electrification solutions for the transport of tomorrow, today.

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## **Long standing experience**

More than a decade in launching innovative EV charging technology, complimented by a century of experience in power distribution and energy management.

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## **Trusted problem solver**

From highway to home, from EV fleets to retail, we are the partner of choice for the world's biggest brands of electric vehicle OFMs to nation-wide EV network operators.

# Global leader in EV charging infrastructure

## Writing the future together

ABB E-mobility has years of experience in designing, manufacturing, installing and maintaining electric vehicle charging infrastructure, including several nationwide charger networks.

### ABB E-mobility infrastructure

ABB has been serving customers for over a century with reliable energy efficient solutions for utilities, industry, infrastructure and transport. Since 2010, ABB is leading the e-mobility revolution with charging infrastructure for any location combined with connected services.

### Main features of all ABB chargers

ABB chargers are designed to be durable, reliable and easy to service. Main advantages include:

- Modular and redundant construction to ensure continuous operation
- Industry-grade components to ensure long lifetime and robust operation
- Future-proof, easily upgradable technology
- Remote maintenance and support for an effective, timely response to any irregularity
- Supports the open communication protocol OCPP
- Stainless steel powder coated cabinets for durability, even in cold or humid climates
- User centered design validated by user tests
- Remote charger's power management

### ABB Ability™ Connected Services

ABB's Connected Services offering is based on a 24/7/365 monitored platform, which ensures the highest availability. A network operator can select from a modular offering supporting a smooth and seamless integration to back office processes via APIs, and giving access to value adding Web tools for configuration, advanced monitoring and notification.

### Key advantages of connected chargers

ABB Ability Connected Services offer four key advantages:

- **Flexibility:** connect to any charging network, back office, payment platform or energy management solution
- **Upgradability:** benefit from the latest industry standards
- **High availability of the service:** based on Microsoft Azure's robust platform
- **Cost efficiency:** avoid development and maintenance costs of proprietary software solutions

### Manufacturing and quality system

Key components in ABB DC fast chargers are designed and manufactured by ABB. This ensures full control over hardware and firmware. ABB chargers are manufactured in factories with strict quality systems in place. These factories undergo rigorous quality audits by independent external parties, as well as by automotive OEM clients.

### Partnerships with automotive OEMs

ABB E-mobility has R&D partnerships with many automotive OEMs to support joint development and testing as well as to ensure optimal compatibility between DC fast charger and electric vehicle.

### Supporting all EV charging standards

ABB supports all currently available open charging standards, which enables providing charging services to widely available electric vehicles. All chargers can be combined with comprehensive solutions for user authorization, payment and network connectivity.



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# The key elements

## to run an EV charging operation

ABB E-mobility provides all elements to run a successful charging operation. One stop for hardware, software, connectivity and services.

### AC chargers

High quality, cost-effective, easy installation

#### Products

AC chargers for cars	<ul style="list-style-type: none"> <li>• from 3 kW AC charging</li> <li>• 22 kW AC fast charging</li> </ul>
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### DC fast chargers

Reliable, robust, modular hardware:

#### Products

DC fast chargers	<ul style="list-style-type: none"> <li>• Up to 180 kW fast charging</li> <li>• 24 kW DC wallbox</li> </ul>
High-power all-in-one chargers	<ul style="list-style-type: none"> <li>• 90 - 360 kW high power</li> </ul>
High-power split chargers	<ul style="list-style-type: none"> <li>• 175 - 350 kW high power</li> </ul>
Heavy vehicle chargers for trucks and buses	<ul style="list-style-type: none"> <li>• Pantograph Down charging from 150 kW to 600 kW</li> <li>• Pantograph Up charging from 150 kW to 600 kW</li> <li>• Connector based charging from 50 kW to 150 kW</li> </ul>

### Payment and Authentication

Global platform to support local payment and authentication solutions:

- RFID
- Smart phone
- PIN code
- Credit card payment module

### Service Level Agreements

Configure a service agreement to match the needs of your organization:

- Proactive monitoring and remote diagnosis
- Certified service teams
- Preventive service and maintenance
- Over-the-air software updates and upgrades
- Training programs
- Clear communication and overview via ABB Web tools

### ABB Ability™ Connected Services

Integrate with back offices and added value systems:

#### Charger Connect

Charger Connect	Giving access to the ABB Ability Connected Services platform.
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#### APIs for back office integration

OCPP 1.6 API	Connect to back office systems via the ABB Cloud
Service API	Support your call center to help EV drivers
Basic Demand Response API	Manage input power of a charger

#### Dual Uplink – Direct OCPP for back office integration

OCPP 1.6	Connect to back office systems directly from the charger
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#### Web tools

Browser based tools for real-time charger access

Driver Care	Status, statistics, access management, etc.
Charger Care	Advanced trouble shooting and service tool
Payment	Configure and support payment terminals

# Car charging infrastructure

## Terra DC fast chargers - from 20 kW to 180 kW

The Terra fast chargers are designed for convenient charging of all types of electric vehicles, including the upcoming ones equipped with high voltage systems. The compact size makes it perfect for urban use, while its modularity allows to increase the charging power up to 180 kW and serve up to 3 electric vehicles at the same time.

### Main features and key benefits

- DC fast charger supporting CCS (type 1 and 2), CHAdeMO 1.2 and GB/T.
- Serving up to 3 vehicles at the same time, 2 fast-charging and one AC charging.
- Modular design allows to increase the power level depending on the specific needs of the site, from 20 to 50 kW (Terra 24-54) and from 90 to 120 to 180 kW (Terra 94-124-184)
- The 300 A CCS cables allow high power charging speed in a compact form factor, ideal for urban environments.
- Capable of charging high voltage batteries (up to 920 Vdc)
- Simultaneous AC charging via optional 22/43 kW cable (Terra 24/54) or 22 kW socket AC Type-2 (all models).
- MID and Eichrecht (PTB) compliant metering system for DC and AC outlets available as option.
- Upgradable with cable management system to handle long cables and enhance the user experience.
- IEC 61000 EMC Class B certified for industrial and residential areas (including petrol stations, retail outlets, offices, etc.)
- Future-proof connection via open industry standards:

- Easy integration in OCPP backends and local control systems via OPC-UA (optional)
- Remote uptime monitoring and assistance
- Remote updates and upgrades
- Easy to use:
  - Daylight readable touchscreen display
  - Graphic visualization of the charging progress
  - RFID/PIN/Remote authorization
- Upgradable with credit card payment terminals

### Configurations

- Low power models: Terra 24 (20 kW), Terra 54 (50 kW)
- High power models: Terra 94 (90 kW), Terra 124 (120 kW), Terra 184 (180 kW)
- European, US, Japan and China versions available, for 400 V, 480 V and 380 V AC grid inputs
- Many combinations of the open protocols CCS, CHAdeMO, GB/T and AC charging
- Continuous current output up to 125 A (Terra 24/54) and 300 A (Terra 94/124/184)
- Different cable lengths available and optional cable management system

01 Terra 54CT

02 Terra 54 CJG

03 Terra 184 CC

04 Terra 184 CJ (USA)

05 Terra 184 CJ with cable management system





## Terra 360 all-in-one high power charger – from 90 kW to 360 kW

The Terra 360 is the fastest all-in-one charger on the market. Designed around the needs of today's EV driver, the Terra 360 is powerful, flexible, user-friendly and designed for accessibility.

ABB's Terra 360 charging network operators deploy fast-charging stations and accelerate the transition to future mobility.

06 Terra CE 360 CC

### Key features

- "All-in-one" integrated design
- Up to 360 kW of charging power
- Modular and scalable in 30 kW steps
- Serving multiple EVs at the same time
- Dynamic power allocation across the outlets
- Supporting the major charging standards
- CCS charging up to 500A (liquid cooled option available in 2022)
- The only charger that can serve a high performance car, such as the Porsce Taycan, at full power (270 kW) and charger a second vehicle (90 kW)
- Serving up to four vehicles at the same time (available from 2022)
- Charging batteries up to 920 Vdc
- Integrated cable management system
- Five meters of cable reach on all sides of the charger
- 15" touchscreen user interface
- Optional 27" advertisement screens
- Optional credit card payment terminals
- Native support to OCPP 1.6 JSON
- Easy and fast installation and commissioning
- Online and local service and configuration tools
- Native integration to ABB site and fleet power management solutions



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## Terra HP – 175 kW to 350 kW

Fast charging just got faster. High power for next gen EVs

Several EV models with larger batteries and longer range are coming. Infrastructure needs are growing. More fast charging points with higher power demands will be needed for drivers to adopt the next generation of electric transportation. ABB has solutions today that will enable this future.

### Main features and key benefits

- Ultra-high current of 500 A per individual power cabinet
- Dynamic DC functionality: 500 A per charge post
- Wide voltage range: 150-920 V
- Modular system: 175-350 kW
- Suited for current and next generation EVs
- CHAdeMO and liquid cooled CCS up to 350 kW and 500 A
- 375 A output current per power cabinet to charge fast at 400 V<sub>DC</sub>
- Dynamic DC to save costs
- Flexible charge
- Scalable installation with integrated galvanic isolation
- Cable retraction system, advanced liquid-cooling system
- Robust, all-weather enclosure for indoor and outdoor use
- EU and US models available

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Dynamic DC  
2x 350 kW  
2x 500 A  
150-920 V<sub>DC</sub>





## Terra DC Wallbox – 24 kW

The smart e-mobility investment for today, and tomorrow.

Developed with leading electric vehicle manufacturers, trusted by energy suppliers and governments, the Terra DC wallbox makes fast charging safe, smart and future-compatible. Backed by 130 years of innovation and a decade in e-mobility, the DC wallbox supports the continuous advance of electric vehicles.

Terra DC wallbox is a futureproof investment supporting current and future EVs with high voltage charging, applicable to a wide variety of use cases, in an ultra-compact footprint, that is safe and reliable, for residential use too.

### Main features and key benefits

- CE variants:
  - 0–22.5 kW, 24 kW (peak) / 60 A
- UL variants:
  - Single phase: 19.5 kW @ 208 V/60 A  
22.5 kW @ 240 V/60 A
  - Three phase: 0–22.5 kW, 24 kW (peak) / 60 A
- Charging voltage: CCS 150 – 920 V DC, CHAdeMO 150 – 500 V DC
- Protection NEMA 3 & IP54
- Overcurrent, overvoltage, undervoltage, ground-fault, surge protection, PE continuity monitoring and leakage current monitor protection integrated
- Futureproof investment supporting current and future EVs with high voltage charging
- Space-savings with easy-to-install design
- Broad range of connectivity options
- Remote software updates
- Certified with EMC Class B protection for safe use in residential areas

24 kW  
Terra DC wallbox





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## Terra AC Wallbox – 3 kW-22 kW

The best value charger on the market.

Brought to you by the global experts in smart mobility, smart buildings and smart homes, the Terra AC wallbox is built on ABB's 130-year heritage of accessible technology leadership for safe, smart and sustainable electrification and informed by our comprehensive expertise in e-mobility.

The Terra AC wallbox is the superior EV home charger, delivering high-value quality, futureproof flexibility, and advanced safety and protection.

With connectivity and smart functionality, the Terra AC wallbox is built to adapt to deliver the most optimized charge today and into the future. Convenient home charging that integrates seamlessly into everyday life.

Safety is a core principal of both ABB's business and the Terra AC wallbox. The wall charger, as with ABB's entire EV charging product portfolio, has been evaluated and tested to the highest safety standards by independent, third-party safety certification organizations.

### Key benefits

- Space-saving and easy-to-install design
- Smart functionality for optimized charging
- Remote software updates
- Broad range of connectivity options
- Built-in energy meter for load management

### Main features

- Complying with IEC standards
- Single phase up to 7.4 kW / 32 A
- Three phase up to 22 kW / 32 A
- Protection IP54, IK10
- Connectors type 2, socket with or without shutter
- Overcurrent, overvoltage, undervoltage, ground fault and surge protections integrated

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3 kW - 22 kW  
Terra AC wallbox



# Heavy vehicle charging infrastructure

## Connector based

Charge electric buses and trucks with a connector



ABB offers a complete portfolio for charging heavy electric vehicles such as buses and trucks with a CCS connector. Due their large voltage range the DC wall box (24 kW) and Terra 54HV (50 kW) are perfectly suited to charge electric buses and trucks. For higher power the products with 100 kW up to 160 kW including sequential charging, are specially designed to charge larger fleets of electric vehicles in its most optimized way.

### Main features and key benefits:

- Power range of 24 kW, 50 kW with Voltage range from 150-920 V<sub>DC</sub>
- Power range of 100 kW up to 160 kW with Voltage range from 150-850 V<sub>DC</sub>
- Sequential charging with up to 4 outlets with 107 and 160 kW dual outlet depot box
- Compliant with ISO 15118 / DIN 70121 / IEC 61851-23 & -24
- OCPP compliant
- Remote diagnostics and management tools
- EU and US models available

### Sequential charging

Instead of having one charger per vehicle, ABB offers sequential charging for the 100 kW up to 160 kW chargers. A single power cabinet is paired with up to 2 Dual CCS outlet depot charge boxes (4 outlets). After the first vehicle has finished charging, the next vehicle will start charging automatically. The advantages are:

- Vehicles are charged with high power, maximizing vehicle availability
- The required grid connection is smaller, reducing initial investments and operational costs
- Optimal utilization of installed infrastructure, meaning lower investments in charging equipment

HVC-150C with 150 kW power cabinet and three depot charge boxes with sequential charging



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## Pantograph Up

Charge electric buses with a roof mounted pantograph



ABB offers an ideal solution to charge electric buses that are equipped with a roof mounted pantograph. This allows to charge larger fleets of electric buses overnight in a range of 50-150 kW per vehicle and during the day with 150-600 kW for opportunity charging.

### Main features and key benefits:

- Voltage range from 150-850 V
- Power range of 50-100-150 kW per outlet for overnight charging
- Power range of 150-300-450-600 kW per outlet for opportunity charging
- Safe and reliable fully automated connection
- Compliant with ISO 15118 / DIN 70121 / IEC 61851-23 & -24
- OCPP compliant
- Remote diagnostics and management tools



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HVC-300PU with 300 kW power cabinet and slim design charge pole

## Pantograph Down

Charge electric buses following the OppCharge protocol



ABB offers an ideal solution to charge electric buses fully automated following the OppCharge protocol. With typical charge times of 3 to 6 minutes the system can easily be integrated in existing operations.

### Main features and key benefits:

- Voltage range from 150-850 V
- Power range of 150-300-450-600 kW
- Charge in 3 to 6 minutes
- One charger can serve multiple vehicle types and brands
- Safe and reliable fully automated connection
- Compliant with OppCharge / IEC 61851-23
- OCPP compliant
- Remote diagnostics and management tools



HVC-450PD with 450 kW power cabinet and standard charge pole

# ABB E-mobility Service Offering

## Secure the availability, performance and safety of your EV chargers

Charging infrastructure must operate with the highest utilization and lowest downtime. ABB’s service level agreements meet that demand, incorporating a decade of experience with thousands of intelligent fast chargers deployed across the globe.



### Service ensures operational excellence

Operational excellence starts with reliable chargers. ABB’s family of EV chargers are modularly designed to withstand heavy operation under rugged conditions. In addition, ABB’s fast chargers are the easiest in the market to service, with 24/7 connectivity for remote diagnostics, and accessible designs that expedite maintenance and field service.

### High uptime means high utilization

ABB’s service level agreements optimize charger uptime for faster remote and on-site response times, from the industry’s most experienced service team – committed to customer success.

### Charger Support Request Response Time (CSRT)

Response time is defined as the maximum allotted time requested for ABB to respond to customer inquiries, acknowledge receipt by the EV charging service team, and begin the remote troubleshooting process.

### Remote Diagnostics Response Time (RDRT)

Remote Diagnostic Response time is defined as the maximum allotted time requested for ABB to provide remote response after receiving a charger support request. In cases where the charger error is flagged as a level 3 issue and the support issue must be elevated to the Global Service Desk, the final response time may be delayed.

### Deployment Time of On-site Service (DTOS)

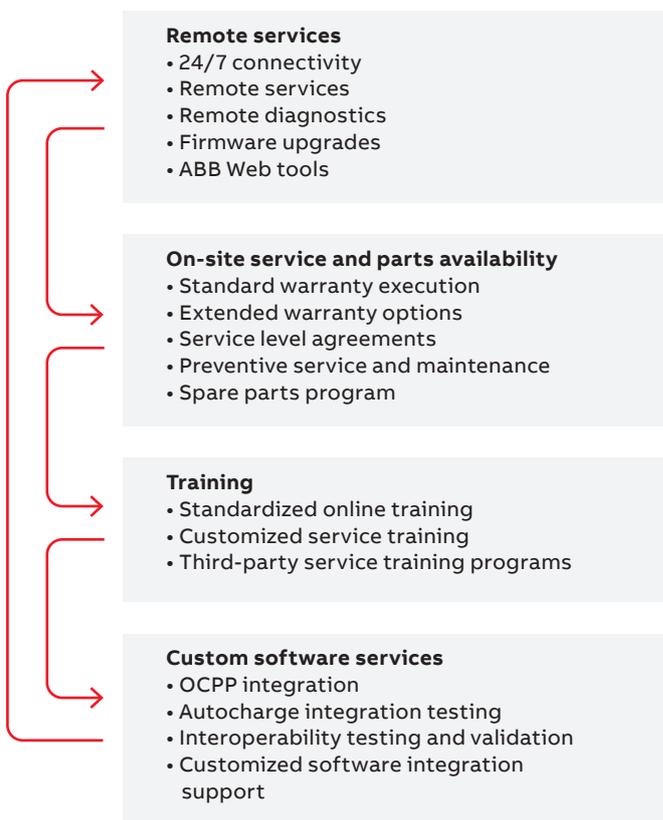
Deployment time is defined as the amount of time after the remote diagnostic response process is complete to the dispatching of an engineer/tech to site.

If the issue cannot be resolved via remote support and it is mutually agreed that on site support is needed; and spare parts are either at site or confirmed for delivery to site, then ABB authorized service personnel will be dispatched to be on site. The timing of site work must also be mutually agreed upon.



### Main features and key benefits

- Highest uptime and reliability by adequate preventive maintenance.
- Operational savings by remote monitoring, trouble shooting and repairs without site visit.
- Quick on-site repairs by remote diagnosis, modular design, and local spare parts availability.
- Repairs are exclusively performed by ABB certified personnel. This could be ABB's service organization, or the service organization selected by the customer after training and certification by ABB.
- Training modules are available for end-users, customer care personnel and service engineers. Trainings can be hosted at customer location on request.
- Clear communication and case tracking via ABB Web tools.
- Over-the-air software updates and upgrades will be installed on all chargers covered by a SLA.

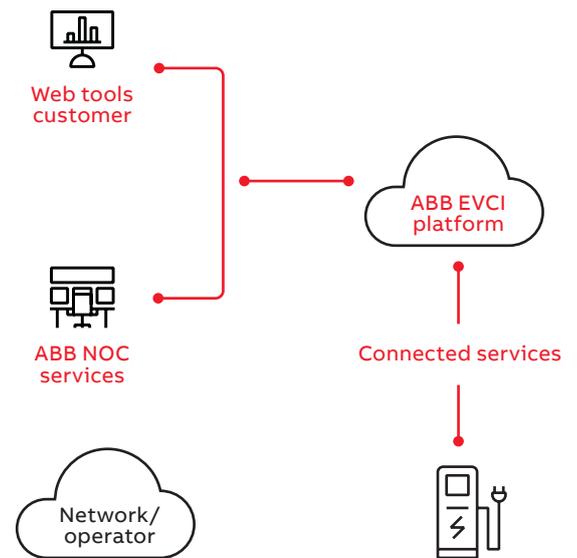


### Enabling your charging operation through intelligent connectivity, and Connected Services and Web Tools

Charger connectivity enables remote service and support. Through ABB's robust platform, our customers have 60% of their service cases solved remotely resulting in very short response times and substantially reducing downtime.

Connectivity allows remote software updates including charging protocols, user interface enhancements and back-end solutions for minimal field intervention as well as future-proofing software.

ABB Web Tools provide an online web interface that gives charging infrastructure operators and fleets with real-time status information and usage statistics on their equipment. Owners can gather detailed session statistics, configure chargers according to their preferences and obtain valuable insights through charger usage statistics. All charge session data can be exported and managed directly from this user-friendly application.



### Service options for every charging site

Charging infrastructure backed by a warranty must offer the highest utilization and lowest downtime. ABB's warranty services are enhanced by remote and real-time connectivity to ensure seamless operation and longest equipment lifetime.

When integrated to ABB Connected Services platform and under a Service level agreement, ABB can provide 24/7/365 network monitoring, remote updates, troubleshoot and onsite service within predefined response times.

# ABB Ability™ Connected Services

## Enabling your charging operation

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.

### Charger Connect

Charger Connect is the basis for all connected services. It gives access to the ABB Ability Connected Services Platform. Connected chargers receive over-the-air software updates, and are activated in ABB Service Tools. The connection to the chargers and the platform is monitored 24/7/365 by the Network Operation Center (NOC). And ABB service personnel can provide support if issues might arise.

### APIs for back office integration

ABB offers standards based APIs supporting smooth integration with back office systems, energy management solutions, and payment services.

### Available APIs:

- Open Charge Point Protocol (OCPP) 1.5 API to integrate with back office systems
- Service API with technical status data from the charger for simpler remote diagnostics, helping to improve availability of a charger and to better support EV drivers
- Basic Demand/Response API to dynamically manage the input power of a charger

ABB APIs are based on OCPP – the industry-wide accepted communication protocol – and therefore ensure seamless integration to customers' back office systems. All ABB APIs have openly available specifications.

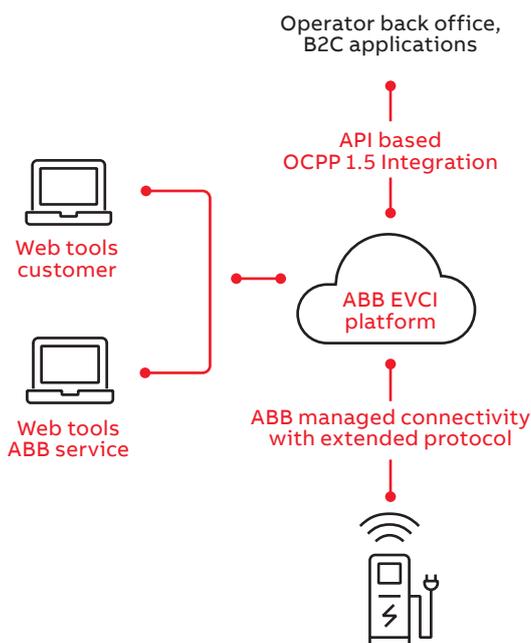
### Manage the charger connectivity yourself

The dual uplink connectivity concept provides a solution to directly integrate chargers with OCPP 1.6 based back office systems. 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.

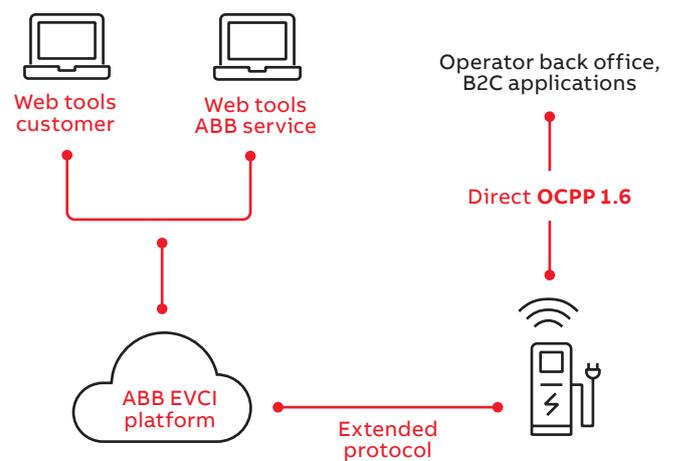
### Web tools

ABB offers advanced Web tools to operate and monitor chargers. Web tools allow to see the real-time status of a charger, to configure settings related to authentication, notification and case management and to obtain valuable insights into usage statistics. For chargers equipped with a credit card payment terminal, a Web tool is available to configure the payment device including pricing per session, currency and language. All data is available directly via an Internet browser and can be exported for further processing.

#### Digital integration - OCPP API Concept



#### Digital integration - Dual Uplink Concept



**Additional information**

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