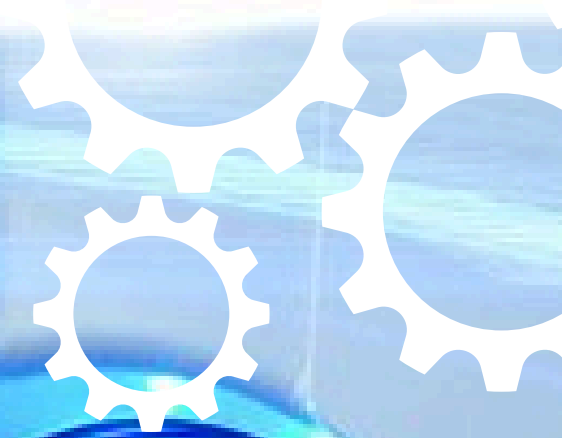


CONNECTING EVS TO THE CLOUD

How Innovation is Shaping the Next
Generation of Transportation.

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EV CONNECT

INTRODUCTION

At EV Connect, we empower the future of mobility by connecting electric vehicles to the cloud. Our cloud-based platform enables property developers, parking operators, fleets, and cities to deploy, manage, and scale intelligent EV charging infrastructure with ease.

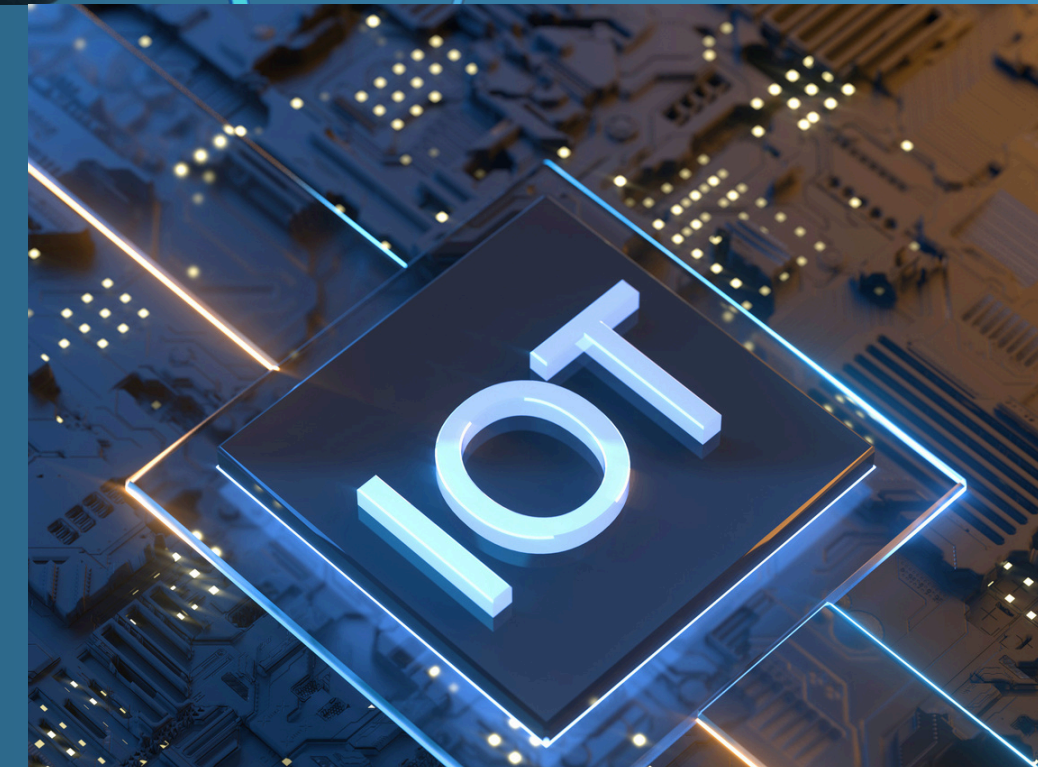
Built on secure, modular architecture, EV Connect provides full control of the charging experience — from installation to remote management and monetization — all while supporting global standards like OCPP and IEC 62443.



CLOUD

OCPP

100+
API FUNCTIONS





CORE PLATFORM FUNCTIONALITIES

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- ✓ **Real-Time Charging Management**
Monitor, control, and optimize every charging session from the cloud.
- ✓ **Energy Usage & Transaction Tracking**
Collect detailed charging data for analysis, reporting, and billing.
- ✓ **User Access & Authorization**
Certificate-based and RFID access control for owners, guests, and fleets.
- ✓ **Firmware & Device Lifecycle Management**
Remotely distribute updates and manage device groups via rolling deployments.
- ✓ **Intelligent Scheduling & Tariff Management**
Set night tariffs, define usage windows, and optimize for grid-friendly charging.
- ✓ **Seamless Mobile App Integration**
User-friendly onboarding, charger pairing, and session management.





EV CONNECT

MANUFACTURING - SECURE & SCALABLE PRODUCTION SETUP

✓ Pre-Whitelisting & QR Code Registration

Devices are pre-approved during manufacturing and registered using secure, unique QR codes linked to the charger and box.

✓ Certificate-Based Identity

Each charger generates a key pair and exchanges its public key with the EV Connect platform. This ensures a secure, tamper-proof identity from day one.

✓ MAC Address Assignment & Firmware Deployment

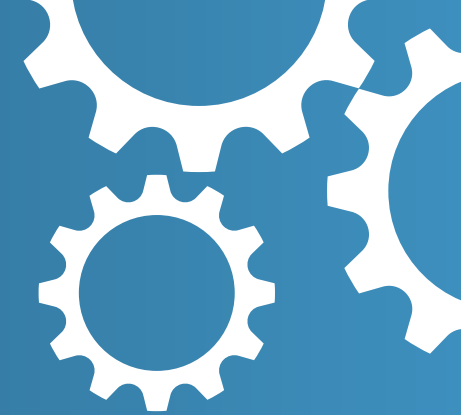
Devices receive a MAC address and the latest stable firmware image as part of the production process, preparing them for live deployment immediately upon installation.

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ONBOARDING – SEAMLESS, SECURE USER ACTIVATION



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Mobile App Pairing

Upon installation, users download the EV Connect mobile app and scan the charger and box QR codes to initiate pairing.



Multi-User Access

Owners can add co-owners and guests with granular access control, enabling flexible use cases for residential, commercial, or fleet environments.

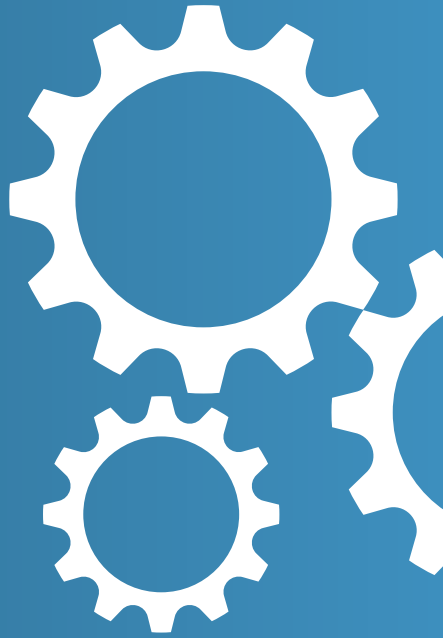


Secure Enrollment & Ownership Assignment

Devices are claimed and enrolled using certificate-based authentication, fully compliant with IEC 62443 standards for industrial cybersecurity.

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FIRMWARE MANAGEMENT – RELIABLE UPDATES AT SCALE



Channel & Hardware Grouping

Devices are categorized by hardware families and firmware channels (e.g., stable, beta) for targeted update rollouts.

Rolling Update Engine

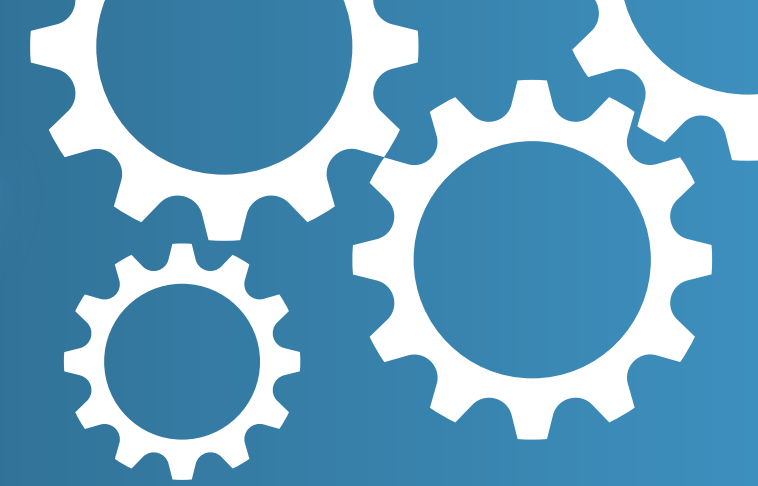
Updates are deployed using an A/B strategy that supports rollback and continuity. This ensures millions of chargers can be updated transparently without downtime.

OTA Delivery & Version Control

All firmware updates are signed, verified, and delivered over the air, with full audit logs and rollback options.



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CHARGING – REAL-TIME, MULTI MODE SESSIONS

✓ App-Based Charging

Users can initiate and monitor sessions via the EV Connect mobile app with full visibility into session progress and energy use.

✓ RFID Authentication

Registered RFID cards can start sessions where configured, offering contactless and fleet-friendly access.

✓ Guest Mode

Temporary access credentials can be issued to guest users, enabling flexible use cases for tenants, visitors, or shared charging stations.

✓ Data Logging & Meter Integration

Every session is logged with timestamp, energy consumption, and status updates — available for users and admins via dashboard or API.





SCHEDULER - SMART TARIFFING & ENERGY OPTIMIZATION



Dynamic Pricing Configuration

Operators can define standard, peak, and night tariffs, allowing price-based user behavior and grid-friendly scheduling.



Target-Based Charging

Users can set time-based, energy-based, or cost-based goals, and the system automatically schedules the session for maximum efficiency.



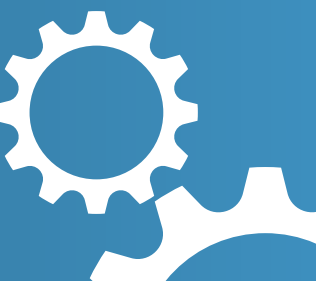
Scheduled Start & Stop

The platform sends commands to the charger to begin and end charging within defined windows – reducing load stress and leveraging off-peak rates.



Automatic Stop & Billing

When the charging goal or end time is reached, the session stops automatically. Billing data is immediately processed and made available via API or dashboard.



ARCHITECTURE



01

CLOUD-NATIVE & GLOBAL REACH

- Hosted on AWS with 300+ edge locations
- High availability, low latency architecture
- Built for hundreds of thousands of connected devices

02

MICROSERVICES ARCHITECTURE

- Modular services for charging, firmware, user access, and telemetry
- Independent scaling of components
- Easy to extend with new integrations

03

TECHNOLOGY STACK

- Backend: Java, SpringBoot, Docker
- Frontend: Angular
- Cloud Runtime: AWS-native, Kubernetes-compatible
- Storage & Streaming: PostgreSQL, Redis, Amazon Kinesis
- DevOps: GitLab CI/CD, Terraform, Infrastructure as Code

05

SECURITY-DRIVEN INFRASTRUCTURE

- Certificate-based mutual TLS
- Role-based access controls and ACL
- Scalable OAuth2 authentication with token lifecycle management

05

MODERN API DESIGN

- REST (Level 3 HATEOAS), WebSocket, and asynchronous APIs
- Designed for integration with smart buildings, fleet systems, and third-party services

STANDARDS



Cybersecurity & Compliance

- Designed in compliance with IEC 62443 – Cybersecurity standard for industrial automation
- End-to-end encryption for data in transit and at rest
- x.509 PKI for device identity and communication
- Secure firmware signing and controlled OTA updates

Authentication & Access


- OAuth2 for secure API access
- Role-based user permissions (owner, guest, admin)
- SSO compatibility (e.g., Keycloak, Cognito)

Charging Protocols & Interoperability


- Fully supports OCPP 1.6 and 2.0.1 message formats:
 - Start/Stop Transaction
 - Status Notifications
 - Meter Values
 - Firmware Management
 - Charging Profiles



THANK YOU

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