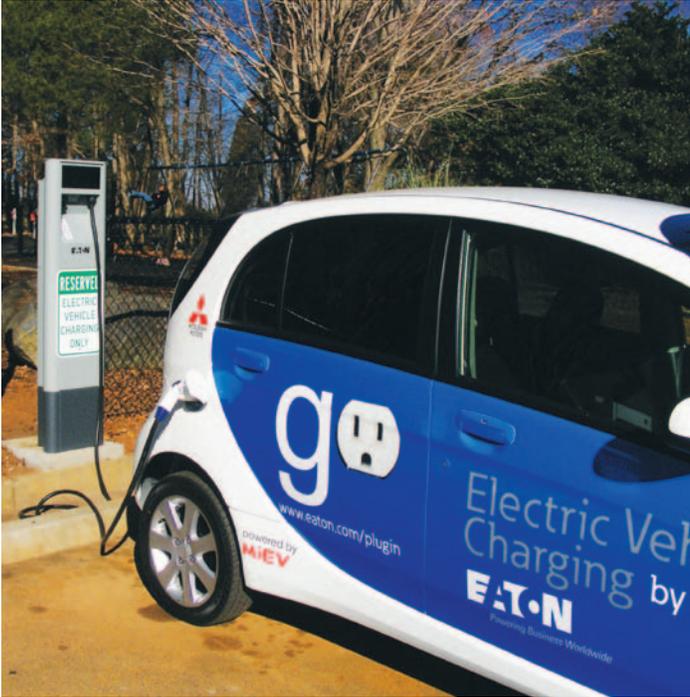# Eaton's Pow-R-Station Network Manager

Charging station infrastructure at your fingertips

Overview

As plug-in electric vehicles start hitting the road, EV infrastructure availability will become more prevalent. In these early stages of adoption, the need for charging stations will likely grow proportionally to the number of electric vehicles released to the road. The vast and far-reaching deployments of charging stations throughout the nation will require a comprehensive tool to manage that asset deployment.

While Eaton's Pow-R-Stations™ supply vehicles' connections to the grid, Eaton's Pow-R-Station Network Manager software captures and supplies the information that is critical for managing the charging, analyzing network performance and proactively maintaining the health of the assets. The Pow-R-Station Network Manager is significant for large-scale EVSE installations because connecting and managing infrastructure provides the visibility, control and efficiency that is vital for success.

Eaton's Pow-R-Station Network Manager is a hosted application for managing your charging station deployment and the associated data streams. Powered by GridPoint, Eaton's Network Manager collects, processes and secures the infrastructure information, saving time and money for owners and managers of charging stations through an easy-to-use, integrated energy management solution. Eaton's Pow-R-Station Network Manager provides the visibility and control of your charging station infrastructure to ensure availability and safety to your power consumers.

Manageability

At Eaton, we know that information is power. We designed the Pow-R-Station Network Manager to gather and analyze your infrastructure data to provide intuitive visualizations of your key performance indicators. The software also allows you to track energy, utilization and cost to enable operational confidence. The Pow-R-Station Network Manager simplifies the details of your network, providing easy-to-understand information so you can quickly view important measures and metrics. With the click of a mouse, you can access real-time information for any or all of your charging stations. Having this information at your fingertips enables you to make fully informed decisions in managing your EVSE network.

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Capabilities

The Pow-R-Station Network Manager software provides web-based portal access to a wide range of capabilities, including real-time monitoring, network provisioning, load management and reporting. By utilizing these tools to manage your network, the Pow-R-Station Network Manager allows you to increase system uptime, reduce energy costs and maximize the reliability of your charging stations.

With this unique tool, you can easily monitor and manage your multi-site deployment. The Pow-R-Station Network Manager allows you to:

• Manage multiple installations simultaneously

• React to and prioritize key alerts and events

• Quickly digest aggregate system performance

• Check the status of charging stations

• Manage and control the timing and pace of vehicle charging ❶

• Map charging station locations and statuses

Energy management

By setting parameters within which the charging stations operate—also known as "load shaping"—the fleet manager can manage the amount of current used during peak times defined by the utility, thus saving on cost. Using such parameters also allows the fleet manager to increase uptime and optimize the distribution of a charger.

Further, if an organization participates in a demand response program, the fleet manager can easily power down EVSE for set times for demand response events, allowing for even more savings.

Data storage and security

Data from the charging stations drives the entire management solution. The Network Manager software can capture the following data:

• EVSE state (idle, EV connected, EV charging, temporary fault and permanent fault)

• Last fault code (pilot error, ground fault, overcurrent, breakaway, maximum temporary faults and contactor fault)

• EVSE metadata (device code, hardware and software revisions, and boot modifications)

• EVSE configuration (Modbus® address, baud rate, voltage configuration, nameplate current, fault timeout, fault count and max fault count)

• Vehicle pilot voltage

• Ground fault current

• Charging current

• Temperature

• Last restart code (power up, software, wake up, low-voltage detect and internal error)

• Override current limits

• Estimated power and energy flow (based on available sensor data)

We are providing the most secure environment possible for customer data. All information transfer is secured with authenticated TLS1 / AES-128 connections. The data is stored and hosted in a SAS70-compliant data center.

Alarms and reporting

Network Manager software includes configurable alarm functionality that enables users to receive alerts via e-mail when certain trigger conditions occur within their deployment of charging stations. Additionally, Network Manager also provides a reporting framework that enables users to generate a full range of reports from template-driven summaries and focused reports to exports of interval, alarm, and Charge Detail Record data in CSV, XLS or PDF. To enable maximum flexibility in reporting, every report in the system is run against a user-configurable set of sites and dates. The Pow-R-Station Network Manager collects data and stores reports that show:

• EVSE performance

• Power consumption and utilization by aggregate, location or user

• Charging session details (such as: start date time, stop date time, duration, energy supplied, location of charging station and vehicle information)

System integration

To facilitate system extensibility, third-party integration, and custom user-interfaces and applications, most data and asset information is available via our public Application Programming Interface (API). The main categories for data access are:
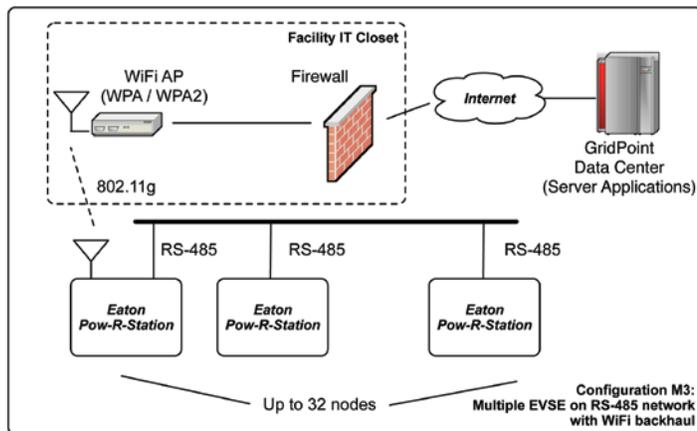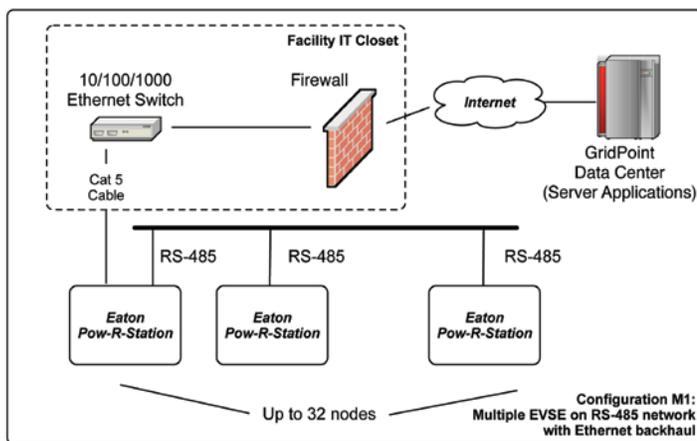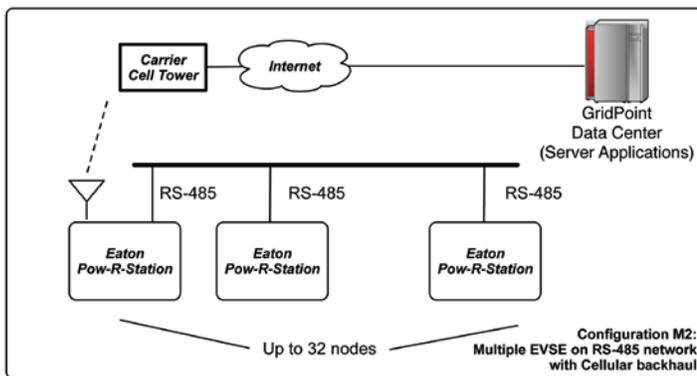
• Asset and site details

• Real-time status

• Interval (time-series) data

• Charge detail records

• Alarm detail records

❶ In districts that have time-of-use utility rates.
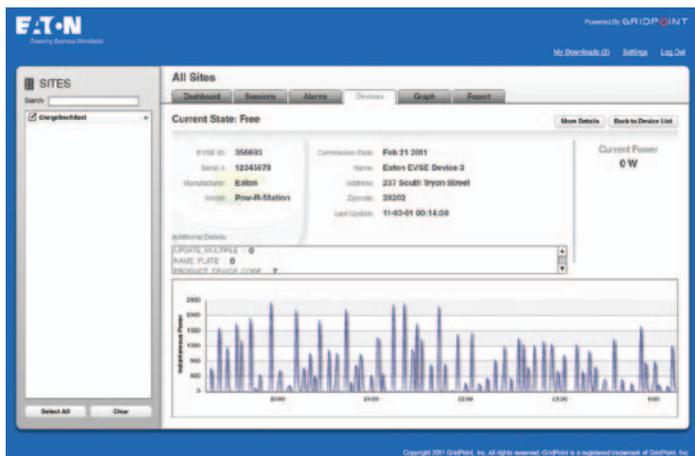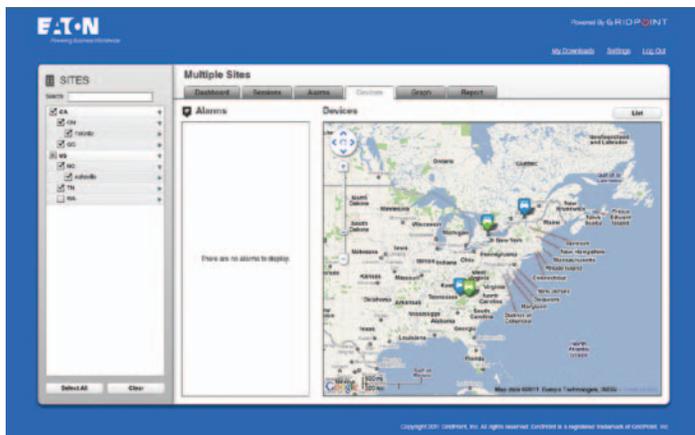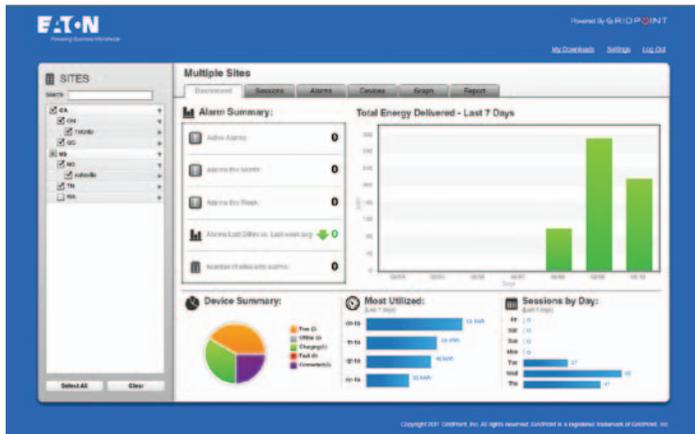
Network connectivity

Pow-R-Stations connect to GridPoint's servers when configured with a network controller that provides a standard hardwired ethernet connection or an optional Wi-Fi or cellular connection. The use of a single network controller on a local Modbus network enables connectivity for 31 additional Pow-R-Stations within 4000 feet. ❷

Configuration M2:
Multiple EVSE on RS-485 network with Cellular backhaul

Configuration M1:
Multiple EVSE on RS-485 network with Ethernet backhaul

Configuration M3:
Multiple EVSE on RS-485 network with WiFi backhaul

Network Manager access

Network Manager web-portal access begins with the foundational EVSE Management module and can be built upon with the optional User Authorization and Accounting and Enterprise Smart Charging modules to provide a customized solution.

EVSE Management

The foundation of the Network Manager charging infrastructure solution. Provides a complete set of functionality for managing EVSE provisioning details, securely collecting and warehousing data from each EVSE, monitoring each EVSE for real-time alert conditions, analyzing and summarizing data, and providing basic charging control for the EVSE network.

User Authorization and Accounting (User AAA)

Used in concert with the EVSE Management Module to enable the ability to collect and securely transport user authentication information including unique user IDs from pass cards, key fobs, customer loyalty cards, etc., providing secure access to the EVSE. Once transported to the server, the information is used to request validation from your user database. Authorization information is captured along with EVSE utilization details to enable billing and accounting activities by user. Authentication options on Pow-R-Station EVSE products may require the use of this module for the authorization processing.

Enterprise Smart Charging

Used in concert with the EVSE Management Module to enable control of the charging behavior of vehicles connected to a network of managed EVSEs. Specifically, this module enables the integration of a single-site EVSE deployment with a compliant power meter for managing demand charges. Details about a user's utility rate (such as Time of Use) can be used to limit energy flow during certain parts of the day. In addition to site integration, the module can execute several other charging strategies that help reduce vehicle charging costs.

Bundled Network Manager plans

EVSE Management	NMEVMXXXX1
EVSE Management + User AAA	NMEVMUAXX1
EVSE Management + Enterprise Smart Charging	NMEVMESXX1
EVSE Management + User AAA + Enterprise Smart Charging	NMEVMUAES1

Electric vehicle management solutions

Eaton is uniquely positioned to create a safe and reliable infrastructure that supports electric vehicle usage throughout North America. We have a strong network of engineers and service personnel, as well as a wide range of capabilities for auditing, implementing, monitoring (locally or remotely), maintaining and supporting charging sites and networks. We offer a full suite of flexible electric vehicle management solutions that can be bundled to meet the specific needs of fleet operators, institutions and the public sector. These solutions allow you to drive savings from improved energy management. We have numerous authentication partners and turnkey solutions for target segments. To find out more about how Eaton can help you manage your EV network, visit *eaton.com/plugin* or call us at *1-855-ETN-EVSE*.

❷ When RFID User reader option is included, a network controller is required in each EVSE.

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