



WIND RIVER EDGE MANAGEMENT SYSTEM

From real-time train tracking to managing energy use in buildings or optimizing traffic flows in smart cities, connected computing solutions are rolling out across many markets worldwide. Industrial automation, healthcare, energy, and transportation are all benefitting from the power of connected systems. This momentum toward the Internet of Things (IoT) offers the potential to make data more efficient, cut operational costs, reduce impact on the environment, improve customer satisfaction, and create new revenue streams.

As more and more connected devices are deployed, the ability to move data off the edge to a place where actionable decisions can be made becomes vital. Wind River® Edge Management System makes this possible. It connects machines and devices, managing and collecting machine-generated data and allowing customers to easily aggregate edge data to offer business intelligence that can be used to protect investments, generate new revenue streams, maximize existing infrastructure, and improve business processes.

Edge Management System is a cloud-based IoT platform that enables devices to securely connect to a centralized console, providing device management and solution extensibility. With the Edge Management System agent, Wind River has streamlined how you integrate a device into your IoT solution. This agent enables cloud connectivity to facilitate capabilities such as data capture, rules engine, configuration, file transfer, and more. It handles all the security around connectivity and data transfer, and provides services for managing the lifecycle of the device, simplifying provisioning, and lowering maintenance costs. The agent can support data analysis and responses on the device, allowing you to make time-critical decisions as close to the edge as needed and lower the amount of data you send over the network.

Leveraging the Edge Management System representational state transfer–conforming (RESTful) application programming interfaces (APIs), customers can quickly build vertical-specific IoT solutions and integrate disparate enterprise IT systems. The cloud-based middleware runs from the embedded device up through the cloud to reduce costs and time-to-market.

A pre-integrated technology stack from the device to the cloud that has been validated to work out of the box with complementary components, Edge Management System is integrated and validated with the Intel® IoT Gateway. In addition, the Edge Management System agent has been integrated with the Wind River portfolio of operating systems, including VxWorks® and Wind River Linux, to support a wide variety of hardware profiles. This combination offers companies the key building block to enable both the connectivity of legacy industrial devices and the next generation of IoT infrastructure.

KEY FEATURES

- **Device management:** Remote device management capabilities reduce service costs by enabling remote maintenance in addition to facilitating the creation of intelligent, rule-based systems.
- **Security:** Integrated security starts with trusted boot and continues through the chain of trust to protect both data at rest and data in motion. The integrated Edge Management System agent has the intelligence to ensure compatibility with security by orchestrating device manageability features with the device-side security features.
- **Telemetry and analytics:** Remote data capture is fundamental to IoT functionality. Sensor and system health data is the source of intelligence in an IoT deployment and is used to reduce operational expenses and enable innovative business models.

BENEFITS

Edge Management System is a horizontal platform that can connect devices in a broad variety of markets, with capabilities to connect things, manage devices, collect data, improve outcomes, and build custom applications.

Connect

- Middleware software and solutions securely connect devices and machines to the cloud and efficiently collect, process, transform, and transfer machine and sensor data to a remote server.
- The connectivity agent has been pre-integrated with the local operating environment to ensure a streamlined out-of-box experience.

Secure

- SSL encryption conceals data from unauthorized parties.
- State-of-the-art equipment, technology investments, and operational expertise ensure a secure and scalable on-demand infrastructure.
- An end-to-end customizable security strategy covers all levels, including network, application, user, and data security.
- Maintenance of compatibility with security packages ensures the safe deployment of a large scale of IoT devices while leveraging rich IoT capabilities.

Manage

- The Edge Management System rules engine allows customers to create business logic and intelligence that drives device lifecycle management, and to define the parameters and actions associated with device provisioning, management, and decommissioning.
- Data and message-processing capabilities and a rules engine enable action on the data, data normalization, and efficient storage of historical machine or sensor data and files.
- Device management capabilities enable you to configure, monitor, and manage communication devices.
- Hardware systems and administration tools required to install, configure, and operationally manage IoT solutions are included. These often include system-monitoring and performance-tuning tools, and are often provided as a cloud service.

Build

- Pre-integrated application development support integrates machine data and message-driven readings, locations, and alarms into systems and applications.
- Application extensibility provides for agile handling of unique business requirements in rapidly changing environments.

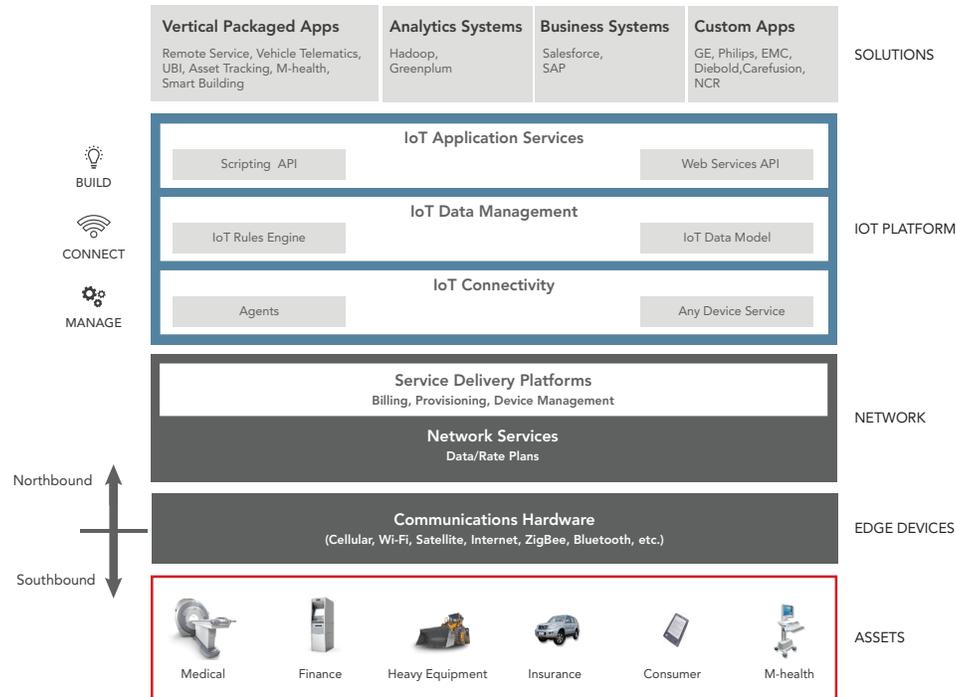


Figure 1: Wind River Edge Management System

USE CASES

Predictive Maintenance

In addition to performing automated tasks as directed, connected intelligent devices feed telemetry, sensor, and performance data into central control systems, making predictive maintenance possible. By managing and analyzing this large amount of data, machine-related decisions can be made on the condition of equipment in the field through gateways and alert operators when a problem needs to be addressed, eliminating the time and labor costs associated with scheduled inspections and preventive maintenance.

Market Applications

Energy

Wind turbines each have hundreds of sensors, so maintenance tasks are very expensive. With Edge Management System, energy users can measure the system health of the wind turbine with sensor readings to determine when parts need to be replaced in order to

prevent downtime. Predictive maintenance allows users to predict when breakage is imminent and proactively repair equipment efficiently by better managing repair teams instead of reactively making repairs. With edge intelligence, turbine sensors can detect wind shifts and operate more efficiently. Upwind turbines can detect changes in wind direction and then relay that information to downwind turbines, which can be rotated in anticipation of those wind shifts.

Transportation

Transportation systems rely on data and automated decisions to ensure safe and predictable service, as well as economic viability for operators. With Edge Management System, operators of buses, heavy fleet vehicles, and more can measure driving behaviors and driver performance, monitor vehicle usage and fuel efficiency, and realize new efficiencies in routing, maintenance, and staffing.

WIND RIVER PROFESSIONAL SERVICES

Wind River Professional Services offers a variety of services to meet your IoT needs. Our offerings span across the entire project lifecycle, including architecture, design, development, porting, integration, and maintenance services; and we leverage our state-of-the-art platform simulation and test tools to accelerate deliverables and provide valuable reporting and documentation. Our global professional services organization provides flexible engagement options for consulting, training, and support that will meet your project resourcing requirements and budget. For more information, visit www.windriver.com/services.

WIND RIVER EDUCATION SERVICES

Wind River Education Services offers flexible training options to meet your business and learning needs, including public and private courses, custom courses, and on-demand learning. For more information, visit www.windriver.com/education.

HOW TO PURCHASE

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