

Connected Rental Equipment Solution

Optimizing operations with cellular-enabled IoT solutions

MESHSYSTEMS™



Microsoft

Agenda

1. The inherent risks of dispersed equipment
2. Get greater insights using cellular connectivity
3. Connected Rental Equipment and Microsoft Azure: An end-to-end solution
4. Introducing Azure IoT Central
5. Applications and opportunities

Unplanned downtime: A risky variable

70%

Companies aren't fully aware when their equipment is due for maintenance, upgrade, or replacement

82%

Experienced unplanned downtime over the past three years (costing as much as \$260,000/hour)

80%

Unable to calculate true downtime costs correctly

Challenges to monitoring rented equipment

Geographic distribution of equipment and loss of control

Once rented equipment is taken offsite, fleet owners must trust that customers will take care of the machinery, maintain and operate it appropriately, and return it in good standing. Too often, equipment is misused or mistreated and returned in a broken state or not returned at all—leading to operational inefficiencies at best—ruined or lost equipment at worst.

Connectivity

Hard-wired network connections aren't always practical when assets are deployed to offsite locations. And provisioning cellular network solutions can prove a challenging and time-consuming obstacle to wireless IoT implementation.

Security

IoT solutions present points of vulnerability—from the devices themselves to data in transit and storage in the cloud. Enterprise companies must choose trusted partners to protect their networks end to end.

Capture data at-the-edge, transfer it securely through cellular networks, and leverage the power of Azure IoT Central to connect, monitor, and centrally manage the equipment in your rental fleet to optimize business operations.



Realize ROI
faster



Integrate business
systems



Enhance security
and scalability

Connected Rental Equipment and Azure IoT Central

Wireless, end-to-end monitoring of rental fleet equipment

Edge connectivity
Connect a host of assets with minimal configuration common protocols and enablement hardware

Cellular enablement
Data is optimized at the gateway, and transmitted efficiently through secure cellular connectivity to the cloud

Powerful cloud tools
Simply manage your IoT data in the cloud; no programming required

Turn-key analytics
Customize existing templates to quickly deliver actionable insights

Streamlined operations
Fully integrate insights to trigger actions within existing business systems



Connecting data. Delivering actionable insights.



Quickly connect rental fleet equipment to unlock valuable information for your business

ACCESS CURRENT DATA, ANYWHERE

Gain access to up-to-date data from geographically-dispersed assets using CAN bus, Modbus, Bluetooth, and UART protocols; the latest location-aware LTE cellular technology; and battery, line-powered, or hybrid-powered options.

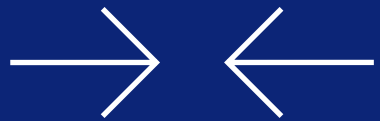
EMPLOY FLEXIBLE SOLUTIONS, FAST

Build enablement hardware into new equipment or connect them to existing assets or sensors—with minimal configuration—to measure everything from location, temperature, and battery life to shock, vibration, or asset orientation.

SIMPLIFY ADOPTION

Direct integration into Azure IoT Central enables simple implementation, operations, and lifecycle maintenance. And we handle provisioning with cellular networks, so you don't have to.





Turn insights into action
by integrating with
existing systems

MONITOR PERFORMANCE IN REAL TIME

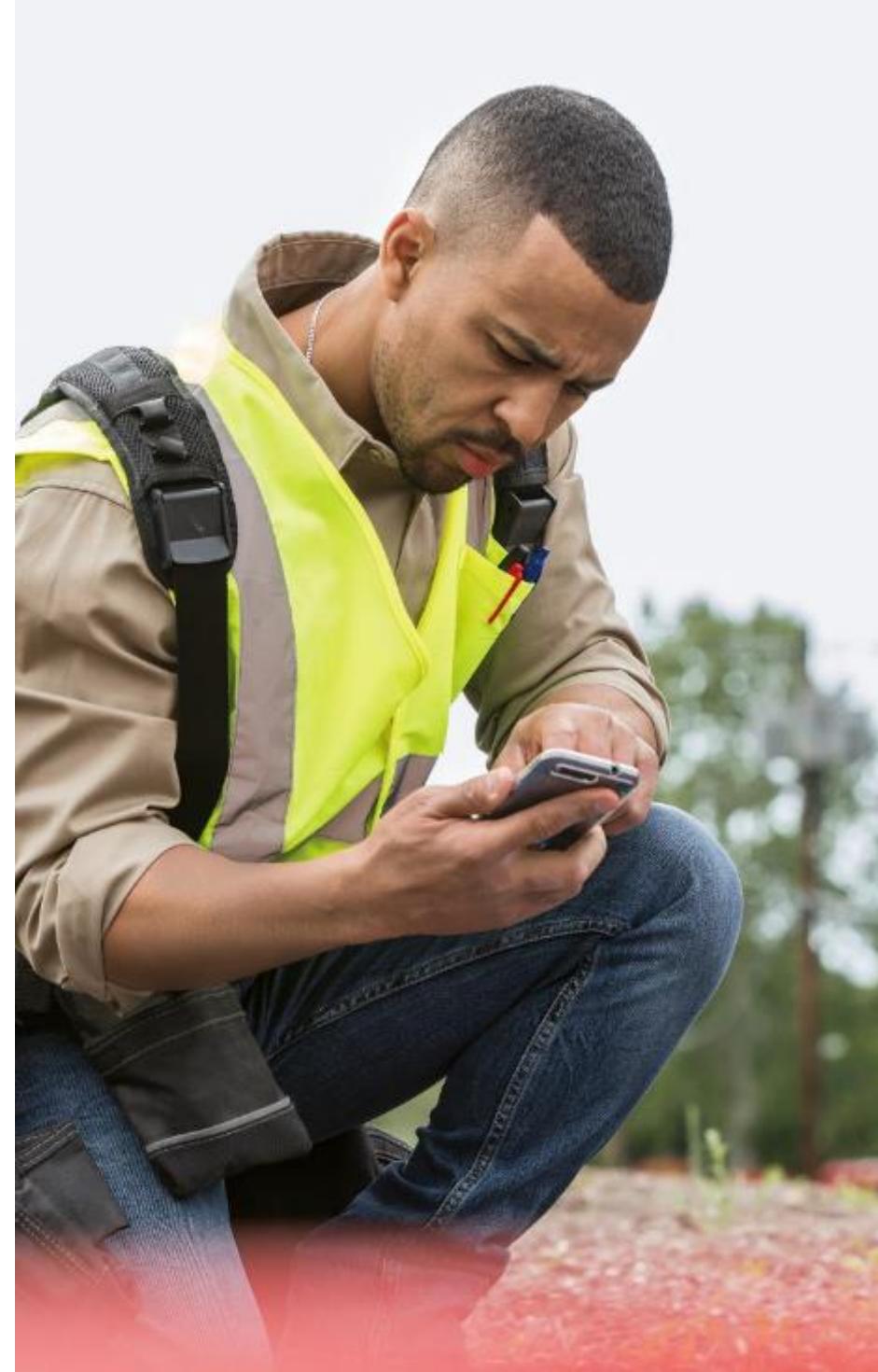
Real-time equipment telemetry helps you assess whether customers are taking care of your equipment, identify problems, and respond quickly to anomalies. Real-time geo-location information is useful in case of loss or theft.

INTEGRATE SYSTEMS WITH EASE

Connect Azure IoT Central to other applications and services (ERP, CRM) using simple webhooks notifications to trigger automatic responses to problems in the field.

STREAMLINE OPERATIONS

Integrating insights with existing systems to manage inventory and maintenance can reduce downtime, reduce human touchpoint requirements, enable preventative and predictive maintenance strategies, and drive cost savings.





Connect your assets
at any scale without
worrying about
infrastructure or security

BRING YOUR OWN NETWORK

The Connected Rental Equipment Solution operates outside your network with service directly to Azure IoT Central to protect you from security vulnerabilities.

RELY ON WORLD-CLASS SECURITY

End-to-end IoT security features are built into the managed cloud solution from the ground up.

ADOPT SOLUTIONS THAT SCALE

Powerful cellular devices coupled with scalable cloud bring limitless possibilities to support the changing needs of your business.



Powered by Azure IoT Central

Experience the simplicity of SaaS for IoT



Fast and easy
set-up



Build without cloud
development
expertise



Connect assets on
the edge at any
scale



Best-in-class
security and
enterprise-grade
services



Full integration
into business
systems

Enablement hardware

Retrofit and connect gateway and sensors to existing assets

LTE Cat 1 / Cat M1 cellular with internal antennas

BLE radio for ancillary wireless sensors and asset ID beacons

Suitable for retrofit or newly-manufactured units

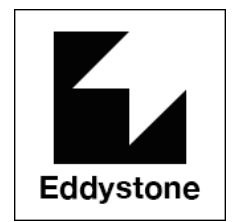


Internal GPS, environmental sensors, impact, vibration, tilt, etc.


Internal rechargeable battery for in-transit visibility





Ancillary wireless sensors and ID beacons




Rental fleet monitoring

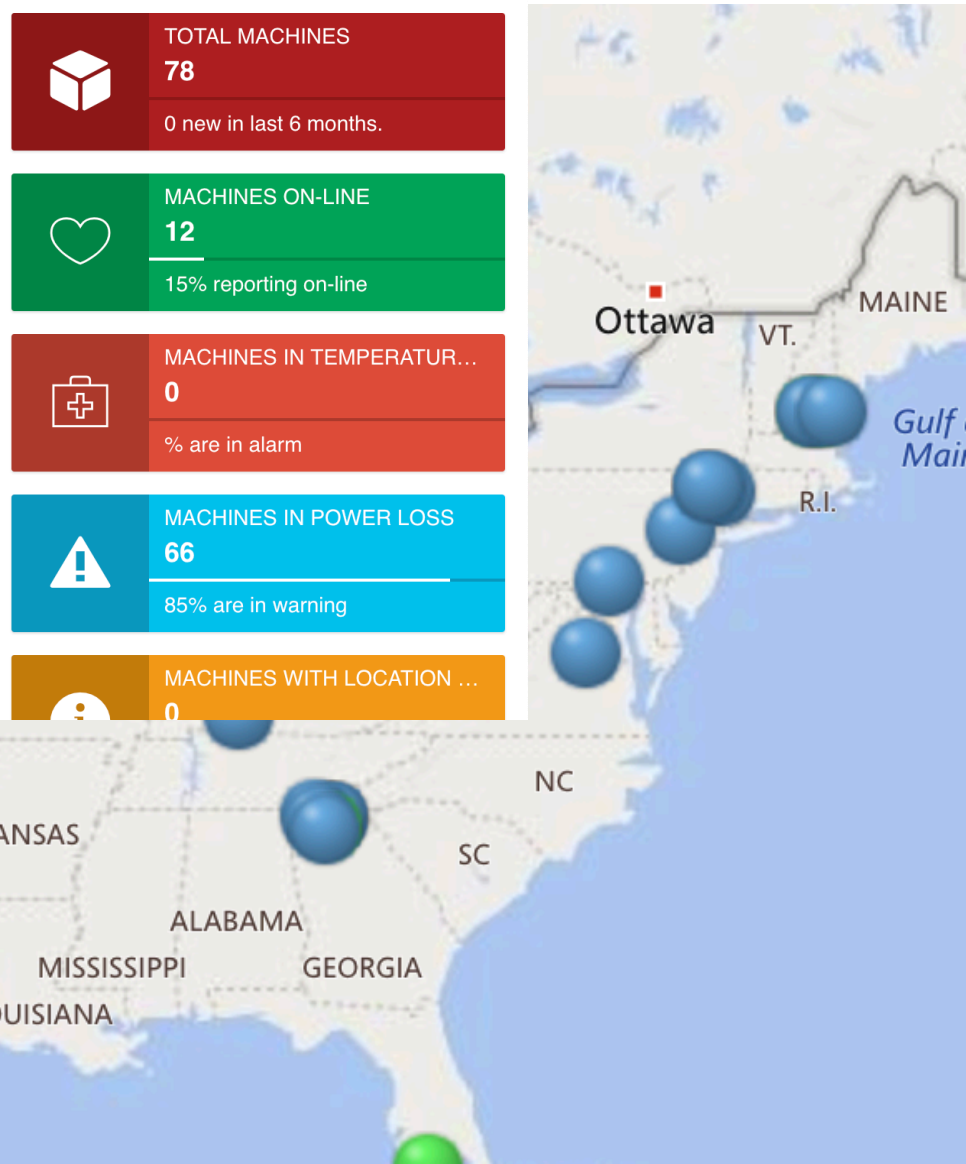
 TOTAL MACHINES
78
0 new in last 6 months.

 MACHINES ON-LINE
12
15% reporting on-line

 MACHINES IN TEMPERATUR...
0
% are in alarm

 MACHINES IN POWER LOSS
66
85% are in warning

 MACHINES WITH LOCATION ...
0



The owner of a major fleet of mobile HVAC units installed the Connected Rental Equipment Solutions' cellular-enabled, low voltage sensors on units to help track locations and service requirements of rented equipment—improving asset oversight and utilization while simplifying their processes. Predictive analytics enable the company to forecast maintenance needs and optimize operations.

TRACK LOCATION

Multi-constellation GNSS chips in enablement hardware helps monitor where assets are at all times.

MONITOR SERVICE NEEDS

Accelerometers, temperature and humidity sensors determine if units are operating within specifications.

APPLY ANALYTICS

Insights from data analytics in the cloud help the company reduce downtime and enables predictive maintenance strategies.

PROVIDE A SCALABLE SOLUTION

A small capital investment enabled this company to immediately see benefits from sensing and monitoring capabilities.



Next steps

- We'll connect you with the Connected Rental Equipment Solution team to find out how you can adopt solutions to monitor your assets: sales@mesh-systems.com
- Learn more about the Connected Rental Equipment Solution at mesh-systems.com
- Learn more about Azure IoT Central at AzureIoTCentral.com

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Remote Mgmt of Rented Heavy Equipment

Mesh Systems Reference Architecture



Edge Intelligence
Our solution uses an integrated sensor box that is easy to attach to any piece of equipment to add remote monitoring capabilities.

Cloud Connection
The built-in gateway in the sensor box processes telemetry, tests data for event conditions and generates alarms to send to the cloud.

Cloud Services
Microsoft's Azure cloud and Azure IoT Central provide a secure, resilient, scalable platform for your data and our solution components.

Cloud Intelligence
Events reported to the cloud are sent to an engine that runs a standard set of actions to analyze and respond to event conditions.

Mgmt Experience
Your team uses Azure IoT Central and PowerBI to review events and alerts and make decisions to optimize equipment operations.

