

# azeti Internet of Things Solution powered by the Intel® IoT Gateway

## Injecting Data Intelligence to Boost Business Performance

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Intel and azeti deliver full remote visibility and control of operational equipment across multiple industries

### Extracting More Value from Existing Infrastructures

Organizations today are challenged to do more with less. Generate more sales, please more customers, manage more stock, go to market faster; all while cutting costs, reducing energy, minimizing downtime and eliminating inefficiencies. As the international marketplace becomes more competitive, the companies that meet these demands will be best placed to succeed.

For many well-established companies, competing in today's fast-paced commercial landscape often means making fundamental changes to business processes and infrastructure. However, large changes often bring large challenges, and large price tags.

As a result, demand is growing for ways to enhance business efficiencies and drive productivity without the need to invest heavily in new resources. Organizations are seeking ways to make their existing infrastructure work harder, and this is where the Internet of Things (IoT) has the potential to make a difference. By capturing and analyzing data about everything from air conditioning units to specialized factory machinery, organizations can optimize their use, perform more timely maintenance and work smarter, faster

and more effectively. However, as connected devices become ubiquitous (Gartner predicts 25 billion by 2020'), the challenge of managing them will only become more urgent.

Recognizing the dual challenge of embracing the potential of IoT while making it manageable, scalable and affordable, azeti set itself the goal of empowering organizations to capture intelligence and value from their existing infrastructures. And do it without having to invest in costly, slow-to-implement tailored IoT devices.

### The Practical Potential of IoT

In a typical industrial environment managers need to monitor a host of environmental and security details to ensure the machinery keeps running safely. At the same time they must keep an eye out for any opportunities to save energy or improve operational efficiencies. The health of all equipment – from the smallest battery to the largest machine – must be checked regularly, and fuel consumption must be carefully controlled.

Each of these priorities traditionally requires a lot of manual effort, which can be time-consuming and can keep human resources away from more value-adding tasks. This challenge is exacerbated when operating remote

## Horizontal solution offers scalability, security and flexibility to meet multiple operational challenges

sites, which may be difficult to reach, and this can impact company finances. For example, in the oil and gas industry, an estimated 77 percent of the profit margin is made at the well, equating to up to \$50,000 revenue per hour. If a part fails in a business-critical but remote location like this, millions of dollars of potential revenue could be lost in the time it takes to send an engineer out to assess and resolve the issue.

By adding sensors to equipment in these situations and then collating and analyzing the data they capture using a local gateway device rather than sending it all to the cloud, azeti's vision is to enable organizations to draw actionable insights about their resources faster and more efficiently, thereby reducing maintenance costs, maintaining security and boosting operational efficiencies. By retrofitting sensors to legacy assets like air conditioning units and then connecting them using azeti software, the aim is to create greater visibility, control and automation.

### azeti and Intel Enable Smarter Operations with IoT

Through collaboration at the Intel® IoT Ignition Lab in Munich, azeti Networks AG and Intel have developed a solution that enables organizations to integrate IoT capabilities into their existing work environments.

Sensor devices can be added to any legacy hardware to measure key variables, such as temperature, power supply or airflow. The data gathered by these sensors is then sent to a nearby Intel® IoT Gateway, powered by Intel® Quark™ processors or Intel® Atom™ processors and running on a Wind River Linux\* Intelligent Device Platform architecture.

The data is processed and filtered at the gateway, using azeti's remote asset management software, which includes

protocol conversion capabilities to connect directly to the sensors, or to I/O modules attached to sensors.

The software provides users with a rule engine (configurable through a cloud-based control panel), which enables them to set thresholds for automated actions to be taken. The collected sensor values are then compared against the thresholds so alerts can be issued or actions taken if a threshold is crossed. For example, a rule could be set to monitor the temperature of a warehouse and turn on the air conditioning any time it rises above thirty degree Celsius, or to send an alert to the network operations center to assign an engineer to check the cause.

Organizations can configure or update a large-scale deployment of gateway devices at once, using the cloud-based control panel, enabling them to implement new modules when required, with modules available to manage fuel, batteries, doors, generators and cooling units. Mechanisms are also available, for example enabling users to configure all the sensors across their network and then push those parameters down to the gateways.

### Intelligence at the Edge

By maintaining intelligence at the edge – i.e. running analytics at the gateway, before data gets to the cloud – the azeti solution optimizes reaction time, minimizing bandwidth and processing requirements, keeping IT costs down and reducing delays due to local data processing at the edge, which are kept under 20 milliseconds (according to azeti internal testing).

Having this logic run on the gateway itself, which also offers storage capacity for up to one year's worth of data, removes the need for constant connectivity. This in turn enables faster decision making. Data is analyzed and actions or alerts triggered in the time it

would take a purely cloud-based model to send all data to the central platform for analysis. In this way, organizations can respond quicker to any issues or opportunities, or even pre-empt them. For example, the performance of different devices within a fleet can be compared and if a piece of factory equipment is starting to run slowly or a diesel tank is under half-full, an alert can be triggered for an employee to address the issue and prevent it becoming a problem.

The data that is fed up to the cloud for more detailed analysis can be selected or filtered to optimize efficiency. For instance, data from 20 different temperature sensors within a warehouse can be taken, and the average reading calculated at the gateway, which then sends just the average number to the cloud. Internal testing by azeti found this cut data traffic by up to 98 percent.

### Added Value with Intel® Architecture

Based on Intel® architecture, the solution offers features designed to help reduce time-to-market and maximize investment for the future:

- **Scalability:** With the ability to remotely update and configure thousands of devices (shown through internal testing) using the MQTT\* publish-subscribe protocol, the azeti solution, built on Intel architecture, enables rapid, seamless growth

in line with business demands. A typical implementation enabled the transmission of over 40,000 sensor messages per second in just one cloud instance.

- **Manageability:** The solution's cloud-based control panel, which runs on the Wind River Helix\* Device Cloud, allows easy configuration as well as smooth integration with existing management software. The ease with which the sensors and gateways of the azeti/Intel solution can be retro-fitted to existing hardware means it can be easily incorporated into any industry environment.

- **Security:** Built-in Intel® Security provides a secure root of trust, creating an end-to-end security chain from the device hardware, through the data itself and the communication networks it travels through. Security alerts are fully integrated to detect tampering even on the software level, while each device is TLS encrypted to protect data delivery from the edge to the cloud. Edge devices authenticate via username and password, helping to prevent malicious devices from being brought online. Data held in azeti's cloud platform is separated per organization, with privileges set on a per-user basis.

### Horizontal Applications

The azeti/Intel solution is a horizontal platform that is designed to support multiple use cases across a range of industries, including utilities, healthcare

and manufacturing. These use cases include:

- **Remote Monitoring & Control:** Connect legacy devices and local sensors to build a central overview of critical parameters across multiple sites. Identify trends and control local assets with increased automation. Carry out performance analytics to spot and prevent issues or opportunities for optimization.

- **Energy Management:** Achieve full visibility of energy consumption, and detect deviations from average consumption levels across single and multi-tenant environments. Operate remote or automated switching of devices and power sources.

- **Maintenance Optimization:** Determine the status or condition of equipment and optimize maintenance schedules with predictive analytics. Carry out remote troubleshooting or assessment of maintenance tasks.

- **Access Management:** Set up role- and time-based access rights, enabling keyless access with pinpads to track entry and leave times of employees. Detect and prevent unauthorized access.

- **Security and Surveillance:** Identify theft, tampering and vandalism using cameras, motion sensors and door monitors. Ensure a safe work environment for all employees and take immediate action in case of an emergency.

For more information on Intel's Internet of Things solutions visit [www.intel.com/iot](http://www.intel.com/iot)  
For more information on azeti remote asset management software visit [www.azeti.net](http://www.azeti.net)



<sup>1</sup> Gartner Says 4.9 Billion Connected "Things" Will Be in Use in 2015, <http://www.gartner.com/newsroom/id/2905717>

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