Transform Your Business with Smart IoT Solutions and Lenovo's Solutions Management Platform on AWS

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Internet of Things (IoT) technologies measure physical environmental parameters and convert them into a digital signal for better interpretation, either on edge or in the cloud.

Such digital signals are used to automate the workflow, provide a better business understanding, or improve customer experience without any human intervention. IoT use cases that leverage these digital signals range from counting retail store visitors and automating inventory management to a touchless self-checkout process.

The touchless self-checkout process, for example, requires integration of several IoT solutions, such as contactless payment, touchless inventory, and computer vision, to provide the best customer experience.

Most business modernization initiatives require integration of several IoT devices and solutions. These integrations require businesses to select, validate, adopt, and manage various IoT solutions.

Managing solutions from various vendors with different security architecture, network topology, ways of managing the device lifecycle, and even approaches to post-deployment services can prove to be a significant challenge.

Enterprise customers need a marketplace experience to address the complexity of integration IoT solutions and to provide a single point of contact for solution validation, deployment, and post-deployment services.

Lenovo Solutions Management Platform hosted on Amazon Web Services (AWS), provides the marketplace experience for enterprise customers to procure validated solutions. It empowers solution providers (ISVs) to commercialize and scale their products across the globe.

In this post we will learn what the Lenovo Solutions Management Platform is, how it can help you, and how it was built to monitor your solutions. Customers and ISVs can monitor millions of devices and have confidence their solutions will be monitored and supported.

Solution Overview

Lenovo Solutions Management Platform provides managed services to proactively monitor and manage the solutions deployed at customer sites. This solution is an outcome of industry knowledge, experience, and deep research of industry needs.

The Solutions Management Platform provides a user-friendly experience for service providers to onboard and configure solutions, customers, and devices. It's a reliable, secure platform hosted in multiple AWS regions including Great China Region, Asia Pacific, EMEA, and North America.
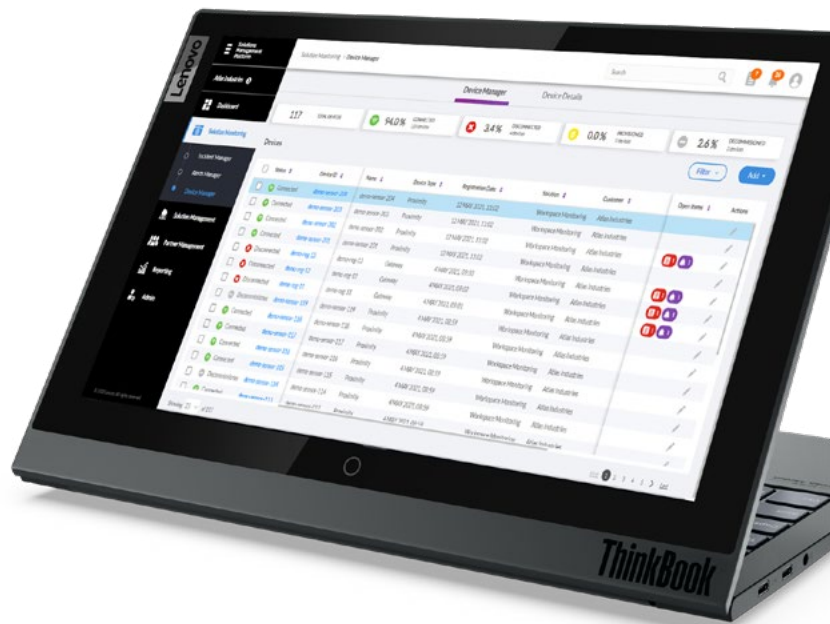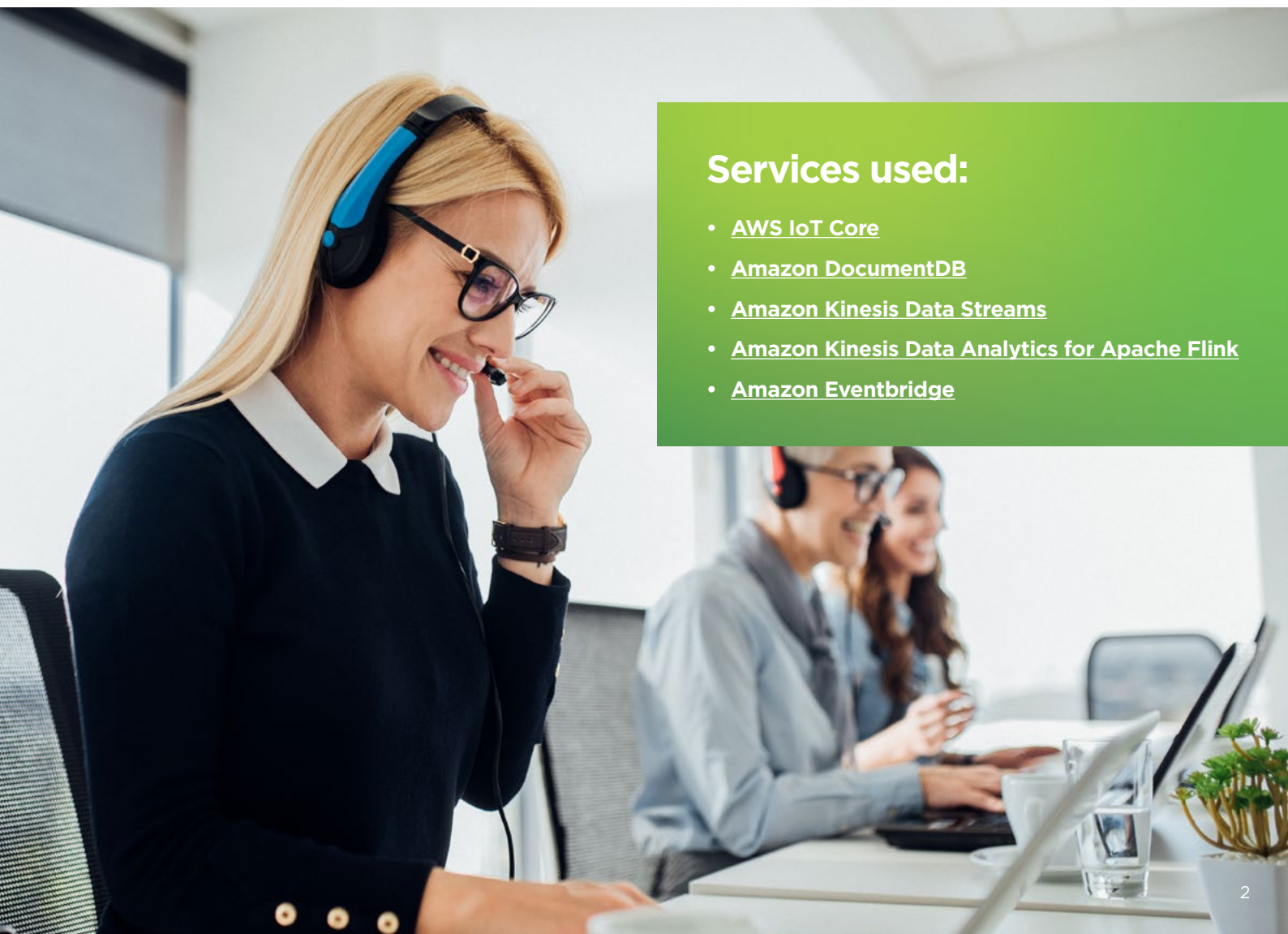
Figure 1 – Lenovo Solutions Mangement Platform Device Administration.

Services used:

- **AWS IoT Core**
- **Amazon DocumentDB**
- **Amazon Kinesis Data Streams**
- **Amazon Kinesis Data Analytics for Apache Flink**
- **Amazon Eventbridge**

The following high-level architecture diagram represents the telemetry data ingestion architecture of the Lenovo Solutions Management Platform.

Lenovo Solutions Management Platform leverage Amazon EventBridge to integrate with vendor/partner AWS accounts.

A public EventBridge endpoint is provided with all required credentials to securely integrate with a vendor's AWS accounts. This endpoint will be used by the Solutions Management Platform to subscribe to the data about IoT devices, their configuration, and telemetry stream.
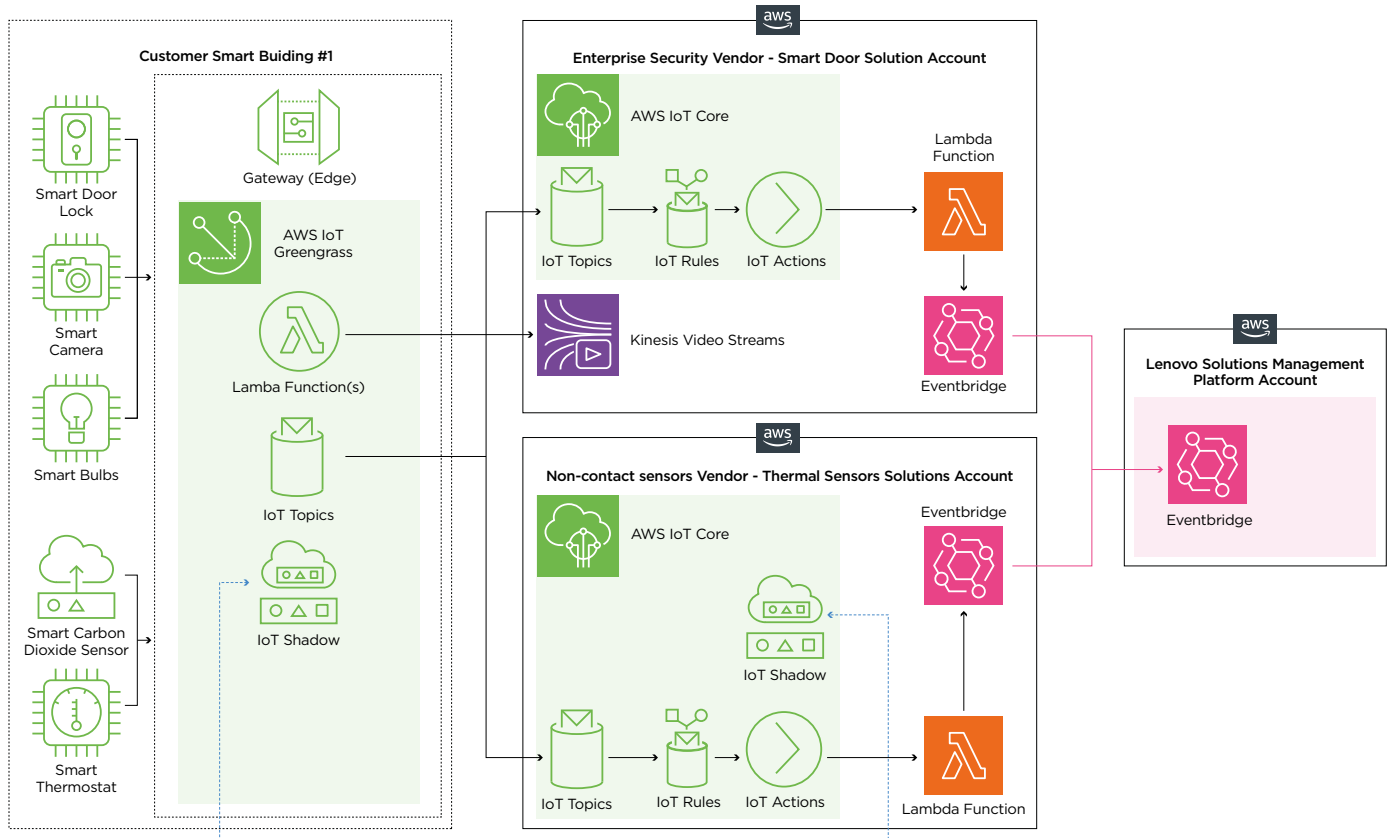
Figure 2 – Typical AWS IoT Customer integration with Lenovo Solutions Management Platform

Getting Started

These steps are required for integrating existing AWS IoT Core solutions with the Lenovo Solutions Management Platform:

- Contact the Lenovo platform team at devopssmp@lenovo.com to gather the required credentials and installation script to onboard your solution.

- Lenovo platform team will onboard the solutions and provide the customized installation script with access rights to publish data on the Lenovo EventBridge.

- Execute installation script in the vendor's AWS account to create a local EventBridge and connect it with the Lenovo EventBridge. The script will also deploy an AWS Lambda function to forward the telemetry data from the vendor's AWS IoT Core to the vendor's EventBridge.

- Provide a list of devices to be provisioned in the Lenovo Solutions Management Platform for monitoring purposes. The platform will only monitor and manage the provisioned device and ignore all other devices data & information.

The Lenovo platform team will connect with you to provide step-by-step instructions after receiving your inputs.

Real-Time Analytics and Alerting

The Lenovo Solutions Management Platform will monitor device and ISV cloud solution health. The platform detects service and device anomalies by capturing and analyzing telemetry data in near real-time.

Anomaly detection and the comprehensive rules engine is written in Java using Apache Flink managed by Amazon Kinesis Data Analytics.
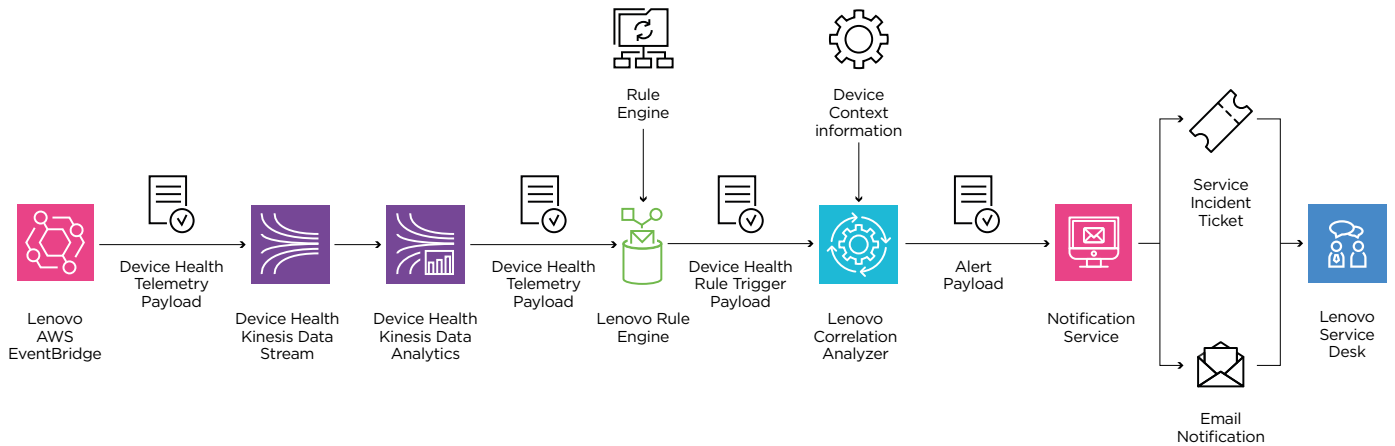
Figure 3 – Anomaly detection with the Lenovo Solutions Management Platform.

Anomaly detection is configured using rules that can be a simple logical condition or more complex, requiring data aggregation windows.

Lenovo's rule engine allows for the creation of dynamic rules on aggregator windows of various sizes, and supports various statistical aggregate functions. The platform also provides composite rules through intelligent correlation analyzer to deduce the relationship between alerts. This increases the precision of the service incident tickets.

Such correlations help service personnel to analyze the root cause via differentiating a device failure from the network and infrastructure problem. Lenovo's platform notifies the service team via auto-generating a service ticket.

Customer Success Story:

RELOGIX

Relogix is a Lenovo trusted solution partner that provides smart, flexible workplace solutions. It is one of the solutions currently validated and verified by the Lenovo Industrial Solution team and integrated with the Lenovo Solutions Management Platform.

With a combined 25 years of domain expertise, state-of-the-art occupancy sensors, and the Conexus Workplace Insights Platform, Relogix helps transform global real estate portfolios, corporate strategy insights, and improve employee experience, productivity, and well-being while optimizing global spend on CRE portfolios.

Relogix combines data analytics with a variety of sensors, such as occupancy sensors and people counters, which interact with a local gateway to forward on workspace or conference room occupancy and floor-level occupancy to services hosted in the cloud.

The data is analyzed by Conexus and delivered in an easy-to-understand dashboard that provides business insights about workspace utilization and helps employee experience overall.

The Lenovo Solutions Management Platform provides managed services by continuous monitoring of these devices and sensors deployed across various geographic locations, including North America, the United Kingdom, and APAC.

> "We know what it's like to feel like you have a blind spot when it comes to understanding how your space is used, and we're committed to making workplace analytics easier than ever," says Andrew Miller, CEO at Relogix. "Through our global partnership with Lenovo, we're able to make the challenging work of today's corporate real estate leaders that much easier."

You can learn more about the AWS, Lenovo, and Relogix solution by watching this pre recorded webinar.

Conclusion

The Lenovo Solutions Management Platform brings together validated ISV solutions on AWS to provide a marketplace experience for customers trying to embrace IoT solutions.

The platform helps ISVs to globally scale their operations and accelerate time to market by providing a holistic service management experience.

Smarter technology for all

Lenovo