
aws
intel
AWS and Intel
Working Together to Enable IoT Solution Development and Deployment

Contents

INTRO

INTERNET OF THINGS (IOT) CONTINUES TO BE THE NEXT BIG THING IN TECHNOLOGY

IoT—a network of physical objects containing embedded technologies for connecting and exchanging data—is growing fast, with Gartner predicting there will be 20 billion internet-connected things by 2020.[1] Whether these things are streetlights, home appliances, cars, or medical devices, it is clear that IoT is impacting the economy by delivering near-real-time actionable business insights and transforming the way enterprises and individuals do business.

1 Leading the IoT: Gartner Insights on How to Lead in a Connected World https://www.gartner.com/imagesrv/books/iot/iotEbook_digital.pdf

IOT IS AT THE CENTER OF OUR CHANGING WORLD:

200%

Growth of information-based products and services by 2020 compared with traditional products and services[2]

66%

Cities that have invested in some type of smart-city technology[3]

62%

Developers who deem IoT "very important" to digital strategies[4]

2 IDC, "Digital Transformation Predictions." https://www.idc.com/getdoc.jsp?containerId=US43193617
3 NLC, "Cities and Innovation Economy: Perceptions of Local Leaders." http://www.nlc.org/resource/cities-and-innovation-economy-perceptions-of-local-leaders
4 "Leading the IoT: Gartner Insights on How to Lead in a Connected World."

IDEALLY, AN END-TO-END IT SOLUTION WOULD HELP YOUR BUSINESS GET THE MOST OUT OF IOT.

However, creating such a solution can be challenging, considering the number of components involved: edge devices and sensors, communication protocols, cloud infrastructure, applications, end-to-end security, and management systems.

Amazon Web Services (AWS) and Intel are working closely to offer a joint reference architecture for IoT. Through this partnership, which combines Intel® platforms and AWS cloud services, enterprises can streamline and accelerate IoT development.

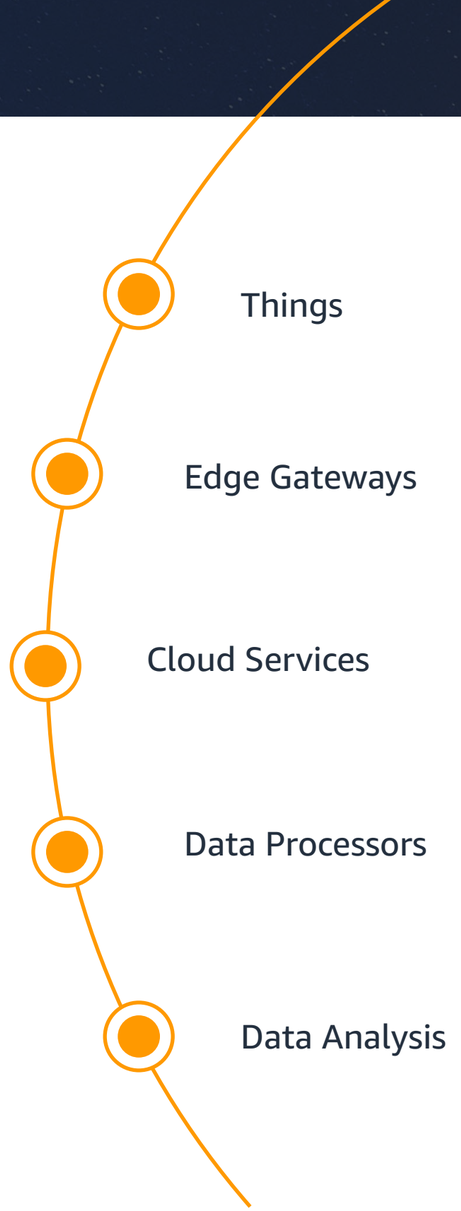
If you know the cloud and want to enter the world of IoT, you can take advantage of Intel's robust AWS cloud integration and deep involvement in creating an ecosystem to enable cloud IoT solutions. At the same time, if your expertise is Intel technology, and you want to provide additional services in the cloud, AWS integrates with Intel hardware and software and offers an extensive list of services to enable the Internet of Things, from edge device processing to ingestion to artificial intelligence (AI) and machine learning (ML) analytics. Additionally, if you want to explore IoT and need a place to start, AWS and Intel offer market-ready solutions to fast-track solution deployment.

Finally, if you have a unique business challenge or other need, look no further. Through this strong partnership, AWS and Intel can help you build and use IoT technologies that increase efficiency, reduce risk and time to deploy, lower costs, and increase your revenue.

IOT: HOW IT WORKS

Data is being generated all around us by millions of connected things. Making sense of this data—in an economical and practical way—can transform your business in ways never before possible, helping you work more efficiently, make better decisions in real time, and create more value for your customers and employees.

With our wide range of computing options, AWS and Intel make it possible to get the right level of performance and intelligence exactly where you need it, so you can do more at the edge and everywhere else. With AWS and Intel, you get intelligence that puts your data to work.



Things

The “things” are objects equipped with sensors for collecting data that is sent across a network, along with actuators that enable the things to produce actions such as turning lights on and off.

Edge Gateways

IoT gateways connect things with the cloud, making the transfer of data possible. Gateways typically process and filter data before it is sent to the cloud.

Cloud Services

A range of cloud services enable secure data transmission between gateways and cloud servers. These services are compatible with different protocols.

Data Processors

IoT processors help ease the transition of incoming data from the cloud to a data lake and analytical applications.

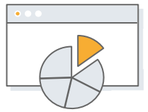
Data Analysis

IoT data generated by connected devices is stored as big data in a data lake and can then be sent to a data warehouse for extraction and analysis.

AWS: ENABLING AN END-TO-END IOT SOLUTION

Because IoT solutions can be complex and multidimensional, AWS has removed the complexity of implementing IoT into the business. AWS provides a full range of core services and edge-based software designed to ease the development of an end-to-end IoT solution. AWS IoT services provide secure, bidirectional communication between internet-connected devices and the AWS Cloud. AWS helps you take full advantage of IoT by providing edge-based software including Amazon FreeRTOS and AWS IoT Greengrass. These technologies help you securely connect your assets, gather data, and take intelligent actions locally, even when internet connectivity is down.

AWS also offers cloud-based services including AWS IoT Core, IoT Device Management, and IoT Device Defender, giving customers the ability to quickly onboard their large and diverse fleets of devices, maintain fleet health, and keep their fleets secure.



In addition, AWS helps you get the most out of your IoT data through services like AWS IoT Analytics. IoT Analytics also integrates seamlessly with Amazon QuickSight for visualization and the Amazon SageMaker platform that hosts machine learning modules.

Relying on AWS IoT tecchnologies, customers are performing predictive maintenance and remote patient monitoring, connecting buildings and systems, maintaining device fleets, monitoring energy efficiency, and safeguarding their manufacturing facilities.

THE ROLE OF INTEL IN IOT: POWERFUL DATA. INTELLIGENT BUSINESS. EXPONENTIAL VALUE.

You can accelerate business transformation by harnessing the power of data generated by connected things. Intel helps you put data to work—at the edge and in the cloud—so your business can achieve greater efficiency, make better decisions, and create more value for your customers and employees.

When your business is powered by Intel technologies that have been purpose-built for IoT, you'll get optimized performance at every point, practical ways to use artificial intelligence, broad connectivity support, and a built-in foundation of security to help protect your data and systems. Proven, market-ready solutions from Intel's partner ecosystem can reduce the time, cost, and risk of IoT deployments, so you can turn the potential of data into intelligent business now.

AWS AND INTEL: A SYNERGISTIC PARTNERSHIP

AWS and Intel have chosen to partner to offer a joint reference architecture for IoT platforms. The two organizations have collaborated closely to create this architecture, which offers a foundation for optimizing cloud-connected devices that seamlessly and securely connect devices to the cloud. Intel and AWS are evolving and optimizing this roadmap to address the key challenges that customers are facing when implementing IoT, including interoperability, security, and connectivity.

CASE STUDY:

THE MICHAEL J. FOX FOUNDATION

As part of a research initiative to evaluate the use of wearable technology to measure and track Parkinson's disease symptoms, the Michael J. Fox Foundation partnered with AWS and Intel to create a big data analytics platform to support research projects.

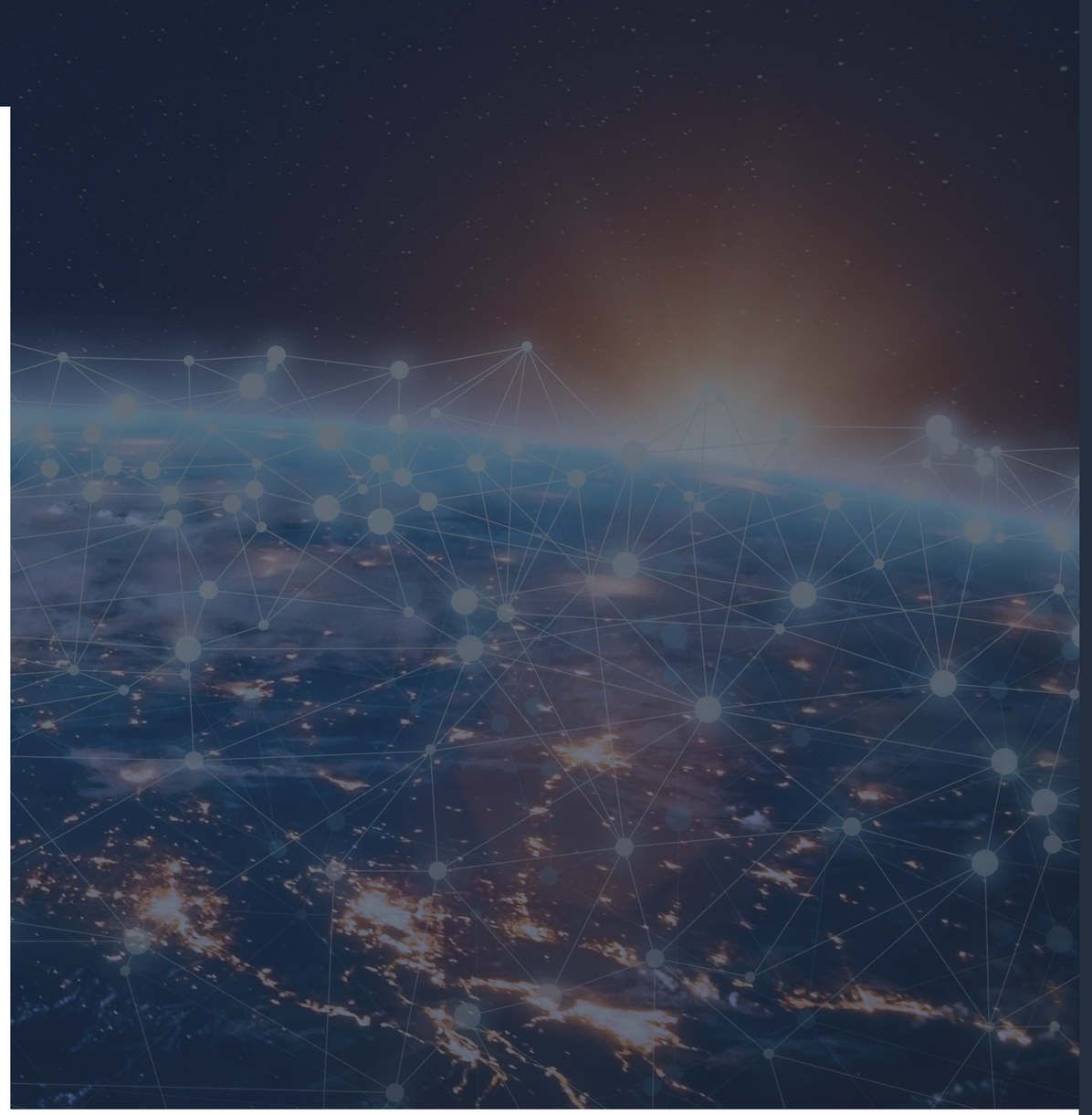
Hosted on AWS infrastructure, the solution uses various scalable big data and IoT technologies to collect, process, and store large streams of anonymized data from the smartphones and wearable devices of study participants. The collected data is hosted on AWS and made available to Parkinson's researchers around the world via the Intel platform. Using AWS and Intel, the Foundation now has a robust technology platform to run more effective research studies.

ACCELERATING THE IOT DEVELOPMENT LIFECYCLE

AWS and Intel enable faster IoT solution development by providing pre-integrated, fully tested components available as a development kit. These kits are focused technology offerings that solve a class of market problems, have been deployed and tested in the field, provide bundled hardware and software, and have been validated by both Intel and AWS for end-to-end interoperability. The technology is scalable and designed to grow with customer requirements, enabling accelerated development and time-to-market. As a result, you can lead your industry without the guesswork and gain a competitive edge with proven solutions built for the IoT.

SCALABILITY, AGILITY, AND RELIABILITY

In developing the joint IoT reference architecture, Intel and AWS have relied on core AWS tenets: scalability, agility, reliability, and security. By taking advantage of these tenets, enterprises using the joint platform can create agile, reliable, and secure solutions that scale to meet expected device growth.



BETTER TOGETHER

AWS and Intel work together seamlessly to offer an IoT architecture that takes advantage of the strengths of both organizations. This “better together” approach uses Intel IoT hardware to provide a secure foundation for connecting and managing devices, and it capitalizes on AWS IoT services to enable the connection of devices to other AWS services.

The Intel-AWS solution starts at the device edge, with Intel IoT Gateways and an ecosystem of compatible sensors and devices. These devices include software that is built with the AWS IoT Device SDK for easy connection to AWS IoT and AWS endpoints. Customers can then build software to connect multiple devices with a full range of AWS services.

UNLOCK POTENTIAL WITH PROVEN SOLUTIONS THAT DELIVER GREATER AGILITY.

Using the joint AWS-Intel architecture, Intel has created a series of IoT RFP Ready Kit (RRK) solutions, designed to drive rapid prototyping and scaling to production. These RRKs are focused technology offerings that have been deployed and tested in the field and give customers bundled hardware, software, and support. Each kit is scalable and designed to grow with your requirements and to accelerate development and time-to-market.

AWS-Intel IoT RRK solutions can be used to enable solutions in verticals such as:

Smart Cities	Solutions are designed for security and surveillance, smart lighting, connected transportation, and air quality management.
Smart Energy	Solutions such as smart lighting help create more-efficient energy management.
Asset Tracking	Solutions for retail and transportation include point of sale (POS) and mobile POS, inventory management, fleet management, and logistics.
Industrial IoT	Solutions enable factories to enhance collaboration between machines, people, and enterprise systems. AWS-Intel RRK solutions can be used for manufacturing, building management, agriculture, and energy.
Healthcare	Solutions include medical and remote health management.
Oil & Gas	Solutions help increase connectivity and enable real-time situational awareness.

AWS AND INTEL USE CASES

THE FOLLOWING ARE EXAMPLES OF SOLUTIONS THAT TAKE ADVANTAGE OF THE AWS-INTEL PARTNERSHIP AND JOINT IOT ARCHITECTURE:

1. AWS DeepLens
2. Vision Dev Kits
3. Vertical-Specific Solutions
4. Precision Agriculture Kit by Atomiton on Amazon
5. OpenBlocks IoT VX1 Kit by Plat'Home

1

AWS DEEPLENS

AWS DeepLens is a deep learning–enabled, fully programmable video camera that brings deep-learning technology into the real world. AWS DeepLens incorporates a fully programmable HD video camera with onboard compute capable of running sophisticated deep-learning computer vision models in real time. The device can run more than 100 billion deep-learning operations per second, and it comes with pretrained models that give developers with no machine-learning experience the ability to run their first deep-learning model in under 10 minutes. Designed in close partnership with Intel, AWS DeepLens optimizes deep-learning models to run faster on Intel processors. AWS DeepLens uses Intel Atom® silicon and the Intel AI inference engine OpenVINO™ (Open Visual Inference & Neural Network Optimization) to accelerate and optimize the function of the solution.

2

VISION DEV KITS

Get integrated hardware and software products specially designed to support IoT. An example of the Intel OEM/ODM ecosystem in action is AAEON, an Intel OEM that adopted the Intel OpenVINO toolkit. This toolkit enables users to speed development of high-performance computer vision applications that use deep learning–inference capabilities. AAEON offers an OpenVINO vision accelerator kit and IoT gateway hardware that help developers jump-start computer vision deployments via pre-integrated offerings that support OpenVINO. As a result, developers can more quickly build and deploy computer vision solutions. Because Intel and AAEON have already identified and packaged the hardware and validated software, developers simply need to add business logic on top of the framework. AWS is currently working to validate OpenVINO running on AWS IoT Greengrass to ensure a seamless user experience.

VERTICAL-SPECIFIC SOLUTIONS

The AWS-Intel reference architecture offers comprehensive capabilities that can also support the requirements of specific verticals. One example is retail, where the online shopping market generates $7 billion in annual revenue.

Transformational retail is built on Intel and AWS IoT, helping customers reach new levels of relevant personalization and efficiency. Intel and AWS help customers make sense of data across responsive, transactional, and immersive retail experiences. We combine intelligence at the edge with cloud capabilities to collect and process data quickly and securely—and provide rich insights you can use immediately in the AWS Cloud. This empowers you to create highly curated experiences, improve store operations and supply chain efficiencies, and help customers get what they want, where they want it, with less friction.

Intel and AWS technologies and solutions are leading retailers through a digital transformation that will drive sales and cut costs. Our solutions are also simplifying IT management by helping you consolidate many systems into one. From intelligent sensors that track inventory in real time to digital signs that customize messages based on the audience, Intel and AWS are collaborating to uncover a new world of possibilities that will reimagine retail. To take advantage of this opportunity, retail customers can build smart vending machines, asset-tracking systems, and other solutions based on ready-to-go hardware and software from Intel, AAEON, and AWS.

4

PRECISION AGRICULTURE KIT BY ATOMITON ON AMAZON

Intel and AWS IoT enhance collaboration between machines, people, and enterprise systems—from the field to the supply chain and everything in between. Intel and AWS architecture, reference designs, IoT technologies, and ecosystem components with built-in security help optimize agricultural processes and operations, boost productivity, increase worker safety, and generate analytics-based insights. AWS and Intel technologies also help reduce the number of systems needed to perform a set of functions, reducing capital and operational expenses while simplifying system management.

Intel partner Atomiton developed the Precision Agriculture Kit, which enables historical and real-time data analysis of soil moisture content. Using an Intel IoT Gateway for data aggregation and AWS IoT services, the kit gives customers actionable insights to optimize crop yields and reduce water usage.

5

OPENBLOCKS IOT VX1 KIT BY PLAT'HOME

This kit provides indoor and outdoor location-tracking and remote management capabilities for equipment and facilities. Positioning is tracked by beacons; the AI layer in the gateway optimizes the received beacon data and sends it to the IoT cloud service for analytics.

Intel makes it possible for technology providers to place the right silicon exactly where you need it for the optimal combination of performance per dollar, per watt. Intel architecture offers a computing option for every point, including:

- Flexible FPGAs
- Purpose-built accelerators like Intel® Movidius™
- Vision processing units (VPUs),
- Power-efficient Intel Atom® processors,
- Performance-heavy Intel® Xeon® processors.

This gives customers powerful flexibility and the best results.

AWS IOT SERVICES

AWS IOT SERVICES INCLUDE:

- AWS IoT Core
- AWS IoT Greengrass
- Amazon FreeRTOS
- AWS IoT Device SDKs
- AWS IoT Analytics
- AWS IoT Things Graph
- AWS IoT SiteWise
- AWS IoT Events
- AWS IoT Device Defender
- AWS IoT Device Management

AWS IOT CORE

AWS IoT Core is a managed cloud service that enables connected devices to easily, securely interact with cloud applications and other IoT devices. Using AWS IoT Core, you can securely connect devices to the AWS Cloud and to other devices through protocols such as HTTP, WebSockets, and MQTT. Additionally, AWS IoT Core supports other industry-standard and custom protocols.

AWS IoT Core can support billions of devices and trillions of messages, reliably and securely processing and routing those messages to AWS endpoints and other devices. Applications on AWS IoT Core can constantly track and communicate with devices even when they are not connected.

AWS IoT Core in Action: Pentair

Pentair provides filtration systems equipped with sensors to fish farms and large industrial brewing customers. Its filtration systems send data to AWS IoT Core, helping the company make decisions in near-real time that affect the health of devices and the health of fish, leading to better yields and preventing the spread of disease while cutting operational costs.

AWS IOT GREENGRASS

AWS IoT Greengrass seamlessly extends AWS to edge devices so they can act locally on the data they generate, while still using the cloud for management, analytics, and durable storage. With AWS IoT Greengrass, connected devices can run AWS Lambda functions, execute predictions based on machine-learning models, keep device data in sync, and communicate with other devices securely—even when not connected to the internet. With AWS IoT Greengrass, you can use familiar languages and programming models to create and test your device software in the cloud, and then deploy it to your devices. AWS IoT Greengrass can be programmed to filter device data and transmit only necessary information back to the cloud.

AWS IoT Greengrass Connectors

You can connect to third-party applications, on-premises software, and AWS services out of the box with AWS IoT Greengrass Connectors. Connectors also jump-start device onboarding with prebuilt protocol adapter integrations and allow you to streamline authentication via integration with AWS Secrets Manager. With AWS IoT Greengrass Connectors, you can discover and import, configure, and deploy applications and services at the edge without the need to understand different device protocols, manage credentials, or interact with external APIs. You can also simply reuse common business logic from one AWS IoT Greengrass device to another.

AWS IoT Greengrass Hardware Security Integration

AWS IoT Greengrass offers customers the option to store their private key on a hardware-secure element. You can store sensitive device information at the edge with AWS IoT Greengrass Secrets Manager and encrypt your secrets using private keys for root-of-trust security.

AWS IoT Greengrass in Action: Enel

Enel, a global energy company, is building AWS IoT Greengrass–enabled industrial gateways for power-generation sites, where AWS IoT Greengrass will allow it to process and act on energy data.

Intel makes it easier to use IoT solutions through popular AWS Cloud services, offering support for AWS IoT Greengrass and other services.

AMAZON FREERTOS

While AWS IoT Greengrass uses gateways, Amazon FreeRTOS (a:FreeRTOS) is an operating system for microcontrollers (MCUs)—single chips containing simple processors that are found in devices such as sensors, appliances, fitness trackers, cars, and industrial automation. Microcontrollers have limited compute power and memory capacity and often run operating systems lacking built-in functionality to connect to local networks or the cloud, which makes the development of IoT applications a challenge. Amazon FreeRTOS addresses that challenge by providing both the core operating system (to run the edge device) and software libraries that enable secure connection to the cloud. Amazon FreeRTOS makes it easy for you to program, deploy, secure, connect, and manage small, low-power edge devices. It is based on the FreeRTOS kernel, a popular open-source operating system for microcontrollers.

AWS IOT DEVICE SDKS

The AWS IoT Device SDKs can help you quickly connect your devices to AWS IoT. These SDKs feature open-source libraries, developer guides, and porting guides so that you can build innovative IoT products or solutions on your choice of hardware platforms. They can be used on the edge, in the cloud, and on edge devices that cannot support AWS IoT Greengrass.

AWS IoT Device SDKs include:

- AWS Mobile SDK for Android
- AWS IoT Arduino Yún SDK
- AWS IoT Device SDK for Embedded C
- AWS IoT Device SDK for C++
- AWS Mobile SDK for iOS
- AWS IoT Device SDK for Java
- AWS IoT Device SDK for JavaScript
- AWS IoT Device SDK for Python

AWS IOT ANALYTICS

AWS IoT Analytics is a fully managed service that enables you to run and operationalize sophisticated analytics on massive volumes of IoT data—without having to worry about the cost and complexity of building an IoT analytics platform. AWS IoT Analytics automates each step required to analyze data from IoT devices. The service filters, transforms, and enriches IoT data and then stores that data in a time-series data store for analysis. You can analyze the data by running ad hoc or scheduled queries using a built-in SQL query engine, or you can perform more complex analytics and machine-learning inference on the data. AWS IoT Analytics also simplifies machine-learning development through prebuilt models for common IoT use cases.

AWS IoT Analytics in Action: Valmet

Valmet, which produces complex manufacturing equipment for the pulp and paper industries, is building a new solution to enable paper mill operators to view equipment and process data during production runs. AWS IoT Analytics is at the heart of the solution, training ML models for paper-quality forecasting. As a result, Valmet can combine historical models of equipment performance with live data from current operations to gain insights that help the company learn how to make paper better and stronger.

AWS IOT THINGS GRAPH

IoT applications are built today using a variety of devices and web services to automate tasks for a wide range of use cases, such as smart homes, industrial automation, and energy management. Because there aren't any widely adopted standards, it's difficult for developers to get devices from multiple manufacturers to connect to each other as well as with web services. This forces developers to write lots of code to wire together all of the devices and web services they need for their IoT application. AWS IoT Things Graph is a service that provides a visual drag-and-drop interface for connecting and coordinating devices and web services, so you can build IoT applications quickly. For example, in a commercial agriculture application, you can define interactions between humidity, temperature, and sprinkler sensors with weather data services in the cloud to automate watering. You represent devices and services using prebuilt reusable components, called models, that hide low-level details, such as protocols and interfaces, and are easy to integrate to create sophisticated workflows.

AWS IOT SITEWISE

AWS IoT SiteWise is a managed service that makes it easy to collect and organize data from industrial equipment at scale. You can easily monitor equipment across your industrial facilities to identify waste, such as breakdown of equipment and processes, production inefficiencies, and defects in products. Today, getting performance metrics from industrial equipment is tough because data is often locked into proprietary on-premises data stores and typically requires specialized expertise to retrieve it and put it in a format that is useful for searching and analysis. IoT SiteWise simplifies this process by providing software running on a gateway that resides in your facilities and automates the process of collecting and organizing industrial equipment data. This gateway securely connects to your on-premises data servers, collects data, and sends the data to the AWS Cloud. You can run the IoT SiteWise software on an AWS Snowball Edge gateway or install the IoT SiteWise software on popular third-party industrial gateways. These gateways are specifically designed for industrial environments that are likely already in your facilities connecting your industrial equipment.

AWS IOT EVENTS

AWS IoT Events is a fully managed IoT service that makes it easy to detect and respond to events from IoT sensors and applications. Before AWS IoT Events, you had to build costly, custom applications to collect data, apply decision logic to detect an event, and then trigger another application to react to the event. Using AWS IoT Events, it's simple to detect events across thousands of IoT sensors sending different telemetry data and hundreds of equipment management applications. You simply select the relevant data sources to ingest, define the logic for each event using simple if-then-else statements, and select the alert or custom action to trigger when an event occurs. AWS IoT Events continuously monitors data from multiple IoT sensors and applications, and it integrates with other services, such as AWS IoT Core and AWS IoT Analytics, to enable early detection and unique insights into events. AWS IoT Events automatically triggers alerts and actions in response to events based on the logic you define.

AWS IOT DEVICE DEFENDER

AWS IoT Device Defender is a fully managed service that helps you secure a fleet of IoT devices. It continuously audits IoT configurations to ensure they follow security best practices. AWS IoT Device Defender makes it easy to maintain and enforce IoT configurations such as ensuring device identity, authenticating and authorizing devices, and encrypting device data. The service alerts you if there are any gaps in your IoT configuration that might create a security risk—for instance, identity certificates being shared across multiple devices.

AWS IOT DEVICE MANAGEMENT

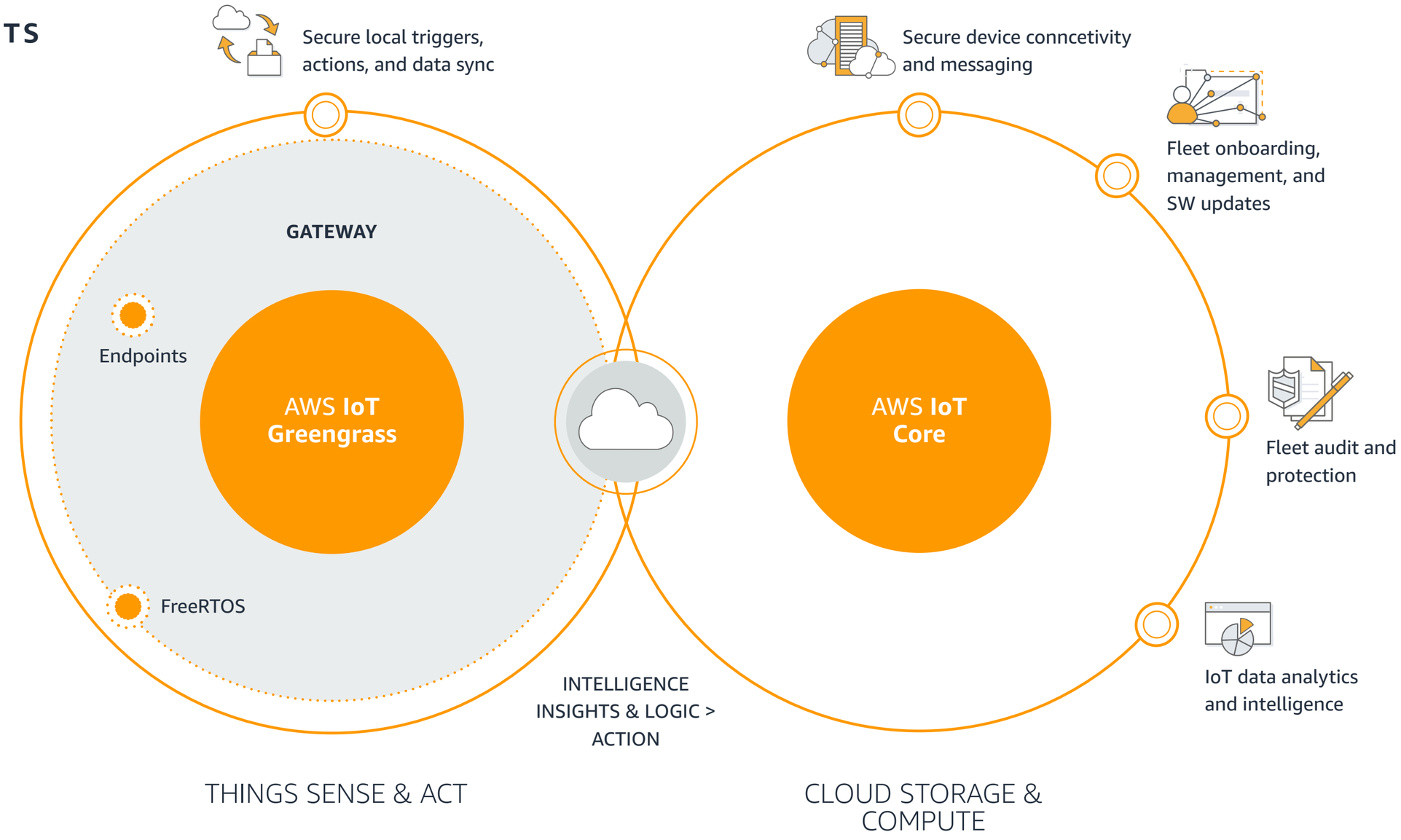
AWS IoT Device Management helps you securely onboard, organize, monitor, and remotely manage IoT devices at scale—thereby reducing the cost and effort of managing large, diverse IoT device deployments. Using this service, you can register your connected devices individually or in bulk and easily manage permissions so that devices remain secure. You can also organize your devices, monitor and troubleshoot device functionality, query the state of any IoT device in your fleet, and send firmware updates over the air (OTA). AWS IoT Device Management can be used with any device type and OS.

AWS IoT Device Management in Action: Trimble

Trimble, an integrator of positioning technologies, aggregates subservices such as IoT and analytics into an internal product called TPAAS. TPAAS takes advantage of IoT Device Management, which has helped Trimble increase device-provisioning throughput by 400 percent and enabled it to meet planned production throughput requirements for connected devices.

AWS IOT COMPONENTS

AWS IOT COMPONENTS



AWS IOT ENABLES YOU TO DEVELOP AN END-TO-END IOT SOLUTION USING THE FOLLOWING TECHNICAL COMPONENTS:

Device Gateway. The Device Gateway securely connects devices to the AWS Cloud and other devices at scale. It provides bidirectional communication over protocols including MQTT, WebSockets, and HTTP.

Message Broker. The Message Broker enables applications to publish and receive messages, and it provides two-way message streaming between devices and applications. It also provides scalable, low-latency, reliable message routing.

Rules Engine. The Rules Engine provides message processing and integration, and it enables you to route device data to and from AWS services.

Security and Identity Service. This service offers automatic device provisioning with just-in-time registration, as well as flexible and fine-grained access control with IoT policies.

Registry. The Registry enables the organization of resources associated with each device and allows for simpler searches.

Group Registry. The Group Registry component helps you manage several different devices simultaneously.

Device Shadow. The Device Shadow is used to store and retrieve current state information for a device and enables applications to interact with devices even when they are offline.

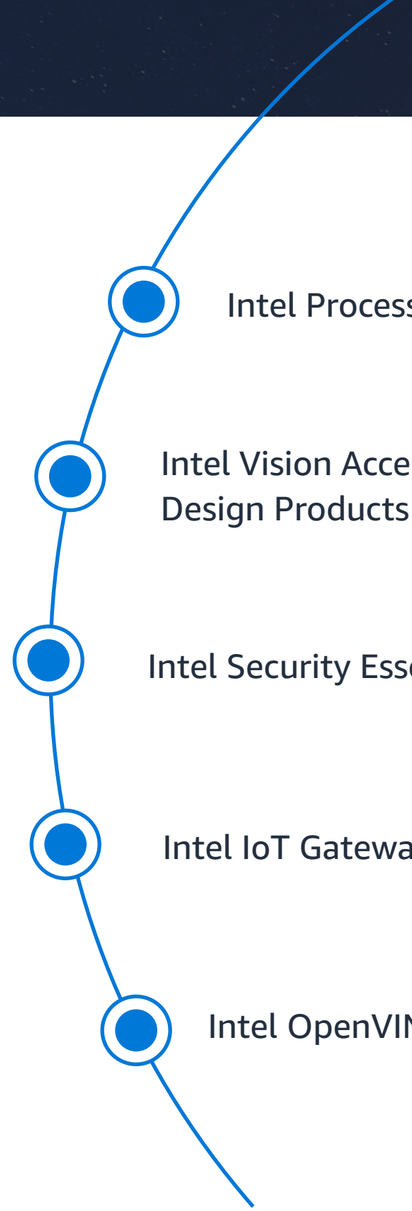
Device Shadow Service. The Device Shadow Service provides persistent device representation in the cloud.

Device Provisioning Service. This service offers a series of templates to provision devices.

Custom Authentication Service. This service helps you define authorizers to manage your authentication and authorization strategy.

Jobs Service. The Jobs Service is used for defining a set of remote operations sent to and executed on one or more devices.

THE SOLUTION CAN ALSO INCLUDE THE FOLLOWING INTEL® TECHNOLOGIES:



Intel Processors

Which provide unique performance scalability across Intel Atom, Intel Core, and Intel Xeon processor families.

Intel Vision Accelerator Design Products

Which provide AI inference and analytics performance on edge IoT devices, with performance scalability across Intel Movidius vision processors and Intel FPGAs.

Intel Security Essentials

Which secure the platform at the hardware level with capabilities such as secure boot Intel Trusted Execution Technology, and a trusted platform module. Intel also offers Intel Platform Trust Technology (PTT) architecture, which implements the trusted-platform module in system firmware.

Intel IoT Gateway

Which seamlessly connects edge devices to the cloud and secures their data flow.

Intel OpenVINO

A toolkit to develop applications that leverage CNN-based deep-learning inference on the edge. It supports heterogenous execution across computer vision accelerators—CPU, GPU, Intel Movidius VPU, and FPGA—using a common API.

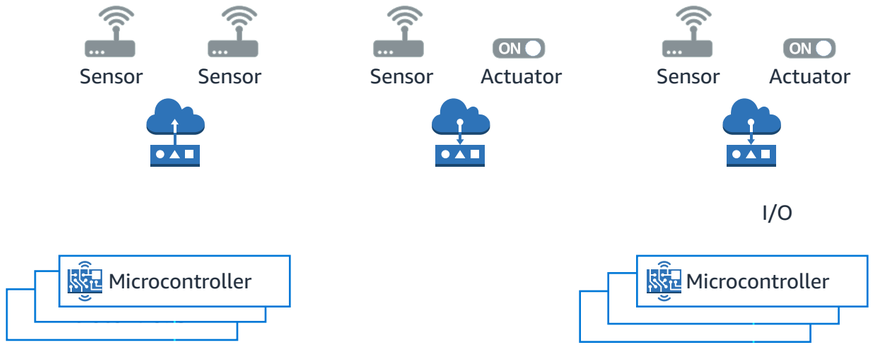
AWS AND INTEL REFERENCE ARCHITECTURES

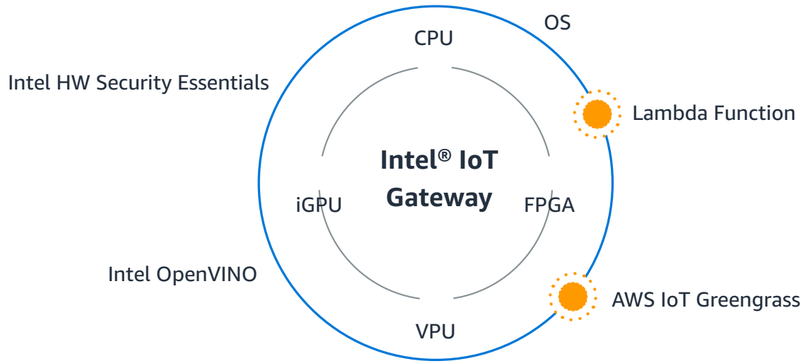
Standards:

Wi-Fi*, ZigBee*, Z-Wave*

Industries:

- Transportation
- Smart Buildings
- Energy
- Manufacturing
- Video





Reference Architecture: Hardware-Accelerated Function as a Service (FaaS)

AWS Lambda functions that are developed in the cloud can be easily deployed at the edge using AWS IoT Greengrass. Intel and AWS have worked together to enable AWS IoT Greengrass to take advantage of Intel OpenVINO technologies. The Lambda functions can leverage edge hardware accelerators using the local resource capability in AWS IoT Greengrass.

Reference Architecture: Healthcare Solution

Intel Health Application Platform

This software integrates with Intel architecture-based design specifications implemented by a third-party hardware vendor such as Flex, and it can help enable the secure, reliable delivery of distributed healthcare services.

SUMMARY

Taking advantage of the combined power of Intel and AWS, you can accelerate the deployment of value-added solutions and bring your IoT solution to life—without worrying about the logistical challenge of moving from prototype to production. Thanks to the AWS-Intel partnership and resulting joint reference architecture, you can quickly deliver your solution to the marketplace by using Intel hardware, the AWS Cloud, and Intel's extensive OEM/ODM partner ecosystem.

Learn more

aws.amazon.com/intel

software.intel.com/en-us/iot/cloud-analytics/aws

aws.amazon.com/iot-core/getting-started

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software.intel.com/en-us/openvino-toolkit