

/ Avnet /IOTCONNECT Solutions Suite

/IOTCONNECT for Amazon Sidewalk OEM Ecosystems

AVNET[®]

/IOTCONNECT[™]

Manage | Secure | Deploy



/ Solution Accelerator & Marketplace Index

/IOTCONNECT enabled solutions

Smart Generator Monitoring

Smart Warehouse Monitoring

Smart City Noise Detection

AWS IoT Greengrass

Smart Asset Monitoring

AWS Physical AI

Smart Facility Solutions

STM32 Amazon Sidewalk

Smart Factory Solutions

Security CRA

Smart Fleet Management

SaaS offering

/IOTCONNECT™

/IOTCONNECT for Amazon Sidewalk OEM Ecosystems

Avnet's Amazon Sidewalk Device Onboarding & Implementation solution using STM32 simplifies the process of connecting, provisioning, and managing Sidewalk-enabled devices using the /IOTCONNECT platform. Designed for OEMs leveraging STM32-based and other Amazon Sidewalk compatible hardware, this solution provides end-to-end developer and operation support from firmware integration and secure manufacturing to cloud onboarding and fleet management—helping teams move quickly from prototype to production while remaining compliant with [‘Works with Amazon Sidewalk qualification’](#) program.

All Avnet Listings



/IOTCONNECT for Amazon Sidewalk OEM Ecosystems

Avnet's /IOTCONNECT STM32 Amazon Sidewalk solution provides expert-led Amazon Sidewalk enablement for STM32 device-based applications, combining deep STM32WB/WL integration support with secure, scalable factory provisioning. Using /IOTCONNECT as a single pane of glass, customers gain unified device onboarding, lifecycle management, and real-time fleet monitoring—accelerating deployment while reducing backend complexity.



Home Monitoring: Enables low-power home monitoring with real-time cloud visibility and alerts



Delivery & Logistics Asset Tracking: Provides long-range, low-power asset tracking without the need for GPS.



Smart Metering: Supports reliable smart metering with automated data collection and monitoring.



Personal & Family Safety Monitoring: Delivers accurate, network-based device location while minimizing power consumption.

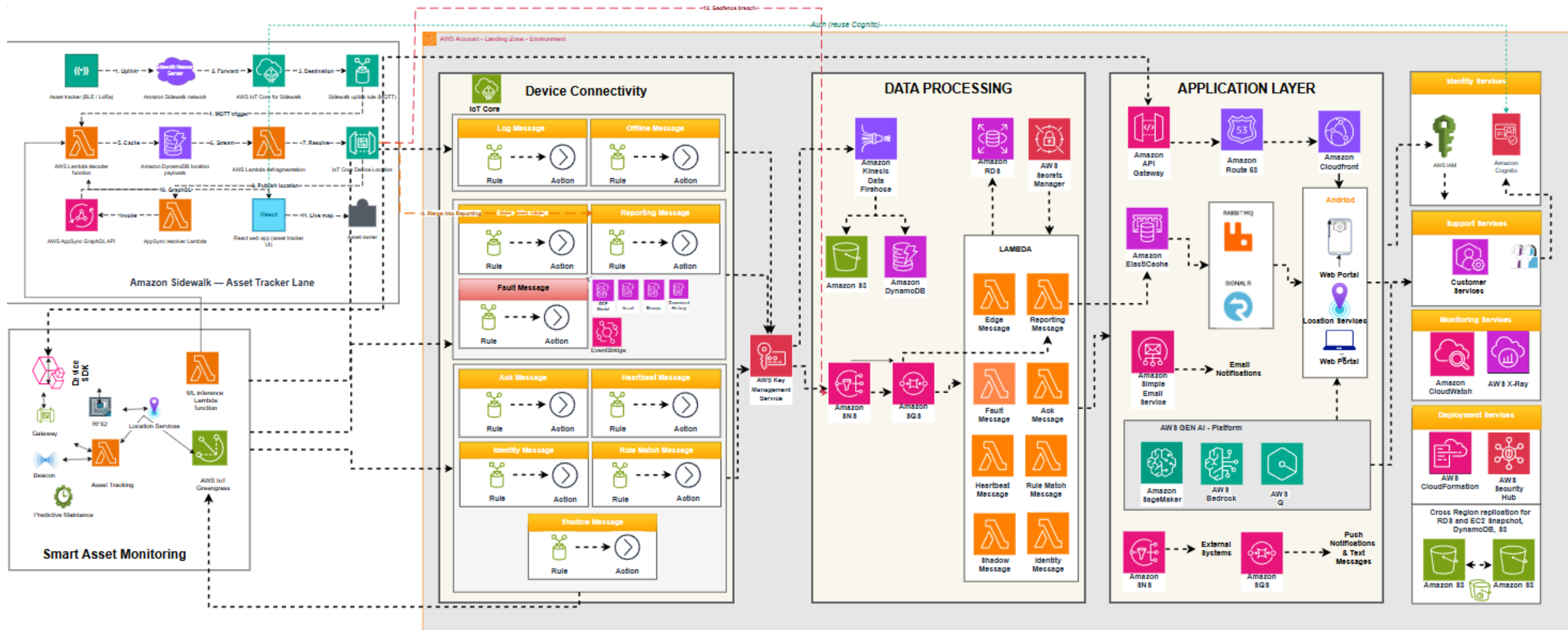


Features

Amazon Sidewalk is designed to provide a secure, easy-to-use, and efficient way to extend the connectivity and utility of smart devices. As with any technology, OEMs should consider the voice of the customer and privacy preferences when choosing the Amazon Sidewalk network.

[Learn more](#)

[Marketplace Listing](#)



/Use Cases

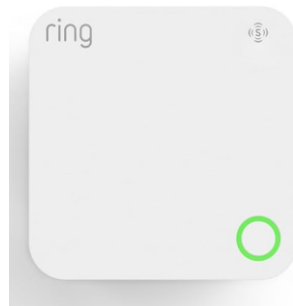
Sidewalk-enabled sensors extend connectivity beyond the home Wi-Fi range, enabling reliable monitoring of devices like leak detectors, locks, and environmental sensors. Data is securely transmitted to the /IOTCONNECT dashboard, allowing homeowners to receive real-time alerts and maintain visibility across their property—even in low-coverage areas.

Home Monitoring

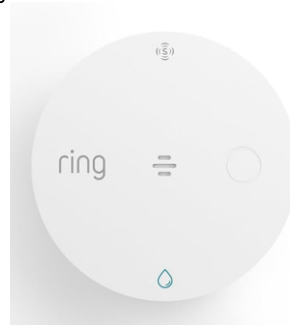
Delivery & Logistics Asset Tracking

Smart Metering

Personal Family Safety Monitoring



Air Quality Sensor



Freeze / Flood Sensor



Door Open Sensor



PIR Motion Sensor



/IOTCONNECT™

/Use Cases

Low-power IoT tags provide continuous location and condition monitoring for shipments across the supply chain. Using Sidewalk's long-range, cost-effective network, businesses can track assets in real time and visualize movement and alerts through the /IOTCONNECT dashboard without relying on expensive cellular infrastructure.

AVNET

Home Monitoring

Delivery & Logistics
Asset Tracking

Smart Metering

Personal Family
Safety Monitoring



 GPS Tracker



/IOTCONNECT™



/Use Cases

Sidewalk-enabled smart meters simplify deployment by eliminating the need for gateways or cellular contracts. Utilities can monitor usage, detect leaks, and analyze consumption patterns through the /IOTCONNECT dashboard, enabling more efficient and cost-effective water or energy management.

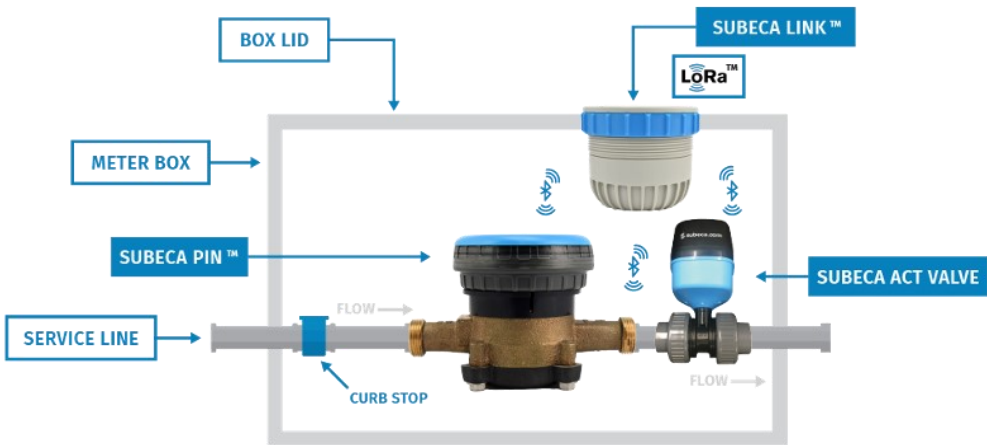


Home Monitoring

Delivery & Logistics
Asset Tracking

Smart Metering

Personal Family
Safety Monitoring



Sidewalk Enabled Water Metering



/IOTCONNECT™

/Use Cases

Wearable or portable trackers use Sidewalk connectivity to provide location visibility even outside traditional network coverage. Families can monitor loved ones, pets, or valuables in real time through the /IOTCONNECT dashboard, improving safety with reliable tracking and alerts.

Home Monitoring

Delivery & Logistics
Asset Tracking

Smart Metering

Personal Family
Safety Monitoring



Item Tracking



Home Assistants



Security cameras



/IOTCONNECT™

Amazon Sidewalk + GNSS Cold Chain Tracking at Fleet Scale

10,000+

Units Shipped / In Progress

100K+

Unit Run Post-Approval

3 Layers

BLE · LoRa · GNSS / Wi-Fi

No SIM

Per-Device Cellular Cost

THE CHALLENGE

Cold chain shipments of food and pharmaceuticals must stay monitored from warehouse to last-mile delivery. No single connectivity option covers all legs affordably — cellular drains battery at fleet scale, while LoRaWAN leaves coverage gaps in dense urban and indoor environments.

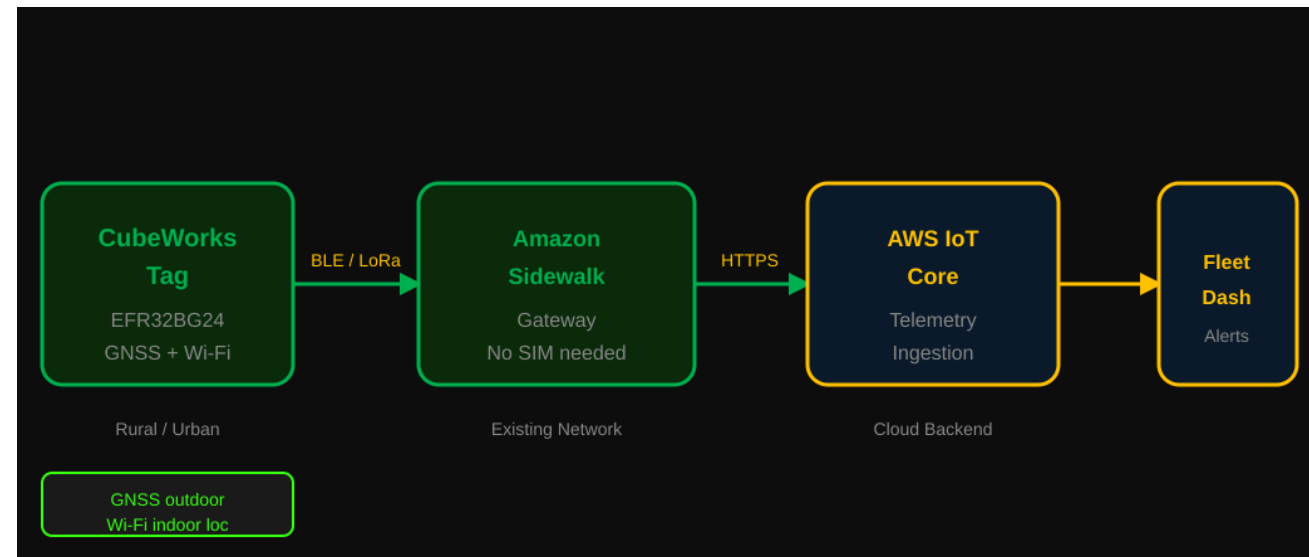
THE SOLUTION

Oxit built the CubeWorks Tag on Silicon Labs EFR32BG24 — a single low-power device pairing Amazon Sidewalk (BLE close-range + LoRa wide-area) with dual-mode location: GNSS under open sky, Wi-Fi scanning indoors. Wide urban coverage with no SIM, no data plan, no customer-installed gateways.

RESULTS

- Initial 3,000-unit production run complete; 7,000 units in active shipment
- 100,000+ unit production run planned post-regulatory approval
- Multi-year Oxit engineering engagement spanning firmware, RF, certification & cloud
- Active Sidewalk registration optimization with Amazon's Sidewalk team

SOLUTION ARCHITECTURE



Oxit Role: Firmware · AWS Sidewalk Integration · GNSS/Wi-Fi Geolocation · Certification Support · Cloud Integration

OxTech Carbon GPS Relay



PARTNER CASE STUDY

AVNET

Patented STM32WL GPS Timing Relay — Indoor LoRaWAN Class B Without Sky Visibility

$\pm 50 \mu\text{s}$

GPS Timing Precision

~1 Mile

Urban Relay Radius

~12 Hr

Battery Backup (DC)

Patent

Filed by Oxit

THE CHALLENGE

LoRaWAN Class B scheduling requires precise GPS timing at the gateway — traditionally forcing outdoor mounting, complex cabling, and expensive weatherproof hardware. For safety infrastructure providers (schools, hospitals, campuses), outdoor-only gateways create coverage gaps deep inside buildings and drive up installation cost.

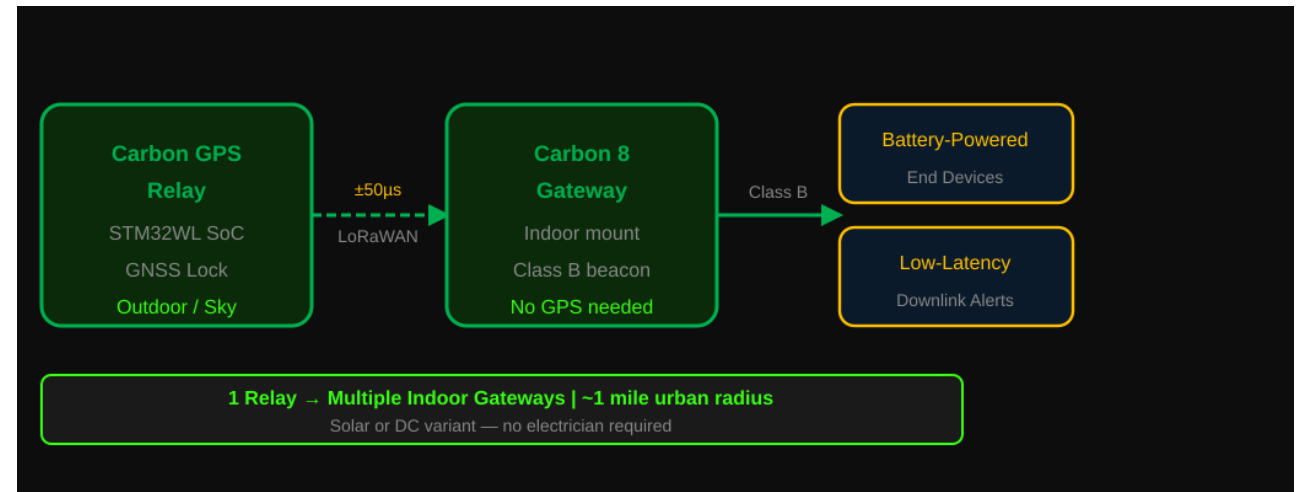
THE SOLUTION

The Carbon GPS Relay (Oxit patent) decouples GPS timing from the gateway. A compact STM32WL-based Relay sits outdoors, acquires GPS lock, and relays precise timing over LoRaWAN to indoor Carbon 8 gateways up to 1 mile away. Gateways move indoors for better in-building coverage — no satellite visibility required.

RESULTS & IMPACT

- Indoor gateway placement improved in-building coverage across complex campuses
- Solar variant eliminated power cabling — no electrician, no conduit
- One Relay serves multiple gateways — timing infrastructure scales independently
- Beacon timing held well within LoRaWAN Class B 1ms spec (achieved $\pm 50 \mu\text{s}$)

SOLUTION ARCHITECTURE



Reference Silicon: ST Microelectronics STM32WL — LoRa SoC with integrated Arm Cortex-M + sub-GHz radio. Single-die integration keeps the Relay compact, low-power, and timing-precise.

Oxit Role: Patented Invention · STM32WL Firmware · LoRaWAN Class B Timing · Safety Infrastructure Deployment

Global Retail Security Leader



PARTNER CASE STUDY

AVNET

ST-Based LoRaWAN Sensor Platform with Secure FUOTA Across Commercial Retail Fleet

4+

Product Lines Deployed

FUOTA

Full OTA Across Fleet

Multi-Year

Partnership Since 2022

STM32WL

Reference Silicon

THE CHALLENGE

A global retail security technology company needed deep LoRaWAN protocol expertise and a dependable FUOTA (Firmware Update Over The Air) capability to reach its entire deployed sensor fleet in live retail environments — without physically touching each device. Security requirements also demanded hardware-accelerated crypto to meet retail brand standards.

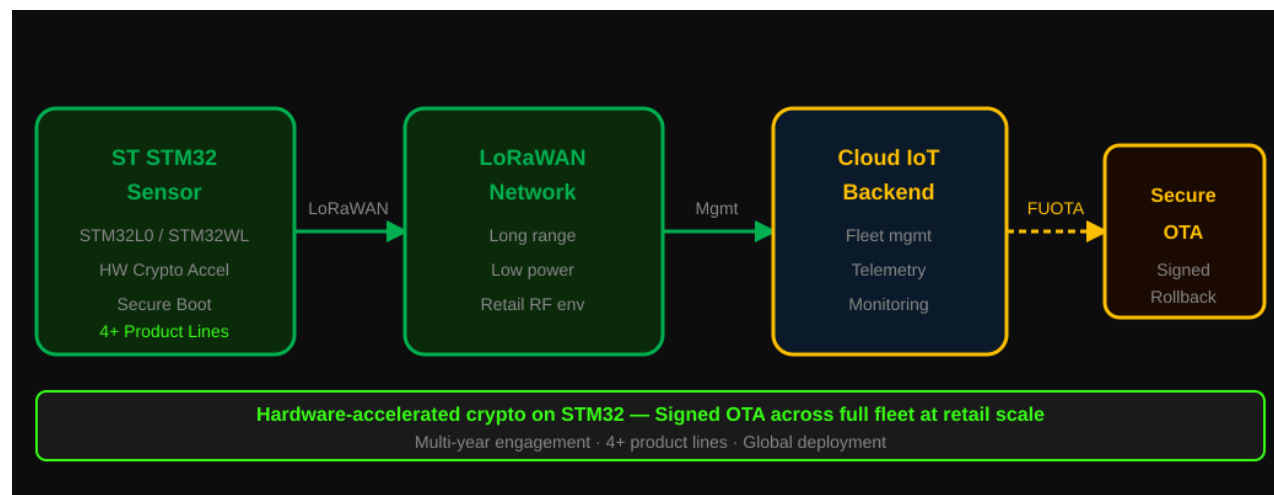
THE SOLUTION

Oxit built the complete LoRaWAN firmware platform on ST STM32 silicon (STM32L0 via Murata 1SJ module + STM32WL), leveraging on-chip hardware crypto for secure boot, firmware signing, and encrypted OTA. A full FUOTA pipeline with rollback protection was implemented across all product variants.

RESULTS

- FUOTA deployed across the complete LoRaWAN sensor product line — every device remotely updatable
- Hardware-accelerated crypto meets security bar required by global consumer brands
- Collaboration expanded from initial sensor to 4+ product lines across the portfolio
- Multi-year engagement reflects ongoing confidence in Oxit's LoRaWAN + embedded expertise

SOLUTION ARCHITECTURE



"Having a robust OTA Update capability is essential to our ongoing success. Collaborating with Oxit, we have implemented this across our complete line of LoRaWAN sensors."
— VP, Merchandise Display and Device Management

Oxit Role: LoRaWAN Firmware · HW Crypto Integration · FUOTA Pipeline · Multi-Product Portfolio Expansion

/ Summary & Next Steps

Benefits

1. **Improved reliability:** Devices stay online through built-in redundancy (connecting via a nearby Sidewalk Bridge) and stable connectivity even in low-coverage areas.
2. **Simplified setup and use:** Devices can join Sidewalk automatically with minimal user effort because Amazon manages the underlying network complexity.
3. **Cost efficiency:** Sidewalk leverages a small portion of home Wi-Fi bandwidth with no added fees, eliminating the need for separate data plans.

Outcomes

1. **Higher uptime in the field:** Fewer disconnects and less downtime because devices have a fallback path and more consistent connectivity.
2. **Faster activation and better user experience:** Reduced friction during onboarding leads to quicker deployments and less end-user setup burden.
3. **Lower operating costs at scale:** Avoiding cellular/data-plan expenses makes large fleets more economical to deploy and maintain.

Next Steps

Let's Accelerate Your Path from Prototype to Production

Contact us: IoT@Avnet.com

More About Avnet /IOTCONNECT & Softweb Solutions (an Avnet company)

/ About Avnet

AVNET

Quick facts

- Founded in 1921
- Headquartered in Phoenix, Arizona
- AVT listed on the NYSE since 1960
- AVT listed on NASDAQ since 2018
- #181 on FORTUNE 500 (US) in 2025

14,500+

Employees
worldwide

2,000+

Engineers around
the world

3.3M+

Engineering
community members

450K

Customers in
140 countries

250+

Locations
globally

\$22.2B

FY25 Revenue

Avnet Capabilities

AVNET

AVNET®

CORE SEMI

softweb
solutions

AN AVNET COMPANY

CLOUD APPLICATION
DEVELOPMENT

TRIA™
AN AVNET COMPANY

EMBEDDED MODULES
& BOARDS

/IOTCONNECT™

IOT PLATFORM
FOR OEMS

W
Witekio

AN AVNET COMPANY

EMBEDDED SOFTWARE
DESIGN SERVICES



DESIGNED BY AVNET

SOLUTIONS DEVELOPMENT:
ADVANCED APPLICATIONS
GROUP



Cloud Migration | MAP SPRINTS

Migrate data sets and apps to the cloud securely



AWS AI / ML | Gen AI

Rekognition, SageMaker, Bedrock & more



Mobile Applications

Powerful mobile apps for global audiences



Server Monitoring

Detect cloud computing and network issues



Big Data & Analytics

Scalable and secure big data solutions



Enterprise Applications

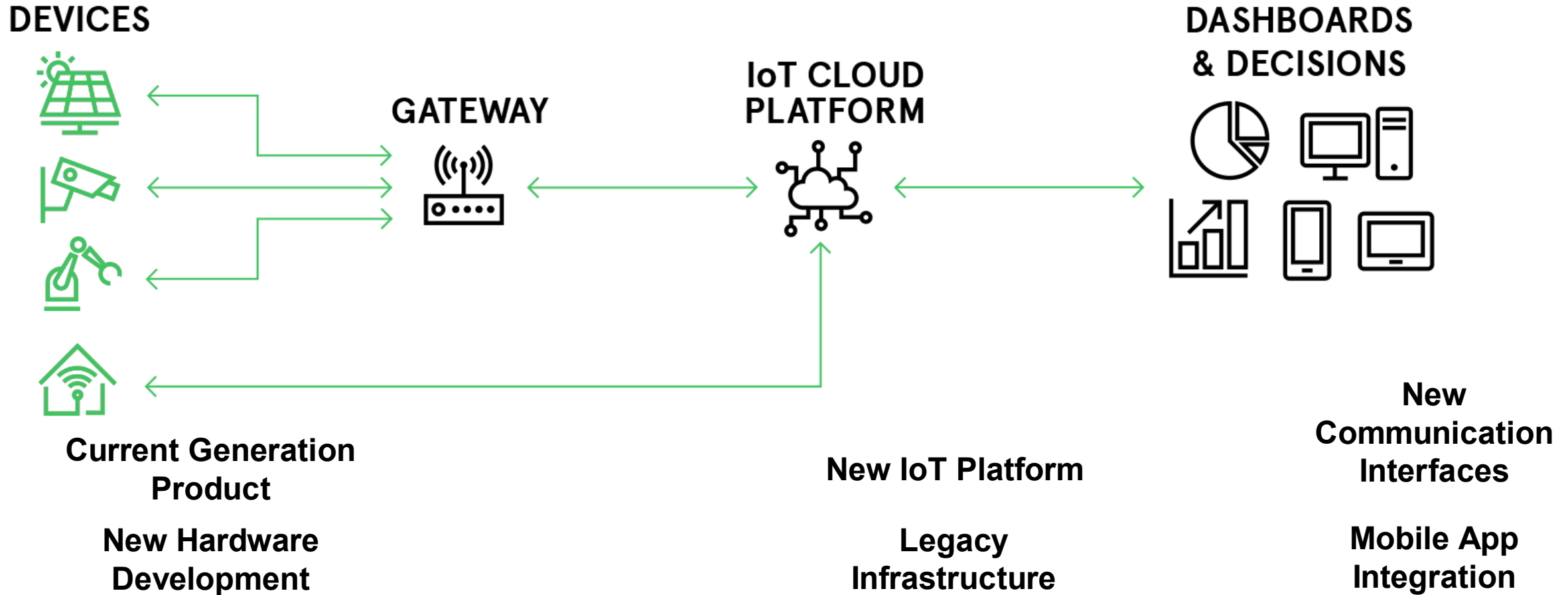
Mission-critical apps running on AWS



Managed Services

Infrastructure management on AWS

/ Challenge of IoT



Developing an IoT product is costly, cumbersome, and time consuming.

/ Challenge of IoT

DEVICES



GATEWAY



IoT CLOUD PLATFORM



DASHBOARDS & DECISIONS



/ IOTCONNECT[®]

With /IOTCONNECT, IoT development becomes simple, secure, and scalable.

Things

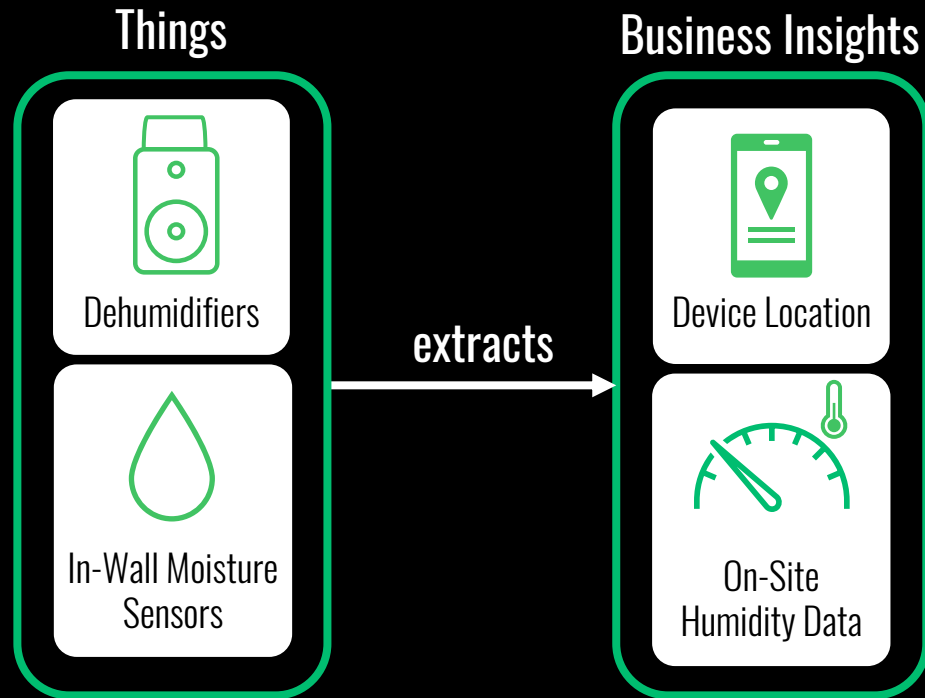


Dehumidifiers



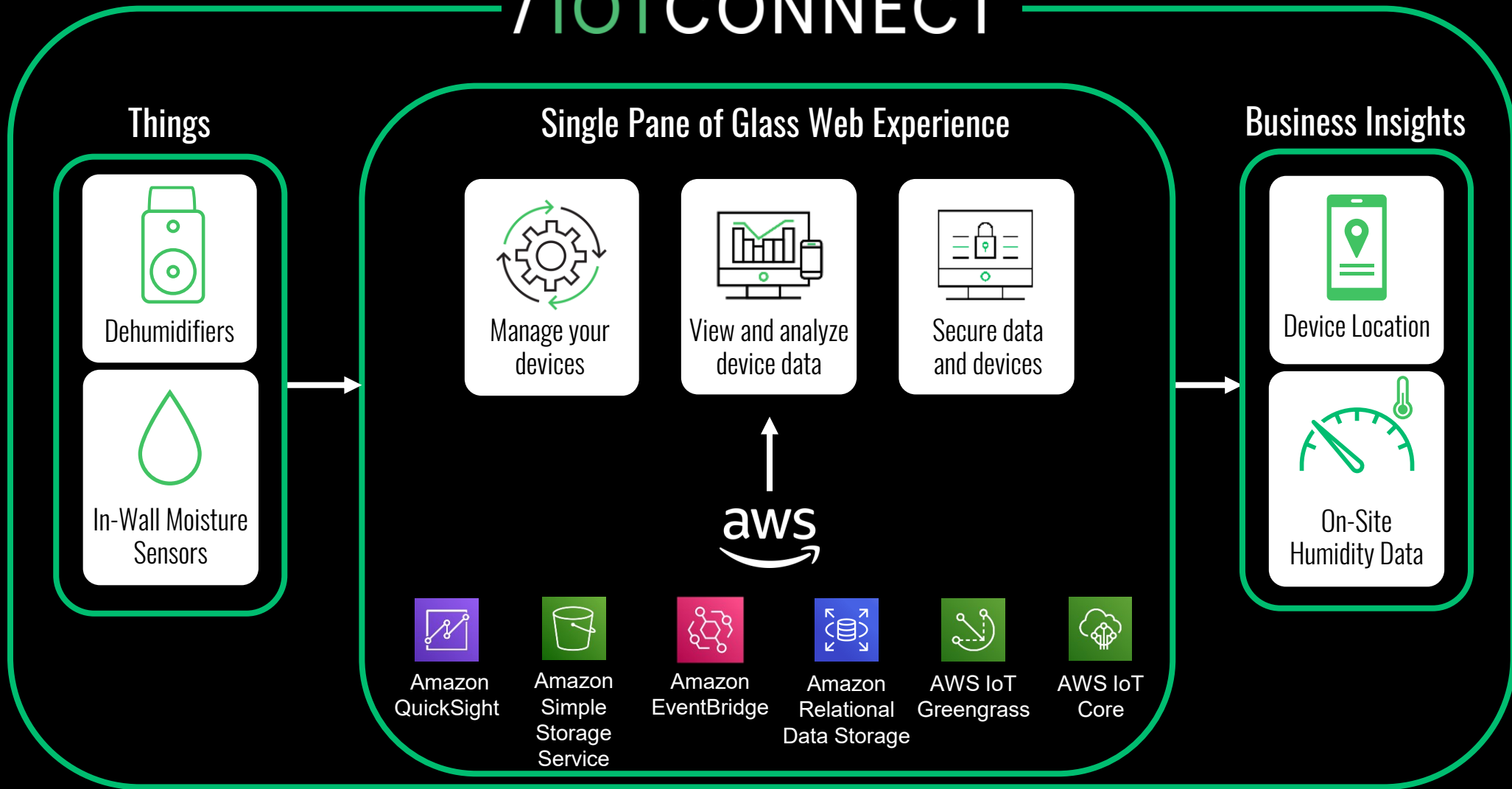
In-Wall Moisture
Sensors

It takes **things** like **connected dehumidifiers** and **moisture sensors**



and **extracts valuable insights** to improve business intelligence

/IOTCONNECT®



to create a **single pane of glass**
experience

that's **built on AWS**

/ IOTCONNECT™

SaaS IoT Development Platform



Amazon QuickSight



Amazon SageMaker



Amazon Kinesis



Amazon EventBridge



Amazon Managed Grafana



Amazon DynamoDB



Amazon Relational Data
Storage



Amazon Simple
Storage Service



AWS IoT Core (MQTT,
Sidewalk, LoRa WAN)



AWS IoT Greengrass



AWS IoT Greengrass
nucleus lite



FreeRTOS



AWS Lambda



AWS Bedrock



AWS Bedrock AgentCore



AWS IoT Device Management:
Managed Integrations

/IOTCONNECT[®]

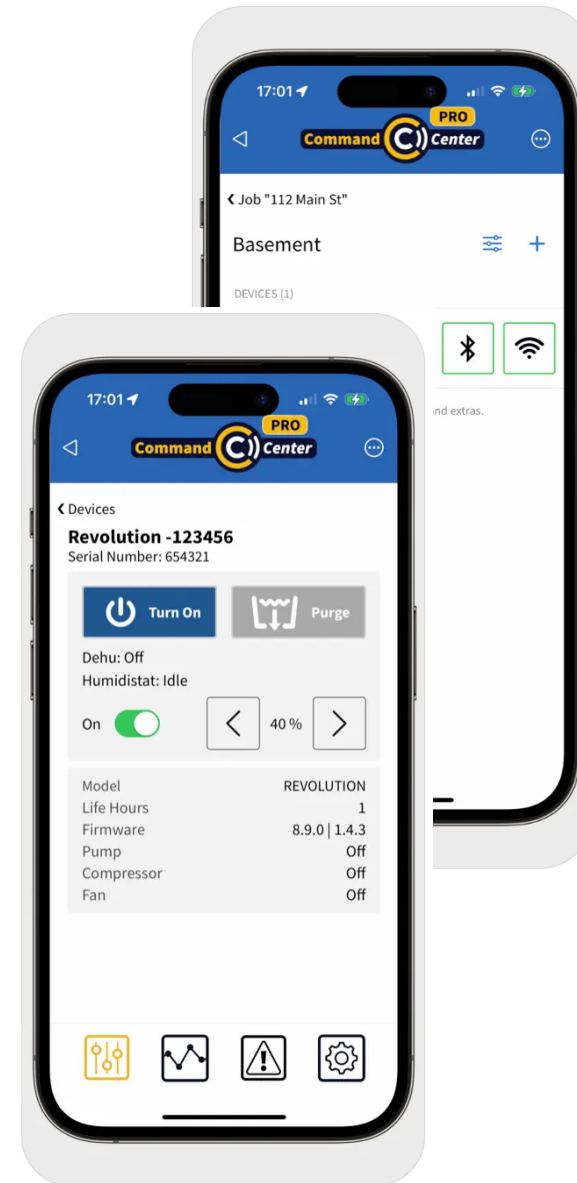
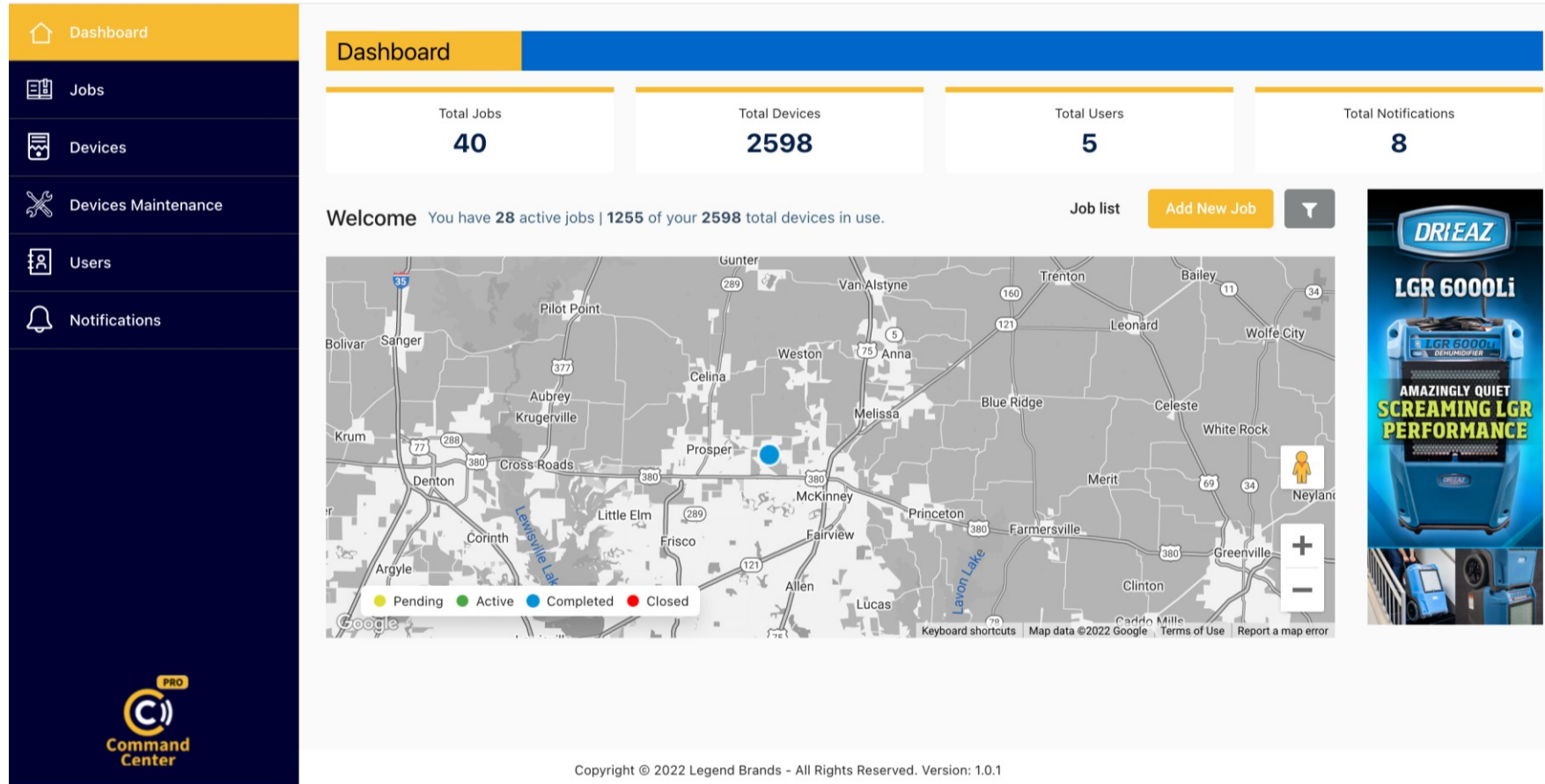
Solutions Suite



One interface for
AWS services

And aggregate them to create **one ecosystem** for **production ready IoT**

/IOTCONNECT SaaS Application in Action



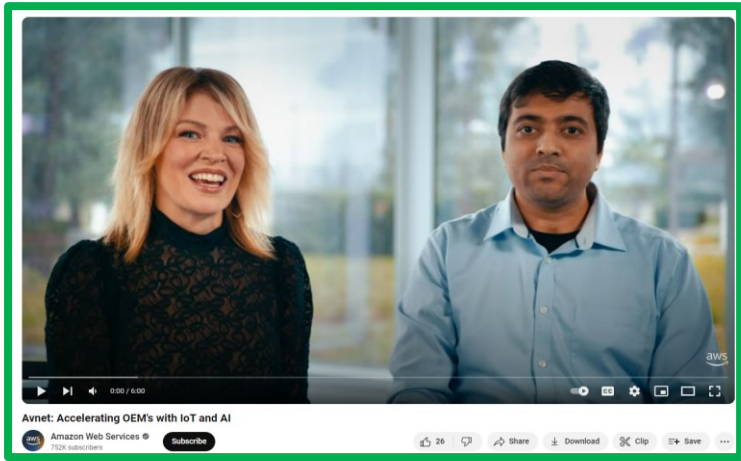
Next Steps



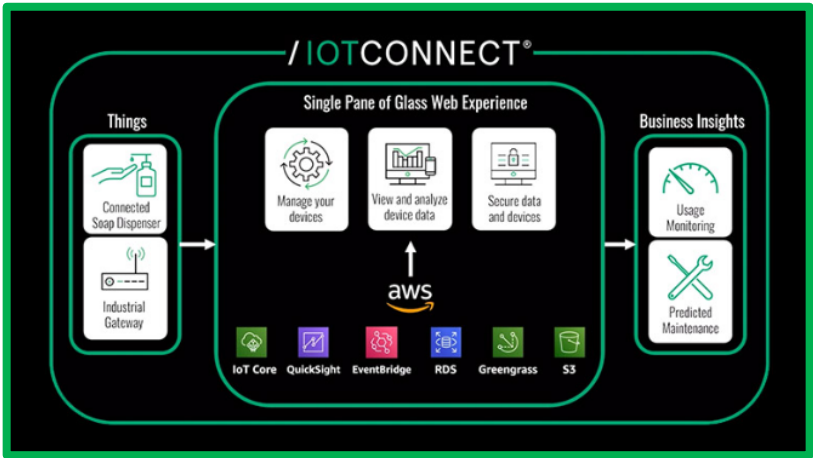
Contact us!

Learn more

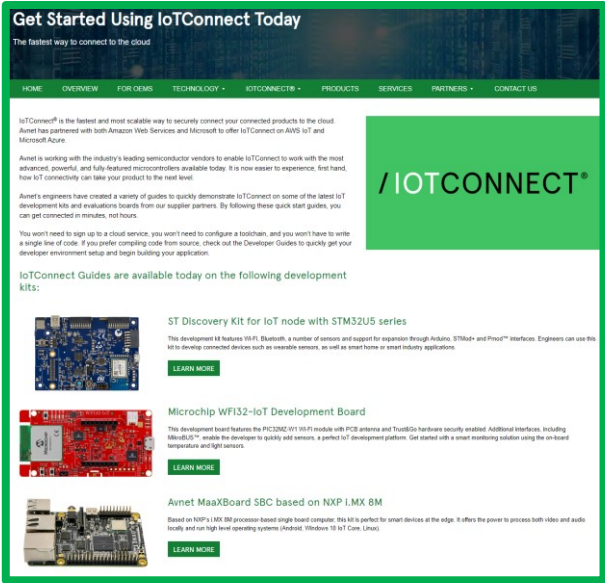
/Resources



[Avnet and AWS:
This is My Architecture](#)



[Avnet
/IOTCONNECT
Webinar](#)



[/IOTCONNECT Quick
Start Development
Kits](#)

/IOTCONNECT Quick Start Enablement

IoTConnect Guides are available today on the following development kits:



ST Discovery Kit for IoT node with STM32U5 series

This development kit features Wi-Fi, Bluetooth, a number of sensors and support for expansion through Arduino, STM32+ and Prox™ interfaces. Engineers can use this kit to develop connected devices such as wearable sensors, as well as smart home or smart industry applications.

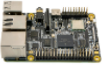
[LEARN MORE](#)



Microchip WiFi32-IoT Development Board

This development board features the PIC32MZ11 Wi-Fi module with PCB antennas and TrustZone hardware security enabled. Additional interfaces, including MicroBLU™, enable the developer to quickly add sensors, a perfect IoT development platform. Get started with a smart monitoring solution using the on-board temperature and light sensors.

[LEARN MORE](#)



Avnet MaaXBoard SBC based on NXP i.MX 8M

Based on NXP's i.MX 8M processor-based single board computer, this kit is perfect for smart devices at the edge. It offers the power to process both video and audio locally and run high level operating systems (Android, Windows, IoT Core, Linux).

[LEARN MORE](#)



Renesas CK-RX65N Cloud Kit Based on RX65N MCU Group

This kit combines the RX65N MCU with an LTE Cellular CAT-M1 module and Ethernet connectivity. With IoTConnect support, you start capturing data in the field and send to the cloud in minutes.

[LEARN MORE](#)



Infineon XENSIV Kit with PAS CO2 sensor

The XENSIV™ connected sensor kit is ideal for battery-powered IoT devices. Its small size hides a lot of performance. With both Wi-Fi and Bluetooth connectivity, the kit includes a CO2 sensor and the OPTIGA™ Trust M security device. The kit works with IoTConnect's Secure Device Management features to provide IoT connectivity with total end-to-end security.

[LEARN MORE](#)

Pick a Board

Access our quick start landing page to look at the variety of developer board options that we have enabled. Select which board fits your need.

IoTConnect SDK for STM32-U5 based on X-Cube-Azure

SDK and sample application to connect [STM32U5 IoT Discovery Kit](#) to IoTConnect.

The QuickStart Guide below provides a binary image to program the board for quick evaluation of the sample application.

- [QuickStart Guide](#)

Use this Developer Guide to setup the project and modify the source to further develop using the sample application.

- [Developer Guide](#)

The BG96 Module from the [P-L496G-CELL02 Combo](#) is also supported by this project. To run your board with this module, follow the respective BG96 sections linked in the Developer or QuickStart guides.

Access GitHub

Click the GitHub link to see the sample code we have created for each of these developer kits. These include templates and dashboards.

Select a Personal Plan

Test Drive

2 Months Free

- Messages **30K (Max)**
- Devices **5 (Max)**
- Users **5 (Max)**

SUBSCRIBE NOW

No Credit Card Required.

Sign up for Free Trial

Using the provided link from the quick start guide, sign up for a free /IOTCONNECT account and demo all of the design acceleration features.

Temperature



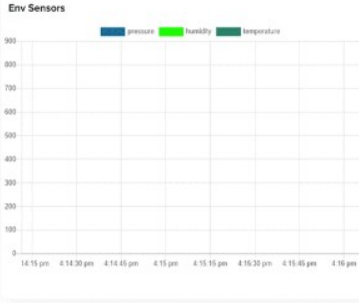
Pressure



Humidity



Env Sensors



Device Command

Select Command: Parameter Value: **Execute Command**

Command	Executed On (UTC)	Status	Executed Count
accelerometer.x	2023-08-21 15:44	30	
accelerometer.y	2023-08-21 15:44	-17	
accelerometer.z	2023-08-21 15:44	1011	
X Axis Check			
Button Count	2023-08-21 15:33	0	

Start Developing

With dynamic dashboards and easy onboarding widgets, /IOTCONNECT makes designing for your application simple, secure, and scalable.

Appendix

/IOTCONNECT[®] Supports All Devices

AVNET

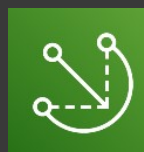
aws
Services



AWS IoT Core



AWS IoT Core for
LoRaWAN amazon sidewalk



AWS IoT Greengrass
+ Greengrass lite

Device
Types



Connected
Devices



Gateway &
Child Devices



Private
LoRaWAN
Base Station



Private
LoRaWAN
Concentrator



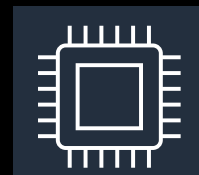
Public
LoRaWAN
Device



Amazon
Sidewalk
Device

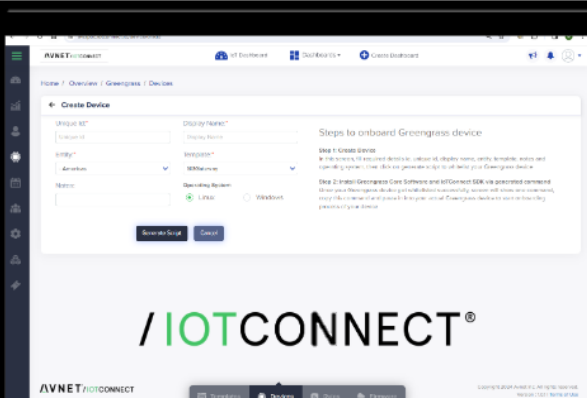


Edge Server
or Gateway



Memory Constrained
Edge Device

Device
Enablement



yocto
LINUX

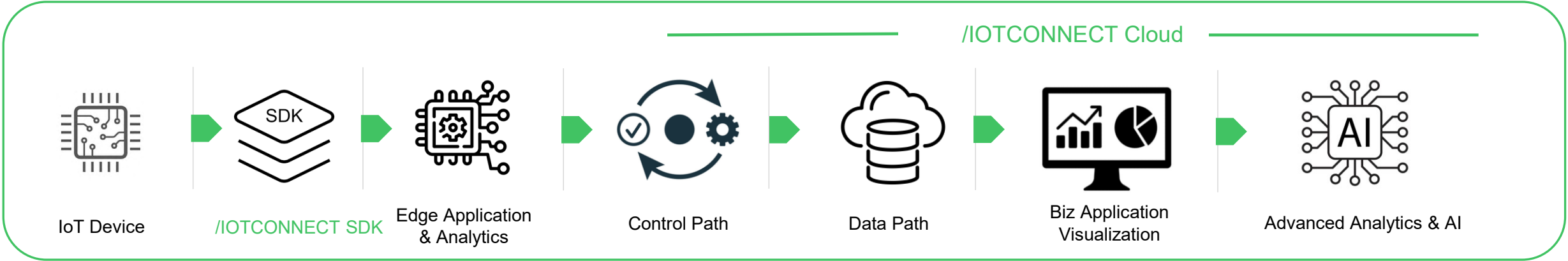


AWS IoT
Greengrass



/IOTCONNECT[®] enables ALL devices types through a single pane of glass.

/IOTCONNECT Building Blocks w/ AWS



FreeRTOS



Python



Greengrass



IoT Core



RDS



QuickSight



SageMaker



C



EventBridge



S3 Data Lake



Grafana

Transport



LoRaWAN™

PRIVATE | PUBLIC



Kinesis



S3

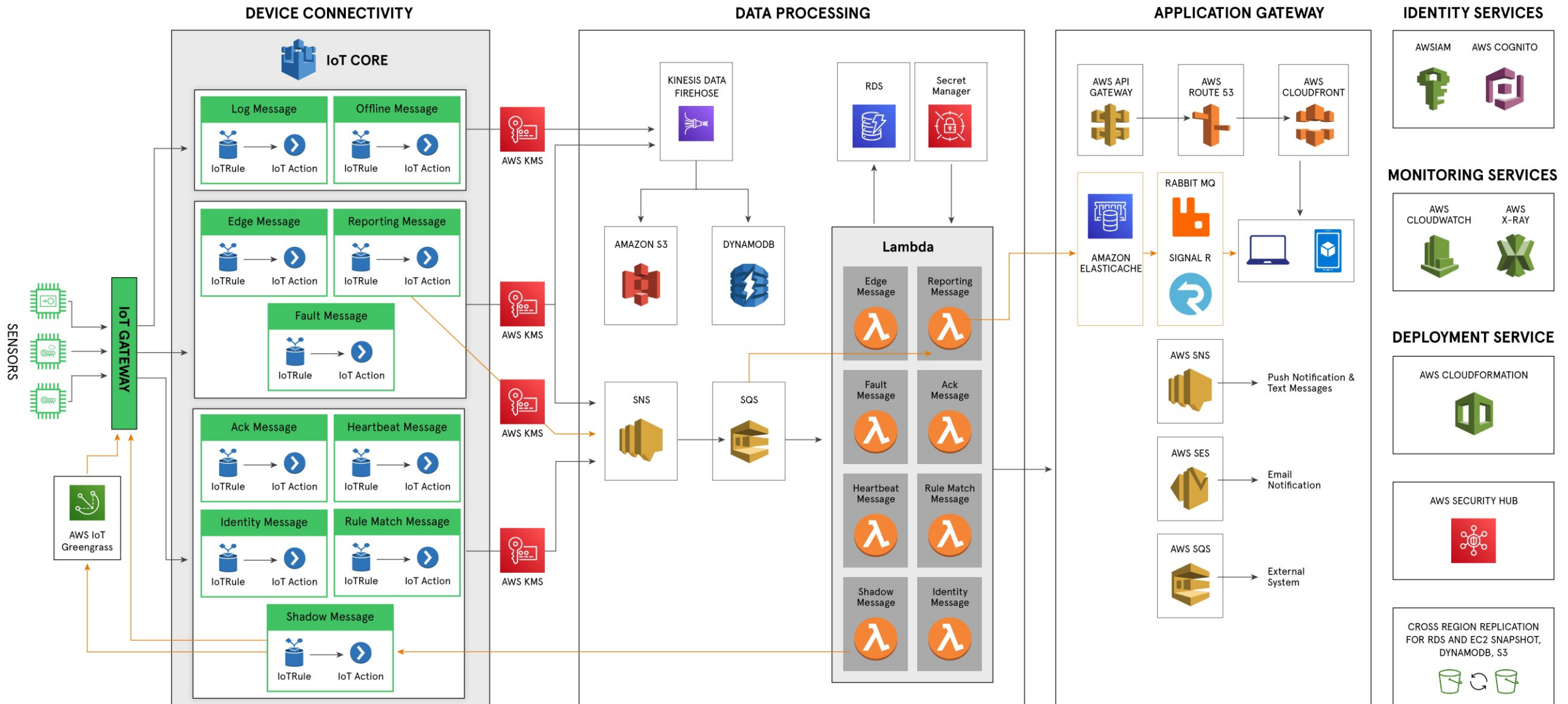


Lambda



DynamoDB

/IOTCONNECT Platform Architecture

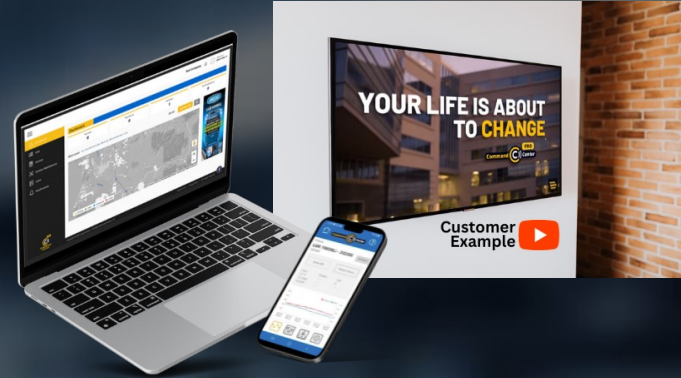


//IOTCONNECT Developer Personas



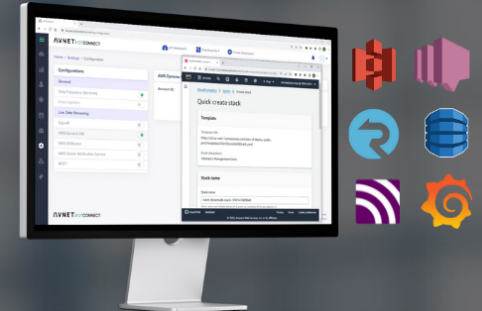
- Device, User, Roles, and Entity Admin
- Security manag
- Basic dashboarding
- Internal Ops

Device Builders & Deployment Managers



- RESTful API
- Predictable URLs
- Intelligent error handling
- OAuth 2.0 authentication
- Access to all IoT functions

Application & UX Developers



- Dynamo DB, S3
- Signal R
- MQTT
- Grafana
- AWS SNS

Cloud Developer & Data Science

/IOTCONNECT SDKs: Deliver a Positive Developer Experience



Objectives:

- Deliver device-builders a positive developer-experience
- Integrate into the Avnet Supplier's development flow and ecosystem
- Provide confidence for a successful outcome at the onset of our customer's IoT journey



Software Resources

- /IOTCONNECT Enablement, Witekio, and Softweb service teams
- Access to global and scalable Avnet software services
- Skills: C, Python, Java, OS/RTOS, Applications, AI/ML



Deliverables

- /IOTCONNECT Library
- SDK (C / C# / Python / ...)
- Test Strategy
- Platform Targeted Samples
- Developer Guide
- QuickStart Experience

/ Device Enablement: SDKs

Generic SDKs

Multiple Languages and Environments



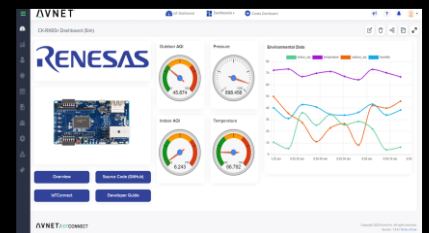
Platform-specific SDKs

Development Boards and Embedded Hardware



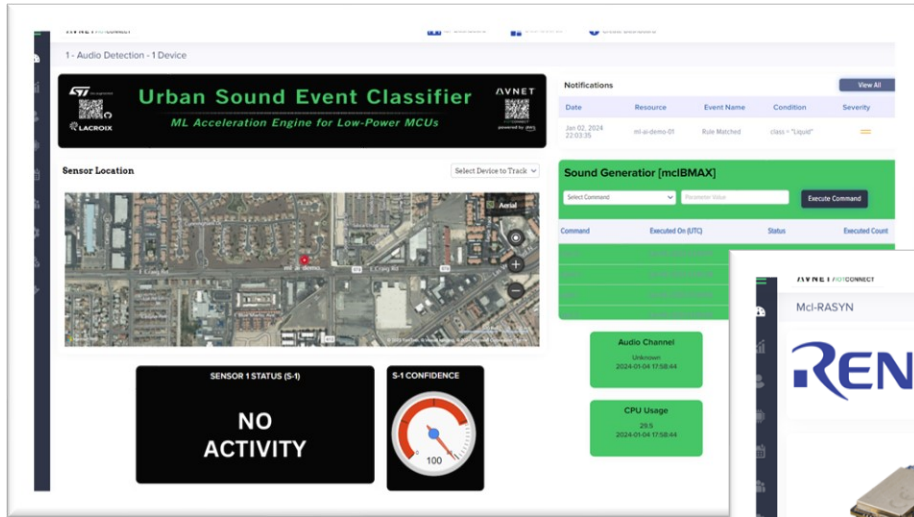
 <https://docs.iotconnect.io/iotconnect/sdk/>

 <https://github.com/avnet-iotconnect/>

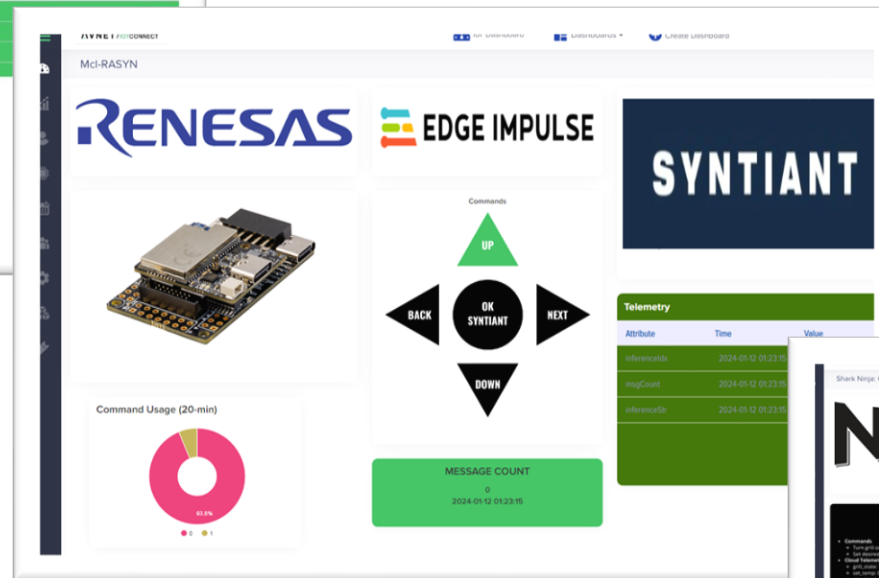


/IOTCONNECT AWS Demo Examples

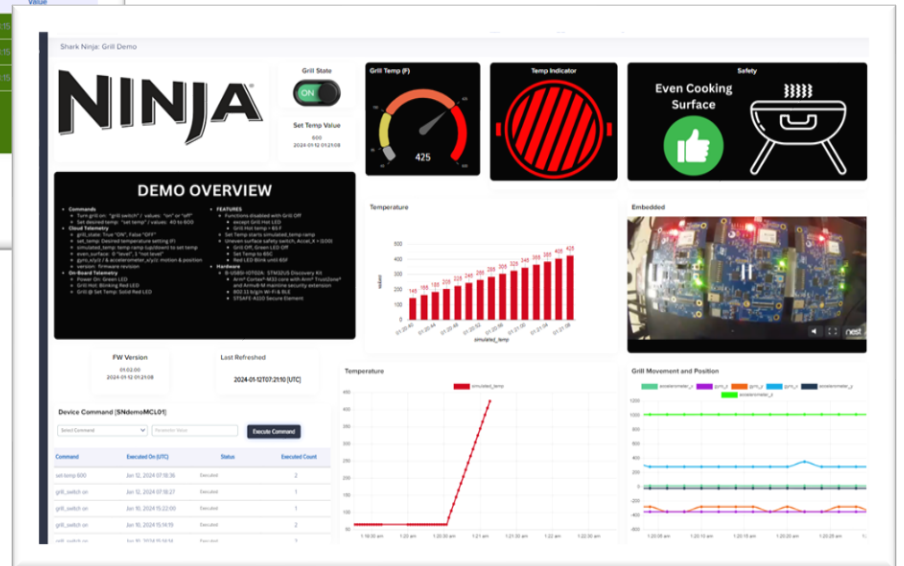
AVNET



AI/ML Audio Classification



Edge ML Voice and Motion Detection



Consumer Indoor Grill