AWS re:Invent

I O T 3 0 6

Building IoT Applications for a Smart Home, ft. Vestel

Mark Relph
Head of IoT Business Development
AWS

Jan Borch
IoT Prototype Architect
AWS

Y. Burak Savak
Vice President
IoT, Cloud, Automotive
VESTEL

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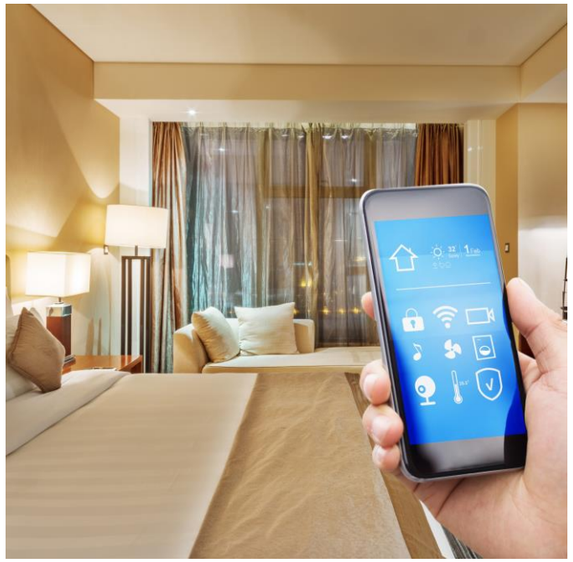
Agenda



Home automation

Home security

Home networking

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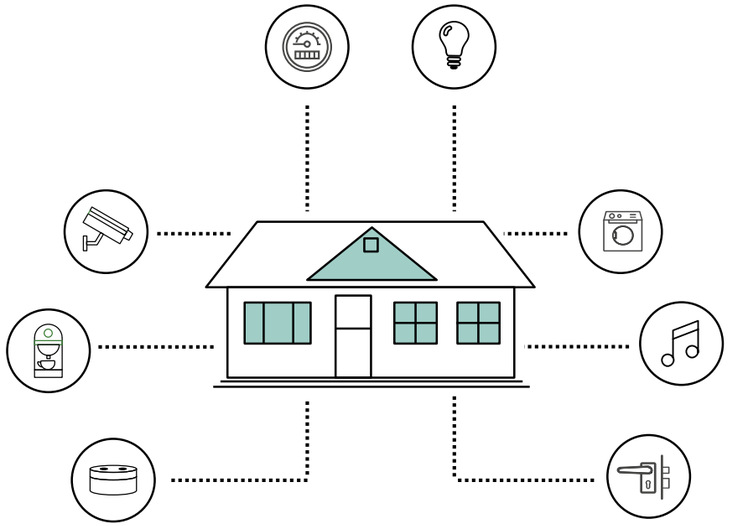
Connected home market

433 million

smart home devices were shipped worldwide in 2017

27.6%

from the previous year



IDC estimates a CAGR of

18.5%

as the market grows to

940 million

devices shipped in 2022

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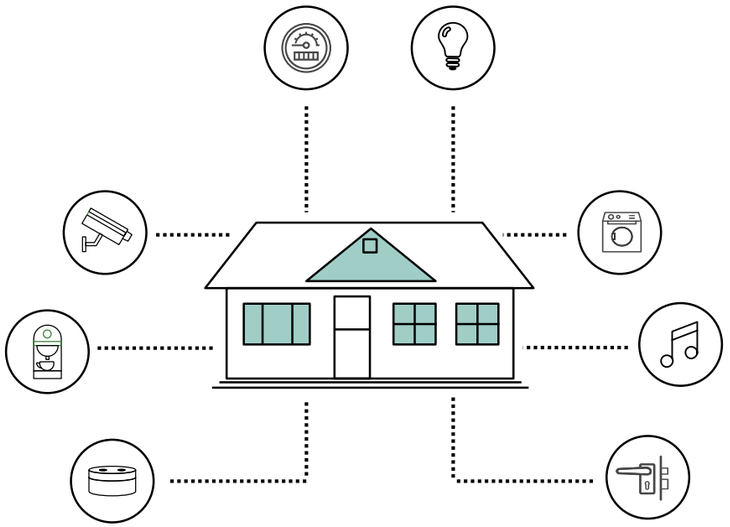
Connected home market—Challenges & opportunities

Hard to differentiate in a crowded market

Hard to improve customer experiences while keeping costs low

Hard to maintain interoperability between multi-vendor devices



Lack of a reliable & scalable cloud infrastructure platform

Need to ensure secure connections

Edge-based computing can help build innovative products

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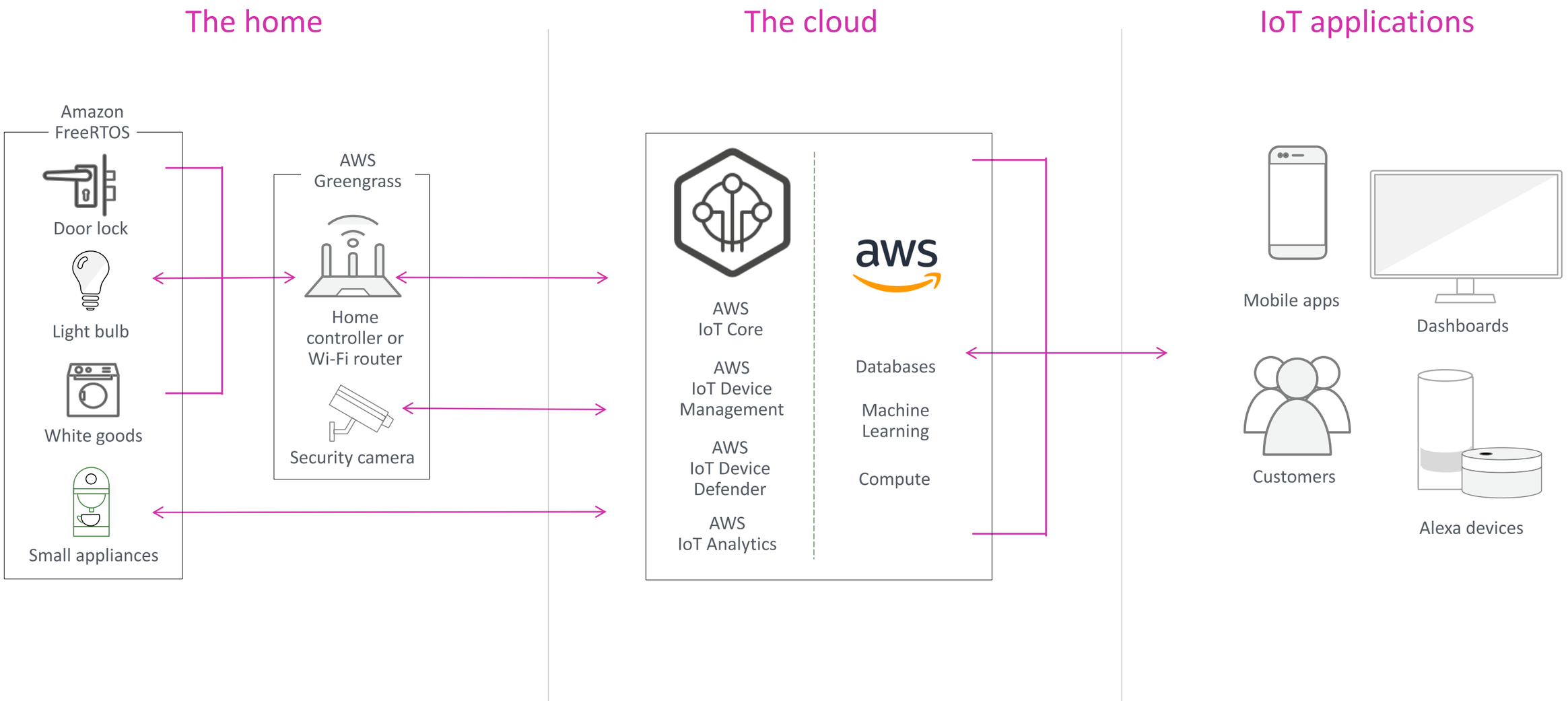
How it works diagram



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Home automation

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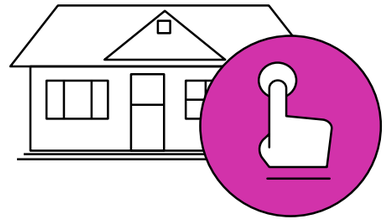
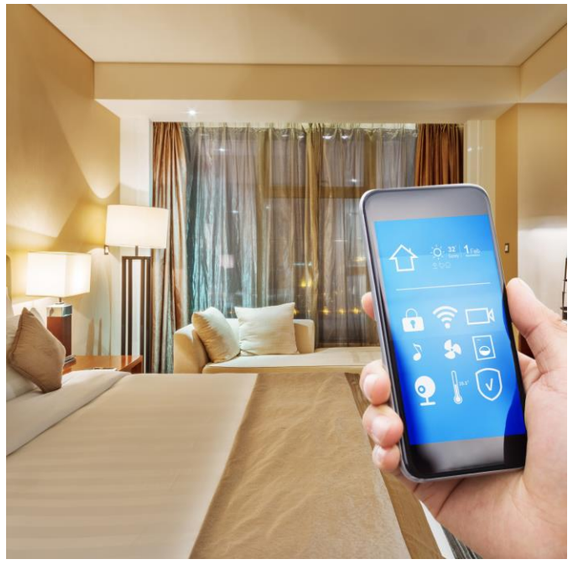
Home automation

Key trends & opportunities

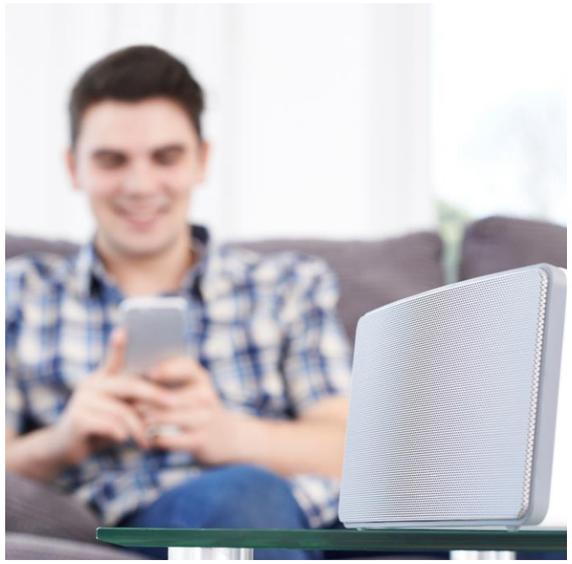


Integration with voice control



Interoperability between devices through hubs

Exciting & new customer experience



Customer ease of use

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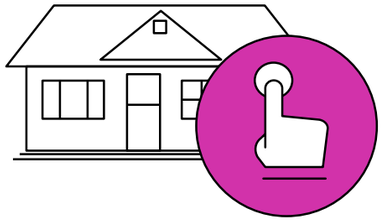
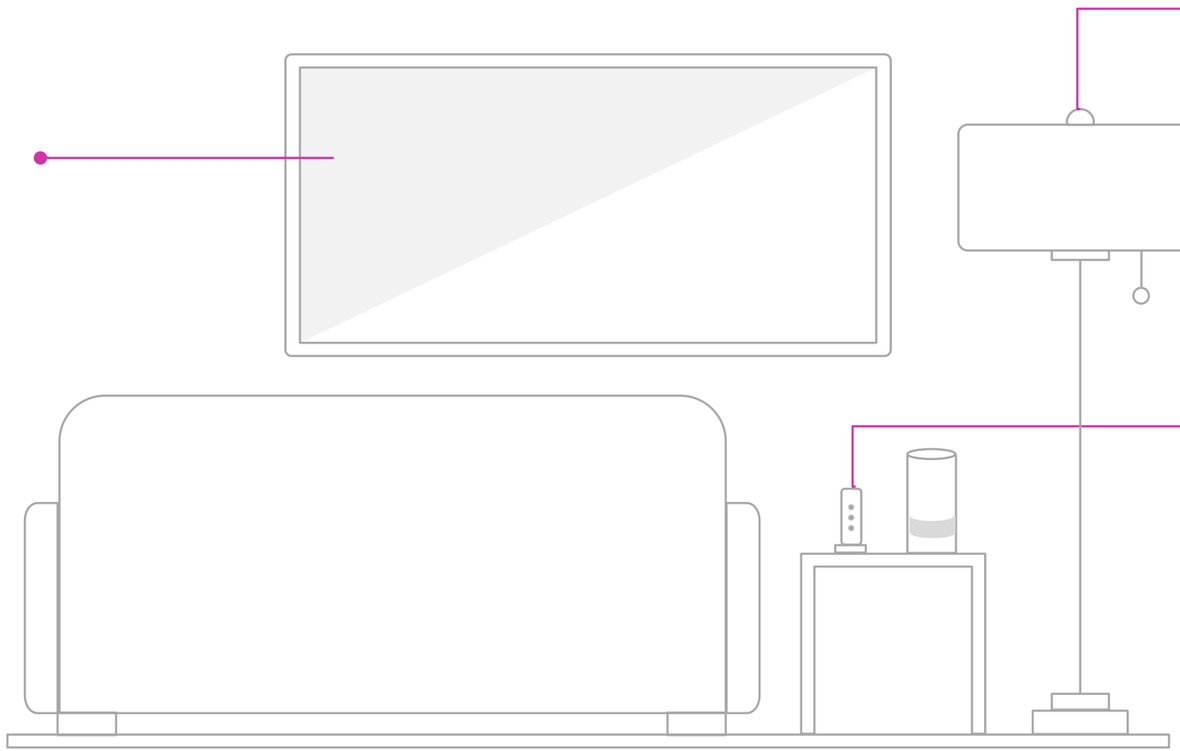
Home automation

Example



Smart TVs can connect to AWS IoT Core to take advantage of a fully scalable cloud backend that provides easy integration with Alexa

AWS IoT Device Management, AWS IoT Device Defender, and AWS IoT Analytics provide added benefits such as remote device management, monitoring, security, and insights into device usage



Amazon FreeRTOS provides security, connectivity, and updateability for devices running on microcontrollers, like a light bulb so it can respond to voice commands

AWS Greengrass can run on a home gateway such as a router so that the lighting system, TV, and Echo continue to operate even if connection to the cloud is lost

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VESTEL

Agenda

Zorlu Corp & Vestel as its admiral ship

Why IoT & smart devices

Vestel legacy cloud & Amazon Web Services (AWS) transition

Vestel future cloud vision & AWS

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VESTEL

Zorlu Holding

- Established in 1953
- Among top 10 holdings in TR
- Eight major industries
- 7B+ USD turnover
- 26,000+ employees

ZORLU

Consumer electronics and appliances


Energy


Tourism


Real estate


Social foundation


Insurance


Textile


Nickel mining

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Vestel

35 Million
Device Production Capacity

18 Million
TV Production Capacity

25 Million
Devices Manufactured

$ 5 Billion
Turnover


Consumer Electronics


Home Appliance


Mobile Devices

Visual Solutions


LED Lighting


Defense Industry

- Largest Manufacturing Facility in Europe
- 20 Major Product Categories
- 3rd among EU TV Sales
- 5th among EU Whitegoods Sales
- 1600+ Developers

1,100,000 m²
Closed Production Area

16,000
Employees

Export Leader of Turkey with $ 2.5 Billion

Exporting to 155 Countries

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VESTEL

“What we need to do is always lean into the future; when the world changes around you and when it changes against you—what used to be a tail wind is now a head wind—you have to lean into that and figure out what to do because complaining isn't a strategy.”

Jeff Bezos

Vestel's smart-device vision

VESTEL

VESTEL
ELECTRONIC R&D

ZORLU TEXTILE
ZORLU ENERGY
ZORLU DEFENCE

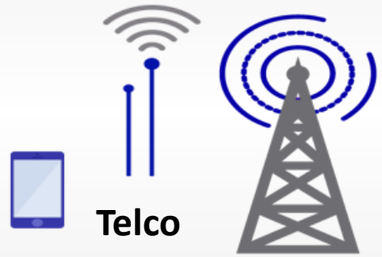
White goods

BigData & Cloud

Wearables

Smart home

IoT group



Telco

Automotive

Smart billing

Lighting

VESTEL
SMART CITY

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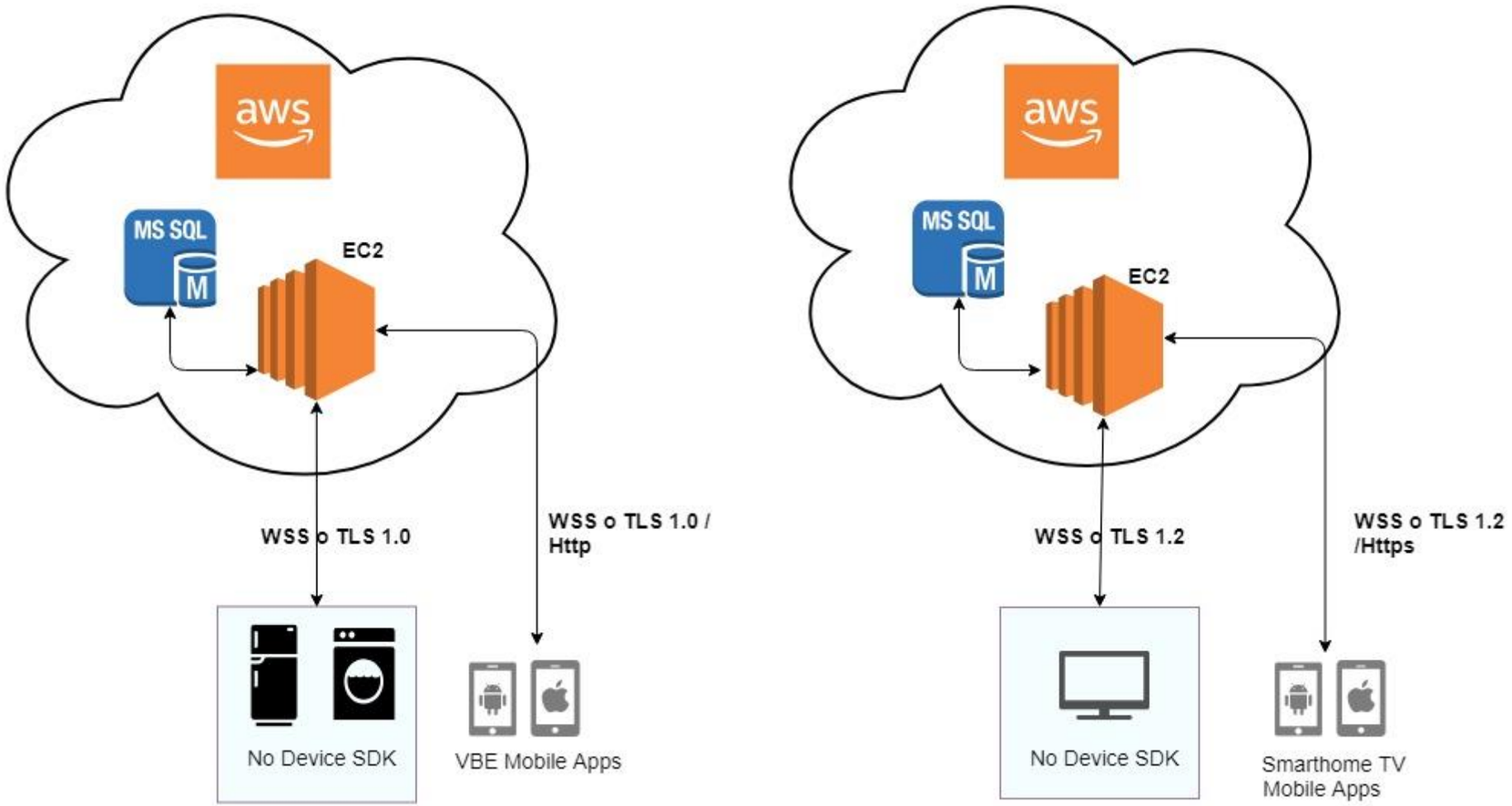
In the beginning …



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Dedicated IoT group established

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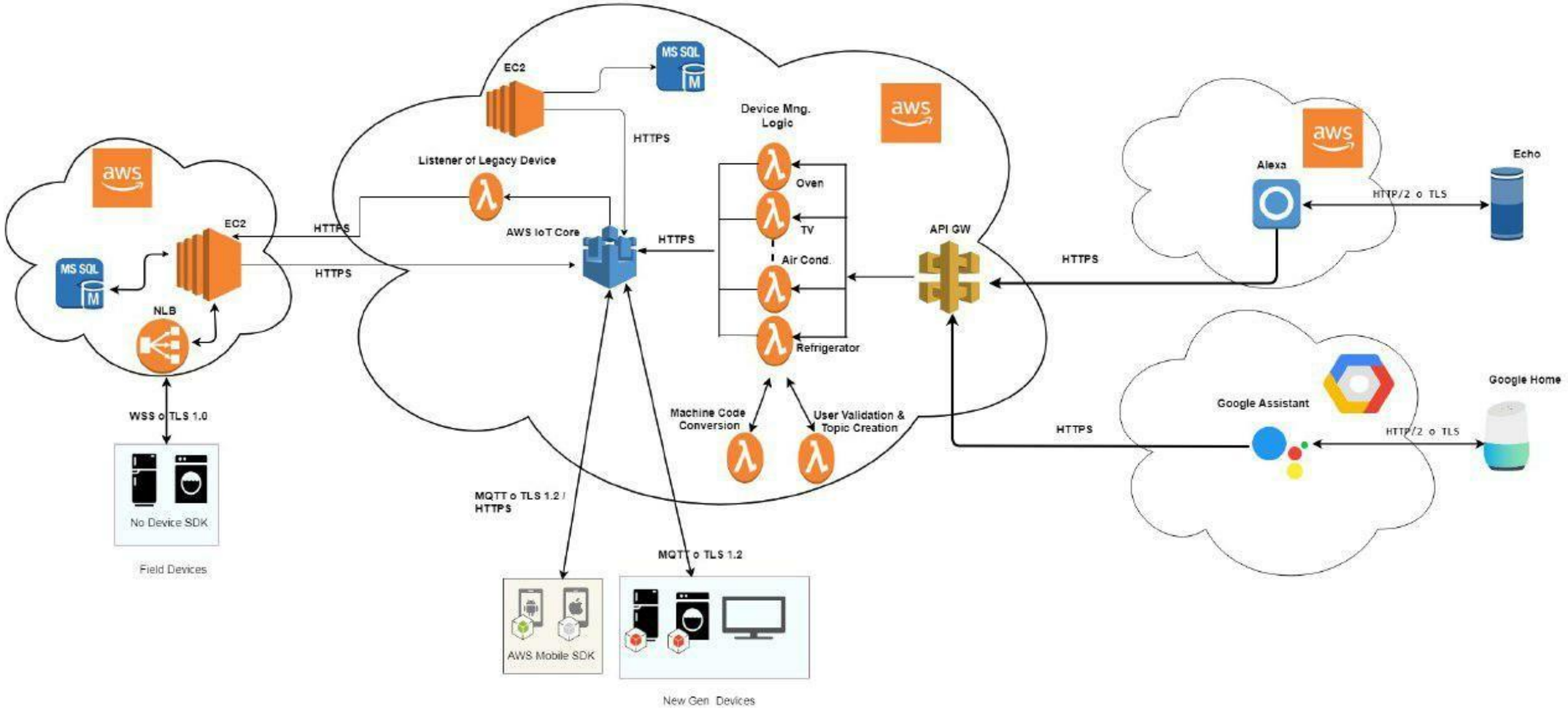
Today



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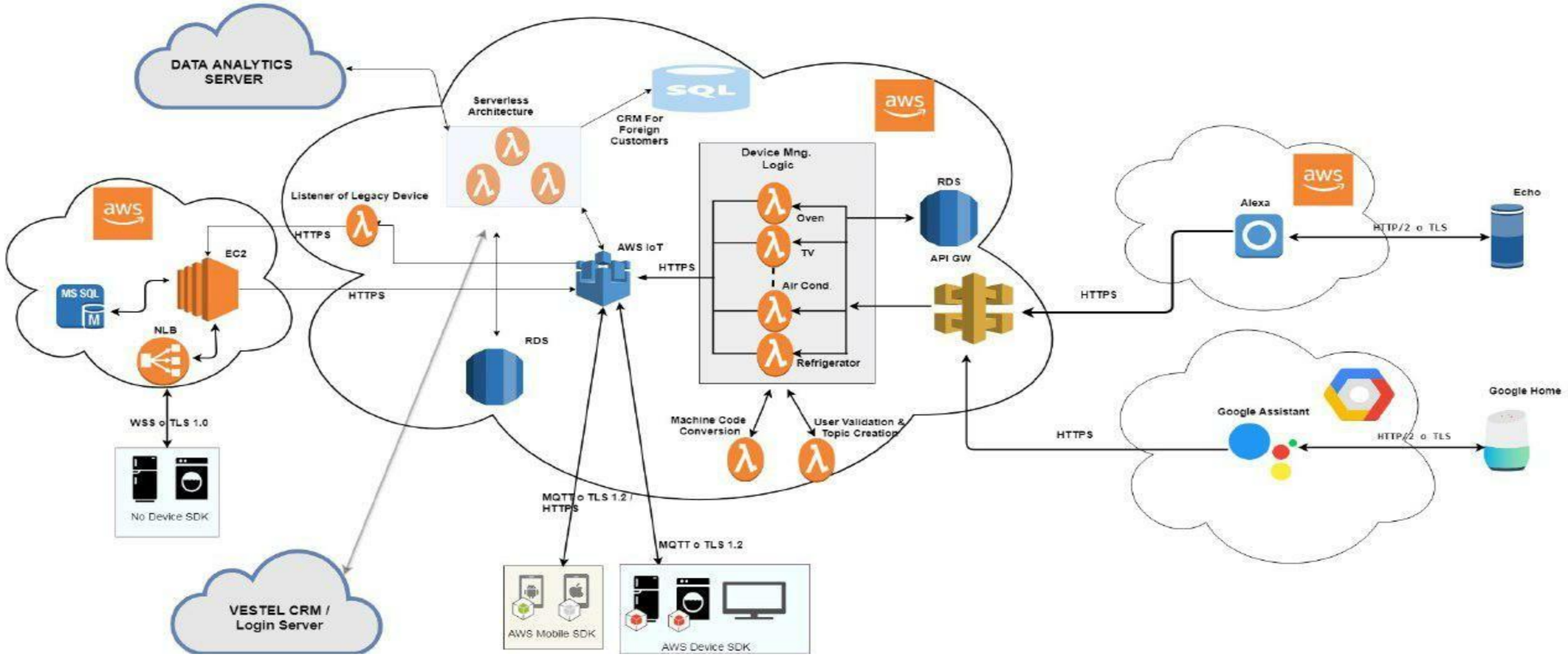
Our future cloud vision



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Step 1: Simplify large-scale IoT device onboarding with AWS IoT Core

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Typical steps of an IoT device onboarding

1. Mobile companion app user profile registration
2. Setting up device connectivity
3. Pairing device with user profile
4. Registering device with AWS IoT Core

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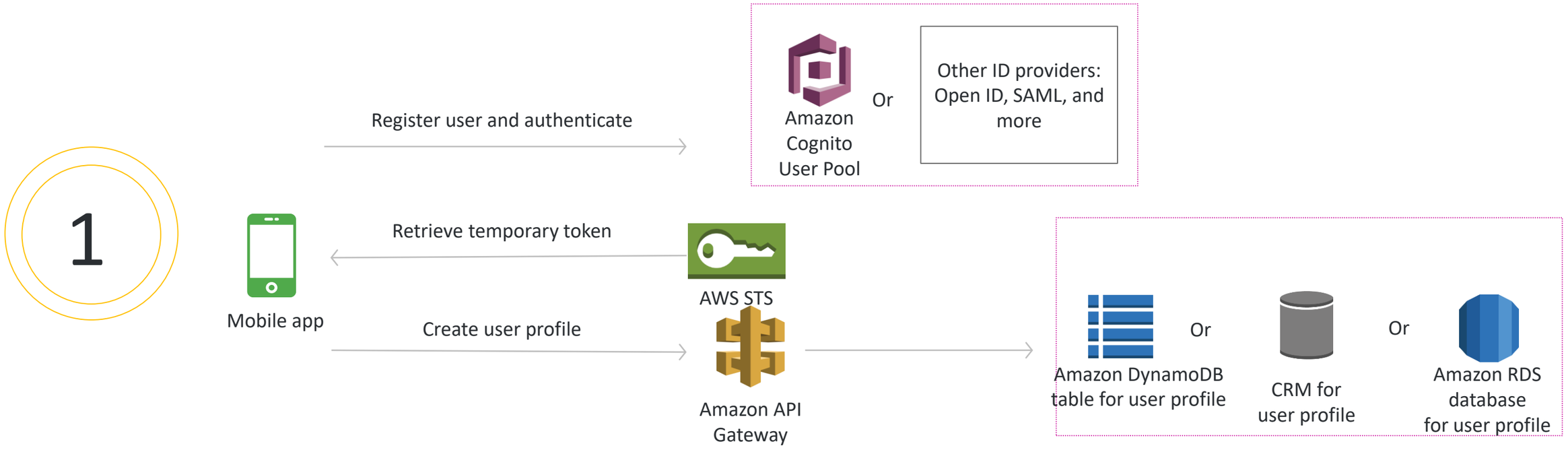
IoT device onboarding

Mobile companion app user profile registration



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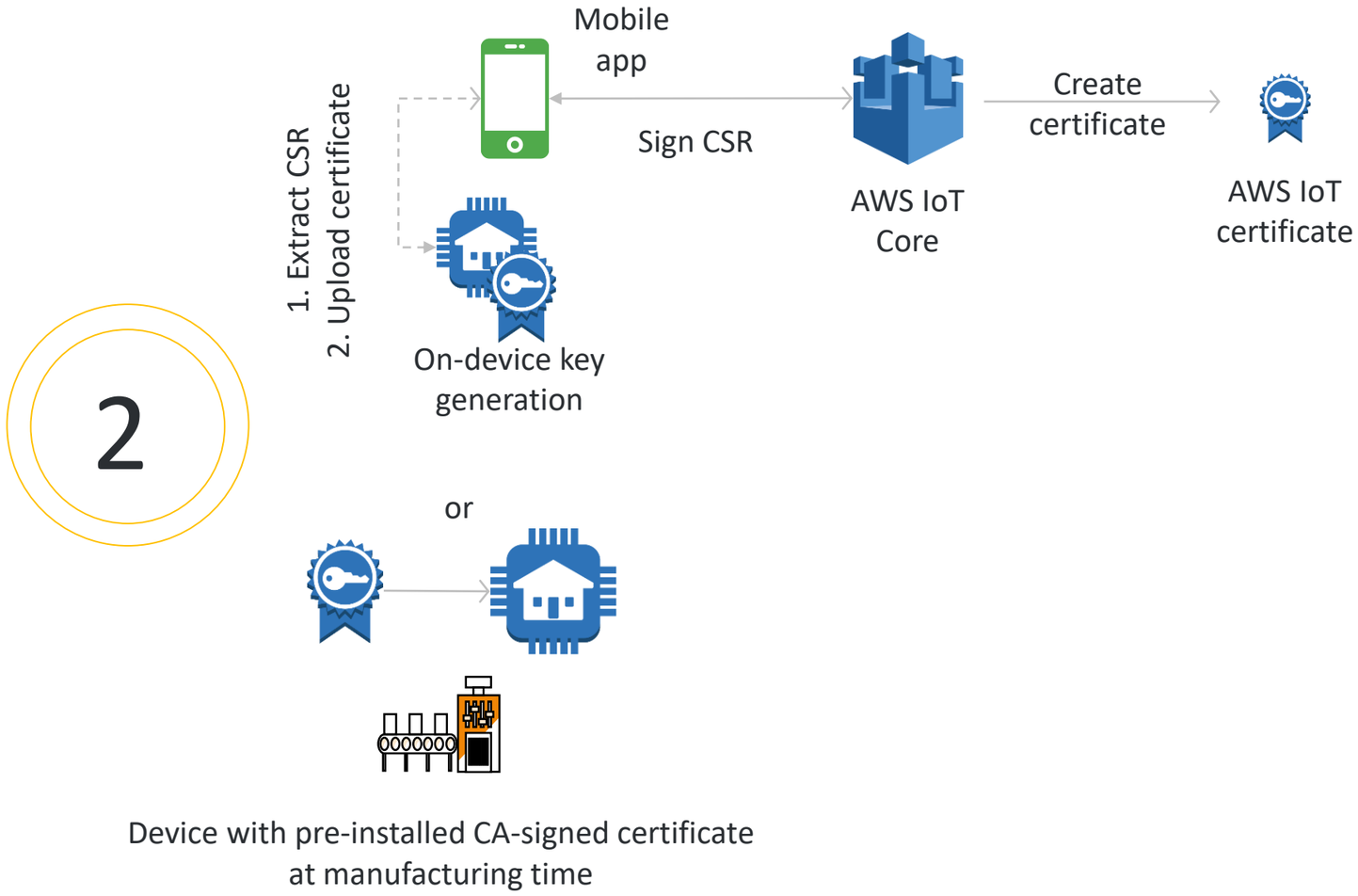
IoT device onboarding

Setting up device IoT credentials



Provisioning initial IoT credentials

- Pre-provisioning at manufacturing time
- On-device generation

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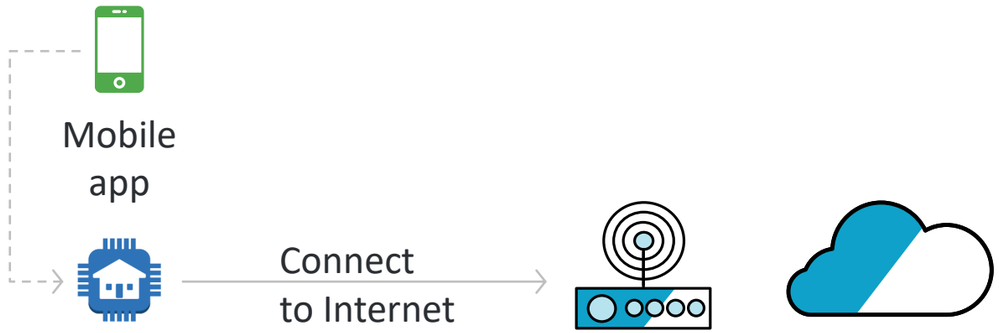
IoT device onboarding

Setting up device connectivity

3



Provisioning initial connectivity config

- BLE
- Wi-Fi AP
- Screen/keyboard
- WPA3

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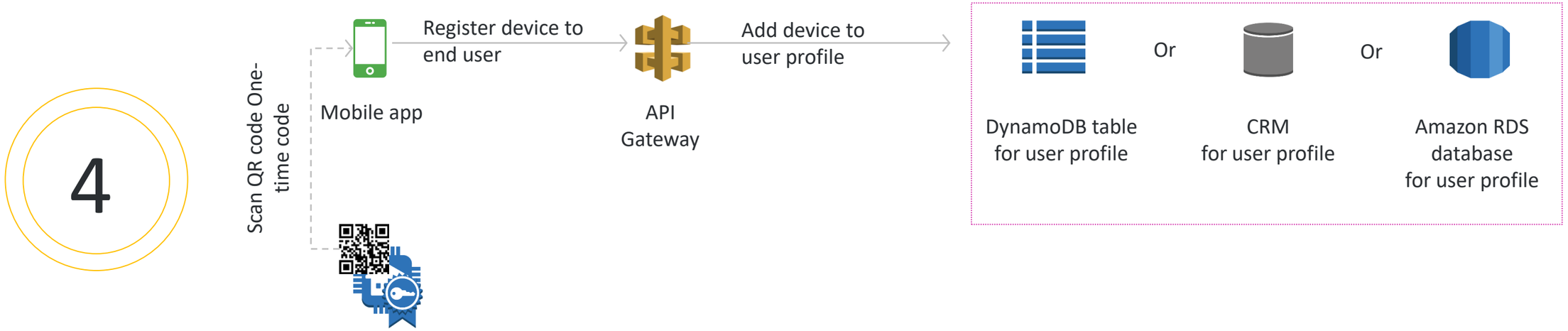
IoT device onboarding

Pairing device with user profile



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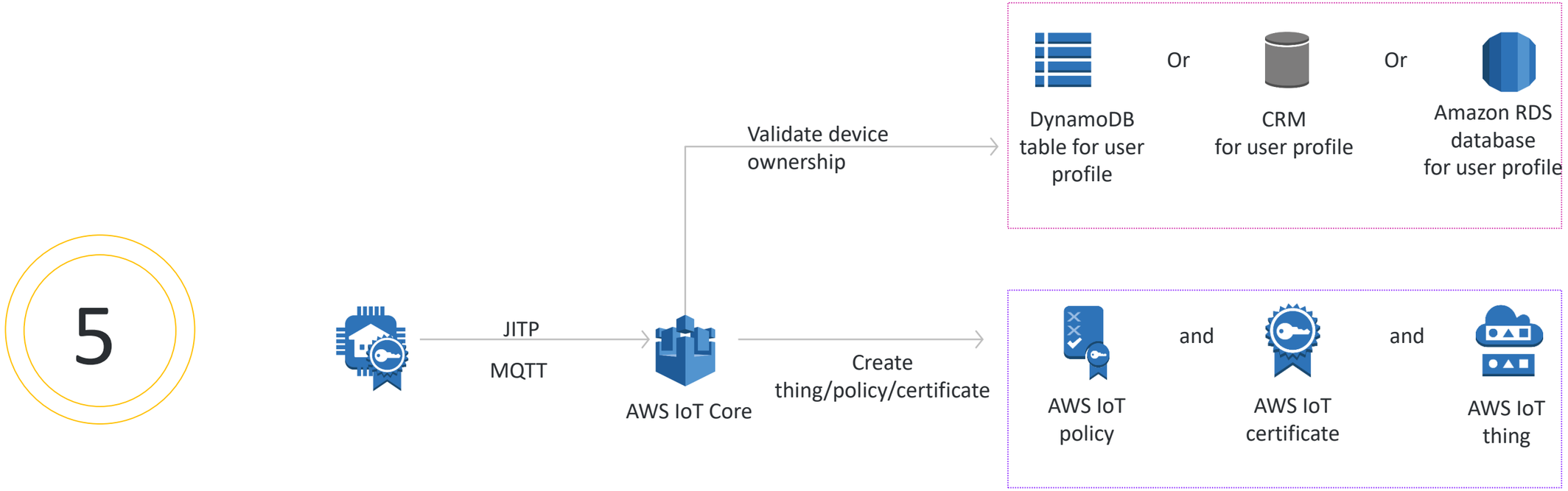
IoT device onboarding

Register device with AWS IoT



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Home security & monitoring

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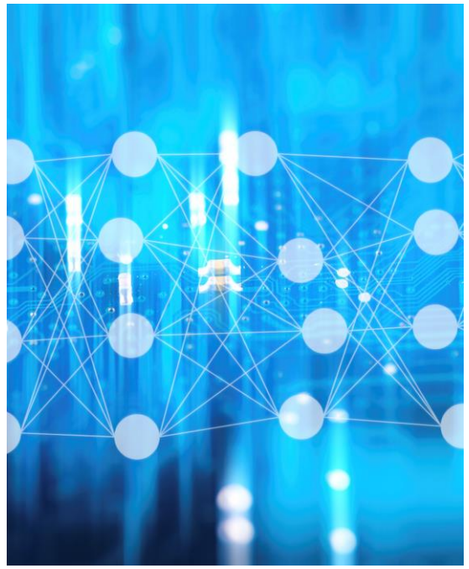
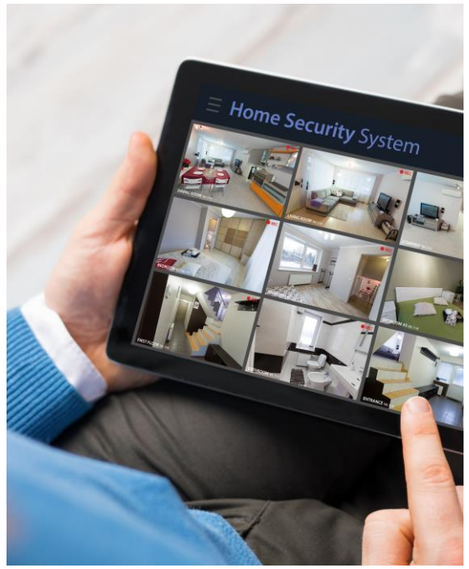
Home security & monitoring

Key trends & opportunities

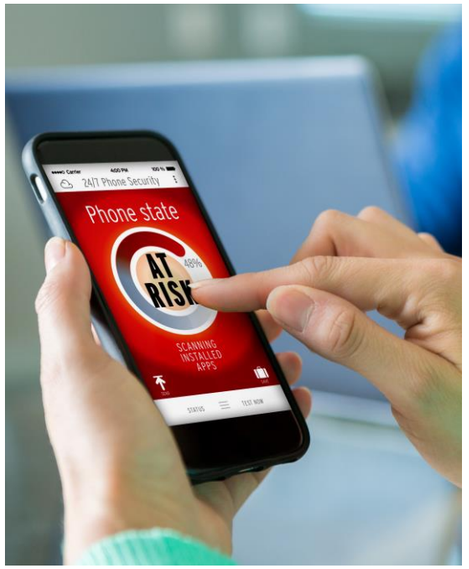
Audio and
image recognition



Machine
learning



Home
surveillance



Quick
response time

Energy
management

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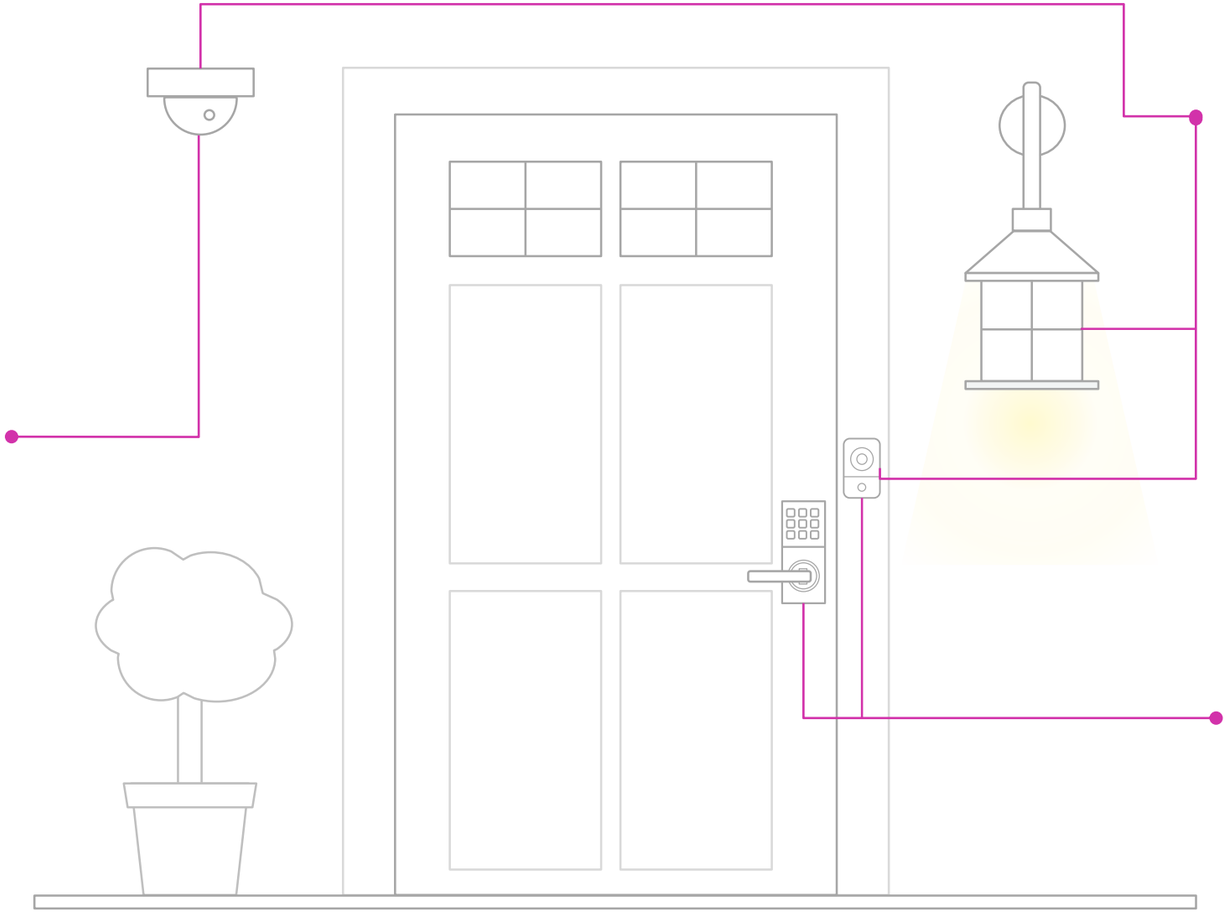
Home security & monitoring

Example

AWS IoT Device Management, AWS IoT Device Defender, and AWS IoT Analytics provide added benefits such as remote device management, monitoring, security, and insights into device usage

AWS Greengrass ML Inference brings machine learning capabilities to a camera, like being able to detect an intruder as it's happening



AWS Greengrass allows the security camera, door lock, and even outdoor lighting to continue operating even when cloud connection is lost. It can also take actions locally, avoiding a costly and timely round trip to the cloud.

Amazon FreeRTOS provides security, connectivity, and updateability for devices running on microcontrollers, like a connected door lock or video door bell

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Demo – Edge inference for sound classification using AWS Greengrass, Amazon SageMaker and Amazon Kinesis Video Streams

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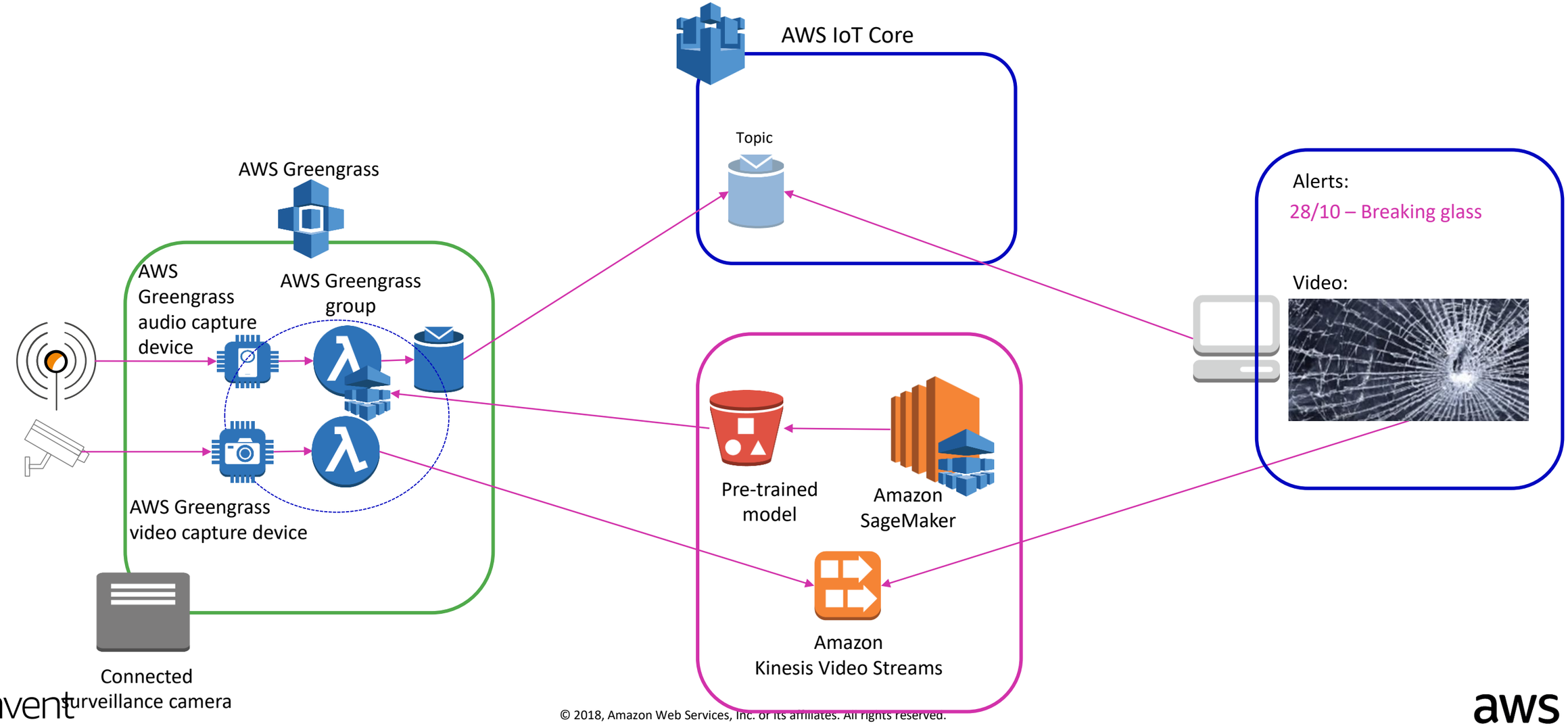
Home security & monitoring

Demo architecture



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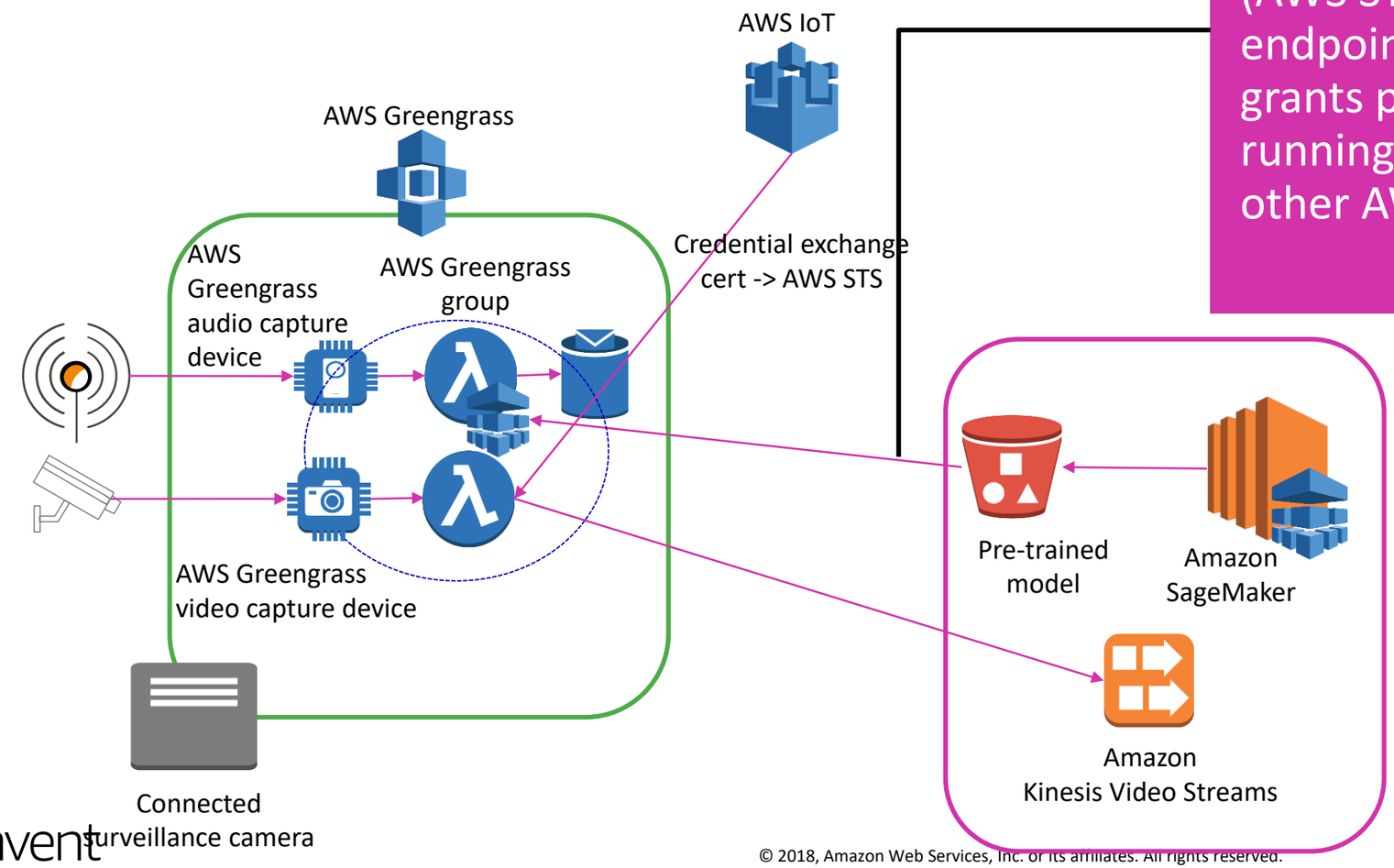
Demo

Technical deep dive

Accessing AWS Cloud Services from AWS Greengrass Lambda

After acquiring AWS Security Token Service (AWS STS) from the AWS IoT credential endpoint, AWS Greengrass group role grants permission to Lambda functions running on an AWS Greengrass core to call other AWS services (in the cloud)



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Home networking

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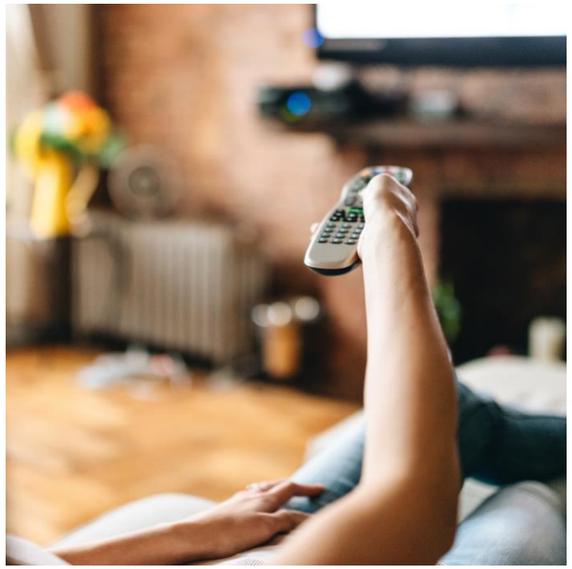
Home networking

Key trends & opportunities



Improve customer experience

Optimize the network performance

Reduce customer support cost

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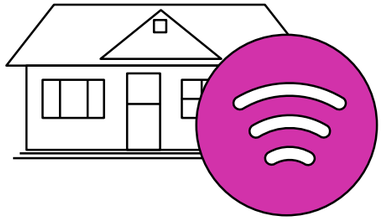
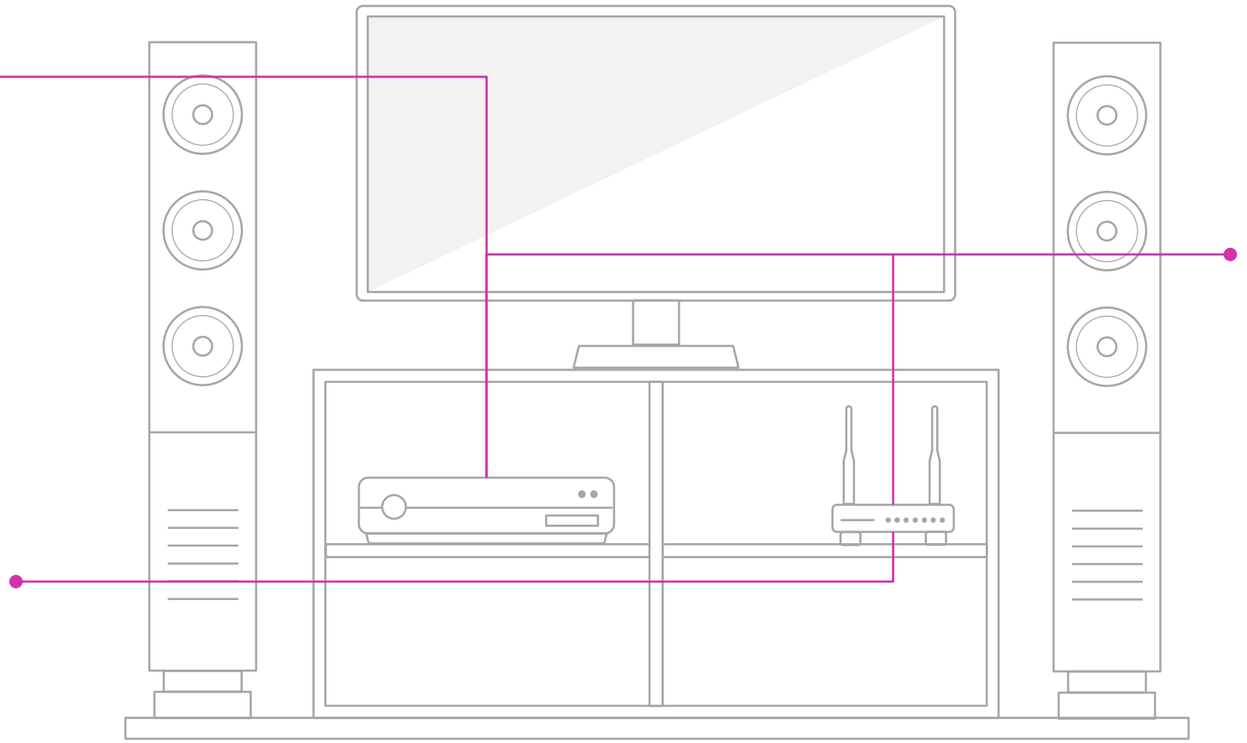
Home networking

Example



AWS IoT Device Management provides device certificates for routers and set-top boxes will never expire. You can perform OTA updates to keep devices running the latest versions of the software.



AWS IoT Analytics can help the operations team identify issues based on historical data, and provide proactive solutions to customers

AWS Greengrass can help customers diagnosing network issues on the device itself, even without internet connectivity. Then it can relay data back to AWS IoT Core for preventative action when cloud connection is re-established.

Customers can diagnose network issues and apply fixes themselves

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Demo – Home network anomaly detection using AWS Device Defender and AWS IoT Analytics

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Amazon SNS

AWS IoT Device Defender

Duplicate MQTT client IDs

Audit device configurations

Identify anomalies

Monitor device behavior

Generate alerts

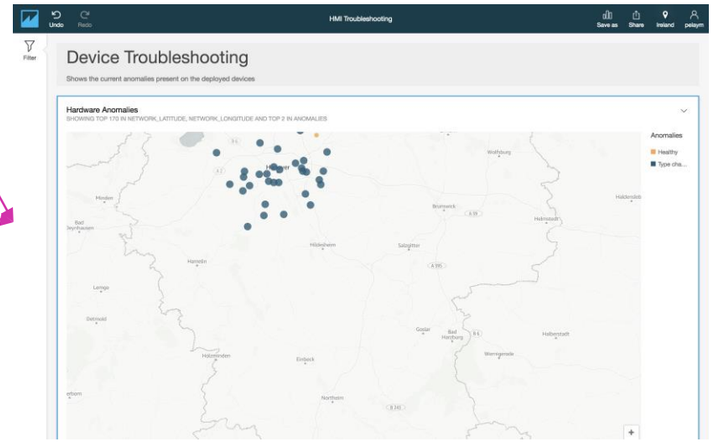
AWS Greengrass

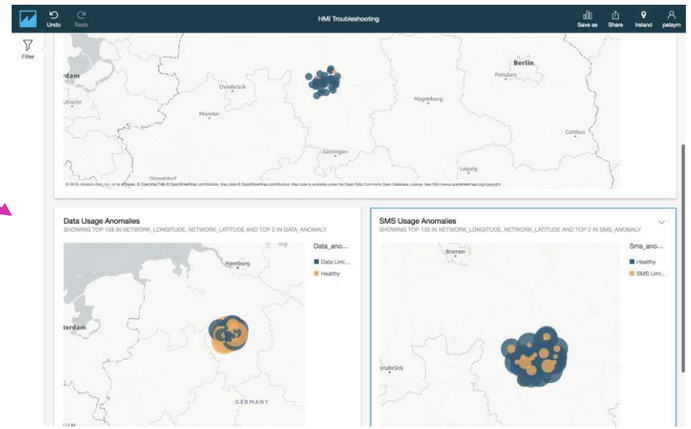
AWS Greengrass group

Home router/STB

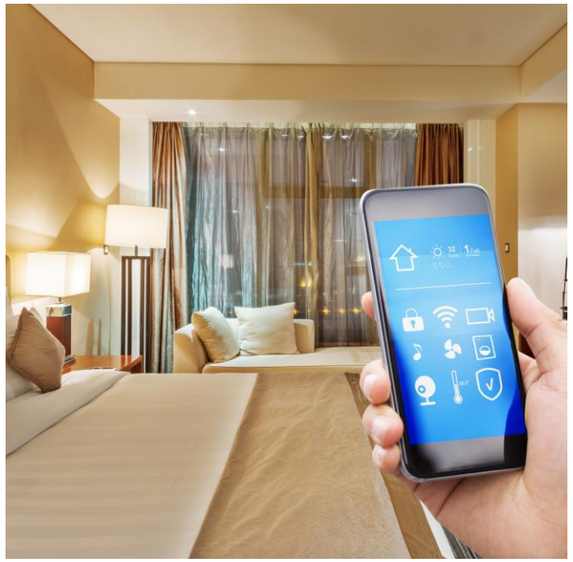
AWS Greengrass Device Defender Agent

Traffic spike detected by AWS Greengrass Device Defender agent





What’s next?



Home Automation

Home Security

Home Networking

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Breakout repeats

Thursday, Nov 29

Building IoT Applications for a Smart Home

4 p.m. – 5 p.m. | MGM, Level 1, Grand Ballroom 111

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Related breakouts

Wednesday, Nov 28

IOT302-R - [REPEAT 1] Alexa and AWS IoT, ft. VIZIO

5:30 p.m. – 6:30 p.m. | MGM, Level 1, Grand Ballroom 111

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Thank you!

Mark Relph
Head of IoT Business Development
AWS

Jan Borch
IoT Prototype Architect
AWS

Y. Burak Savak
Vice President
IoT, Cloud, Automotive
VESTEL

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