

AWS re:Invent

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Build smart camera applications using Amazon Kinesis Video Streams WebRTC

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Agenda

Amazon Kinesis Video Streams service overview

Key use cases and architectures

Hands-on workshop

What customers are building

Kinesis Video Streams enables millions of camera-enabled IoT devices to securely stream media to the AWS Cloud for storage, media playback, and ML-based analytics processing. Additionally, KVS offers managed WebRTC capabilities that enable interactive, real-time audio and video communication between web browsers, mobile applications, and connected devices.



Connected home

Video doorbells
Baby monitors
Outdoor cameras



Industrial

Safety management
Predictive maintenance models
Quality assurance



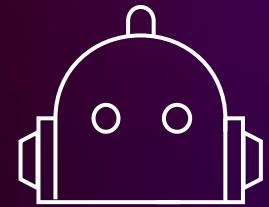
Public sector

Traffic management with 24/7 video
Public safety



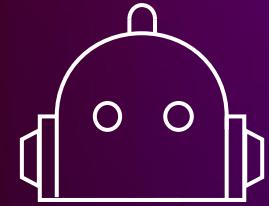
Automotive

Sentinel mode for vehicle monitoring
Telematics
Video dash cameras



Robotics

Customer challenges



Scalability and security

Connected home

High reliability, low-latency live viewing
Video playback and storage
Integrations with AI/ML models like Amazon Rekognition for people, pet & package detection

Industrial

Media Ingestions into CV and AI/ML models
Reliable 24/7 streaming
Imaging extraction for CV analytics

Public sector

Highly reliable video with multiple viewers
Imaging extraction for CV analytics

Automotive

Integrate with edge and cloud hybrid models to collect data while driving and analyze locally stored data when stopped

Robotics

Live streaming video and metadata and 300 ms latency to remote control products

Amazon Kinesis Video Streams service overview

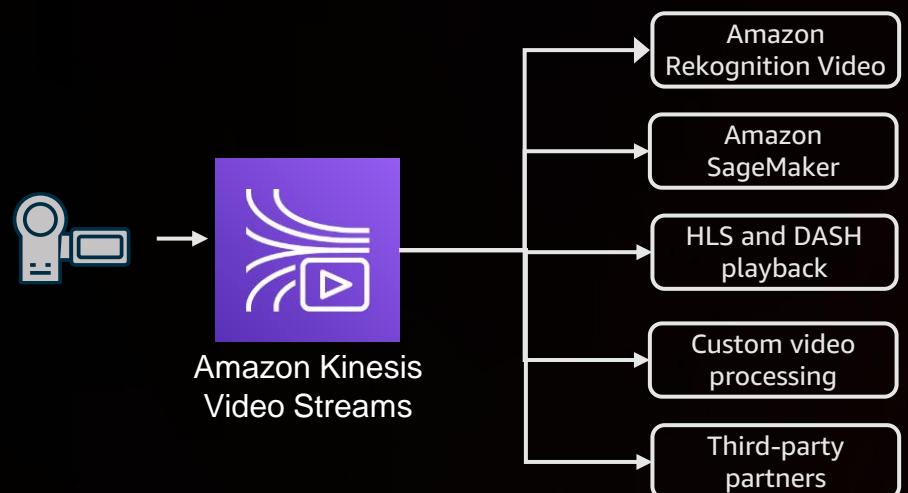


Two streaming methods

Streams

Secure data ingestion from millions of camera devices

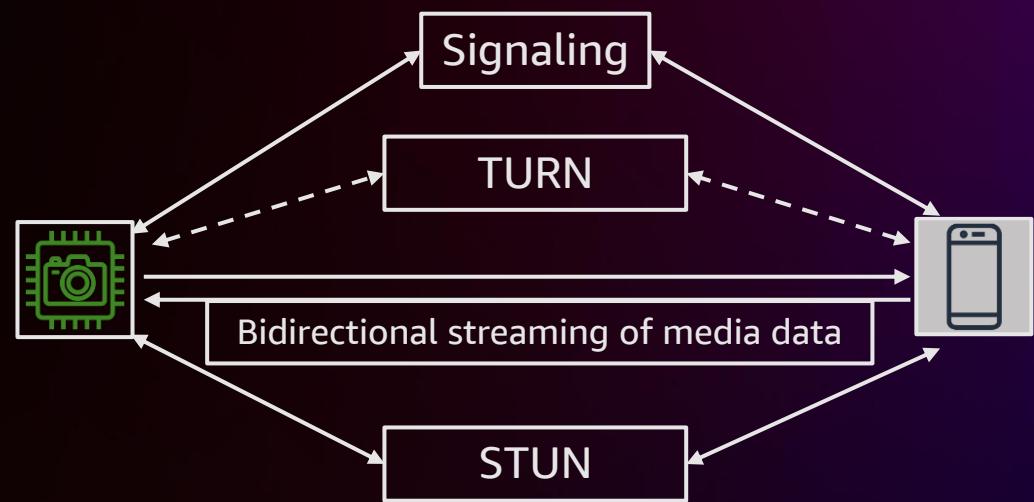
- Ingest media, store, consume and playback time-indexed media data
- Integration with AI/ML services



WebRTC

Low-latency and two-way media streaming with WebRTC

- Managed signaling, STUN, and TURN servers



Choosing the right streaming method

	Streams	WebRTC
Cloud media storage Analysis with AI/ML services	Yes	No
Bidirectional streaming	No	Yes
Typical latency for live playback	3-5 seconds	Less than 1 second
Number of simultaneous playback sessions	Up to about 100 sessions	Up to 10 sessions
SDK for camera devices	Producer SDK	WebRTC SDK

WebRTC technology overview

WebRTC is not “just” a media streaming protocol. It is an open standard for real-time communication with technology specifications for:

Signaling



Exchange connection metadata

Connectivity



Establish peer-to-peer connectivity

Media delivery



Low-latency exchange media and arbitrary data

Encryption

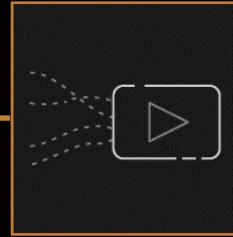


End-to-end encryption

Kinesis Video Streams with WebRTC

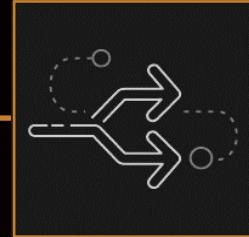
Stream live media with ultra-low latency and enable two-way interactivity for millions of camera devices

Low-latency live media streaming



Peer-to-peer audio and video live streaming with sub-1 second latency for playback

Real-time, two-way interactivity



Exchange audio, video, and data between devices, mobile, and web apps for real-time, two-way interactivity

Standards compliant



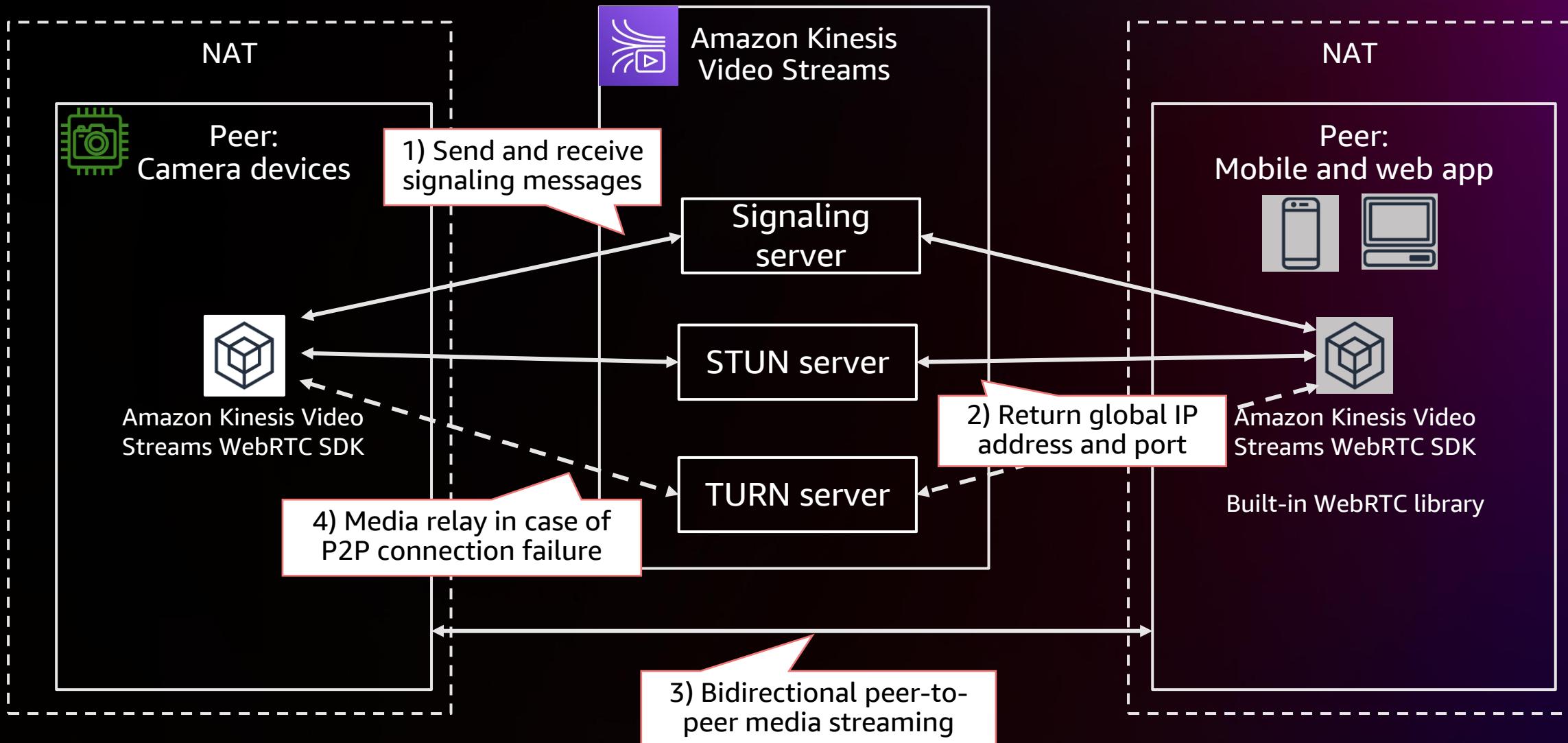
Compliant with web and mobile platforms for easy plugin free playback

Fully managed

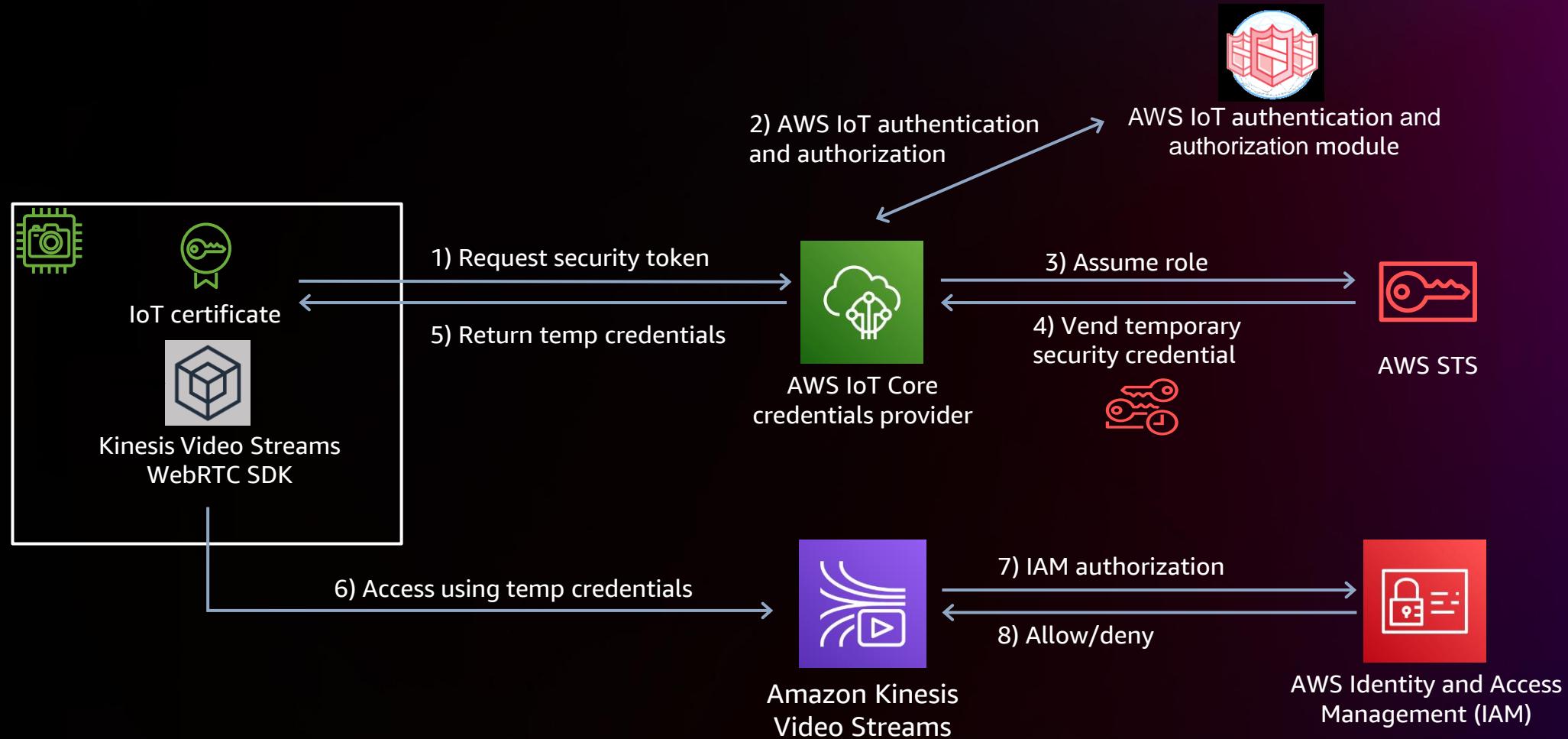


Fully managed WebRTC signaling, TURN, and STUN services with easy to use SDKs

WebRTC connection flow



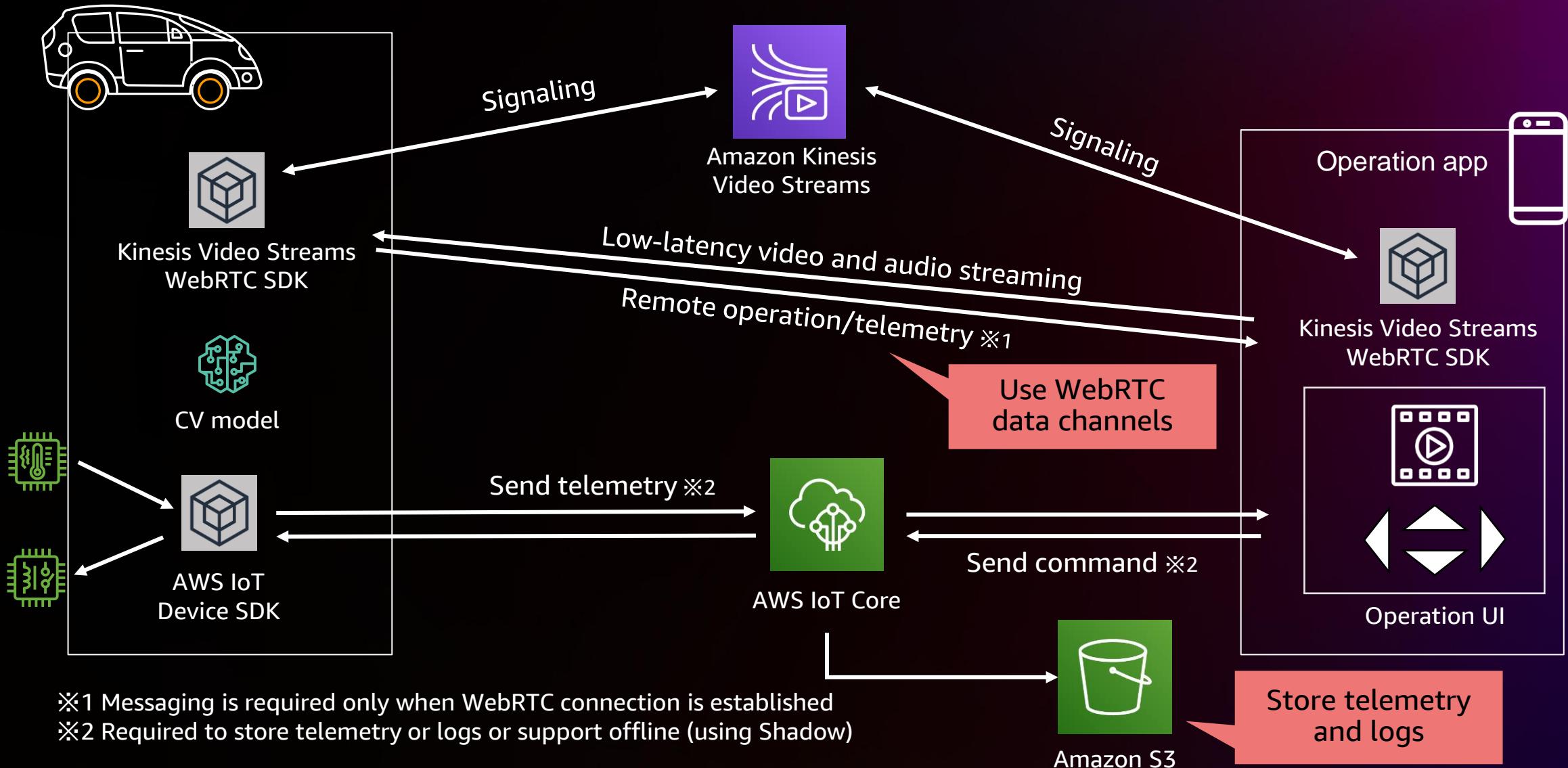
How to authenticate camera devices



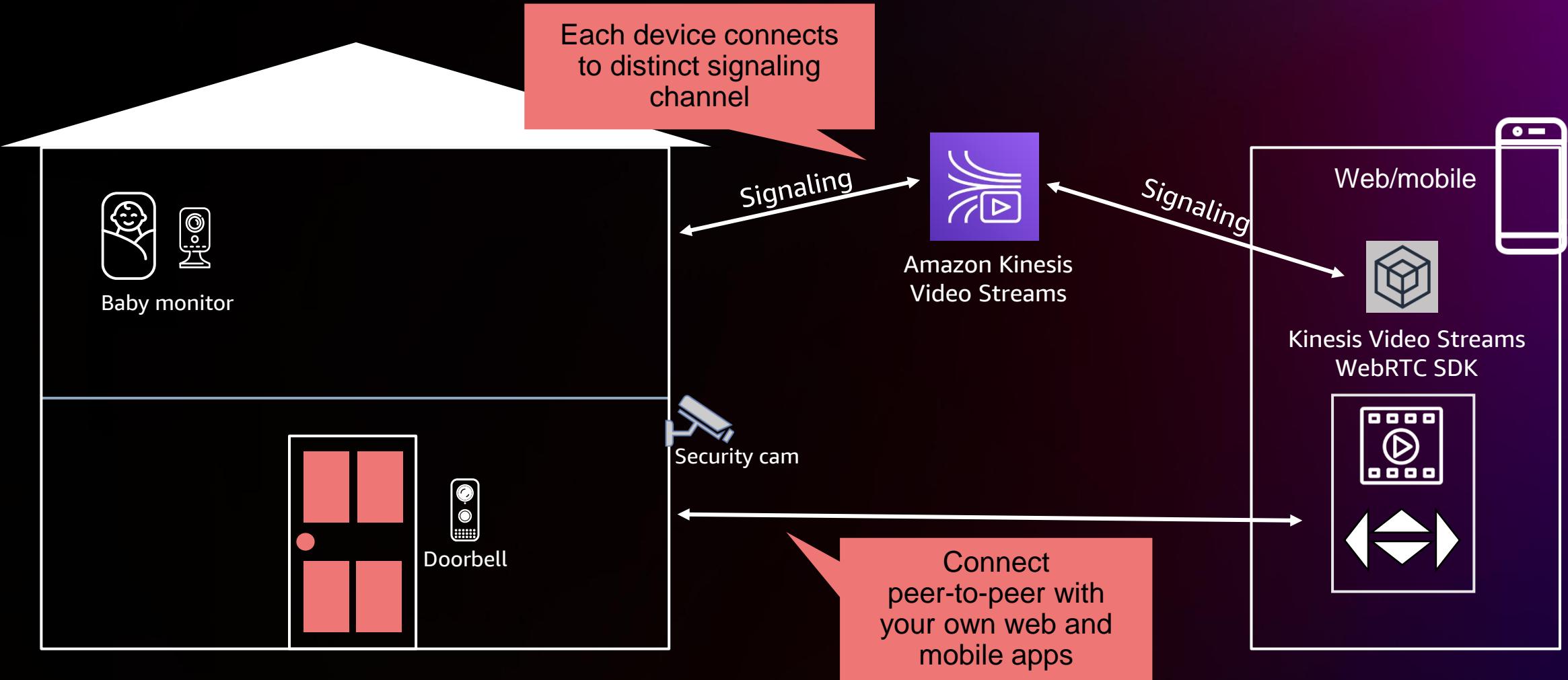
<https://docs.aws.amazon.com/iot/latest/developerguide/authorizing-direct-aws.html>

Key use cases and architectures

Automotive and robotics



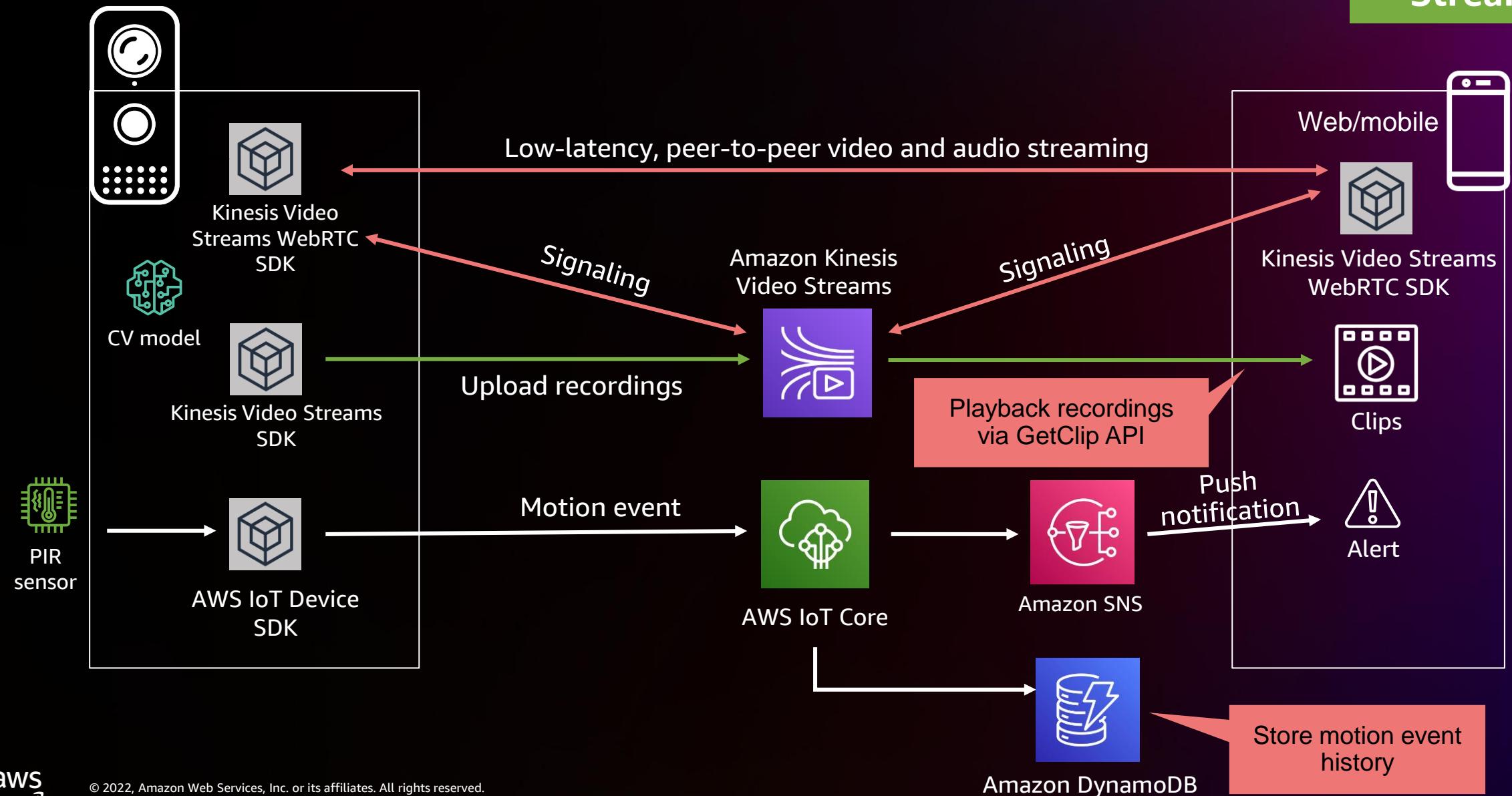
Smart home



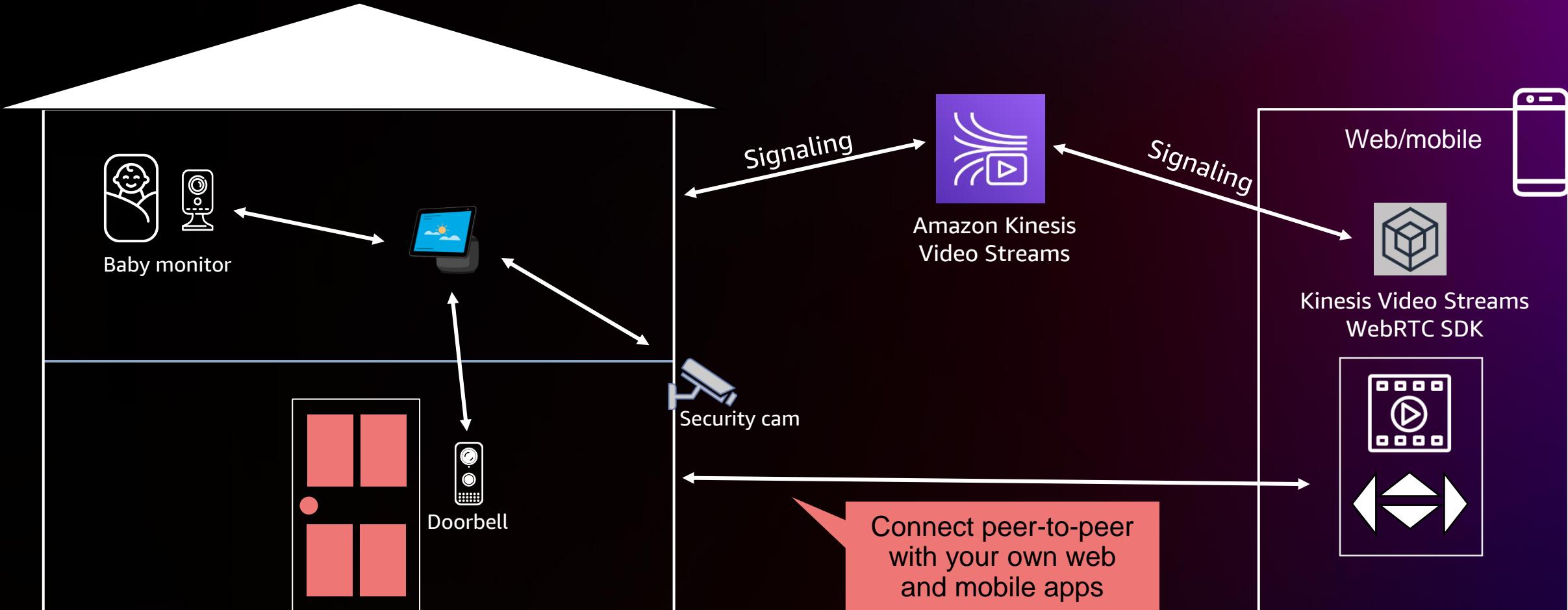
Smart home

WebRTC

Streams



Connect to Echo Show



Workshop



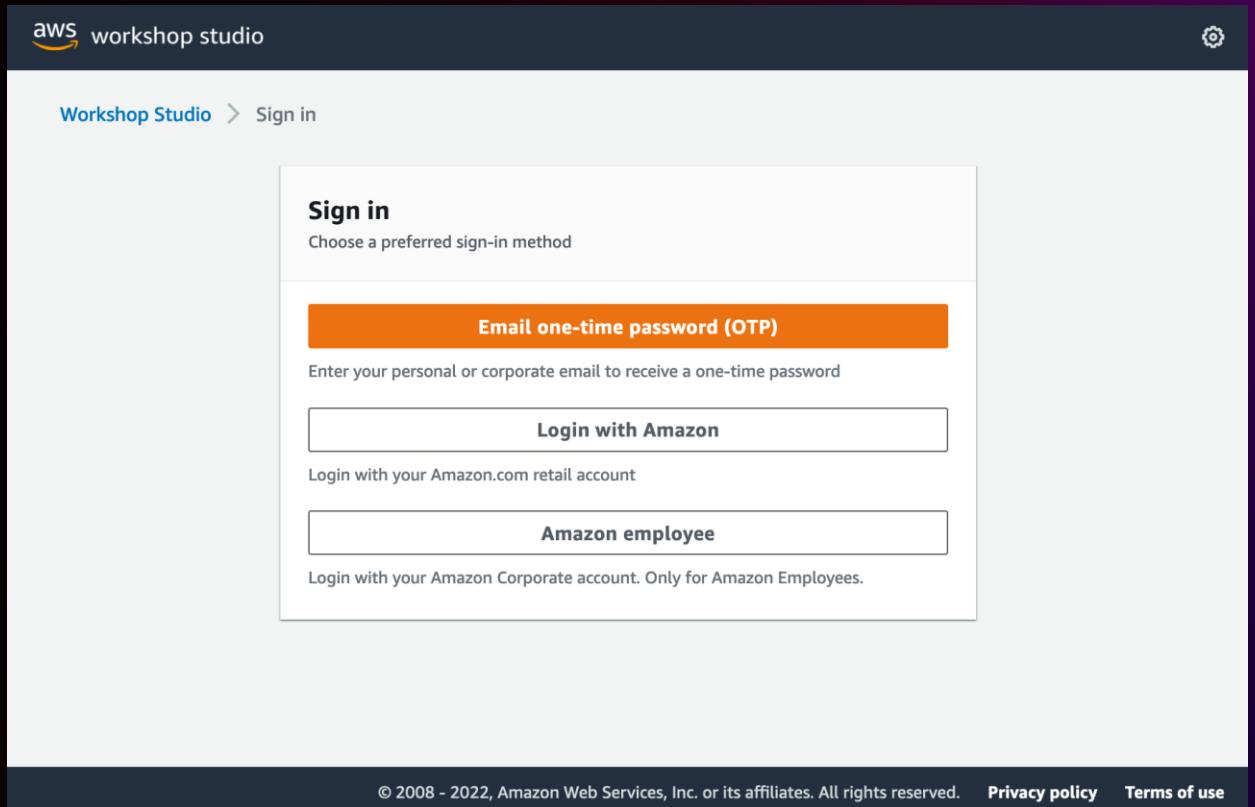
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Getting started with this workshop

- As a participant, you will have access to an AWS account with any optional pre-provisioned infrastructure and IAM policies needed to complete this workshop
- The AWS account will only be available for the duration of this workshop – you will lose access to the account thereafter
- The optional pre-provisioned infrastructure will be deployed to a specific AWS Region; check your workshop content to determine whether other Regions will be used
- Be sure to review the terms and conditions of the event – do not upload any personal or confidential information in the account

Step 1: Sign in via your preferred method

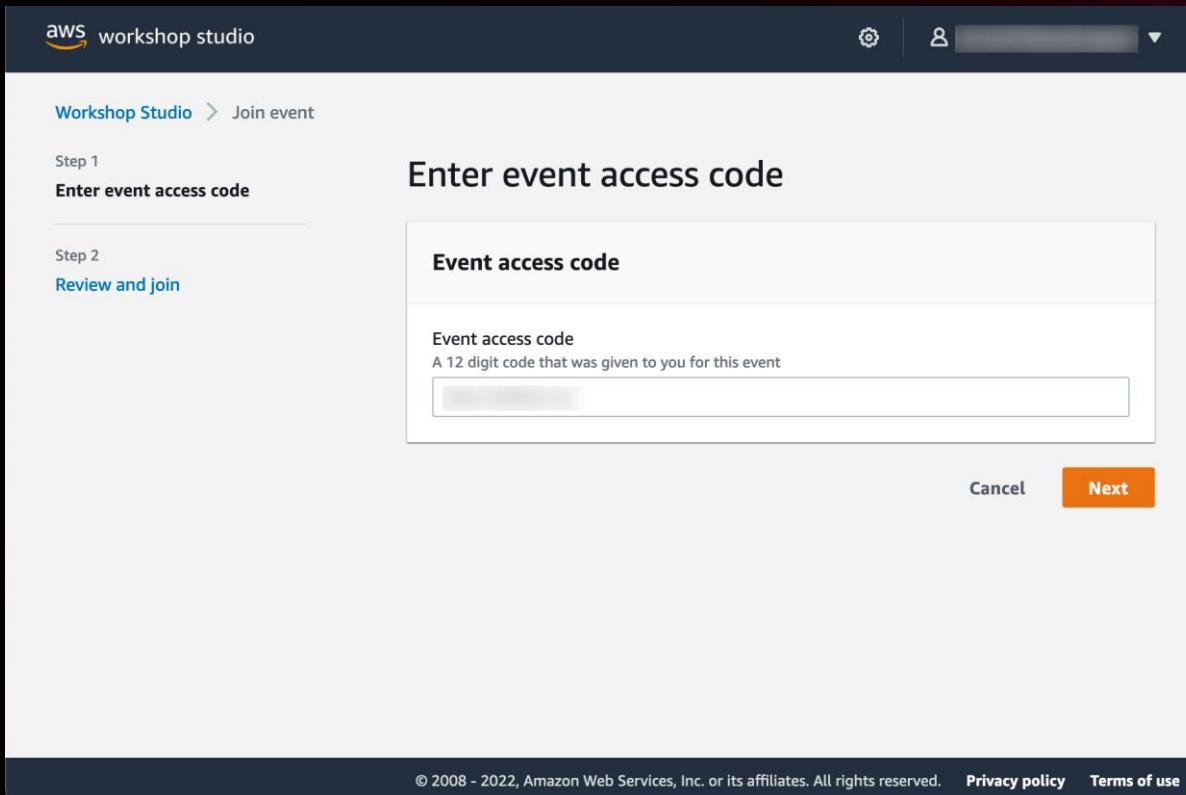
<https://catalog.workshops.aws/join>



The screenshot shows the AWS Workshop Studio sign-in interface. At the top, the AWS logo and 'workshop studio' are visible, along with a gear icon for settings. The main title 'Workshop Studio > Sign in' is centered above the sign-in form. The form is titled 'Sign in' and prompts the user to 'Choose a preferred sign-in method'. It features three main options: 'Email one-time password (OTP)' (highlighted with an orange background), 'Login with Amazon' (with a sub-note 'Login with your Amazon.com retail account'), and 'Amazon employee' (with a sub-note 'Login with your Amazon Corporate account. Only for Amazon Employees.'). The bottom of the page includes a copyright notice '© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.' and links for 'Privacy policy' and 'Terms of use'.

Step 2: Enter event access code

7293-07ee19-9f



Step 3: Review terms and join event

The screenshot shows the 'Review and join' step of the AWS Workshop Studio 'Join event' process. The page is titled 'Review and join' and displays 'Event details' and 'Terms and Conditions'.

Event details

Name	Start time	Duration	Level
AWS General Immersion Day	9/23/2022 01:13 AM	12 hours	-

Description
AWS General Immersion Day

Terms and Conditions
Read and accept before joining the event

1. By using AWS Workshop Studio for the relevant event, you agree to the AWS Event Terms and Conditions and the AWS Acceptable Use Policy. You acknowledge and agree that are using an AWS-owned account that you can only access for the duration of the relevant event. If you find residual resources or materials in the AWS-owned account, you will make us aware and cease use of the account. AWS reserves the right to terminate the account and delete the contents at any time.
2. You will not: (a) process or run any operation on any data other than test data sets or lab-approved materials by AWS, and (b) copy, import, export or otherwise create derivative works of materials provided by AWS, including but not limited to, data sets.
3. AWS is under no obligation to enable the transmission of your materials through Event Engine and may, in its discretion, edit, block, refuse to post, or remove your materials at any time.
4. Your use of AWS Workshop Studio will comply with these terms and all applicable laws, and your access to AWS Workshop Studio will immediately and automatically terminate if you do not comply with any of these terms or conditions.

I agree with the Terms and Conditions

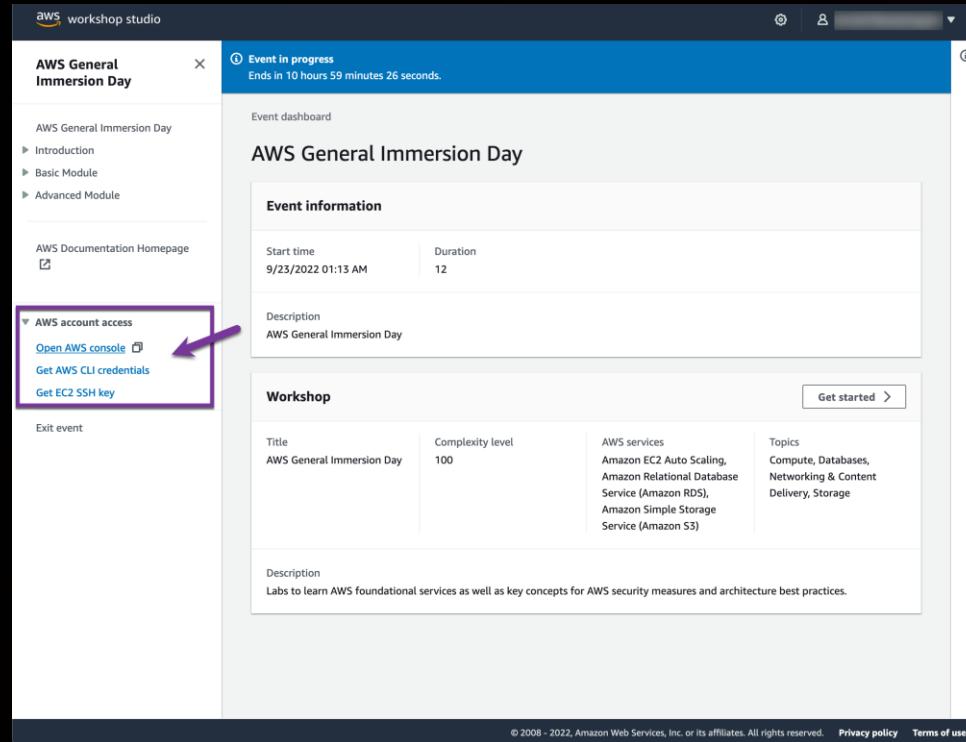
Cancel Previous **Join event**

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Step 4: Access AWS account

Access the AWS Management Console or generate AWS CLI credentials as needed



AWS General Immersion Day

Event in progress
Ends in 10 hours 59 minutes 26 seconds.

Event dashboard

AWS General Immersion Day

Event information

Start time: 9/23/2022 01:13 AM Duration: 12

Description: AWS General Immersion Day

Workshop

Title: AWS General Immersion Day Complexity level: 100

AWS services: Amazon EC2 Auto Scaling, Amazon Relational Database Service (Amazon RDS), Amazon Simple Storage Service (Amazon S3)

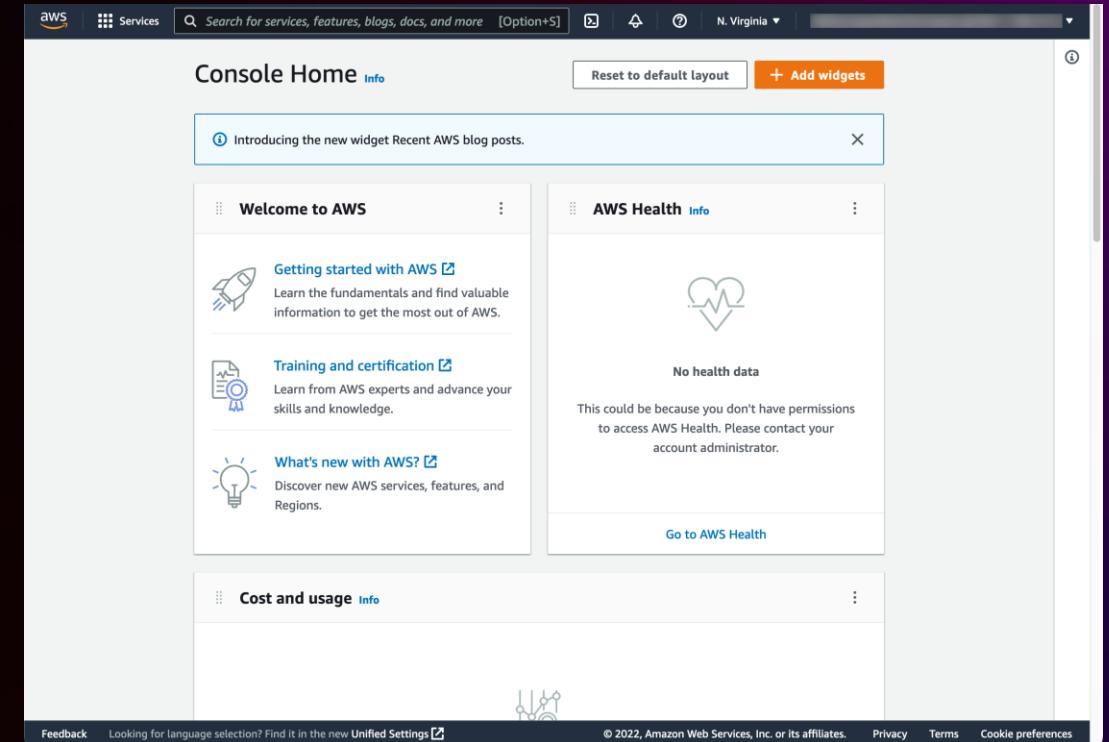
Topics: Compute, Databases, Networking & Content Delivery, Storage

Description: Labs to learn AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

AWS account access

- Open AWS console
- Get AWS CLI credentials
- Get EC2 SSH key

Exit event



Console Home

Introducing the new widget Recent AWS blog posts.

Welcome to AWS

Getting started with AWS

Learn the fundamentals and find valuable information to get the most out of AWS.

Training and certification

Learn from AWS experts and advance your skills and knowledge.

What's new with AWS?

Discover new AWS services, features, and Regions.

AWS Health

No health data

This could be because you don't have permissions to access AWS Health. Please contact your account administrator.

Go to AWS Health

Feedback Looking for language selection? Find it in the new Unified Settings

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Step 5: Get started with the workshop

AWS workshop studio

AWS General Immersion Day

Event in progress
Ends in 10 hours 59 minutes 26 seconds.

Event dashboard

AWS General Immersion Day

Event information

Start time	Duration
9/23/2022 01:13 AM	12

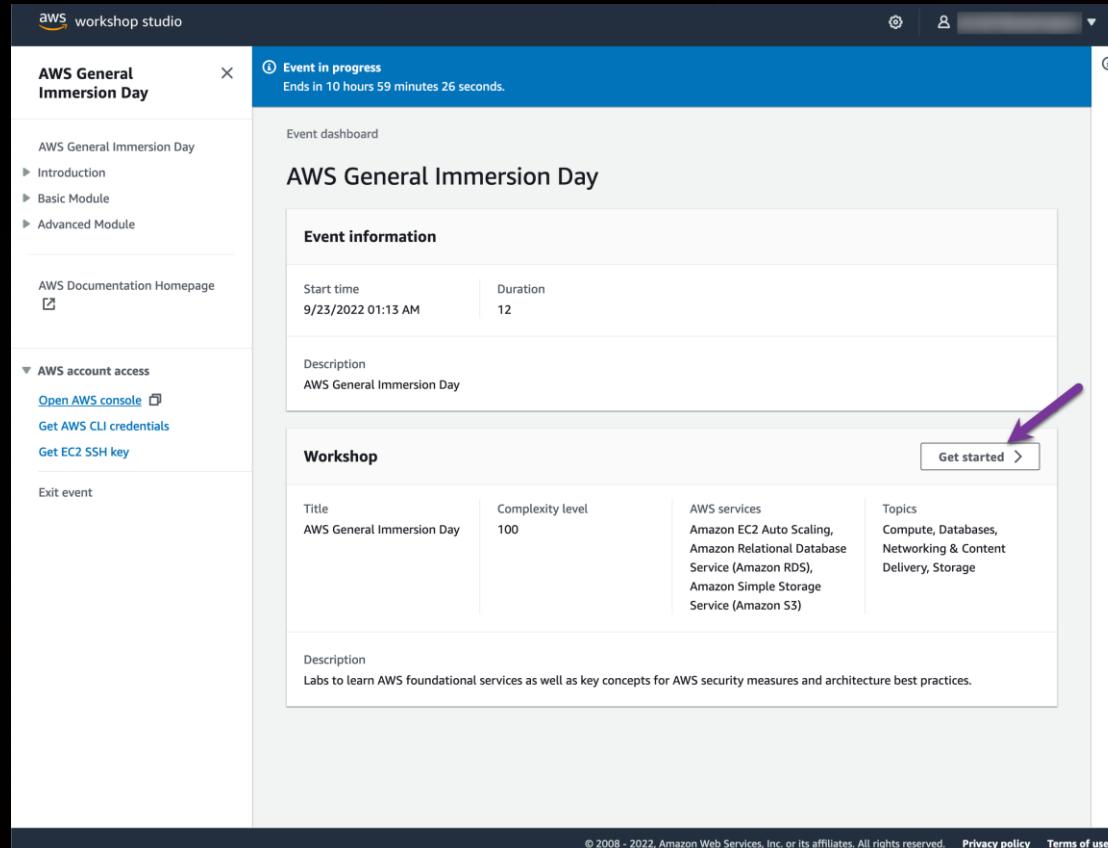
Description
AWS General Immersion Day

Workshop

Title	Complexity level	AWS services	Topics
AWS General Immersion Day	100	Amazon EC2 Auto Scaling, Amazon Relational Database Service (Amazon RDS), Amazon Simple Storage Service (Amazon S3)	Compute, Databases, Networking & Content Delivery, Storage

Description
Labs to learn AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

Get started >



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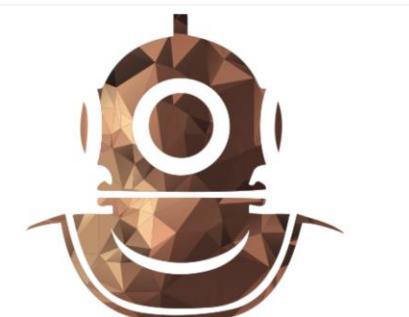
AWS workshop studio

AWS General Immersion Day

Event in progress
Ends in 10 hours 57 minutes 12 seconds.

Event dashboard > AWS General Immersion Day

AWS General Immersion Day



IMMERSION DAYS

In this General Immersion Day workshop, through a mix of service explanation and hands-on labs led by AWS, you will learn about AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

The hands-on labs are largely divided into **basic** and **advanced** modules.

In basic modules, you can learn various features of each AWS foundational service. In advanced modules, you can learn how to connect each service organically to create architecture like 3-tier web application.

[Previous](#) [Next](#)

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Thank you!

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survey in the **mobile app**