

AWS re:Invent

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IOT309-R

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



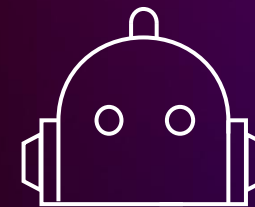
Public sector

- Traffic management with 24/7 video
- Public safety



Automotive

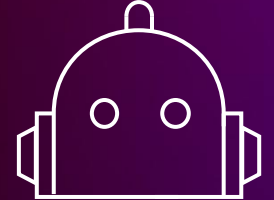
- Sentinel mode for vehicle monitoring
- Telematics
- Video dash cameras



Robotics

- Remote control

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

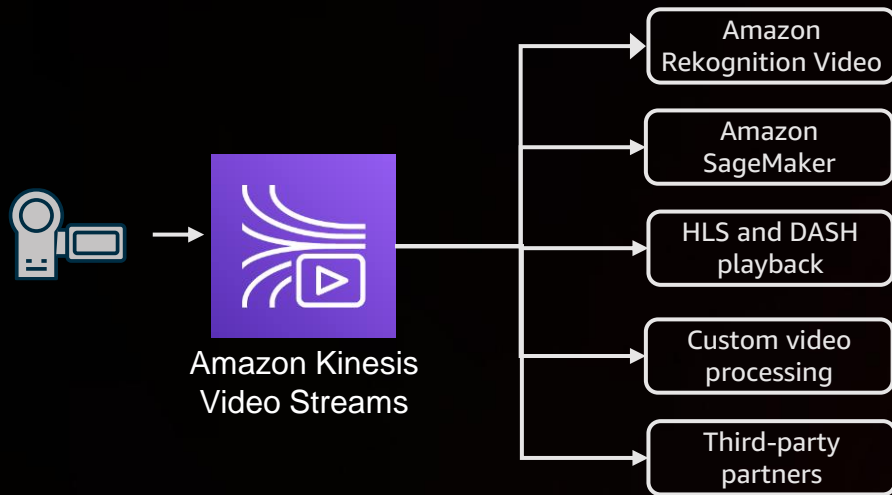


Two streaming methods

Streams

Secure data ingestion from millions of camera devices

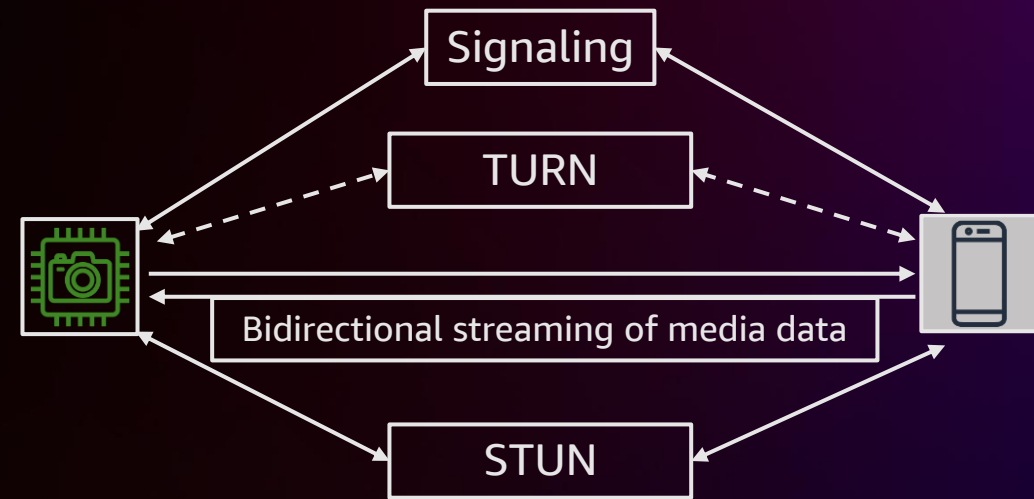
- Ingest media, store, consume and playback time-indexed media data
- Integration with AI/ML services



WebRTC

Low-latency and two-way media streaming with WebRTC

- Managed signaling, STUN, and TURN servers



Choosing the right streaming method

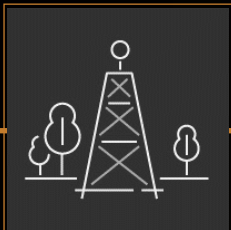
	Streams	WebRTC
Cloud media storage Analysis with AI/ML services	Yes	No
Bidirectional streaming	No	Yes
Typical latency for live playback	3-5 seconds	Less than 1 second
Number of simultaneous playback sessions	Up to about 100 sessions	Up to 10 sessions
SDK for camera devices	Producer SDK	WebRTC SDK

WebRTC technology overview

WebRTC

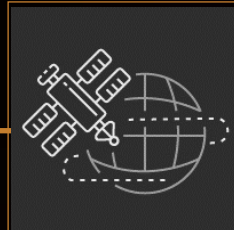
WebRTC is not “just” a media streaming protocol. It is an open standard for real-time communication with technology specifications for:

Signaling



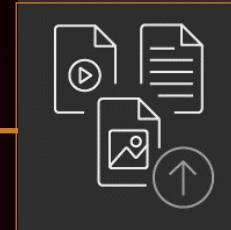
Exchange connection
metadata

Connectivity



Establish peer-to-peer
connectivity

Media delivery



Low-latency
exchange media and
arbitrary data

Encryption



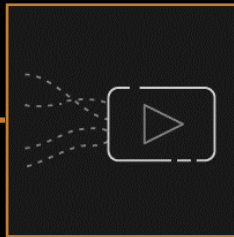
End-to-end
encryption

Kinesis Video Streams with WebRTC

WebRTC

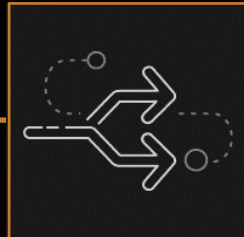
Stream live media with ultra-low latency and enable two-way interactivity for millions of camera devices

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



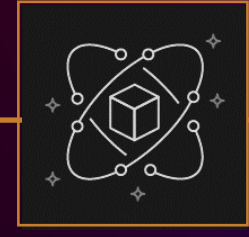
Exchange audio, video, and data between devices, mobile, and web apps for real-time, two-way interactivity

Standards compliant



Compliant with web and mobile platforms for easy plugin free playback

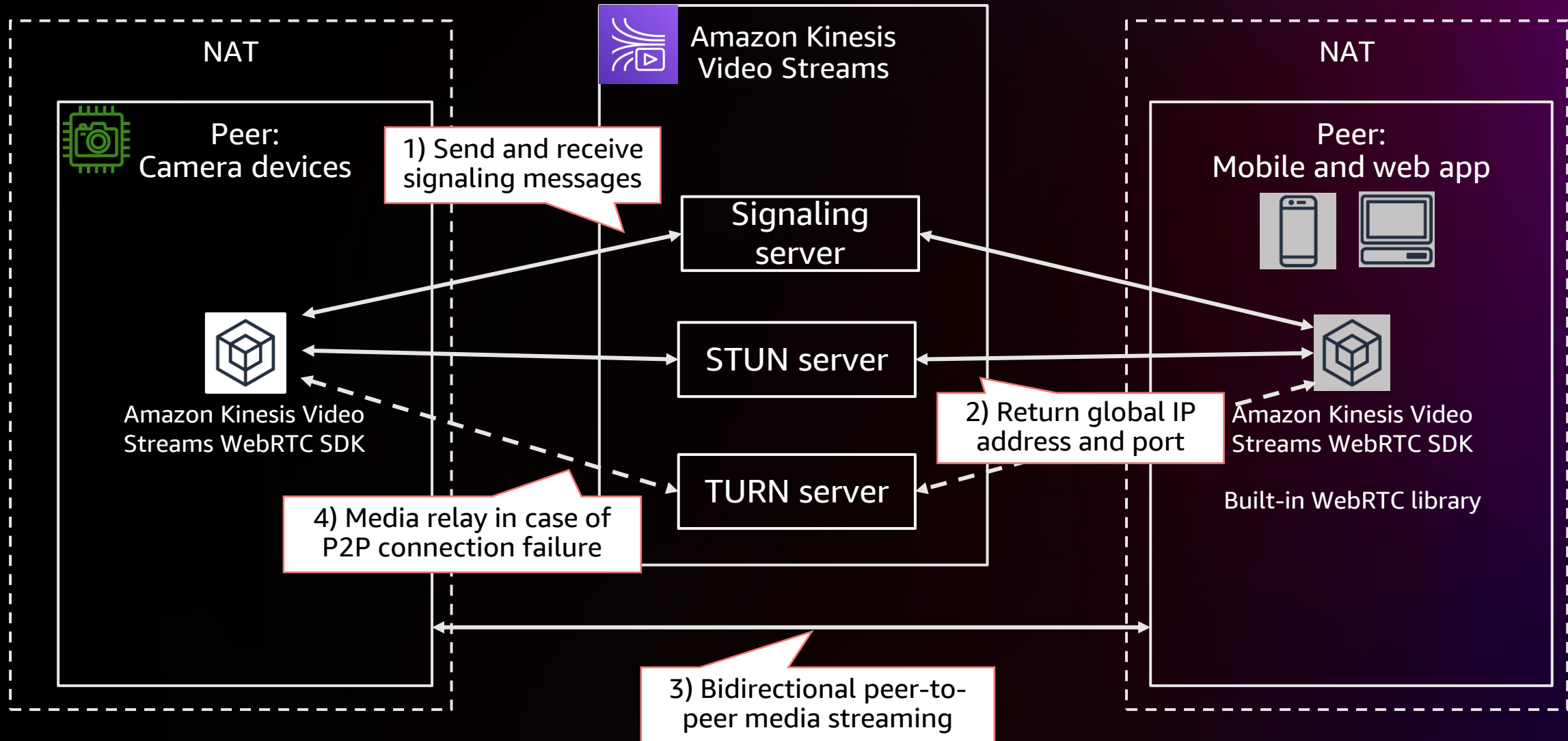
Fully managed



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

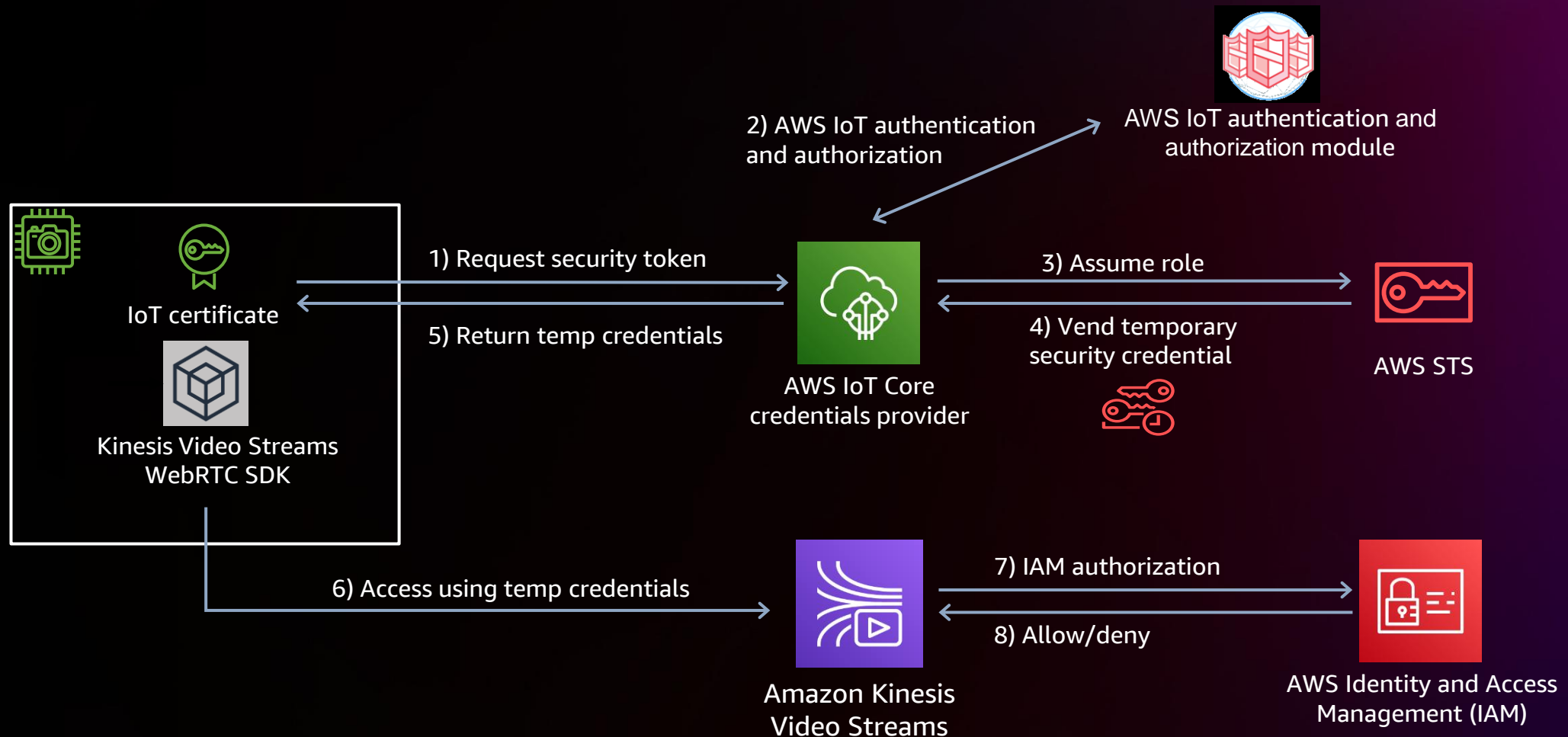
WebRTC connection flow

WebRTC



How to authenticate camera devices

WebRTC

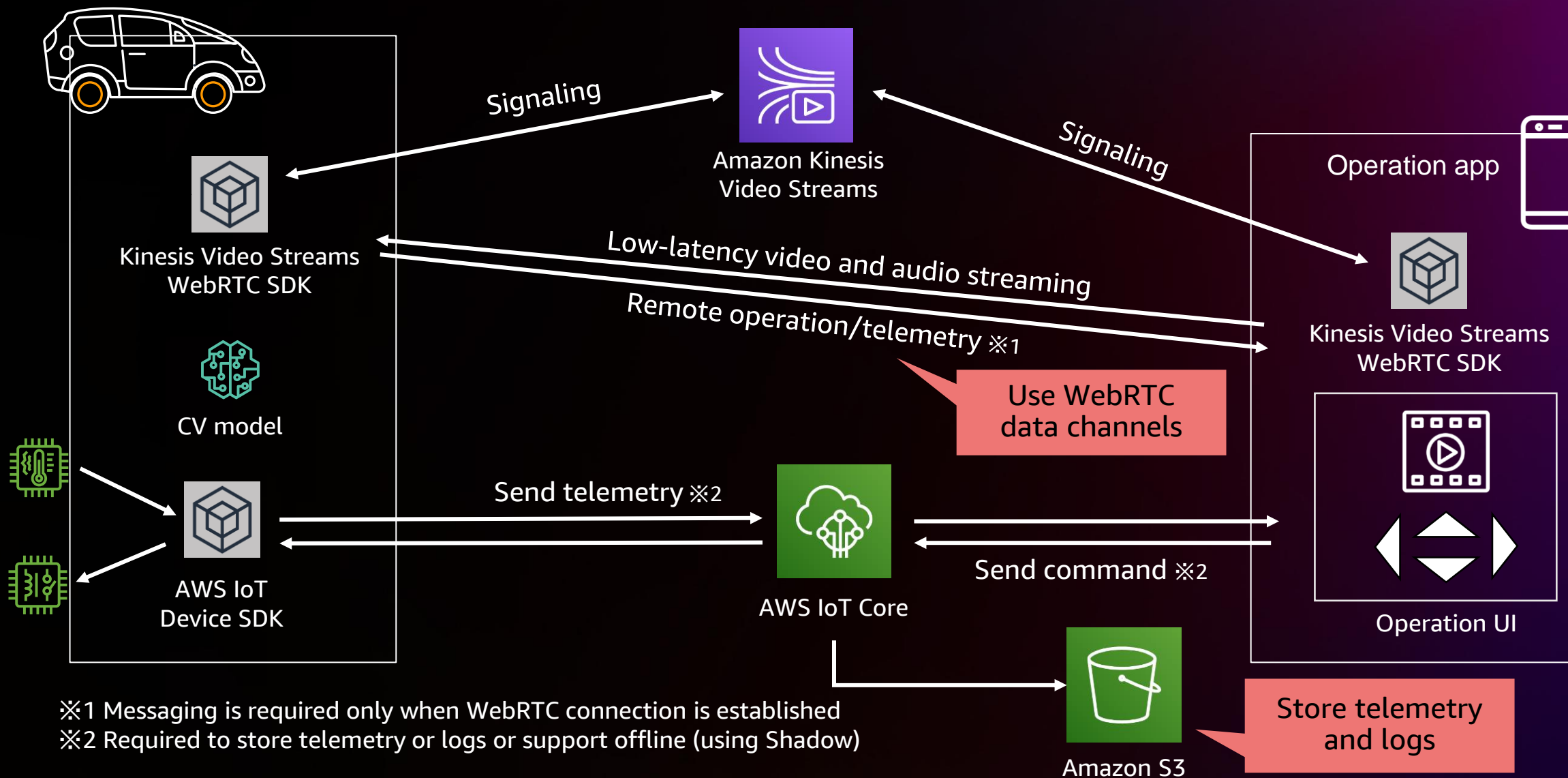


<https://docs.aws.amazon.com/iot/latest/developerguide/authorizing-direct-aws.html>

Key use cases and architectures

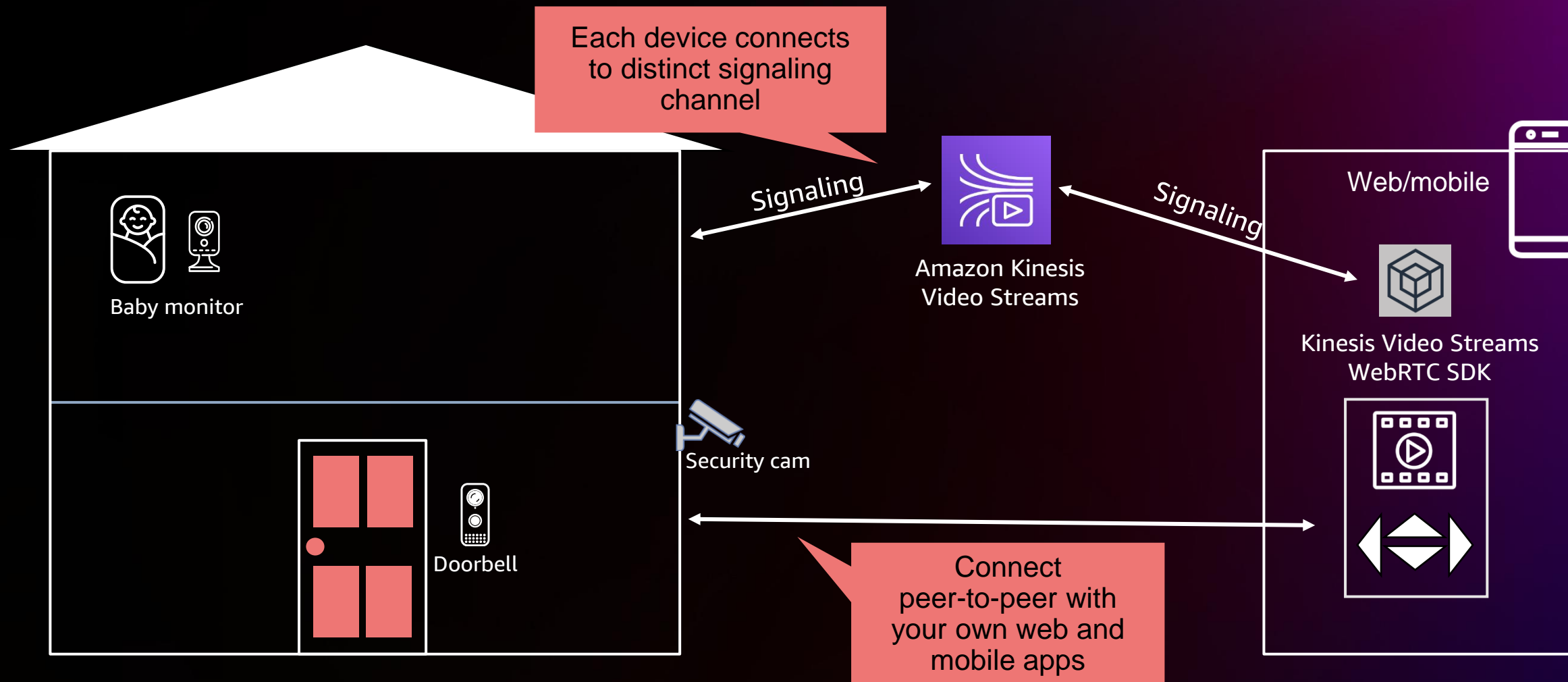
Automotive and robotics

WebRTC



Smart home

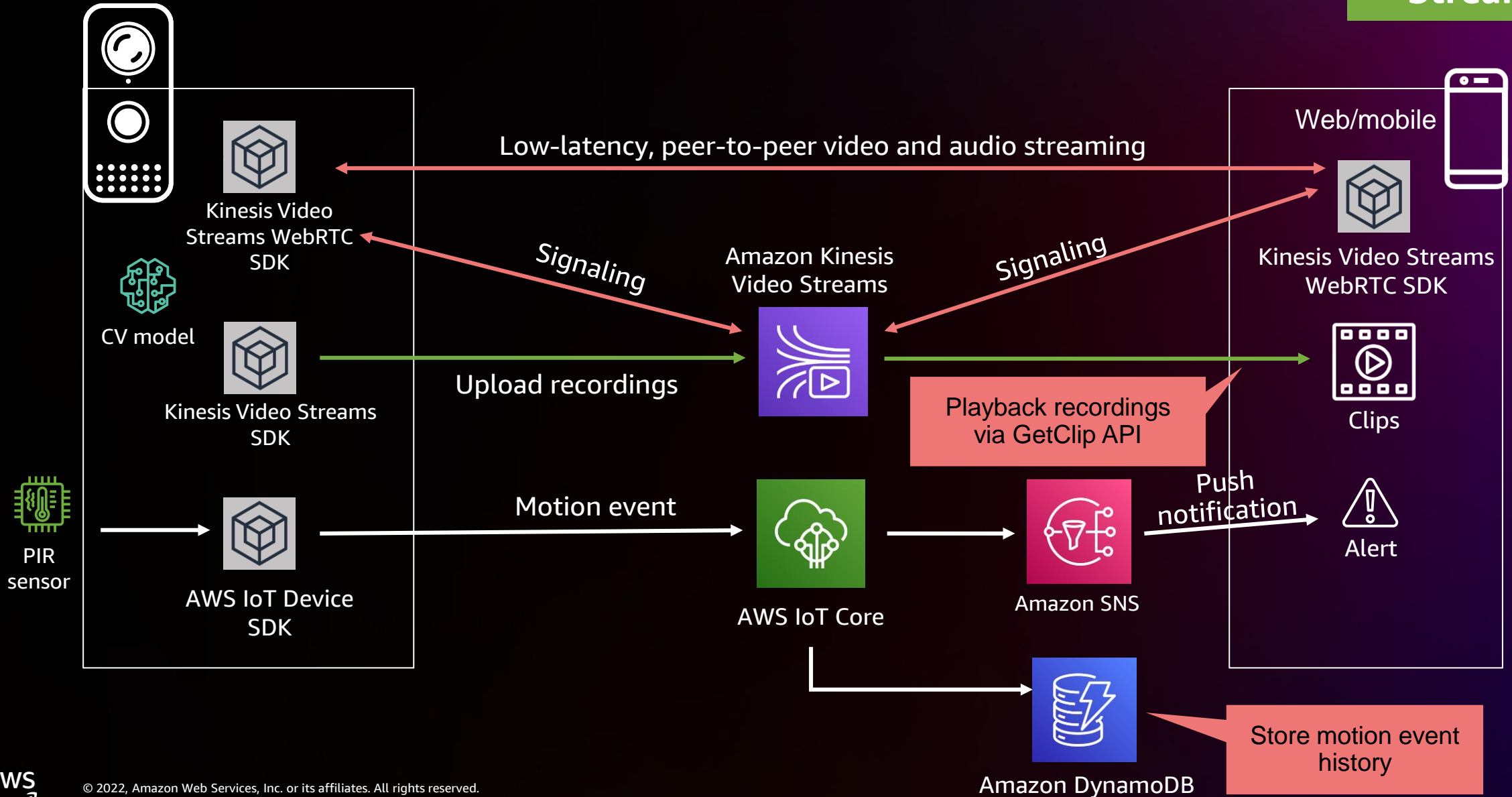
WebRTC



Smart home

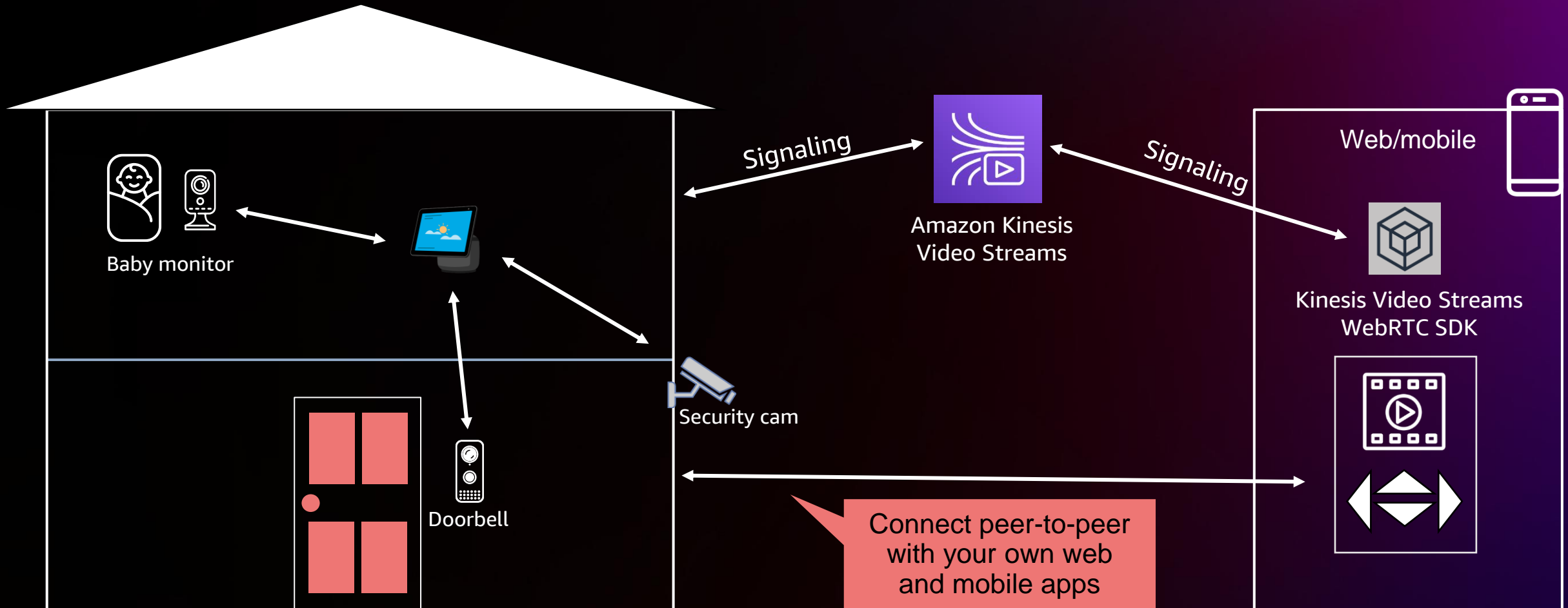
WebRTC

Streams



Connect to Echo Show

WebRTC



Workshop



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>



aws workshop studio

Workshop Studio > Sign in

Sign in

Choose a preferred sign-in method

Email one-time password (OTP)

Enter your personal or corporate email to receive a one-time password

Login with Amazon

Login with your Amazon.com retail account

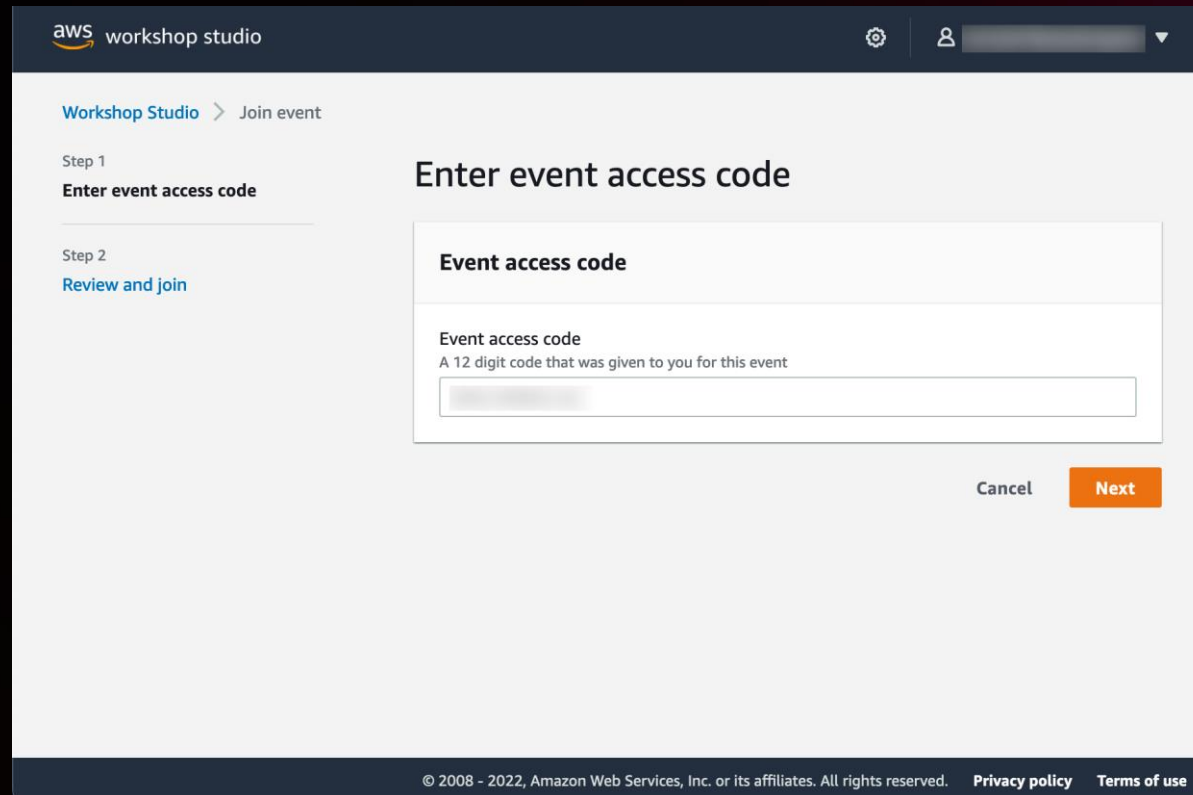
Amazon employee

Login with your Amazon Corporate account. Only for Amazon Employees.

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Step 2: Enter event access code

7293-07ee19-9f



The screenshot shows the AWS Workshop Studio interface. At the top, there's a header with the AWS logo and 'workshop studio' text. Below this, a breadcrumb trail shows 'Workshop Studio > Join event'. The main content area is titled 'Enter event access code'. On the left, a sidebar indicates 'Step 1: Enter event access code' (current step) and 'Step 2: Review and join'. The main form area has a title 'Event access code' and a description: 'Event access code' followed by 'A 12 digit code that was given to you for this event'. Below this is a text input field. At the bottom right of the form, there are 'Cancel' and 'Next' buttons. The footer contains copyright information: '© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.' and links to 'Privacy policy' and 'Terms of use'.

aws workshop studio

Workshop Studio > Join event

Step 1
Enter event access code

Step 2
Review and join

Enter event access code

Event access code




Event access code
A 12 digit code that was given to you for this event

Cancel Next

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Step 3: Review terms and join event

aws workshop studio

Workshop Studio > Join event

Step 1

[Enter event access code](#)

Step 2

Review and join

Review and join

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 derivate 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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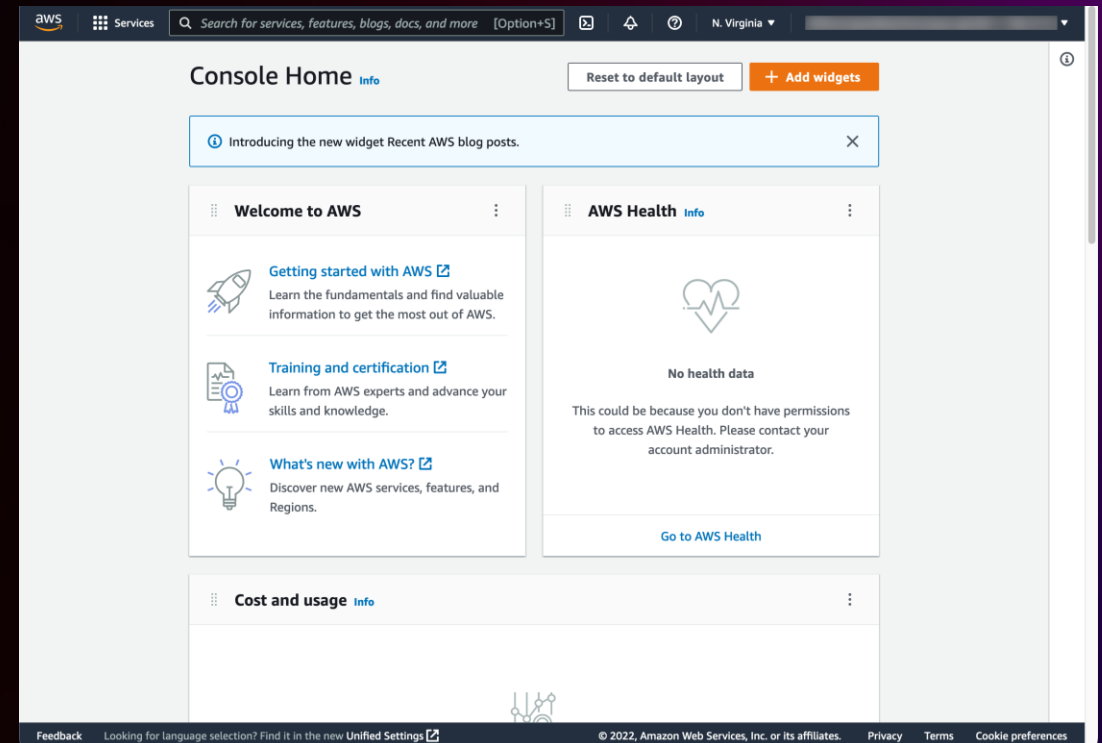
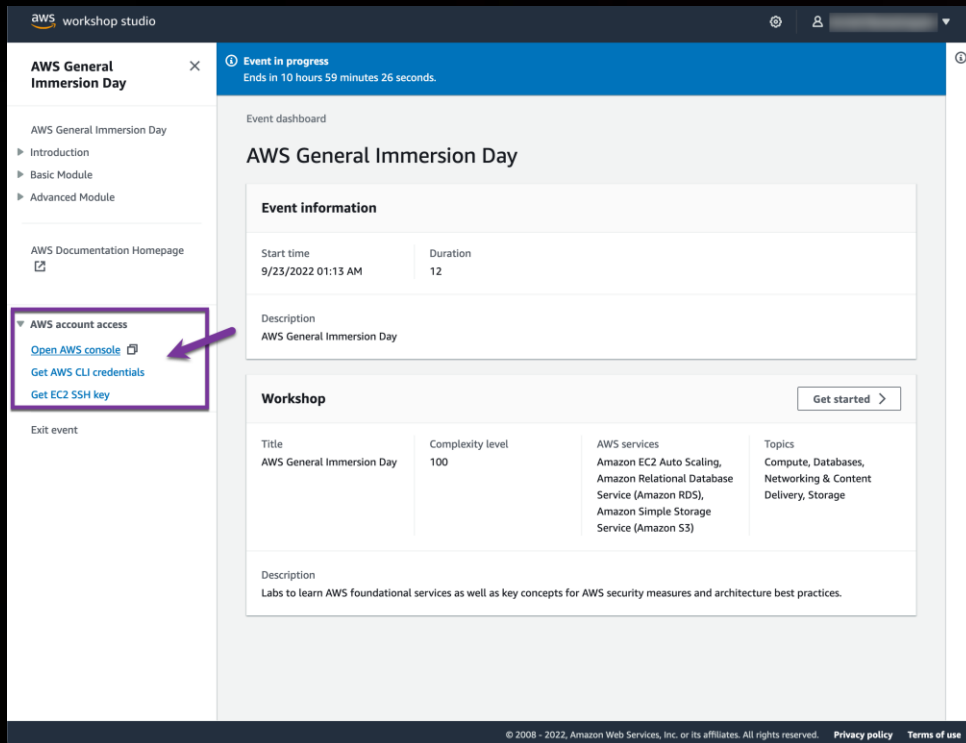
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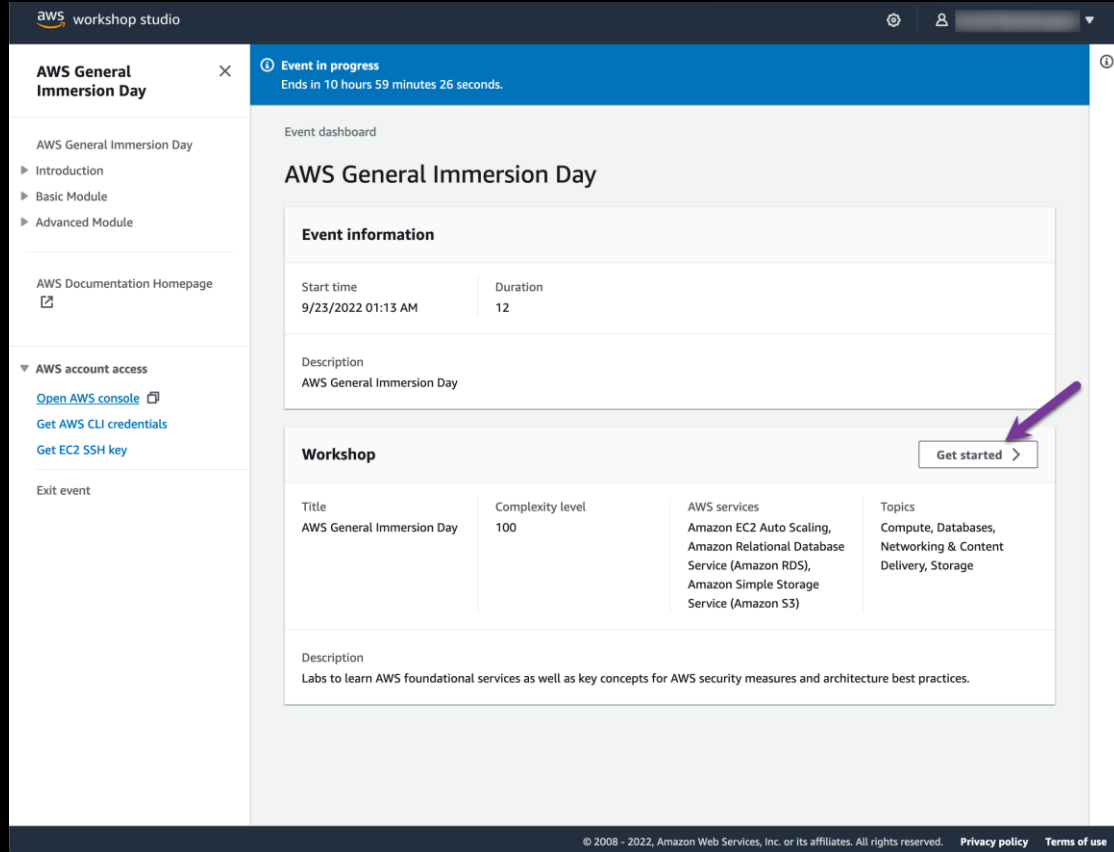


Step 4: Access AWS account

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



Step 5: Get started with the workshop



aws workshop studio

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
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Description
AWS General Immersion Day

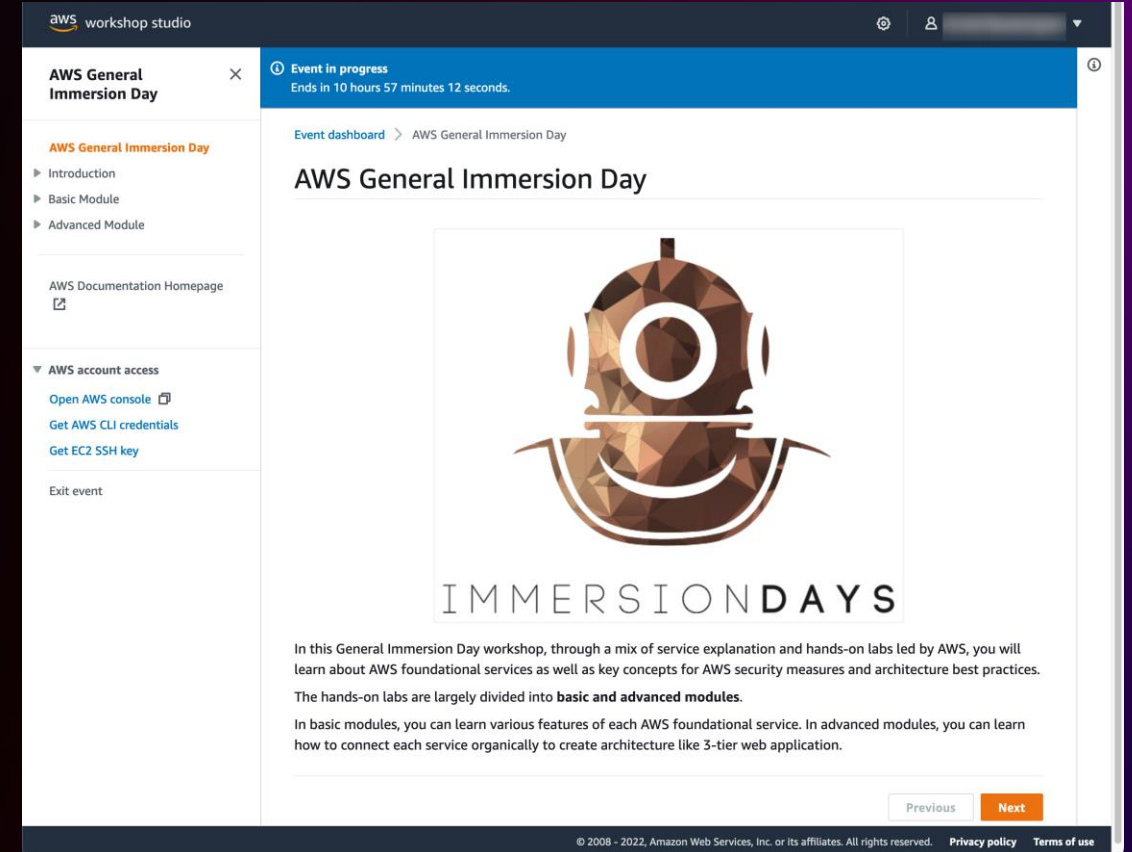
Workshop

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

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.

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Thank you!

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