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re:Invent
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SUP304-R

Continuous cost and sustainability optimization

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Introduction

In this workshop you will learn mechanisms that empower application owners to have clear, actionable tasks for cost and sustainability optimization, building upon real-world use cases

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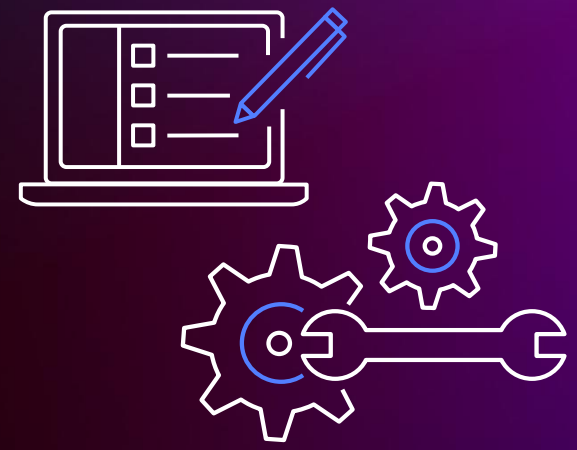
Agenda



- Why we are here, and what we will be doing (10 min)
  - Workshop context
  - Cost optimization key concepts
  - Sustainability key concepts
  - Workshop structure
  - Workshop modules and goals
- Workshop instructions and how to start (2 min)

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Workshop context

You will impersonate a key member of the Cloud Center of Excellence (CCoE) team, who is responsible for cost and sustainability optimization

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Cost optimization key concepts

Right-sizing is the process of matching resource types and sizes to your workload performance and capacity requirements at the lowest possible cost

Scheduling allows you to configure custom start and stop times for Amazon EC2 and Amazon RDS instances, improving cost per hour and resource utilization

Lifecycle policies allow you to remove unneeded or redundant data optimizing the total storage requirements of your workload

Optimization of usage and spend has a strong correlation with improving the sustainability posture, focusing on energy consumption and efficiency

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Sustainability key concepts

Increase energy efficiency by optimizing your architecture for user, software, data, hardware, and development patterns

In this workshop we will focus on hardware and data patterns

Similar to cost optimization, Sustainability optimization in the cloud is a continuous, focused effort on energy reduction and efficiency across all components of a workload

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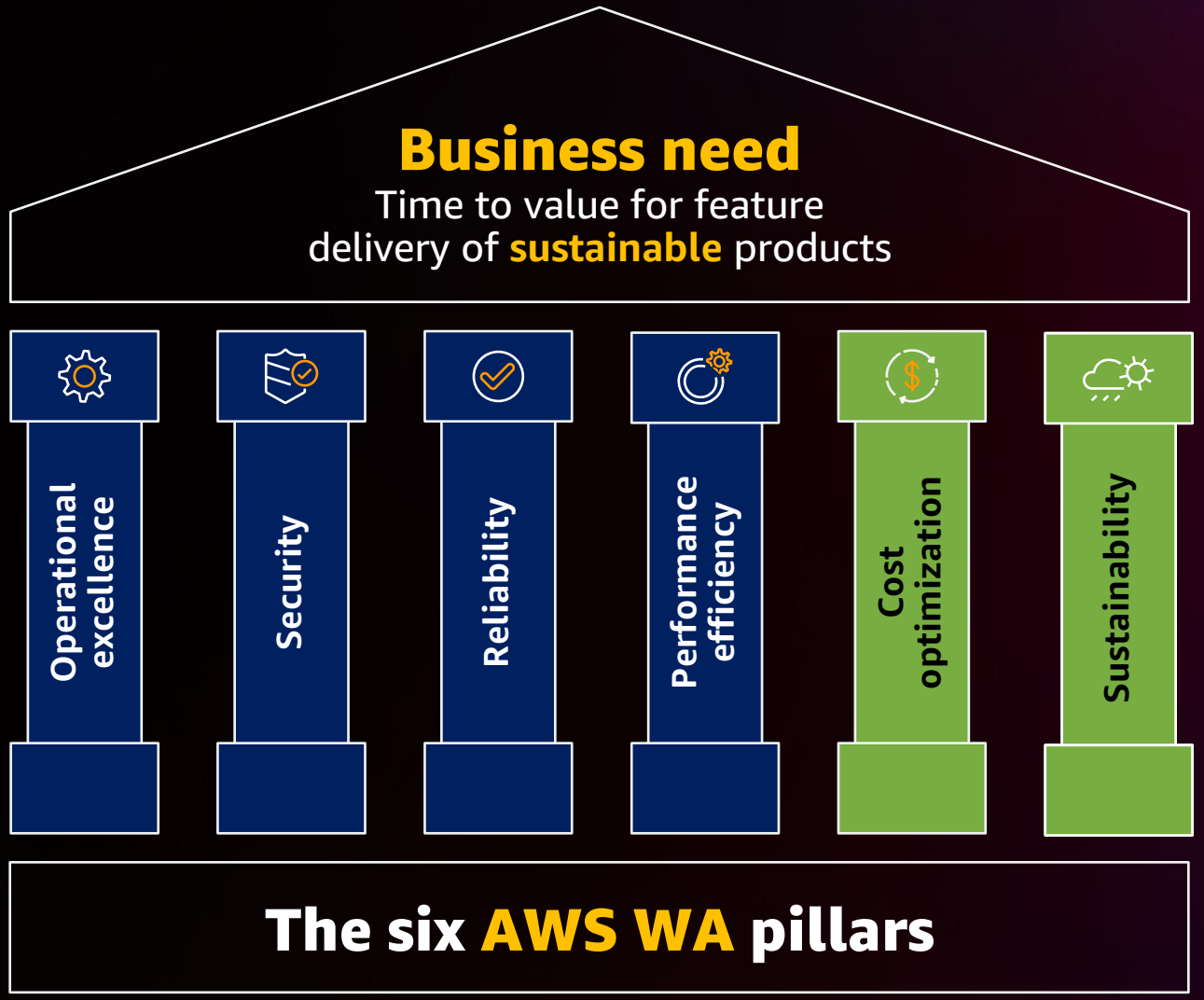
AWS Well-Architected (WA)



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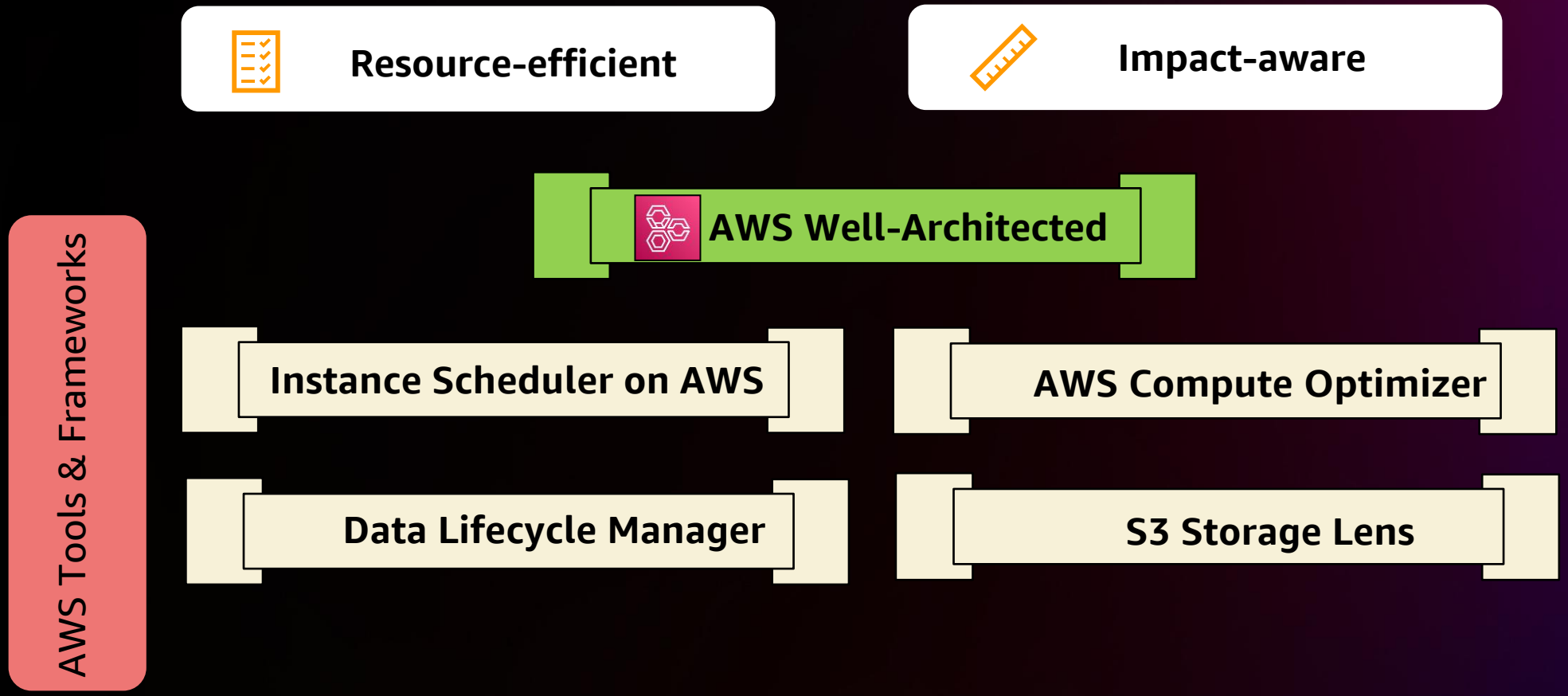
Sustainable high-performing architectures



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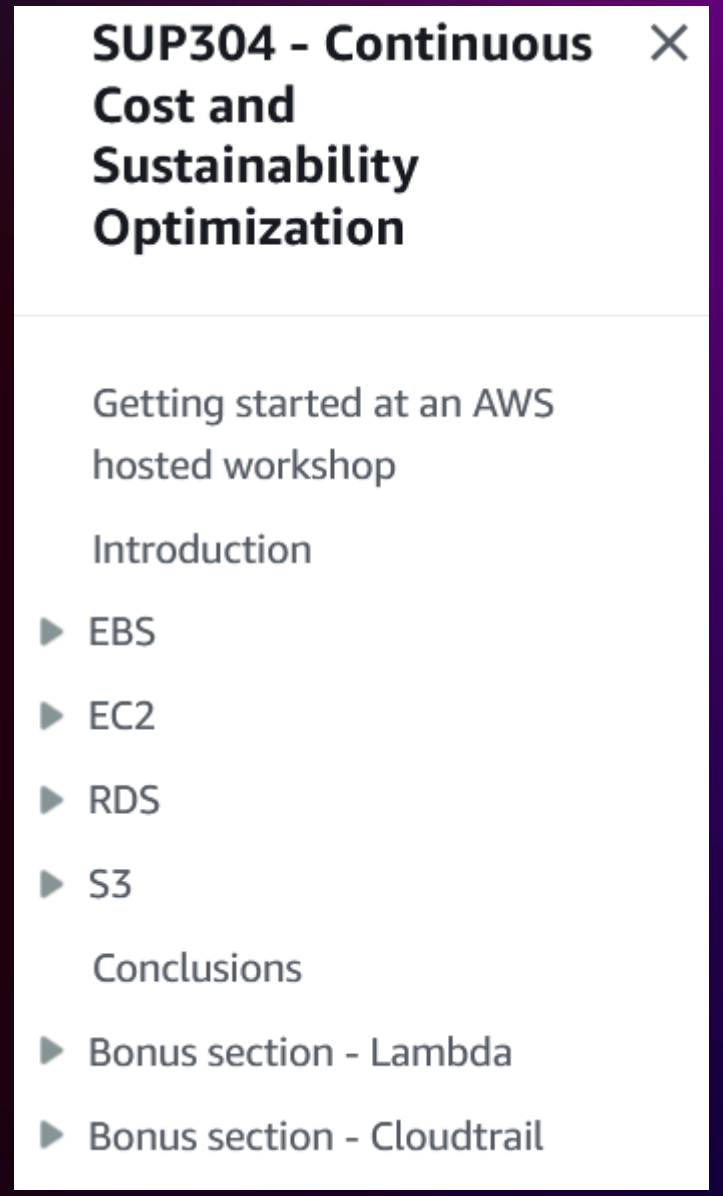
Workshop structure

This workshop is divided into four core AWS service modules (Amazon EBS, Amazon EC2, Amazon RDS, and Amazon S3), and two bonus modules, where you will go through several cost and sustainability optimization scenarios

This workshop takes about 100 minutes to complete all the core labs

We recommend to follow the exercises in order, as there are some dependencies between them

Each scenario has an introduction section with specific objectives, and a step by step instructions section



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Workshop modules and goals

Module	Goals
Amazon EBS	Optimize Amazon EBS volume types manually and at scale using an automation based on AWS SDK. Leverage Data Lifecycle Manager to optimize EBS Snapshots at scale
Amazon EC2	Schedule EC2 instances at scale using the Instance Scheduler on AWS. We also right-size EC2 manually and at scale using an SSM automation
Amazon RDS	Move one Amazon RDS instance to the most efficient AWS Graviton2 hardware, and schedule it using the Instance Scheduler on AWS
Amazon S3	Find and remove unneeded storage in multipart uploads, and choose the best S3 storage class leveraging S3 Intelligent Tiering and lifecycle policies
Bonus Lambda Module	Move Lambda functions written in 3 different languages to Graviton
Bonus CloudTrail Module	Optimize CloudTrail removing duplicate trails

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Getting started with this workshop

- As a participant, you will have access to an AWS account with a pre-provisioned infrastructure
- The AWS account will only be available for the duration of this workshop; you will lose access to the account thereafter
- The pre-provisioned infrastructure has been be deployed in the us-east-1 AWS Region, make sure you use this Region
- Be sure to review the terms and conditions of the event; do not upload any personal or confidential information in the account

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Getting started with this workshop

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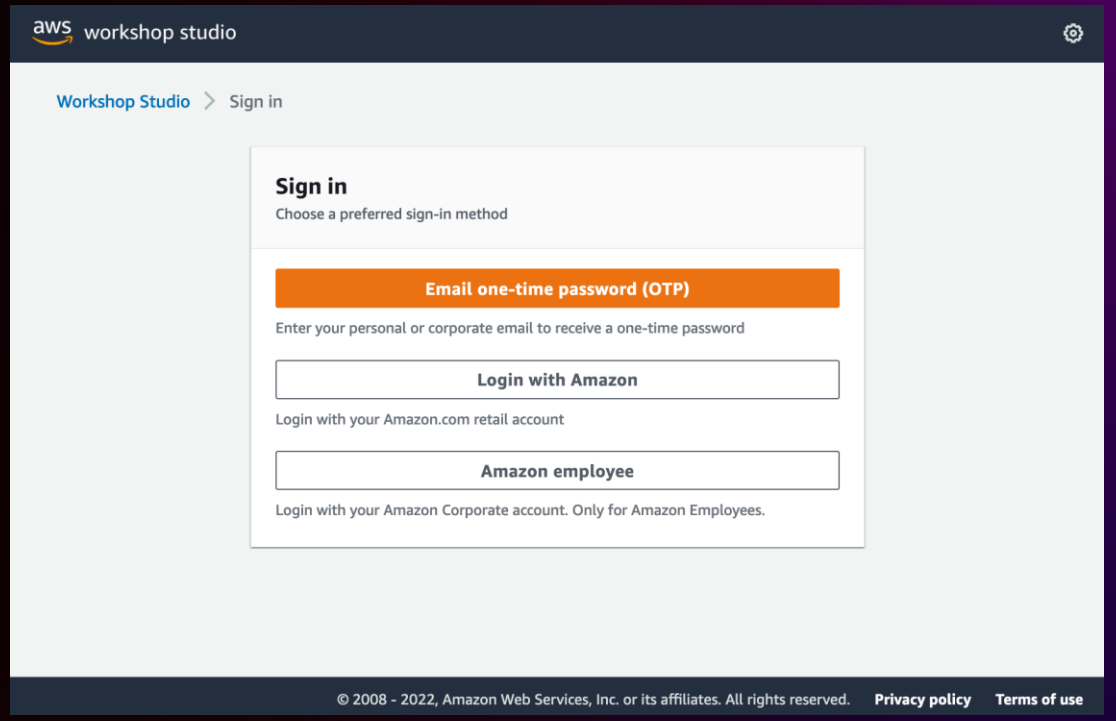

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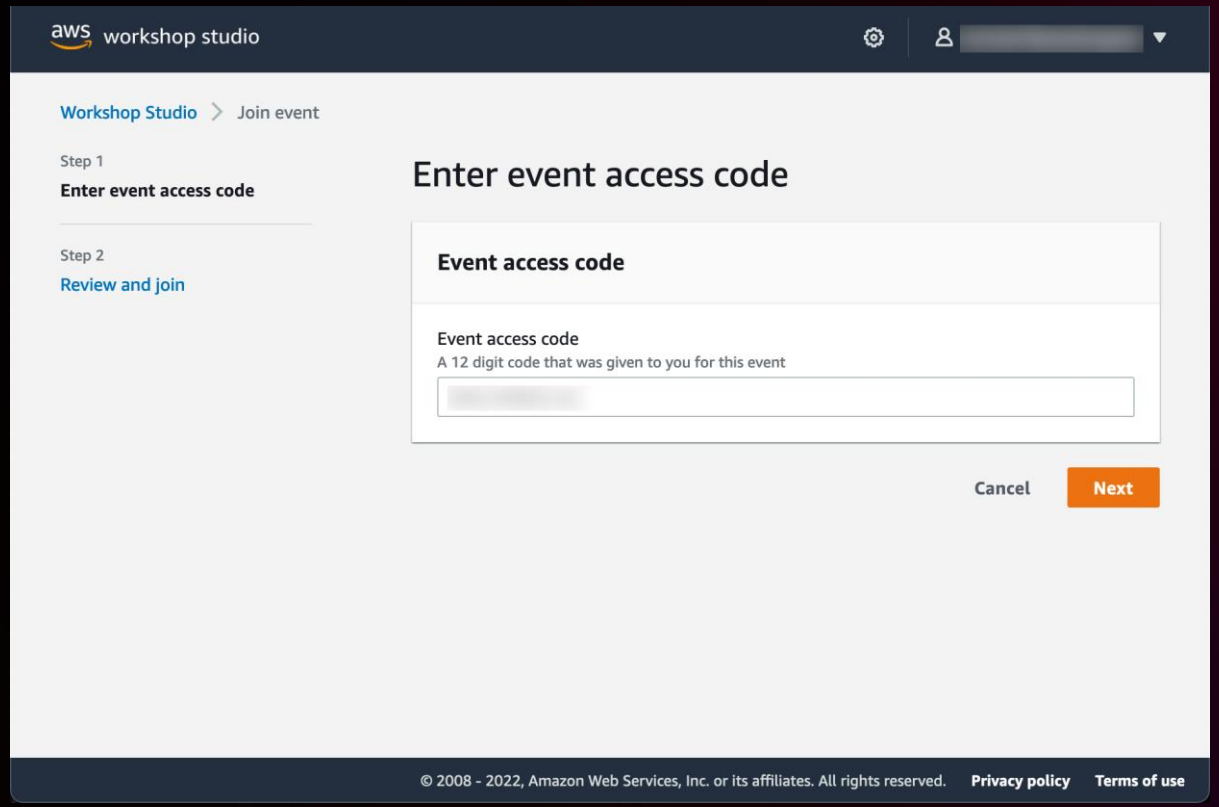

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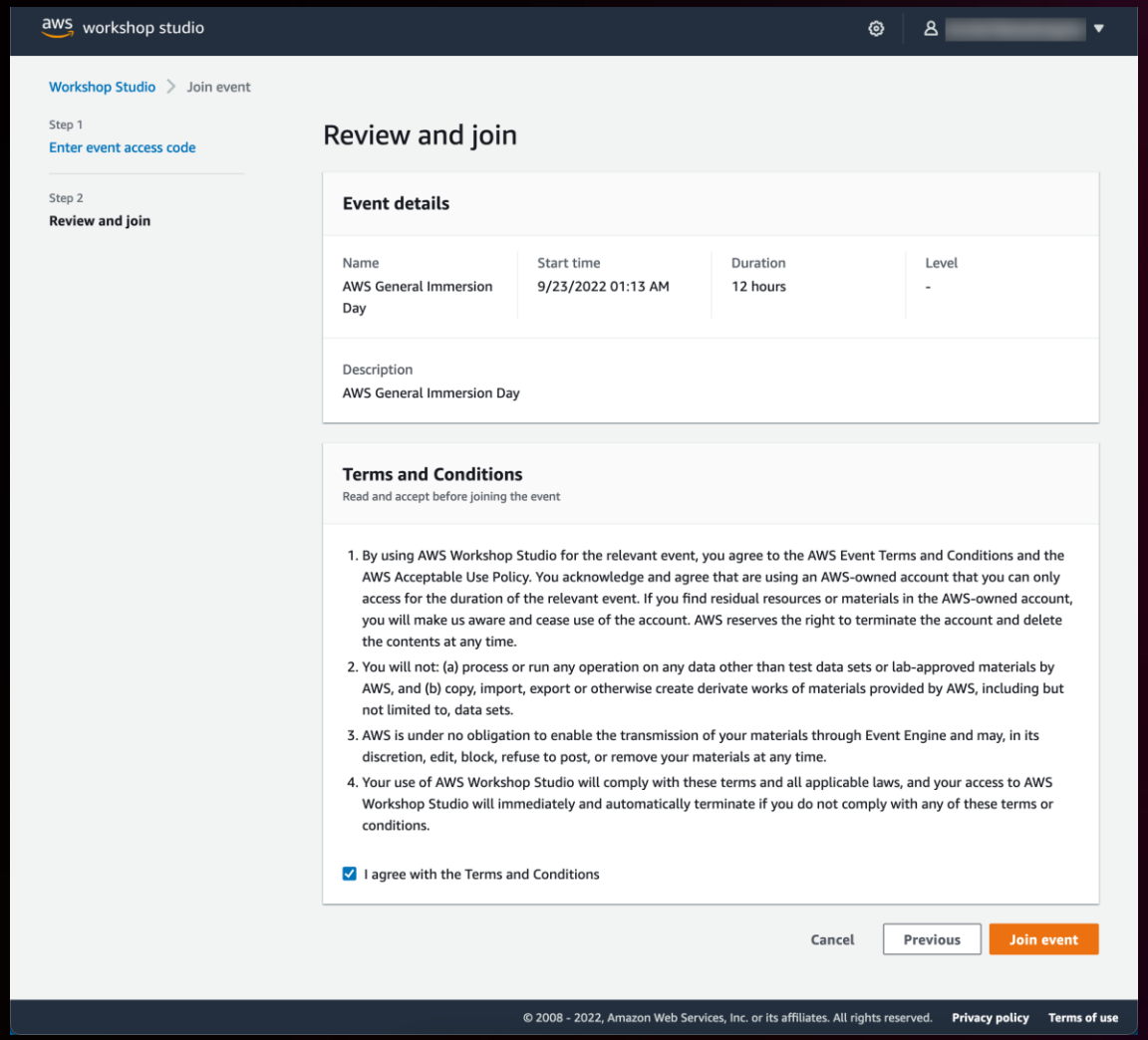

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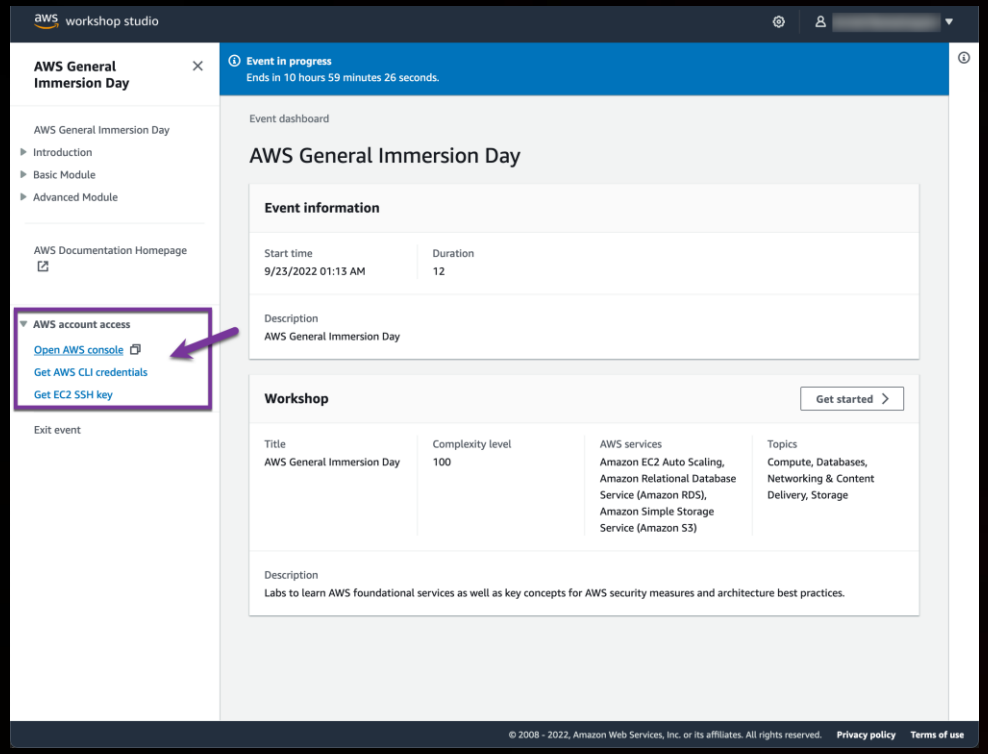
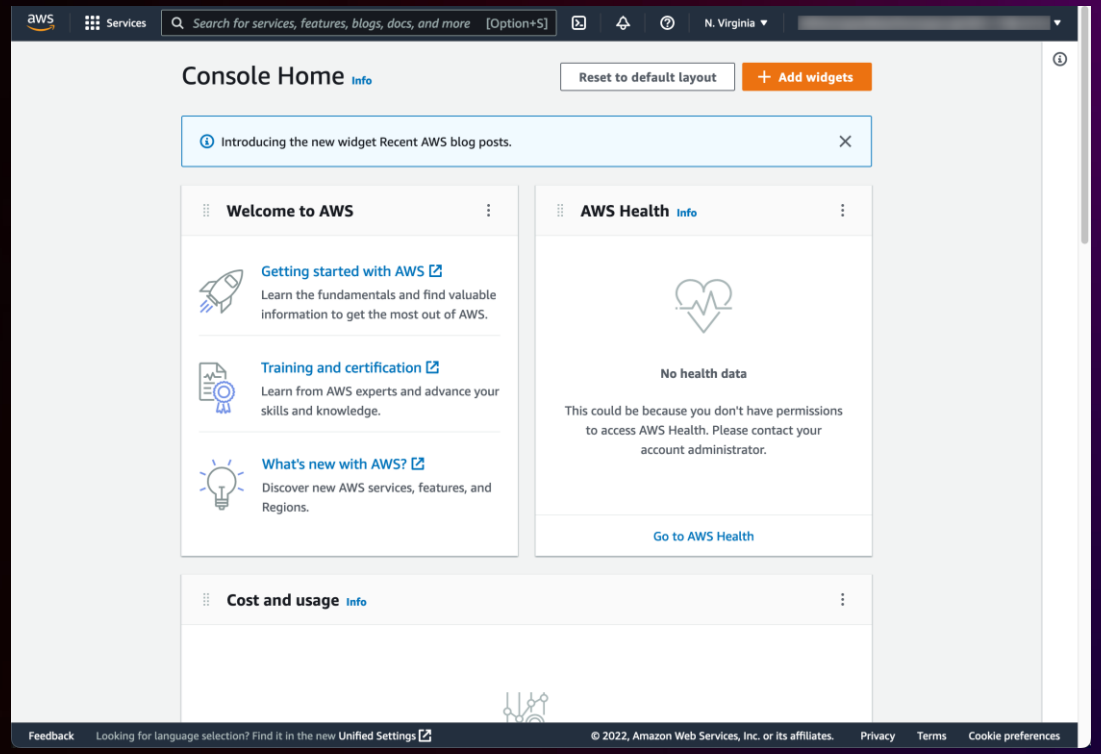
Access AWS account

Access the AWS Management Console





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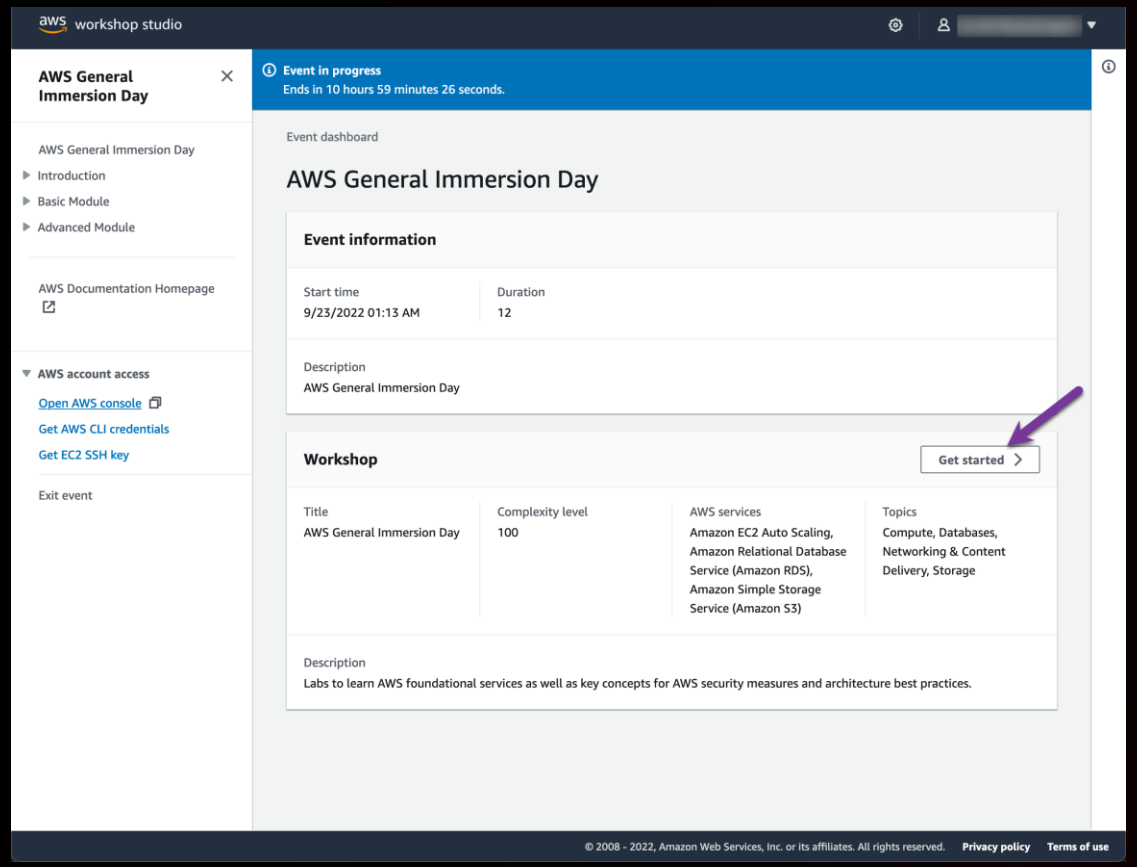
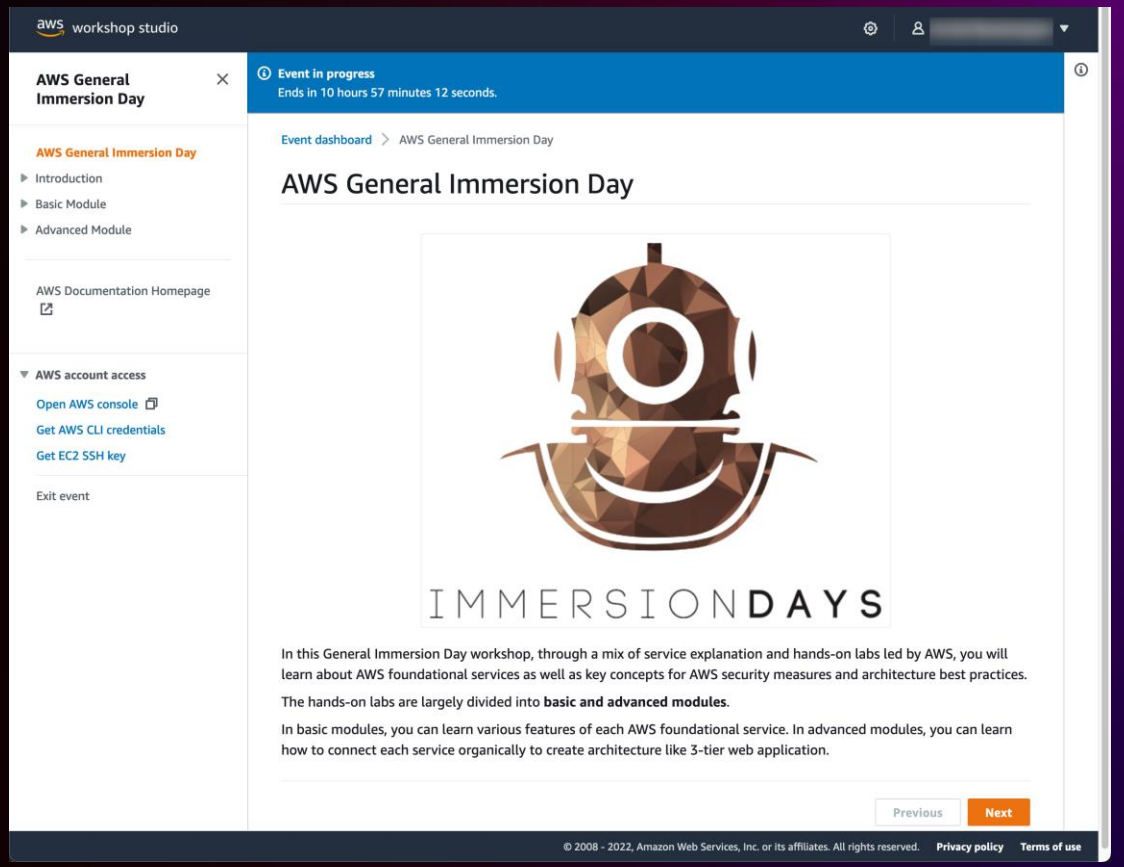
Get started with the workshop





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Getting started with this workshop

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Don’t hesitate to ask for help

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Summary

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Well done! In this workshop, we started with a cost and sustainability suboptimal infrastructure, we applied the key concepts learned today as per table below:

Scheduling	Right Sizing	Lifecycle policies
• Amazon EC2 instances • Amazon RDS instances	• Amazon EBS volumes • Amazon EC2 instances • Amazon RDS instances	• Amazon EBS snapshots • Amazon S3

We have applied multiple principles from the Well-Architected Cost Optimization, and the Sustainability pillars.

The CCoE has now foundational techniques to implement a continuous cost and sustainability optimization process (i.e., quarterly). The CCoE can now empower individual teams with best practices, and standard tools, for cost and sustainability optimization

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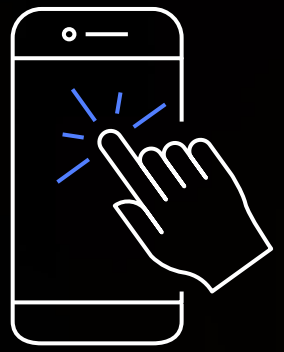

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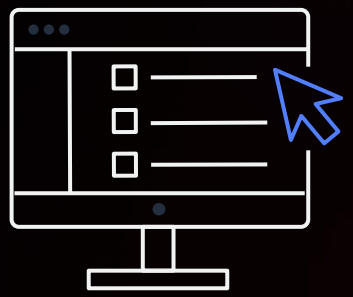

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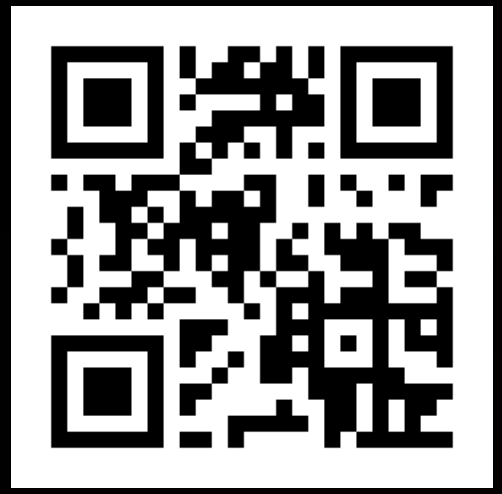
Additional resources



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Community-driven knowledge-sharing site

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Thank you!

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