

AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

Continuous cost and sustainability optimization

Enrico Bonaccorsi (he/him)

Principal TAM
AWS

Francesc Sala (he/him)

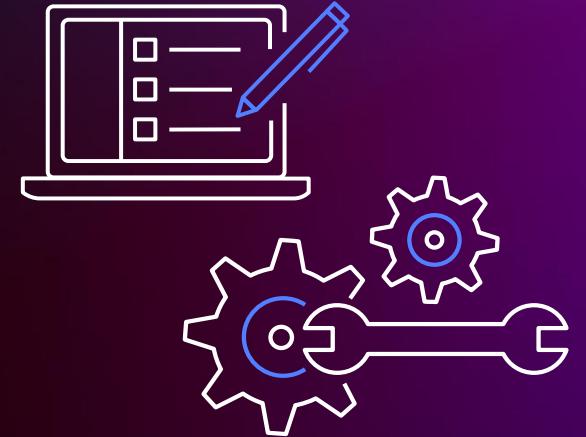
Principal TAM
AWS

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

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)



Workshop context

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

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

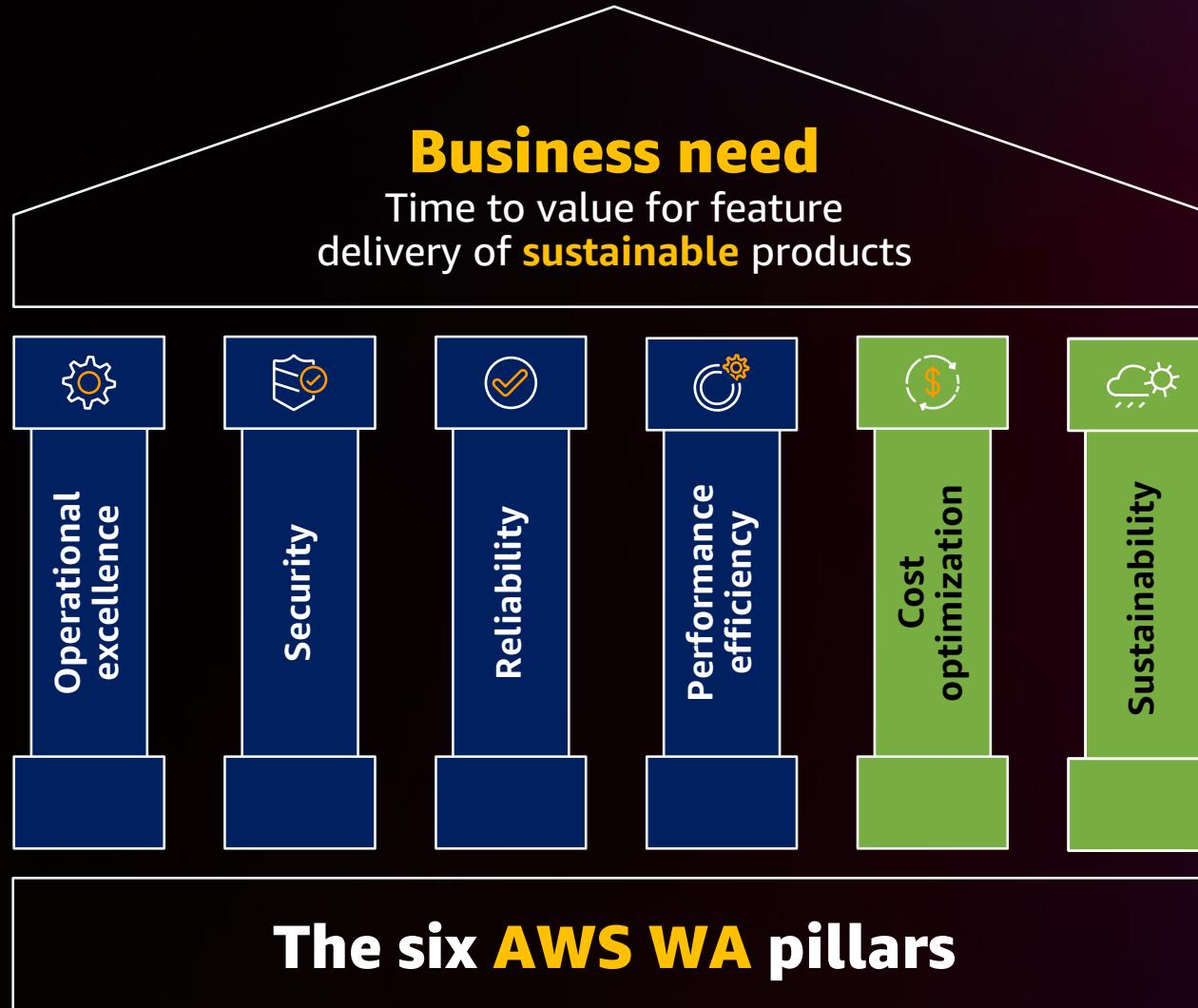
Sustainability key concepts

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

AWS Well-Architected (WA)



Sustainable high-performing architectures



Resource-efficient



Impact-aware

AWS Tools & Frameworks



AWS Well-Architected

Instance Scheduler on AWS

AWS Compute Optimizer

Data Lifecycle Manager

S3 Storage Lens

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

SUP304 - Continuous Cost and Sustainability Optimization

Getting started at an AWS hosted workshop

Introduction

- ▶ EBS
- ▶ EC2
- ▶ RDS
- ▶ S3

Conclusions

- ▶ Bonus section - Lambda
- ▶ Bonus section - Cloudtrail

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

Getting started with this workshop

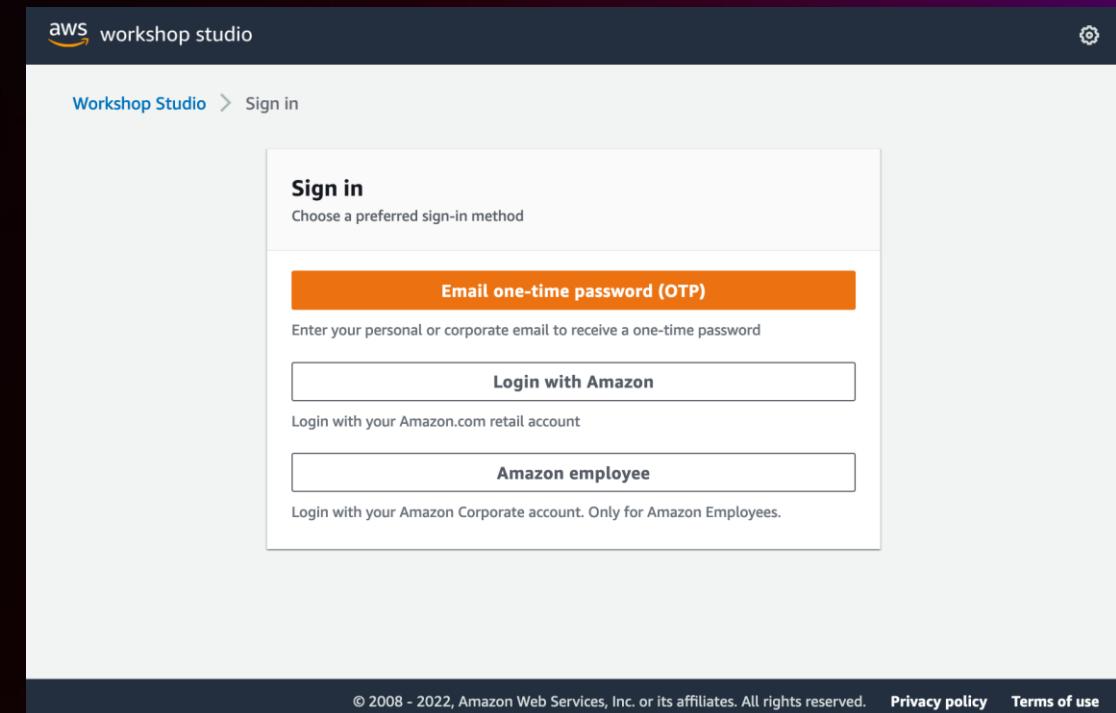
- As a participant, you will have access to an AWS account with a pre-provisioned infrastructure
- The AWS account will only be available for the duration of this workshop; you will lose access to the account thereafter
- The pre-provisioned infrastructure has been deployed in the us-east-1 AWS Region, 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

Getting started with this workshop

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

Sign in via your preferred method

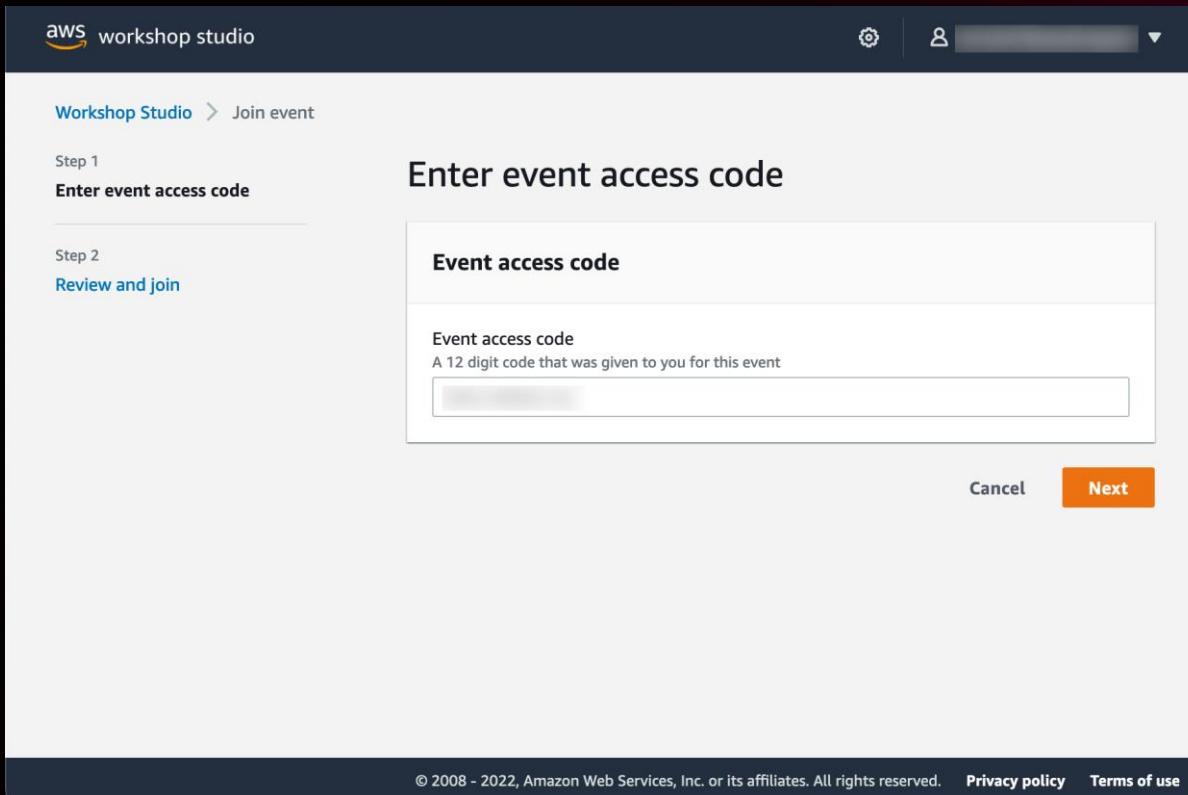
<https://catalog.workshops.aws/join>



Enter event access code

Enter 12-digit event access code: **ec6c-06dac7-e0**

If you were given a one-click join link, you can skip this step



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 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.

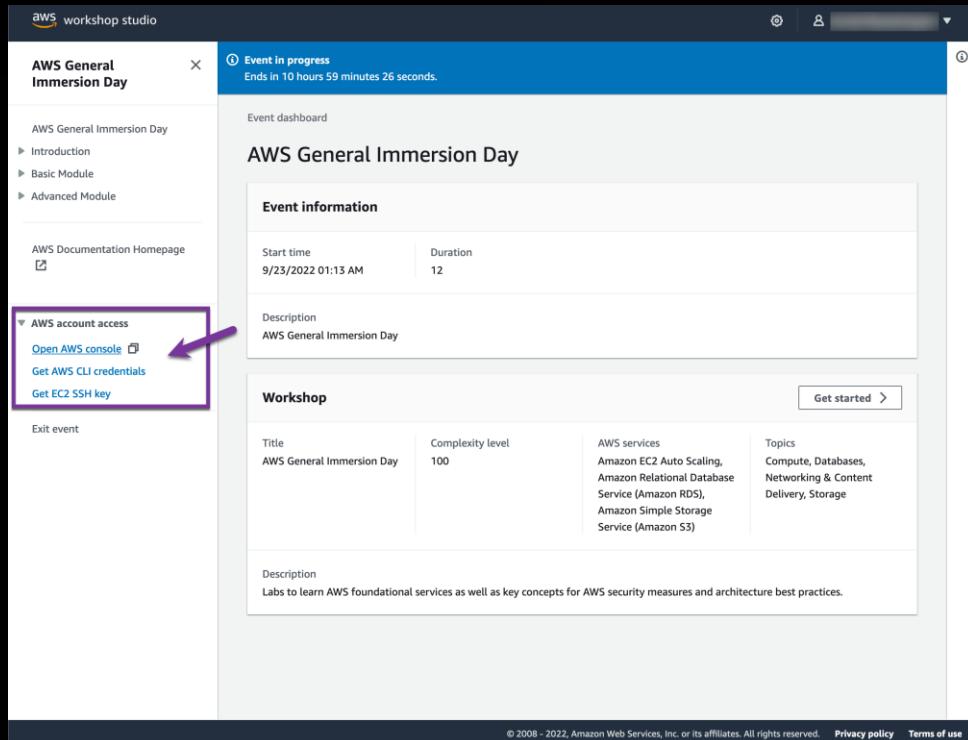
I agree with the Terms and Conditions

Cancel Previous Join event

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy policy](#) [Terms of use](#)

Access AWS account

Access the AWS Management Console



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		

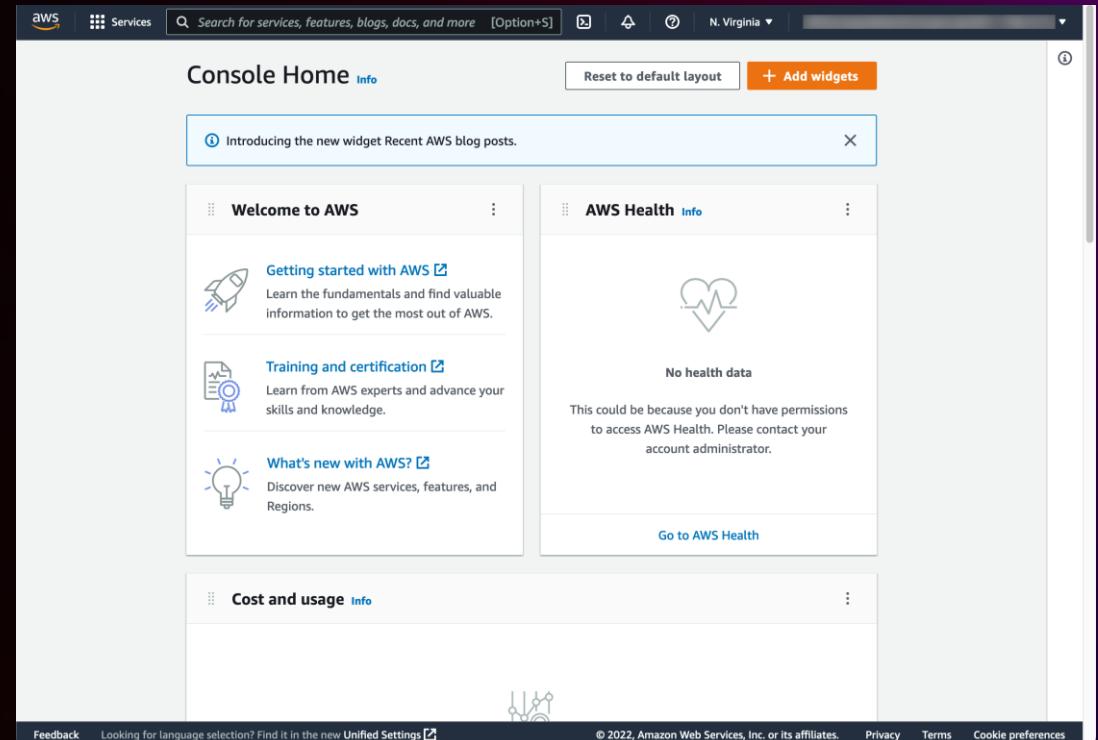
Description
Labs to learn AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

AWS account access

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

Exit event

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy policy](#) [Terms of use](#)



Console Home

Introducing the new widget Recent AWS blog posts.

Welcome to AWS

- Getting started with AWS
- Training and certification
- What's new with AWS?

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](#)

Cost and usage

Feedback Looking for language selection? Find it in the new [Unified Settings](#)

© 2022, Amazon Web Services, Inc. or its affiliates. [Privacy](#) [Terms](#) [Cookie preferences](#)



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

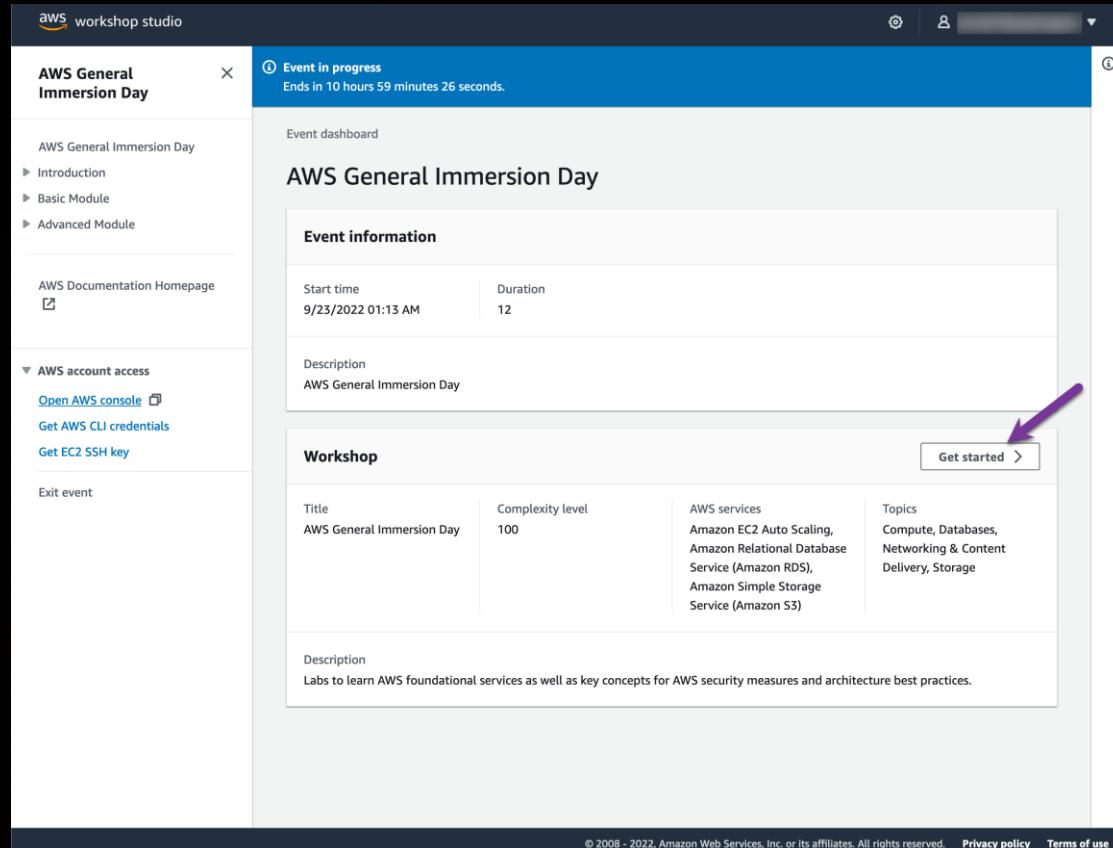
Description
AWS General Immersion Day

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 >



© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy policy](#) [Terms of use](#)



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](#)

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy policy](#) [Terms of use](#)



Getting started with this workshop

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

Don't hesitate to ask for help

Access Code: **ec6c-06dac7-e0**

Summary

SUP304-R

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
<ul style="list-style-type: none">• Amazon EC2 instances• Amazon RDS instances	<ul style="list-style-type: none">• Amazon EBS volumes• Amazon EC2 instances• Amazon RDS instances	<ul style="list-style-type: none">• Amazon EBS snapshots• Amazon S3

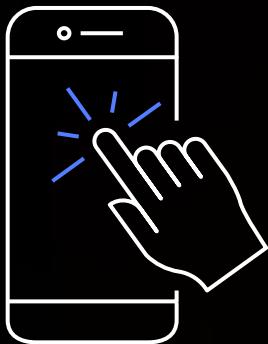
We have applied multiple principles from the Well-Architected Cost Optimization, and the Sustainability pillars.

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

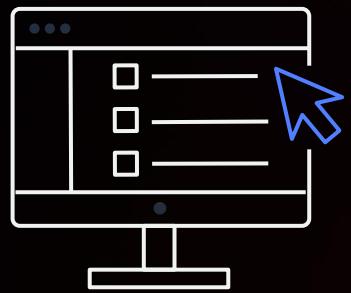
AWS re:Post

Community-driven knowledge-sharing site for your AWS questions

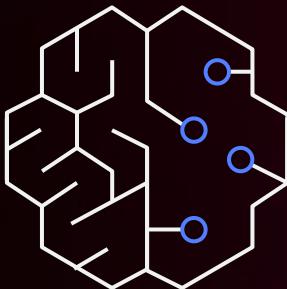
Visit: <https://repost.aws/>



Login is not required to browse content



Content is organized by topics and tags



Machine learning drives smart content recommendations



Follow specific questions, topics, and community experts

Additional resources



[AWS re:Post](#)

Community-driven knowledge-sharing site

Thank you!

Enrico Bonaccorsi
bonaccor@amazon.com

Francesc Sala
franrius@amazon.com



Please complete the session
survey in the **mobile app**