
AWS
re:Invent
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STP302

Startup optimization: Tuning app performance for maximum efficiency

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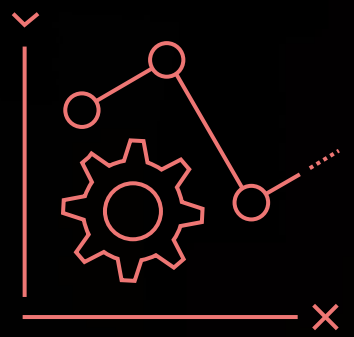
Agenda

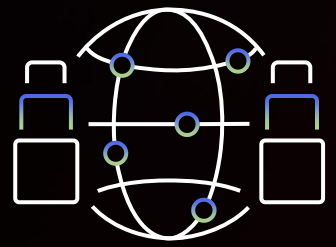
- Why performance matters
- Observability and monitoring – distinguishing performant systems
- AWS tools and services that help you optimize performance
- The workshop

AWS Well-Architected Framework pillars

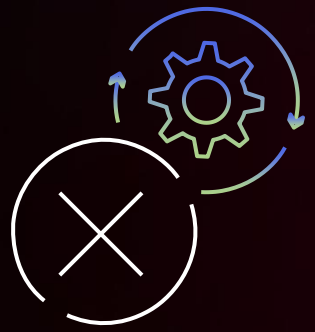


Performance efficiency

Security



Reliability



Operational excellence

Cost Optimization

Sustainability

Performance efficiency

The efficient use of computing resources to meet requirements and how to maintain that efficiency as demand changes and technologies evolve

Is your solution performant?

Performance metrics

Why we need them

- To implement a data-driven approach to decisions
- To define operational success or ascertain the effectivity of our efforts
- To anticipate, prevent, or mitigate problems
- To effectively prioritize or agree on what problems need solving

Performance metrics

Best practices

- Record the relevant metrics
- Build easy-to-use dashboards with access to details
- Establish key performance indicators (KPIs)
- Use monitoring to generate alarm-based notifications
- Review metrics at regular intervals
- Automate proactive measures

How do you optimize for performance?

Design principles for performance efficiency

- Democratize advanced technologies
- Go global in minutes
- Use serverless architectures
- Experiment more often
- Consider mechanical sympathy

AWS tools and services we are going to use today

Amazon
DevOps Guru

Amazon
CodeGuru Profiler

Amazon CloudWatch
Lambda Insights

Amazon CloudWatch
Container Insights

AWS X-Ray

Amazon DevOps Guru
is an ML-powered service that makes it easy for developers and operators to automatically detect issues to improve application availability and reduce expensive downtime – no machine learning experience required

Easy to use
No configuration or ML experience required

Automatically detect operational issues
DevOps Guru continuously analyzes streams of disparate data and metrics to determine application behavior

Quick resolution
Helps resolve issues quickly with ML-powered insights and recommendations

Scalable
Easily scales and maintains availability as new AWS workloads are added

Reduce noise
Helps overcome alarm fatigue by automatically correlating and grouping related anomalies

Amazon CodeGuru Profiler collects runtime performance data from your live applications and uses ML algorithms to provide recommendations that can help you fine-tune your application performance

Useful insights

Troubleshoot latency, CPU utilization, and issues in your application

Built for production systems

Low overhead, powerful visualizations, continuous analysis

Languages supported

Python and Java

Services supported

AWS Lambda, Amazon EC2, Amazon ECS, Amazon EKS, AWS Fargate, and on-premises

Amazon CloudWatch Lambda Insights is a monitoring and troubleshooting solution for serverless applications running on AWS Lambda

System-level metrics

CPU time, memory, disk, and network

Diagnostic information

Information on cold starts, worker shutdowns, memory leaks, and other issues that helps resolutions

Curated dashboards

Summary of the performance and health of your Lambda functions

Deep linking and correlations

Review information across metrics, logs, and traces

Amazon CloudWatch Container Insights collects, aggregates, and summarizes metrics and logs from your containerized applications and microservices

Metrics for many resources

CPU, memory, disk, and network

Embedded metric format

Structured JSON schema that enables high-cardinality data

CloudWatch agent for containers

Discover all containers in a cluster and then collect data at every layer

Encryption

Ability to encrypt logs and metrics with AWS KMS key

Supported platforms

Amazon ECS, Amazon EKS, and Kubernetes platforms on Amazon EC2 instances

AWS X-Ray
provides a complete view of requests as they travel through your application and filters visual data across payloads, functions, traces, services, APIs, and more with no-code and low-code motions

Simple setup
Just integrate the X-Ray SDK with your application (and install the X-Ray agent in some cases)

End-to-end tracing
Provides an end-to-end, cross-service view of requests made to your application

Support for multiple languages
Supports tracing for applications that are written in Node.js, Java, and .NET

Data annotation and filtering
Lets you add annotations to data emitted from specific components or services in your application

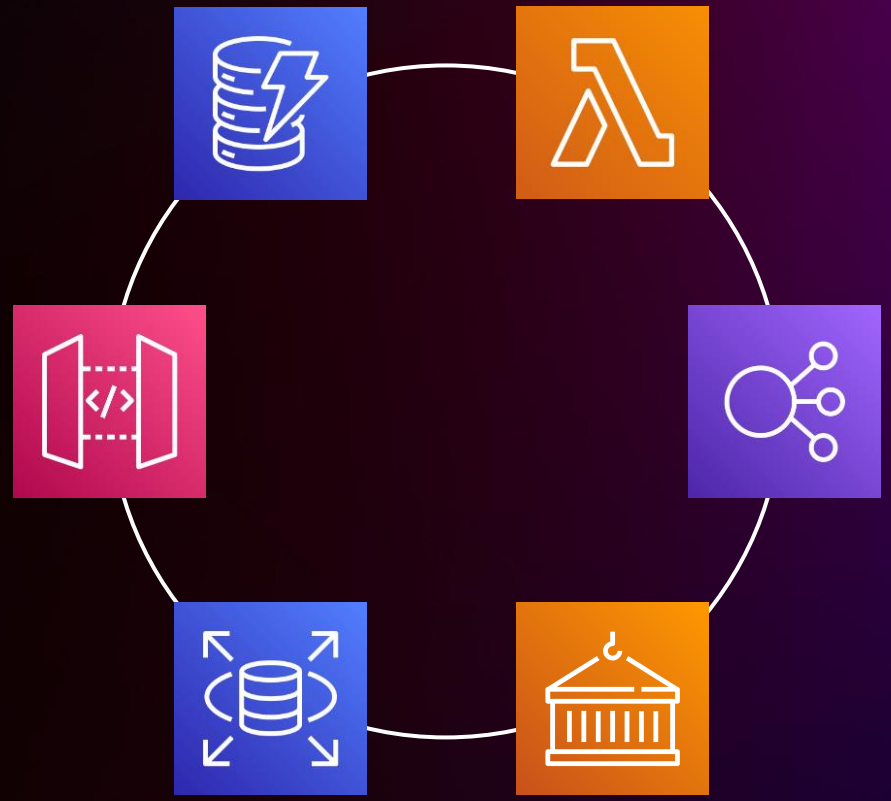
Console view or raw data
You can use the dashboard in the AWS Management Console or export the data in other systems

The workshop

The workshop

- **Serverless performance tuning**
  AWS Lambda, Amazon API Gateway, Amazon DynamoDB

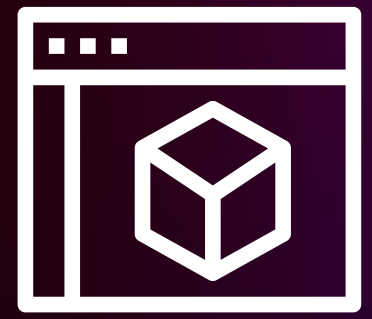
- **Containerized application**
  Application Load Balancer, Amazon ECS, AWS Fargate, Amazon RDS



The workshop

Hands-on experience with

- Techniques for observing performance
- Load testing
- Different approaches and tools that can help

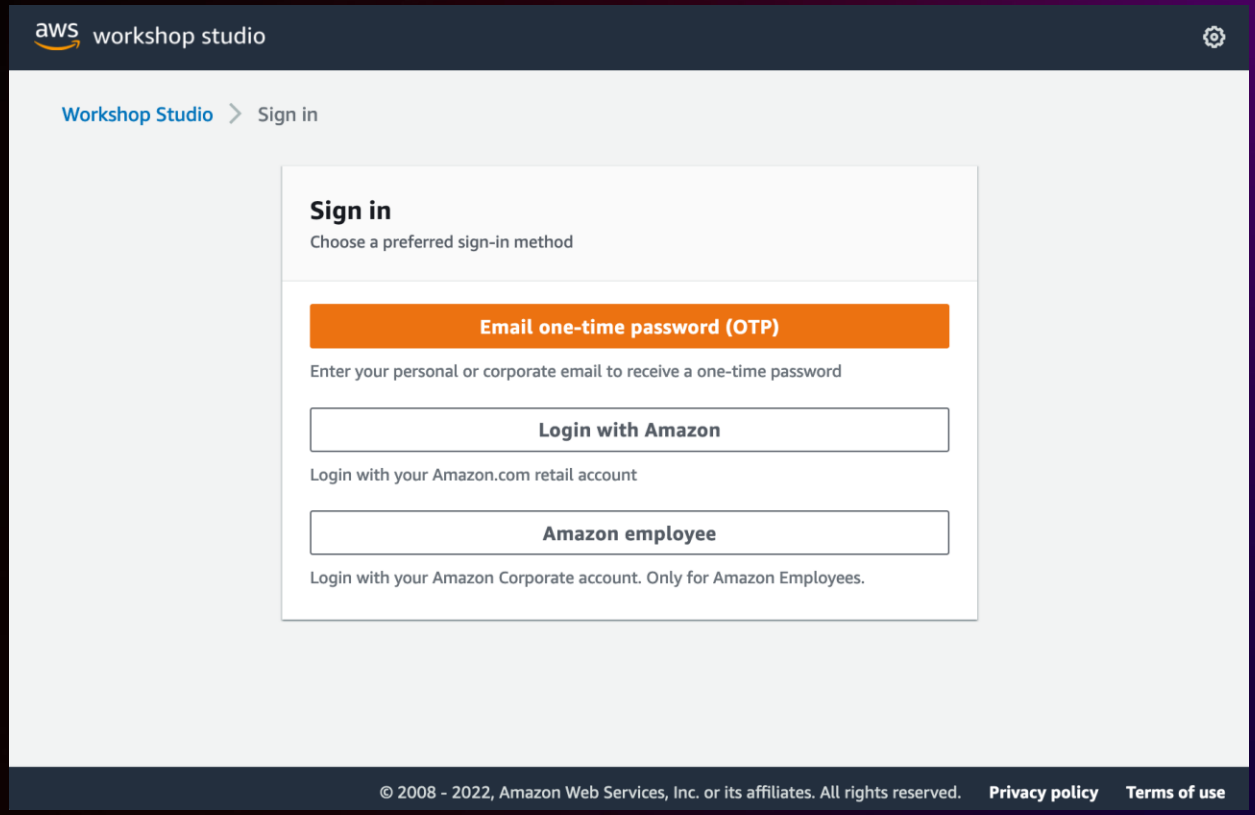


Getting started with this workshop

- As a participant, you will have access to an AWS account with a 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 pre-provisioned infrastructure will be deployed to the Oregon (us-west-2) region
- 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

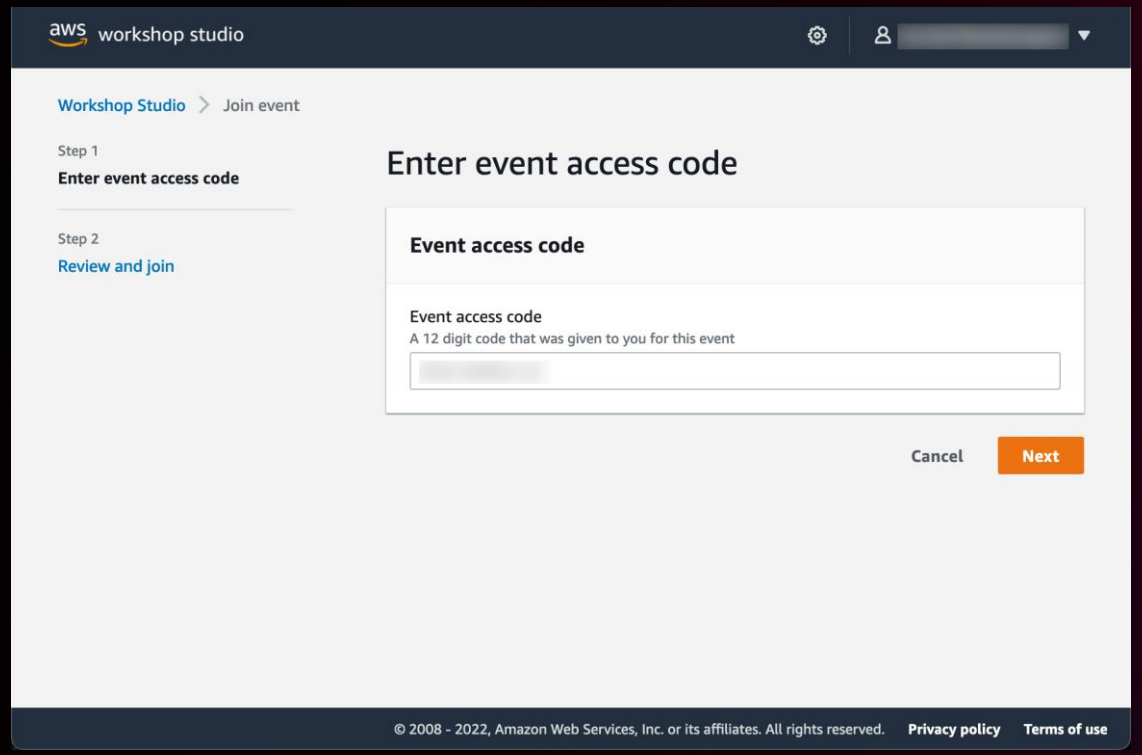
https://s12d.com/stp302



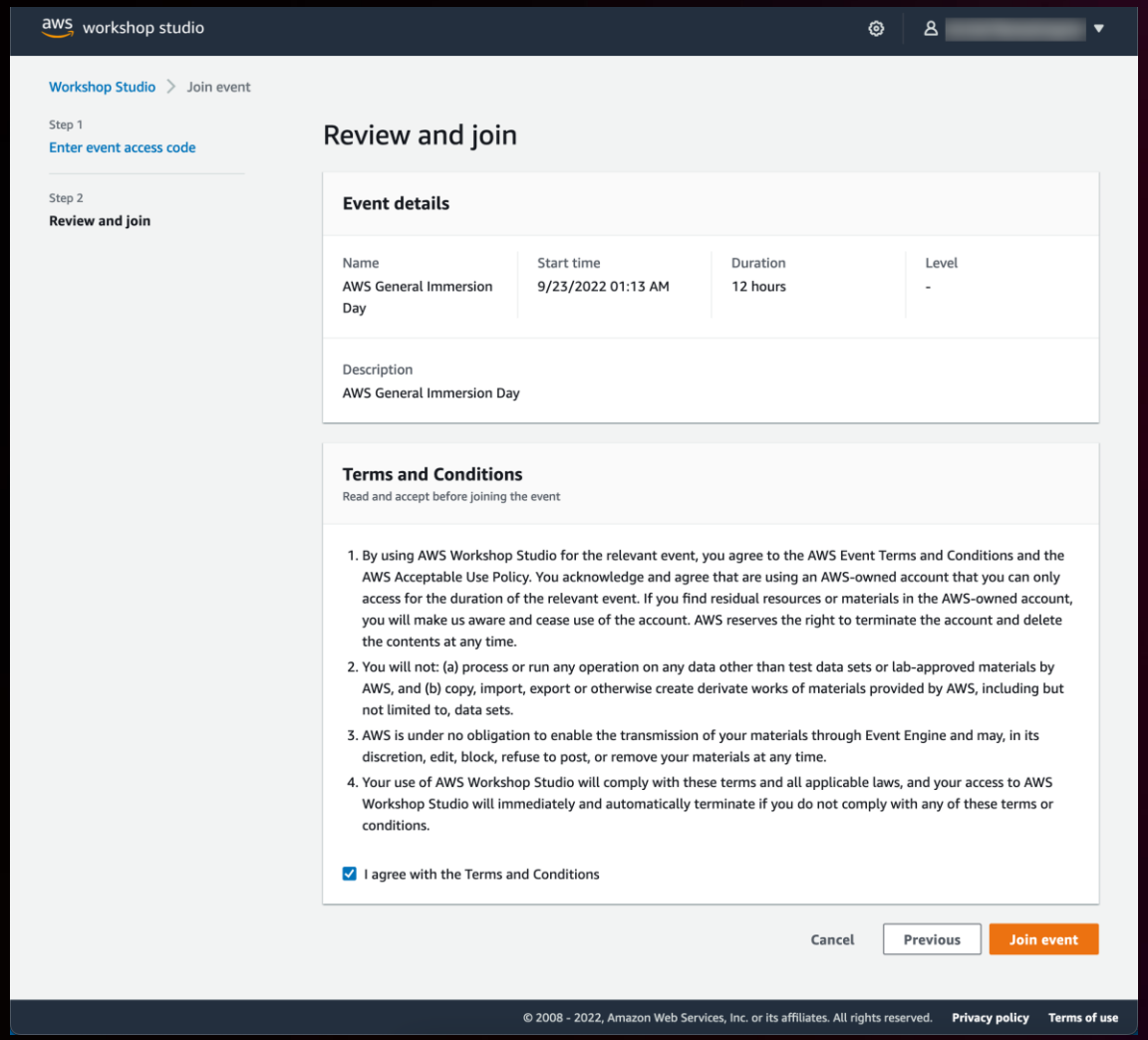
Step 2: Enter event access code

Enter 12 digit event access code - **e36a-0e3f40-34**

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

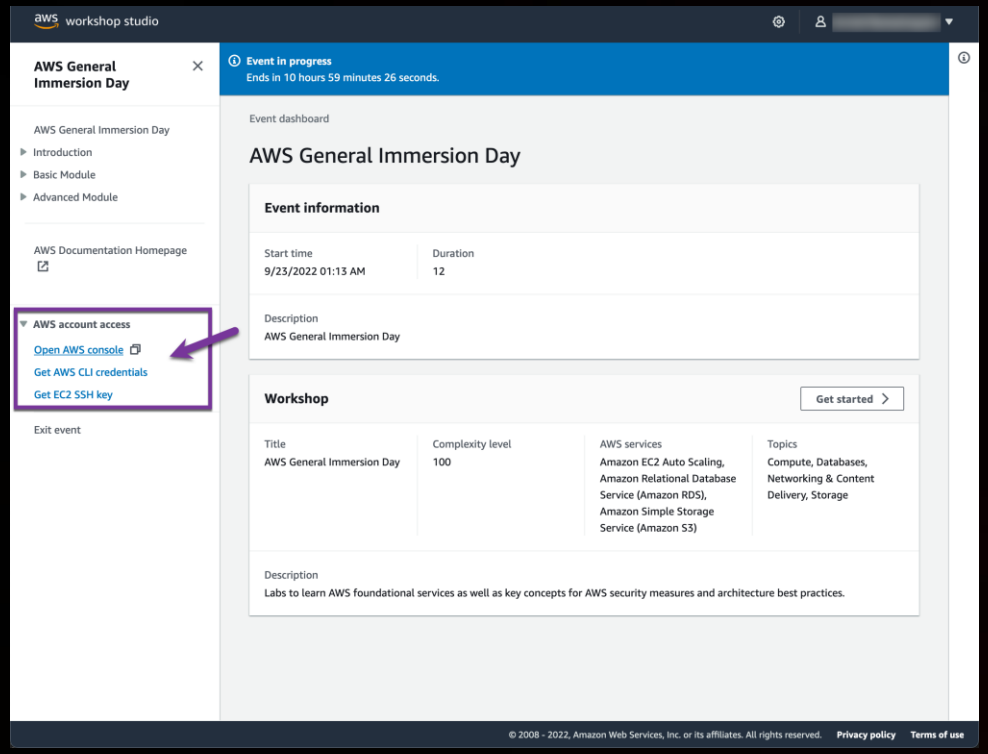


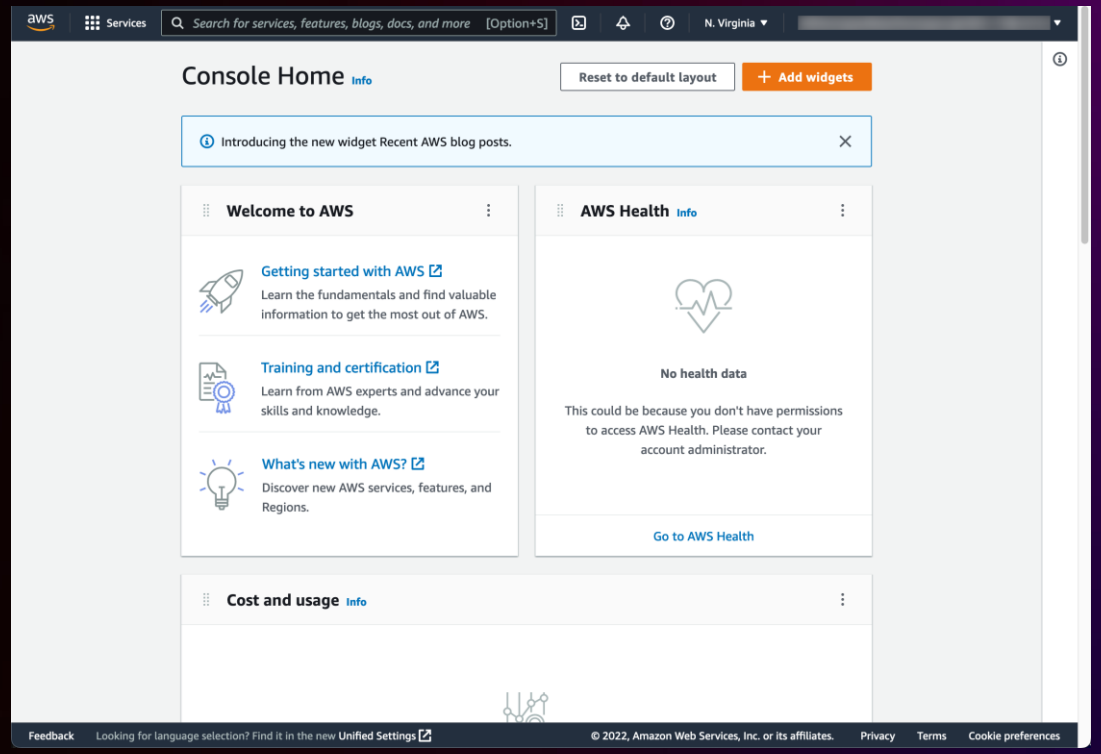
Step 3: Review terms and join event



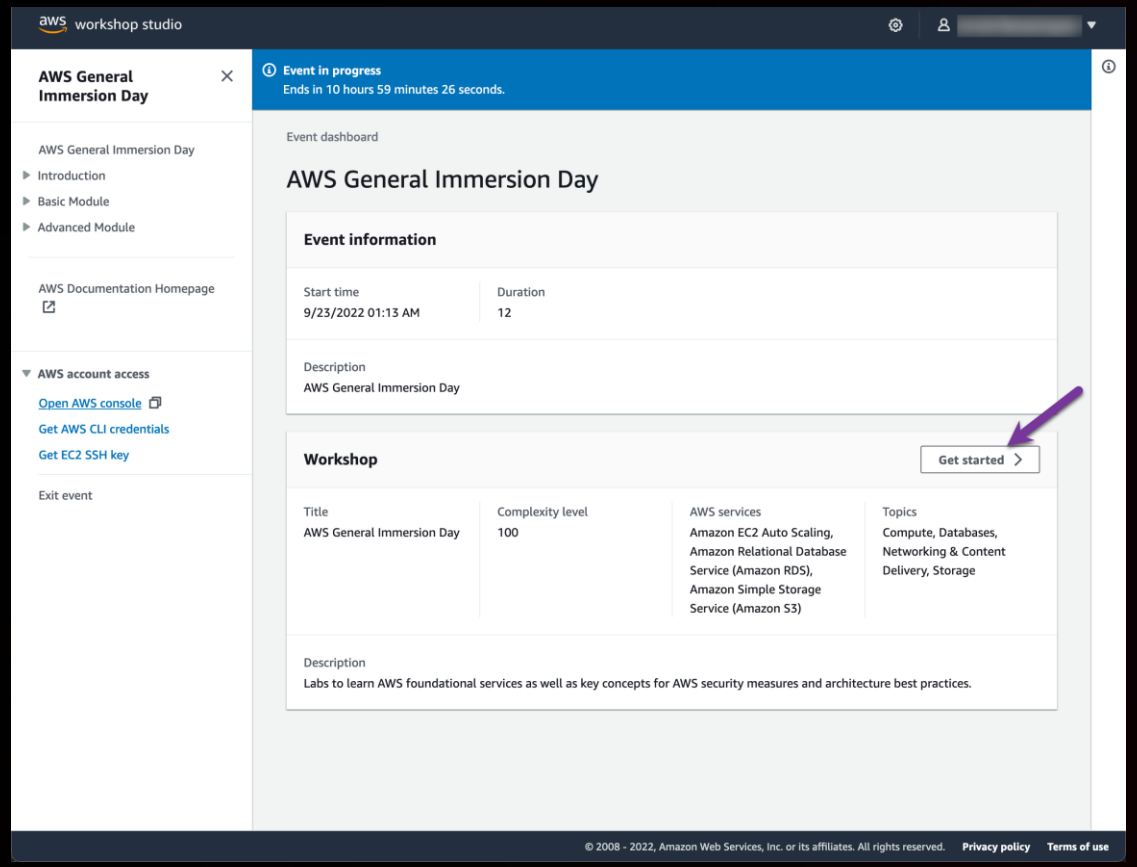
Step 4: Access AWS account

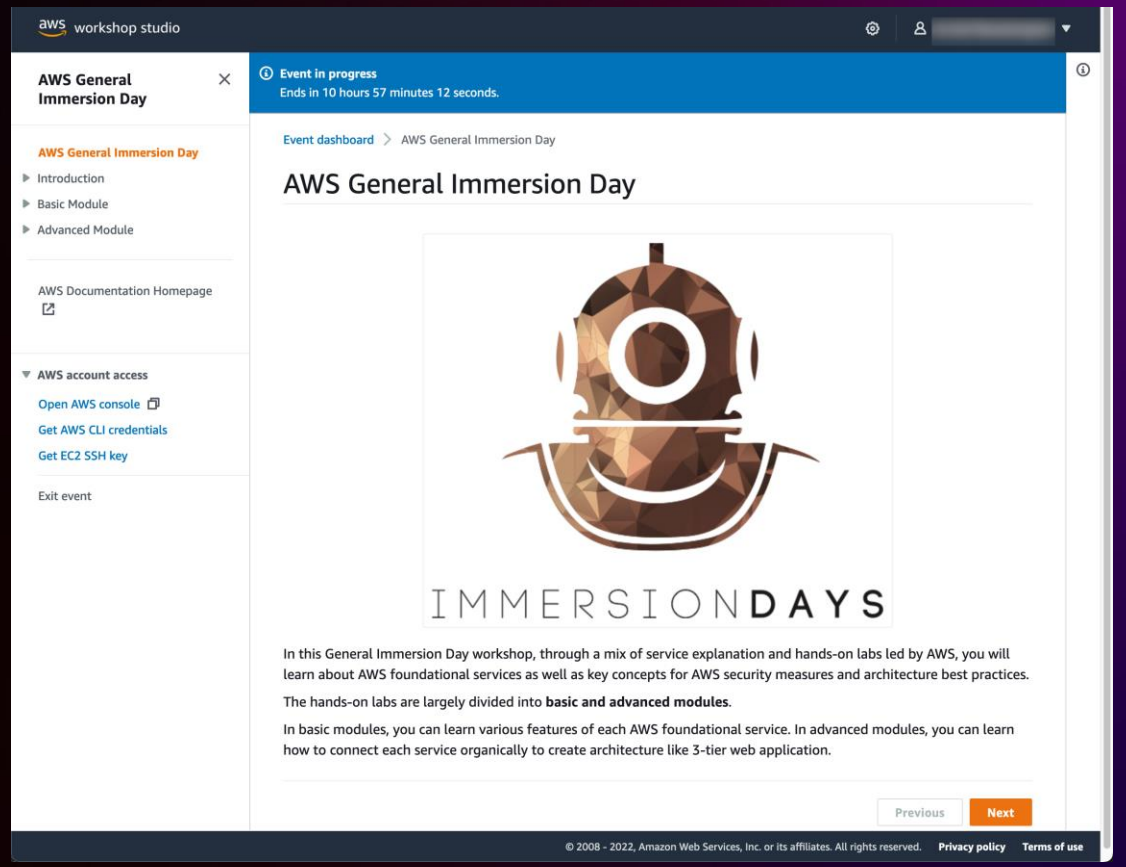
Access the AWS Console, or generate AWS CLI credentials as needed





Step 5: Get started with the workshop





Thank you!

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