AWS re:Invent

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BOA310

Resilient and well-architected apps with chaos engineering

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Agenda

Welcome and housekeeping

Overview of the AWS Well-Architected Framework

Overview of chaos engineering

Workshop

Cleanup

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Objectives

Introduce chaos engineering

Walk away with actionable activities to help application scenarios with resilience, observability, security, and performance

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Requirements

1. Your own device for console access
2. AWS Account through Event Engine

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Housekeeping

Please be a good neighbor ☺

Turn off network backups and any network-hogging app

Switch your phones to silent mode

Help the people around you, if you can

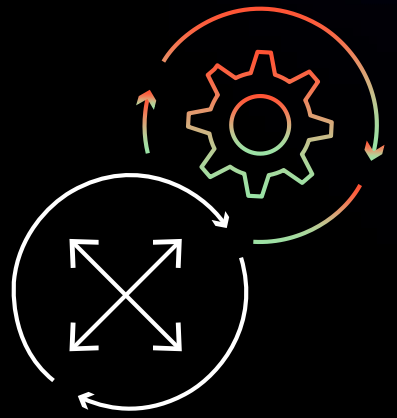
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Well-Architected Framework: An overview

https://aws.amazon.com/architecture/well-architected/

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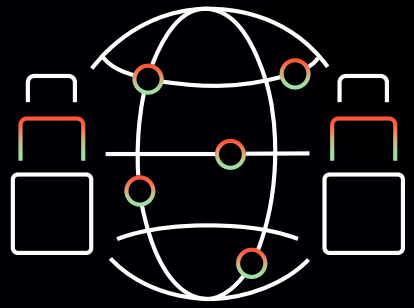
Pillars of AWS Well-Architected



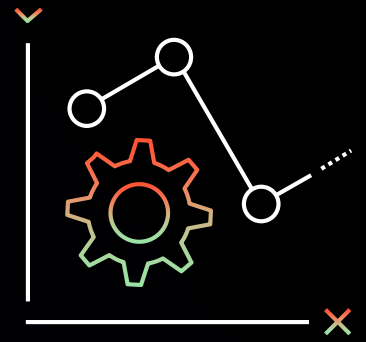
Operational excellence



Security



Reliability



Performance efficiency



Cost optimization

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AWS Well-Architected and chaos engineering

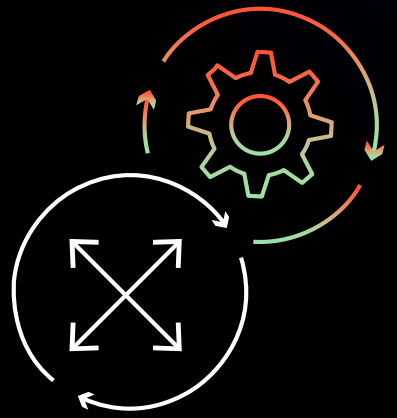
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“Run tests that inject failures regularly into pre-production and production environments”

Reliability pillar of AWS Well-Architected Framework

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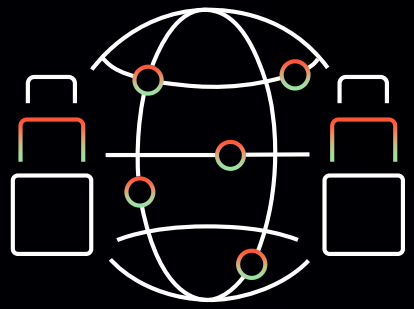
Today’s focus



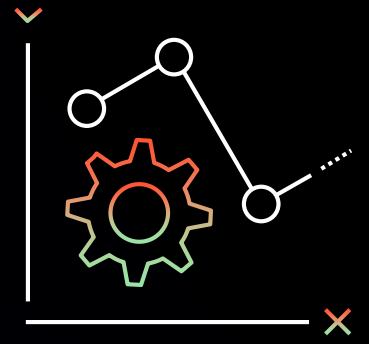
Operational excellence



Security



Reliability



Performance efficiency



Cost optimization

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Chaos engineering: An overview

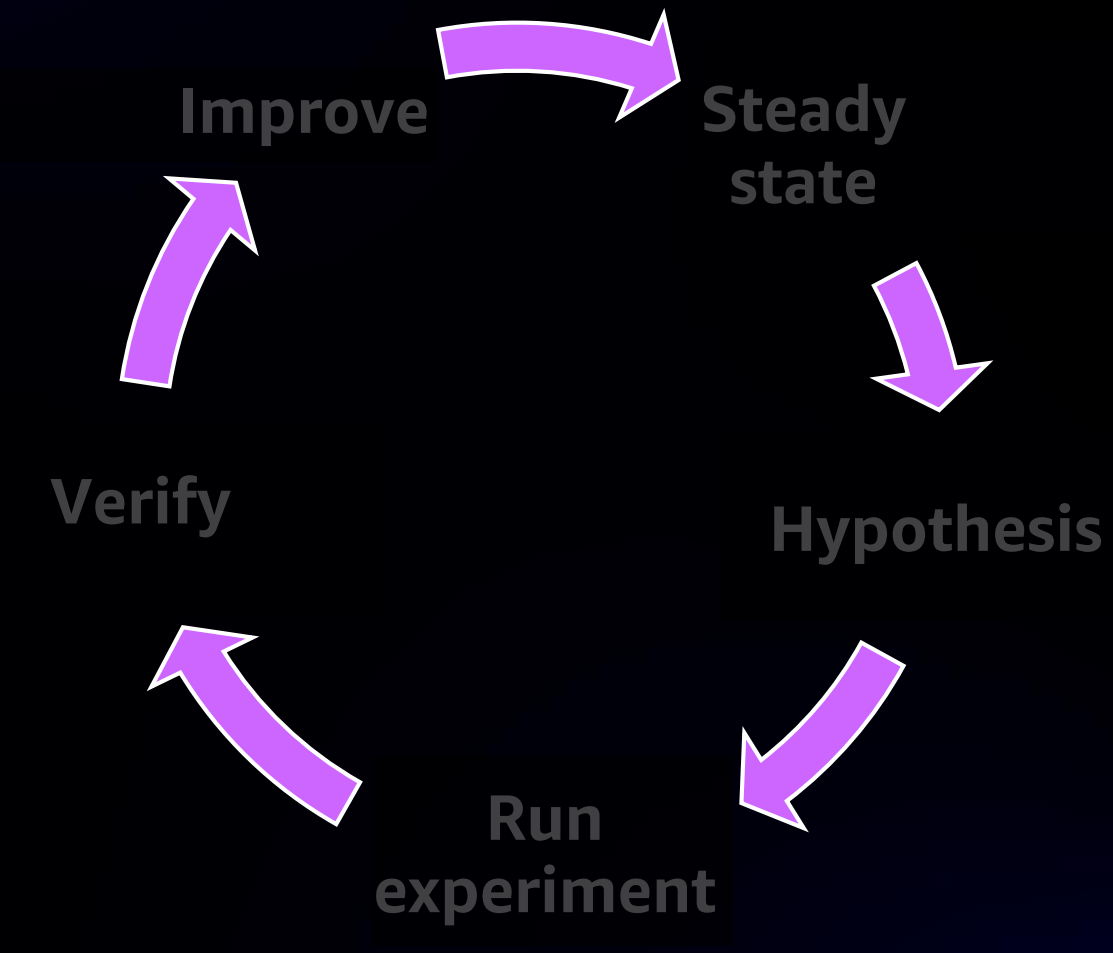
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Chaos engineering

Experimenting on a software system to **build confidence**

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Phases of chaos engineering



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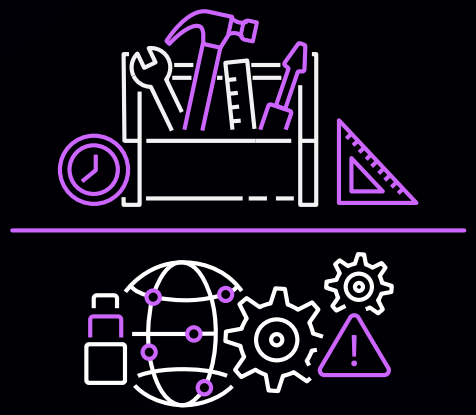
AWS Fault Injection Simulator

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AWS Fault Injection Simulator



Easy to
get started



Real-world
conditions



Safeguards

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Components



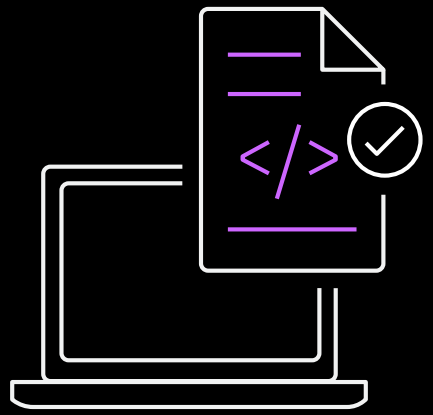
Actions



Targets



Experiment templates

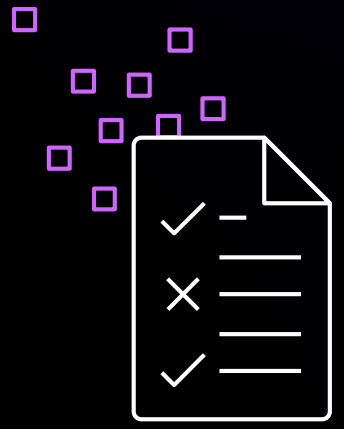


Experiments

aws

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Actions



Actions are the fault injection actions executed during an experiment

`aws:<service-name>:<action-type>`

Actions include:

- Fault type
- Targeted resources
- Timing relative to any other actions
- Fault-specific parameters such as duration, rollback behavior, or the portion of requests to throttle

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Targets



Targets define one or more AWS resources on which to carry out an action

Targets include:

- Resource type
- Resource IDs, tags, and filters
- Selection mode (e.g., ALL, RANDOM)

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Experiment templates



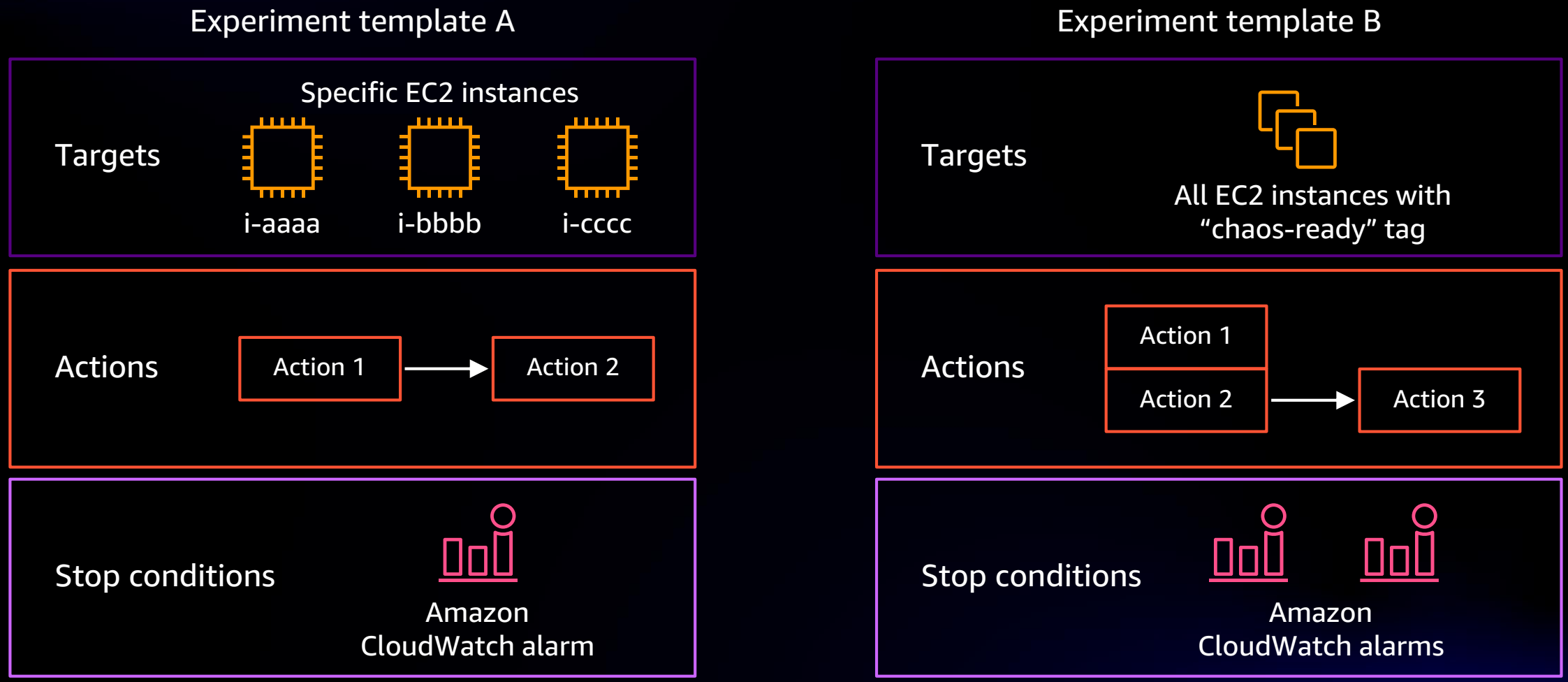
Experiment templates define an experiment and are used in the start-experiment request

Experiment templates include:

- Actions
- Targets
- Stop condition alarms
- IAM role
- Description
- Tags

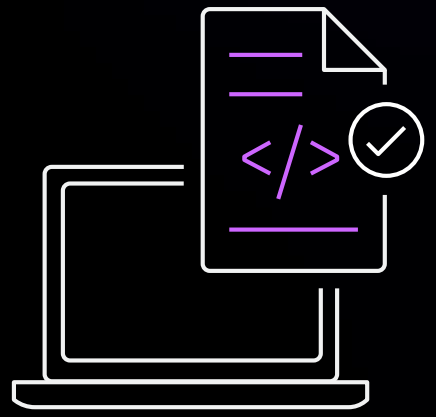
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Experiment templates



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Experiments



Experiments are snapshot of the experiment template when it was first launched with couple additions

Experiments include:

- Snapshot of the experiment
- Creation and start time
- Status
- Execution ID
- Experiment template ID
- IAM role ARN

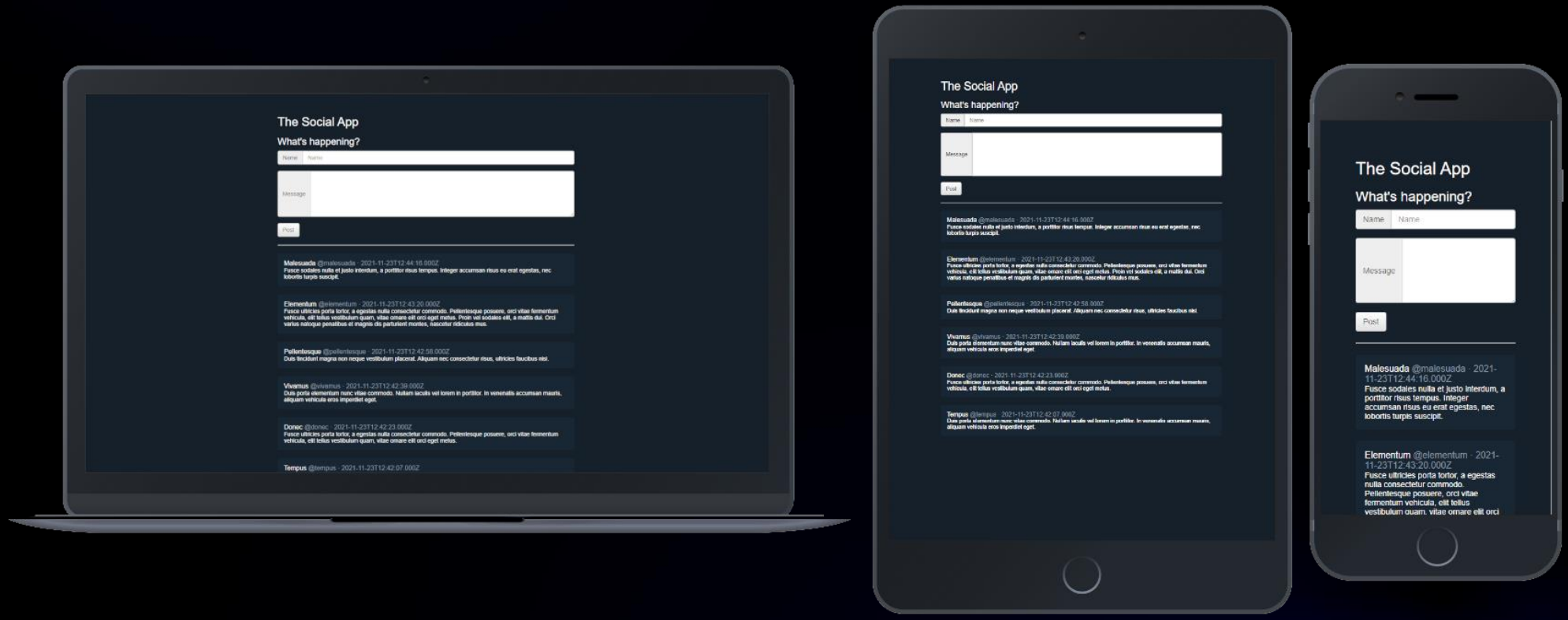
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Workshop

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Scenario

OUR IN-HOUSE BUILT APPLICATION THE SOCIAL SHOULD BE MADE PUBLIC



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Workshop walkthrough

- Single instance
- Multiple instances with Auto Scaling
- Auto Scaling across multiple Availability Zones
- Amazon RDS single Availability Zone
- Amazon RDS multi Availability Zone
- Continuous delivery

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Let’s get started

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Resources

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Resources

AWS Well-Architected Framework
https://aws.amazon.com/architecture/well-architected/

AWS Fault Injection Simulator documentation
https://docs.aws.amazon.com/fis/latest/userguide/

Amazon Builders' Library – Challenges with distributed systems
https://aws.amazon.com/builders-library/challenges-with-distributed-systems/

AWS Well-Architected labs reliability
https://bit.ly/wa-chaos/

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Thank you!

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