



AWS Well-Architected

Are You Well-Architected?

Jon Steele, Specialist TAM, Operations

**When you look at the system your team
is building, can you answer the question:**

“Are you Well-Architected?”

Are you Well-Architected?



Operational
excellence



Security



Reliability



Performance
efficiency



Cost
optimization

Are you Well-Architected?



Operational
excellence



Security



Reliability



Performance
efficiency



Cost
optimization



Review
process



Consistent



Technology
portfolio

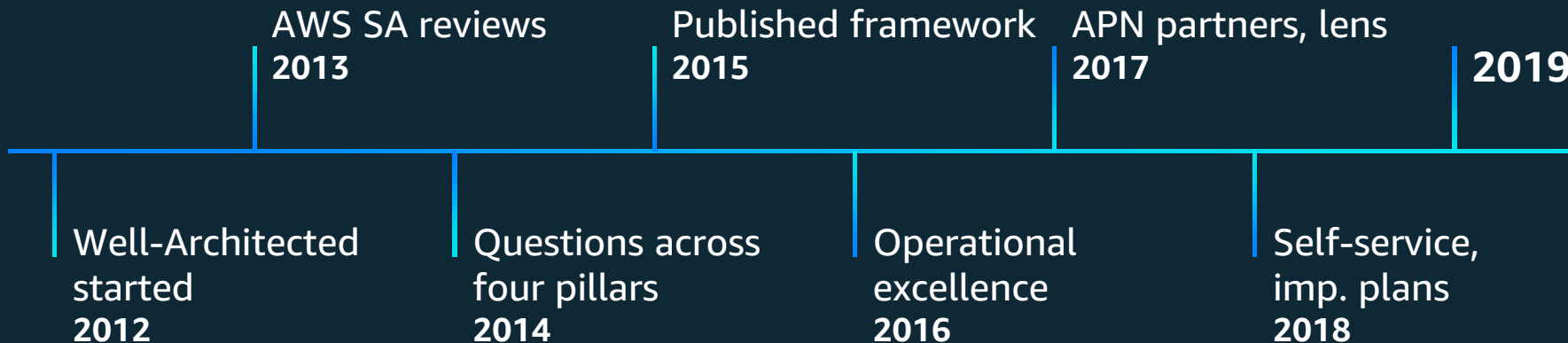


AWS Well-Architected

<https://aws.amazon.com/well-architected/>

A little bit of history...

History



AWS Well-Architected Framework

Why AWS Well-Architected Framework?



Build and deploy faster



Lower or mitigate risks



Make informed decisions



Learn AWS best practices

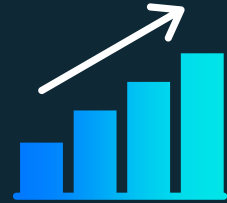
A mechanism for your cloud journey



Learn



Measure



Improve

What is the AWS Well-Architected Framework?



Pillars



Design principles



Questions

Pillars of AWS Well-Architected



Operational
Excellence



Security



Reliability



Performance
efficiency



Cost
optimization

Design principles



General
design principles



Pillar-specific
design principles

Automate responses to security events: Monitor and automatically trigger responses to event-driven, or condition-driven, alerts

Questions

Failure management

REL 7 How does your system withstand component failures?

If your workloads have a requirement, implicit or explicit, for high availability and low mean time to recovery (MTTR), architect your workloads for resiliency and distribute your workloads to withstand outages.

Best practices:

- **Monitoring is done at all layers of the workload to detect failures:** Continuously monitor the health of your system and report degradation as well as complete failure.
- **Deployed to multiple Availability Zones; Multiple AWS Regions if required:** Distribute workload load across multiple Availability Zones and AWS Regions (for example, DNS, ELB, Application Load Balancer, API Gateway).
- **Has loosely coupled dependencies:** Dependencies such as queuing systems, streaming systems, workflows, and load balancers are loosely coupled.
- **Has implemented graceful degradation:** When a component's dependencies are unhealthy, the component itself does not report as unhealthy. It can continue to serve requests in a degraded manner.
- **Automated healing implemented on all layers:** Use automated capabilities upon detection of failure to perform an action to remediate.
- **Notifications are sent upon availability impacting events:** Notifications are sent upon detection of any significant events, even if it was automatically healed.

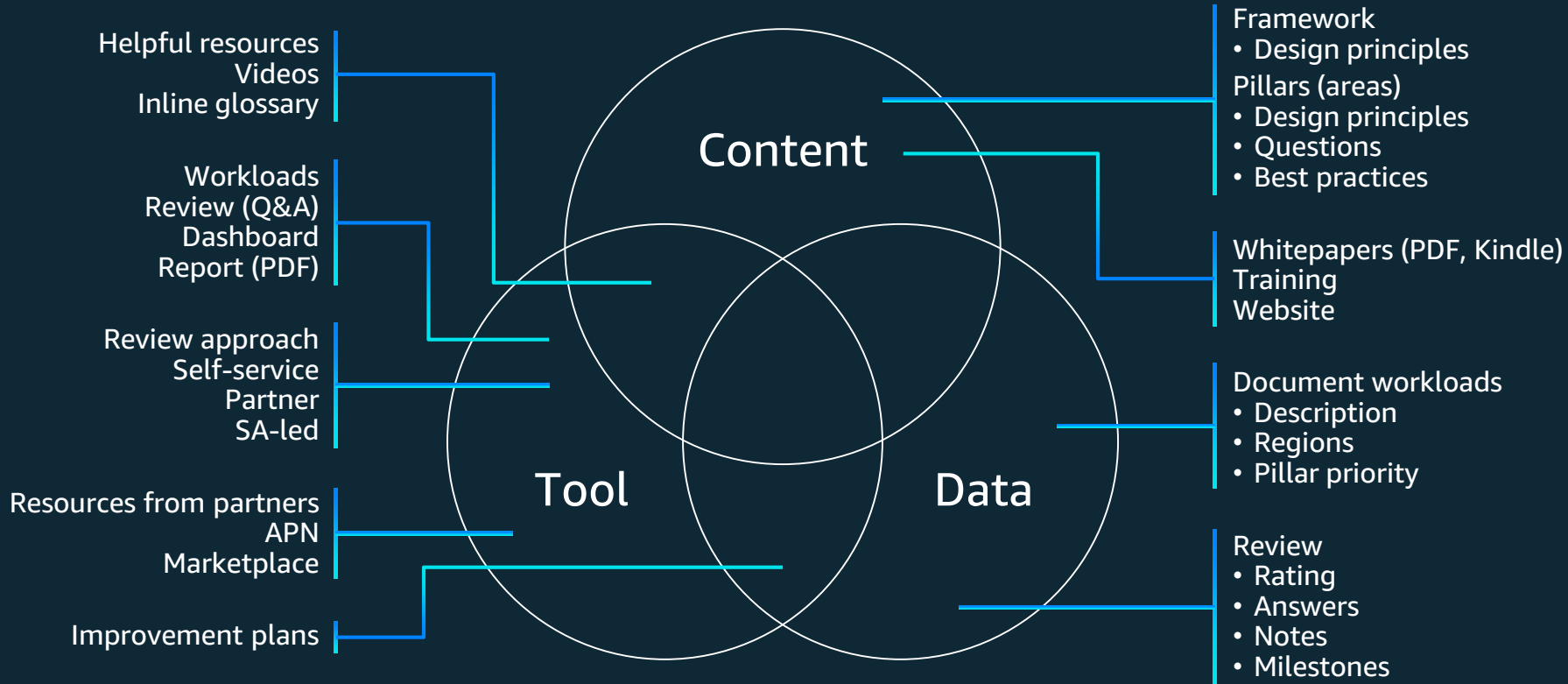
Pillar area

Question

Context

Best practices

What is available?



Have you used the Well-Architected Tool?

- a. No, I've never used the Well-Architected Tool.
- b. Yes, but I haven't completed a review.
- c. Yes, I've complete at least 1 review.
- d. Yes, I've completed more than 5 reviews.



Well-Architected Tool Walkthrough

AWS Well-Architected Tool

Learn, measure, and build using architectural best practices

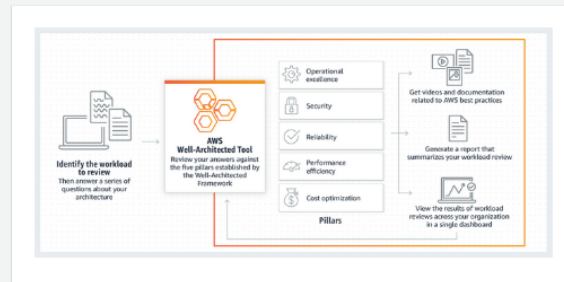
The AWS Well-Architected Tool helps you review your workloads against current AWS best practices and provides guidance on how to improve your cloud architectures. This tool is based on the AWS Well-Architected Framework.

Define a workload

Define a workload based on one of your existing cloud applications.

Define workload

How it works



Benefits and features

Get architectural guidance

Access the knowledge and best

Enable consistent governance

Apply a consistent process to help you

Continuously improve architectures

Support continuous improvement

Pricing (US)

Any usage

Free

Getting started

[What is the AWS Well-Architected Tool?](#)

[Getting started video](#)

More resources

[FAQ](#)

[AWS Well-Architected Partners](#)

Applying AWS Well-Architected

Intent of review

Not an audit



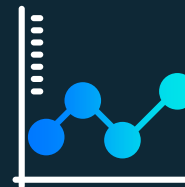
Working together
to improve

Not architecture astronauts



Pragmatic,
proven advice

Not a one-time check



Throughout
lifecycle

Review choice

Your team technical
and business leads

AWS
WA tool

AWS
APN partner

AWS Solutions
Architect

Self-service



Partner



AWS SA



Review choice

Self-service

Full control of how often and when

Partner

When you have a shortage of skilled resource, can address issues

AWS SA

Critical workloads, advice on improvement plan

Partner Well-Architected reviews



Engage with a
Well-Architected partner
for a free review



Results including
Statement of Work (SoW)
for improvements



Approve SoW within
30 days receive \$5k
in AWS credits

Well-Architected Partners

<https://aws.amazon.com/architecture/well-architected/partners/>



Booz | Allen | Hamilton



Five Talent 



Learnings

Pre-launch only?



Earlier
is better

Make bad decisions?



Not considered
decisions

Findings?



Most workloads
can be improved

Use cases



Learning best practices
for the cloud



Technology
governance



Portfolio
management

Question:

Learning best practices for the cloud

How do I architect for the cloud?

Being constrained by on-premises assumptions

So many resources, where to start?

How do I know if I have done something wrong?

Answer:

Learning best practices for the cloud

Learn AWS best practices

Transition to cloud native

Sign-post resources/services

Identify improvements

Inform future architectures

Question:

Technology governance

Ready to go into production?

Are my teams following best practice?

Consistent measurement?

Burn down risks?

Answer:

Technology governance



Operational
excellence



Security



Reliability



Performance
efficiency



Cost
optimization



Review
process



Consistent



Technology
portfolio

Question:

Portfolio management

Where is my inventory of workloads?

What decisions did I make in each?

What risks are in each?

How are risks changing over time?

Where should I invest?

Are there trends I can address holistically?

Can I build mechanisms?

Answer: Portfolio management



Technology portfolio



Operational
excellence



Security



Reliability



Performance
efficiency



Cost
optimization

How likely are you to use the W-A Tool?

- a. Already using
- b. Likely to use
- c. Unlikely to use
- d. Unsure

Tips

<https://aws.amazon.com/well-architected/>



Whitepapers (PDF, Kindle)

- Framework
 - Per pillar (operational excellence, reliability, security, performance efficiency, cost optimization)
 - Lens (serverless, HPC, IoT)
-



Training (framework, pillars, review process, tool)

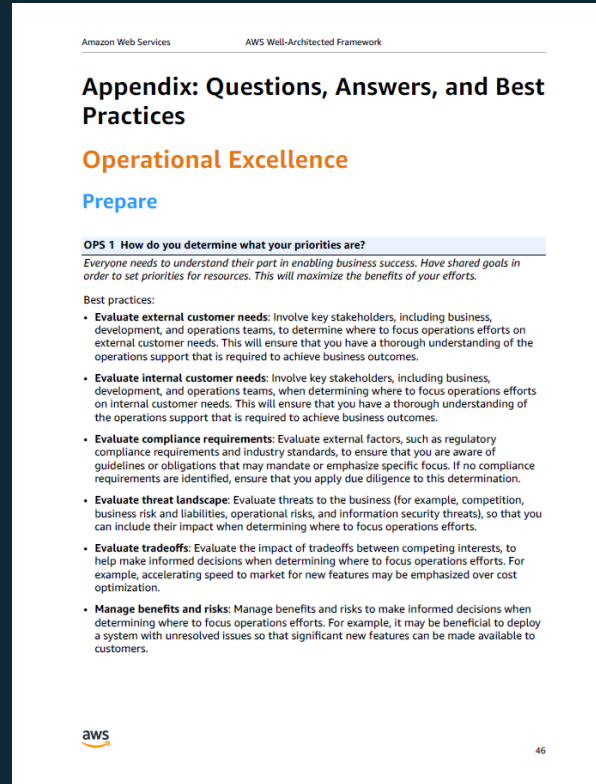


Website

- Glossary
 - Videos
 - Map
-

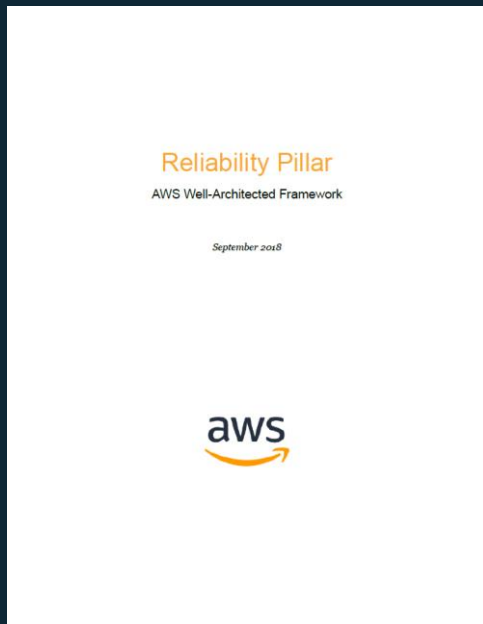
Framework has Q&A

<https://aws.amazon.com/well-architected/>



Pillar has detail

<https://aws.amazon.com/well-architected/>



Contents

Introduction

Reliability

Design Principles

Definition

Foundation – Limit Management

Foundation - Networking

Application Design for High Availability

Understanding Availability Needs

Application Design for Availability

Operational Considerations for Availability

Example Implementations for Availability Goals

Dependency Selection

Single Region Scenarios

Multi-Region Scenarios

Conclusion

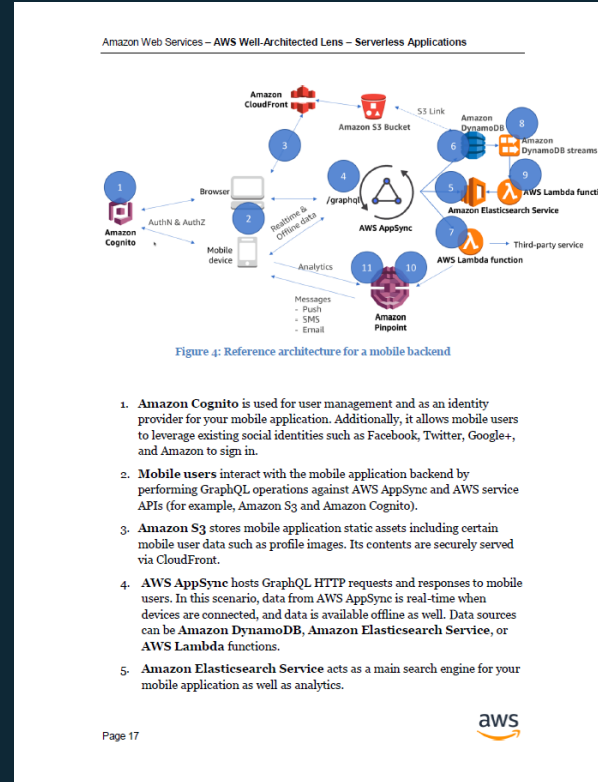
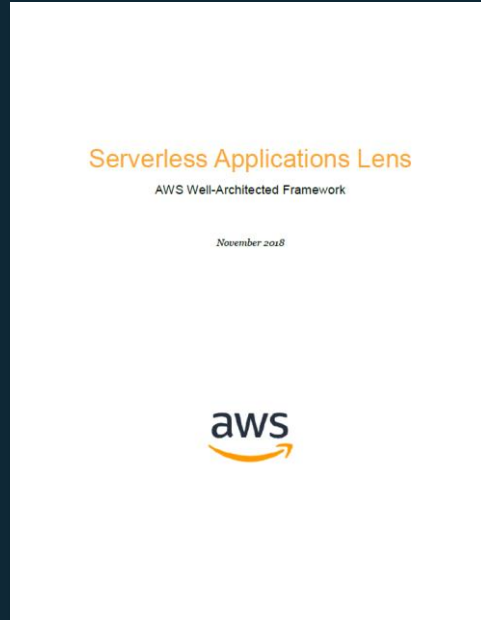
Contributors

Document Revisions

Appendix A: Designed-For Availability for Select AWS Services

Lens have ref. arch

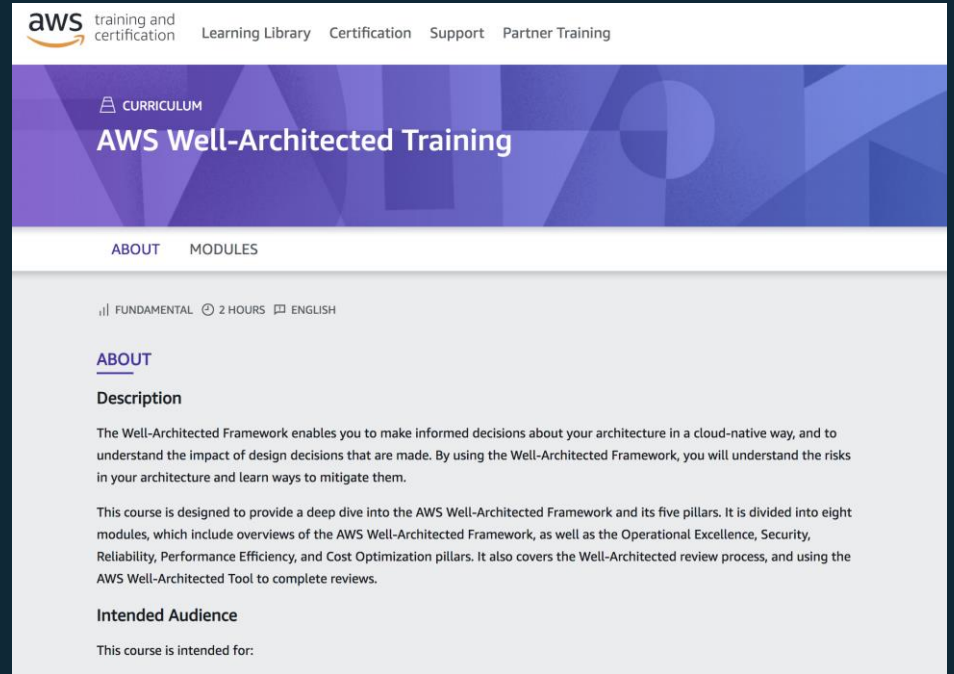
<https://aws.amazon.com/well-architected/>



Free training

<https://www.aws.training/Details/Curriculum?id=12049>

- The Framework
- Operational Excellence
- Security
- Reliability
- Performance Efficiency
- Cost Optimization
- Well-Architected Review
- AWS Well-Architected Tool



aws training and certification Learning Library Certification Support Partner Training

CURRICULUM

AWS Well-Architected Training

ABOUT MODULES

FUNDAMENTAL 2 HOURS ENGLISH

ABOUT

Description

The Well-Architected Framework enables you to make informed decisions about your architecture in a cloud-native way, and to understand the impact of design decisions that are made. By using the Well-Architected Framework, you will understand the risks in your architecture and learn ways to mitigate them.

This course is designed to provide a deep dive into the AWS Well-Architected Framework and its five pillars. It is divided into eight modules, which include overviews of the AWS Well-Architected Framework, as well as the Operational Excellence, Security, Reliability, Performance Efficiency, and Cost Optimization pillars. It also covers the Well-Architected review process, and using the AWS Well-Architected Tool to complete reviews.

Intended Audience

This course is intended for:

Well-Architected content website

<https://wa.aws.amazon.com/>

AWS Well-Architected Framework



AWS Well-Architected Framework

Abstract

This document describes the AWS Well-Architected Framework, which enables you to review and improve your cloud-based architectures and better understand the business impact of your design decisions. We address general design principles as well as specific best practices and guidance in five conceptual areas that we define as the *pillars* of the Well-Architected Framework.

Contents

[Introduction](#)

[Definitions](#)

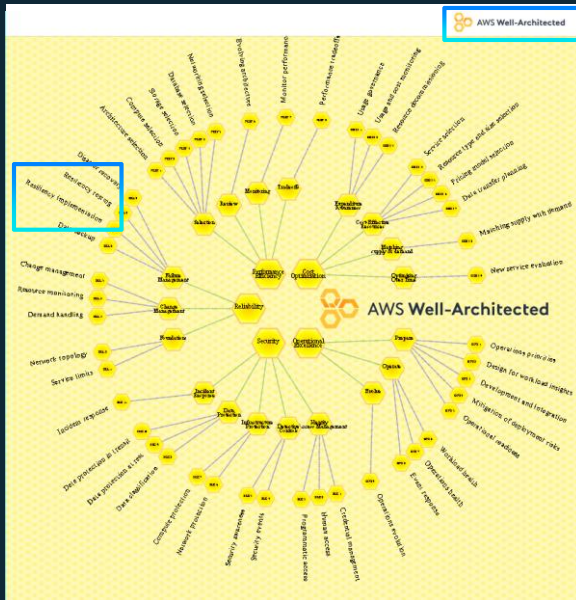
[On Architecture](#)

[General Design Principles](#)

[The Five Pillars of the Framework](#)

[Operational Excellence](#)

[Security](#)



AWS Well-Architected Framework

> [The Five Pillars of the Framework](#)



> [Reliability](#) > How does your system withstand component failures?

REL 7: How does your system withstand component failures?
If your workloads have a requirement, implicit or explicit, for high availability and low mean time to recovery (MTTR), architect your workloads for resilience and distribute your workloads to withstand outages.



Resources

[Performing chaos at Netflix scale](#)

[AWS global infrastructure](#)

[Global tables](#)

[Multiple data center HA network connectivity](#)

[AWS Marketplace: products that can be used for fault tolerance](#)

[APN Partner: partners that can help with automation of your](#)

Well-Architected Labs

WellArchitectedLabs.com

The screenshot shows the AWS Well-Architected Labs website. At the top, there is a navigation bar with the AWS logo, the text "AWS Well-Architected Labs", a search bar, and a GitHub repository link for "aws-labs/aws-well-archite..." with 498 stars and 181 forks. Below the navigation bar, there are tabs for "Home", "Operational Excellence", "Security", "Reliability", "Performance Efficiency", "Cost Optimization", and "Well Architected Tool". The main content area has a left sidebar with "AWS Well-Architected Labs" and "Home". The main heading is "AWS Well-Architected Labs" with an edit icon. Below the heading is the "Introduction" section. The text describes the Well-Architected framework as a secure, high-performing, resilient, and efficient infrastructure framework. It also mentions that the repository contains hands-on labs categorized into levels: 100 (introductory), 200/300 (intermediate), and 400 (advanced). There are sections for "Prerequisites:" and "Labs:". The prerequisites section states that an AWS account is needed for testing, not production, and that users will be billed for resources used. The labs section states that they are structured around the five pillars of the Well-Architected Framework.

AWS Well-Architected Labs

AWS Well-Architected Labs

Introduction

The Well-Architected framework has been developed to help cloud architects build the most secure, high-performing, resilient, and efficient infrastructure possible for their applications. This framework provides a consistent approach for customers and partners to evaluate architectures, and provides guidance to help implement designs that will scale with your application needs over time.

This repository contains documentation and code in the format of hands-on labs to help you learn, measure, and build using architectural best practices. The labs are categorized into levels, where 100 is introductory, 200/300 is intermediate and 400 is advanced.

Prerequisites:

An AWS account that you are able to use for testing, that is not used for production or other purposes. NOTE: You will be billed for any applicable AWS resources used if you complete this lab that are not covered in the AWS Free Tier.

Labs:

The labs are structured around the five pillars of the Well-Architected Framework:

- Table of contents
- Introduction
- Prerequisites:
- Labs:
- License

General design principles

Stop guessing your capacity needs

Test systems at production scale

Automate to make architectural experimentation easier

Allow for evolutionary architectures

Drive architectures using data

Improve through game days



Design principles for operational excellence

Perform operations as code

Annotate documentation

Make frequent, small, reversible changes

Refine operations procedures frequently

Anticipate failure

Learn from all operational failures



Design principles for security

Implement a strong identity foundation

Enable traceability

Apply security at all layers

Automate security best practices

Protect data in transit and at rest

Keep people away from data

Prepare for security events



Design principles for reliability

Test recovery procedures

Automatically recover from failure

Scale horizontally to increase aggregate system availability

Stop guessing capacity

Manage change in automation



Design principles for performance efficiency

Democratize advanced technologies

Go global in minutes

Use serverless architectures

Experiment more often

Mechanical sympathy



Design principles for cost optimization

Adopt a consumption model

Measure overall efficiency

Stop spending money on data center operations

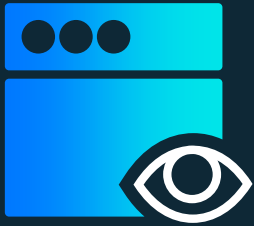
Analyze and attribute expenditure

Use managed services to reduce cost of ownership



Getting started

<https://aws.amazon.com/well-architected/>



Read online resources



Account team or partner



Review first workload



Thank you

<https://aws.amazon.com/well-architected/>