Skills Center

Becoming a Cloud Practitioner Part 3

Participant Workbook

Instructions

This is the participant workbook you can use throughout this course. You will find valuable terminology and acronym definitions explained here. There is space for you to take notes and even additional links for you to dive deeper into the information you will learn in class today.

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Module 1: AWS Frameworks, billing, and support

Topic A: AWS Cloud Adoption Framework

The AWS Cloud Adoption Framework (AWS CAF) leverages AWS experience and best practices to help you digitally transform and accelerate your business outcomes through innovative use of AWS. AWS CAF identifies specific organizational capabilities that underpin successful cloud transformations. These capabilities provide best practice guidance that helps you improve your cloud readiness.

Capabilities and perspectives

AWS CAF capabilities provide best practice guidance that helps you improve your cloud readiness. AWS CAF perspectives comprise capabilities that functionally related stakeholders own or manage in your cloud transformation journey.

For more information on the AWS Cloud Adoption Framework, see https://aws.amazon.com/cloud-adoption-framework/.

Notes:

Topic B: Well Architected Framework

AWS Well-Architected helps cloud architects build secure, high-performing, resilient, and efficient infrastructure for a variety of applications and workloads. Built around six pillars—operational excellence, security, reliability, performance efficiency, cost optimization, and sustainability—AWS Well-Architected provides a consistent approach for customers and partners to evaluate architectures and implement scalable designs.

Framework Overview

The AWS Well-Architected Framework describes key concepts, design principles, and architectural best practices for designing and running workloads in the cloud. By answering a few foundational questions, learn how well your architecture aligns with cloud best practices and gain guidance for making improvements.

AWS Well-Architected Lenses

AWS Well-Architected Lenses extend the guidance offered by AWS Well-Architected to specific industry and technology domains, such as machine learning (ML), data analytics, serverless, high performance computing (HPC), IoT, SAP, streaming media, the games industry, hybrid networking, and financial services. To fully evaluate workloads, use applicable lenses together with the AWS Well-Architected Framework and its six pillars.

For more information on the AWS Well Architected Framework, see https://aws.amazon.com/architecture/well-architected/.

Notes:

Topic C: Billing and Support

AWS Free Tier categories

The AWS Free Tier provides customers the ability to explore and try out AWS services free of charge up to specified limits for each service. The Free Tier is comprised of three different types of offerings, a 12-month Free Tier, an Always Free offer, and short term trials. Services with a 12-month Free Tier allow customers to use the product for free up to specified limits for one year from the date the account was activated.

For more information, see https://aws.amazon.com/free/free-tier-faqs.

AWS pricing concepts

AWS offers you a pay-as-you-go approach for pricing for the vast majority of our cloud services. With AWS you pay only for the individual services you need, for as long as you use them, and without requiring long-term contracts or complex licensing. AWS pricing is similar to how you pay for utilities like water and electricity. You only pay for the services you consume, and once you stop using them, there are no additional costs or termination fees.

For more information, see https://aws.amazon.com/pricing/.

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AWS Budgets

Using AWS Budgets, you can set a budget that alerts you when you exceed (or are forecasted to exceed) your budgeted cost or usage amount. You can also set alerts based on your RI or Savings Plans Utilization and Coverage using AWS Budgets.

For more information, see https://aws.amazon.com/aws-cost-management/aws-budgets/faqs/.

AWS Cost Explorer

AWS Cost Explorer has an easy-to-use interface that lets you visualize, understand, and manage your AWS costs and usage over time. Get started quickly by creating custom reports that analyze cost and usage data. Analyze your data at a high level (for example, total costs and usage across all accounts), or dive deeper into your cost and usage data to identify trends, pinpoint cost drivers, and detect anomalies.

For more information, see https://aws.amazon.com/aws-cost-management/aws-cost-explorer/faqs/.

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AWS Support plans

AWS Support provides a mix of tools and technology, people, and programs designed to proactively help you optimize performance, lower costs, and innovate faster. We save time for your team by helping you to move faster in the cloud and focus on your core business.

For more information, see https://aws.amazon.com/premiumsupport/plans/.

AWS Support plans

	Developer	Business	Enterprise On-Ramp	Enterprise
	Recommended if you are experimenting or testing.	Minimum recommended if you have production workloads.	Recommended if you have production and/or business critical workloads.	Recommended if you have business and/or mission critical workloads.
Enhanced tech support	Business hour web access to CSAs**	24/7 access web & chat access to CSEs	24/7 access web & chat access to CSEs	24/7 access web & chat access to CSEs
Response times	System imp: < 12 hrs**	System imp: < 12 hr Prod sys imp: < 4 hr Prod sys down: < 1 hr	System imp: < 12 hr Prod sys imp: < 4 hr Prod sys down: < 1 hr Crit sys down: < 30 mins	System imp: < 12 hr Prod sys imp: < 4 hr Prod sys down: < 1 hr Crit sys down: < 15 mins
Architecture guidance	General best practice guidance	Contextual use-case guidance	Consultative review on your apps (1 per year)	Consultative review on your apps
AWS Trusted Advisor	Service quota & Basic security checks	Full set of checks	Full set of checks	Full set of checks Prioritized, curated recommendations

Notes:

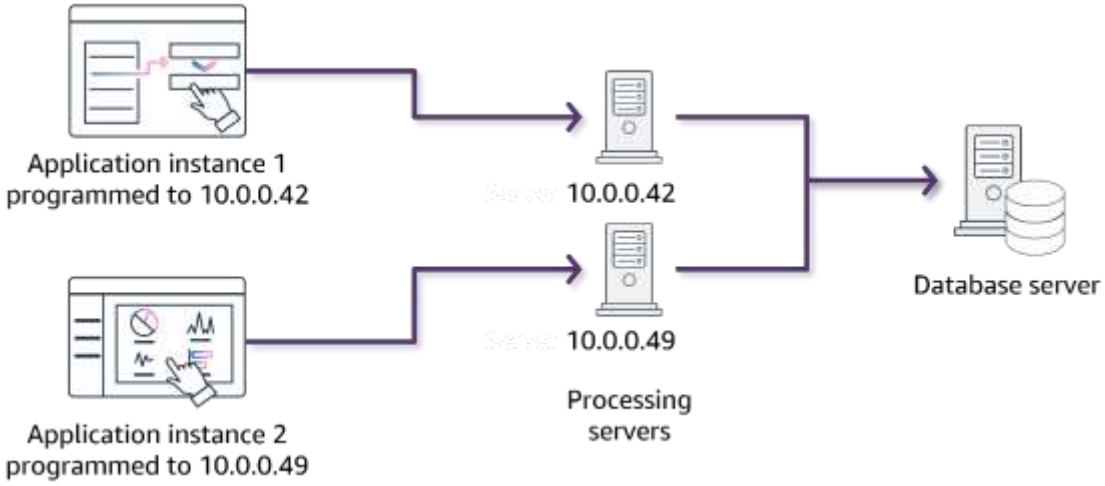
Module 2: Applications in the cloud

Topic A: Application availability

Understanding points of application failure

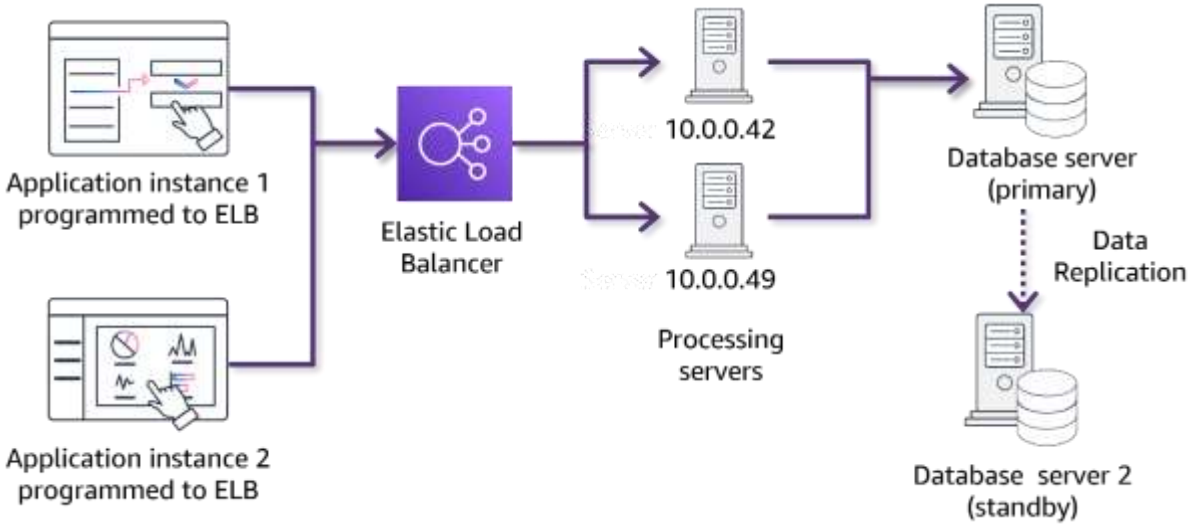
When designing an application, developers must choose between cost and availability. Should you have a single application instance or multiple instances? Should we have a single processing servers or multiple instances? It is important to identify points of failure within the application architecture address the risk or make changes to the architecture.

In the following image, you will see an architecture with multiple points of failure.



There are two applications instances, however each application is programed to work directly with a single processing server. If one of the processing servers were to fail, that application instance will also not function. The other area that is a sing point of failure is the database server.

The following image shows one option for eliminating all of the single-points of failure.



Topic B: Messaging Services

Amazon Simple Notification Service (Amazon SNS)

Amazon SNS is a managed service that provides message delivery from publishers to subscribers. Publishers communicate asynchronously with subscribers by sending messages to a topic, which is a logical access point and communication channel. Clients can subscribe to the SNS topic and receive published messages using a supported endpoint type, such as Amazon Kinesis Data Firehose, Amazon SQS, AWS Lambda, HTTP, email, mobile push notifications, and mobile text messages (SMS).

For more information on Amazon SNS features, see https://docs.aws.amazon.com/sns/latest/dg/welcome-features.html.

Amazon Simple Queue Service (Amazon SQS)

Amazon SQS lets you send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available. Amazon SQS offers two queue types for different application requirements, standard and FIFO queues.

For more information on Amazon SNS features, see https://aws.amazon.com/sqs/.

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Topic C: Messaging Services

AWS Lambda

AWS Lambda is a serverless compute service that runs your code in response to events and automatically manages the underlying compute resources for you. These events may include changes in state or an update, such as a user placing an item in a shopping cart on an ecommerce website. You can use AWS Lambda to extend other AWS services with custom logic, or create your own backend services that operate at AWS scale, performance, and security. AWS Lambda automatically runs code in response to multiple events, such as HTTP requests via Amazon API Gateway, modifications to objects in Amazon Simple Storage Service (Amazon S3) buckets, table updates in Amazon DynamoDB, and state transitions in AWS Step Functions.

For more information on AWS Lambda, see https://aws.amazon.com/lambda/features/.

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Module 3: Databases

Topic A: Relational database services

In a relational database, data is stored in a way that relates it to other pieces of data.

An example of a relational database might be the coffee shop's inventory management system. Each record in the database would include data for a single item, such as product name, size, price, and so on.

Relational databases use structured query language (SQL) to store and query data. This approach allows data to be stored in an easily understandable, consistent, and scalable way. For example, the coffee shop owners can write a SQL query to identify all the customers whose most frequently purchased drink is a medium latte.

Amazon Relational Database Service (Amazon RDS)

Amazon RDS is a collection of managed services that makes it simple to set up, operate, and scale databases in the cloud. Choose from seven popular engines — Amazon Aurora with MySQL compatibility, Amazon Aurora with PostgreSQL compatibility, MySQL, MariaDB, PostgreSQL, Oracle, and SQL Server — and deploy on-premises with Amazon RDS on AWS Outposts.

For more information on Amazon RDS, see https://aws.amazon.com/rds/.

Amazon Aurora

Amazon Aurora provides built-in security, continuous backups, serverless compute, up to 15 read replicas, automated multi-Region replication, and integrations with other AWS services.

For more information on Amazon Aurora, see https://aws.amazon.com/rds/aurora/.

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Topic B: Nonrelational database services

In a nonrelational database, you create tables. A table is a place where you can store and query data.

Some refer to nonrelational databases as “NoSQL databases” because they use structures other than rows and columns to organize data. One type of structural approach for nonrelational databases is key-value pairs. With key-value pairs, data is organized into items (keys), and items have attributes (values). You can think of attributes as being different features of your data.

For example, the coffee shop might use a key-value database to organize all of its customer information for the rewards application. This database could include data pairs such as “Name: John Doe,” “Address: 123 Any Street,” “City: Anytown,” and so on.

In a key-value database, you can add or remove attributes from items in the table at any time. Additionally, not every item in the table has to have the same attributes.

Amazon DynamoDB

Amazon DynamoDB is a fully managed, serverless, key-value NoSQL database designed to run high-performance applications at any scale. DynamoDB offers built-in security, continuous backups, automated multi-Region replication, in-memory caching, and data import and export tools.

For more information on Amazon DynamoDB, see https://aws.amazon.com/dynamodb/features/.

AWS Database Migration Service (AWS DMS)

AWS Database Migration Service (AWS DMS) is a managed migration and replication service that helps move your database and analytics workloads to AWS quickly, securely, and with minimal downtime and zero data loss. AWS DMS supports migration between 20-plus database and analytics engines, such as Oracle to Amazon Aurora MySQL-Compatible Edition, MySQL to Amazon Relational Database (RDS) for MySQL, Microsoft SQL Server to Amazon Aurora PostgreSQL-Compatible Edition, MongoDB to Amazon DocumentDB (with MongoDB compatibility), Oracle to Amazon Redshift, and Amazon Simple Storage Service (S3).

For more information on Amazon DMS, see https://aws.amazon.com/dms/.

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Module 4: Monitoring and Analytics

Topic A: Amazon CloudWatch

Amazon CloudWatch is an AWS monitoring service for cloud resources and the applications that you run on AWS. You can use Amazon CloudWatch to collect and track metrics, collect and monitor log files, and set alarms. Amazon CloudWatch can monitor AWS resources, such as Amazon EC2 instances, Amazon DynamoDB tables, and Amazon RDS DB instances, in addition to custom metrics generated by your applications and services, and any log files that your applications generate, hosted on premises, hybrid, or on other clouds. You can use Amazon CloudWatch to gain system-wide visibility into resource utilization, application performance, and operational health. You can use these insights to react and keep your application running smoothly.

For more information on Amazon CloudWatch, see https://aws.amazon.com/cloudwatch/faqs/.

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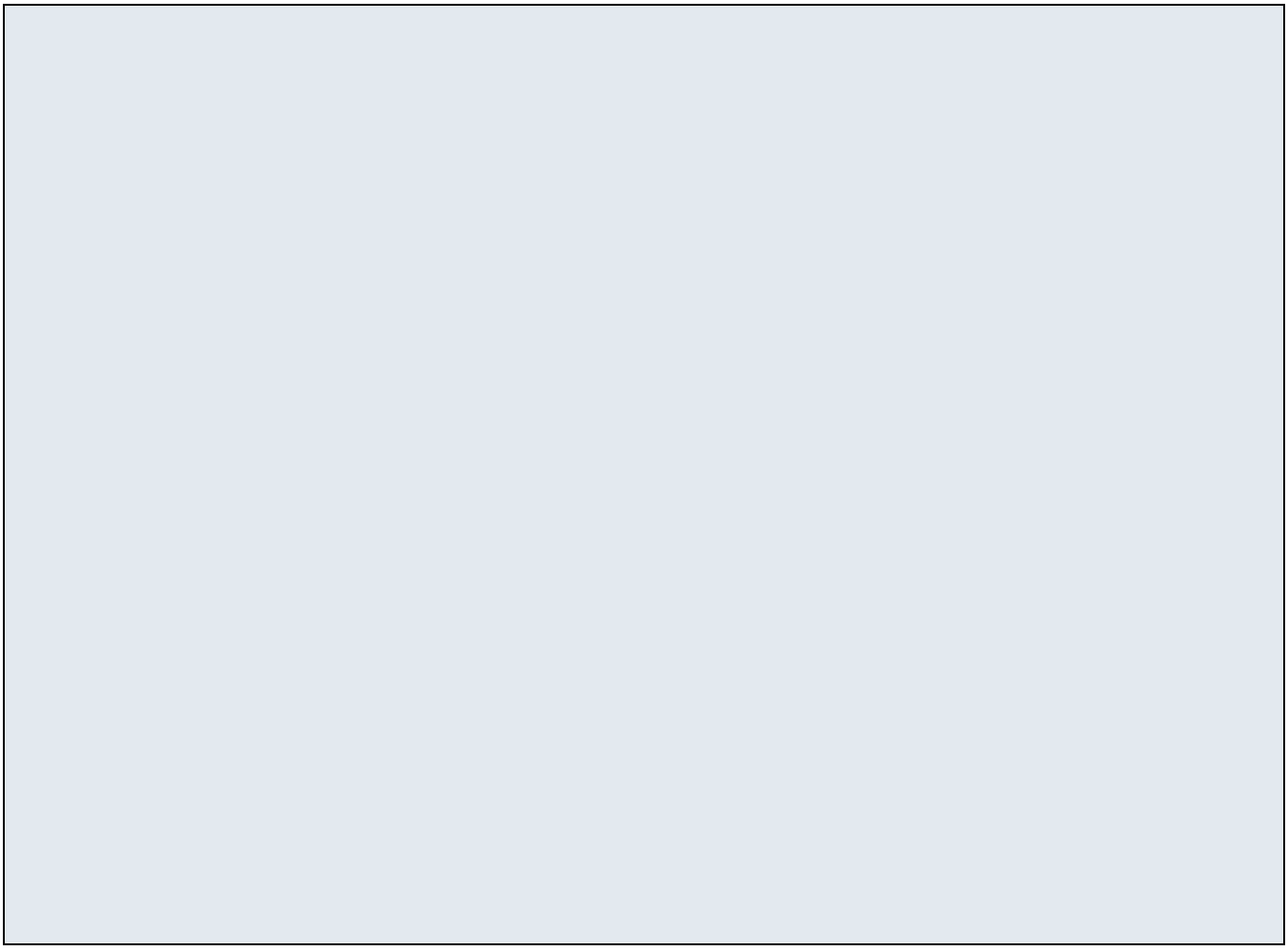

Topic B: Amazon CloudTrail

Amazon CloudTrail enables auditing, security monitoring, and operational troubleshooting by tracking user activity and API usage. CloudTrail logs, continuously monitors, and retains account activity related to actions across your AWS infrastructure, giving you control over storage, analysis, and remediation actions.

For more information on Amazon CloudTrail, see https://aws.amazon.com/cloudtrail/faqs/.

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Topic C: Amazon Trusted Advisor

AWS Trusted Advisor provides recommendations that help you follow AWS best practices. Trusted Advisor evaluates your account by using checks. These checks identify ways to optimize your AWS infrastructure, improve security and performance, reduce costs, and monitor service quotas. You can then follow the recommendations to optimize your services and resources.

Health Dashboard

The AWS Health Dashboard is the single place to learn about the availability and operations of AWS services. You can view the overall status of AWS services, and you can sign in to view personalized communications about your particular AWS account or organization. Your account view provides deeper visibility into resource issues, upcoming changes, and important notifications.

For more information on Amazon rusted Advisor, see https://aws.amazon.com/premiumsupport/technology/trusted-advisor/.

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