

HPE Digital Learner Architecting on Amazon Web Services (Introduction) Content

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This self-paced eLearning Content Pack represents a baseline training series for IT individuals who are transitioning to a cloud architect role utilizing the Amazon Web Services (AWS) public cloud environment. This is a comprehensive advanced training series that includes two core areas defined as “Advanced Architecting on AWS” and “AWS Professional Solutions Architect” and includes many advanced areas required to plan, design and implement a hybrid cloud utilizing the AWS public cloud.

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Audience

- Individuals and organizations seeking to gain insight as to how Amazon Web Services can benefit them
- Individuals who perform a solutions architect role using the Amazon AWS cloud
- Personnel at all levels of an enterprise who perform a developer role

as well as a multitude of technical areas that make up the AWS public cloud environment. Areas of focus are around the AWS cloud tech primer and introductory training, as well as various other training areas that include AWS management, IAM and object storage, auto scaling, databases, application services, networking, security, web services, core services and infrastructure services. This training will enable the student to transition to the cloud architect role within a typical AWS public cloud environment and will also assist with the path to AWS Certification.

Content Pack objectives

This Content Pack provides the information necessary for a cloud architect to work within a typical Amazon Web Services (AWS) public cloud environment. This training introduces many critical baseline knowledge areas which a cloud architect must learn in order to transition to an AWS public cloud domain. Some of the critical baseline training areas include an overall understanding of the AWS architecture,

Detailed Content Pack outline

Cloud Tech Primer

In this course, standard IT technologies are mapped to cloud equivalents in the AWS environment.

- Describe common network functionality also available in the cloud
- Describe common database functionality also available in the cloud
- Describe the role of a hypervisor
- Compare and contrast on-premises and cloud virtual machines
- Define what a container service does
- List standard development practices and protocols also available in the cloud
- Recognize managed services in the cloud
- Specify when HPC should be used
- Identify variations in how cloud services can be deployed to meet needs
- Describe cloud components

The AWS Cloud

This course covers cloud computing concepts and also defines AWS services that can solve specific business problems.

- Describe what enterprise cloud computing is
- Define the characteristics of a public cloud
- Define the characteristics of a private cloud
- Define the characteristics of a hybrid cloud
- Explain how IaaS maps to IT services
- Explain how PaaS maps to IT services
- Explain how SaaS maps to IT services
- Describe how cloud computing can benefit businesses
- Describe a service level agreement
- List major cloud providers and how their services vary
- Show which AWS services can solve specific business problems
- Sign up for AWS
- Define cloud models and SLA details

Core AWS Management

This course covers common AWS management tools at the GUI and command line levels. It includes content covered on the AWS Certified Solutions Architect - Associate exam.

- Identify tools to manage AWS
- Use the AWS Management Console
- Manage AWS using the mobile app
- Describe AWS CLI management
- Obtain and install the AWS CLI
- Use the AWS CLI
- Describe AWS PowerShell management
- Obtain and install the AWS PowerShell module
- Use PowerShell to learn about AWS cmdlets
- Connect to AWS through PowerShell
- Outline how Systems Manager works
- Determine when to use specific management tools

Architecting on Amazon Web Services: IAM and Object Storage

Amazon Web Services was one of the first complete solution providers in the cloud computing space and continues to be the market leader. One of the main offerings is the object storage service, Simple Storage Service, or S3. Another key component is the integrated Identity and Access Management, or IAM, which touches upon most other parts of the AWS cloud. This course gives you an overview of AWS including a brief history and a rundown of the services. It goes on to cover IAM and how it integrates with AWS components. It rounds out the discussion by diving into S3 and object storage, and how it can be used as the basis for content delivery networks. This course is one of a series that covers the objectives for Amazon certification exam AWS Certified Solutions Architect - Associate.

- Describe the history of the Amazon Web Services platform
- Describe the Amazon Web Services platform and recognize the global infrastructure components
- Describe the Amazon Web Services networking components
- Describe the Amazon Web Services compute components
- Describe the Amazon Web Services storage components
- Describe the Amazon Web Services database components
- Describe the Amazon Web Services analytics components
- Describe the Amazon Web Services application services components
- Describe the Amazon Web Services deployment and management components
- Create an account for Amazon Web Services and log in to the service
- Describe the basic concepts of Identity and Access Management on the Amazon Web Services platform
- List best practices pertaining to Identity and Access Management on the Amazon Web Services platform
- Describe how Microsoft Active Directory can be integrated with Amazon Web Services
- Navigate the Identity and Access Management console in Amazon Web Services
- Configure Identity and Access Management for an account in Amazon Web Services
- Manage Identity and Access Management users in Amazon Web Services
- Configure two-factor authentication in Amazon Web Services
- Describe object storage in Amazon Web Services
- Create an S3 bucket in Amazon Web Services
- Upload files to an S3 bucket in Amazon Web Services
- Configure policies on the Glacier storage service in Amazon Web Services
- Describe the function on a content delivery network and CloudFront on Amazon Web Services
- Create a CloudFront content delivery network in Amazon Web Services
- Create an S3 bucket and distribute content with CloudFront

Architecting on Amazon Web Services: Elastic Compute Cloud (EC2) Overview

Elastic Compute Cloud, or EC2, is the virtual machine engine for Amazon Web Services. EC2 enables you to run instances of Linux or Windows VMs and spin them up or down with a few clicks. Elastic Block Store provides the raw block level storage for EC2 instances, or for IOPS intensive workloads, such as databases. This course covers an overview of EC2 including the marketplace, and common tasks such as spinning VMs up or down. It goes on to cover EBS and the roles it can fulfill and how to monitor an EC2 cloud using CloudWatch. This course is one of a series that cover the objectives for Amazon certification exam AWS Certified Solutions Architect - Associate.

- Describe components related to the Elastic Compute Cloud platform
- Describe the architecture and concepts of Elastic Compute Cloud platform
- Create a Virtual Private Cloud on the Elastic Compute Cloud platform
- Create a Linux instance on the Elastic Compute Cloud platform
- Use the AWS Marketplace to find system images
- Create a Windows instance on the Elastic Compute Cloud platform
- Connect to a Windows and a Linux instance on the Elastic Compute Cloud platform
- Describe the use of security groups on the Elastic Compute Cloud platform
- Create and delete a security group on the Elastic Compute Cloud platform
- Add rules to a security group on the Elastic Compute Cloud platform
- Configure a security group on the Elastic Compute Cloud platform for Virtual Private Cloud
- Describe the Elastic Block Store service on the Elastic Compute Cloud platform
- Create an Elastic Block Store volume on the Elastic Compute Cloud platform
- Create a snapshot on the Elastic Compute Cloud platform
- Describe Amazon Machine Images and how they are used on the Elastic Compute Cloud platform
- Create an Amazon Machine Image on the Elastic Compute Cloud platform
- Import and export an Amazon Machine Image on the Elastic Compute Cloud platform
- Describe options for configuring RAID arrays on Elastic Block Store on the Elastic Compute Cloud platform
- Create a Linux RAID array on Elastic Block Store on the Elastic Compute Cloud platform
- Create a Windows RAID array on Elastic Block Store on the Elastic Compute Cloud platform
- Configure a load balancer on the Elastic Compute Cloud platform
- Perform health checks on the Elastic Compute Cloud platform
- Monitor Elastic Compute Cloud instances using CloudWatch
- Create a VPC, a security group and a mirror set using EBS volumes using Elastic Compute Cloud on Amazon Web Services

Architecting on Amazon Web Services: Elastic Compute Cloud (EC2) Auto Scaling

Auto Scaling on the Elastic Compute Cloud platform enables your cloud-based applications to respond to changes in load by scaling up or down, preventing under-provisioning in busy times and over-provisioning in quiet times. This course covers configuring scalable EC2 clouds using Auto Scaling groups, including a primer in the AWS command line interface, scripts to run at boot time and in-depth configuration of Auto Scaling and placement groups. This course is one of a series that cover the objectives for Amazon certification exam AWS Certified Solutions Architect - Associate.

- Install the Amazon Web Services Command Line Interface on a Windows instance
 - Install the Amazon Web Services Command Line Interface on a Linux instance
 - Configure the Amazon Web Services Command Line Interface
 - Create an Identity and Access Management role for Elastic Compute Cloud using the Amazon Web Services Command Line Interface
 - Configure an Identity and Access Management role for Elastic Compute Cloud using the Amazon Web Services Command Line Interface
 - Launch an Elastic Compute Cloud instance with an Identity and Access Management role using the Amazon Web Services Command Line Interface
 - Write a Linux shell script to run at boot up on Amazon Web Services
 - Configure the cloud-init directive on Linux for Amazon Web Services
 - Plan Auto Scaling on Elastic Compute Cloud
 - Create a launch configuration on Elastic Compute Cloud
 - Create a launch configuration from an Elastic Compute Cloud image
 - Create an Auto Scaling group on Elastic Compute Cloud
 - Create an Auto Scaling group from an Elastic Compute Cloud instance
 - Link an Elastic Compute Cloud instance to a Virtual Private Cloud
 - Tag an Auto Scaling group on Elastic Compute Cloud
 - Load balance an Auto Scaling group on Elastic Compute Cloud
 - Attach an instance to an Auto Scaling group on Elastic Compute Cloud
 - Detach an instance from an Auto Scaling group on Elastic Compute Cloud
 - Suspend and resume an Auto Scaling group on Elastic Compute Cloud
 - Shut down an Auto Scaling group on Elastic Compute Cloud
 - Describe placement groups on Elastic Compute Cloud
 - Create a placement group on Elastic Compute Cloud
 - Launch an Elastic Compute Cloud instance into a placement group
 - Delete an Elastic Compute Cloud placement group
 - Create a load balanced Auto Scaling group in Elastic Compute Cloud
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Architecting on Amazon Web Services: Databases and Application Services

Databases are a key part of any web application. Amazon web services supports most database types and lots of ancillary data services. AWS also has other services for deploying and managing web app logic and data components. This course covers all components of AWS database, data analytics, application services, application deployment and management tools. This course is one of a series that cover the objectives for Amazon certification exam AWS Certified Solutions Architect - Associate.

- Describe the Amazon Web Services Relational Database Service
- Launch a DB Instance in Amazon Web Services Relational Database Services
- Manage access to a DB Instance in Amazon Web Services Relational Database Services with Identity and Access Management
- Describe options for encrypting databases on Amazon Web Services Relational Database Services
- Contrast DB security groups and VPC security groups on Amazon Web Services Relational Database Services
- Describe the basic concepts of DynamoDB databases on Amazon Web Services
- Perform DynamoDB database operations using DynamoDB Local
- Describe the architecture of Amazon Web Services ElastiCache
- Launch an ElastiCache cluster using the Amazon Web Services management console
- Describe the Amazon Web Services Redshift data warehouse service
- Describe the Amazon Kinesis data processing service
- Describe the Elastic MapReduce service on Amazon Web Services and how it integrates with other big data services
- Describe the operation of Amazon Web Services Simple Queue Service
- Describe the operation of Amazon Web Services Simple Workflow Service
- Describe the operation of Amazon Web Services Simple Notification Service
- Send email using Amazon Web Services Simple Email Service
- Transcode a media file with Amazon Web Services Elastic Transcoder
- Describe the Amazon Web Services CloudSearch service
- Use Amazon Web Services CloudWatch to monitor billing and costs for AWS services
- Create a simple application stack using OpsWorks
- Describe the Elastic Beanstalk service on Amazon Web Services
- Create an audit trail on Amazon Web Services using CloudTrail
- Create an Amazon Web Services Data Pipeline
- Describe the Amazon Web Service CloudFormation service for automating provisioning
- Create and monitor a DB Instance on Amazon Web Services

Architecting on Amazon Web Services: Networking and Best Practice

Once you have mastery of all aspects of Amazon Web Services, you need to put it all together into a set of best working practices for implementing, managing and maintaining web applications. This course covers best practices for creating secure, scalable and fault tolerant web applications. It also covers configuration of network services on Amazon Web Services, including Route 53 for DNS and Virtual Private Cloud for creating logically isolated and secure sections of AWS. This course is one of a series that cover the objectives for Amazon certification exam AWS Certified Solutions Architect - Associate.

- Describe the Route 53 DNS service on Amazon Web Services
- Register a DNS domain through the Route 53 DNS service on Amazon Web Services
- Configure Route 53 as your DNS service provider
- Create a Virtual Private Cloud on Amazon Web Services
- Configure network subnets in Amazon Web Services Virtual Private Clouds
- Launch an EC2 instance into a Virtual Private Cloud on Amazon Web Services
- Configure network address translation on Amazon Web Services Virtual Private Clouds
- Configure access control lists on Amazon Web Services Virtual Private Clouds
- Describe Amazon Web Services Direct Connect
- Create and delete an Amazon Web Services Direct Connect connection
- View and delete a virtual interface in Amazon Web Services Direct Connect
- Describe design for failure best practice when architecting Amazon Web Services cloud services
- Describe application decoupling best practice for building apps on Amazon Web Services
- Describe best practice for implementing elasticity in Amazon Web Services applications
- Describe best practice for parallelization in Amazon Web Services applications
- Describe best practice for determining data location in Amazon Web Services applications
- Describe the shared responsibility model in Amazon Web Services
- Describe the process of defining and categorizing assets on Amazon Web Services as part of an information security management system
- Design an information security management system to protect assets on Amazon Web Services
- Manage AWS and IAM accounts for security best practices on Amazon Web Services
- Describe how key pairs are used to manage access to EC2 instances
- Describe concerns for data at rest and S3 best practice for mitigating risks
- Describe EBS best practice for mitigating risk to data at rest
- Describe RDS best practice for mitigating risk to data at rest
- Describe best practices for building web applications on Amazon Web Services

AWS Security

This course provides examples of how to secure AWS resources such as EC2 instances, S3 buckets and EBS volumes.

- Explain where cloud computing responsibility lies
- Describe platform compliance
- Discuss general AWS security options for various services
- List EC2 security options
- List S3 security options
- Integrate standard third-party security products into the AWS environment
- Explain how AWS can protect against DoS and DDoS attacks
- List various encryption options for AWS
- Configure encryption for an EBS volume
- Explain how the Trusted Advisor can provide advice based on best practices
- Configure the Trusted Advisor
- Define cloud customer and provider responsibilities, secure EC2 instances and encrypt EBS volumes

Getting Started with Amazon Web Services

Amazon Web Services is a cloud computing platform. It provides a comprehensive platform from which to provide web applications with high availability. AWS facilitates managing application-related resources automatically from convenient interfaces. In this course, you will learn about some of the various services offered by Amazon Web Services. You will also learn the basic steps to get started developing a Node.js application on AWS.

- Identify the features and benefits of cloud computing
- Describe the features of Amazon S3
- Describe the features of Amazon Compute services
- Use Amazon event services in your application
- Administer AWS users and accounts
- Identify Amazon database services
- Describe Amazon services to help with task automation
- Describe the features of the AWS Management Console
- Make use of AWS documentation
- Install Node.js and the Node Package Manager in AWS
- Prepare your environment to use the AWS SDK
- Install Express.js in your environment
- Make use of the JSON data description language
- Describe the file structure of an Express.js application
- Describe AWS user accounts and group permissions
- Describe AWS account credentials and security features
- Identify AWS access control mechanisms
- Utilize access credentials from other services
- Describe IAM roles as they relate to EC2
- Create S3 buckets for data storage
- Track object versions and replicate objects across regions
- Perform operations on S3 buckets and the objects in it
- Configure CloudFront to distribute media streams efficiently
- Use CloudFront to distribute media streams efficiently
- Use CloudWatch and CloudTrail to monitor your AWS instances
- Host a web site on Amazon S3
- Provide user access to an Amazon S3 bucket

Core Services on AWS

AWS provides multiple services that address all needs of an online application. It provides a comprehensive platform from which to provide web applications with high availability. In this course, you will learn about services and features to host your service with confidence.

- Describe the features of the standard AWS VPC
- Create an AWS Virtual Private Cloud and define its network
- Control access to your services
- Securing your network services
- Create and configure a VPC
- Launch an EC2 instance from an AMI
- Make use of Amazon EBS for storage and create snapshots
- Distribute application requests across multiple instances
- Scale server numbers to meet application load
- Manage the configuration of your application
- Use AWS Lambda to execute code on demand
- Describe DynamoDB table structure
- Identify indexes on DynamoDB tables
- Select the level of data consistency when accessing records
- Set required throughput on a table
- Design and work with DynamoDB tables effectively
- Read, write and modify data contained in a DynamoDB table
- Monitor AWS log files
- Monitor AWS API calls
- Get notifications and take actions based on S3 events
- Take actions and receive notifications based on DynamoDB events
- Execute pieces of code in response to AWS events
- Publish and monitor your application API

AWS Infrastructure Services

Amazon Web Services consists of a number of services designed to ensure your customers are always able to access your services. Preventing downtime and ensuring enough servers are available during times of peak load are situations that are handled through the AWS infrastructure. In this course, you will learn about AWS security and elastic services designed to host your application and guarantee high availability.

- Set up a domain in Route 53
- Ensure your customers know you are working to recover in the event of a major problem
- Route traffic to your application in an optimized way
- Route traffic to your application based on predefined weights
- Configure Amazon WorkMail with Route 53
- Describe features of Amazon IoT Device Registry
- Define Things in Amazon IoT and attach certificates
- Configure Amazon IoT policies and permissions
- Describe Amazon IoT topics
- Configure rules in the Amazon IoT service
- Use Amazon SNS in your project
- Use Amazon SQS with your project
- Use Amazon SWF in your project
- Describe the features of Docker containers
- Install and configure Docker on your local workstation
- Perform common Docker commands
- Create a CloudFormation stack
- Perform the steps to run a stack
- Work with the CloudFormation stack details page
- Describe the CloudFormation template structure
- Deploy an application on Amazon Elastic Beanstalk
- Describe the features of the Amazon shared responsibility model
- Deploy a sample application on Amazon Elastic Beanstalk

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