

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

HPE Content Pack number	CP015
Content Pack length	20 Hours
Content Pack category	Category 2
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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 intermediate training series that includes many core areas required to plan, design and implement AWS public cloud infrastructures and applications. It is intended for IT personnel who possess baseline IT and cloud skills needed to rapidly move forward into a cloud architect role 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
- IT professionals including application developers, cloud engineers and cloud architects

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 needed to transition to an AWS public cloud domain as part of a hybrid cloud strategy. Specific areas

of focus include AWS management, GUI VM management, command line VM management, caching, performance, high availability, EBS, identity/access control, advanced AWS management, security, disaster recovery, troubleshooting, CPN/Route 53, database services, serverless architecture, and AWS Lambda. This training helps the student transition to a cloud architect role working within a typical AWS public cloud environment and also assists with the path to AWS Certification.

Detailed Content Pack outline

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

EFS and EBS

In this course, you will learn EFS and EBS concepts and put them into practice using GUI and command line tools.

- Describe AWS Elastic File System (EFS)
- Manage Elastic File System properties
- Use the CLI to manage EFS
- Use PowerShell cmdlets to manage EFS
- Perform an NFS mount to EFS from Linux
- Describe the AWS Elastic Block Store (EBS)
- Create an Elastic Block Store volume
- Use the CLI to manage EBS
- Use PowerShell cmdlets to manage EBS
- Use an EBS volume with Linux
- Use an EBS volume with Windows
- Define and manage EFS and EBS

Cloud Storage Solutions

This course covers S3 bucket storage, long-term archiving with Glacier, the AWS storage gateway for providing cloud storage access to on-premises clients, and data import and export options.

- Describe when to use AWS S3 storage
- Use the AWS Management Console to create an S3 bucket
- Use the CLI to create an S3 bucket
- Use PowerShell to create an S3 bucket
- Get data into and out of an S3 bucket
- Set S3 bucket properties
- Describe the benefit of long term storage using Glacier
- Determine which Glacier settings ensure regulatory compliance
- Configure Glacier settings in accordance with regulations
- Name the use cases of AWS Import/Export
- Integrate on-premises and AWS file access
- Configure S3 and Glacier

Virtual Private Clouds (VPCs) and Subnets

In this course, planning, creating, and managing VPCs and subnets will be covered, as well as Direct Connect and Network ACLs. The course includes content covered on the AWS Certified Solutions Architect - Associate exam.

- Describe AWS cloud networking options
- Describe the purpose of a Virtual Private Cloud (VPC)
- Illustrate why an organization would directly link to AWS
- Create a Virtual Private Cloud
- Use the CLI to create a VPC
- Use PowerShell to create a VPC
- Create subnets within a VPC
- Use the CLI to create a subnet
- Use PowerShell to create a subnet
- Define how network ACLs inspect incoming and outgoing traffic
- Use the console to configure a network ACL
- Specify how NAT gateways provide internet access for VMs
- Enable internet access through NAT for a private subnet
- Create a VPC and subnet, and configure a network ACL

GUI VM Management

AWS virtual machines, or EC2 instances, can be created and managed using the AWS console as well as command line utilities. This course focuses on the console, and prepares you for the AWS Certified Solutions Architect - Associate exam.

- Describe how virtual machines underlie many cloud services
- Describe how Amazon Machine Images play a role in virtual machine configurations
- Describe how to connect to Windows and Linux virtual machines
- Describe how security groups are used to control network traffic to virtual machines
- Set rules within security groups to restrict traffic in to and out of virtual machines
- Use the AWS Management Console to create a Windows virtual machine
- Connect to an EC2 Windows virtual machine on-premises
- Use the AWS Management Console to create a Linux virtual machine
- Connect to an EC2 Linux virtual machine on-premises
- Use the console to create a custom AMI
- Deploy a virtual machine using a custom AMI
- Use the console to manage EC2 instances

Command Line VM Management

This course shows you how to use the AWS CLI and PowerShell to create and manage EC2 instances.

- Use the CLI to create a security group
- Use PowerShell to create a security group
- Use the CLI to deploy a Windows VM
- Use PowerShell to deploy a Windows VM
- Use the CLI to deploy a Linux VM
- Use PowerShell to deploy a Linux VM
- Use the CLI to create a custom AMI
- Use PowerShell to create a custom AMI
- Create a cloud service design given a set of requirements
- Use the calculator to estimate AWS charges
- Specify when to use reserved EC2 instances
- Specify when to use on-demand EC2 instances
- Describe the purpose of Spot EC2 instances
- Describe AWS SQS
- Work with EC2 instances from the command line

Caching, Performance and High Availability

AWS provides numerous caching services and performance and high availability solutions. This course explores the available options.

- Describe the concept of using IT assets as needed
- Describe the benefits of having a highly expandable server capacity
- Describe how security features built in to cloud computing can benefit the overall security of the business
- Determine SLA details for specific cloud services
- Describe the concept of scaling horizontally and what can benefit from it
- Describe the concept of scaling vertically and what can benefit from it
- Describe how AWS Auto Scaling works
- Use the console to configure Auto Scaling
- Describe the problems and solutions for working with ever changing IT assets
- Describe AWS account sign-up requirements
- Describe how AWS allows single points of failure to be removed
- Describe AWS caching options and configure Auto Scaling

EBS Snapshots, Monitoring and Logging

In this course, you will learn when and how to work with EBS volume snapshots. This course also covers monitoring and logging through CloudWatch.

- Describe the purpose of snapshots
- Create a virtual machine snapshot
- Use a snapshot as the source of a new EBS volume
- Use an EBS snapshot to restore a VM
- Use the CLI to create an EBS snapshot
- Use PowerShell to create an EBS snapshot
- Describe how CloudWatch is used to monitor AWS resources
- Enable EC2 virtual machine monitoring using CloudWatch
- Enable alarms when the AWS charges reach a specific value
- Recognize how CloudWatch logging works
- Identify the purpose of CloudTrail
- Download and install the latest SSM agent for Windows Server 2016 EC2 instances
- Configure the Windows EC2 service to send Windows log data to CloudWatch
- Locate logs and metrics in CloudWatch sent from EC2 instances
- Quickly monitor AWS operation health using a CloudWatch dashboard
- Manage EBS snapshots and configure CloudWatch

Identity and Access Management

This course illustrates how to plan and implement IAM user and group accounts, Active Directory integration and MFA.

- Describe the role of identity and access management in AWS
- Use the console to configure IAM users
- Use the CLI to configure IAM users
- Use PowerShell to configure IAM users
- Use the console to configure IAM groups
- Use the CLI to configure IAM groups
- Use PowerShell to configure IAM groups
- Use the console to create a new IAM role
- Use the console to create a custom IAM policy
- Assign permissions to IAM users and groups through policies
- Describe how multifactor authentication enhances AWS security
- Enhance security by enabling two-factor authentication
- Describe the benefits of AWS Directory Services
- Enable AWS Directory Services
- Join a computer to AWS Simple AD
- Add users and groups to AWS Directory Services
- Enable WorkDocs authentication for Directory Services users
- Create IAM users and groups and describe AD integration

Advanced AWS Management

This course covers AWS cost optimization methods, CloudTrail monitoring, app provisioning with Elastic Beanstalk, and OpsWorks and CloudFormation stacks for both Windows and Linux.

- List ways that cost can be optimized with a cloud solution
- Specify the purpose of Elastic Beanstalk
- Use Beanstalk to deploy a simple web application
- View settings for a Beanstalk app
- Describe OpsWorks and its use cases
- Use OpsWorks to create a Windows stack
- Describe CloudFormation and its use cases
- Use the console to configure a CloudFormation stack
- Leverage Beanstalk, OpsWorks and CloudFormation to automate resource deployment

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

AWS Disaster Recovery

In this course, you will explore methods of restoring disrupted AWS services with minimal downtime.

- List the basics of recovering from a disaster
- Describe a recovery time objective
- Describe a recovery point objective
- Illustrate how Elastic Block Store (EBS) can help with disaster recovery
- Provide DR solutions in a specific scenario
- Recommend the best DR solution in a given scenario

AWS Troubleshooting

A good AWS design reduces problems, but problems will occasionally pop up and having a sense of AWS troubleshooting strategies reduces downtime.

- Troubleshoot an EC2 instance that cannot be connected
- Overcome configuration issues preventing EC2 instance access
- Troubleshoot an EC2 instance that cannot be terminated
- Troubleshoot an EC2 instance that fails status checks
- Troubleshoot an EC2 instance that has problems with instance capacity
- Reboot instances and use console output for troubleshooting
- Troubleshoot an EC2 instance that boots from the wrong volume
- Troubleshoot a Windows EC2 instance that has a lost/expired administrator password
- Describe common classic load balancer errors and their solutions
- Given a scenario, use troubleshooting skills to solve the problem

CDN, Route 53

Content delivery networks improve user access to web content. Route 53 is an AWS DNS service.

- Describe why content delivery networks enhance user web app experiences
- Enable content delivery for static data
- Explain how DNS works
- Explain use cases that are good for Route 53
- Create a DNS name using Route 53
- Configure DNS resource records within a Route 53 hosted DNS zone
- Define how routing policies affect name resolution
- Use the console to configure a Route 53 routing policy
- Plan and deploy CloudFront and Route 53

AWS Database Services

AWS offers multiple cloud-hosted database solutions. This course explains when to use a specific database solution and how to enable database high availability.

- Describe when to use RDS
- Deploy and manage RDS
- Manage existing RDS deployments
- Use on-premises client tools to connect to an RDS database
- List RDS high availability options
- Configure RDS high availability options
- Specify when to use DynamoDB
- Create and work with a DynamoDB table
- Describe the Aurora database service
- Describe the Redshift data warehouse solution
- Describe the ElastiCache in-memory solution
- Use the console to deploy a Memcached ElastiCache cluster
- Compare and contrast hosted vs. manually configured cloud database services
- Plan and deploy AWS database solutions

AWS Serverless Architecture

Serverless applications do not require servers to be maintained or provisioned. In this course, you will learn about serverless architecture, AWS serverless applications, and how to access AWS serverless application repository.

- Describe serverless architecture and AWS serverless applications
- Identify serverless application use cases
- Create an AWS account
- Create an AWS IAM user
- Set up AWS command line interface (CLI)
- Use the AWS Lambda console
- Install SAM Local and Docker
- Use Amazon Simple Notification Service (SNS)
- Access the AWS serverless application repository
- Publish an application to the AWS serverless application repository
- Use the AWS command line interface (CLI)

AWS Lambda

AWS Lambda allows you to run applications without managing or provisioning servers. This course covers AWS Lambda, Lambda deployment packages, and Lambda functions and concepts. You will also learn how to access AWS services.

- Describe AWS Lambda
- Create a Lambda deployment package
- Create a simple Lambda function
- Create an IAM role for your Lambda function
- Build a Lambda function by authoring and deploying your code
- Identify Lambda function concepts
- Configure your Lambda functions
- Deploy a serverless application using AWS Lambda
- Invoke your Lambda function and view the results
- Map an event source to a Lambda function
- Identify Lambda function failures
- Use AWS Lambda scaling
- Use environment variables to create a Lambda function
- Use Lambda@Edge to run Lambda functions
- Access AWS services from a Lambda function
- Use the AWS Lambda console

AWS Serverless Monitoring & Security

Amazon provides various tools to help monitor and secure your serverless applications. In this course, you will learn about Amazon CloudWatch, Lambda X-Ray, CloudTrail and Cognito.

- Use Amazon CloudWatch to monitor Lambda functions
- Use Lambda X-Ray to optimize performance with AWS Lambda applications
- View metrics using CloudWatch
- Identify AWS Lambda resource limits
- Use AWS CloudTrail to log AWS Lambda API calls
- Access AWS using different types of identities
- Manage access permissions to AWS Lambda resources
- Create a permissions policy
- Use resource-based policies for AWS Lambda
- Set up and use Amazon Cognito
- Create a private virtual network
- Use CloudWatch console

AWS Serverless Storage

Amazon offers different methods to help move and store your serverless applications. In this course, you will learn about Amazon S3, DynamoDB, AWS Storage Gateway, AWS Snowball, Cloud data migration and Amazon Aurora Serverless.

- Describe Amazon S3
- Use Amazon S3 Reduced Redundancy Storage (RRS)
- Create an Amazon DynamoDB Table
- Use AWS storage gateway to connect to Amazon S3
- Use AWS Snowball to move data into Amazon S3
- Use AWS SDKs with AWS Lambda
- Use cloud data migration to move data to cloud storage
- Use Amazon Aurora serverless to run your database in the cloud
- Use Amazon S3

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