



# Integrating Hybrid Clouds with Amazon Web Services

Delivery: Instructor Led/Virtual

Duration: 3 Days

Training Units: 38

## Course Description

Learn to implement a hybrid cloud solution with Amazon Web Services using NetApp® Cloud Volumes ONTAP®. Connect an AWS Virtual Private Cloud and an on-premises data center to unify your infrastructure. Use NetApp Cloud Manager to move and manage storage in the hybrid cloud. Learn about NetApp cloud services integrated into Cloud Manager to provide persistent storage for Kubernetes containers and enhance data protection, security, and compliance. Learn to optimize capacity and performance of Cloud Volumes ONTAP.

## Audience

Administrators, Operators, Architects, Implementation Engineers

## Prerequisites

For a successful learner experience, we recommend that you have knowledge of the following concepts before you attend the course.

### Cloud computing concepts:

- Cloud characteristics, Service delivery methods, Cloud deployment models

### Networking concepts and definitions:

- Classless Inter-Domain Routing (CIDR)/Network address translation (NAT)

### AWS concepts:

- AWS VPC, subnets, Internet Gateway, NAT Gateway, route tables, security groups, Amazon EC2, and Amazon Simple Storage Service (Amazon S3)

## Objectives

- Describe how NetApp technologies can be used to build your data fabric
- Configure an AWS VPC and connect it to an on-premises data center with VPN Internet Protocol security (IPsec)
- Describe Cloud Volumes ONTAP architecture
- Install Cloud Manager Connector and deploy Cloud Volumes ONTAP
- Explain basic system administration tasks with Cloud Manager
- Copy data between NetApp ONTAP system and NetApp Cloud Volumes ONTAP for AWS for disaster recovery
- Use data tiering to Amazon S3 for Cloud Volumes ONTAP
- Use Cloud Volumes ONTAP as persistent storage for Kubernetes containers
- Identify performance and sizing options for Cloud Volumes ONTAP

## Course Content

Module	Lessons	Exercises
<b>Module 1: Data Fabric Overview</b>	<p>Lesson 1: Data Fabric</p> <p>Lesson 2: Solutions for the Hybrid Cloud</p> <p>Lesson 3: NetApp Public Cloud Products</p> <p>Lesson 4: Cloud Storage</p> <p>Lesson 5: Cloud Services and Analytics</p> <p>Lesson 6: Cloud Controls</p>	<p>Exercise 1: Controlling Cloud Resources with CLI</p> <p>Exercise 2: Controlling Cloud Resources with PowerShell Toolkit</p> <p>Exercise 3: Controlling NetApp ONTAP (On-Premises) Resources with NetApp PowerShell Toolkit</p>
<b>Module 2: Public Cloud Essential Concepts</b>	<p>Lesson 1: AWS Networking and Other Concepts</p> <p>Lesson 2: AWS CloudFormation</p>	<p>Exercise 1: Configuring Resources in AWS with AWS CloudFormation</p> <p>Exercise 2: Reviewing Resources in the AWS Console</p> <p>Exercise 3: Verifying Connectivity to the EC2 Instances in Public and Private Subnets</p>
<b>Module 3: Connectivity from the Public Cloud to Other Networks</b>	<p>Lesson 1: Amazon Web Services Virtual Public Cloud Connectivity to an On-Premises Network</p>	<p>Exercise 1: Connecting AWS VPC to Your On-Premises Network</p> <p>Exercise 2: Configuring Your On-Premises DNS and Domain Controller for Your Amazon EC2 Instances</p>
<b>Module 4: NetApp Cloud Manager</b>	<p>Lesson 1: NetApp Cloud Manager Overview</p>	<p>Exercise 1: Deploying a Connector</p>
<b>Module 5: NetApp Cloud Volumes ONTAP: Single-Node Architecture</b>	<p>Lesson 1: Cloud Volumes ONTAP</p> <p>Lesson 2: Cloud Volumes ONTAP Use Cases</p> <p>Lesson 3: Cloud Volumes ONTAP Architecture</p> <p>Lesson 4: Deploying Cloud Volumes ONTAP</p> <p>Lesson 5: Cloud Volumes ONTAP Supported Features</p>	<p>Exercise 1: Deploying a Single-Node Cloud Volumes ONTAP Instance</p> <p>Exercise 2: Accessing the SMB Share from an SMB Client</p> <p>Exercise 3: Creating an NFS Volume and Accessing It from an NFS Client</p>
<b>Module 6: NetApp Cloud Volumes ONTAP: High-Availability Architecture</b>	<p>Lesson 1: Highly Available Cloud Volumes ONTAP in AWS</p>	<p>Exercise 1: Deploying a Cloud Volumes ONTAP High-Availability Pair</p> <p>Exercise 2: Connecting an SMB Client from Within the Same VPC</p> <p>Exercise 3: Performing Failover and Failback of the High-Availability Pair of Nodes</p> <p>Exercise 4: (Optional) Connecting an SMB Client from Outside the VPC Using a Transit Gateway</p>

Module	Lessons	Exercises
<b>Module 7: Administration of NetApp Cloud Volumes ONTAP and NetApp Cloud Manager</b>	Lesson 1: Administering Cloud Volumes ONTAP  Lesson 2: Administering Cloud Manager	Exercise 1: Using Cloud Manager for Basic Administration of Cloud Volumes ONTAP  Exercise 2: Doing Basic Administration of Cloud Manager
<b>Module 8: Implementing Disaster Recovery with NetApp Cloud Volumes ONTAP</b>	Lesson 1: Disaster Recovery with NetApp Cloud Volumes ONTAP Overview	Exercise 1: Configuring and Managing Disaster Recovery in the Data Fabric
<b>Module 9: Data Tiering for NetApp Cloud Volumes ONTAP</b>	Lesson 1: Data Tiering for NetApp Cloud Volumes ONTAP Overview	Exercise 1: Tiering Backup Data to Amazon Simple Storage Service
<b>Module 10: Using NetApp Cloud Manager to Provision Persistent Storage for Kubernetes Clusters</b>	Lesson 1: Using NetApp Cloud Manager to Provision Persistent Storage for Kubernetes Clusters Overview	Demonstration videos provided
<b>Module 11: Using Integrated Services from NetApp Cloud Manager</b>	Lesson 1: Using Cloud Backup Service from Cloud Manager  Lesson 2: Using Cloud Sync from Cloud Manager  Lesson 3: Using Cloud Compliance from Cloud Manager  Lesson 4: Using Cloud Tiering Service from Cloud Manager	Demonstration videos provided
<b>Module 12: Sizing NetApp Cloud Volumes ONTAP</b>	Lesson 1: An Introduction to Sizing  Lesson 2: Capacity Sizing  Lesson 3: Performance Sizing  Lesson 4: Single Node versus High Availability  Lesson 5: Key Differences between Cloud Volumes ONTAP and On-Premises ONTAP Software  Lesson 6: Performance Tuning  Lesson 7: Frequently Seen Sizing Mistakes	Exercise 1: Exploring the TCO Calculator and Sizer Tools