

Using NetApp Trident with Kubernetes



Delivery: Instructor-led-training (ILT)

Duration: 3 days

Course Description

Learn how to install, configure, and use NetApp® Trident to manage Kubernetes with NetApp ONTAP® based storage systems. Deploy NetApp Trident by using the Trident operator and then use the `tridentctl` and `kubect1` methods to manage configurations. Configure NFS-backed, iSCSI-backed, NAS economy-backed, and NVMe-over-TCP (NVMe/TCP) backed storage. Manage Snapshot copies, expand volumes, and import non-NetApp Trident volumes to become managed volumes. Install and configure Trident Protect to protect Kubernetes applications by using snapshots and backups. Restore snapshots and backups in place and to new namespaces. Finally, protect applications across clusters by using cloning and asynchronous SnapMirror.

Written for Kubernetes v1.29, NetApp Trident 24.10, and NetApp Trident Protect 24.10.1, this course includes appendixes on Kubernetes certifications, operator design patterns to extend Kubernetes, and a GitOps introduction.

Role

Systems administrator, architect, and integration engineer

Prerequisites

Basic Linux administration skills

Objectives

This course focuses on enabling you to do the following:

- Describe Kubernetes storage concepts
- Explain how Trident makes managing persistent storage easier, and install Trident in a Kubernetes cluster
- Configure back ends, storage classes, and persistent volumes to use storage that Trident manages
- Use Trident to manage common scenarios
- Install and use Trident Protect to protect Kubernetes applications
- Protect across clusters by cloning and mirroring applications
- Monitor Trident by using Prometheus and Grafana
- Investigate security options to ensure a secure Kubernetes environment

Course Content

This course includes the following modules, lessons, and exercises:

Module	Lessons	Exercise
Module 1: Kubernetes storage	<ul style="list-style-type: none">• Persistent storage in Kubernetes• Container storage• Kubernetes storage concepts• Static provisioning• Dynamic provisioning	Working with Kubernetes storage volumes
Module 2: Trident installation	<ul style="list-style-type: none">• NetApp Trident details• NetApp Trident installation	Installing NetApp Trident
Module 3: Configuration	<ul style="list-style-type: none">• Configure back ends• Manage storage classes• Create persistent volumes by using NetApp Trident• Custom naming conventions	Working with NetApp Trident
Module 4: Usage scenarios	<ul style="list-style-type: none">• Manage Snapshot copies• Expand volumes• Import volumes• Manage multiple-zone storage• Consumption and performance control• Cross-namespace volume access	Managing storage by using NetApp Trident
Module 5: Protection	<ul style="list-style-type: none">• Trident Protect installation• Application protection• Application restoration• Tridentctl-protect	Protecting Trident workloads
Module 6: Business continuity	<ul style="list-style-type: none">• Use cases• Restoring an app to a new cluster• Application mirroring• MetroCluster support	Protecting Trident workloads across clusters
Module 7: Monitoring	<ul style="list-style-type: none">• Available options for monitoring NetApp Trident• Monitor with Prometheus and Grafana	Monitoring NetApp Trident

Module	Lessons	Exercise
Module 8: Security	<ul style="list-style-type: none"> • SVM hardening • NFS hardening • iSCSI hardening 	
Module 9: Next steps		
Appendix 1: Kubernetes certifications	<ul style="list-style-type: none"> • Cloud Native Computing Foundation exams • NetApp Kubernetes-related exams 	
Appendix 2: Introduction to operators	<ul style="list-style-type: none"> • Design patterns for extending Kubernetes • Operators • Example operator implementation 	
Appendix 3: GitsOps introduction	<ul style="list-style-type: none"> • GitOps definition • Benefits of GitOps • Set up Argo CD 	

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