

Arctera InfoScale Storage 9.0 for UNIX/Linux: Administration

Course Description

COURSE DESCRIPTION

The Arctera InfoScale Storage 9.0 for UNIX/Linux: Administration course is designed for IT professionals tasked with installing, configuring, and maintaining Arctera InfoScale Storage environments, including Volume Manager (VxVM), File System (VxFS), Cluster File System (CFS), Cluster Volume Manager (CVM), InfoScale features support for protection against ransomware, and InfoScale for Cloud environments.

This course covers how to use InfoScale Storage to manage disks, disk groups, and volumes using a variety of InfoScale Storage user interfaces, including the Arctera InfoScale Operations Manager (IOM) Web console. It also discussed the basics of online file system administration and recovery from disk failures. In addition, the course covers data replication using Arctera File Replicator and Arctera Volume Replicator. The course also describes how to configure Arctera Cluster Volume Manager and Arctera Cluster File System and support for cloud environments.

Delivery Methods

This course is available in the following delivery methods:

- Instructor-led training (ILT)
- Virtual instructor-led training (VILT)
- Learning Lab

Duration

- Instructor-led training - ILT: 5 days, including 6 months of lab access
- Virtual instructor-led training - VILT: 5 days, including 6 months of lab access
- Learning Lab – Self-paced lesson guide plus 6 months of lab access

Course Objectives

After completing this course, you will be able to:

- Install and configure the InfoScale Storage environment.
- Create, configure, and manage disks, disk groups, and volumes.
- Administer file systems and manage components in the VxVM architecture.
- Manage multiple paths to disk devices.
- Identify types of disk failures and how to resolve them.
- List the InfoScale features that support protection against ransomware.
- Describe concepts and components specific to Arctera Volume Replicator and Arctera File Replicator.
- Configure a CFS cluster according to a specified sample design.
- Configure shared disk groups, shared volumes, and shared file systems.
- Share local disks among systems in a cluster (FSS type storage support).
- Describe InfoScale support for Cloud Environments and also explain the InfoScale CFS support for OpenStack.
- Describe SmartIO support for FSS-type storage in Cloud deployments.

Who Should Attend

This course is designed for UNIX/Linux system administrators, system engineers, technical support personnel, network/SAN

administrators, and systems integration/development staff, who will install, configure, manage, and integrate InfoScale Storage.

Prerequisites

Knowledge of and hands-on experience with UNIX/Linux systems administration is required.

Hands-On

This course includes practical lab exercises that enable you to test your new skills and begin to transfer those skills into your working environment.

COURSE OUTLINE

Storage Foundation Basics

Installing and Licensing InfoScale

- Introducing the Arctera InfoScale Product Suite
- Tools for Installing InfoScale Products
- InfoScale Cloud Offerings
- Installing Arctera InfoScale Storage
- Installing Arctera InfoScale Availability
- Upgrading Arctera InfoScale Enterprise

Labs: Introduction

- Exercise A: Viewing the Virtual Machine Configuration
- Exercise B: Displaying Networking Information

Labs: Installation of InfoScale Storage

- Exercise A: Verifying that the System Meets Installation Requirements
- Exercise B: Installing InfoScale Storage and Configuring Storage Foundation
- Exercise C: Performing Post-Installation and Version Checks
- Exercise D: (Optional) Visualizing InfoScale Information in AI Browser

Virtual Objects

- Operating System Storage Devices and Virtual Data Storage
- Volume Manager (VxVM) Storage Objects
- VxVM Volume Layouts and RAID Levels
- Arctera InfoScale Operations Manager (IOM): Overview

Labs

- Exercise A: Using Text-based VxVM Menu Interface
- Exercise B: Accessing CLI Commands
- Exercise C: Adding Managed Hosts to the IOM Management Server
- Exercise D: Working with the IOM GUI Dashboard and Inventory Information
- Exercise E: Exploring the IOM GUI Licensing Option
- Exercise F: Working with the IOM GUI Settings Option

Creating a Volume and File System

- Preparing Disks and Disk Groups for Volume Creation
- Creating a Volume and Adding a File System
- Displaying Disk and Disk Group Information
- Displaying Volume Configuration Information
- Removing Volumes, Disks, And Disk Groups

Labs

- Exercise A: Creating Disk Groups, Volumes, and File Systems (CLI)
- Exercise B: Removing Volumes and Disks (CLI)
- Exercise C: Destroying Disk Data Using Disk Shredding (CLI)
- Exercise D: (Optional) Creating Disk Groups, Volumes, and File Systems (IOM)
- Exercise E: (Optional) Removing Volumes, Disks, and Disk groups (IOM)

Working with Volumes with Different Layouts

- Volume Layouts
- Creating Volumes with Various Layouts
- Allocating Storage for Volumes

Labs

- Exercise A: Creating Volumes with Different Layouts (CLI)
- Exercise B: (Optional) Creating Volumes with User Defaults (CLI)

Making Configuration Changes

- Administering Mirrored Volumes
- Resizing a Volume and a File System
- Moving Data Between Systems
- Renaming VxVM Objects
- InfoScale Support for Protection Against Ransomware

Labs

- Exercise A: Administering Mirrored Volumes
- Exercise B: Resizing a Volume and File System
- Exercise C: Renaming a Disk Group
- Exercise D: Moving Data Between Systems
- Exercise E: (Optional) Resizing Only the File System

Administering File Systems

- Arctera File System: Benefits
- Using Arctera File System Commands
- Arctera File System: Logging
- Controlling File System Fragmentation
- Using Thin Provisioning Disk Arrays

Labs

- Exercise A: Preparing to Defragment the Arctera File System
- Exercise B: Defragmenting a Arctera File System
- Exercise C: Working with SmartMove
- Exercise D: Observing Thin Reclamation

Managing Devices

SmartIO

- InfoScale Storage: SmartIO
- Support for Caching on Solid State Drives
- Using the SmartAssist Tool

Labs

- Exercise A: Configuring VxVM Caching
- Exercise B: Configuring VxFS Read Caching
- Exercise C: Configuring VxFS WriteBack Caching
- Exercise D: (Optional) Destroying the Cache Area

Dynamic Multi-Pathing

- Managing Components in the VxVM Architecture
- Discovering Disk Devices
- Managing Multiple Paths to Disk Devices

Labs

- Exercise A: Administering the Device Discovery Layer
- Exercise B: Displaying DMP Information
- Exercise C: Displaying DMP Statistics
- Exercise D: Enabling and Disabling DMP Paths
- Exercise E: Managing Array Policies

Working with Erasure Coding

- Erasure Coded: Overview
- Erasure Coded Architecture
- Erasure Coded Volume Enhancements
- Erasure Coded Performance Comparison

Labs

- Exercise A: Creating Erasure Coded Volume for Object Store (CLI)
- Exercise B: Creating Erasure Coded Volume for Generic Workloads (CLI)

Resolving Hardware Problems

- VxVM and Hardware Failures
- Recovering Disabled Disk Groups
- Resolving Disk Failures

Labs

- Exercise A: Recovering a Temporarily Disabled Disk Group
- Exercise B: Inducing a Disk Failure in the Lab Environment
- Exercise C: Recovering from Temporary Disk Failure
- Exercise D: Recovering from Permanent Disk Failure
- Exercise E: (Optional) Recovering from Temporary Disk Failure - Layered Volume
- Exercise F: (Optional) Recovering from Permanent Disk Failure - Layered Volume
- Exercise G: (Optional) Replacing Physical Drives - Without Hot Relocation
- Exercise H: (Optional) Replacing Physical Drives - With Hot Relocation
- Exercise I: (Optional) Recovering from Temporary Disk Failure with vxattachd Daemon
- Exercise J: (Optional) Exploring Spare Disk Behaviour
- Exercise K: (Optional) Using the Support Website

Cluster File System

Storage Foundation Cluster File System Architecture

- Storage Foundation Cluster File System: Overview
- SFCFS Architecture
- SFCFS Communication
- VCS Management of SFCFS Infrastructure

Labs

- Exercise A: Performing a Pre-Installation Check Using the Installer Utility
- Exercise B: Installing Arctera InfoScale Storage and Configuring Cluster File System
- Exercise C: Configuring Cluster File System in a Pre-Installed InfoScale Storage Environment
- Exercise D: (Optional) Performing Post-Installation and Version Checks
- Exercise E: Verifying Cluster Communications
- Exercise F: Adding Managed Hosts to the IOM Management Server

Cluster Volume Manager

- Volume Manager and Cluster Volume Manager: Overview
- Cluster Volume Manager: Concepts
- Cluster Volume Manager: Configuration
- CVM Response to Storage Disconnectivity

Labs

- Exercise A: Creating Shared Disk Groups and Volumes (CLI)
- Exercise B: Creating a Shared Disk Group and Volume (IOM)
- Exercise C: Converting a Disk Group from Shared to Private and Vice-versa
- Exercise D: Investigating the Impact of Disk Group Activation Modes
- Exercise E: (Optional) Observing the Impact of Rebooting the Master Node in a Storage Cluster

Cluster File System

- Cluster File System Concepts
- Data Flow in CFS
- Group Lock Manager
- Administering CFS
- CFS Support for OpenStack

Labs

- Exercise A: Creating a Shared File System (CLI)
- Exercise B: Changing the Primary Node Role (CLI)
- Exercise C: Placing the Shared File System Under Storage Cluster Control (CLI)
- Exercise D: Deleting the Shared File System and Disk Groups

Flexible Storage Sharing

- Understanding Flexible Storage Sharing
- Flexible Storage Sharing: Storage Objects

- Flexible Storage Sharing Case Study
- Flexible Storage Sharing: Implementation
- Flexible Storage Sharing: Configuration
- Dynamic LUN Expansion Support for FSS

Labs

- Exercise A: Administering Flexible Storage Sharing
- Exercise B: Testing Flexible Storage Sharing

Replication

Disaster Recovery and Replication Overview

- Disaster Recovery Concepts
- Defining Replication
- Replication Options and Technologies
- Arctera Technologies for Disaster Recovery

Arctera File Replicator

- Understanding Arctera File Replicator
- Setting up Replication for an Arctera File System
- Error Recovery with Arctera File Replicator

Labs

- Exercise A: Setting Up and Performing Replication for a VxFS File System
- Exercise B: Restoring the Source File System Using the Replication Target

Arctera Volume Replicator Components

- Arctera Volume Replicator: Overview
- Comparing Volume Replication with Volume Management
- Volume Replicator Components
- Volume Replicator Data Flow

Arctera Volume Replicator Operations

- Configuring the Replication Setup
- Assessing the Status of the Replication Environment
- Performing Migration, Takeover, and Fast Failback Operations

Labs

- Exercise A: Preparing Storage for Replication
- Exercise B: Establishing Replication
- Exercise C: Observing Data Replication
- Exercise D: Migrating the Primary Role

InfoScale Support for Cloud Environments

- InfoScale Solutions for Cloud Environments
- InfoScale Support for Kubernetes on Linux
- Preparing for InfoScale Installations in Cloud Environments
- Configuration for Cloud Environments
- Migration Support for AWS
- Application Mobility Overview
- Troubleshooting Issues in Cloud Environment

Labs

- Exercise A: Configuring REST API Server
- Exercise B: Verifying S3 Server Details
- Exercise C: Creating InfoScale Storage Support for S3 Connector
- Exercise D: (Optional) Creating FSS and SmartIO Type Storage and Backing Up Data to the S3 Server
- Exercise E: Adding IOM Management Server in the Global Reports Perspective
- Exercise F: Generating IOM Reports

Challenge Lab (Linux)

- Task A: Creating a 4-Node Storage Cluster (CVM Type)
- Task B: Creating a Local Mount Point (VxFS type) and Backing Up Data to S3 Server
- Task C: Creating an FSS Storage Type Cluster Mount Point and Backing Up Data to S3 Server

About Arctera

Arctera helps organizations around the world thrive by ensuring they can trust, access, and illuminate their data from creation to retirement. Created in 2024 from Veritas Technologies, an industry leader in secure multi-cloud data resiliency, Arctera comprises three business units: Data Compliance, Data Protection, and Data Resilience. Arctera provides more than 75,000 customers worldwide with market-leading solutions that help them to manage one of their most valuable assets: data. Learn more at www.arctera.io. Follow us on X [@arcteraio](https://twitter.com/arcteraio).



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