



## COURSE DESCRIPTION

The *Veritas InfoScale Availability 7.4.2 for Unix/Linux: Administration* course is designed for IT professionals tasked with installing, deploying, configuring, and maintaining Veritas Cluster Server (VCS) clusters.

This course discusses how to use InfoScale Availability to manage applications in a high availability environment and support for Cloud environments. The course is designed to enable you to gain the necessary fundamental and advanced skills that are required to manage a highly available application in a cluster. It also discusses how to deploy InfoScale Availability in the lab environment to practically implement a sample cluster design and deployment.

### Delivery Method(s)

This course is available in the following delivery method(s):

- [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

By the completion of this course, you will be able to:

- Describe how clustering is used to implement high availability in the data center environment.
- Describe VCS and cluster communication mechanisms.
- Create a cluster, and configure service groups and resources.
- Implement and verify failover and fallback capability for application, storage, and network services.
- Configure and optimize cluster behavior.
- Protect data in a shared storage environment.
- Describe I/O fencing operations, and its implementation.
- Configure VCS to manage an Oracle database and other applications.
- Describe InfoScale support for Cloud Environments.
- Configure and manage VCS clusters on virtual machines in VMware environment.
- Implement Just in Time Availability for single node VCS cluster on virtual machine in a VMware environment.

### Who Should Attend

This course is for UNIX/Linux system administrators, system engineers, technical support personnel, network/SAN administrators, and systems integration/development staff, who will be installing, operating, or integrating InfoScale Availability.

### 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

### *Cluster Server Basics*

#### High Availability Concepts

- High availability concepts
- Clustering concepts
- High availability application services
- Clustering prerequisites

#### **Labs: Intro Lab**

Exercise A: Viewing the virtual machine

Exercise B: Verifying network

#### **Labs: Validating Site Preparation**

Exercise A: Performing a CPI pre-installation verification

Exercise B: Performing a SORT pre-installation verification

### Installing and Licensing InfoScale

- Introducing the Veritas InfoScale product suite
- Tools for installing InfoScale products
- Installing Veritas InfoScale Availability
- InfoScale cloud offerings
- Upgrading to InfoScale Enterprise

#### **Labs:**

- Exercise A: Installing InfoScale Enterprise using the Common Product Installer (CPI)]
- Exercise B: Running a post-installation check
- Exercise C: Adding cluster systems to VIOM as managed hosts

### VCS Building Blocks

- VCS terminology
- Cluster communication
- VCS architecture
- Multi version cluster

#### **Labs:**

- Exercise A: Working with the VIOM GUI Dashboard and inventory information
- Exercise B: Exploring the VIOM GUI Licensing option
- Exercise C: Working with the VIOM GUI Settings option

### VCS Operations

- Common VCS tools and operations
- Service group operations
- Resource operations

### **Labs**

- Exercise A: Displaying cluster information
- Exercise B: Displaying status and attributes
- Exercise C: Performing service group operations
- Exercise D: Manipulating resources

### **VCS Configuration Methods**

- Starting and stopping VCS
- Overview of configuration methods
- Online configuration
- Controlling access to VCS

### **Labs**

- Exercise A: VCS configuration state and stopping VCS
- Exercise B: Configuring automatic backup of the VCS configuration
- Exercise C: Setting non default VCS stop options

### **Preparing Services for VCS**

- Preparing applications for VCS
- Performing one-time configuration tasks
- Testing the application service
- Stopping and migrating a service
- Collecting configuration information

### **Labs**

- Exercise A: Configuring and examining storage for the service
- Exercise B: Examining the application
- Exercise C: Manually starting and stopping the application

### **Online Configuration**

- Online service group configuration
- Adding resources
- Solving common configuration errors
- Testing the service group

### **Labs**

- Exercise A: Creating a service group for the loopy application
- Exercise B: Configuring resources for the loopy application
- Exercise C: Performing a virtual fire drill on the service group
- Exercise D: Testing the service group
- Exercise E: Setting resources to critical
- Exercise F: (Optional) Examining Veritas File System locking by VCS

### **Offline Configuration**

- Offline configuration examples
- Offline configuration procedures
- Solving offline configuration problems
- Testing the service group

### **Labs**

- Exercise A: Editing a copy of the main.cf file using a system editor
- Exercise B: Stopping VCS

- Exercise C: Restarting VCS using the edited main.cf file

### **Configuring Notification**

- Notification overview
- Configuring notification
- Overview of triggers

### **Labs**

- Exercise A: Configuring and testing the notifier using VIOM
- Exercise B: Configuring trigger scripts

### **Cluster Server Additions**

#### **Handling Resource Faults**

- VCS response to resource faults
- Determining failover duration
- Controlling fault behavior
- Recovering from resource faults
- Fault notification and event handling

#### **Labs**

- Exercise A: Observing non-critical resource faults
- Exercise B: Observing critical resource faults
- Exercise C: (Optional) Observing faults in frozen service groups
- Exercise D: (Optional) Observing ManageFaults behavior
- Exercise E: (Optional) Observing restart limit behavior

#### **Intelligent Monitoring Framework**

- IMF overview
- IMF configuration
- Faults and failover with intelligent monitoring

#### **Labs**

- Exercise A: Examining IMF monitoring on a resource
- Exercise B: (Optional) Examining the IMF default configuration

#### **Cluster Communications**

- VCS communications review
- Cluster interconnect configuration
- Cluster startup
- System and cluster interconnect failure
- Changing the interconnect configuration

#### **Labs**

- Exercise A: Reconfiguring LLT
- Exercise B: Observing jeopardy membership

### **Cluster Server Applications**

#### **Using I/O Fencing for Application Data Integrity**

- Data protection requirements
- I/O fencing concepts
- I/O fencing operations

- I/O fencing implementation
- Fencing configuration

#### **Labs**

- Exercise A: Fencing configuration pre-checks
- Exercise B: Configuring VCS for I/O fencing
- Exercise C: I/O fencing configuration verification
- Exercise D: Verifying data disks for I/O fencing

#### **Clustering Applications**

- Application service overview
- VCS agents for managing applications
- The Application agent
- IMF support and prevention of concurrency violation

#### **Labs**

- Exercise A: Adding a resource of type Application
- Exercise B: Testing the resource
- Exercise C: IMF and Application agent monitoring options

#### **Clustering Databases**

- VCS database agents
- Database preparation
- The database agent for Oracle
- Database failover behavior
- Additional Oracle agent functions

#### **Labs**

- Exercise A: Verifying the Oracle configuration
- Exercise B: Preparing storage and network resources for the Oracle service group
- Exercise C: Testing the Oracle database manually
- Exercise D: Configuring Oracle under VCS control
- Exercise E: Running a virtual fire drill and switching the Oracle service group
- Exercise F: (Optional) Oracle monitoring

### ***In-Guest Clustering***

#### **InfoScale support for Cloud Environments**

- InfoScale solutions for cloud environments
- Preparing for InfoScale installations in cloud environments
- Configurations for cloud environments
- Troubleshooting issues in cloud environments

#### **Labs**

- Exercise A: Verify S3 server details (sys3)
- Exercise B: Create InfoScale storage support for S3 connector
- Exercise C: Using VIOM deploy Application Migration Add-on

#### **VMware vSphere Data Center Architecture**

- VMware vSphere high availability architecture
- VMware administration
- VMware storage architecture
- Server and storage migration

#### **Labs**

- Exercise A: Verifying the VMware vSphere lab environment
- Exercise B: Connecting to the nested virtual machines
- Exercise C: Testing vMotion

#### **Veritas High Availability Deployment in VMware**

- Veritas high availability architecture in VMware
- Deploying InfoScale Availability on virtual machines
- Configuring the vSphere Web Client for Veritas HA

#### **Labs**

- Exercise A: Preparing the nested virtual machine lab environment
- Exercise B: Deploying a Veritas cluster on nested virtual machines
- Exercise C: Adding cluster systems as managed hosts to VIOM
- Exercise D: Installing the VIOM Control Host add-on on mgt
- Exercise E: Adding virtualization information to the VIOM management server
- Exercise F: Installing and registering the Veritas HA Plug-in for vSphere Web Client

#### **Veritas High Availability Configuration and Administration**

- Configuring storage for VCS failover cluster
- Configuring shared storage for CFS clusters
- Configuring availability
- Veritas high availability operations
- Just-In-Time Availability solution

#### **Labs – Part A**

- Exercise A: Preparing the nested virtual machine lab environment
- Exercise B: Using the vSphere Web Client to monitor Veritas high availability
- Exercise C: Setting EnableUUID parameter for virtual machine disks
- Exercise D: Testing vMotion with Veritas in-guest clustering
- Exercise E: (Optional) Managing the Oracle Disk group configuration

#### **Labs – Part B**

- Exercise A: Preparing the nested virtual machine lab environment
- Exercise B: Configuring a shared VMFS datastore
- Exercise C: Configuring virtual and physical RDM disks on sys3
- Exercise D: Creating a service group to manage the virtual and physical RDM disks
- Exercise E: (Optional) Observing vMotion with RDM disks
- Exercise F: (Optional) Enabling shared storage across multiple VMs using physical RDM disks
- Exercise G: (Optional) Aligning the shared disk device names across multiple virtual machines

**Labs: Challenge Lab (Linux)**

- Exercise A: Creating a 4-Node West cluster (VCS type)
- Exercise B: Creating a local mount point (VxFS type) and backup data to S3 server (sys3)
- Exercise C: Using VIOM install Application Migration and Control Host Add-ons