

# VERITAS Cluster Server™ 4.2 for Windows

## COURSE DESCRIPTION

### Delivery Method

Instructor-led

### Duration

Five days

### Course Objectives

You will learn how to use VERITAS Cluster Server to manage applications in a high-availability environment. After gaining the fundamental skills that are needed to manage a highly available application in an existing cluster, you will deploy VCS in a lab environment to implement a sample cluster design. You will learn to:

- Manage existing highly available application services using VERITAS Cluster Server.
- Install VCS and create a cluster.
- Configure service groups and resources.
- Implement and verify failover and failback capability for application, storage, and network services.
- Configure and optimize cluster behavior.
- Protect data in a shared storage environment.
- Analyze, troubleshoot, and correct cluster problems.
- Implement four-node clusters.
- Configure service group dependencies and workload management.
- Implement alternative storage and network configurations.
- Perform ongoing maintenance.

### Who Should Attend

This course is for system administrators, system engineers, network administrators, system integration or development staff, and technical support personnel who will be working with VERITAS Cluster Server.

### Prerequisites

You should have experience as a system and network administrator working in a Windows environment. Experience developing Perl scripts is helpful.

### Hands-On

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

## COURSE OUTLINE

### VERITAS Cluster Server, Fundamentals

#### VCS Building Blocks

Cluster Terminology  
 Cluster Communication  
 Maintaining the Cluster Configuration  
 VCS Architecture  
 Failover Configurations Supported by VCS

#### Preparing a Site for VCS Implementation

Planning for Implementation  
 Hardware Requirements and Recommendations  
 Software Requirements and Recommendations  
 Preparing Cluster Information

#### Installing VERITAS Cluster Server

Installing VCS Using the Common Product Installer  
 Configuration Files Created During Installation  
 Viewing the Running VCS Configuration  
 Fencing Considerations  
 Installing the Cluster Manager Java Console

#### VCS Operations

Managing Applications in a Cluster Environment  
 VCS Management Tools  
 Service Group Operations  
 Using the VCS Simulator

#### Preparing Services for High Availability

Preparing Applications for VCS  
 Configuration and Migration Process Overview  
 One-Time Configuration Tasks  
 Testing the Application Service  
 Stopping Resources  
 Manually Migrating a Service  
 Validating the Design Worksheet

#### VCS Configuration Methods

Overview of Configuration Methods  
 Controlling Access to VCS  
 Online Configuration  
 Offline Configuration  
 Starting and Stopping VCS

## COURSE OUTLINE

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### Online Service Group Configuration

Online Configuration Procedure  
Using a Design Worksheet and Diagram  
Adding a Service Group Using Online Configuration Tools  
Adding Resources  
Solving Common Configuration Errors  
Testing the Service Group

### Offline Service Group Configuration

Offline Configuration Procedure: New Cluster  
Offline Configuration Procedure: Existing Cluster  
Using a Design Worksheet During Configuration  
Adding a Service Group Using Offline Configuration Tools  
Solving Common Offline Configuration Problems  
Testing the Service Group

### Sharing Network Interfaces

Sharing Network Interfaces Among Service Groups  
Alternate Network Configurations Using Proxy Resources  
Using Parallel Service Groups with Network Resources  
Configuring a Parallel Service Group  
Localizing Resource Attributes

### Configuring Notification

Notification Overview  
Configuring Notification  
The NotifierMngr Resource Type  
Configuring the ResourceOwner Attribute  
Configuring the GroupOwner Attribute  
Configuring the SNMP Console to Receive VCS Traps

### Configuring VCS Response to Resource Faults

The Role of Critical Resources in Failover Decisions  
How VCS Responds to Resource Faults  
Determining Failover Duration  
Controlling Fault Behavior with Resource Type Attributes  
Recovering from Resource Faults  
Fault Notification  
Extended Event Handling Using Triggers

### Cluster Communications

VCS Communications Review  
How VCS Determines Cluster Membership  
Interconnect Configuration Files  
How Systems Join the Cluster Membership

### System and Communication Failures

Ensuring Data Integrity  
VCS Response to System Failure  
LLT Link Failures  
Interconnect Failures with a Low-Priority Public Link  
Preexisting Network Partition  
Changing the Interconnect Configuration

### Troubleshooting

Monitoring VCS  
Using the VERITAS Support Web Site  
Troubleshooting Guide  
Cluster Communication Problems  
VCS Engine Startup Problems  
Service Group Problems  
Resource Problems  
Agent Problems and Resource Type Problems  
Backing Up VCS-Related Files

## VERITAS Cluster Server, Example Application Configurations

### Module 1: Clustering Applications

Application Service Overview  
VCS Agents for Managing Applications  
The GenericService Agent  
Encrypting Passwords  
The ServiceMonitor Agent

### Module 2: Clustering SQL Server 2000

SQL Server 2000 in the VCS Environment  
The Lanman Agent  
Managing Registry Keys  
The SQL Server 2000 Agent  
Installing a SQL Server  
Configuring a SQL Server 2000 Service Group  
SQL Server 2000 Detail Monitoring  
SQL Server 2000 Service Group with MSSearch Defining Database Failover Behavior  
Clustering Multiple SQL Instances

### Module 3: Clustering File Shares

Preparing File Shares for High-Availability VCS  
Resources for Managing File Shares  
The Lanman Agent  
The FileShare Agent  
The CompositeFileShare Agent  
The File Share Configuration Wizard

### Module 4: Clustering Exchange Server

Exchange Server in the VCS Environment  
Exchange Configuration Overview  
Configuring the Domain Controller  
Install the Exchange 2000 Server Agent  
Installing Exchange Server  
Configuring Failover Nodes for Exchange  
Configuring an Exchange Service Group

## **COURSE OUTLINE**

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### **VERITAS Cluster Server, Implementing Local Clusters**

#### **Workshop: Reconfiguring Cluster Membership**

- Workshop Overview
- Task 1: Removing a System from a Running VCS Cluster
- Task 2: Adding a New System to a Running VCS Cluster
- Task 3: Merging Two Running VCS Clusters

#### **Configuring Service Group Interactions**

Common Application Relationships  
Service Group Dependencies  
How Dependencies Affect Failover  
Configuring Service Group Dependencies  
Limitations of Service Group Dependencies  
Using Resources to Control Service Group Interactions  
Using Triggers to Control Service Group Interactions

#### **Configuring Service Group Workload Management**

Rules for Automatic Startup of a Service Group  
Automatic Startup Policies  
Rules for Automatic Failover of a Service Group  
Failover Policies  
Additional Startup and Failover Controls  
Configuring Startup and Failover Policies  
Controlling Overloaded Systems  
Using the Simulator to Model Workload Management

#### **Maintaining VERITAS Cluster Server**

Guidelines for Replacing a System in a VCS Cluster  
Upgrading Software and Hardware in a Running Cluster  
Performing a Rolling Upgrade in a Running Cluster  
Upgrading VERITAS Cluster Server to Version 4.0  
Alternative VCS Installation Methods  
Staying Informed About VCS

#### **Validating Implementation**

Best Practices Review  
Solution Acceptance Testing  
Knowledge Transfer  
Implementation Report  
References for High Availability  
Clustering Solutions Using VCS