

CXS-202-2 Citrix XenServer 5.6 Administration

In this Citrix XenServer 5.6 training course, students will learn skills necessary to configure and administer XenServer 5.6, XenCenter, and Provisioning Services 5.6. Through virtual labs, as well as demonstrations and the practical application of concepts, students will gain experience with:

- Configuring a XenServer virtualization server
- Managing a XenServer using XenCenter
- Creating Windows and Linux virtual machines
- Creating XenServer resource pools and connecting to remote storage
- Using XenMotion and automatic virtual machine placement
- Designing a Provisioning Server farm
- Creating, assigning and administering virtual disks
- Managing target devices
- Configuring high availability

Audience

This course is designed for IT professionals, Architects, Systems Engineers and Citrix Partner Network members.

Preparatory Recommendations

Prior to taking this course, Citrix recommends that learners possess the following knowledge and experience:

- A basic knowledge of the purpose and goals of virtualization technology
- An understanding of computing architecture, including network and storage devices, device drivers and operating systems
- Basic experience installing and administering Windows Server 2003 or Windows Server 2008
- Basic experience installing and administering Linux variants
- Intermediate knowledge of network devices and site architecture, including configuring vLANs
- Basic knowledge of storage terminology and technologies, including partitions, SANs, LUNs, iSCSI, NFS, and CIFS file shares

Key Skills

In this Citrix XenServer 5.6 training course, students will learn skills necessary to configure and administer XenServer 5.6, XenCenter, and Provisioning Services 5.6. Through hands-on labs, students will gain experience with:

- Configuring a XenServer virtualization server
- Managing a XenServer using XenCenter
- Creating Windows and Linux virtual machines
- Creating XenServer resource pools and connecting to remote storage
- Using XenMotion and automatic virtual machine placement
- Designing a Provisioning services farm
- Creating, assigning and administering virtual disks
- Managing target devices

Instructional Method

This course is available in either classroom or self-paced online formats, and includes access to a live lab environment, as well as demonstrations and the practical application of concepts through hands-on exercises.

Course Length

30 hours or 5 days

Certification Preparation

This course prepares learners for the CCA for Citrix XenServer 5

Registration

For more information and to register for this course, please go to www.citrixeducation.com.

Topic Outline

Provided is the outline for CXS-202-2:

- **Module 1: XenServer Introduction**
 - Overview
 - XenServer Product Line
 - Citrix XenServer 5.6 New Features
 - Role-based Access Control
 - Dynamic Memory Control
 - Virtual Machine Disk Snapshot
 - Automated Virtual Machine Optimizations and Power Management
 - StorageLink Site Recovery
 - Heterogeneous Pools
 - Enhanced Operating-System Support
 - Enhanced XenCenter Interface
 - Administrative Logging and Audit
 - XenServer Architecture Overview
 - XenServer Architectural Components
 - Emulation Example
 - Paravirtualization Example
 - XenCenter Overview
 - XenCenter Performance Data

- **Module 2: XenServer and XenCenter Installation**
 - Overview
 - XenServer Installation
 - Virtual Machine Storage
 - Single and Multiple Disk System Installations
 - Multiple Disk System
 - Installing XenServer
 - Pre-Installation Checklist
 - XenServer Installation Process
 - Practice: XenServer Installation
 - Installing XenCenter
 - XenCenter Windows Consoles
 - XenCenter Linux Consoles
 - XenServer Licensing
 - Licensing Components
 - License File Management
 - Obtaining License Files
 - Installing the Citrix License Server
 - License Management Console
 - Review Questions

- **Module 3: Windows Virtual Machines**
 - Overview
 - Virtual Memory and Disk Size Limits
 - Virtual Device Support
 - Windows Virtual Machine Architecture
 - To Create a Windows Virtual Machine
 - Installation from an ISO
 - ISO Libraries
 - To Create an ISO Library
 - Practice: Windows Virtual Machine Creation from an ISO Library
 - XenServer Tools
 - Review Questions

- **Module 4: Linux Virtual Machines**
 - Overview
 - Linux Virtual Machine Architecture
 - Linux Distributions
 - Xen-enabled Distributions
 - Non-Xen-enabled Distributions
 - Creating Linux Virtual Machines
 - To Create a Linux Virtual Machine
 - Installing XenServer Tools
 - To Install XenServer Tools
 - Virtual Network Computing for Virtual Machines
 - To Configure VNC for Virtual Machines
 - Review Questions

- **Module 5: Templates and Life-Cycle Operations**
 - Overview
 - Virtual Machine Templates
 - Practice: Virtual Machine Templates
 - Exporting a Virtual Machine
 - Importing a Virtual Machine
 - Copying a Virtual Machine
 - Practice: Importing and Exporting a Virtual Machine
 - New Virtual Machine Creation Using a Template
 - Life-Cycle Operations
 - Suspend and Resume
 - Deleting a Virtual Machine
 - Practice: Life-Cycle Operations
 - Review Questions

- **Module 6: XenConvert**
 - Overview
 - XenConvert Overview
 - Xen Virtual Appliance Formats
 - Open Virtualization Format
 - XenConvert Default Behavior
 - Physical Machine Conversion
 - To Produce a Virtualized Instance of a Workload
 - Source Volume Properties
 - Destination Volume Properties
 - Disk Properties
 - Practice: Disk Space
 - Converting from Physical to Virtual Machine
 - To Complete the P2V Conversion
 - New Virtual Machine in XenCenter
 - Practice: P2V Conversion

- Virtual-to-Virtual-Machine Conversion
- To Convert a Server or Desktop to a Virtual Machine
- Review Questions
- **Module 7: Resource Management**
 - Overview
 - Virtual Machine Resource Management
 - Virtual Disks
 - Virtual Disk Sizes
 - vDisk Resizing
 - Virtual NICs
 - Virtual CPUs
 - Memory
 - Multiprocessor HAL in Windows 2000
 - Practice: Resource Management
 - Resource Optimization
 - CPU Scheduler
 - CPU Priorities
 - Network and Storage Resources
 - Practice: Fine-Tuning Resources
 - Dynamic Memory Control
 - Dynamic Memory Control Configuration
 - DMC Behavior when Launching New Virtual Machines
 - Events and Alerts
 - To Set Host Alerts in XenCenter
 - To Set Virtual Machine Alerts in XenCenter
 - Alert Customization
 - Perfmon String
 - Valid Virtual Machine Elements
 - Valid Host Elements
 - Persistent XenServer Performance Statistics
 - E-mail Alert Configuration
 - Performance Statistics in XenCenter
 - Performance Graphs in XenCenter
 - XenCenter Searches
 - Review Questions
- **Module 8: Networking**
 - Overview
 - Network Components and Architecture
 - Network Architecture Diagram
 - Internal-only Networks
 - Virtual NICs
 - External Networks
 - VLAN Support and Components
 - Practice: Network Component Descriptions
 - Initial Network Setup
 - Management and Normal Interfaces
 - IP Address Information for Normal NICs
 - Practice: Configuring Physical Networks
 - NIC Bonds
 - NIC Bonding Architecture
 - Active-Active Mode
 - Load Balancing
 - Network Adapter Drivers
 - Virtual Network Setup
 - Virtual NIC Creation
 - Virtual NICs Connections
 - To Configure a NIC Bond for a Standalone Host

- NIC Bond Configuration for Resource Pools
- Network Configuration
- To Configure a VLAN
- Review Questions
- **Module 9: Managing XenServer**
 - Overview
 - Managing XenServer Users
 - End User Authentication using Active Directory (AD)
 - Active Directory Integration Key Benefits
 - External Authentication Process
 - Active Directory Integration
 - Active Directory Integration Configuration
 - Role-based Access Control
 - Roles
 - Command-Line Interface Overview
 - XenServer Menu-Driven Text Console
 - Command-line Interface Operations Targets
 - XenServer Objects
 - Core XenServer Objects
 - Host Connector Objects
 - Virtual Machine Connector Objects
 - Object Naming within the Command-Line Interface
 - Command-Line Interface Usage
 - Command-Line Interface Prerequisites
 - Basic Command-Line Interface Syntax
 - Command-Line Interface Shortcuts
 - Common Object Commands
 - The List Command
 - List Command Displayed Parameters
 - List Command Class Object
 - To Use the List Command Procedure
 - Expanded Fields
 - The Parameter Commands
 - Parameter Command Modifiers
 - To Use the Param Command
 - Practice: XenServer Commands
 - XenServer Help Commands
 - To Access Help Commands
 - Command-Line Interface Access
 - XenServer Host Command-Line Interface
 - To Access the Command-Line Interface Directly from the Host Procedure
 - To Access the XenServer Command-Line Interface Using SSH Procedure
 - To Access the XenServer Command-Line Interface Using XenCenter
 - Remote Command-Line Interface Access
 - Credential Arguments
 - Remote Host Example
 - Review Questions
- **Module 10: Storage**
 - Overview
 - Storage Introduction
 - Storage Components
 - Storage Types
 - Storage Type Feature Comparison
 - Practice: Storage Components
 - Storage Architecture
 - Storage Repositories
 - Local Disk Storage Architecture

- Storage Repository Architecture
 - Practice: Storage Architecture
 - Multiple Storage Repositories
 - Practice: Storage Repositories
 - Initial Storage Setup
 - Local Storage
 - Virtual Machine Storage Types
 - Virtual Disk Setup
 - Virtual Disk Size
 - Practice: Local Storage
 - Scaling Storage for the Enterprise
 - Remote Storage Features
 - Storage Capability Comparison
 - Fibre Channel SANs Overview
 - Fibre Channel Architecture
 - Storage Repositories Configuration
 - LUN Device Path
 - Practice: Fibre Channel HBA Management
 - iSCSI Storage Overview
 - iSCSI Terminology and Names
 - iSCSI Network
 - Software-based iSCSI
 - iSCSI Storage Configuration
 - iSCSI Setup Best Practices
 - Practice: iSCSI Storage
 - NFS Storage Overview
 - NFS Remote Storage
 - Software NFS Architecture
 - NFS Virtual Disks
 - NFS Remote Storage Configuration
 - NFS Setup Best Practices
 - Practice: NFS Storage
 - Third-Party Storage
 - NetApp Storage Overview
 - NetApp Storage Architecture
 - FlexVol Limits and Parameters
 - NetApp Access Control
 - NetApp Features
 - Dell EqualLogic Storage Integration
 - Storage Management
 - Dedicated NIC Bonds for Remote Storage
 - Dedicated Remote Storage Interface Configuration
 - Storage Multipathing
 - iMultipathing and Disaster Recovery
 - Storage Repository Recovery
 - StorageLink Overview
 - StorageLink Components
 - StorageLink Manager Interface
 - StorageLink Configuration
 - Creating a Storage Repository
 - To Create a Storage Repository
 - Allocating Storage for Virtual Machines
 - Creating a Storage Profile
 - Template Management
 - Virtual Machine Creation from Templates
 - StorageLink Command-Line Interface and PowerShell
 - Review Questions
- **Module 11: Resource Pools**
 - Overview

- Resource Pools Overview
 - Resources Shared in a Pool
 - Resource Pool Architecture
 - Pool Member Types
 - Resource Pool Communication
 - Heterogeneous Pools
 - Pool Member Requirements
 - Resource Pool Requirements Diagram
 - CPU Requirements
 - Network Settings
 - XenServer Licenses in a Resource Pool
 - Resource Pool Administration
 - Resource Pool Creation and Configuration
 - Shared Configurations
 - Pool Members
 - To Prepare for Adding a Member
 - To Add a Member to a Resource Pool
 - To Remove a Secondary Member from a Resource Pool
 - Resource Pool Recovery
 - Master Failure Overview
 - Failure Detection Process
 - Recovered Master Reconnection
 - To Promote a Secondary Member to a Master
 - Practice: Master and Secondary Server Roles
 - Virtual Machine Movement
 - Automatic Virtual Machine Placement
 - Virtual Machine Location
 - XenMotion Overview
 - XenMotion CPU Requirements
 - To Use XenMotion (XenCenter)
 - Alternate Virtual Machine Movement Methods
 - Practice: Virtual Machine Movement
 - Review Questions
- **Module 12: High Availability**
 - Overview
 - High Availability Overview
 - High Availability Requirements
 - High Availability Considerations
 - Restart Protection Levels
 - Protection Level Settings
 - Server Failure Tolerance
 - Overcommitting
 - Overcommitment Warning
 - High Availability on a XenServer Pool
 - High Availability Failure Tolerance
 - To Configure High Availability (XenCenter)
 - To Configure High Availability (Command-Line Interface)
 - Host Fencing
 - Changing High Availability Settings (CLI)
 - Practice: Configuring High Availability
 - Disaster Recovery
 - Metadata
 - Practice: Virtual Machine Rollback
 - To Roll Back a Virtual Machine (XenCenter)
 - To Roll Back a Virtual Machine (Command-Line Interface)
 - Review Questions
- **Module 13: Workload Balancing**

- Overview
- Workload Balancing Overview
- Workload Balancing Key Concepts
- Workload Balancing Components
- Workload Balancing Deployment
- Workload Balancing High Availability
- Single Server Deployment
- Key Services
- XenServer Environment Sizes
- Workload Balancing Installation
- Pre-Installation Considerations
- Installation on a Single Server
- Workload Balancing Installation Verification
- Workload Balancing Configuration
- To Initialize Workload Balancing
- Pool Workload Balancing Configuration
- Authorization for Workload Balancing
- XenServer and the Workload Balancing Server
- Antivirus Software Configuration
- Performance Thresholds and Metric Weighting
- Practice: Workload Balancing Power Management
- Workload Balancing Settings Configuration
- Optimization Mode
- Fixed and Scheduled Optimization Modes
- Optimization Recommendations
- Workload Balancing Power Management
- Power Management Behavior
- Power Management and Virtual Machine Consolidation
- To Apply Optimization Recommendations Automatically
- Practice: Workload Balancing
- Critical Thresholds
- Default Settings for Critical Thresholds
- Tuning Metric Weightings
- Host Exclusion from Recommendations
- To Exclude Hosts
- Optimal Server Selection
- Maintenance Mode with Workload Balancing Enabled
- Workload Balancing Reports
- Pool Optimization Performance History Report
- Pool Audit Log History
- Pool Health
- Pool Health History Report
- Pool Optimization History
- Virtual Machine Motion History Report
- Virtual Machine Performance History Report
- Configuring for a Different Workload Balancing Server
- Disable Workload Balancing
- To Update Workload Balancing Credentials
- Review Questions
- Module : Troubleshooting XenServer
- Overview
- XenServer Logs and Reports
- XenCenter Event Logs
- Server Status Reports
- XenServer dmesg Overview
- To Generate the dmesg File in XenCenter
- To Generate the dmesg File in the Command-Line Interface
- XenServer Crashdump Overview
- To Generate a Crashdump File in XenCenter
- To Generate the Crashdump File in the Command-Line Interface

- XenServer Debug Tools
 - XenCenter Searches
 - Troubleshooting Usage
 - Upgrading Usage
 - XenServer Alerts
 - To Create XenServer Alerts in XenCenter
 - To Create E-mail Alerts in XenCenter
 - Overcommitment Warnings
 - XenServer-to-XenCenter Communications
 - XenCenter Version
 - Valid License
 - Network Port Availability
 - XenServer Patch Location
 - XenServer Patch Installation
 - Rolling Pool Upgrade
 - Planning a Rolling Upgrade
 - To Prepare for Upgrading
 - To Perform a Rolling Upgrade
 - Review Questions
- **Module 14: Provisioning Services Installation and Configuration**
 - Overview
 - Provisioning Services for XenServer
 - Citrix Provisioning Services Infrastructure
 - Provisioning Services Administration
 - Citrix Provisioning Services Components
 - Key Services
 - Practice: Key Services
 - Installation Planning
 - Network Boot Services
 - Boot Process
 - DHCP Deployment Options
 - DHCP Configuration
 - Provisioning Services Farm Design
 - Farms
 - SQL Database Server
 - SQL Database Authentication
 - Sites
 - Stores
 - Write Caches
 - Practice: Write Cache
 - Storage Requirements
 - Sample vDisk Storage Requirements
 - Provisioning Services Installation
 - To Install Provisioning Services
 - Provisioning Services Configuration
 - To Configure a Provisioning Services Farm
 - Store Configuration
 - Provisioning Services Hosts in the Console
 - Target Device Connections
 - Server Properties
 - Target Device Management
 - Target Device Collection
 - Target Device Views
 - Target Device Properties
 - To Copy Target Device Properties
 - Target Device Additions to the Database
 - Auto-Add Wizard
 - Active Directory Integration
 - Domain Password Management

- Automatic Password Renegotiation
- To Integrate Active Directory
- To Enable Machine Account Password Management
- Troubleshooting Provisioning Services Installation and Configuration
- Review Questions
- **Module 17: vDisk Administration**
 - Overview
 - vDisk Image Modes
 - Standard Image Mode
 - Difference Disk Image Mode
 - Private Image Mode
 - Write-Cache Types
 - Cache on Server Disk
 - Cache on Server Disk: Local Storage
 - Cache on Server Disk: Shared Storage
 - Cache on Device's Hard Drive
 - Cache on Device's Hard Drive: Local Storage
 - Cache on Device's Hard Drive: Shared Storage
 - Target Device-based RAM Cache
 - Target Device RAM
 - To Create a vDisk
 - vDisk File Creation
 - VHD Format
 - vDisk Mounting
 - vDisk Formatting
 - Master Target Device
 - Boot Order
 - Master Target Device Software
 - To Create a Windows Master Target Device using the Imaging Wizard
 - To Image Windows Target Devices with XenConvert
 - vDisks Streaming to Diskless Virtual Machines
 - To Create a Diskless Virtual Machine
 - To Create a Master Target Virtual Machine Workload Image
 - Practice: Master Target Device
 - Troubleshooting vDisk Creation Issues
 - vDisk Management
 - To Unassign vDisks from Target Devices
 - To Delete a vDisk
 - vDisk Locks
 - vDisk Backup
 - vDisk Updates
 - Automatic Update
 - Incremental Update
 - Autoupdate Tool
 - Incremental Update Rollback
 - Scheduled vDisk Updates
 - Practice: vDisk Updates
 - vDisk Update Strategies
 - High Availability Overview
 - High Availability Benefits
 - High Availability Components
 - Boot File Configuration for High Availability
 - Provisioning Services Host Addition to the Boot File
 - To Add a Login Server
 - Enabling High Availability on vDisks
 - Review Questions

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