

## CMB-207-1I Citrix Desktop Virtualization Fast Track

This fast-paced course provides the foundation necessary for students to effectively centralize and manage desktops and applications in the datacenter and deliver them as a service to users anywhere. Students will learn how to build XenApp and XenDesktop environments; assign virtual desktops; deliver published resources and printers to users; use policies to customize farm settings and the user experience; and administer the environments. In addition, students will learn how to build a Provisioning services farm to enable single-image desktop management.

### Audience

This course is intended for IT professionals, such as server, network, and systems administrators familiar with Microsoft Windows environments, including Windows 2008 R2 administrators. Existing Citrix XenApp administrators interested in increasing their desktop virtualization skills with Citrix XenDesktop, are ideal candidates. Systems engineers, sales engineers, analysts, consultants, and architects are also appropriate candidates for this course.

### Instructional Method

This course is offered as a classroom training course that focuses on the practical application of XenApp and XenDesktop concepts and administrative tasks through hands-on exercises in a lab environment. Students are expected to self-study select modules of the course content after classroom hours each day. Regularly scheduled 'Question and Answer' sessions will occur daily to address students' questions arising from the self-study sessions.

### Preparatory Recommendations

Before taking this course, Citrix recommends that students have a basic understanding of the following technologies:

- Microsoft Windows Server 2008 R2 and Remote Desktop Services
- Network and storage devices, device drivers, and operating systems
- Networking concepts, such as DNS, DHCP, IIS, load balancing, and file and printing services
- Active Directory and group policy
- Server, desktop, and application virtualization concepts
- Citrix XenApp

### Key Skills

Upon completion of this course, students will be able to:

- Install and configure a Citrix license server, import Citrix licenses, configure license monitoring, and view license usage trends.
- Install and configure Citrix XenApp to create a new farm or join an existing farm.
- Create administrator accounts and assign custom administrative permissions to the accounts.
- Configure the logging of administrative changes to a database.
- Create and apply worker groups that simplify the administration of published resources and policies.
- Install the Web Interface role.
- Create and configure XenApp Web and XenApp Services web sites.
- Customize the layout, content, and appearance of a XenApp Web site.
- Publish application and server desktop resources for access by users and verify that workspace control works correctly.
- View and manage user sessions from the administrative console.
- Install profiling software, profile an application for streaming, and link dependent profiles to allow interaction between streamed applications.
- Publish a streamed application and verify that the streamed application works correctly.
- Create policies to improve performance, restrict user access, and shadow user sessions.
- Test policies to verify that they produce the desired effect.

- Configure custom load evaluators and apply them to servers and applications.
- Configure and test failover using a load balancing policy.
- Install Citrix Receiver, configure and deliver a plug-in package, and verify that self-service applications can be added from a client device.
- Configure printing including, printer auto-creation, driver compatibility lists, session printers, and printing policies.
- Configure a XenApp Web site to use an ICA proxy.
- Identify tools that can be used to monitor XenApp servers and sessions.
- Identify additional components included with Citrix XenApp Platinum edition.
- Configure a XenServer host for desktop delivery.
- Adjust virtual machine properties.
- Backup virtual machine metadata to shared storage.
- Import a virtual machine.
- Install XenDesktop.
- Add a controller to an existing site.
- Install, configure and secure Web Interface.
- Delegate XenDesktop administration.
- Prepare a master virtual machine.
- Assign users to pooled virtual desktops and dedicated virtual desktops.
- Modify desktop catalogs, groups, and a master virtual machine.
- Use policies and Profile Management to restrict and allow XenDesktop features.
- Monitor XenDesktop sessions.
- Shadow XenDesktop sessions.
- Install and configure Provisioning services.
- Create a shared vDisk.
- Create streamed virtual desktops using Provisioning services.
- Update a vDisk.
- Identify key features of XenDesktop 5.5.

## Course Length

5 days

## Citrix XenApp 6.5 Topics

The following outline identifies the Citrix XenApp topics included in the course.

**Note:** Not all topics will be covered by lecture. Students are expected to self-study select sections as designated by the instructor.

### Module 1: Introduction and Course Overview

- Overview
- Course Outline
- Citrix Education
- Course Evaluation and Completion Certificate

### Module 2: Introducing Basic Administration for Citrix XenApp 6

- XenApp 6 Editions
- XenApp 6 Features
- XenApp Architecture
  - XenApp Components
  - Single and Multiple Farm Environments
  - Data Store
  - Data Store Updates and the Local Host Cache
  - Independent Management Architecture
  - Data Collectors
  - Data Collector Election
  - Zones
  - Additional XenApp Components
- Delivery Services Console

- Review

### **Module 3: Licensing XenApp**

- Overview
- XenApp Licensing
  - Licensing Communication
  - License Communication Process
  - License Types
  - Citrix License Server 11.6.1
  - Microsoft Remote Desktop Services
  - Additional Licensing Considerations
- License Administration Console
  - Port Configuration
  - Delegated Administrators in the License Administration Console
- Installing Licensing
  - Manual Installation and Configuration
  - Uninstalling Licensing
  - License Server Considerations
- License File Management
  - Obtaining License Files
  - Importing License Files
  - Subscription Advantage
- High Availability Considerations
  - Additional License Server Processes
  - License Server Clustering
- Review

### **Module 4: Installing XenApp**

- Overview
- Installation Decisions
- XenApp Server Role Manager
- Web Interface Installation Decisions
- Unattended Installation and Configuration
- Hardware Requirements
- Software Requirements
- XenApp Configuration Options
  - Which Farm or Zones Will Be Used in the Environment?
  - Which License Server Will Be Used for the Server Farm?
  - Which Database Engine Will Be Used for the Data Store Database?
  - Will Shadowing Be Enabled?
  - On Which Port Will the Citrix XML Service Run?
  - When Will Users Be Added to the Local Remote Desktop Users Group?
  - Which Pass-through Client Will Be Used in the Environment?
  - Will Pass-through Authentication Be Used in the Environment?
  - Will Information in the Data Store and Configuration Logging Databases be Protected with IMA Encryption?
- Review

### **Module 5: Configuring XenApp Administration**

- Overview
- Worker Groups
  - Publishing Applications to Worker Groups
  - Prioritizing Worker Groups
  - Filtering Policies to Worker Groups
- Administrator Privilege Levels
  - Creating Administrator Accounts
  - Configuring Administrator Permissions
  - Configuring Folder Permissions
  - Delegating Administration
- Configuration Logging
  - Creating the Configuration Logging Database
  - Configuration Logging Database Settings
  - Enabling Configuration Logging

- Review

## **Module 6: Installing and Configuring Web Interface**

- Overview
- Architecture and Communications
  - Web Interface Communication Process
- Web Interface Installation
  - Installing the Web Interface
- Site Creation
  - Creating a Web Interface Site
  - Site Creation Considerations
  - XenApp Web Site Configuration Options
  - XenApp Services Site Configuration
- Web Interface Site Modification
  - Modifying the Web Interface Configuration File
  - Using the Web Interface Management Console
- Specifying Citrix Plug-in Backup URLs
- Site Appearance
  - Site Customization Options
  - Session Preferences
  - Session Options
  - User Options
- Workspace Control
  - Workspace Control Functionality
  - Workspace Control Configuration Options
  - Workspace Control User Customization
  - Configuring Workspace Control
- Citrix Plug-ins and the Web Interface
  - Plug-in Deployment Options
  - Automatically Detecting Plug-ins
  - Client Detection
  - Client for Java
- Authentication Configuration
  - Authentication Options
  - Generic RADIUS Support
  - Explicit Authentication
  - Pass-through Authentication
  - Smart Card Authentication
  - Citrix XML Service Trust Relationships
- Secure Access Configuration
  - Access Methods
  - Network Address Translation
  - Network Address Translation Access Types
- Client-side Proxy Settings
  - Configuring Client-side Proxy Settings
- Server Configuration
  - Configuring Multiple Server Farms
  - Adding Farms
  - Configuring Load Balancing
  - Enabling Fault Tolerance
  - Specifying the XML Communication Port
  - Ticket Expiration Settings
- Web Interface Site Removal
- Troubleshooting Web Interface Issues
- Review

## **Module 7: Delivering Applications and Content**

- Overview
- Published Resources
  - Published Resource Types
  - Resource Publishing Phases
  - Resource Name and Location

- Server Assignment
  - Configured or Anonymous Accounts
  - Users and Groups
  - Resource Publishing Settings
- VM Hosted Apps
  - Components of VM Hosted Apps
- Organizing Published Resources for Users
- Advanced Published Resource Settings
  - Access Control
  - Content Redirection
  - Implementing Resource Limits and Client Options
  - Configuring Resource Appearance
- Published Resource Configuration
  - Managing Connections to Resources
  - Disabling or Hiding a Published Resource
- Troubleshooting Application Delivery Issues
- Review

### **Module 8: Streaming Applications**

- Overview
- Application Streaming
  - Application Streaming Components
  - Application Streaming Communication Process
  - Streaming App-V Packages
- Citrix Offline Plug-in
  - Citrix Offline Plug-in Cache
  - Citrix Offline Plug-in Installation
- Citrix Streaming Profiler
  - Profiling Process
  - Installing the Citrix Streaming Profiler
  - Creating a Profile
  - Profile Security Setting
  - Targets
  - Inter-Isolation Communication
  - Profile Preference Settings
  - Profile System Requirements
  - Profile Installation Types
  - Profile Properties
  - Known Limits for Profiling Applications
  - Target Properties
  - Upgrading an Application in a Target
- Application Delivery Methods
  - Benefits of Streaming with Dazzle
- Web Delivery Method
- Streaming to Servers
- Publishing a Streamed Application
  - Specifying an Alternate Profile for a Published Application
  - Enabling the Least-Privileged User Account
- Configuring Sites for Streaming Applications
  - Support for Both Remote and Streaming Applications
- Offline Access Management
  - Indirect Membership to the Offline Access List
  - Providing Offline Access
  - Offline Access Period
  - Renewing Offline Access Period
  - Application Caching
  - Pre-Deployment of Streaming Applications
- Troubleshooting Streaming Issues
- Review

### **Module 9: Configuring Policies**

- Overview

- Group Policy Integration
  - IMA-based Group Policies
  - Group Policy Extensions
  - Group Policy Architecture
- Policy Evaluation
  - Policy Application Process
  - Policy Processing and Precedence
- Policy Rules
- Policy Filtering
- Policy Modeling and Troubleshooting
- Review

### **Module 10: Configuring Load Management**

- Overview
- Load Manager
- Load Balancing
  - Load Balancing Process
- Load Calculation
  - Load Calculations
- Load Evaluator Configuration
  - Creating Custom Load Evaluators
  - Thresholds for Load Management
  - Assigning Load Evaluators to Servers and Applications
- Load Balancing Policies
  - Creating Load Balancing Policies
  - Force Application Streaming
- Preferential Load Balancing
  - Preferential Load Balancing Example
  - Preferential Load Balancing Considerations
- Troubleshooting Load Management Issues
- Review

### **Module 11: Optimizing the User Experience**

- Overview
- Optimizing Session Performance
  - Enabling Display Settings
- HDX Broadcast Session Reliability
  - Enabling HDX Broadcast Session Reliability
- HDX Broadcast Session Reliability Considerations
- HDX RealTime
  - Enabling HDX RealTime
  - Understanding HDX RealTime Design Considerations
- HDX Plug-n-Play
  - Enabling HDX Plug-n-Play
  - Understanding HDX Plug-n-Play Design Considerations
- HDX MediaStream Multimedia Acceleration
  - HDX MediaStream Multimedia Acceleration Benefits
  - Enabling HDX MediaStream Multimedia Acceleration
- HDX MediaStream for Flash
  - Enabling HDX MediaStream for Flash
- SpeedScreen Latency Reduction
  - Enabling SpeedScreen Latency Reduction
- HDX 3D Image Acceleration
  - Enabling HDX 3D Image Acceleration
- HDX 3D Progressive Display
  - Enabling HDX 3D Progressive Display
- User Profiles
  - Differentiating User Profile Types
  - Redirecting User Data
  - Managing User Profiles
  - Enabling Profile Management
  - Understanding the Profile Management Logon Process

- Troubleshooting User Experience Issues
- Review

### **Module 12: Configuring Self-Service Applications**

- Overview
- Citrix Receiver
  - Citrix Receiver for Windows
  - Citrix Receiver for Macintosh
- Citrix Merchandising Server
  - Citrix Merchandising Server Architecture
- Citrix Dazzle
  - Citrix Dazzle Communication Process
- Plug-ins
  - Plug-in Delivery
  - Citrix Online Plug-in for Windows
  - Citrix Online Plug-in for Mac
  - Client for Java
  - Citrix Receiver for Linux
- Troubleshooting Self-Service Application Issues
- Review

### **Module 13: Configuring Printing**

- Overview
- Printing Concepts
  - Printing Definitions
  - Printer Types
  - Printing Security
- Default Printing Behavior
  - Altering the Default Printing Behavior
- Printer Provisioning
  - User Self-Provisioning
  - Printer Auto-Creation
- Printing Pathways
  - Network Printing Pathway
  - Client Printing Pathway
  - Printing Pathway Demonstration
- Printer Drivers
  - Printer Driver Types
- Citrix Universal Printing
  - Enhanced Metafile Format
  - Print Preview
  - Citrix Universal Printer
  - Configuring Citrix Universal Printing
- Administrator-Assigned Network Printers
  - Adding a Network Printer
  - Editing Network Printer Settings
  - Specifying the Default Printer
- Workspace Control and Proximity Printing
  - Configuring Proximity Printing
- Printing Preferences
  - Printing Properties
  - Printing Preference Hierarchy
  - Configuring Printer Property Retention
- Printing Bandwidth
- Troubleshooting Printing Issues
- Review

### **Module 14: Securing XenApp**

- Overview
- XenApp Security Solutions
- SecureICA
- Citrix SSL Relay
  - SSL Relay Communication

- Configuring SSL Relay
- Access Gateway
  - Access Gateway Deployment Scenarios
  - Access Gateway Communications
  - Digital Certificates
  - Securing Access to Hosted Applications
  - SmartAccess
- Web Interface Configuration
  - Access Methods
  - Access Gateway Settings
  - Configuring Web Interface for Access Gateway Connections
- Security Configuration Best Practices
- Troubleshooting Access Gateway with XenApp
- Review

### **Module 15: Monitoring XenApp**

- Overview
- Health Monitoring and Recovery
- EdgeSight Monitoring
  - EdgeSight Components
  - EdgeSight Communication
- License Usage Monitoring
  - Configuring License Alerts
  - Viewing License Usage
  - Viewing Historical License Data
- Workflow Studio Overview
  - Workflow Studio Architecture
  - Workflow Automation Use Cases
- Accessing the Server Farm using PowerShell
- Administering the Server Farm using Commands
- Review

### **Module 16: Additional Components**

- Overview
- SmartAuditor
  - SmartAuditor Components
  - Session Recording Process
- Single Sign-on
  - Single Sign-on Components
  - Single Sign-on Process
- EasyCall Voice Services
  - EasyCall Components
  - EasyCall Process
- Branch Optimization
  - Branch Repeater Components
  - Branch Optimization Process for the Plug-in
- Provisioning Services
  - Provisioning Services Components
- Power and Capacity Management
  - Power Management
  - Load Consolidation
  - Power and Capacity Management Components
  - Power Setpoints
- XenServer
  - XenServer Components
- Review

## **Citrix XenDesktop 5 Topics**

The following outline identifies the Citrix XenDesktop topics included in the course.

**Note:** Not all topics will be covered by lecture. Students are expected to self-study select modules as designated by the instructor.

### **Module 1: Introduction and Course Overview**

- Course Overview
- Course Outline
- Connect with Citrix Education

### **Module 2: Introducing XenDesktop**

- Overview
- Five Core Strengths of XenDesktop
- Desktop Virtualization
- XenDesktop Product Family
- FlexCast
  - Use Cases
  - Virtual Desktop Models
- HDX Technologies
- Hosted Desktop Delivery
- Quick Deploy
  - Quick Deploy System Requirements

### **Module 3: Configuring the Hypervisor for Desktop Delivery**

- Overview
- Virtualization
  - Virtualization Components
- Hypervisors
  - Hypervisor Role in Desktop Delivery
- Windows Virtual Machine Architecture
  - Installation from an ISO
  - To Create an ISO Library
  - Windows Virtual Machine Device Support
  - Windows Virtual Machine Creation
  - XenServer Tools
- Templates and Life-Cycle Operations
  - Virtual Machine Templates
  - To Provision a New Virtual Machine Using a Template
  - Virtual Machine Export and Import
  - Virtual Machine Duplication
  - Snapshots
  - Virtual Machine Operations
- XenConvert
  - To Convert a Server or Desktop to a Virtual Machine
- Virtual Machine Resource Management
- Events and Alerts
- Resource Pools
  - Virtual Machine Movement
- Network Components and Architecture
  - External Networks
  - Internal-only Network
  - NIC Bonds
  - To Create a NIC Bond in XenCenter
  - VLANs
- Storage
  - Storage Repositories
- Remote Storage
  - Storage Capability Comparison
- Troubleshooting Hypervisor Issues

### **Module 4: Installing and Configuring XenDesktop**

- Overview
- XenDesktop Architecture
  - Production Site Configuration
- License File Management

- Obtaining License Files
- Security Considerations
- Active Directory Considerations
  - Supported Active Directory Environments
  - Active Directory-Based Controller Discovery
  - Active Directory Objects
- Configuring a XenDesktop Site
  - To Configure a XenDesktop Site
- Web Interface
  - Web Interface Considerations
- Desktop Delivery Communication Process
  - Access Gateway
  - ICA Proxy Mode
  - Access Gateway Deployment Scenarios
  - Access Gateway Communications
  - Access Gateway Authentication
  - Single Sign-on to Web Interface
  - SmartAccess

### **Module 5: Managing Desktop Catalogs and Groups**

- Overview
- Administration Roles
  - To Add an Administrator Account
- Preparing a Virtual Desktop for Delivery
  - Virtual Desktop Agent Installation
  - Virtual Desktop Agent Wizard Settings
  - Manual Firewall Configuration
- Machine Creation Services
  - Machine Creation Services Host and Storage Requirements
- Desktop Catalogs
  - Machine Types
  - Pooled Machine Type
  - Dedicated Machine Type
  - Existing Machine Type
  - Physical Machine Type
  - Streamed Machine Type
  - Virtual Desktop Updates
  - To Modify the Master Virtual Machine
  - To Revert to the Previous Master Virtual Machine
- Desktop Groups
  - Desktop Group Types
  - Desktop Group Examples
  - To Create a Desktop Group
  - Power Management
  - Pools and Buffers
  - To Configure Power Management
- Troubleshooting Desktop Catalog and Group Issues

### **Module 6: Customizing the User Experience**

- Overview
- User Device Types
  - Display Modes
- Citrix Receiver
  - Citrix Receiver for Windows
  - Citrix Receiver for Windows System Requirements
  - Citrix Receiver for Macintosh
- Citrix Merchandising Server
  - Citrix Merchandising Server Architecture
- Profile Management
  - User Profiles
  - User Profile Types
  - Redirecting User Data

- Managing User Profiles
  - Profile Management Logon Process
  - To Enable Profile Management
- FlexCast for Apps
  - Application Delivery Method
- XenDesktop Policies
  - Policy Creation
  - To Create a Policy
  - Policy Settings
  - Policy Setting Best Practices
  - Policy Prioritization
- Troubleshooting Customization Issues

### **Module 7: Monitoring XenDesktop Sites**

- Overview
- Desktop Director
  - Installing Desktop Director
  - Accessing Desktop Director
  - Desktop Director Pages
  - Filters
  - Searching for a User or Machine
- User and Machine Management
  - Managing Machines
  - Managing End Users
- User Shadowing
  - To Shadow a User
- Troubleshooting Site Monitoring Issues

### **Module 8: Streaming Desktops to Virtual and Physical Machines**

- Overview
- Streamed VHDs and Catalogs
- Provisioning Services
  - Citrix Provisioning Services Infrastructure
  - Citrix Provisioning Services Components
  - Key Services
  - Provisioning Services Administration
- Installation Planning
  - Network Boot Services
  - Boot Process
  - DHCP Deployment Options
  - DHCP Configuration
  - Provisioning Services Farm Design
  - Farms
  - SQL Database Server
  - Service Account Permissions
  - Sites
  - Stores
  - Write Caches
- Storage Requirements
  - Sample vDisk Storage Requirements
- Provisioning Services Installation
  - To Install Provisioning Services
- Provisioning Services Configuration
  - To Configure a Provisioning Services Farm
- Store Configuration
- Troubleshooting Provisioning Services Installation and Configuration

### **Module 9: Creating a Shared vDisk**

- 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
  - Imaging Wizard
  - vDisk File Creation
  - VHD Format
  - vDisk Mounting
  - Formatting a vDisk
- Master Target Device
  - Boot Order
  - Master Target Device Software
  - To Create a Windows Master Target Device using the Imaging Wizard
- XenConvert Overview
  - To Image Windows Target Devices with XenConvert
- Troubleshooting vDisk Creation Issues

## **Module 10: Administering Provisioning Services Components**

- Overview
- Provisioning Services Hosts in the Console
  - Target Device Connections
  - Provisioning Services Host Properties
- Target Device Management
  - Target Device Collection
  - Target Device Views
  - Target Device Properties
- Active Directory Integration
  - Domain Password Management Process
  - Automatic Password Renegotiation
  - To Integrate Active Directory
- vDisk Management
  - vDisk Properties
  - To Create a vDisk File
  - To Unassign vDisks from Target Devices
  - To Delete a vDisk
  - vDisk Locks
  - vDisk Backup
- Streamed Desktop Catalogs
  - To Create a Streamed Desktop Catalog
- vDisk Updates
  - Automatic Update
  - Incremental Update
  - Auto-update Tool
  - Incremental Update Rollback
  - Scheduled vDisk Updates
  - vDisk Update Strategies
- Troubleshooting Provisioning Services Issues

## **Module 11: Delivering Local VM Desktops**

- Overview
- Local VM Desktops with XenClient
  - XenClient Architecture
  - Synchronizer for XenClient
- XenClient Installation
  - To Install XenClient
- XenClient Configuration

- Receiver for XenClient
- To Create a Virtual Machine
- XenClient Tools
- Synchronizer Installation and Configuration
  - Image Management
  - To Upload a Virtual Machine to the Synchronizer
  - To Assign Desktops to End Users
  - User Management
  - To Create a Local User or Group
  - To Link an Existing AD User or Group
  - Device Management
- XenClient User Experience
  - Secure Application Sharing
- Troubleshooting Local VM Desktop Issues

## **Module 12: XenDesktop 5.5 New Features**

- What's New in XenDesktop 5.5?
  - Flash Redirection
  - HDX 3D Pro
  - IntelliCache
  - XenDesktop 5.x Migration Tool

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