

# Citrix Certified Professional - Virtualization (CCP-V)



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## Course Modules



### 1. Architecture Overview

- StoreFront Server Redundancy
- StoreFront Server Scalability
- Citrix Gateway Redundancy
- Citrix Gateway Scalability
- Citrix Delivery Controller Redundancy
- Delivery Controller Scalability
- Citrix Cloud Connector Redundancy
- Citrix Cloud Connector Scalability
- Considerations
- Citrix License Server Redundancy Options
- and Scalability
- Site Database Redundancy Options
- Site Database Scalability
- Citrix Director Redundancy & Scalability
- Determine Redundancy Requirements for
- Machines Running the Virtual Delivery
- Agent
- Assess the Performance of Machines
- Running the Virtual Delivery Agent
- Optimizing the Performance of Windows
- Workloads



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## 2. Manage a Virtual Apps & Desktops Environment

- What are Zones?
- Zones Deployment Options
- FMA Zones Architecture (Deployment Example) (Hidden Slide)
- Primary Zone
- Satellite Zones
- Reason to Create Zones
- Zones with Citrix Cloud
- VDA Registration Process and Methods
- Single Zone (Registration Communication Process)
- Multi Zone: Registration Communication Process
- Failover Registration
- Moving a Catalog from One Zone to
- Another Zones
- Zone Preference (The default Zone Preference priority order)
- Customize Zone Preference
- Zone Preference (Order of Preference)
- Standard Routing
- Optimal Gateway Routing
- Optimal Gateway Routing Configuration
- Optimal Gateway Routing and Zones
- StoreFront Resource Aggregation
- Configure StoreFront Resource Aggregation



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- Subscription Store
- Replicating Subscriptions between Stores in a
- Server Group
- Replicating Subscriptions between
- StoreFront Server Groups
- Configuring Subscription Synchronization



## 3.Implement Backups and Disaster Recovery

- Determining backup requirements and location
- StoreFront Configuration
- User Data (User profiles / home folders)
- Application Data
- Golden Images
- Understand Disaster Recovery
- Access During a DR Event
- Resources During a DR Event
- Disaster Recovery and Citrix Cloud
- Failing Over to a DR Environment
- Returning to Normal Operations



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## 4. Implement Advanced Authentication Methods

- One Time Passwords (OTP)
- What is RADIUS?
- Citrix Gateway and RADIUS
- Authentication
- Smart Cards with Citrix Virtual Apps and
- Desktops
- Smart Card PIN Prompts with Citrix
- Virtual Apps and Desktops
- Federated Identity Solutions Utilize
- Claims-based Identity
- Active Directory Federation Services
- (ADFS) and Security Assertion Markup
- Language (SAML)
- Citrix and SAML/ADFS



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## 5.Improve App and Data Security

- User Assignments
- Remove Undesired Windows and Citrix Functionality
- Application and Web Browser Hardening
- Restrict Access to Internal Tools
- Application Whitelisting/Blacklisting
- Implementing Defense in Depth
- Breaking Out of the Application (Attacker Example)
- Separate Applications Based on their Security Sensitivity
- Use NTFS to Isolate Applications on the Same Server
- Use Citrix Analytics to Detect Attacks and
- Apply Mitigations
- Session Recording
- How Session Recording Works

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## 6. Secure Machines Running the Virtual Delivery Agent

- Limitations for Default Deployment
- Securing Internal Traffic with Secure ICA Policy
- Securing Internal Traffic with Secure ICA (TLS Encryption)
- Secure the VDA
- Harden Components by Using a Golden Image
- Enable Cryptographic Checksum & Hashes on Golden Image & OS
- Creating a Locked-down VM Template
- Separate Policies for Users/Admins
- Citrix Security and Control Policy Template
- Citrix Policy Example (Clipboard Redirection)
- Citrix Policy Guides
- Using Citrix Gateway
- Smart Access & Smart Control with Citrix Virtual Apps & Desktops
- Can I Use Registry Changes to Provide Further Lockdowns



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## 7. Advanced Troubleshooting

- Citrix Director
- Environment Tests
- Citrix Diagnostics Toolkit
- Citrix Scout
- Citrix Supportability Pack
- Citrix Insight Services
- CDF Tracing Overview
- CDF Tracing Tools PowerShell
- When and how to use resource tools.
- PowerShell Structure Cmdlet Syntax
- PowerShell is Citrix Virtual Apps and Desktops
- Citrix Virtual Apps and Desktops
- Cmdlets Syntax
- Using Get-Command
- Using Get-Help
- Using Show-Command
- Troubleshooting StoreFront Credential Wallet
- Enumeration Subscriptions Store
- Troubleshooting Citrix Gateway
- Logn Pg Nt Accessbl unbl to Authntct through Citrix Gateway
- Error Message Appears after Authenticating



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- Application Launch Issues through Citrix Gateway
- FMA Services
- Central Configuration Service (CSS)
- FMA Services and PowerShell
- SQL Connections Complete Connections and Communication
- Troubleshooting VDA Registration
- Registration Communication Process
- Common Registration Failures
- Tshooting Methods Complete Connections & Communication
- Tshooting HDX Conctns Anlyzg Conctn Requests Load mngmt
- Complete Connections and Communication



## 8.App Layering and Creating the Layers

- Architecture Diagram
- Technical Overvw ELM Server (Enterprise Layer Manager (ELM))
- Configure the ELM Server
- How App Layering Creates Layers (Process Flow)
- How App Layering Creates a VM
- The Layered Image Boot Process Flow
- Citrix App Layering Management Console
- App Layering Connectors
- Create an OS Layer (The Process of Preparng an Operatg System)
- Create an OS Layer (Enterprise Layer Manager (ELM) Preparatn)



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- How Many OS Layers? (How many do we need to build?)
- Create a Platform Layer (The Process)
- Are Platform Layers Optional? (How many do we need to build?)
- Create an App Layer (The Process)
- How Many App Layers? (How many do we need to build?)
- Update a Citrix Virtual Apps & Desktops Catalog
- Elastic App Layering
- Elastic App Layer Use Case
- How Many Elastic Layers? (How many do we need to build?)
- Types of User Layers
- Requirements for all User Layers
- Requirements for Full User Layers
- User Layer Location Considerations for Config Storage Locations
- Configure Security Settings on User Layer Folders

## 9. Deploy a Layered Image using Citrix Virtual Apps & Desktops

- Create a Template (The Process)
- OS Layers
- Platform Layers
- App Layers
- Elastic Layers
- User Layers
- Citrix Virtual Apps and Desktops



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- Approach without App Layering
- Citrix Virtual Apps and Desktops
- Approach with App Layering
- Installing the Virtual Delivery Agent
- (Preparing the Eventual Layered Image for MCS)
- Using App Layering with MCS

## 10. Explore Layer Priority & Maintain an App Layering

- Layer Priority
- How does Layer Priority Work?
- Layer Priority Change Scenario
- Updating Layers
- Layer Update
- Layer Deletion
- ELM Server Coordination and Management
- ELM Backup Server
- ELM multi-location
- Creating Backups for Layers
- ELM Server Periodic Updates
- Updating the ELM Server
- Layering Anti-Virus
- Layering Microsoft Office
- Layering Microsoft Office 365



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## 11. Workspace Environment Management (WEM) Administration

- What is Workspace Environment
- Management (WEM)?
- WEM Technical Components
- Overview (On-premises)
- WEM Technical Components
- Overview (Citrix Cloud Service)
- Infrastructure Services (The Role)
- WEM Initial Installation
- The WEM Administration Console
- The WEM Agent
- The WEM Agent (Processing Cache)
- SQL Server Database
- Active Directory
- Configuration Set
- Configuration Set vs. User Settings
- User Statistics vs. Agent Statistics
- Delegating Administration
- Administrator Permissions
- Monitoring



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## 12. Use WEM to Centralize Environment Management

- Adding Users and Machines to WEM
- Actions Filters
- Conditions Assignments
- Citrix Profile Management
- Citrix Profile Management Health Status
- Transformer Settings
- General Settings
- Advanced Settings
- Advanced and Administration Settings
- Logon/Logoff & Power Settings
- Login Time Scenario - Without WEM
- Login Time Scenario - With WEM
- Use WEM to Enforce Security on
- the Machine Running the VDA
- Application Security
- Process Management
- Environmental Settings



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## **13. Migrate and Upgrade WEM**

- To Make the Move Process
- Common Features to Move
- Migratg frm On-Premises WEM to the WEM Citrix Cloud Service
- WEM Component Upgrade Order
- Step 1: Upgrade the Infrastructure Services
- Step 2: Upgrade the Database
- Step 3: Upgrade the Administration Console
- Step 4: Upgrade the Agent
- Implement Multiple WEM Brokers
- Load Balance Multiple WEM Brokers
- Multi-Datacenter Architecture Options

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