

# Exam 70-413: Designing and Implementing a Server Infrastructure

## Course Overview

This course teaches students about server infrastructure upgrades and migration, storage and file services, network infrastructure services, planning for external user access, designing and implementing logical AD infrastructure, AD GPO, designing a physical AD infrastructure, and domain controllers.

### Course Introduction

5m

Course Introduction

### Module 01 - Server Infrastructure - Upgrade and Migration

2h 14m

Server Infrastructure - Upgrade and Migration

Planning for Deployment

Windows Server Editions

Choice Summary

Pre-installation Requirements

Windows Server 2012 Upgrades

Upgrade Options

Migration to Windows Server 2012

Roles That Can Be Migrated

Roles That Can Be Combined on a Single Server

MAP Toolkit

Windows Assessment and Deployment Kit (ADK)

Windows Server 2012 Licensing

Activation Strategies

Considerations for Virtualization

Virtualization Planning

Hyper-V Virtual Licensing

Planning Hardware for Hyper-V Hosts

Deployment Considerations for Virtualized Workloads

Tools for Deploying Virtual Machines

Virtual Machines and Domain Controllers

Cloning Domain Controllers

Demo - Cloning Domain Controllers

VHDs

VHDXs

Imaging Strategies

Windows Imaging Format

WIM File Structure

High Touch Retail Media Deployments

High Touch with Retail Media Deployment Steps

High Touch Standard Image Deployment

High Touch with Standard Image Process

Lite Touch

Zero Touch High-Volume Deployments

Designing the ZTI Environment

Automated Deployment Methods

Types of Images  
Choosing a Deployment Method  
Deployment Scenarios  
Tools for Image-Based Installation of Windows  
ImageX Tasks  
Image Servicing and Management: DISM  
Windows AIK  
Tools Available in Windows AIK  
Demo - Installing Windows AIK  
Windows PE  
Windows DS  
Windows DS Architecture  
New Features in Windows DS  
MDT 2012  
Configuration Manager  
Configuration Manager Task Sequence and Packages  
Module 01 Review

## **Module 02 - Storage and File Services**

1h 38m

Storage and File Services  
Direct Attached Storage (DAS)  
Network Attached Storage (NAS)  
Storage Area Network (SAN)  
SAN Components  
iSCSI  
iSCSI Target Server and iSCSI Initiator  
iSCSI Target Server Scenarios  
Windows Server 2012 R2 New and Changed Functionality  
iSCSI and High-Availability  
Defense in Depth  
DFS  
DFSR Replication  
Standalone DFS Namespace  
Domain DFS Namespace  
DFS Uses  
Demo - Deploying and Configuring DFS  
BranchCache  
BranchCache Modes  
Procedure Reference to Install  
Demo - Implementing BranchCache  
Discretionary Access Control  
Dynamic Access Control  
DAC Scenarios  
DAC Requirements  
Central Access Policy  
Creating Central Access Policies  
Implementing Central Access Policy  
DAC Claims  
Creating Claims  
Resource Properties  
Accessing Resources with DAC  
Enabling Support in AD DS KDC  
Creating Resource Properties

Central Access Control Rules  
File Access Auditing  
Planning for Access Denied Assistance  
Dynamic Access Control Prerequisites  
Module 02 Review

**Module 03 - Network Infrastructure Services**

2h 51m

Network Infrastructure Services  
Best Practices for Designing an IPv4 Addressing Scheme  
How to Plan and Implement the Appropriate Addressing Scheme  
Selecting an Address Scheme (eNotes)  
DHCP Server Placement Infrastructure  
DHCP Redundancy Options  
DHCP Failover  
DHCP Super Scopes  
DHCP Reservations  
DHCP Option Classes  
IPv6 Autoconfiguration  
Autoconfigured Address States  
Improved PowerShell Commands for DHCP in Server 2012 R2  
New PowerShell Commands for DHCP  
New PowerShell Commands for DHCP (Cont)  
DHCP Guidelines  
IPAM Definition and Benefits  
IPAM  
IPAM and DHCP  
IPAM Components  
Role Based Access Control  
Role Based Access Control Roles Provided by Default  
IPAM Prerequisites  
IPAM Database Support  
IPAM Users and Groups  
Manual Provisioning for IPAM  
Manual Provisioning for IPAM (Cont)  
IPAM Design Considerations  
IPAM Views  
IPAM Monitoring  
DNS Namespace Design  
Evaluating a Namespace Design  
DNS Namespaces (eNotes)  
NetBIOS Name Resolution  
GlobalNames  
WINS vs. GNZ  
DNS and AD DS  
DNS Records Needed by AD  
Demo - DNS Records Needed by AD  
DNS Design Considerations  
Integrating Multiple DNS Namespaces  
DNS Application Partitions  
DNS Server Capacity Planning  
Demo - Performance Monitor and DNS  
DNS Server Roles  
DNS Zone Types

DNS Zone Delegation  
Zone Transfers and Replications  
DNS BIND Versions  
Zone Transfer Security  
Root Hints Servers  
Optimizing DNS Root Hints  
DNS Forwarders | Conditional | Stub Zones  
Demo - Configuring Zone Transfers  
NetBIOS Name Resolution (Cont.)  
Demo - Creating DNS Zones  
Optimizing Queries  
Optimizing DNS Server  
Optimizing Active Directory Integrated Zones  
DNS and High-Availability  
Common DNS Security Issues  
DNS Security Levels  
Additional DNS Security Settings  
Module 03 Review

**Module 04 - Planning for External User Access**

2h 5m

Planning for External User Access  
Types of Network Access Services  
Types of Users  
Considerations of Data to Access  
Remote Access Methods  
Tunneling Protocols: PPTP  
Tunneling Protocols: L2TP  
Tunneling Protocols: SSTP  
Tunneling Protocols: IKEv2  
Authentication Protocols and Methods  
Encryption Protocols and Methods Set  
Planning for Remote Access  
New Features in Remote Access Windows Server 2012  
New Features Windows 8.1  
Placement of VPN Servers  
Network Access Policies  
Connection Request Policies  
How Policies are Applied  
Order of Applying Connections  
Demo - Creating a VPN  
Perimeter Networks  
Common Perimeter Network Applications and Protocols  
Types of Firewall Configurations  
Windows Firewall with Advanced Security  
Secure Outside Access Options  
DirectAccess  
DirectAccess Server Functions  
DirectAccess Infrastructure Prerequisites  
DirectAccess Server Prerequisites  
DirectAccess Client Prerequisites  
Methods of Client Connections  
DirectAccess Client Connections  
Planning DirectAccess

Getting Ready: DirectAccess  
Configure DirectAccess Server  
DirectAccess with a Single Network Card  
RADIUS Authentication and NPS  
NPS RADIUS Server  
RADIUS Proxy  
RADIUS Client  
RADIUS Client Examples  
Connection Request Policies Conditions | Settings  
Conditions | Settings | Default Connection Policy  
Connection Request Processing  
Network Security  
Defense in Depth  
Network Policies  
Points of Failure for Security Policies  
Employee Training  
Reasons For Network Attacks  
Types of Network Attacks  
STRIDE Model  
Security Measures  
Windows Firewall  
Connection Security Rules  
IPsec  
Server and Domain Isolation  
Authentication Options  
Best Practices  
Demo - Connection Security Rules  
Module 04 Review

## **Module 05 - Design and Implement Logical AD Infrastructure**

3h 38m

Design and Implement Logical AD Infrastructure  
AD DS Forest Designed  
Forest Models: Single  
Forest Models: Organizational  
Forest Models: Resource Forest Model  
Forest Models: Restricted Access  
Benefits of Multiple Forests  
Guidelines for Designing AD DS Forests  
Demo - Creating a Forest Root  
Demo - Viewing and Editing the Schema  
Forest Trusts  
Security Considerations Forest Trust  
Accessing Resources in Another Forest  
Forest Trust Guidelines  
Demo - Creating a Forest Trust  
AD DS Domains  
Domain Models  
Forest Root Domains  
Password Policies  
Demo - Install Second Domain Controller to Domain  
Items That Affect Domain Design  
Replication and WAN Links  
Trust Relationships

Trusts within a Domain  
Trusts Between Domains  
Shortcut Trusts  
External Trusts  
Realm Trusts  
Best Practice for Domain Trusts  
AD Delegation Options  
Delegation Models  
Examples of Delegation  
Administrative Models  
How to Start Planning Resource Management  
Administrative Permissions  
Branch Office Management  
OU Strategies  
Users and Permissions  
OU Security Descriptors  
Demo - Exploring AD Permissions within OU Structure  
Delegation Administrative Methods  
Where OU Permissions Fall  
Examples of Permissions at OU Level (eNotes)  
OU Accidental Deletion  
Protecting OUs using PowerShell  
Demo - Protecting OUs using PowerShell  
Active Directory Groups  
Group Scope and Nesting  
Demo - Creating Groups with Active Directory Administration Center  
Demo - Creating Groups with PowerShell  
Group Strategy  
Default Groups  
Protected Users Security Group  
Protected Users Security Group User Limitations  
Special Identities  
Computer Accounts  
Best Practices  
Module 05 Review

## **Module 06 - AD GPO**

51m

AD GPO  
Factors for Group Policy Design  
Planning for Desktop Environments with Group Policy  
Planning Group Policy for Administrative Models  
Group Policy Components  
Uses for Group Policy  
Demo - Group Policy Categories  
Group Policy Templates  
Nodes: Computer  
Nodes: User  
Group Policy Preferences  
Configuring Group Policy Preference  
GPO Design Considerations  
Group Policy Inheritance  
Group Policy Filtering  
Group Policy Processing

Group Policy, Backup and Restore and Documentation  
PowerShell Cmdlets  
Migrating GPOs to a New Domain Set  
Migration Table Editor  
Administration of Group Policy  
Slow Link Detection  
Module 06 Review

**Module 07 - Designing a Physical AD Infrastructure**

41m

Designing a Physical AD Infrastructure  
AD DS Sites  
Location of AD DS Site Configuration  
Replication Traffic  
Service Localization  
Designing AD DS Sites  
Factors that Determine AD DS Site Design  
Automatic Site Coverage  
AD DS and DNS  
AD DS Site Considerations  
Domain Controller Placement  
AD DS Replication Components: Connection Objects  
AD DS Replication Components: Notification and Polling  
KCC  
ISTG - Intersite Topology Generator  
Replication Topologies: Ring  
Replication Topologies: Hub and Spoke  
Replication Topologies: Full Mesh  
Replication Topologies: Hybrid  
Replication Protocols  
Notes on SMTP  
Replication and RODCs  
Replication and Global Catalogs  
Replication and SYSVOL  
Site Links  
Bridgehead Servers  
Site Link Bridging  
Virtualized Domain Controllers  
Cloning Virtual Domain Controllers  
Process: Cloning Server 2012 VDC  
DcCloneConfig.xml Syntax  
DcCloneConfig.xml Parameters  
Domain Controller Safe Backup and Restore  
PowerShell for Hyper-V Snapshot Management  
Module 07 Review

**Module 08 - Domain Controllers**

36m

Domain Controllers  
Hardware Requirements for Domain Controllers  
Installing Server Core  
FSMO Roles  
FSMO Locations  
RODC Limitations

Tools For Monitoring Domain Controllers  
Best Practices Analyzer  
Demo - Best Practices Analyzer  
Security Best Practices  
High-Availability  
Defining High-Availability Needs for Active Directory  
Active Directory, High-Availability  
DNS High-Availability  
Backup and Recovery AD DS  
Types of Backups  
Backing Up Critical Volumes  
Active Directory Restores  
Restoring Active Directory  
Active Directory Recycle Bin  
Module 08 Review  
Course Closure

**Total Duration:** 14h 40m