

# 70-413: Designing and Implementing a Server Infrastructure

## Course Overview

This course covers everything you need to know about designing and implementing a server infrastructure. Students will learn about server infrastructure upgrade and migration, storage and file services, designing a physical AD infrastructure, and planning for external user access. Students will also learn about designing and implementing logical AD infrastructure, AD GPO, network infrastructure services, and domain controllers.

## Course Outline

### Course Introduction

5m

Course Introduction

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

2hr 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**

1hr 26m

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 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  
Dynamic Access Control  
Central Access Policy  
Creating Central Access Policies  
Implementing Central Access Policy  
File Access Auditing  
Planning for Access Denied Assistance  
Dynamic Access Control Prerequisites  
Module 02 Review

### **Module 03 - Network Infrastructure Services**

2hr 40m

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  
DHCP Guidelines  
IPAM Definition and Benefits  
IPAM  
IPAM Components  
IPAM Prerequisites  
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**

2hrs 1m

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  
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**

3hr 30m

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 Affected 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  
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**

33m

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  
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:** 13h 56m