Module Overview

• Overview of AD DS
• Overview of Domain Controllers
• Installing a Domain Controller
Lesson 1: Overview of AD DS

- Overview of AD DS
- What Are AD DS Domains?
- What Are OUs?
- What Is an AD DS Forest?
- What Is the AD DS Schema?
Active Directory Domain Services (AD DS) is composed of both logical and physical components

<table>
<thead>
<tr>
<th>Logical components</th>
<th>Physical components</th>
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<tbody>
<tr>
<td>• Partitions</td>
<td>• Domain controllers</td>
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<tr>
<td>• Schema</td>
<td>• Data stores</td>
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<tr>
<td>• Domains</td>
<td>• Global catalog servers</td>
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<td>• Domain trees</td>
<td>• Read-only domain controllers (RODC)</td>
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<tr>
<td>• Forests</td>
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<tr>
<td>• Sites</td>
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<td>• Organizational units (OUs)</td>
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<td>• Containers</td>
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What Are AD DS Domains?

• AD DS requires one or more domain controllers
• All domain controllers hold a copy of the domain database which is continually synchronized
• The domain is the context within which user accounts, computer accounts, and groups are created
• The domain is a replication boundary
• The domain is an administrative center for configuring and managing objects
• Any domain controller can authenticate any sign-in anywhere in the domain
• The domain provides authorization
What Are OUs?

• Containers that can be used to group objects within a domain

• Create OUs to:
  • Configure objects by assigning GPOs
  • Delegate administrative permissions

OUs are represented by a folder with a book on it

Containers are represented by a blank folder
What Is an AD DS Forest?

- **Tree Root Domain**: fabrikam.com
- **Forest Root Domain**: adatum.com
- **Child Domain**: atl.adatum.com

The diagram illustrates the relationship between these domains within an Active Directory Domain Services (AD DS) forest.
What Is the AD DS Schema?

The Schema defines the objects that can be stored in AD DS.
What Is New for Windows Server 2012 Active Directory?

Improvements for using consumer devices in the enterprise:

**Workplace Join**
- Allows consumer devices to be joined to the domain

**Web Application Proxy**
- Allows applications to be published to the Internet

**Multi-Factor Access Control**
- Allows claims using different factors

**Multi-Factor Authentication**
- Allows you to specify the use of multiple factors for authentication
Lesson 2: Overview of Domain Controllers

- What Is a Domain Controller?
- What Is the Global Catalog?
- The AD DS Sign-in Process
- Demonstration: Viewing the SRV Records in DNS
- What Are Operations Masters?
What Is a Domain Controller?

Domain Controllers

- Servers that host the AD DS database (Ntds.dit) and SYSVOL
- Kerberos authentication service and Key Distribution Center (KDC) services perform authentication

Best practices:
  - Availability:
    At least two domain controllers in a domain
  - Security:
    RODC and BitLocker
What Is the Global Catalog?

The Global catalog:
- Hosts a partial attribute set for other domains in the forest
- Supports queries for objects throughout the forest

Global catalog server
The AD DS Sign-in Process

The AD DS sign-in process:

1. The User Account is authenticated to the domain controller.
2. The domain controller returns a ticket-granting ticket (TGT) back to client.
3. The client uses TGT to apply for access to the workstation.
4. The domain controller grants access to the workstation.
5. The client uses TGT to apply for access to the server.
6. The domain controller returns access to the server.
Demonstration: Viewing the SRV Records in DNS

In this demonstration, you will see how to use DNS Manager to view SRV records.
What Are Operations Masters?

In the multi-master replication model, some operations must be single master.

Many terms are used for single master operations in AD DS, including the following:

- Operations master (or operations master roles)
- Single master roles
- Flexible single master operations (FSMOs)

<table>
<thead>
<tr>
<th>The five FSMOs are:</th>
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<tbody>
<tr>
<td><strong>Forest:</strong></td>
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<tr>
<td>• Domain naming master</td>
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<tr>
<td>• Schema master</td>
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<tr>
<td><strong>Domain:</strong></td>
</tr>
<tr>
<td>• RID master</td>
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<tr>
<td>• Infrastructure master</td>
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<tr>
<td>• PDC Emulator master</td>
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Lesson 3: Installing a Domain Controller

• Installing a Domain Controller from Server Manager
• Installing a Domain Controller on a Server Core Installation of Windows Server 2012
• Upgrading a Domain Controller
• Installing a Domain Controller by Using Install from Media
• What Is Windows Azure Active Directory?
• Deploying Domain Controllers in Windows Azure
Installing a Domain Controller from Server Manager

Deployment Configuration page of the Active Directory Domain Services Configuration Wizard
Installing AD DS is a two-step process regardless of which installation method you use.

• Method 1, use Server Manager on a Windows 2012 server with a GUI interface to connect to the system
  1. Install the files by installing the Active Directory Domain Services role
  2. Install the domain controller role by running the Active Directory Domain Services Configuration Wizard

• Method 2, Use Windows PowerShell locally
  1. Install the files by running the command `Install-WindowsFeature AD-Domain-Services`
  2. Install the domain controller role by running the command `Install-ADDSDomainController`
Upgrading a Domain Controller

Options to upgrade AD DS to Windows Server 2012:

• In-place upgrade (from Windows Server 2008 or Windows Server 2008 R2)
  • Benefit: Except for the prerequisite checks, all the files and programs stay in-place and there is no additional work required
  • Risk: May leave legacy files and DLLs

• Introduce a new Windows Server 2012 server into the domain and promote it to be a domain controller
  • This option is usually the preferred choice
  • Benefit: The new server has no accumulated legacy files and settings
  • Risk: May need additional work to migrate administrators’ files and settings
Installing a Domain Controller by Using Install from Media

Additional Options page of the Active Directory Domain Services Configuration Wizard
What Is Windows Azure Active Directory?
• Windows Server 2012 is cloud-ready and virtualization safe

• Considerations for deploying in Windows Azure include:
  • Rollback
  • Resource limitations

• Virtualization considerations for deploying AD DS
  • Time synchronization
  • Single point of failure
Lab: Installing Domain Controllers

- Exercise 1: Installing a Domain Controller
- Exercise 2: Installing a Domain Controller by Using IFM

Logon Information

Virtual machines 20410C-LON-DC1
    20410C-LON-SVR1
    20410C-LON-RTR
    20410C-LON-SVR2

User name  Adatum\Administrator
Password  Pa$$w0rd

Estimated Time: 45 minutes
You have been asked by your manager to install a new domain controller in the data center to improve sign-in performance. You have been asked also to create a new domain controller for a branch office by using IFM.
Lab Review

• Why did you use Server Manager and not Dcpromo.exe when you promoted a server to be a domain controller?
• What are the three operations masters found in each domain?
• What are the two operations masters that are present in a forest?
• What is the benefit of performing an IFM install of a domain controller?
Module Review and Takeaways

• Review Questions