What is AD Domain?

Active Directory Domain Structure Operational Units Devices Users

OU

Domain

OU   OU

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Device 1

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Users

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Device 2

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

# Overview of AD DS

AD DS is composed of both logical and physical components

Logical components	Physical components
- Partitions - Schema - Domains - Domain trees - Forests - Sites - OUs - Containers	- Domain controllers - Data stores - Global catalog servers - RODCs

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

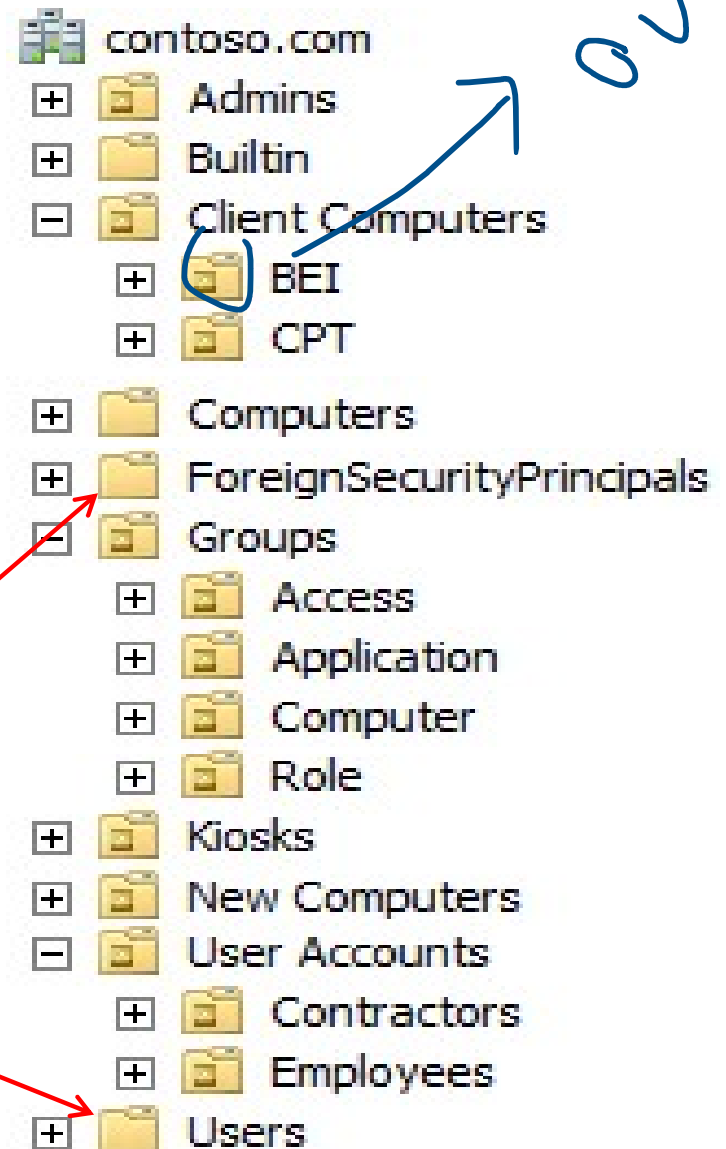Users

AD DS

Computers
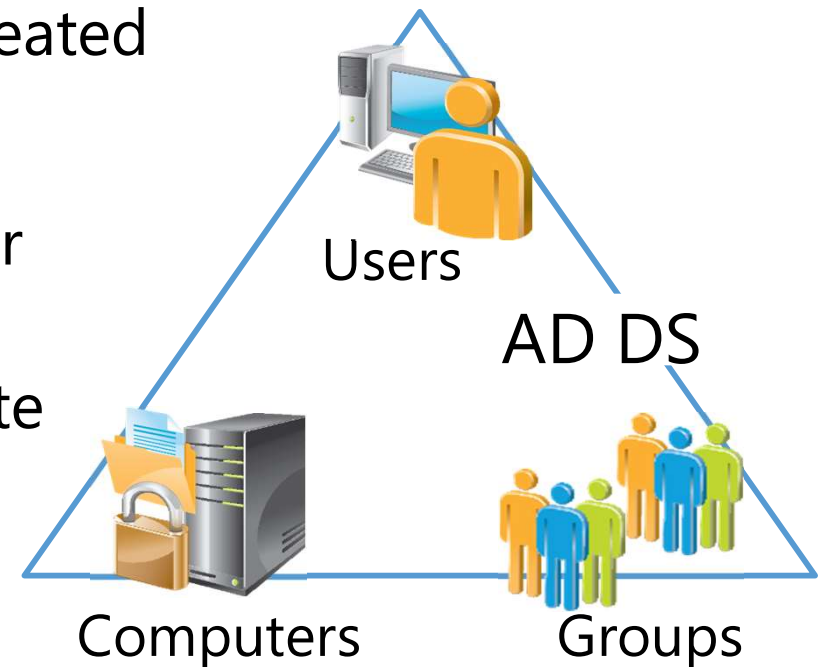
Groups

What Are OUs?

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

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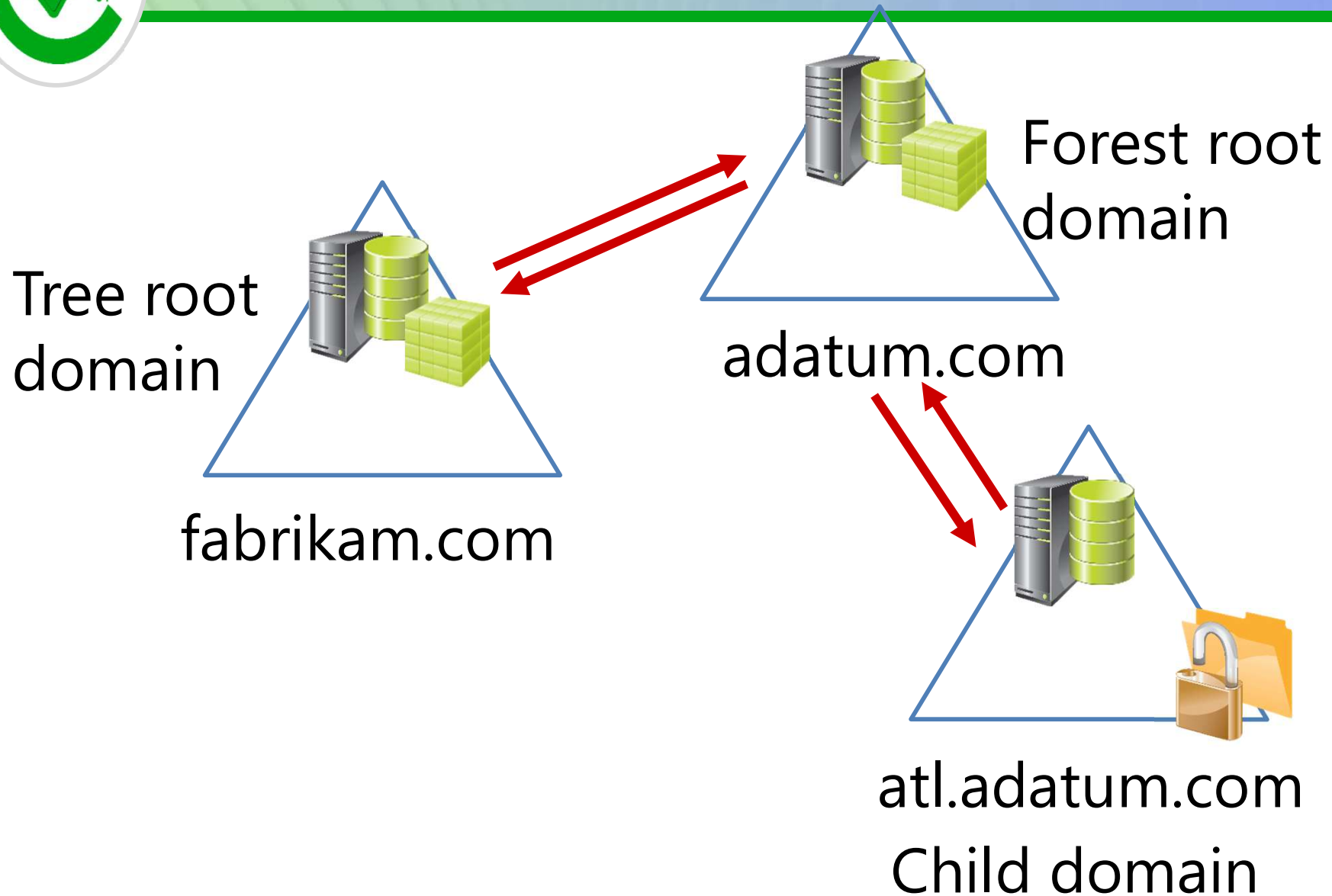 - Delegate administrative permissions

OUs are represented by a folder with a book on it

Containers are represented by a blank folder

```
contoso.com
  [+] Admins
  [+] Builtin
  [-] Client Computers
      [+] BEI
      [+] CPT
  [+] Computers
  [+] ForeignSecurityPrincipals
  [-] Groups
      [+] Access
      [+] Application
      [+] Computer
      [+] Role
  [+] Kiosks
  [+] New Computers
  [-] User Accounts
      [+] Contractors
      [+] Employees
  [+] Users
```

OU

What Is an AD DS Forest?

Forest root domain

adatum.com

Tree root domain

fabrikam.com

atl.adatum.com

Child domain
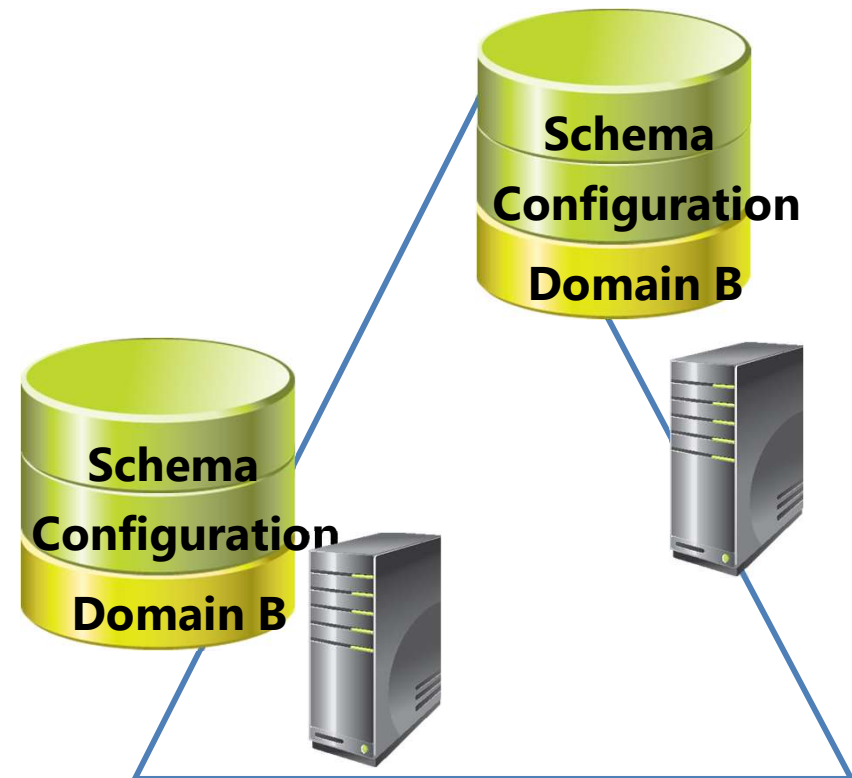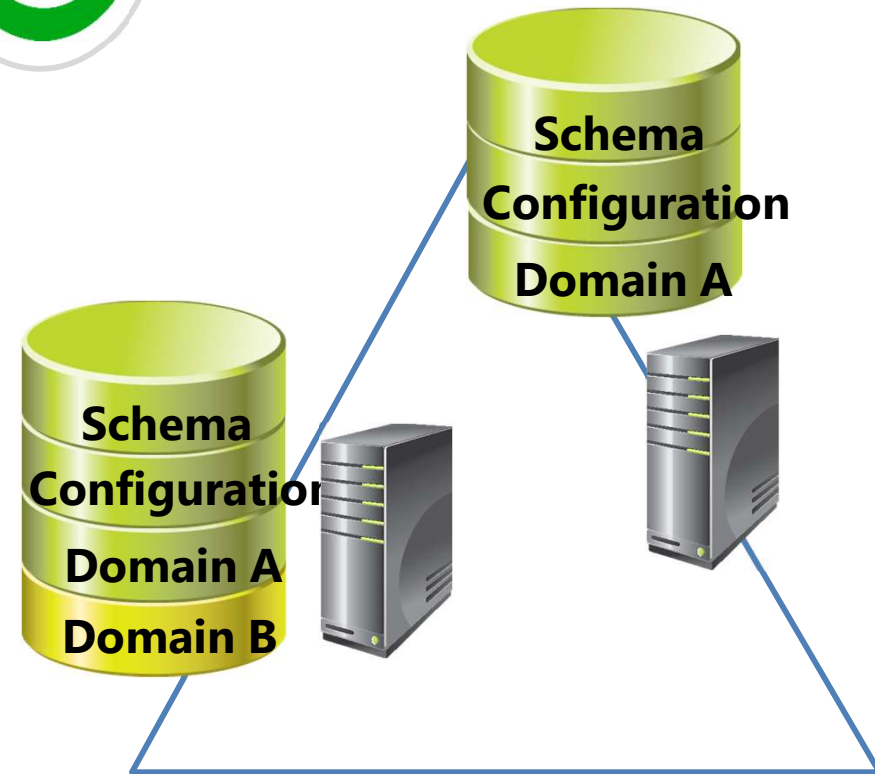
What Is a Domain Controller?

Domain controllers

- Servers that host the AD DS database (Ntds.dit) and SYSVOL

- Kerberos authentication service and KDC services perform authentication

- Best practices:

  - Availability:

    At least two domain controllers in a domain

  - Security:

    RODC and BitLocker

What Is the Global Catalog?

Schema
Configuration
Domain A

Schema
Configuration
Domain A
Domain B

Schema
Configuration
Domain B

Schema
Configuration
Domain B

Global catalog
server

AD
DS

The global catalog:

Hosts a partial attribute set for other domains in the forest

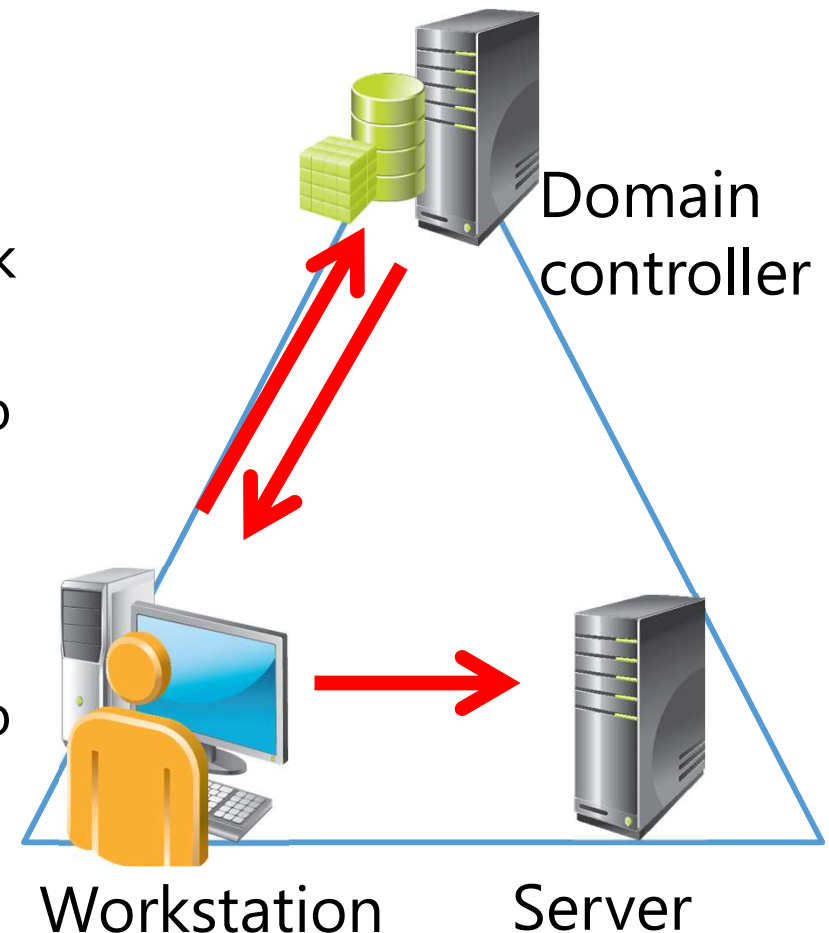Supports queries for objects throughout the forest

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 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.

Domain controller

Workstation

Server

Deployment Configuration section of the
Active Directory Domain Services Configuration Wizard

Select the deployment operation

- ⦿ Add a domain controller to an existing domain
- ○ Add a new domain to an existing forest
- ○ Add a new forest

Specify the domain information for this operation

Domain: * [   ] [Select...]

Supply the credentials to perform this operation

\<No credentials provided\>   [Change...]

Installing a Domain Controller on a Server Core Installation of Windows Server 2012

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, or remotely using WinRM
  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 to Windows Server 2012
  - ✅ 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 preferable
  - ✅ Benefit: The new server has no accumulated legacy files and settings
  - ❌ Risk: May need additional work to migrate administrators' files and settings

Install from Media section on the Additional Options page of the Active Directory Domain Services Configuration Wizard

Specify IFM options

☑ Install from media path   k:\   Verify

Specify additional replication options

Replicate from: Any domain controller ▾

Replicate application partitions: Add...

Remove

Deploying and Managing Windows Server 2012

- Windows Server 2012 Overview
- Installing Windows Server 2012
- Post-Installation Configuration of Windows Server 2012
- Overview of Windows Server 2012 Management
- Introduction to Windows PowerShell

What Is Server Core?

Server Core:

- Is a more secure, less resource-intensive installation option
- Can be converted to full graphical shell version of Windows Server 2012
- Is the default installation option for Windows Server 2012
- Is managed locally using sconfig.cmd

With remote management enabled, you rarely will need to sign in locally

Windows Server 2012 R2 Roles

Roles

- Roles are made up of role services components that provide additional functionality associated with the role

- In Server Manager 2012, console servers with a similar role are grouped together

- Role deployment also includes the configuration of dependencies

What Are the Windows Server 2012 Features?

Features:

- Are components that support the server such as Windows Server Backup or Failover clustering
- Usually do not provide a service directly to clients on the network

Keep in mind the following points:

- Roles can have features as dependencies
- Features on Demand are features that need to be installed using a mounted image as a source

Lesson 2: Installing Windows Server 2012

- Installation Methods
- Installation Types
- Choosing Whether to Upgrade or Migrate
- Hardware Requirements for Windows Server 2012 R2
- Installing Windows Server 2012
- Migrating Server Roles

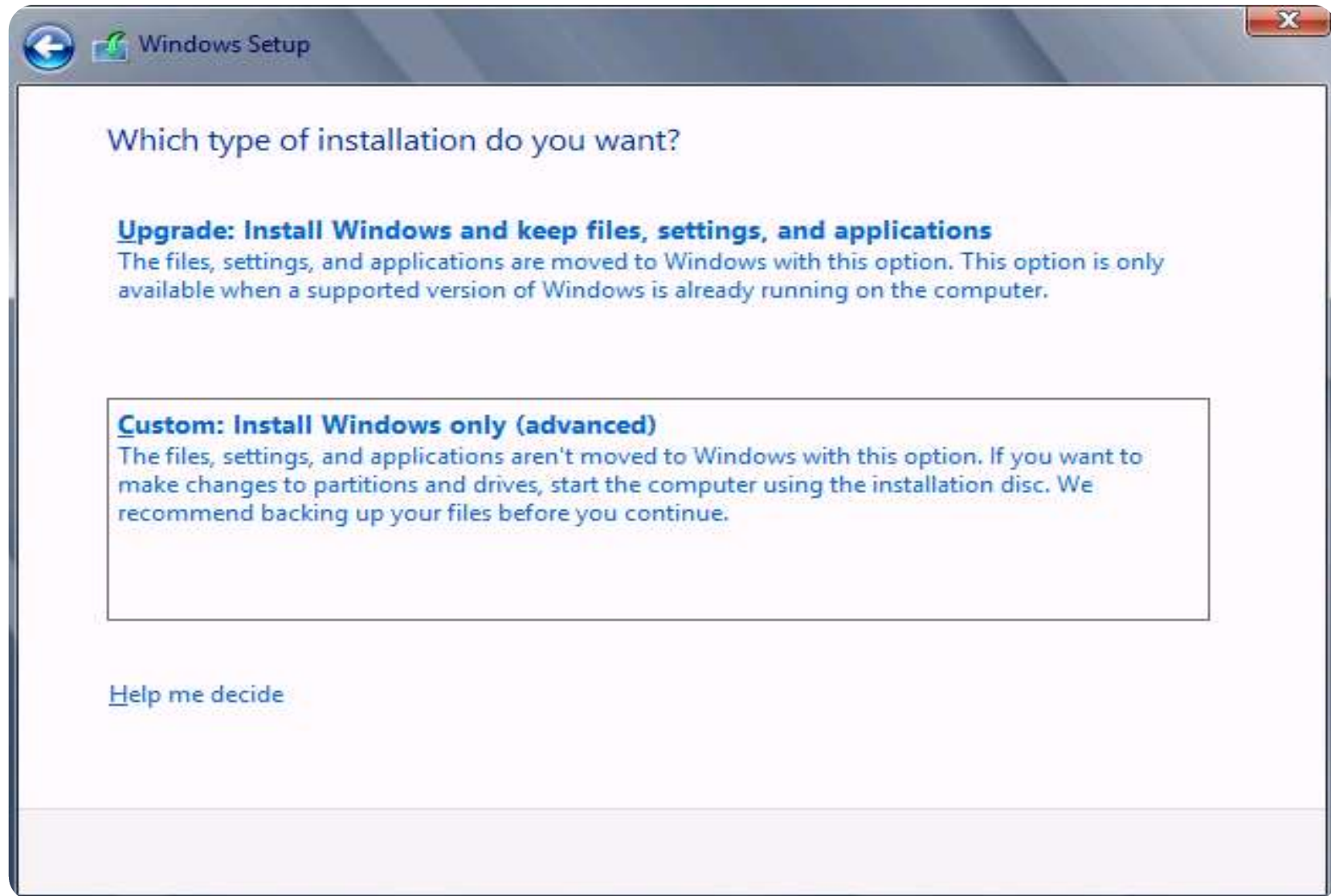# Windows Server 2012 R2 deployment method options include:

Optical disk

USB flash drive

Windows Deployment Services

Installation Types

Windows Setup

Which type of installation do you want?

Upgrade: Install Windows and keep files, settings, and applications
The files, settings, and applications are moved to Windows with this option. This option is only available when a supported version of Windows is already running on the computer.

Custom: Install Windows only (advanced)
The files, settings, and applications aren't moved to Windows with this option. If you want to make changes to partitions and drives, start the computer using the installation disc. We recommend backing up your files before you continue.

Help me decide

Choosing Whether to Upgrade or Migrate

In-place upgrade

Advantages:

- Generally straightforward process that takes less time and planning than a migration strategy
- All server roles, features, data, and application settings are maintained

Disadvantages:

- More difficult to troubleshoot installation failures caused by existing applications or server roles
- Existing problems and configuration issues might be brought into the new operating system

Migration

Advantages:

- Easier to troubleshoot installation failures
- Existing configuration or application issues are not carried forward to the new operating system
- You can easily move to updated versions of applications

Disadvantages:

- Requires all applications to be reinstalled and configured
- Requires planning of migration of server roles
- Requires migration of data
- Requires the purchase of new hardware

Windows Server 2012 R2 has the following minimum hardware requirements:

- Processor architecture   x64

- Processor speed   1.4 GHz

- Memory (RAM)   512 MB

- Hard disk drive space   32 GB

    ➢ More hard disk drive space is needed if the server has more than 16 GB of RAM

Installing Windows Server 2012

Migrating Server Roles

When does this rule apply?

☑ **Domain**

Applies when a computer is connected to its corporate domain.

☑ **Private**

Applies when a computer is connected to a private network location, such as a home or work place.

☑ **Public**

Applies when a computer is connected to a public network location.

Overview of Post-Installation Configuration

Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
WIN-56JQB2LJLAN

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

Select one or more roles to install on the selected server.

Roles

- ☐ Active Directory Certificate Services
- ☑ Active Directory Domain Services
- ☐ Active Directory Federation Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Application Server
- ☐ DHCP Server
- ☐ DNS Server
- ☐ Fax Server
- ▣ File and Storage Services (1 of 12 installed)
- ☐ Hyper-V
- ☐ Network Policy and Access Services
- ☐ Print and Document Services
- ☐ Remote Access
- ☐ Remote Desktop Services

Description

Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users and network administrators. AD DS uses domain controllers to give network users access to permitted resources anywhere on the network through a single logon process.

< Previous   Next >   Install   Cancel

Overview of Post-Installation Configuration

PROPERTIES
For WIN-GRUSOCV22M4

TASKS

Computer name	WIN-GRUSOCV22M4	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Not configured
		Last checked for updates	Never
Windows Firewall	Private: On	Windows Error Reporting	Off
Remote management	Enabled	Customer Experience Improvement Program	Not participating
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC-08:00) Pacific Time (US & Canada)
Ethernet	IPv4 address assigned by DHCP, IPv6 enabled	Product ID	00252-90000-00000-AA632 (activated)
Operating system version	Microsoft Windows Server 2012 R2 Datacenter Evaluation	Processors	AMD FX(tm)-8120 Eight-Core Processor
Hardware information	Microsoft Corporation Virtual Machine	Installed memory (RAM)	2 GB
		Total disk space	126.66 GB

Overview of Post-Installation Configuration

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Overview of Post-Installation Configuration

PROPERTIES
For WIN-GRUSOCV22M4   TASK

|			
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		Last checked for updates	Never
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Overview of Post-Installation Configuration

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Overview of Post-Installation Configuration

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Configuring Server Network Settings
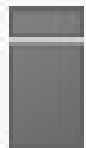
PROPERTIES
For LON-DC1

Computer name	LON-DC1
Domain	Adatum.com
Windows Firewall	Domain: On
Remote management	Enabled
Remote Desktop	Disabled
NIC Teaming	Disabled
Ethernet	172.16.0.10, IPv6 enabled

Information necessary for a domain join:

- Domain name

- Account with permission to join the computer to the domain

Computer Name/Domain Changes ☒

You can change the name and the membership of this computer. Changes might affect access to network resources.

Computer name:

WaggaWagga

Full computer name:
WaggaWagga.Adatum.com

More...

Member of

⦿ Domain:

Adatum.com

○ Workgroup:

OK   Cancel

Activating Windows Server 2012

Configuring a Server Core Installation

In this demonstration, you see how to use the DISM command-line utility to:

- View a list of all Windows features and their current state
- Gather information about the Windows Server Backup feature
- Enable the Windows Server Backup feature

- What Is Server Manager?
- Administrative Tools and Remote Server Administration Tools
- Demonstration: Using Server Manager
- Configuring Services
- Configuring Windows Remote Management
- Demonstration: Performing Remote Management

What Is Server Manager?

You can use Server Manager to:

- Manage multiple servers on a network from one console
- Add roles and features
- Launch Windows PowerShell sessions
- View events
- Perform server configuration tasks
- Manage down-level servers

You can use Best Practices Analyzer to:

- Determine whether roles on your network are functioning efficiently
- Query event logs for warning and error events
- Diagnose health issues with specific roles

Administrative Tools and Remote Server Administration Tools

Administrative tools:

- Active Directory Administrative Center
- Active Directory Users and Computers
- DNS console
- Event Viewer
- Group Policy Management Console
- IIS Manager
- Performance Monitor
- Resource Monitor
- Task Scheduler
- Can be used to manage non-domain joined systems

Configuring Services

Configuring Windows Remote Management

When deciding to use Remote Management, consider the following:

- You are more likely to manage a server remotely than by locally signing on

- With WinRM, you can use consoles, command-line utilities, or Windows PowerShell to perform remote management tasks

- With Remote Desktop, you can sign in to a server locally or from across the network

What Is Windows PowerShell?


```
Administrator: Windows PowerShell

Name                                         ModuleName
----                                         ----------
Set-BCAuthentication                         BranchCache
Set-BCCache                                  BranchCache
Set-BCDataCacheEntryMaxAge                   BranchCache
Set-BCMinSMBLatency                          BranchCache
Set-BCSecretKey                              BranchCache
Set-ClusteredScheduledTask                   ScheduledTasks
Set-DAClientExperienceConfiguration          DirectAccessClientComponents
Set-DAEntryPointTableItem                    DirectAccessClientComponents
Set-Disk                                     Storage
Set-DnsClient                                DnsClient
Set-DnsClientGlobalSetting                   DnsClient
Set-DnsClientNrptGlobal                      DnsClient
Set-DnsClientNrptRule                        DnsClient
Set-DnsClientServerAddress                   DnsClient
Set-DtcAdvancedHostSetting                   MsDtc
Set-DtcAdvancedSetting                       MsDtc
Set-DtcClusterDefault                        MsDtc
Set-DtcClusterTMMapping                      MsDtc
Set-DtcDefault                               MsDtc
Set-DtcLog                                   MsDtc
Set-DtcNetworkSetting                        MsDtc
Set-DtcTransaction                           MsDtc
Set-DtcTransactionsTraceSession              MsDtc
Set-DtcTransactionsTraceSetting              MsDtc
Set-InitiatorPort                            Storage
Set-iSCSIChapSecret                          iSCSI
Set-LogProperties                            PSDiagnostics
Set-MMAgent                                  MMAgent
Set-NCSIPolicyConfiguration                  NetworkConnectivityStatus
Set-Net6to4Configuration                     NetworkTransition
Set-NetAdapter                               NetAdapter
Set-NetAdapterAdvancedProperty               NetAdapter
Set-NetAdapterBinding                        NetAdapter
Set-NetAdapterChecksumOffload                NetAdapter
```

Windows PowerShell Cmdlet Syntax:

- Get-Help -Noun *NounName*

- Get-Help -Verb *VerbName*

- Help *CmdltName*

- Get-Command

```
Capability          Name
----------          ----
CIM                 Set-BCAuthentication
CIM                 Set-BCCache
CIM                 Set-BCDataCacheEntryMaxAge
CIM                 Set-BCMinSMBLatency
CIM                 Set-BCSecretKey
CIM                 Set-ClusteredScheduledTask
CIM                 Set-DAClientExperienceConfiguration
CIM                 Set-DAEntryPointTableItem
CIM                 Set-Disk
CIM                 Set-DnsClient
CIM                 Set-DnsClientGlobalSetting
CIM                 Set-DnsClientNrptGlobal
CIM                 Set-DnsClientNrptRule
CIM                 Set-DnsClientServerAddress
CIM                 Set-DtcAdvancedHostSetting
CIM                 Set-DtcAdvancedSetting
CIM                 Set-DtcClusterDefault
CIM                 Set-DtcClusterTMMapping
CIM                 Set-DtcDefault
CIM                 Set-DtcLog
```

Common Cmdlets for Server Administration

System Administration cmdlets	Details
Service Cmdlets	Use the Service noun
Event Log Cmdlets	Use the Eventlog noun
Process Cmdlets	Use the Process noun
ServerManager module	Allows the WindowsFeature noun
Windows PowerShell Remote Management	Allows cmdlets or scripts to be run on remote computers

What Is Windows PowerShell ISE?