

# Lesson 1: Installing Servers

MOAC 70-410: Installing and Configuring  
Windows Server 2012

# Overview

- Exam Objective 1.1: Install Servers
- Selecting a Windows Server 2012 Edition
- Installing Windows Server 2012
- Choosing Installation Options
- Upgrading Servers
- Migrating Roles

# Selecting a Windows Server 2012 Edition

## Lesson 1: Installing Servers

# Planning

- The Windows Server 2012 Edition you choose should be based on multiple factors, including:
  - The roles you intend the servers to perform
  - The virtualization strategy you intend to implement
  - The licensing strategy you plan to use

# Windows Server 2012 Core Editions

- Windows Server 2012 Datacenter
- Windows Server 2012 Standard
- Windows Server 2012 Essentials
- Windows Server 2012 Foundation

# Datacenter

- Designed for large and powerful servers
- Supports up to 64 processors
- Fault tolerance—hot-add processors
- Only available to purchase through:
  - Microsoft volume-licensing program
  - Original equipment manufacturers (OEMs), bundled with a server

# Standard

- Includes the full set of Windows Server 2012 features
- Only differs from Datacenter by the number of virtual machine instances permitted by the license

# Essentials

- Includes nearly all features from Datacenter and Standard editions, except:
  - Server Core
  - Hyper-V
  - Active Directory Federation Services
- Limited to one physical or virtual server instance
- Maximum of 25 users

# Foundation

- Reduced version of the operating system designed for small businesses
- Supports only basic server features:
  - File and print services
  - Application support
- No virtualization rights
- Limited to 15 users

# Supporting Server Roles

Three basic categories of server roles are:

- **Directory services**
  - Store, organize, and supply information about a network and its resources
- **Infrastructure services**
  - Provide support services for network clients
- **Application services**
  - Provide communication services, operating environments, or programming interfaces for specific applications

# Directory Services Roles

- Active Directory Certificate Services
- Active Directory Domain Services (AD DS)
- Active Directory Federation Services
- Active Directory Lightweight Directory Services (AD LDS)
- Active Directory Rights Management Services (AD RMS)

# Infrastructure Services

- DHCP (Dynamic Host Configuration Protocol)
- DNS Server
- Hyper-V
- Network Policy and Access Services (NPAS)
- Health Registration Authority (HRA)
- Remote Access
- Volume Activation Services
- Windows Deployment Services (WDS)
- Windows Server Update Services (WSUS)

# Application Services

- Application Server
- Fax Server
- File and Storage Services
- Print and Document Services
- Remote Desktop Services
- Web Server (IIS)

# Supporting Server Virtualization

**POSE:** Physical operating system environment

**VOSE:** Virtual operating system environment

<i><b>Edition</b></i>	<i><b>POSE Instances</b></i>	<i><b>VOSE Instances</b></i>
Datacenter	1	Unlimited
Standard	1	2
Foundation	1	0
Essentials	1 POSE or VOSE	1 POSE or VOSE

# Server Licensing

Licensing Windows Server 2012 includes purchasing licenses for both servers and clients.

	<b><i>Retail</i></b>	<b><i>Volume Licensing</i></b>	<b><i>Original Equipment Manufacturer</i></b>
Datacenter	No	Yes	Yes
Standard	Yes	Yes	Yes
Foundation	No	No	Yes
Essentials	No	Yes	Yes

Windows Server Sales Channel Availability, by Edition

# Installing Windows Server 2012

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## Lesson 1: Installing Servers

# System Requirements

Minimum system requirements for all editions of Windows Server 2012:

- **Processor:** 1.4 GHz 64-bit
- **RAM:** 512 MB
- **Disk space:** 32 GB
- DVD or USB flash drive
- Super VGA (800 x600) or higher resolution monitor

# Maximum Hardware Configurations

	<b><i>Windows Server 2012</i></b>	<b><i>Windows Server 2008 R2</i></b>
Logical processors	640	256
RAM	4 terabytes	2 terabytes
Failover cluster nodes	63	16

# Clean Installation

- Necessary when you have a bare metal computer.
- Use if you are willing to reformat an existing disk.
- Creates the most stable environment.

# Performing a Clean Installation

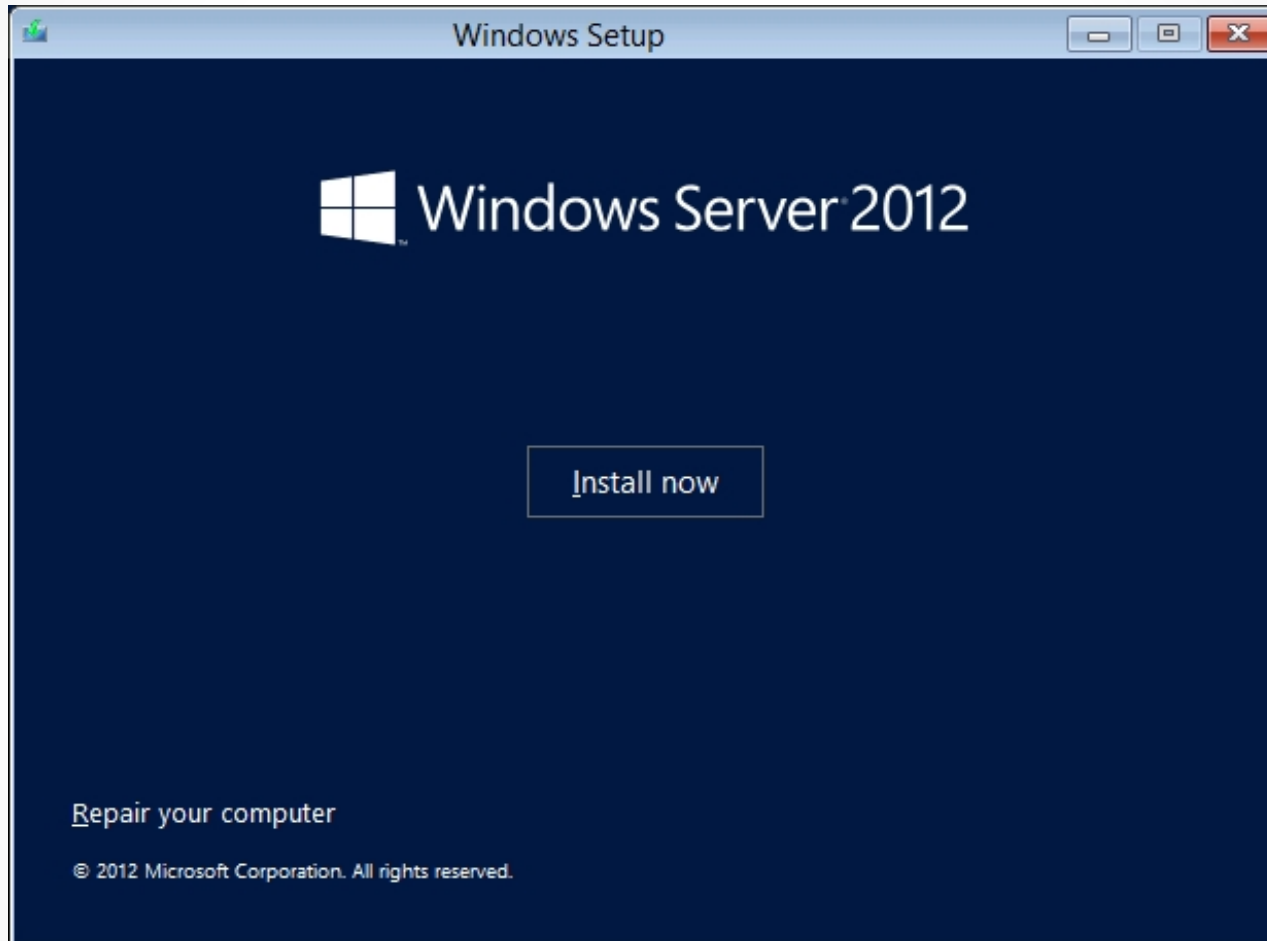
- Connect and power on all devices.
- Boot from the Windows Server installation DVD.
- Select Language, Time and Currency format, and Keyboard layout.
- Click *Install Now*.
- Select your edition of Windows Server 2012.
- Select *Custom: Install Windows only (advanced)*.
- Select the partition on which to install.
- When the installation is complete, set your password.

# Performing a Clean Installation



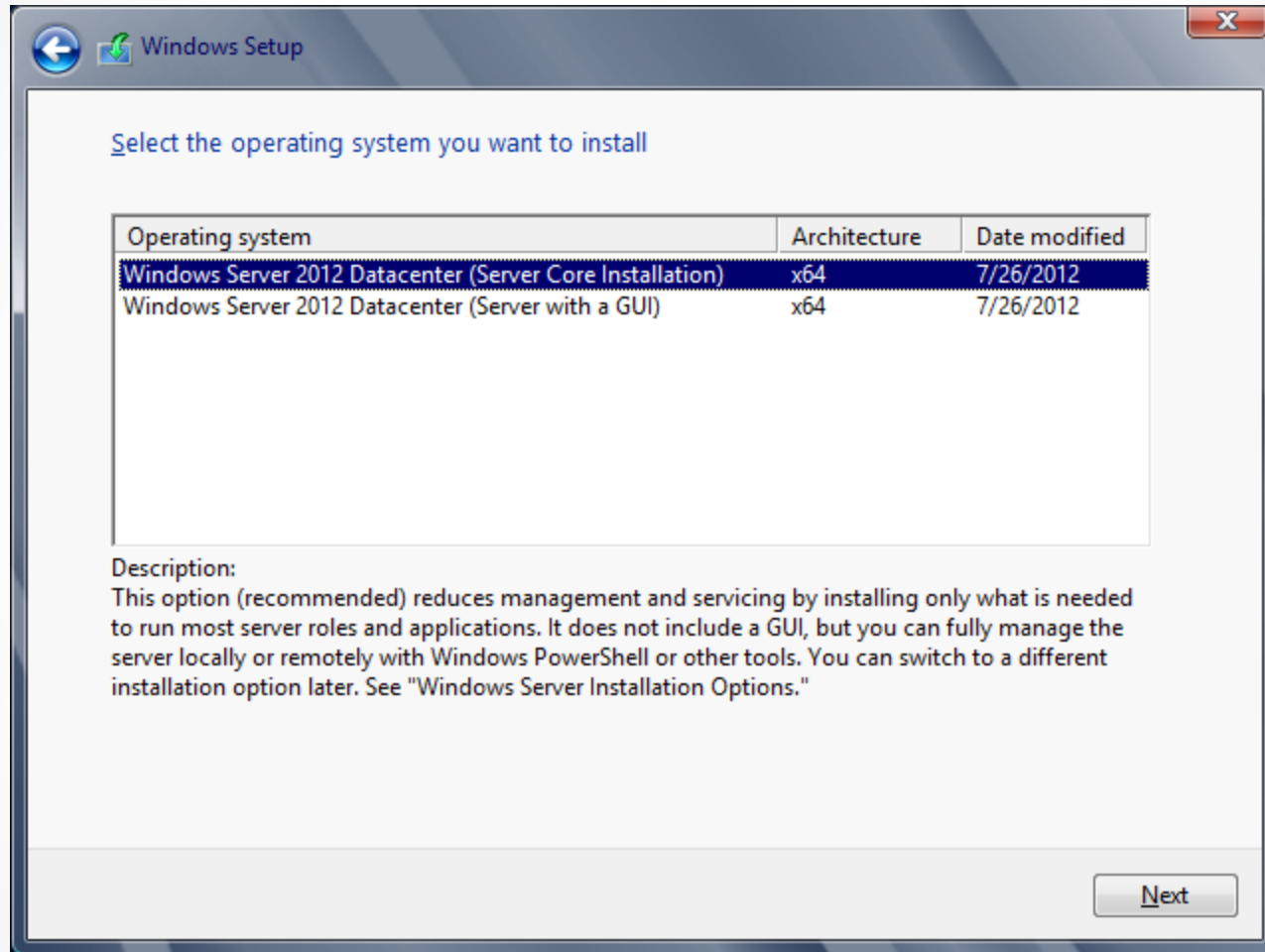
Select Your Preferences

# Performing a Clean Installation



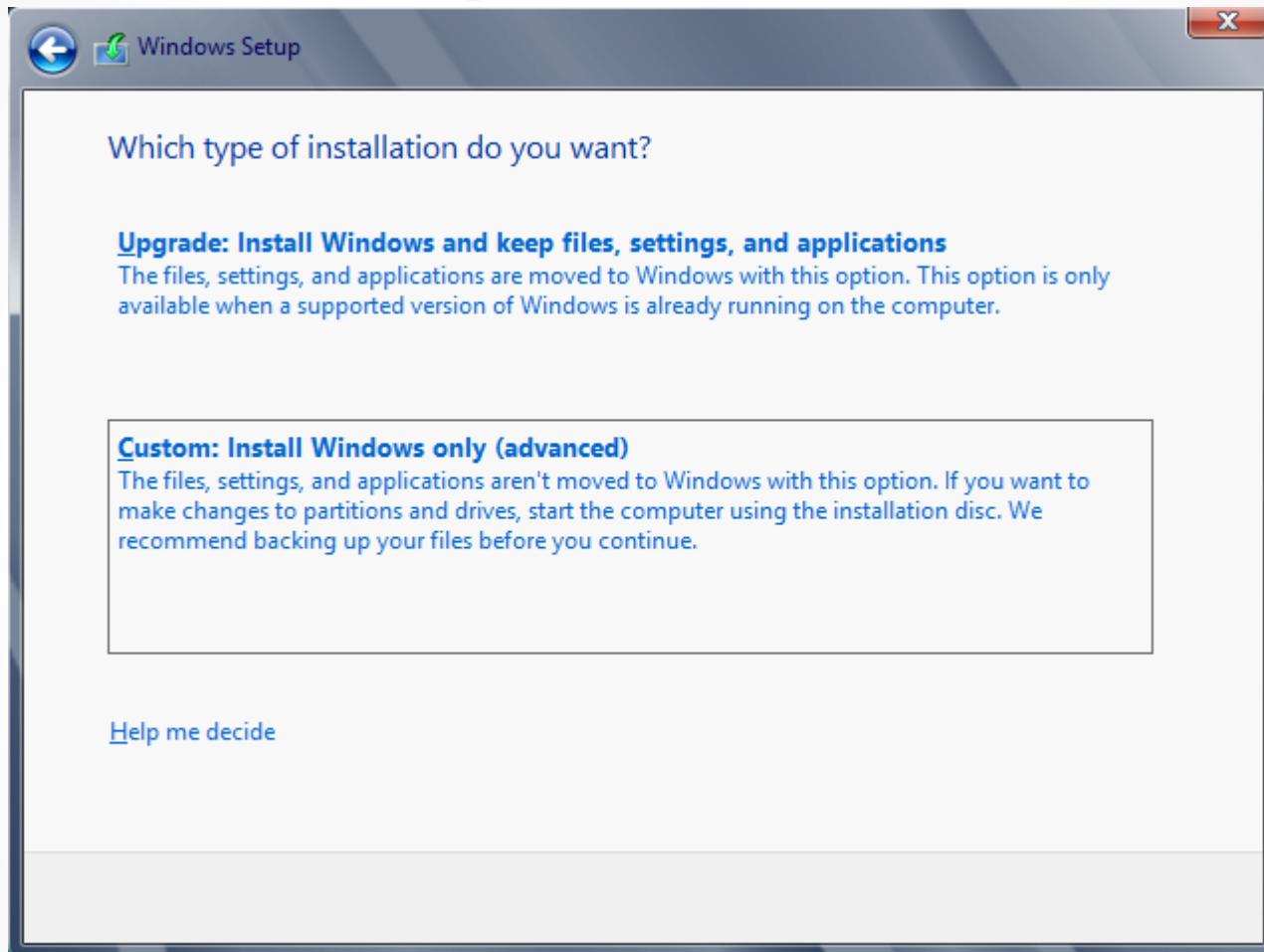
Click Install Now

# Performing a Clean Installation



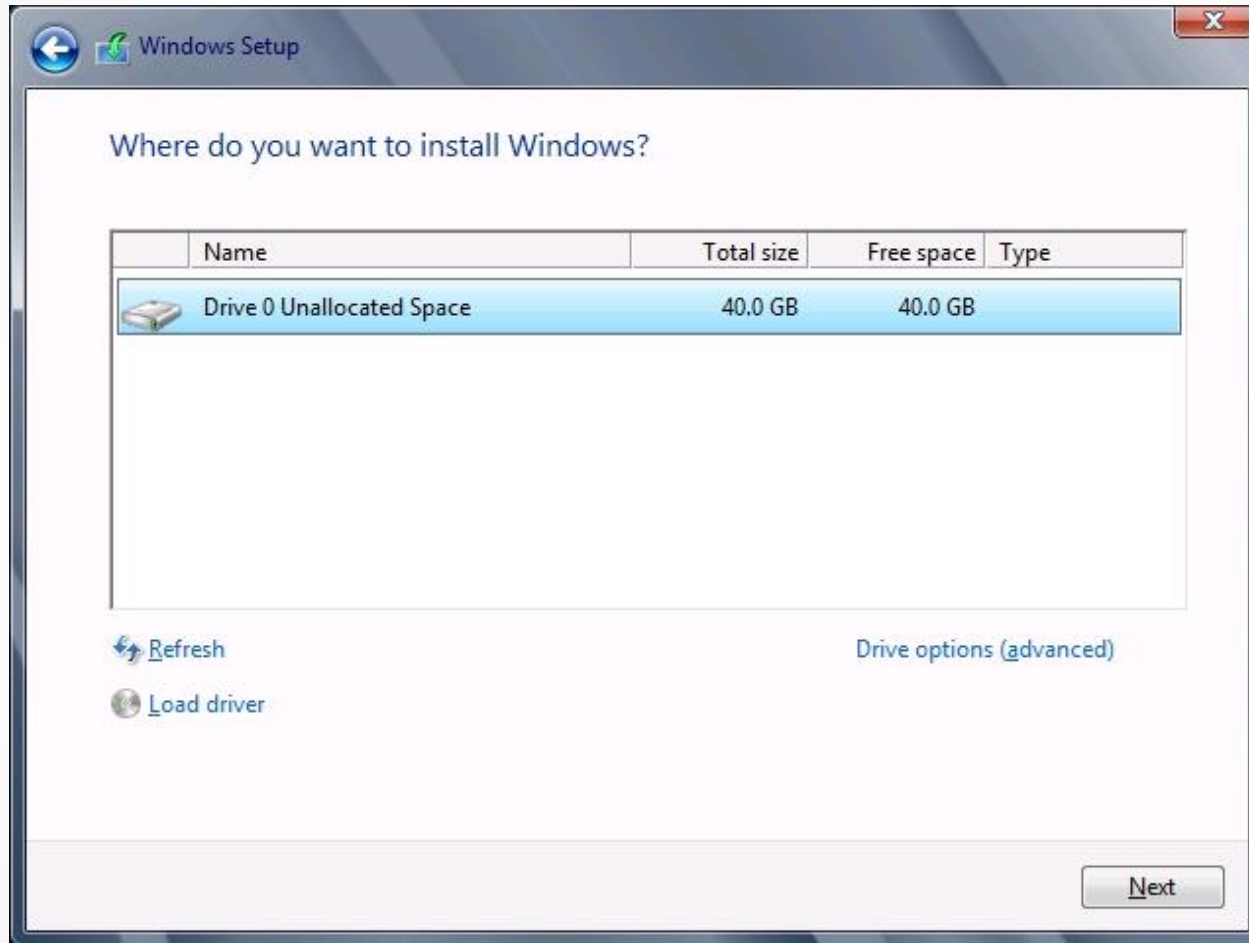
Select Server Edition

# Performing a Clean Installation



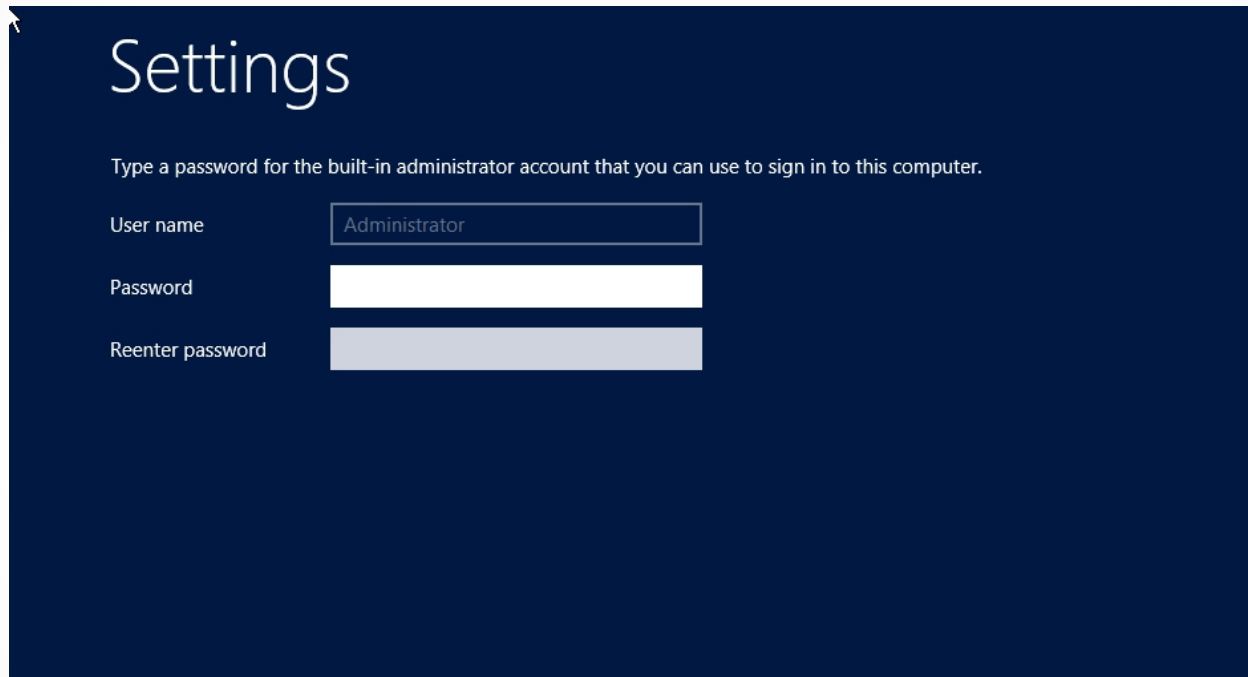
Select Custom: Install Windows only (advanced)

# Performing a Clean Installation



Select the Partition/Drive on which to Install  
Windows Server

# Performing a Clean Installation



The screenshot shows the 'Settings' application in Windows. The title bar is dark blue with the word 'Settings' in white. Below the title bar, there is a subtitle in white: 'Type a password for the built-in administrator account that you can use to sign in to this computer.' Below this, there are three input fields. The first is labeled 'User name' and contains the text 'Administrator'. The second is labeled 'Password' and is empty. The third is labeled 'Reenter password' and is empty. The background of the window is dark blue.

Settings

Type a password for the built-in administrator account that you can use to sign in to this computer.

User name

Password

Reenter password

Set the Administrator Password

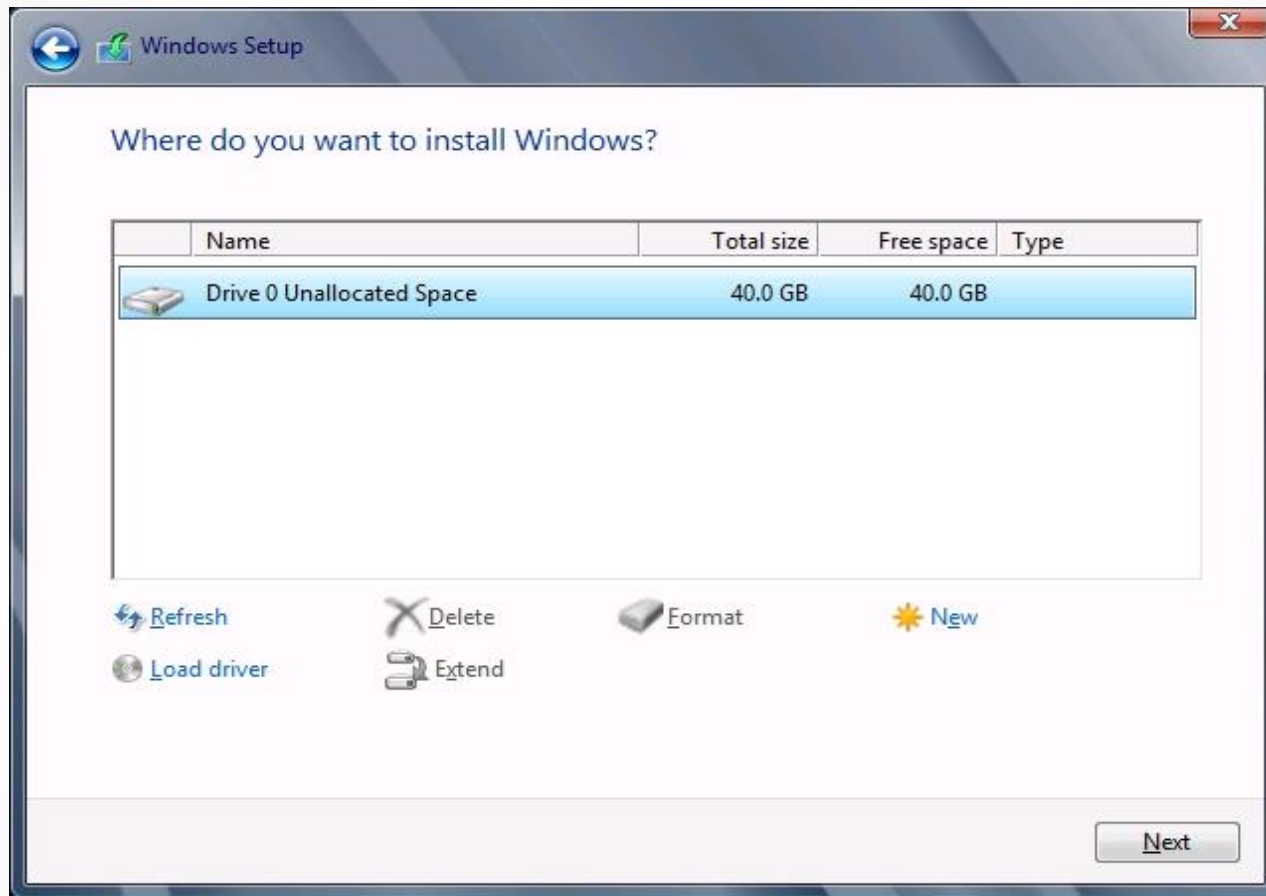
# Installing Third-Party Drivers

- If hard drives are connected to a third-party controller, rather than the one integrated into the motherboard, the installation procedure may not detect your hard drive.
- The Where do you want to install Windows? page will not list hard drives.
- Install a third-party driver to allow the installation program access to your hard drive to continue the installation.

# Working with Installation Partitions

- You can create, manage, and delete partitions on your hard drive.
- Click *Drive options (advanced)* and four buttons will appear:
  - Delete
  - Extend
  - Format
  - New

# Working with Installation Partitions



Advanced Drive Options Buttons

# Choosing Installation Options

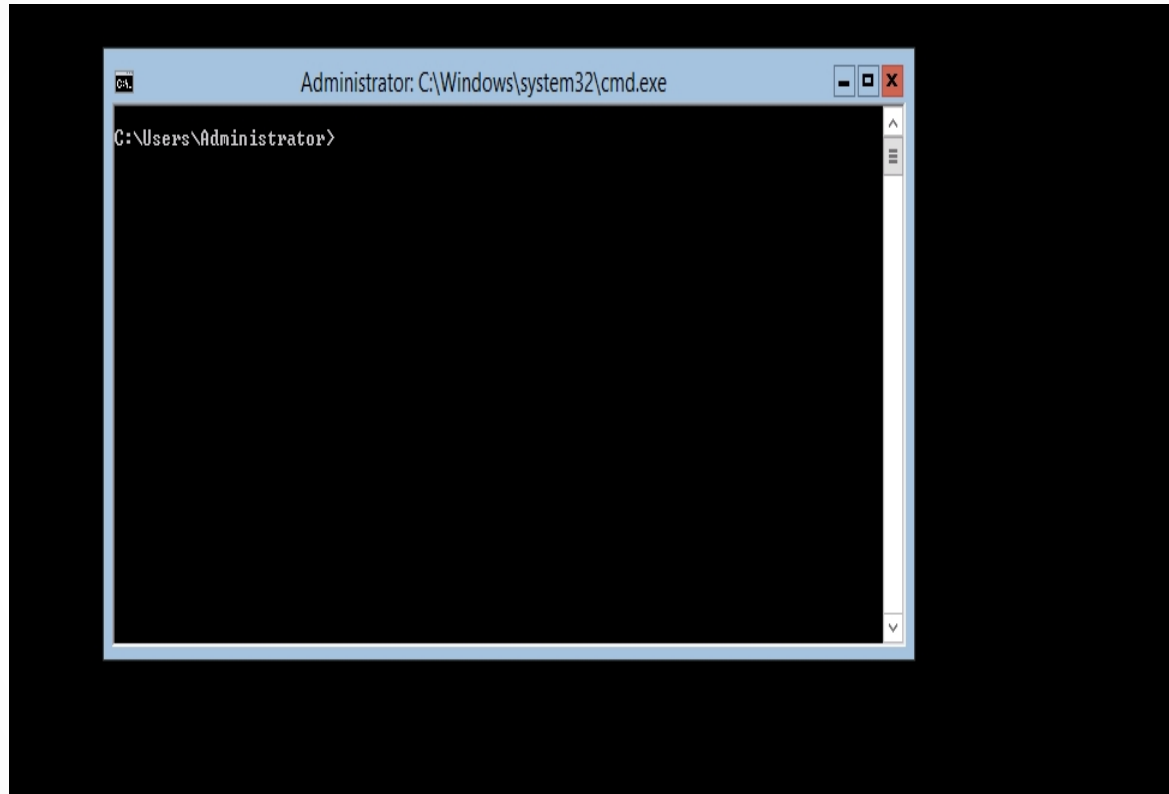
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Lesson 1: Installing Servers

# Using Server Core

- Stripped-down version of the operating system
- Takes you to a Graphical User Interface (GUI)
- Type commands at the command prompt

# Server Core



Server Core's Command Line Interface

# Advantages of Server Core

- Hardware resource conservation
- Reduced disk space
- Reduced patch frequency
- Reduced attack surface

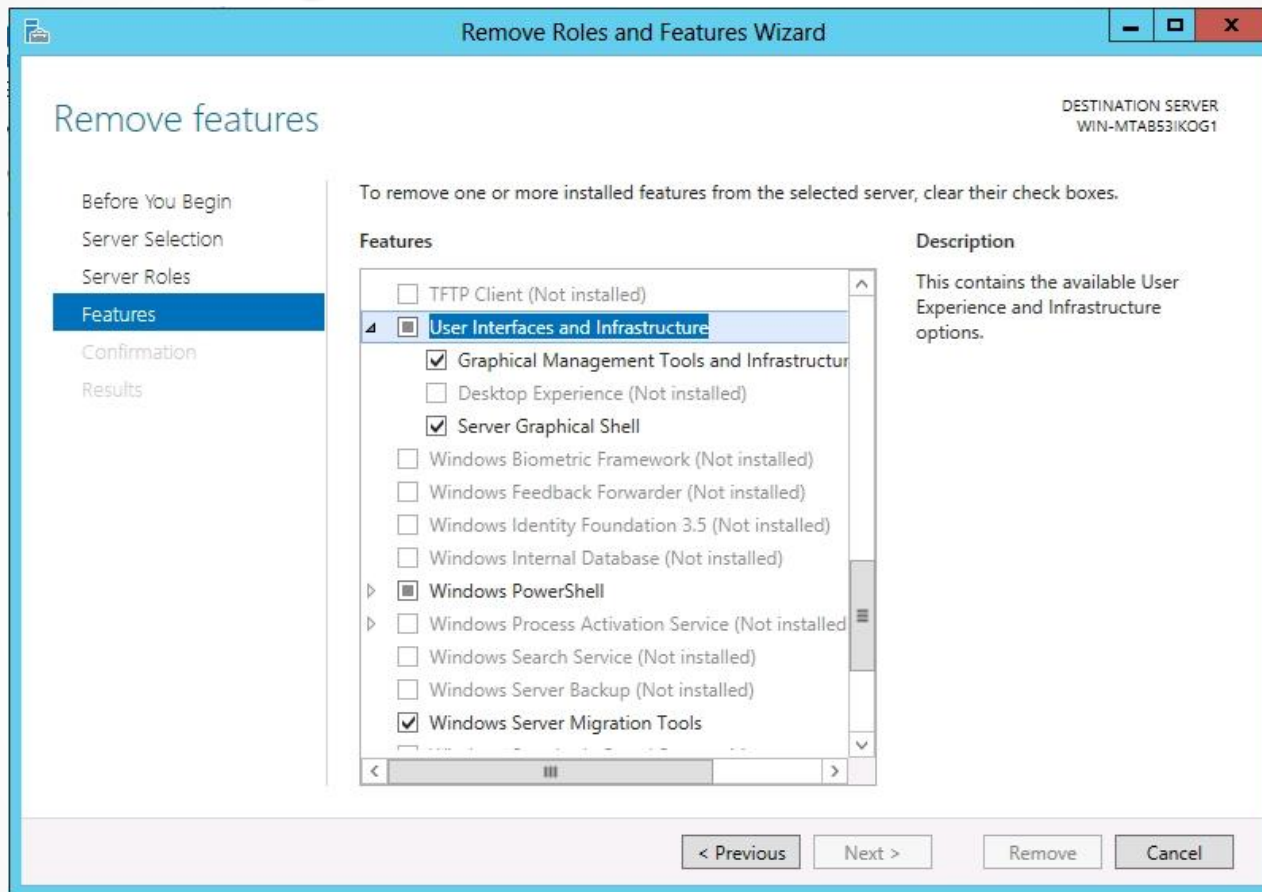
# Server Core Defaults

- Server Core is now the default installation option.
- GUI tools can be added and removed using Windows PowerShell commands.
- New Server Manager includes comprehensive remote administration tools.

# Using the Minimal Server Interface

- A setting that removes some of the most hardware-intensive elements from the GUI.
- Middle ground between Server Core and full GUI installation.
- Administrators are left with essential tools:
  - Server Manager
  - MMC applications
  - Device Manager
  - Windows PowerShell

# Configure the Minimal Interface



User Interfaces and Infrastructure Feature in the Remove Roles and Features Wizard

# Using Features on Demand

- Allows you to optimize resource utilization by removing files related to unused Windows features stored in WinSxS directory.
- Permanently remove files for unused features using Windows PowerShell commands.
- The following command will disable the Server Graphical Shell and remove its source files from WinSxS:

**Uninstall-WindowsFeature Server-Gui-Shell -Remove**

- If you attempt to enable the feature in the future, the system will download it from Windows Update or from an image file you specify.

# Upgrading Servers

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## Lesson 1: Installing Servers

# Upgrading Servers

- Setup program creates a new Windows folder in which to install the new version of Windows Server 2012.
- The program then migrates applications, files, and settings from the old OS to the new.
- To minimize risks involved in this complex procedure, administrators must perform backups and be able to troubleshoot problems that may arise.

# Upgrade Paths

- Windows Server 2012 has very limited upgrade paths.
- You can only upgrade Windows Server 2008 or Windows Server 2008 R2, 64 bit versions only, to their comparable Windows Server 2012 edition.
- For all other Windows versions and editions, you will have to perform a Clean Installation.

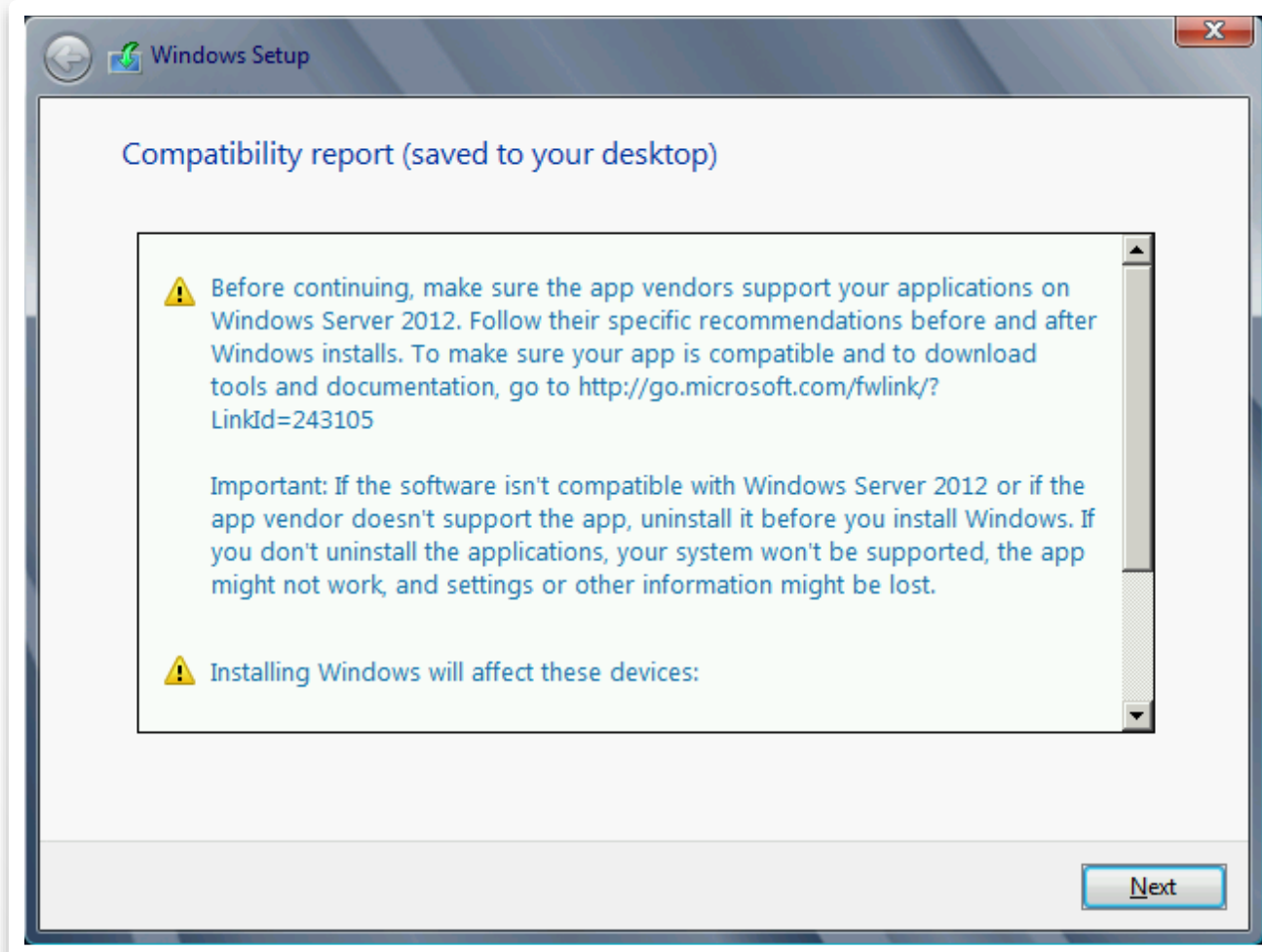
# Preparing to Upgrade

- Check hardware compatibility.
- Check disk space.
- Confirm that software is signed.
- Check application compatibility.
- Ensure computer functionality.
- Perform a full backup.
- Purchase Windows Server 2012.

# Performing an Upgrade Installation

- Insert the Windows Server 2012 installation DVD while your current server is still running, and run the Setup program.
- The installation program will run the same way as a clean installation except on the Which type of installation do you want page, you must select Upgrade: Install Windows and keep files, settings, and applications option.
- The Setup program will provide a Compatibility Report.

# Performing an Upgrade Installation



Compatibility report page

# Migrating Roles

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## Lesson 1: Installing Servers

# Migrating Roles

- Migration is the preferred method of replacing an existing server with one running Windows Server 2012.
- Migration copies vital information from an existing server to a clean Windows Server 2012 installation.
- Upgrade restrictions do not apply to migrations.
- You can migrate between versions, platforms, editions, physical and virtual instances, and installation options.

# Server Migration

- Different from workstation migration.
- Migrate roles or role services individually.
- Migration guides exist for different roles supported by Windows Server 2012.
- Some migrations require the use of Windows Server Migration Tools and others do not.

# Server Migration Steps

- Install Windows Server Migration Tools on the destination server, running Windows Server 2012.
- Create a distribution folder and copy an appropriate version of the tools for the source server.
- Copy the distribution folder to the source server and then register the Windows Server Migration Tools.
- Use Migration Guides to migrate roles, features shares, settings, and other data.

# Migration Guide Elements

- Compatibility notes
- Guide contents
- Migration overview
- Migration requirements
- Pre-migration tasks
- Migration procedures
- Post-migration procedures

# Lesson Summary

- Microsoft releases all of its operating systems in multiple editions, which provides consumers with varying price points and feature sets.
- Windows Server 2012 includes predefined combinations of services called roles that implement common server functions.
- A clean installation is the simplest way to deploy Windows Server 2012 on a bare metal computer or a computer with a partition that you are willing to reformat (losing all of the data on the partition in the process).

# Lesson Summary

- Many enterprise networks today use servers that are dedicated to a particular role. When a server is performing a single role, does it really make sense to have so many other processes running on the server that contribute little to that role?
- When you select the Windows Server Core installation option, you get a stripped-down version of the operating system.
- If the advantages of Server Core sound tempting, but there are traditional server administration tools you don't want to give up, Windows Server 2012 provides a compromise that it calls the Minimal Server Interface.
- The Minimal Server Interface is a setting that removes some of the most hardware-intensive elements from the GUI.

# Lesson Summary

- An in-place upgrade is the most complicated form of Windows Server 2012 installation. It is also the lengthiest, and the most likely to cause problems during its execution. Whenever possible, Microsoft recommends that administrators perform a clean installation, or migrate required applications and settings instead.
- Migration is the preferred method of replacing an existing server with one running Windows Server 2012. Unlike an in-place upgrade, a migration copies vital information from an existing server to a clean Windows Server 2012 installation.
- Windows Server Migration Tools is a Windows Server 2012 feature that consists of Windows PowerShell cmdlets and help files that enable administrators to migrate certain roles between servers.

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