Server as Software

CET 05202: SERVER ADMINISTRATION

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The roles of computer server

A server stores, sends, and receives data. In essence, it "serves" something else and exists to provide services.

A computer hardware, software program, or even a storage device may act as a server, and it may provide one service or several.

Roles and Features are the tools that you need to install or activate in order to complete your IT Administration duties, without their installation you cannot do anything.

Server as a Software program

Different servers provide different services. Servers are dedicated, meaning they are created to do one thing and cannot change. In other words, e.g. a print server cannot become a web server.

The most common types of servers include:

1) application server
2) Computing server
3) Database server
4) mail server
5) print server
6) web webserver
7) file server i.e. Networked File Server (NFS), FTP server
8) Proxy server
9) Virtual server
10) DNS server
11) Server OS and etc

Server as a Software program cont...

WEB SERVER

- If you're online looking at a webpage, you are accessing a server.
- Viewing the web through your browser requires getting data from a web server for the text, images, videos, and any other components you can view on a webpage.
- When you send or receive files through the internet, download apps or programs, or even save your work files to the cloud, you are interacting with a variety of internet servers.

Example of webservers:

Apache, Microsoft's Internet Information Services (IIS) and Nginx -- pronounced engine X, Novell's NetWare server, Google Web Server (GWS) and IBM's family of Domino servers.

Server as a Software program cont...

EMAIL SERVER

- If you use a web-based program, such as Gmail or Yahoo!, to access your email account, you probably rely on a web server to handle your messaging.
- For those consumers who prefer to use a computer-based program, such as Outlook, you access a specific email server that supports the sending and receiving processes.
- If you see references to IMAP, POP, or SMTP when using email, you are connecting to a third-party email server.

Microsoft Exchange, Exim and Sendmail are common examples of mail server programs.

Server as a Software program cont...

PRINT SERVER: Do you send print jobs to your computer over WiFi? The management of print files and printer tasks is done through a print server.

FTP SERVERS: It stands for "File Transfer Protocol", but it is traditional technology. FTP delivers secure file transfer in between multiple computer systems.

FILE SERVERS: These servers allow saving and distributing files, so all clients and users have permission to share file hold on the server. File server hardware are designed for getting more maximize read and write speed for growing its performance.

Server as a Software program cont...

DNS Servers: It stands for "Domain Name Server", and this server has enlarged database of IP addresses with their linked Hostnames. On the DNS servers, to operate special software program as well as they make to communication with each other with the help of appropriate protocols.

Database Servers: **Database server** allows clients send SQL requests as messages toward server and finally output of your query are come back over the **network**.

Server as a Software program cont...

GAME SERVER:

Gamers know all about these. Loading an online game requires you to connect to a server. Each game generally has its own server.

If you've ever waited a long time for a game to load, congestion on the server may be the issue.

From the biggest online computer games to the smallest, app-based smartphone games, they all use servers to send and receive the information necessary for gamers to play.

Server as a Software program cont...

PROXY SERVER

- Any time there is a third-party intermediary between a person's computer and another server, this middle-man is known as a proxy server.
- Proxies have useful roles in filtering content, speeding up internet traffic, and keeping unauthorized users from accessing the network.
- Most business internet connections use proxy servers on their networked computers to keep data safe and to ensure their workers only use permitted web functions.

Server as a Software program cont...

STREAMING VIDEO SERVER:

When you open Netflix on your phone or stream movies from Amazon on your smart TV, you are using a video server. All of those movies and TV shows are saved as data on these servers and are pushed out to you when you request them.

Server Operating systems

Server OS

A **server operating system** (OS) is a type of operating system that is designed to be installed and used on a server computer.

Server (Hardware) needs minimum necessary two software components like as **operating system** and **Application**.

- Operating system plays role as a platform that helps to run different server applications.
- It delivers access to their hardware resources and produces many dependency services which are depended on the application.
- Server's operating system also provides better communication environment in between clients and server application.
- Operating system is assigned **IP address** of server and **fully qualified domain name.**

Server OS

- Server operating systems support and enable common server tasks like Windows, file, and database server, Web server, mail server, application server, and print server.
- It is an advanced version of the basic operating system, and it serves server-client computers request on the network.
- It has all of the functionality needed to work in a client-server computing environment.

Features of Server Operating System

There are various features of the server operating system. Some of the features are as follows:

i. It executes all or most processes from the operating system command.

ii. A server operating system is designed to run large programs and perform activities like heavy data transfers with simplicity.

iii. It can access the server both **GUI (Graphical User Interface)** and **command-level interface**.

iv. The server operating system includes all of the administrative tools necessary to execute a wide range of applications and tasks.

v. It offers the central interface to manage the users, implement the security and other administration processes.

vi. The operating system helps in the creation of a stable environment in which all apps and processes may run smoothly. An operating system that is still in development or contains bugs and glitches might slow down procedures and have an impact on data.

vii. It provides **advanced-level hardware, software, and network configuration processes**.

viii. It manages and **monitors the client's computers and operating systems**.

ix. A server operating system with a built-in firewall and security capabilities is essential because servers are prone to infiltration and infection. Hackers and malicious apps cannot easily penetrate the client's operating system when a proper security system exists.

x. It installs and deploys business applications and web applications.

Benefits of Server Operating System

There are various benefits of a server operating system compare to client servers. Some of the benefits are as follows:

- Higher Efficiency: It helps in reducing dependence on physical servers, resulting in greater savings.
- Future-Proofing: It ensures long-term sustainability by calculating the expected growth of the corporate network.
- Higher savings with reduced downtime: Reduced downtime leads to increased savings for any organization.
- Increased Performance: A network-supporting system with higher performance can support more users and storage options than another.

Server OS Vs. Client OS

Client OS	Server OS
• It is an OS that runs on desktop computers and other portable devices.	• It is an OS that is developed to be installed and utilized on a server.
• It is a simple and easy OS.	• It is a complex OS.
• It provides less security than the server OS.	• It provides more security than the client OS.
• It run on a client device, including mobile phones, desktops, tablets, and laptops.	• It run on a server.
• It may get services from a server.	• It may offer services to many clients or end-user devices.
• It is less stable than the server OS.	• It is more stable than client OS.
• It is less efficient than server OS.	• It is highly efficient than client OS.
• Some examples of client OSs are Android, Windows, Mac, etc.	• Some examples of server OSs are Mac OS X, Windows Server, Red Hat Enterprise Linux, etc.

Main Function of Server Operating System

Most **crucial duty of server OS is to listen in on a port for incoming network requests.**

Types of Server Operating System

1. Windows Operating System

The Windows Operating System is a family of the operating system that is developed by the **Microsoft Corporation**.

- It allows the users to play games, videos, music, store the files, run the software.
- It was developed for both personal and professional works. The Windows OS series contain other series, including **Windows 2000, Windows 2003, Windows 2008, 2012, 2016** and others.
- It offers virtual memory management, a graphical user interface, multitasking, and support for various peripheral devices. Microsoft offers Windows operating systems for desktop computers, servers, and mobile devices.

Types of Server Operating System

2. Linux Operating System

Linux is a type of free software that performs all of the features of UNIX. Version 0.11 was released in 1991, originally developed by students from Finnish universities.

- Linux is open, allows multi-user, multi-process, multi-thread, has good real-time performance, is powerful and robust
- The OS software package also contains application software like a text editor and a high-level language compiler, which allows the system to be controlled via windows, icons, and menus.

Types of Server Operating System

3. UNIX Operating System

UNIX began as a time-sharing OS for small computers, but it has now developed into one of the most popular operating systems in a client-server environment.

It is written in the C language, and the C language abbreviator supports several platforms. UNIX has been ported to a larger number of machines than other operating systems.

At the moment, the UNIX operating system is used by more than 90% of the numerous sites that provide services on the Internet.

Unlike other operating systems, UNIX is sold by different vendors, and there is no true UNIX. On the other side, despite efforts to create a standard UNIX version, there are various identical and incompatible versions.

Types of Server Operating System

4. Netware Operating System (NOS)

It is a server-based network operating system that needs the use of a dedicated server in the network. In early computer networks, the NetWare operating system was widely used in the local area network (LAN). **Novell** developed it in the early **1980s**.

NetWare series operating systems may support multiprocessor and large-capacity physical memory management. It may offer shared file access and printing services and support for the high scalability of corporate networks via open standards and file protocols.

NetWare 5 is the latest version of the NetWare operating system. It contains native Internet Protocol (IP), Dynamic Host Configuration Protocol (DHCP), Domain Name System (DNS), and a new multiprocessing kernel with virtual memory support.

Types of Server Operating System

5. Red Hat Enterprise Linux (RHEL)

It is a commercial Linux distribution created by Red Hat. Red Hat Enterprise Linux is available in the server, and desktop editions for **x86-64, Power ISA, ARM64**, and **IBM Z**.

The Red Hat Enterprise Linux platform is the center of all official support and training from Red Hat and the Red Hat Certification Program.

The initial Red Hat Enterprise Linux version was released under **"Red Hat Linux Advanced Server".**

Red Hat renamed Red Hat Linux Advanced Server **"Red Hat Enterprise Linux AS"** in **2003** and included two new variations, **Red Hat Enterprise Linux ES** and **Red Hat Enterprise Linux WS**.

Types of Server Operating System

Therefore; On the Internet, the dominant operating systems among servers are

- UNIX-like open-source distributions, such as those based on Linux and FreeBSD,
- Windows Servers
- z/OS and macOS Server are also deployed, but in much smaller numbers.

Windows server 2012

Windows Server 2012 and Windows Server 8 is the most recent version of the operating system from Microsoft regarding server management, but not the last one which is Windows Server 2016.

- Officially win server 2012 released on August 1, 2012 and is just a commercial version as of now.
- Windows Server 2012 has four editions – Foundation, Essentials, Standard and Datacenter.

Installing Windows Server 2012

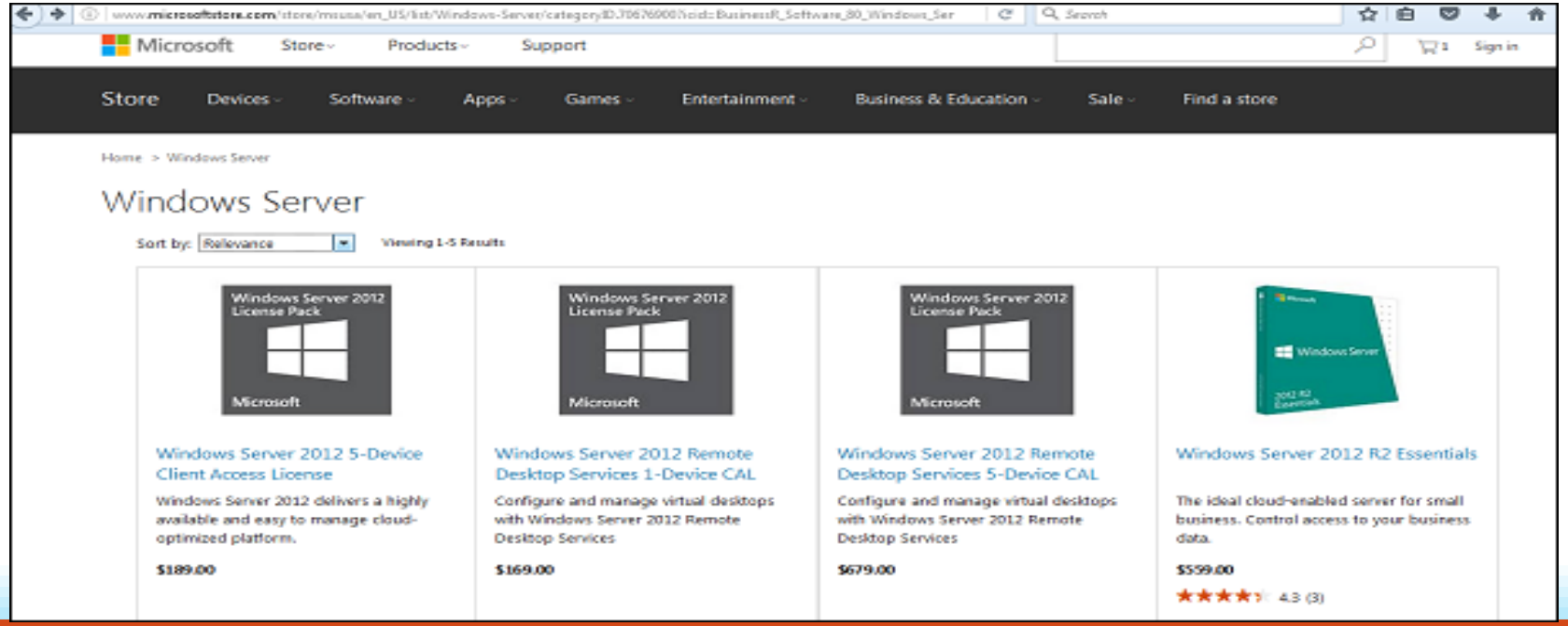
Pre installation information: Minimum System requirements

The following are estimated system requirements for the Windows Server 2012. If your computer has less than the "minimum" requirements, you will not be able to install this product correctly. Actual requirements will vary based on your system configuration and the applications and features you install.

- **CPU** socket minimum 1.4 GHz (64-bit processor) or faster for single core and Microsoft recommends is 3.1 GHz (64-bit processor) or faster multi-core.
- **RAM** memory minimum is 2GB, but Microsoft recommends 8GB.
- **160 GB hard disk with a 60 GB system** partition space in your hard disk.

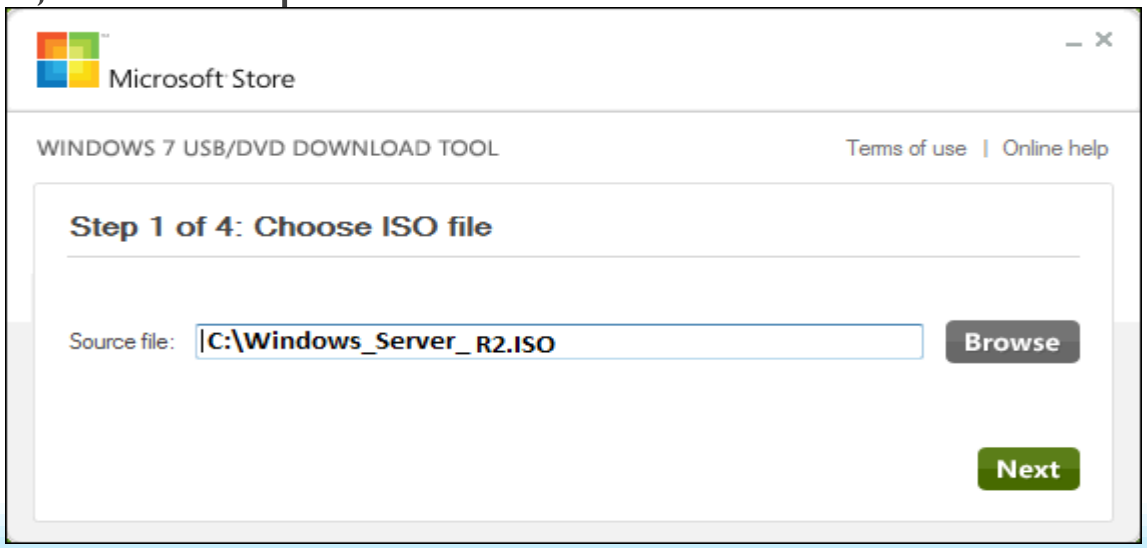
Step 1 - You can purchase Windows server 2012 R2 from online via a Microsoft online store found in – https://www.microsoftstore.com/store/msusa/en_US/list/Windows-Server/categoryID.70676900?icid=BusinessR_Software_80_Windows_Server_112315

For the Enterprise solution, I would recommend to purchase it via a Microsoft partner that is found in your country.



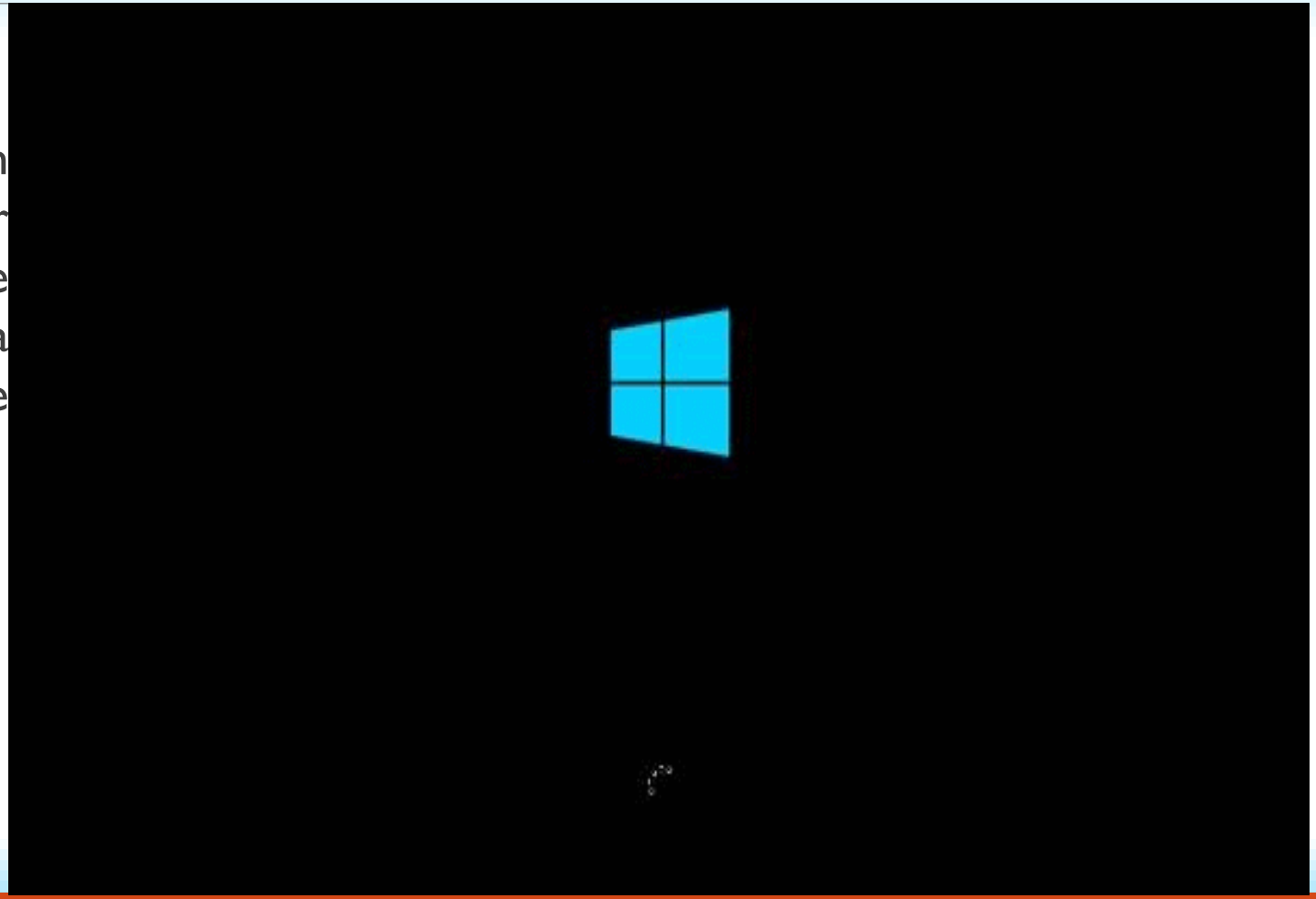
Step -2 After downloading the ISO of Microsoft, create a boot USB driver which can be created with the Microsoft tool called Windows USB/DVD Download Tool and can be downloaded from the following link – https://www.microsoft.com/en-us/download/windows-usb-dvd-download-tool

After downloading the EXE file, open it and select the ISO file location and then click next like in the following screenshot, and wait up to the end when the Boot USB is created.



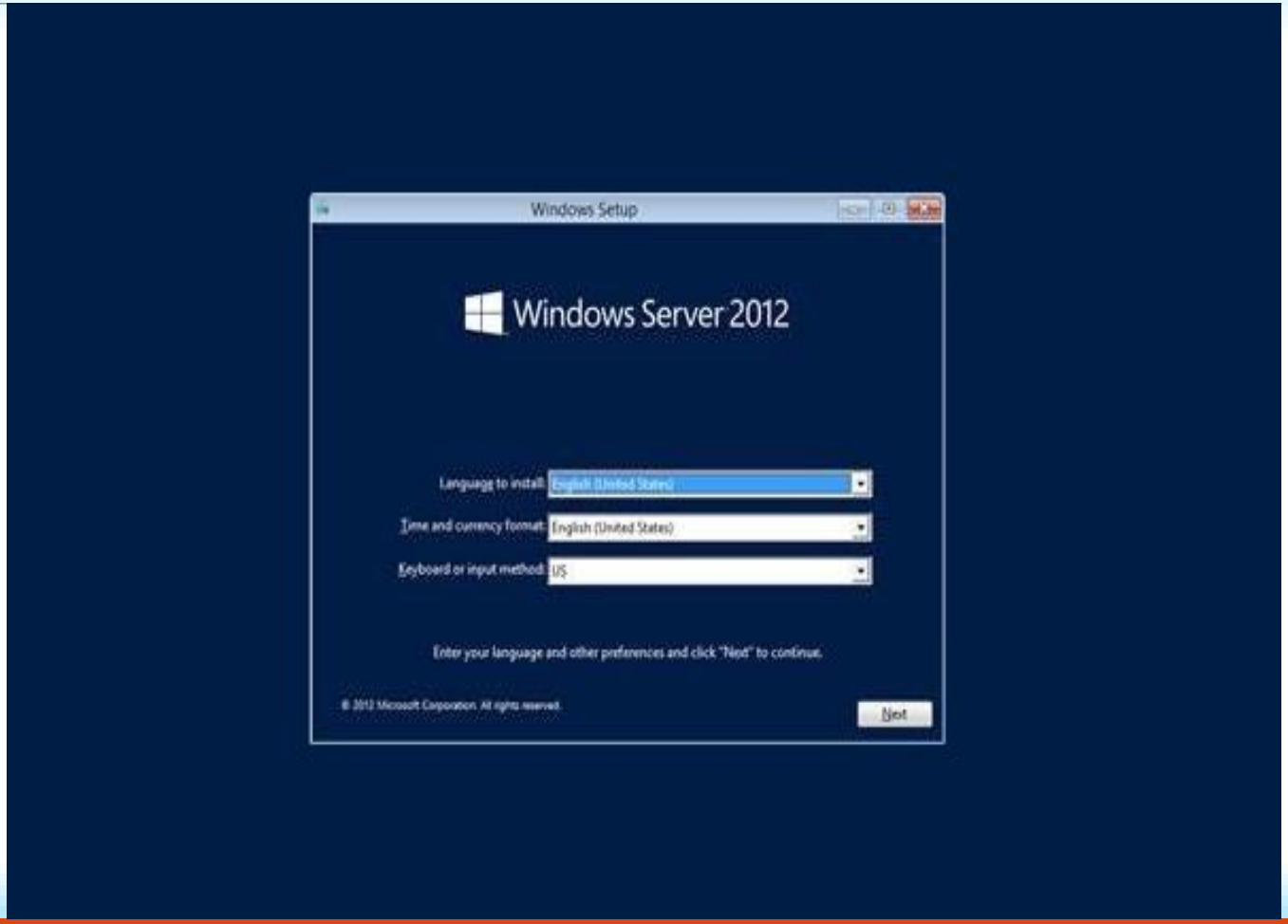
Step 3

After completing the above given steps, plug-in the USB to the server and wait for a while till it loads the files. This will continue for about a couple of minutes as shown in the following screenshot.



Step 4

After the files are loaded, you will see the screen of language settings of installation, keyboard, time and currency format. Generally, all the default ones are also good enough to start with. Click Next.



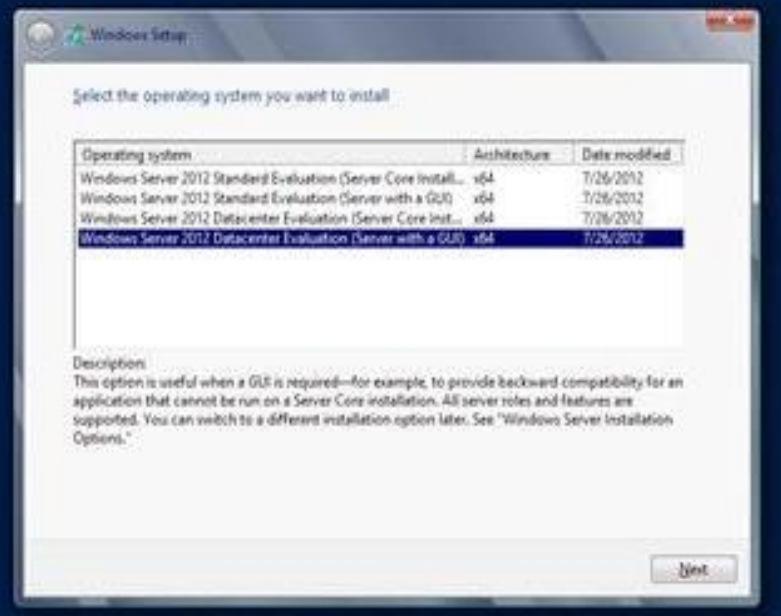
Step 5

Click “Install now”.



Step 6 – Once you have clicked on Install Now, the setup will start and it will load all the files

Step 7 – Wait until the files are loaded and then you will see the following screen. Let's select Windows Server 2012 Data Center Evaluation (Server with GUI) and click Next.

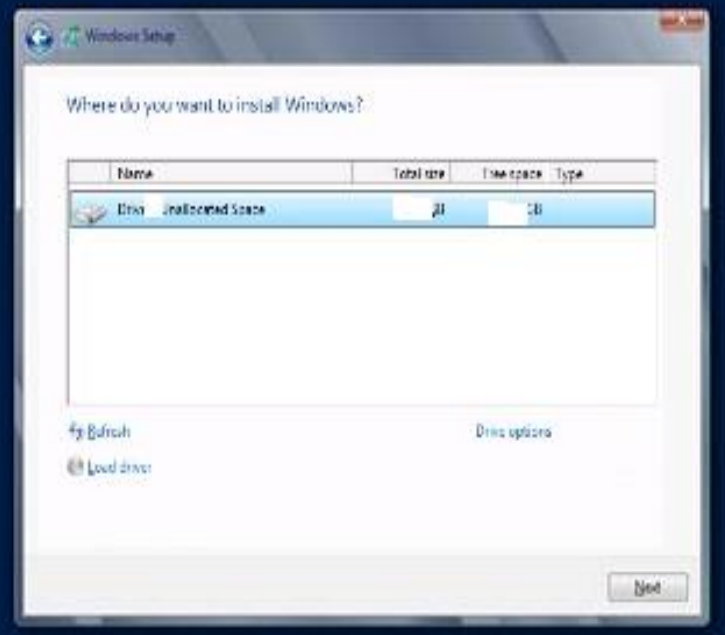


Step 8 − Click "I accept the license terms" and then click on the Next button as shown in the following screenshot.

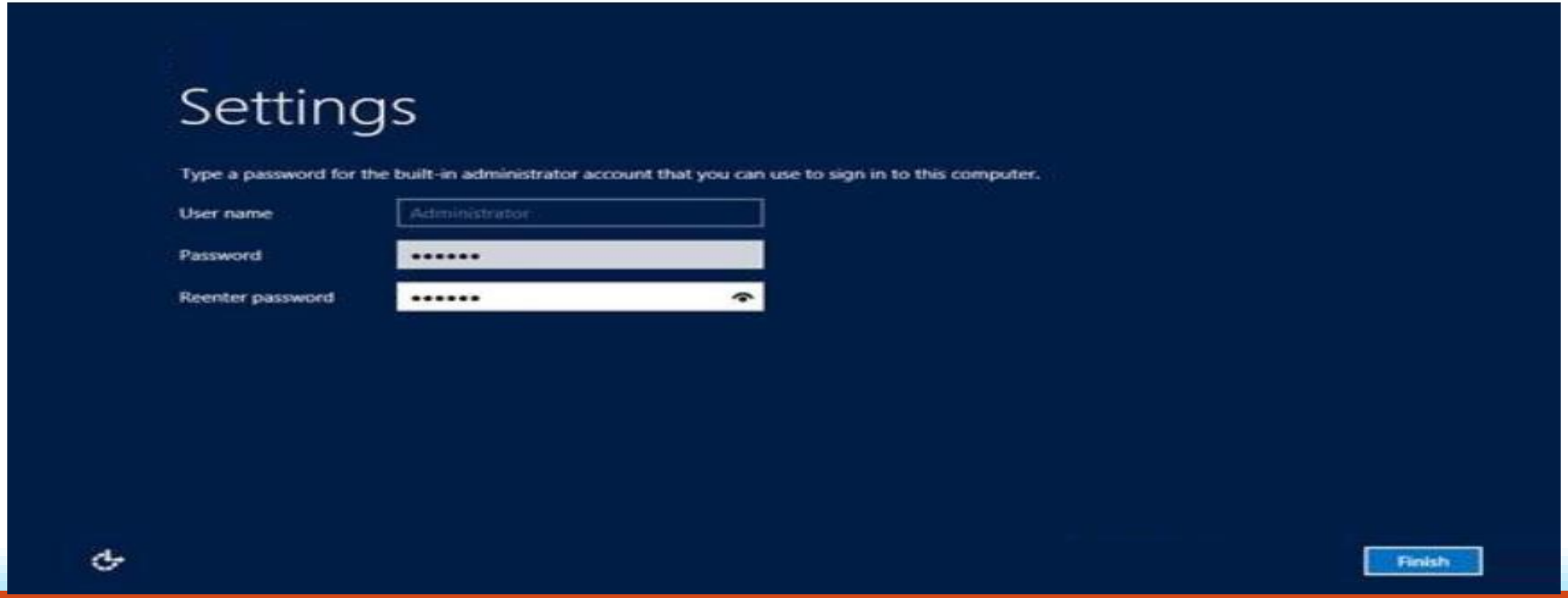


Step 9

The following screen will appear. In "Driver Options" you can create a new partition, delete or format the Hard disk. After you have done this process then you can select the partition where the Windows server 2012 R2 will be installed in our case we have one partition. Once all this is done, then click on Next.



Step 11 – Once the reboot is done the following screen will appear. Set the password for the server and then click on “Finish”.



Step 12 – It will take some minutes until the setup finishes completely.



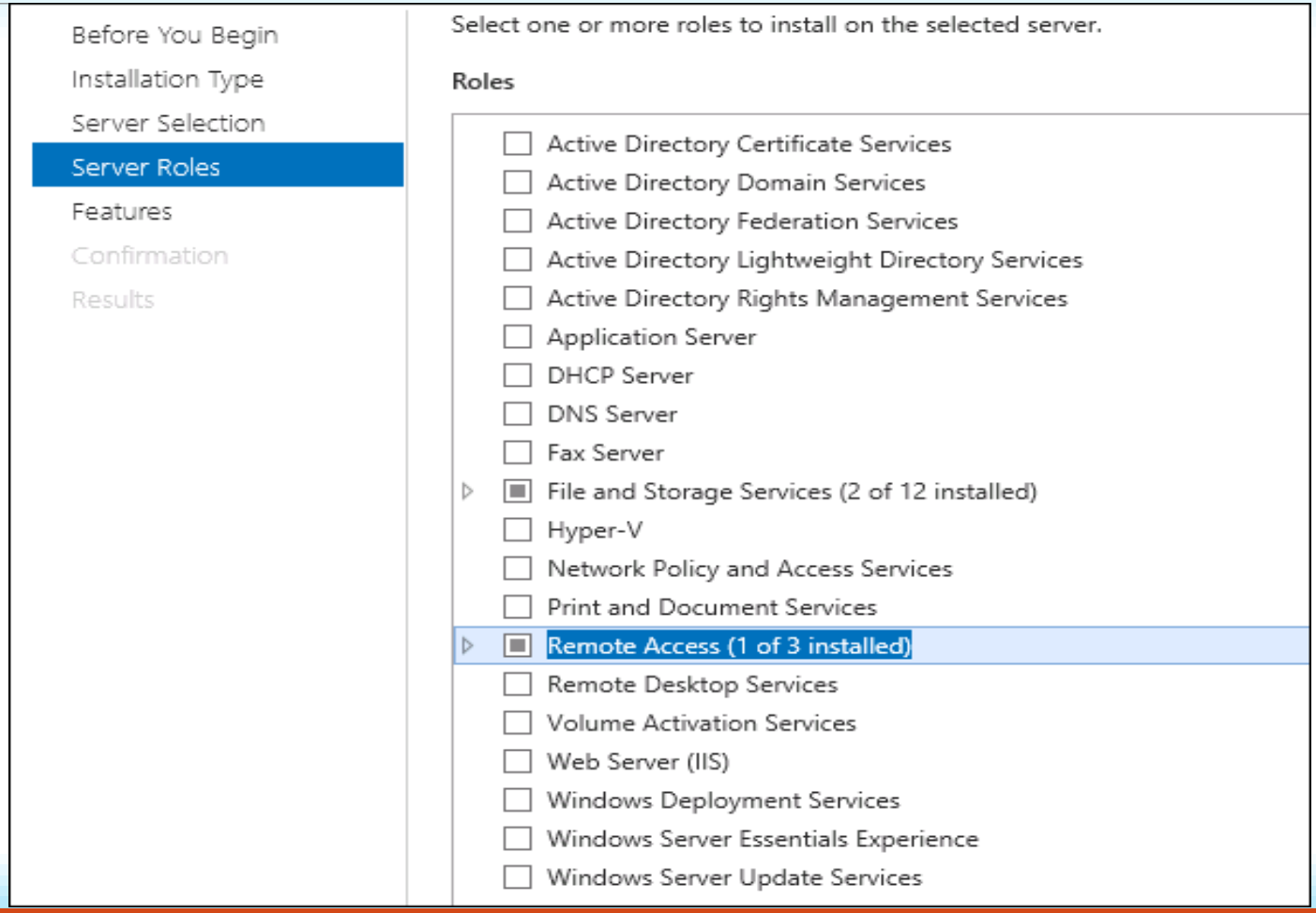
Step 13 – Once all this is done, you have completed the installation process and the following screen will appear.

Congratulations!!!



Windows Server 2012 - Server Roles

Roles and Features are the tools that you need to install or activate in order to complete your IT Administration duties, without their installation you cannot do anything.



Thank you!!

For listening