Hardware and Networking Service Level III

Based on August, 2011 Version 3 Occupational standards

Module Title: Configuring and Administering Server

LG CODE: EIS HNS3 M06 1220 LO(1-3) LG(19-21)

TTLM Code: EIS HNS3 TTLM 1220 V1

December 2020
Bishoftu, Ethiopia

Table of Contents page

L #19	LO #1- Confirm Server Specification

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Confirming Network operating system and server design
- Identifying product, vendor architecture and equipment
- Identifying technology and resource with business requirements

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Confirm Network operating system and server design
- Identify product, vendor architecture and equipment
- Identify technology and resource with business requirements

Learning Instructions:

Read the specific objectives of this Learning Guide.

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

Information Sheet 1.1 Confirming network operating system and server design

Confirm server design with client

The first step in building and configuring a server is to confirm that the information about the project is correct, current and that the client agrees with documented specifications and design.

You will need to reconfirm with the client

- The role of the server
- How it will function with the remaining IT infrastructure, and the required configuration.

Functional requirements

Functional requirements capture the intended behavior of the system. This behavior may be expressed as a service, task or function that the system is required to perform. The functional requirements documents are the 'blueprint' for the project implementation

Requirements issues

One of the first and most important activities to get on when confirming server specifications is to confirm client needs and to ensure that they acknowledge that requirements have been captured correctly and sign-off on the requirements

So one of the tasks in confirming client needs is to document the requirements.

This may include identifying or clarifying

- The business case
- What the client considers the project's main objectives are, including the services that are to be performed
- What IT infrastructure is already in place
- Basic specifications
- Conflicting or overlapping requirements
- Maintenance and backup requirements
- Bandwidth issues that may affect the project

- Role definition of parties involved
- The nature of the data (e.g. text, multimedia)
- Security needs (e.g. levels of user access and privileges)Available support resources Costing.

Functional requirements specification

The functional specification describes what the system will do, as opposed to how it will be done. This distinction is important because the client may not be interested in the details of how a function is implemented, and the technical details may simply cause confusion for the client the implementation details may need to change during the design and development of the project You don't want to have to negotiate changes to the functional specification just to change details of implementation the technical specification for large projects will be detailed in a separate document, and you should not entangle one with the other.

User requirements

How many users are expected to use the system?

How many people will be utilizing the solution at one time?

Where the users will be located (e.g. overseas, interstate or at home?

Technical requirements

- What types of computers/operating systems will the users operate?
- Are their desktops all the same?
- What bandwidth restrictions occur presently?
- What security (login) will they need?
- What backup policies need to be in place?

- Who will have administration rights?
- What will the business do if the system fails at any stage?
- Who is the project sponsor?
- What does management expect the system will do and won't do?

Hardware

- Compatibility: will the solution work with existing systems?
- Support for proprietary formats: will the existing systems and architecture support all types of data?
- Will the new system be supported by existing resources within the company?
- What funding is available for new hardware?
- What is the backup strategy? Has this been cost?
- Does the system need to be redundant, load balanced or clustered?
- Will there be time delays to purchase and install hardware?
- Who will be building the server?
- Are there other projects that you may be able to share hardware costs with?

Software

- What is the true cost of the software?
- Are there licensing issues? As the system is in development, should you pay for all the licensing now or when the system is in live mode?
- Can the software be licensed for use by multiple users who use it on different machines? (Concurrent licensing)
- How long has the software been on the market for?
- What happens if the software company becomes insolvent? Who supports it?
- Who owns the source code?
- What happens if the source code is modified? Who supports the product then?
- Does the solution work with all other company software systems?
- If web-based, does the solution function on all common browsers?
- If security is a concern, can the software be delivered in a 'locked down' format?
- Does the software support all file formats?
- Is the software easy to use, or are there major training issues/costs?

Stage sign-off

A project is divided into many stages. Each stage will have entry and exit criteria that must be met before the project can progress further.

At the planning stage, the owner of the system or project steering committee must sign-off on stage exit criteria, which would include server design documentation. This then would trigger the start of the next stage of the project the development stage.

The exit criteria will normally state that the following items have been identified and agreed to:

- Server platforms
- Operating systems
- Applications
- Hardware and software limitations
- Client and developer responsibilities
- Privacy issues
- Initial timelines
- Budget
- State and federal regulations.

Identify specifications

Once requirements have been defined and client needs are clarified, it's time to start thinking about identifying products that fit the solution. In this case, we need to focus on the possible server solutions. Remember: a server consists of

- Hardware
- Software
- Network connections.

There are different types of server designs that need to be considered when identifying equipment. There are multiple server architectures to choose from, including

- Mainframe architecture

- File sharing architecture
- Client/server architecture
- Web based architecture Thin client architecture Blade architecture.

Network operating system

Definition – Network operating system is like as software that is installed on the server side on the network infrastructure. Network operating system provides the several functionalities for managing the data, applications, security, and other functions. In this system, all computers and other terminal are connected each other through LAN (Local Area Network) line or Inter-network system. Main objective of NOS (Network operating system) is to share data, printer access, and other devices. Novell NetWare was introduced as a first network operating system, in 1983.

There are some **working functionality of network operating system**.

- NOS allows the protection of data, information, and their hardware components from unauthorized users.
- It allows to program testing routines.
- It can memory management while loading of programs.
- To detect the all errors and bugs while execution of their jobs.
- It provides the remote access to server/client machines.
- It manages the sequence of all their processing jobs.
- NOS allows to all users for creating user account, and they can manage them as well.
- It allows to all Configuration and management of entire network resources.
- It allows to all communication services.

- It can monitor as well as troubleshooting the entire network.

There are two types of components of network operating system such as hardware and software components.

Hardware Components

There are some devices which are physically connected with each other.

- Server M/C
- Client M/C
- Peer M/C
- Communication medium – Guided media – coaxial cable, fiber optic cables.
- Unguided media – microwaves, infra-red waves
- Connecting Terminals – Routers, Bridges, Hubs, Repeaters, Gateways, Switches, hub, Network Interface Card, Shared printers.

Software Components

These are some programs which are installed on the network machines.

- Networking Operating System – Unix, Linux, Windows 2000, Windows 98, Windows XP.
- Protocol Suite – OSI Model (Open System Interconnections), TCP / IP Model

•

Self-Check 1.1.	Written Test

Directions: Answer all the questions listed below.

I. Elaborate the following

1. List and explain multiple server architecture. 3points
2. List 3 working functionality of network operating system 3points
3. List 3 thing that server consist. 3 points
4. List four requirement issues of server. 4 points

Note: **Satisfactory rating - 13 out of 13 points** **Unsatisfactory - below 13and 13points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 1.2. Identify product ,vendor architecture and equipment

Identify vendor architecture

Each vendor in the marketplace supports specific platforms and server architecture. When selecting equipment for the server, you will need to consider the hardware and software platforms from each vendor.

Hardware platform refers to the hardware components that make up the computer system.

Software platform refers to the operating system or programming language developed for the hardware. There are defined terms used in the IT industry to describe the types of platforms, including o Wintel o Lintel o Mac, Macintel o Mainframe o UNIX o Alpha AXP o Java o .Net.

Platform selection

Platform choice is an important consideration very early on in a project. Most projects cannot be changed midstream, as there are many different factors such as file formats and protocols that are fixed requirements. There are many different types of server platforms designed to perform many types of functions. A server's platform will mainly depend on the type of service provided.

Some of the functions provided by a server are

- mail services
- web services
- transactional processing services
- streaming media services
- remote access services

- file storage and retrieval services
- network access
- Application services.

Hardware and software specifications

Detailed information about server hardware is available from the server documentation and from the hardware manufacturer's website. At a minimum, the server vendor will have a component list detailing what hardware is in the server.

Identifying network equipment's

Hub

Hubs connect multiple computer networking devices together. A hub also acts as a repeater in that it amplifies signals that deteriorate after traveling long distances over connecting cables. A hub is the simplest in the family of network connecting devices because it connects LAN components with identical protocols.

A hub can be used with both digital and analog data, provided its settings have been configured to prepare for the formatting of the incoming data. For example, if the incoming data is in digital format, the hub must pass it on as packets; however, if the incoming data is analog, then the hub passes it on in signal form.

Hubs do not perform packet filtering or addressing functions; they just send data packets to all connected devices. Hubs operate at the Physical layer of the Open Systems Interconnection (OSI) model. There are two types of hubs: simple and multiple port.

Switch

Switches generally have a more intelligent role than hubs. A switch is a multiport device that improves network efficiency. The switch maintains limited routing information about nodes in the internal network, and it allows connections to systems like hubs or routers. Strands of LANs are usually connected using switches. Generally, switches can read the hardware addresses of incoming packets to transmit them to the appropriate destination.

Using switches improves network efficiency over hubs or routers because of the virtual circuit capability. Switches also improve network security because the virtual circuits are more difficult to examine with network monitors. You can think of a switch as a device that has some of the best capabilities of routers and hubs combined. A switch can work at either the Data Link layer or the Network layer of the OSI model. A multilayer switch is one that can operate at both layers, which means that it can operate as both a switch and a router. A multilayer switch is a high-performance device that supports the same routing protocols as routers.

Switches can be subject to distributed denial of service (DDoS) attacks; flood guards are used to prevent malicious traffic from bringing the switch to a halt. Switch port security is important so be sure to secure switches: Disable all unused ports and use DHCP snooping, ARP inspection and MAC address filtering.

Modem

Modems (modulators-demodulators) are used to transmit digital signals over analog telephone lines. Thus, digital signals are converted by the modem into analog signals of different frequencies and transmitted to a modem at the receiving location. The receiving modem performs the reverse transformation and provides a digital output to a device connected to a modem, usually a computer. The digital data is usually transferred to or from the modem over a serial line through an industry standard interface, RS-232. Many telephone companies offer DSL services, and many cable operators use modems as end terminals for identification and recognition of home and personal users. Modems work on both the Physical and Data Link layers.

Router

Routers help transmit packets to their destinations by charting a path through the sea of interconnected networking devices using different network topologies. Routers are intelligent devices, and they store information about the networks they're connected to. Most routers can be configured to operate as packet-filtering firewalls and use access control lists (ACLs). Routers, in conjunction with a channel service unit/data service unit (CSU/DSU), are also used to translate from LAN framing to WAN framing. This is needed because LANs and WANs use different network protocols. Such routers are known as border routers. They serve as the outside connection of a LAN to a WAN, and they operate at the border of your network.

Router are also used to divide internal networks into two or more sub networks. Routers can also be connected internally to other routers, creating zones that operate independently. Routers establish communication by maintaining tables about destinations and local connections. A router contains information about the systems connected to it and where to send requests if the destination isn't known. Routers usually communicate routing and other information using one of three standard protocols: Routing Information Protocol (RIP), Border Gateway Protocol (BGP) or Open Shortest Path First (OSPF).

Routers are your first line of defense, and they must be configured to pass only traffic that is authorized by network administrators. The routes themselves can be configured as static or dynamic. If they are static, they can only be configured manually and stay that way until changed. If they are dynamic, they learn of other routers around them and use information about those routers to build their routing tables.

Routers are general-purpose devices that interconnect two or more heterogeneous networks. They are usually dedicated to special-purpose computers, with separate input and output network interfaces for each connected network. Because routers and gateways are the backbone of large computer networks like the internet, they have special features that give them the flexibility and the ability to cope with varying network addressing schemes and frame sizes through segmentation of big packets into smaller

sizes that fit the new network components. Each router interface has its own Address Resolution Protocol (ARP) module, its own LAN address (network card address) and its own Internet Protocol (IP) address. The router, with the help of a routing table, has knowledge of routes a packet could take from its source to its destination. The routing table, like in the bridge and switch, grows dynamically. Upon receipt of a packet, the router removes the packet headers and trailers and analyzes the IP header by determining the source and destination addresses and data type, and noting the arrival time. It also updates the router table with new addresses not already in the table. The IP header and arrival time information is entered in the routing table. Routers normally work at the Network layer of the OSI model.

Crimpers

Crimpers are tools **used to** make cold weld joints between two wires or a wire and a connector, such as lugs. Ideally, the electrical and mechanical properties of the weld joint are as strong as the parent materials. **Crimping** tools are sized according to the wire gauges (using AWG - American Wire Gauge) they can accept.

Self-Check1.2.	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.

1. Crimping tools are sized according to the wire gauges they can accept. 2pts
2. Modems are used to transmit analog over digital signals telephone lines. 2pts
3. Router are also used to divide internal networks into two or more sub networks. 2pts
4. A switch can work at either the Data Link layer or the Network layer of the OSI model. 2pts
5. Hub is not acting like a repeater. 2pts

II. DIRECTION: CHOOSE THE BEST ANSWER AND ENCIRCLE THE CORRECT LETTER OF YOUR CHOICE

1. One of the following is the functions provided by a server. 2.5pts
   A. Mail server
   B. Print server
   C. File storage service
   D. ALL
2. Each router interface has its own Address Resolution Protocol (ARP) module, its own LAN address (network card address) and its own Internet Protocol (IP) address. 2.5pts
   A. Router
   B. Switch
   C. Hub
   D. Repeater

Note: **Satisfactory rating – 15 out of 15 points** **Unsatisfactory - below 15and 15points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 1.3. Identify technologies and resource

Identify server technologies

Information technology is constantly changing and improving at a high speed. Common hardware technologies are

- Processors
- Random access memory
- Storage
- Optical drive.

System requirements

For hardware and software components, you will need to ensure that any minimum system requirements are met. You will find this information at manufacturer's websites as whitepaper, installation documentation, and product overviews.

For software, you will need to ensure that your system meets minimum requirements for

- the type and speed of the processor o memory
- available disk space o operating system
- for hardware components you will need to ensure compatibility with the existing system o
- processor — ensure motherboard support for new CPU is available
- memory — ensure type and size is compatible with the motherboard
- Hard drives and optical drives — ensure that there is an available drive bay, power cable and interface connection.

- Expansion cards — ensure that there is a suitable expansion slot for installation of the expansion card.

Windows Server 2008 Core Technologies

- New Technology File System
- Active Directory
- Microsoft Management Console
- Disk Management
- File and printer sharing
- Windows networking
- Internet Information Services

New Technology File System

- Successor to FAT/FAT32
- Native support for long filenames, file and folder permissions, support for large files and volumes, reliability, compression, and encryption
- Most significant is the added ability for more granular file access control

Active Directory

- Provides a single point of administration of resources (Users, groups, shared printers, etc.)
- Provides centralized authentication and authorization of users to network resources

- Along with DNS, provides domain-naming services and management for a Windows domain.
- Enables administrators to assign system policies, deploy software to client computers, and assign permissions and rights to users of network resources

Microsoft Management Console (MMC)

- Creates a centralized management interface for administrators
- Uses snap-ins, which are designed to perform specific administrative tasks (such as disk management or active directory configuration)
- Multiple snap-ins can be combined into a single MMC, providing quicker access to commonly used tools

Disk Management

- Monitors disk and volume status
- Initializes new disks
- Creates and formats new volumes
- Troubleshoots disk problems
- Configures redundant disk configurations (RAID)

File and Printer Sharing

- Shadow copies
- Disk quotas
- Distributed File System (DFS)

- Also possible to configure options that allow redundancy, version control, and user storage restrictions.

Windows Networking Concepts

The Workgroup Model:

- A small group of computers that share common roles, such as sharing files or printers.
- Also called a peer-to-peer network
- Decentralized logons, security, and resource sharing
- Easy to configure and works well for small groups of users (fewer than 10)
- A Windows Server 2008 server that participates in a workgroup is referred to as a The Domain Model
- Preferred for a network of more than 10 computers or a network that requires centralized security and resource management
- Requires at least one computer to be a domain controller
- A domain controller is a Windows server that has Active Directory installed and is responsible for allowing client computers access to domain resources
- A member server is a Windows Server that's in the management scope of a domain but doesn't have Active Directory installed
- stand-alone server

Windows Networking Components

- Network Interface
    - ✓ Composed of two parts; the network interface card (NIC) and the device driver software
- Network Protocol
    - ✓ Specifies the rules and format of communication between network devices
- Network Client and Server Software
    - ✓ Network client sends requests to a server to access network resources
    - ✓ Network server software receives requests for shared network resources and makes those resources available to a network client

Internet Information Services

- Windows Server 2008 provides IIS 7.0
- Modular design
    - ✓ Unused features aren't available for attackers to exploit
- Extensibility
    - ✓ Functionality is easily added via modular design
- Manageability
    - ✓ Delegated administration; can assign control over some aspects of the website to developers and content owners
    - ✓ Appcmd.exe provides the ability to manage IIS via scripts and batch files

Self-Check1.3.	Written Test

Directions: Answer all the questions listed below.

I. Elaborate the following

1. List the network components. 3pts
2. What are windows technologies. 7pts
3. What are the feature of IIS 7 ? 3pts

Note: **Satisfactory rating - 13 out of 13points** **Unsatisfactory - below 13 and 13points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

L #20	LO #2- Verify server compatibility and inter-operability

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Reviewing Hardware and software to ensure compatibility
- Obtaining all hardware required for server installation
- Installing required operating system and software
- Installing additional tools or third-party software
- Patching operating system and applications

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Review Hardware and software to ensure compatibility
- Obtain all hardware required for server installation
- Install required operating system and software
- Install additional tools or third-party software
- Patching operating system and applications

Learning Instructions:

Read the specific objectives of this Learning Guide.

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

Information Sheet 2.1.Reviewing Hardware and software to ensure compatibility

Ensuring Hardware Compatibility

Networking is hardware-dependent, and not all hardware products are compatible. In order for two computers to communicate, they must use the same protocol.

Computer hardware raises similar issues. In some instances, two pieces of hardware simply can't communicate with each other. For example, consider an analogy to automobile parts: two parts might look alike and be able to perform the same function, but each is designed to work in a different car.

This lesson examines the issue of ensuring hardware compatibility and what you can do to resolve incompatibilities.

When Hardware Is a Problem

Hardware incompatibilities are a fact of life. In today's computer industry, hundreds of manufacturers develop hardware and software.

Each developer has a unique perspective on the best way to accomplish the same task, and each will provide a unique solution. Copyright and patent issues further complicate the matter. Evaluating and selecting hardware is a major part of planning for network implementation.

It is likely that you will have to create a network out of an existing collection of hardware. In such cases, the likelihood that problems stemming from incompatible hardware will arise is very high. It is sometimes more cost-effective to discard the old hardware and start over. The most common incompatibilities occur between hardware and software. Changing or upgrading a computer or network operating system can lead to major problems.

Reading the Documentation

Read all the documentation about the products involved. Your hardware or software might have a recurring problem or might conflict with another product. Frequently, the

manufacturer will document these conflicts and provide a fix. If you do not find the solution in the supplied documentation, you might contact the manufacturer of the product and ask for undocumented conflicts.

Detection during Installation

When you install a new computer or network operating system, your computer will usually attempt to detect the hardware in the system during the installation process and load the appropriate drivers for it.

Check the list of detected hardware and ensure that it matches what is already in the machine. If you are installing Novell's Intranet Ware, for example, the install utility will automatically scan your computer for hardware such as hard disks, CD-ROM drives, and NICs. If the devices are recognized, the appropriate drivers will then be loaded for the recognized devices.

COMPUTER

Checking Minimum Requirements

As a first step before you install, make sure that you exceed the minimum requirements for the resources in the computer. These resources include processor speed, memory, and disk space. Table **1.1** Minimum computer Hardware Requirements for server 2008

lists some minimum computer hardware requirements for server 2008

Requirement	**Standard Edition**	**Enterprise Edition**	**Datacenter Edition**	**Web Edition**
Minimum CPU Speed	133 MHz	133 MHz for x86-based computers733 MHz for Itanium-based computers*	400 MHz for x86-based computers733 MHz for Itanium-based computers*	133 MHz
Recommended CPU Speed	550 MHz	733 MHz	733 MHz	550 MHz

Minimum RAM	128 MB	128 MB	512 MB	128 MB
Recommended Minimum RAM	256 MB	256 MB	1 GB	256 MB
Maximum RAM	4 GB	32 GB for x86based computers512 GB for Itaniumbased computers*	64 GB for x86based computers512 GB for Itanium-based computers*	2 GB
Multiprocessor Support **	Up to 4	Up to 8	Minimum 8 required Maximum 64	Up to 2

Table 1 Minimum computer Hardware Requirements for server 2008

Switch

Requirement		Specification
Operating speed		0.01 mm to 1m/s * 1
Operating frequency	Mechanical	240 operations/min
	Electrical	20 operations/min
Insulation resistance		100 MΩ min. (at 500 VDC)
Contact resistance		15 mΩ max. (initial value)
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between terminals of the same polarity 2,000 VAC, 50/60 Hz for 1 min between the current-carrying metal parts and the ground, and between each terminal and non-current- carrying metal parts
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude * 2
Shock resistance	Destruction	1,000 m/s^2 max.
	Malfunction	300 $m/^2$ max. * 1 * 2
Durability	Mechanical	1,000,000 operations min.
	Electrical	500,000 operations min.
Degree of protection		IP00
Degree of protection against electric shock		Class I
Proof tracking index (PTI)		175
Ambient operating temperature		-25 ° C to 80 ° C (with no icing)
Ambient operating humidity		35% to 85%RH
Weight		Approx. 22 to 58 g

Table 2 Minimum switch Requirements for server 2008

Software compatibility

Application software

When evaluating software, the cost of the product will be determined by how many licenses are required. A license is a legal agreement to use software, and the exact terms of the agreement vary.

An important part of managing software licenses is to purchase the right types and mix of licenses. Software licenses are offered as follows:

- A site license for a number of computers at a particular office
- A license assigned to a specific computer
- A license assigned to one specific user.

Self-Check2.1	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.

1. Evaluating and selecting hardware is a major part of planning for network implementation. 2pts
2. When evaluating software, the cost of the product will be determined by how many licenses are required. 2pts
3. A license is not assigned to a specific computer. 2pts
4. A first step before you install a server is , make sure that you exceed the minimum requirements for the resources in the computer.2pts
5. The most common incompatibilities occur between hardware and software.2pts

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10 and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 2.2. Obtaining all hardware required for server installation

Network Hardware

Definition – Network Components is also called the “Network Device” or “Network Equipment” or “Computer Networking Devices” which are used to need make communication and interaction between multiple computers over network.

We need to obtain the following hardware for server installation

Network hardware is not as susceptible as software to conflicts and compatibility problems. Connectivity Devices, covers the basics of how these devices (repeaters, bridges, routers, routers, and gateways) work.

Since these devices are common to many different types of networks and work mainly with data packets, they are less likely to present conflicts. The manufacturers of these products maintain strict adherence to the IEEE 802.x standards.

Therefore, any device that meets an IEEE standard can communicate with another device that meets the same standard. The only situation in which you can expect incompatibility issues to arise is when two devices meet different standards. There are some network hardware that’s stated below.

NIC

NIC stands for “Network Interface Card”, and this hardware component is used to link multiple computers with each other over the network. NIC performs some activates such as sending and receiving data as well as controlling data flow between linked all terminals over the network. NIC is capable to send and receive data on (10,100 to 1000 Mb/s) transfer rate. All NIC contain unique id (MAC address) that is programmed on chip, and it is embedded on the network interface card.

NIC has two variant such as –

1. **Wired NIC** – Cables and connectors are connected to Wired NIC, which is embedded inside the motherboard.

2. **Wireless NIC** – Wireless NIC has small type antenna, it helps to make connection on the wireless network.

Modem

Modem stands for “Modulator – Demodulator”. Main objective of using of Modem in computer network is to move data from one computer terminal to another computer terminal via telephone line system.

Types of modem are:

Ethernet modem – It is connected into NIC in the computer system.

Wireless modem – Wireless modem contains small antenna, and it is connected with computer terminal through wireless network.

Switches

Switches are used in the wired network such as Ethernet network. Switch is a small type of hardware component that helps to receive data from other different input ports and send this got data to appropriate output port, and finally destination terminal obtains data over the network.

Here, some types of switches

Unmanaged switches – These switches are used in the small area such as home network.

Managed switches – These switches are used in medium size of area such as small and large organizations. There are two types such as Smart switches and Enterprise managed switches.

Ethernet switches – These types of switches are mostly used to decrease network congestion, and it helps to make connection with LAN points.

PoE switches – PoE switches stands for “Power over Ethernet”, and they deliver to great flexibility by cabling process.

Client

Client is edge point of computers which are obtained the requests and received services from server side, and it uses computer network resources such as printer, scanner, plotter, and more.

Server

Server is high level computer which are get high configuration. It has responsibility to handle all resources of the entire network system. On the server, a special type of operating system is installed, it is known as network operating system.

Server has some variants such as –

- File servers
- Database servers
- Print servers, and more

Self-Check2.2.	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: CHOOSE THE BEST ANSWER AND ENCIRCLE THE CORRECT LETTER OF YOUR CHOICE. (each question have 2pts)

1. One of the following is a high level computer which are get high configuration
   A. Mainframe computer
   B. Server computer
   C. Personal computer
   D. server installed computer
2. Which of the following is stands for “Modulator – Demodulator
   A. Switch
   B. Repeater
   C. Router
   D. Modem
3. ---------- has small type antenna, it helps to make connection on the wireless network.
   A. Wireless NIC
   B. Weird NIC
   C. weird Modem
   D. wireless Modem
4. These types of switches are mostly used to decrease network congestion, and it helps to make connection with LAN points
   A. Unmanaged switch
   B. Managed switch
   C. Ethernet switch
   D. PoE switch
5. These switches are used in the small area such as home network.
   A. Unmanaged switch
   B. Managed switch
   C. Ethernet switch
   D. PoE switch

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 2.3. Installing required operating system and software

Installing an operating system?

The steps for installing an operating system, like Linux or Microsoft Windows, depends on the operating system version you are installing. Each version has different steps and options that are unique to that operating system.

On this page, you'll find general steps and guidelines for installing an operating system on your computer.

Purchase the operating system

First, you need to purchase the operating system that you want to install on the computer. The best place to purchase the operating system from is a retail store, like Best Buy, or through an online store, like Amazon or Newegg. The operating system may come on multiple CD or DVD discs, or it may even come on a USB flash drive.

Downloading a copy of the operating system is usually the most convenient way to obtain it. However, be sure you obtain the operating system from the publisher, like Microsoft. Downloading it from another source may result in an unusable or illegal copy of the software.

Install the operating system

To install the computer's operating system using a CD or DVD, you need to configure your computer to boot from the CD/DVD drive. You can change the boot sequence in your BIOS setup, and setting the CD/DVD drive to be the first boot device. Some computers may also allow you to access the boot sequence directly at computer start up, without entering the BIOS, by pressing a specific key on the keyboard. The key to press differs for each computer, but is often the Delete key or one of the function keys.

- **entering the BIOS or CMOS setup**

If the operating system software came on a USB flash drive, you need to configure the computer to boot to a USB device as the first boot device.

Once the computer is configured to boot to the proper device, the computer should load the operating system installation program and guide you through the install process. You will be asked questions along the way for configuration of basic settings, like date and time, user account name, and if you want to enable automatic operating system updates. Go through the installation steps, answering questions and selecting the preferred options.

Self-Check2.3.	Written Test

Directions: Answer all the questions listed below.

I. Elaborate the following

1. How u can get operating system?(10pts)

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Operation Sheet 2.1. Installing operating system and software

Operation title: Installing window server 2008

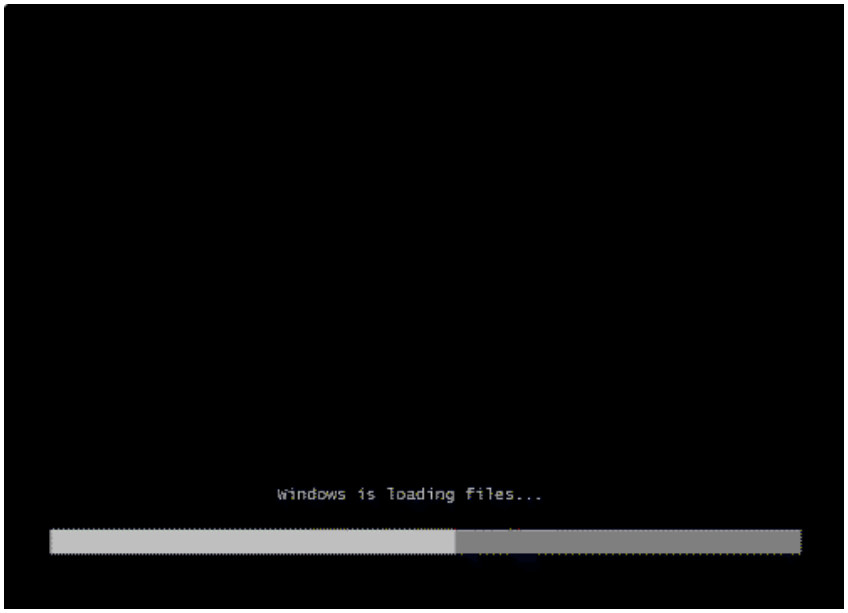
Equipment ,tools and materials: computer and server software

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

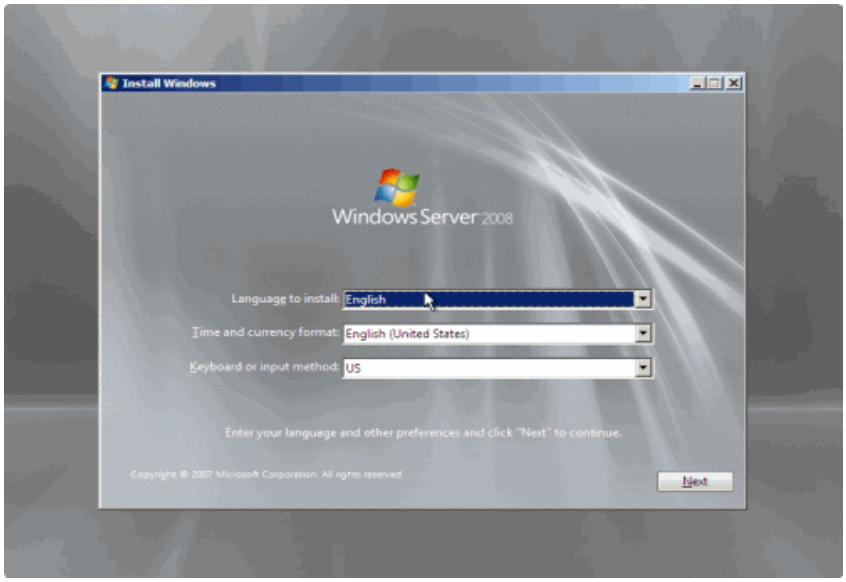
Procedures :

Step 1. Insert the appropriate **Windows Server 2008 installation media** into your DVD drive.

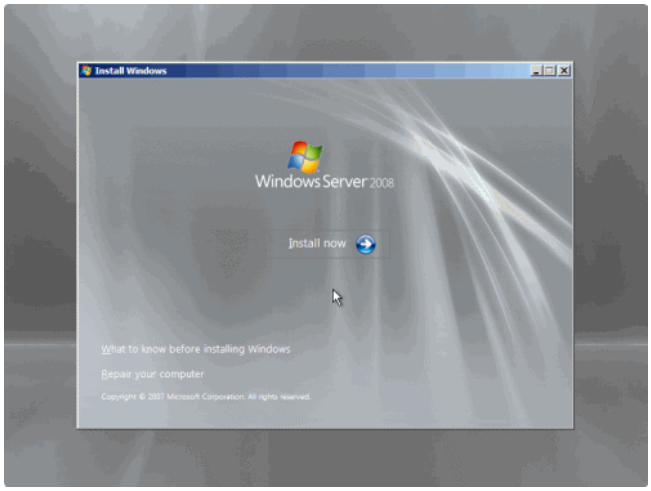
Step 2. Reboot the computer.



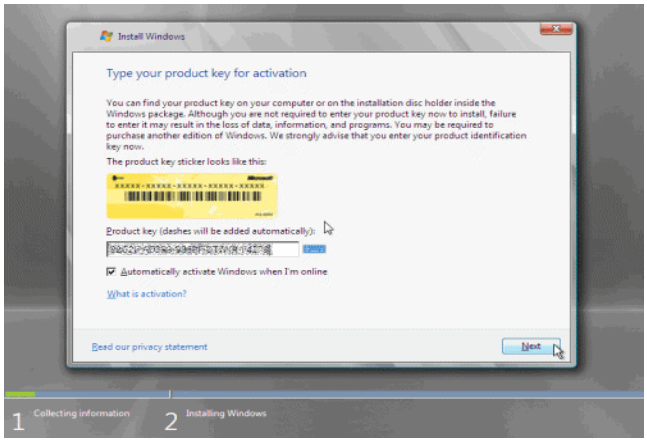
Step 3. When prompted for an **installation language** and other regional options, make your selection and press **Next**.



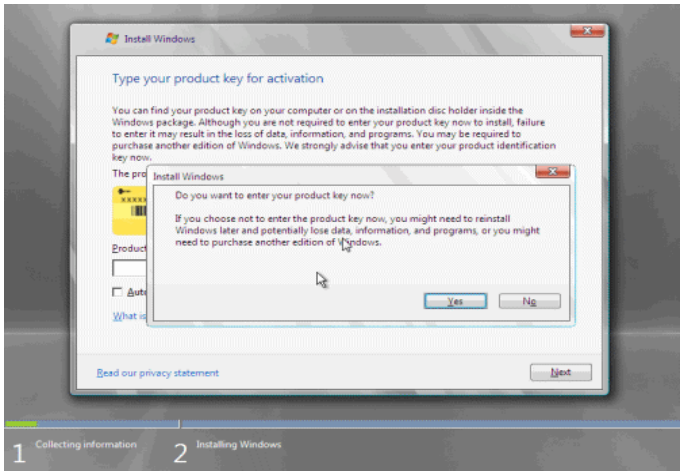
Step 4. Next, press **Install Now** to begin the installation process.



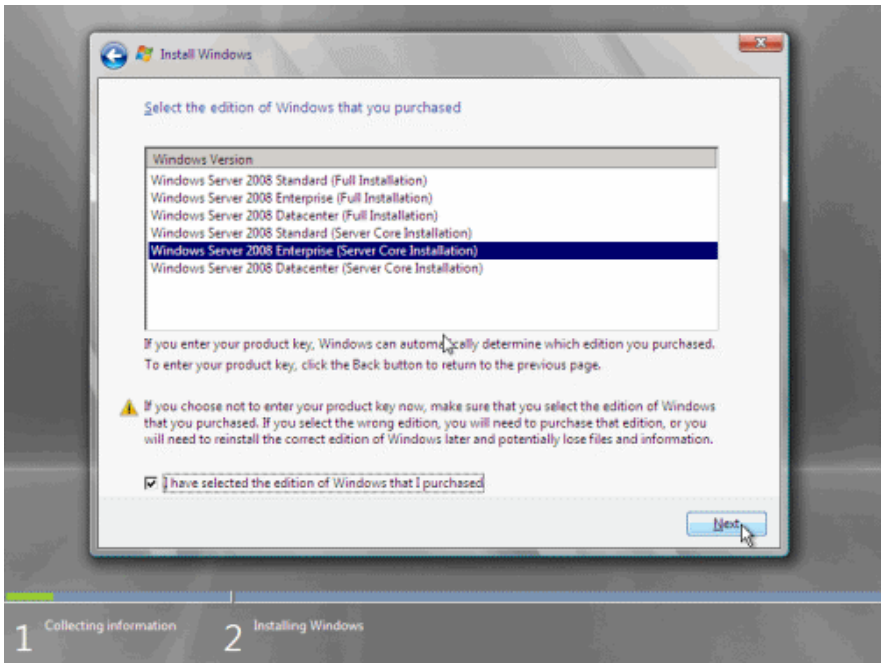
Step 5. Product activation is now also identical with that found in Windows Vista. Enter your **Product ID** in the next window, and if you want to automatically activate Windows the moment the installation finishes, click **Next.**



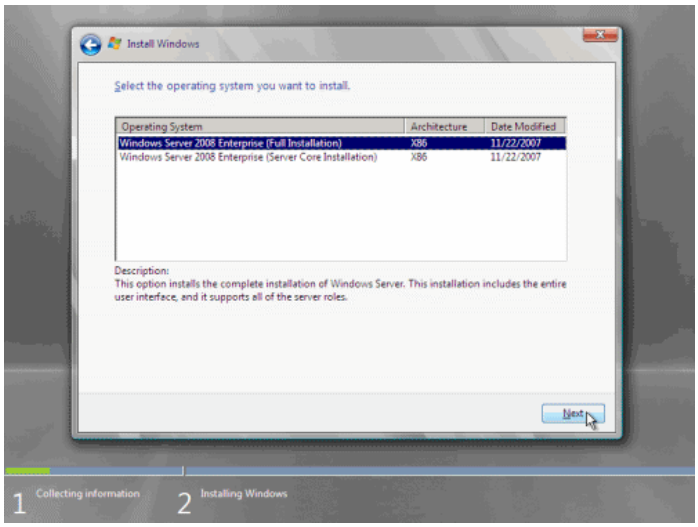
Step 6. If you do not have the Product ID available right now, you can leave the box empty, and click next. You will need to provide the Product ID later, after the server installation is over. Press No.



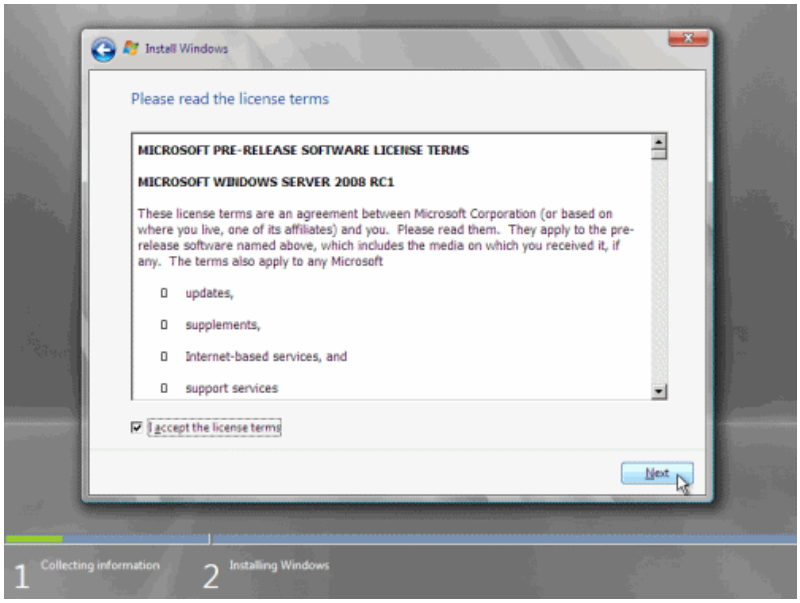
Step 7. Because you did not provide the correct ID, the installation process cannot determine what kind of Windows Server 2008 license you own, and therefore you will be prompted to **select your correct version** in the next screen, assuming you are telling the truth and will provide the correct ID to prove your selection later on.



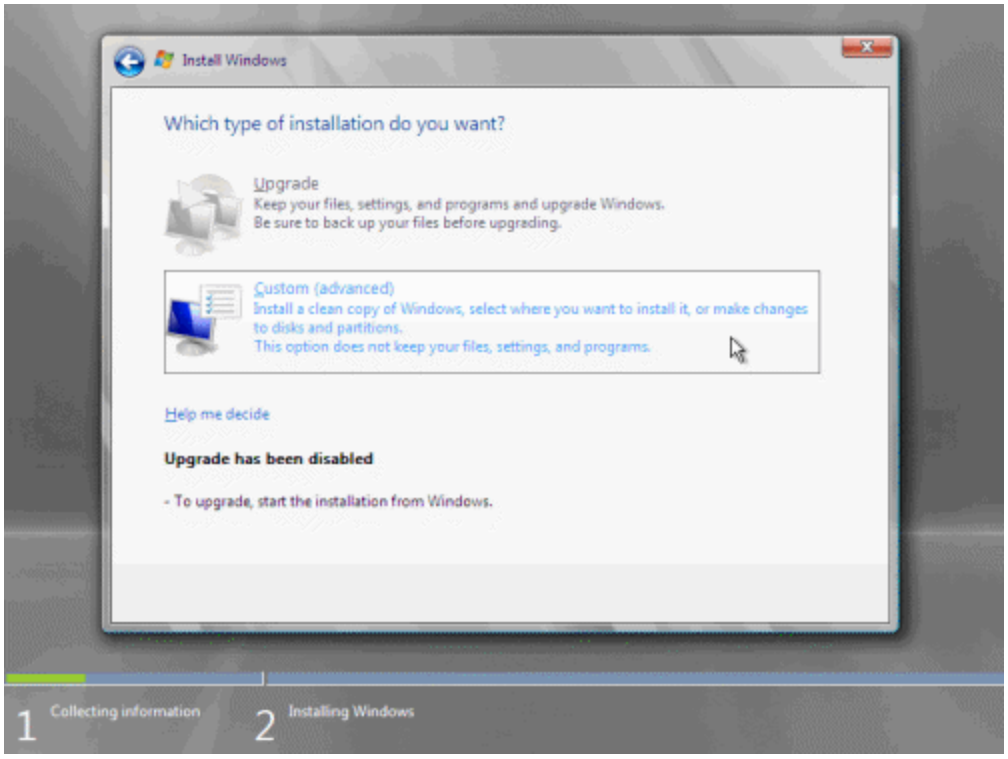
Step 8. If you did provide the right Product ID, select the **Full version** of the right Windows version you're prompted, and click **Next**.



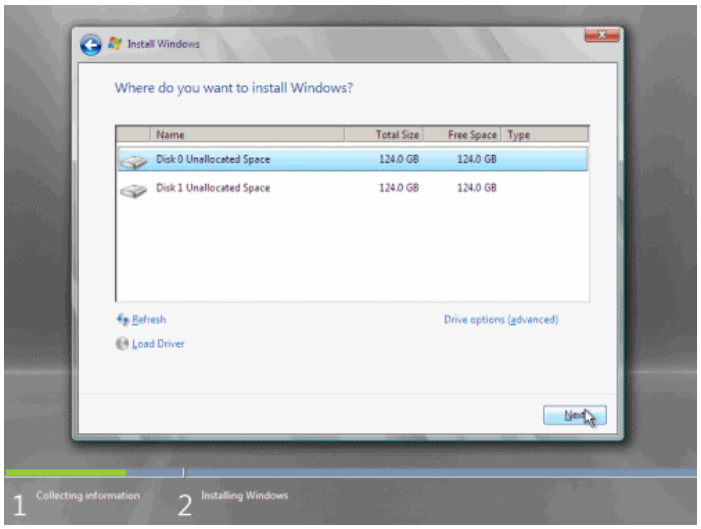
Step 9. Read and accept the license terms by clicking to select the **checkbox** and pressing **Next**.



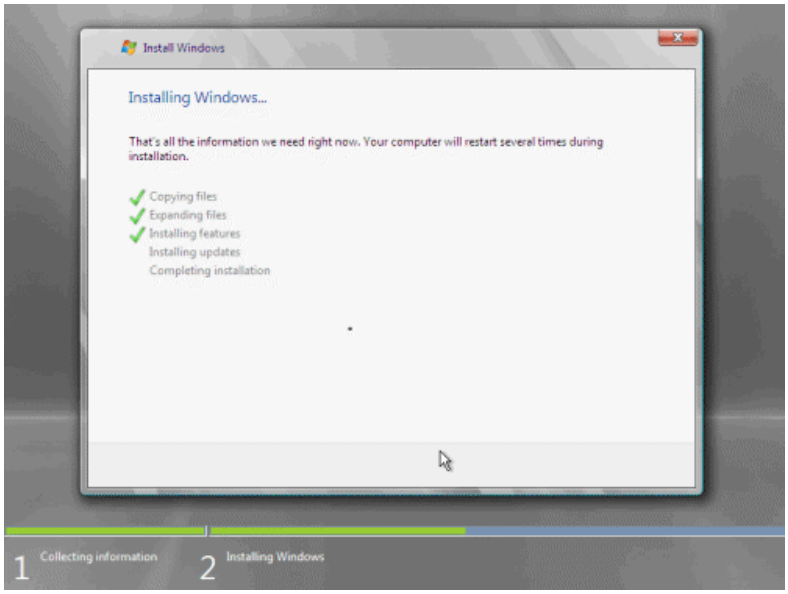
Step 10. In the "**Which type of installation do you want?**" window, click the only available option – **Custom (Advanced).**



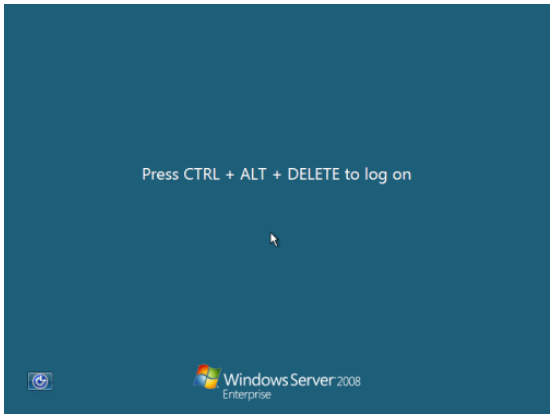
Step 11. In the "**Where do you want to install Windows?"**, if you're installing the server on a regular IDE hard disk, click to select the **first disk**, usually **Disk 0,** and click **Next**.



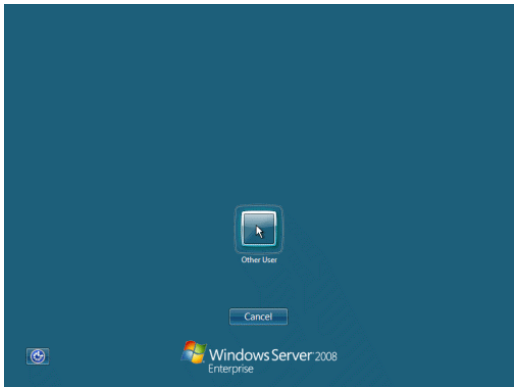
Step 12.The installation now begins, and you can go and have lunch. Copying the setup files from the DVD to the hard drive only takes about one minute. However, extracting and uncompressing the files takes a good deal longer. After 20 minutes, the operating system is installed. The exact time it takes to install server core depends upon your hardware specifications. Faster disks will perform much faster installs… Windows Server 2008 takes up approximately 10 GB of hard drive space.



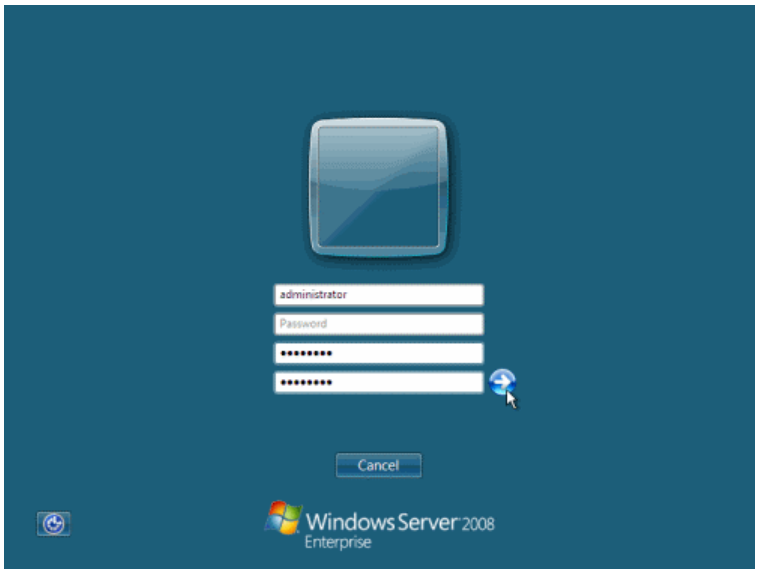
Step 13. Then the server reboots you'll be prompted with the new Windows Server 2008 type of login screen. Press **CTRL+ALT+DEL** to log in.



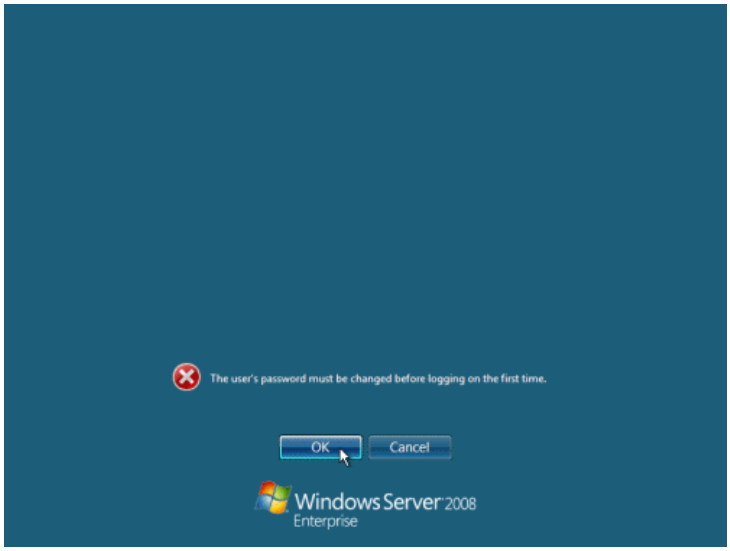
Step 14. Click on **Other User.**



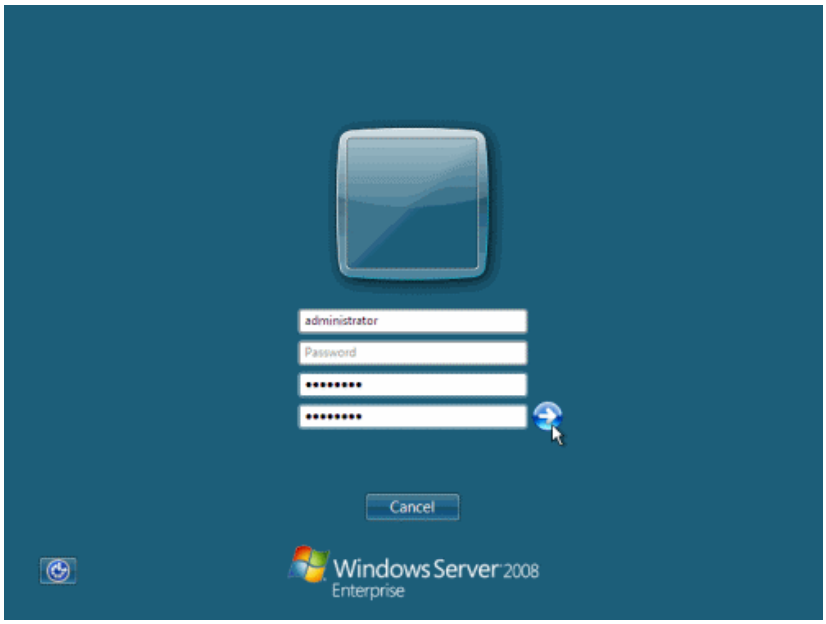
Step 15. The default **Administrator** is **blank**, so just type **Administrator** and press **Enter**.



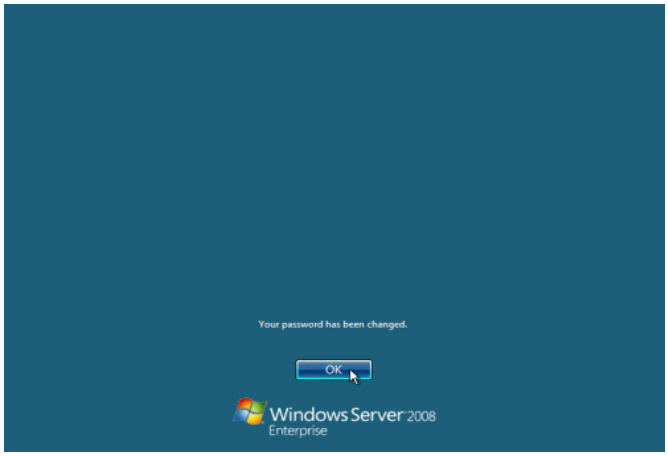
Step 16.You will be prompted to change the user's password. You have no choice but to press **Ok**.



Step 17. In the password changing dialog box, leave the d**efault password blank** (duh, read step #15…), and enter a new, complex, at-least-7-characters-long new password twice. A password like "topsecret" is not valid (it's not complex), but one like "T0pSecreT!" sure is. Make sure you remember it.



Step 18.Someone thought it would be cool to nag you once more, so now you'll be prompted to accept the fact that the password had been changed. Press **Ok**.



Step 19. Finally, the desktop appears and that's it, you're logged on and can begin working. You will be greeted by an assistant for the **initial server configuration,** and after performing some initial configuration tasks, you will be able to start working

Precautions: Care should be taken while connecting with electric power

Quality criteria: install all roll of server 2008

Information Sheet 2.4. Installing additional tools or third-party software

Installing additional software

Additional tools or third party software is very necessary after we install server 2008 software and on the client computer. So one of third party software is driver.

Installing device drivers is necessary in many instances. Unfortunately, for someone who does not have a lot of experience with these drivers, the task may sound somewhat overwhelming. The good news is that it does not have to be. In fact, if you are using Microsoft Windows, chances are good the process will be fast, efficient and even easy to understand!

First off, keep in mind that the method of installation is dependent on the type of device driver you are working with. Each type has its own particular needs and methods. In addition, each developer of the driver may have specifics on how they would like the driver to be downloaded and used.

Consider the following methods to installing device drivers, most commonly found.

CD And Discs: When it comes to Windows, almost all manufacturers of hardware and computer components will include a group of device drivers for each of these devices on a CD or other disc. However, remember this, too. Often times, the same CD will contain drivers for more than just one driver. For example, if you obtained a device driver for a printer on CD form, chances are good that CD also has drivers for numerous other printers. Therefore, it is critical to select only the driver right for the printer you have.

Downloading: In this day and age, it is easy to find what you need online. That goes for device drivers, too. Most of the drivers you need can be downloaded from the web. These are going to download in an executable file in most situations that will be compressed. You will need to uncompressed the file and extract the information from it. This is all done by answering questions that are posed to you as the driver downloads. It is also helpful to note that when you are done downloading these files, you can delete them from your computer. They are not necessary files after you have installed the driver and just take up space.

Take the time to find the right device driver for the computer component that you are downloading. It is critical to have the exact information in place to ensure that you are actually downloading the right driver, since even small number differences can make problems rather than solutions.

The good news is that most manufacturers realize that people do not have extensive knowledge of how to use these drivers and therefore they make the process simple using on screen navigation screens. Even if you do know how to use these files, these on screen steps make the process simplistic. Simply follow the commands as directed.

Learning how to install drivers is a onetime thing. Once you know how to do so, you will see that the process is easy and can be highly efficient. Keep in mind that as new media becomes available, the methods for installation may differ. Nearly all computer components you need device drivers for will come with specific directions on how to download these to your computer.

The importance of driver

What are device drivers and why do you have to worry about them? If you just purchased a printer, camera or even a new video card, you need device drivers. You cannot often take these items out of the box, slide them into your computer and assume that they will work. In some instances, these devices may work like this, however they may also have problems, including glitches. This can be quite frustrating for anyone that just wants to start using what they purchased. The fact is, you need to download device drivers to your computer to work between your new hardware and the computer itself.

Device drivers

A device driver is a set of instructions. The driver tells your computer what to do with the hardware you are installing in it. For example, you may have a new printer. Your computer does not have information installed in it to handle all types of printers, since every printer is slightly different. Therefore, it needs something to tell it what to do. Device drivers are created by the manufacturers of the hardware (in this case the printer manufacturer) and provide very specific instructions on how to use the device.

Just about all computer devices require the use of device drivers. They tell the computer what the device is and how to use it. This includes both internal and external devices.

Installing Drivers

The good news is that it is usually fairly easy for you to download device drivers to your computer so that you can start using the device. Most of the time, device drivers are sent with the manufacturer of the device to you when you purchase the device. This is often done in the form of a CD ROM. All you need to do is to insert the CD and follow the directions provided to you. The driver will be automatically loaded onto your computer.

Repairing Drivers

Device drivers are a form of software. Therefore, you have to keep in mind that these drivers may in fact become corrupt or they may not work properly over time. The good news is that you can often reinstall the device driver to fix the problem. If you need to do this, try to use the same installation disk you used rather than investing in a third party to have the driver you need.

If you cannot find the device driver you need from the installation disk, or you do not have a disk, you can visit the manufacturer's website, as well as a number of third party websites, to obtain the driver. It is important to have the right driver, so look for them based on the manufacturer and model number.

You do need device drivers to operate many of the software and hardware that is installed on your computer. They provide a fundamental resource for your computer in telling your computer what to do with the device. Device drivers do not have to be difficult to find or use, if you know where to look.

The Importance of Choosing Compatible Device Drivers

Why do you use your computer? Unless you just use it to play games or to write reports just for your own information, you need device drivers. If you watch videos online line you need video and audio drivers in addition to sound and video cards. The drivers you install must be compatible with the device as well as your computer and its operating system. You can't simply choose drivers you may have from another system and expect them to work - it just won't happen. If the drivers are not compatible with the device on which you install them, the device will not work.

That doesn't mean each device needs its own driver - there are some drivers that will work on more than one type of device - if that were not the case we would find probably millions of different device drivers on the market. It is essential for the user to choose the drivers that are designed to work with the hardware they have on their computer. Failure to do this will render the device unusable. You can buy the most expensive printer you can find, connect it to your computer, but if you do not use the printer drivers that are compatible with your hardware nothing you do will make the printer work. The same holds true for network drivers, probably the most important of your drivers. Without compatible network drivers your compute will not be able to communicate with other computers in the network or allow you to access the Internet.

Wouldn't it be easier to design drivers that will work on any device by any manufacturer? It might seem it would be easier but in reality, it would be much more complicated. Each hardware device has a different set of components, so to make drivers that would work with all of those components interchangeably would be very complicated indeed. Even if it were possible, there is a good probability those drivers would lack the efficiency of those that are designed for specific hardware devices.

Using compatible drivers for each hardware device will make that device more efficient and assure a long life for both the device and the drivers. If you were to attempt to use the wrong drivers for an audio device, it would likely provide a distorted sound quality if it even worked at all. If you think back to the days when we relied on typewriters, you will remember ribbons and then later printer balls were designed for specific models.

Certainly, the same one worked in more than one model but only if you choose the one that was compatible with that model. The same holds true for device drivers.

Whether you are operating a home or business computer it is essential for you to understand the importance of drivers and choosing ones that are compatible with the hardware you are using. Have no doubts about it - the wrong drivers will reduce the efficiency of your device or will prevent it from working entirely.

Self-Check 2.4	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1. The method of installation of driver is dependent on the type of device driver you are working with.
2. The driver not tells your computer what to do with the hardware you are installing in it.
3. The drivers you install must be compatible with the device as well as your computer and its operating system.
4. Device drivers are not a form of software.
5. Device drive may not work properly over time

Note: **Satisfactory rating – 5 out of 10points** **Unsatisfactory - below 4and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Operation Sheet 2.2. Installing third-party software

Operation title: Installing driver pack solution

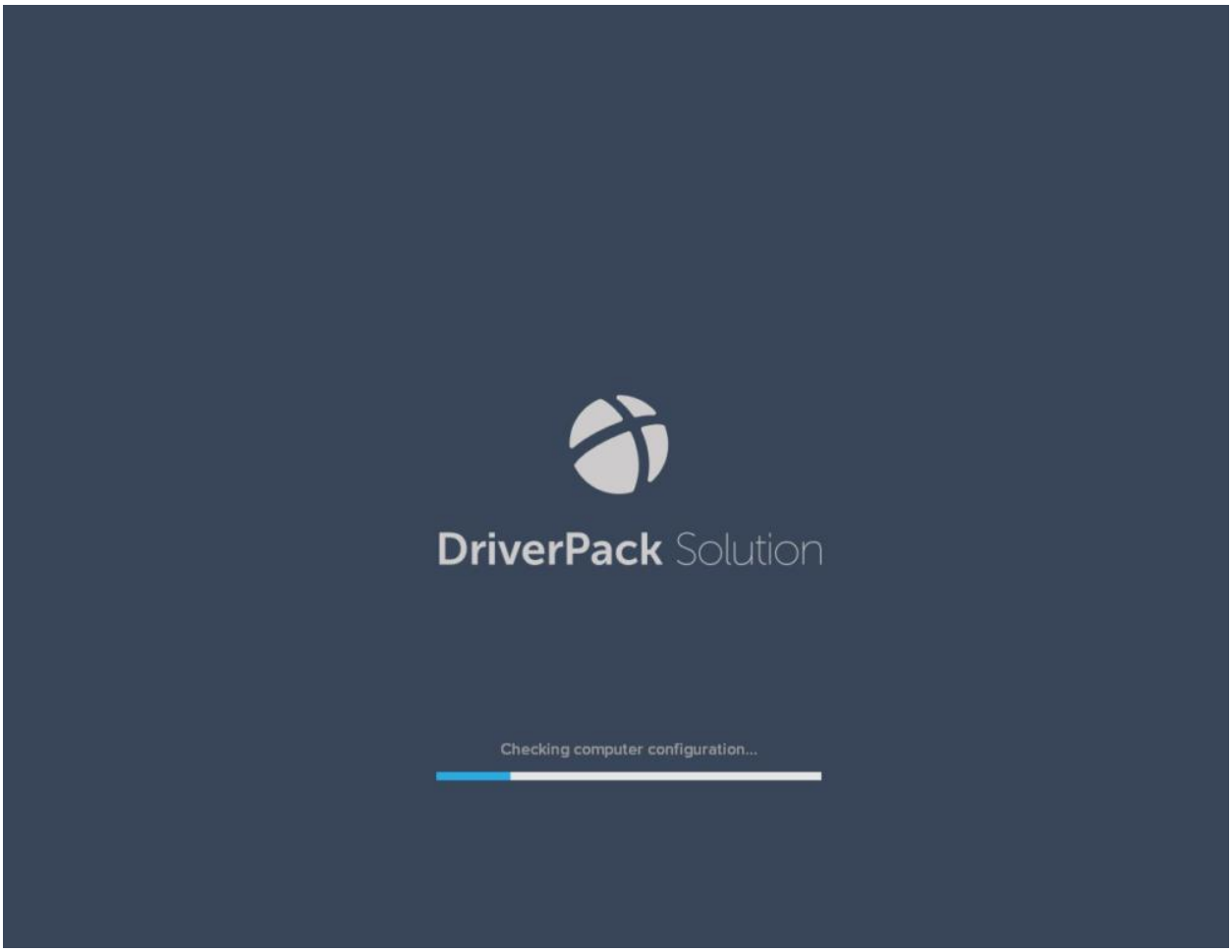
Equipment ,tools and materials: computer and driver pack solution software

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required, need available power all time and internet connection.

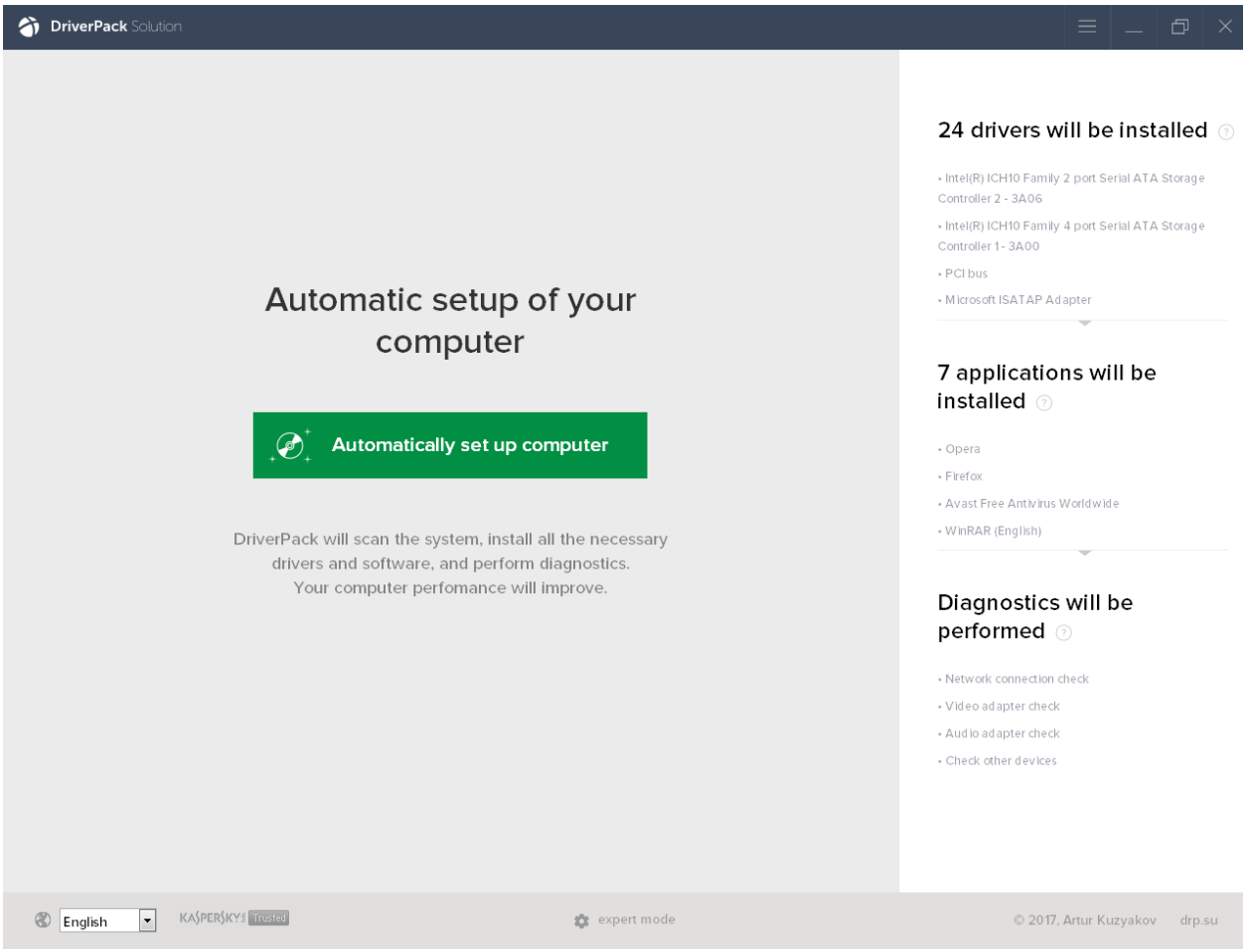
Procedures :

Step 1- Download Driver Pack Solution

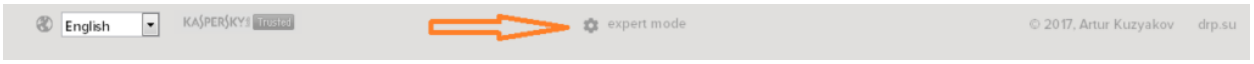
Download and run it easily, and it will check your computer configurations.



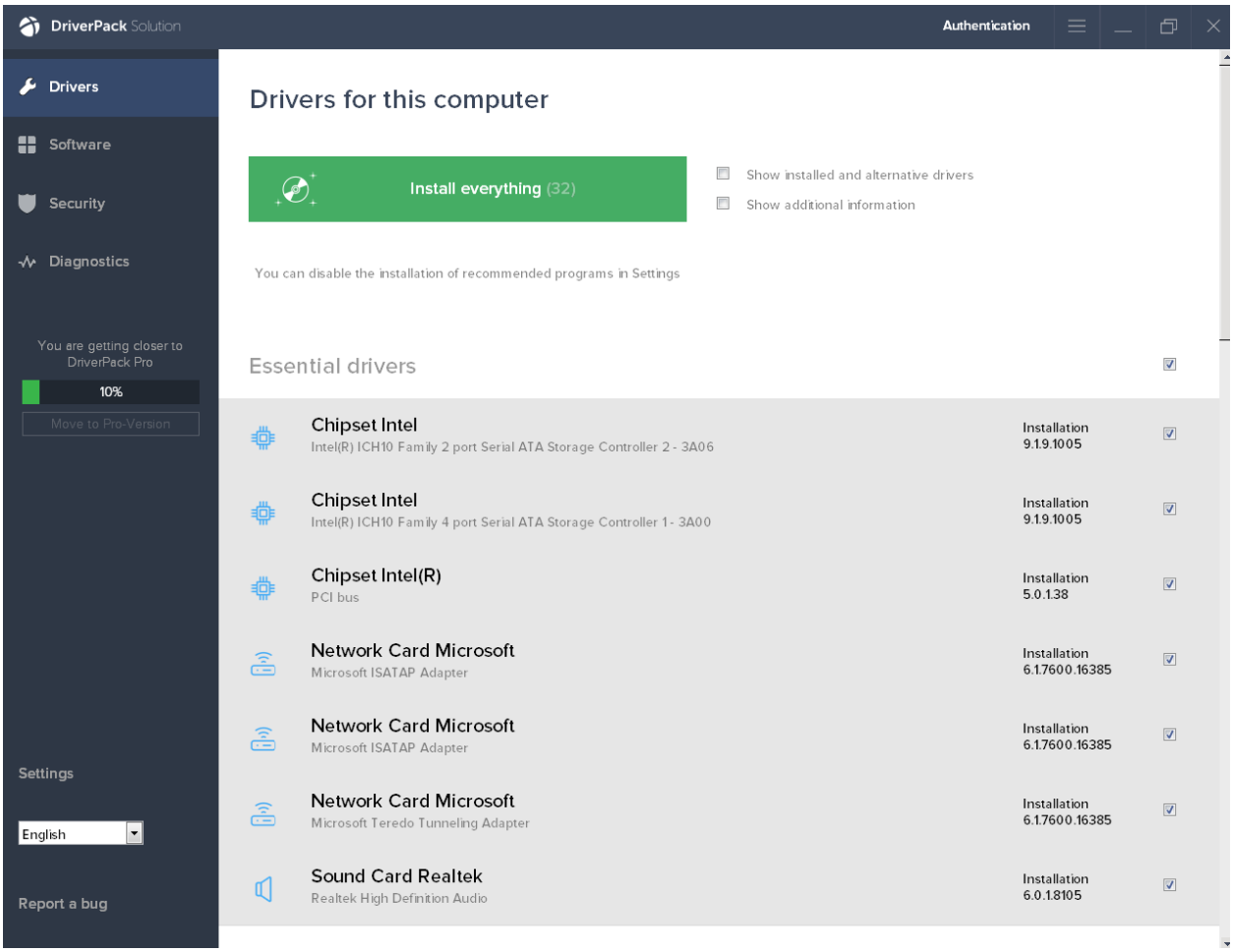
Step 2- After checking your computer configurations, the application will look like below



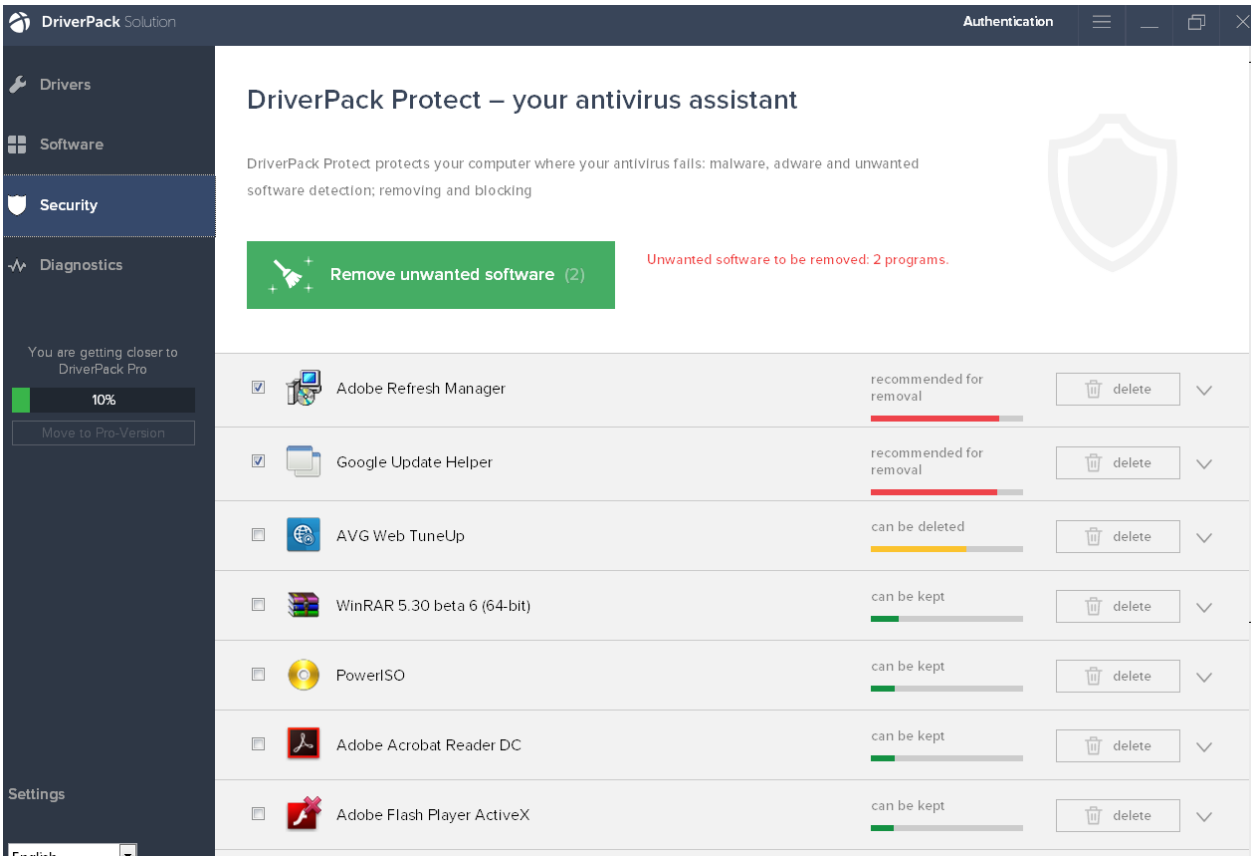
You can chose to do automatic setup or you can click on the expert mode on the below bar to customize your driver and programs installations, and that's what i recommend



Step 3- Exploring the Expert Mode

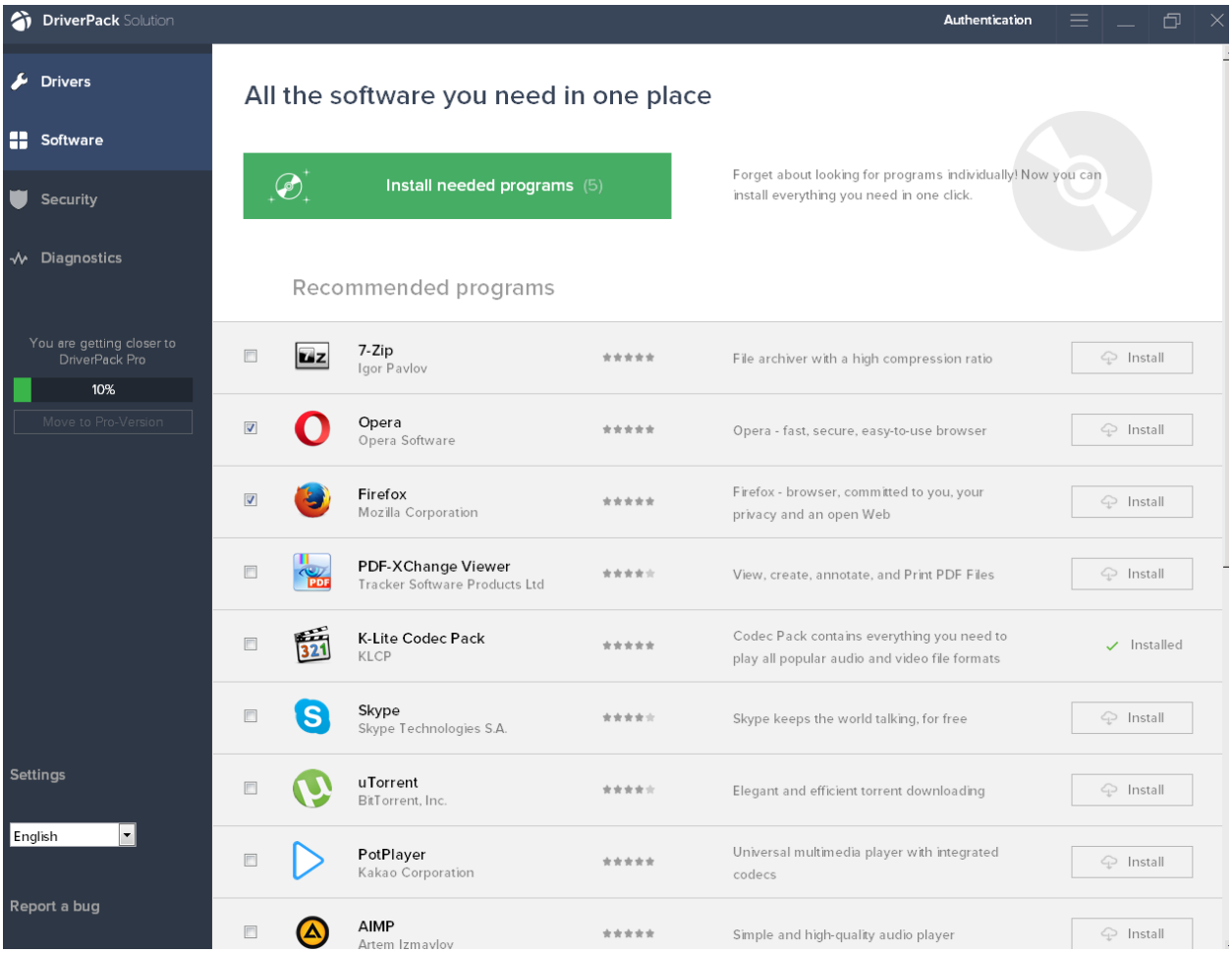


You can chose what to install from the driver and what not, same for the software package, as for "**Security Tab**" it will guide you about the unnecessary application if you have and you need to remove it



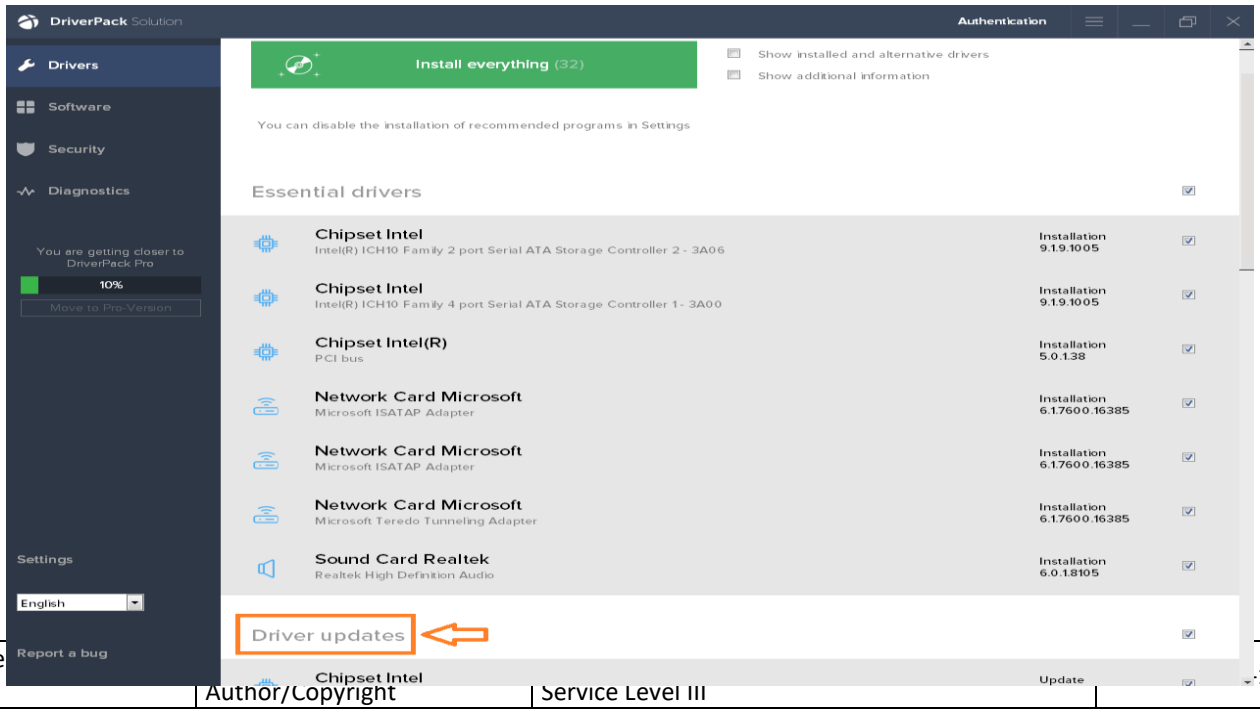
Step 4- Choosing what software to install

On this step you will select which software do you need for your computer

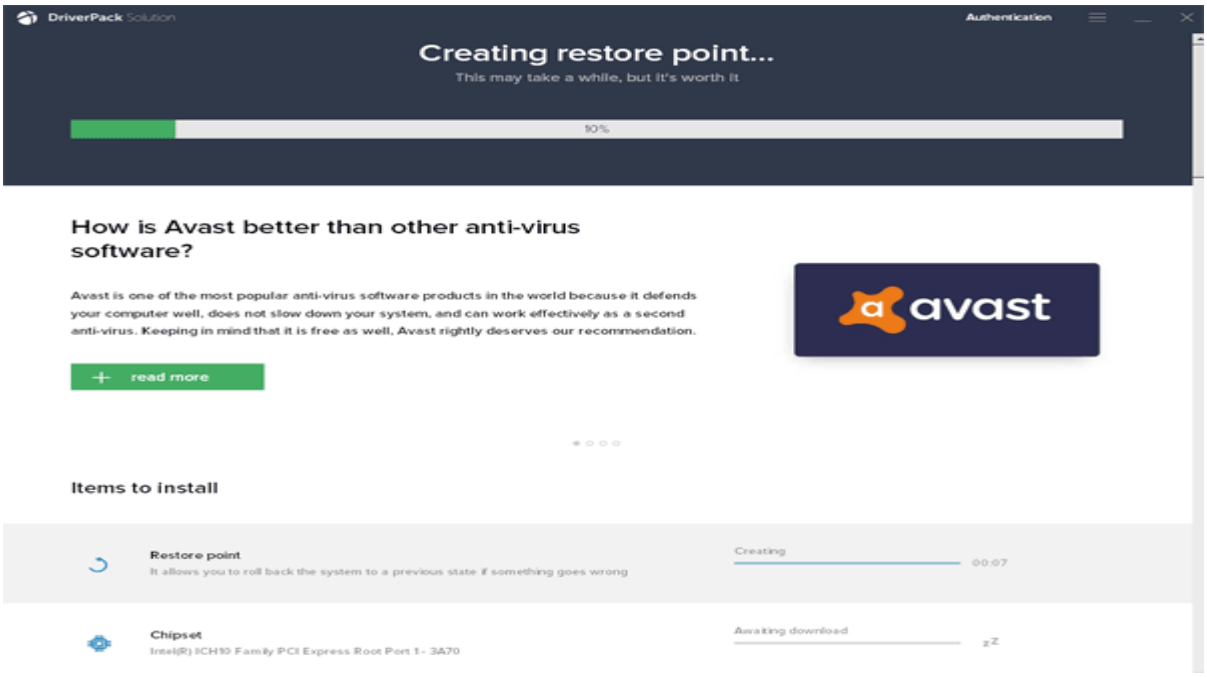


Step 5- The most important step and it's Drivers installation

Select the required drivers that you need to install and also you will notice that Driverpack can update your current drivers



After made your selections with each tab (Drivers,Software,Security,..Etc) click Install everything, and the driver pack will download your required drivers and software to install



Precautions: Care should be taken while connecting with electric power

Quality criteria: install all needed driver for network installation

Information Sheet 2.5. Patching operating system and applications

Patching Operating Systems

Patching operating systems is a strategy used by IT professionals and businesses to ensure all known or potential system vulnerabilities are fixed (or patched) thereby reducing the likelihood of malware entering the system via glitches. Hackers specifically look for old and outdated operating systems to breach. A **patch** updates one component of the software, perhaps to fix a bug or error discovered after product release. ... Security **patches** address vulnerabilities in the software cybercriminals might use to gain unauthorized access to your device and your data.

patching doesn't remove virus!

It's pretty much useless. New threats that have been discovered since its last update cannot be picked up, as it'll not show any no record of it being a vulnerability. Patching your anti-virus means that it can pick up everything that it should do.

Patch management system

Patch management is the process of distributing and applying updates to software. ... Common areas that will need patches include operating systems, applications, and embedded systems (like network equipment). When a vulnerability is found after the release of a piece of software, a patch can be used to fix it.

Patching

A **patch** is a set of changes to a computer program or its supporting data designed to update, fix, or improve it. ... This includes fixing security vulnerabilities and other bugs, with such **patches** usually being called bugfixes or bug fixes. Poor **patch** management can leave an organization's data exposed, subjecting them to malware and ransom ware attacks where data is hijacked unless a ransom is paid; typically in the form of Bitcoin.

Security is the most critical benefit of **patch** management. Network security breaches are most commonly caused by missing patches in operating systems and other applications. For example, security breaches are regularly discovered in MS **Windows** ActiveX, IIS and Internet Explorer .

Self-Check 2.5	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1. Patching operating systems is a strategy used by IT professionals and businesses to ensure all known or potential system vulnerabilities are fixed.
2. Security **patches** does not address vulnerabilities in the software cybercriminals
3. A **patch** is a set of changes to a computer program to fix bug.
4. Security is the most critical benefit of **patch** management.
5. Network security breaches are most commonly caused by missing patches in operating systems and other applications

Note: **Satisfactory rating – 5 out of 10points** **Unsatisfactory - below 4and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Operation Sheet 2.3. Installing operating system patching

Operation title: Installing (or uninstall) patches/service packs in Windows servers and workstations

Equipment ,tools and materials: windows server 2008 installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1. Navigate to **Configurations** tab and choose **Install/Uninstall Patch** configuration from the list of Windows Configurations.

Step 2. Name the Configuration

Provide a name and description for the Install/uninstall Patches Configuration.

Step 3. Define Configuration

Parameter	Description
Add the Patches	If you have reached this configuration page from the Patch Management tab by selecting the patches, the selected patches automatically gets added to the List of Patches. Click the Add More Patches button to invoke the Patch Browser. From the patch browser select the patches and service packs that have to be applied. The patch browser has an option to view the missing patches/service packs or all patches/service packs, which can then be filtered based on the application and service pack.
Scheduler Settings	Install After

	• Select this option and specify the date and time after which the patches have to be installed. The patches will be installed based on the Install Options selected after the scheduled time. Expiry date • Set an expiry date for installation/uninstallation of patches.
Deployment Settings	If you have set any Policy as default, then the default policy will be automatically applied to the configuration. You can choose from the policies which are listed under "Apply Deployment Policy". You can see the Policies segregated as My Policies and Created by Others. You can click on View Details to see the policy details and the list of configurations to which the policy is applied. If you do not have an existing policy, you can create one by clicking on create policy Deployment Rule: Deployment can be continued even if some patches cannot be downloaded. If the failed patches are successfully redownloaded, they will be installed in the subsequent refresh cycle (within deployment window).

Step 4. Define Target

Using the Defining Targets procedure, define the targets for deploying the Install Patches Configuration.

Step 5. Deploy Configuration

Click the **Deploy** button to deploy the defined Install Patches Configuration in the defined targets. Deployment will be initiated during the next system startup.

To save the configuration as draft, click **Save as Draft**.

Precautions: Care should be taken while connecting with electric power

Quality criteria: install all patch file and safe computer from any kind of security threat.

Operation Sheet 2.3. Installing application software patching

Operation title: Installing application software patching

Equipment ,tools and materials: windows 10 and office 2013 installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1. Click on the Windows **"start"** icon (bottom-left corner of your screen).

Step 2. Click on **"Settings"**. The "Windows Settings" window should appear.

Step 3. Click on **"Apps"**. The "Apps and Features" window containing a list of your installed programs should appear.

Step 4. Select **"Microsoft Office"** (or "Microsoft Excel" if you do not have the full Office installation).

Step 5.Click **"Modify"**.

Step 6. Choose from **"Quick Repair"** or **"Online Repair".**

Precautions: Care should be taken while connecting with electric power

Quality criteria: install all patch file and repair MS office 2013

LAP Test 1	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, workshop, tools and materials you are required to perform the following tasks within 3 hours.

Task1: installing server 2008 operating system

1. Install Windows Server 2008 Operating System on the Server Computer

Task2: installing deriver pack solution

Task3: installing operating system patch

Task4: installing application software patch

L #21	LO #3- Configure and test server

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Configuring server and server application using technical requirements
- Defining scope and applicability of testing
- Developing test plan with reference to resource and network impact
- Running system test
- Analyzing error report and making changes
- Validating changes or additions against specifications

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Configure server using technical requirements
- Define scope and applicability of testing
- Develop test plan with reference to resource and network impact
- Run system test
- Analyze error report and making changes
- Validate changes or additions against specifications

Learning Instructions:

Read the specific objectives of this Learning Guide.

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

Information Sheet 3.1. Configuring server and its applications using technical requirements

Server configuration

Configuring server hardware and software means setting up the way the hardware and software operates to suit the IT environment and organizational or user requirements. Generally, server hardware is configured before the server operating system is installed or afterwards, if hardware components in an operating server are being changed or added. Software may be configured when installed, as part of the installation process, or afterwards, if a default installation has been performed. Some specific considerations for configuring server hardware and software configuration follow.

Server Hardware Configuration

Server hardware configurations will depend on what components make up the server. Configurations you may need to consider include those for

- **Storage**
- **Boot sequence**
- **Specific device**
- **Redundant component**

Server Software Configuration

Configurations for server software depend on the purpose or function of the server.

Generally, a server may be configured for one or more of the following roles:

- ✓ An application server which runs specific software applications for end users, such as a server that runs a central Oracle Database that is accessed by users across an organization.
- ✓ A storage server which provides a central storage place for data that can be accessed by computer users around a network.
- ✓ A network services server which provides specific services such as print,

user authentication and authorizations, dynamic host configuration protocol (DHCP), and domain name system (DNS) are some examples of the services that can be provided.

Server Items to be Configured

Generally, the following items will need to be configured on a server:

- ✓ **Network setting**, which includes network protocol to be used, network addressing, server name and network adaptor settings.
- ✓ **Services**, which include enabling and configuring specific services to run on the server, such as setting the server to run dynamic host configuration protocol (DHCP) and domain name system (DNS) services for an organization.
- ✓ **Authentication**, which involves setting how users of the server will be identified. This may involve setting up local user accounts with passwords on the server or setting the server to authenticate users via some other mechanism.
- ✓ **Authorization**, which is setting up which authenticated users are permitted to access and use the server, such as allocating user permission to access data storage or server applications or programs.

Environment setting and policies, which are settings for the server to operate as required or settings dictated by organizational policy. Having data backup schedules for the server is an example of environment setting.

Types of Servers

- The multiple types of servers or types of network servers are as follows:
  - ✓ **File Server** Provides convenient, centralized access to files and directories for individual users, departments, and entire organizations.

- Choosing this option allows you to manage user disk space by enabling and configuring disk quota management and to provide improved file system.

- ✓ **Print Server** Provides centralized and managed access to printing devices by serving shared printers and printer drivers to client computers.
- ✓ **Application Server** (IIS, ASP.NET) Provides infrastructure components required to support the hosting of Web applications.
- ✓ **Mail Server** (POP3, SMTP) Installs POP3 and SMTP so that the server can act as an e-mail server for POP3 clients.
- ✓ **DHCP Server** Provides automatic IP addressing services to clients configured to use dynamic IP addressing.
- ✓ **Terminal Server** Provides applications and server resources, such as printers and storage, to multiple users as if those applications and resources were installed on their own computers.
- ✓ **Remote Access/VPN Server** Provides multiple-protocol routing and remote access services for dial-in, local area networks (LANs) and wide area networks (WANs).
- ✓ **Domain Controller** (Active Directory) Provides directory services to clients in the network.

Active directory

Installing Active Directory on Windows Server 2008

Microsoft Active Directory provides the structure to centralize the network management and store information about network resources across the entire domain.Active Directory uses Domain Controllers to keep this centralized storage available to network users. In order to configure a Windows Server 2008 machine to act as Domain Controller, several

considerations and prerequisites should be taken into account, and several steps should be performed.

Considerations when installing a new Windows Server 2008 forest

When you install AD to create the first domain controller in a new Windows Server 2008 forest, you must keep the following considerations in mind:

- You must make forest and domain functional level decisions that determine whether your forest and domain can contain domain controllers that run Windows 2000 Server, Windows Server 2003, or both.
- Domain controllers running the Microsoft Windows NT Server 4.0 operating system are NOT supported with Windows Server 2008.
- Servers running Windows NT Server 4.0 are NOT supported by domain controllers that are running Windows Server 2008, meaning you MUST have additional DCs running Windows 2000/2003 to support older NT 4.0 servers.
- The first Windows Server 2008 domain controller in a forest must be a global catalog server

Considerations when installing a new Windows Server 2008 domain in an existing Windows 2000/2003 forest

When you install AD to create the first domain controller in a new Windows Server 2008 domain, you must keep the following considerations in mind:

- Before you create a new Windows Server 2008 domain in a Windows 2000/2003 forest, you must prepare the forest for Windows Server 2008 by extending the schema.
- You must make domain functional level decisions that determine whether your domain can contain domain controllers that run Windows 2000 Server, Windows Server 2003, or both.

General considerations

Installing Active Directory Domain Services (AD-DS)

In Windows Server 2008, unlike previous server operating Systems, there is an additional step that needs to be taken before running **DCPROMO** to promote the server to Domain Controller and installing Active Directory on it. This step is the installation of Active Directory Domain Services (AD-DS) role on the server. In fact, the AD-DS role is what enables the server to act as a Domain Controller, but you will still need to run DCPROMO the regular way.

User Objects

User objects are, well, users! Users, after all, are the foundation of your organization.

When you right-click a User object and select Properties, you'll see the screen shown in Figure 1.

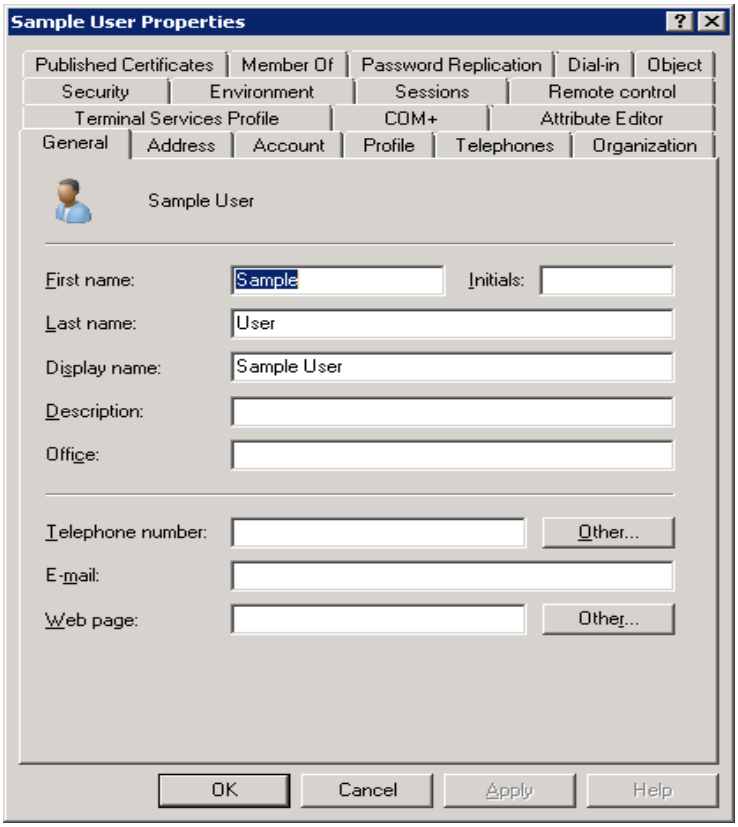


Figure 1 : sample user property

The Properties page for a user object

Tabs on User objects include:

General: Displays general descriptive information about the user, including name, email address and primary telephone number.

Address: This tab displays postal addresses for the selected user.

Account: The Account tab holds detailed account information for the user, including the logon name for the user and, via the Logon Hours button on this tab, account restrictions.

The Account options section gives you a way to force users to change their password at next logon, prevent them from changing passwords, require a Smart Card for logon, and enable delegation for the account. You'll also use this page if the account gets locked out due to logon failures. Microsoft has made is easy to unlock accounts by adding an "Unlock account" option to this tab.

Profile: The Profile tab holds fields that specify the paths to any logon scripts the user needs to access. You can also specify a path to the user's profile and home folder here.

Telephones: This tab serves as a repository for any telephone numbers you have for the user, including pagers, cell phones, and IP telephone numbers.

Organization: Don't confuse this tab with Active Directory's Organizational Unit object. Here, you'll place information about the user's company, including job title, department, and company name. You can also link the user to his or her manager's Active Directory object.

Terminal Services Profile: This tab is similar to the Profile tab, but this only controls profile information for the Terminal Services session, including home folder location.

COM+: You can assign the user to be part of a COM+ partition set here. COM+ partition sets allow users in a domain to access COM+ applications throughout the domain.

Attribute Editor (new tab in Windows Server 2008): In Windows Server 2008, Microsoft has borrowed from the ADSI Edit utility and added this tab, which allows you to directly manipulate all of the attributes associated with the selected object.

Security: This tab controls the Active Directory rights other objects have to this object. The Group or users box lists the objects with rights and the Permissions box describes the permissions of the selected object.

Environment: This tab controls the Terminal Services startup environment for the user.

Sessions: The information on the Sessions tab helps you control how the user interacts with Terminal Services, including how long a session stays connected and what happens if she disconnect from the server.

Remote Control: This tab indicates whether a user's Terminal Server session can be remotely controlled. You can set options that allow you to establish view-only sessions or that allow interaction.

Published Certificates: This tab allows you to associate X.509 security certificates with the user.

Group Objects

There are a couple of kinds of group objects that can be created in Active Directory. The first kind, the security distribution group, provides a way to manage access rights for multiple users (or other objects) all at once. Rather than assign individual permissions to a file share, for example, you can give rights to the security group and then add and remove group members as needed. Security groups can also be used as email distribution groups. The second kind of group, called a distribution group, is used solely as an email distribution list. This article focuses on security groups.

If you right click a Group object, you'll see the screen shown in **Figure 2**.

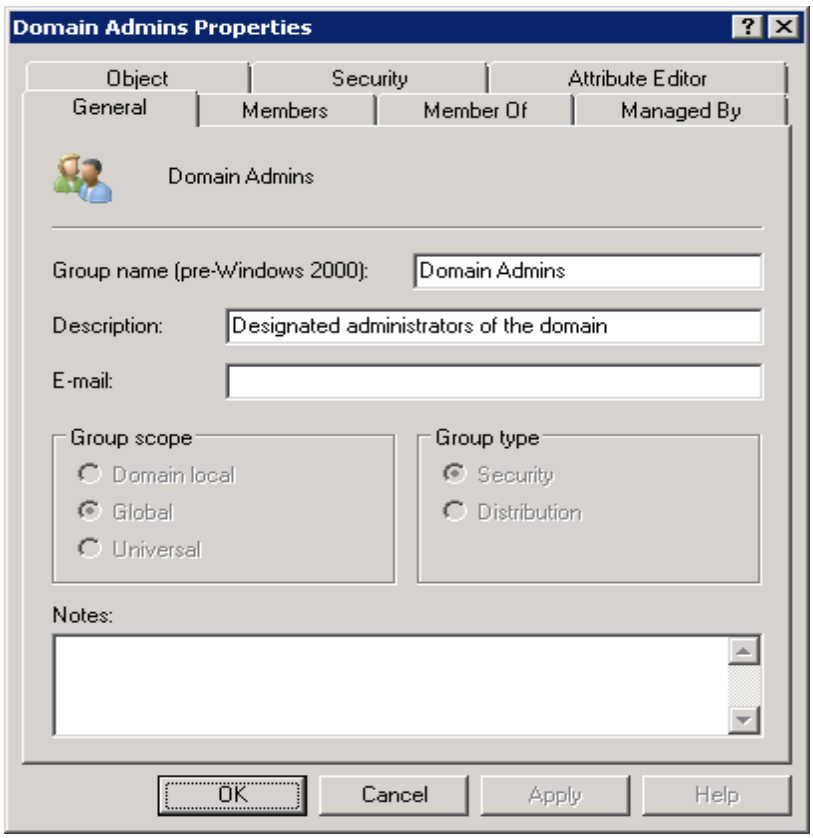


Figure 2: domain admins properties

The Properties page for the Domain Admins group object

Tabs on the Group object include:

- **General**: This tab displays information about the object. You can view, but not change Group Scope and Group Type for Groups. You can change all other fields on this page.
- **Member**: Here you can add and remove group members. By clicking the Add button, you can add individual objects or select multiple objects.
- **Member Of**: This tab lists the groups that the object belongs to. You can add or delete group membership here.
- **Managed By**: Here you can enter information about who's in charge of the computer. You can quickly assign someone by selecting their information directly from Active Directory.

- **Object**: This tab displays information about the object including its name, when it was created, when it was last updated, and the Update Sequence Numbers for it. On this tab, you can also indicate that the object should be protected from accidental deletion.
- **Security**: This tab controls the Active Directory rights other objects have to this object. The **Group or users** box lists the objects with rights and the **Permissions** box describes the permissions the selected object has.
- **Attribute Editor (new tab in Windows Server 2008)**: In Windows Server 2008, Microsoft has borrowed from the ADSI Edit utility and added this tab, which allows you to directly manipulate all of the attributes associated with the selected object.

Operation Sheet 3.1.1 Installing active directory

Operation title: Installing active directory

Purpose: installing AD for full function of server 2008 in three ways

Equipment ,tools and materials: server 2008 software CD **and** windows server 2008 installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

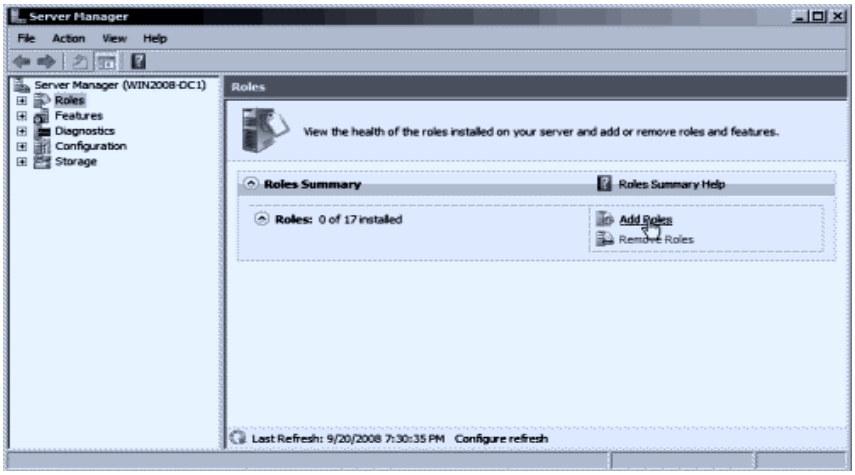
Method 1 – Server Manager/Initial Configuration Tasks

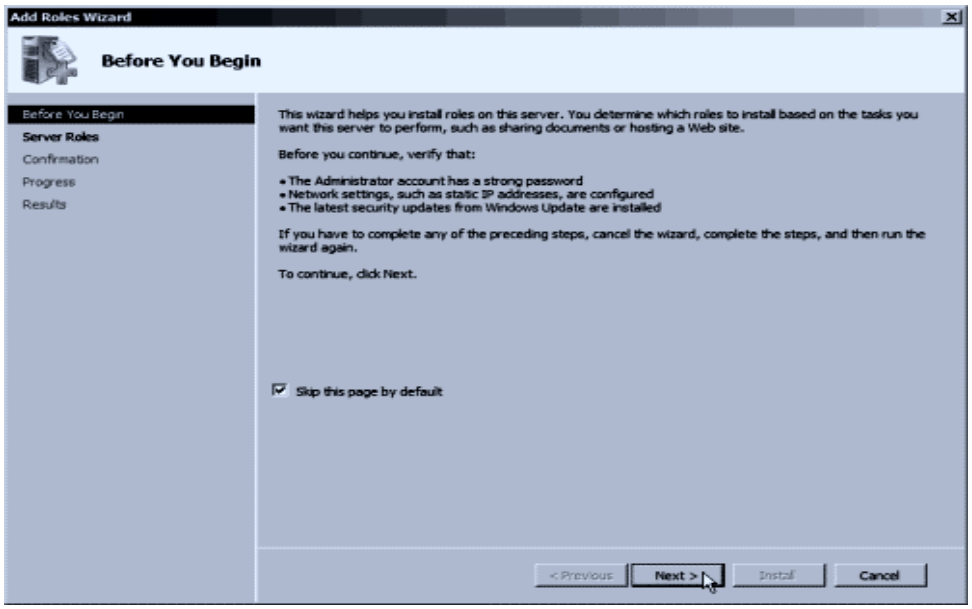
Roles can and should be added from Server Manager (but they can also be initiated from the Initial Configuration Tasks wizard that auto-opens the first time you log on to the server).

Step 1.Open **Server Manager** by clicking the icon in the Quick Launch toolbar, or from the Administrative Tools folder.

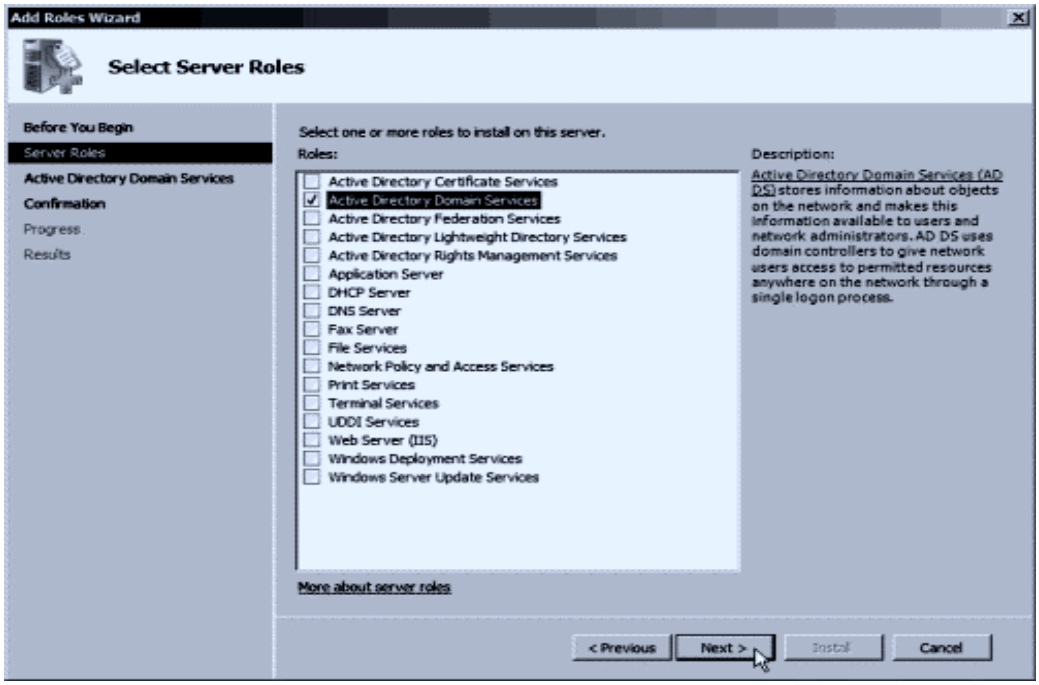
Step 2. Wait till it finishes loading, then click on **Roles > Add Roles** link.

Step 3. In the Before you begin window, click **Next**.



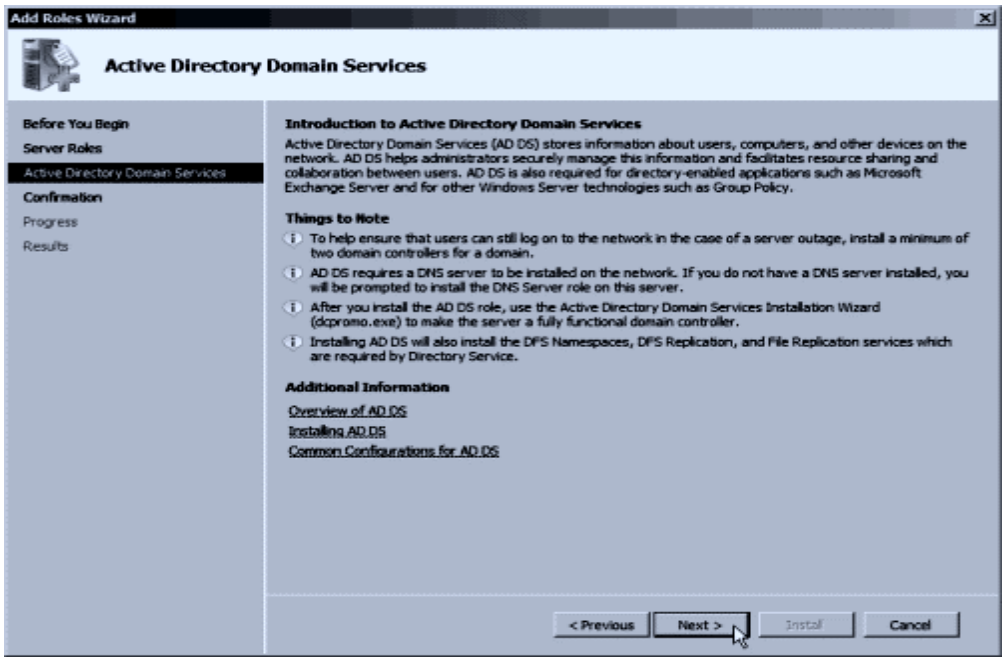


Step 4. In the Select Server Roles window, click to select **Active Directory Domain Services**, and then click **Next**.

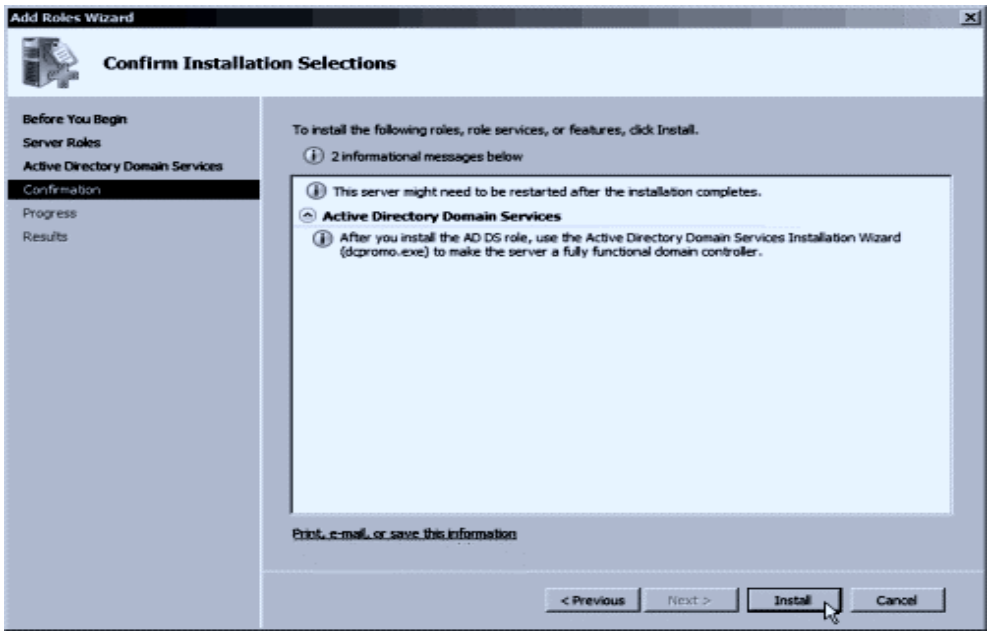


Step 5.In the Active Directory Domain Services window read the provided information if you want to, and then click **Next**.

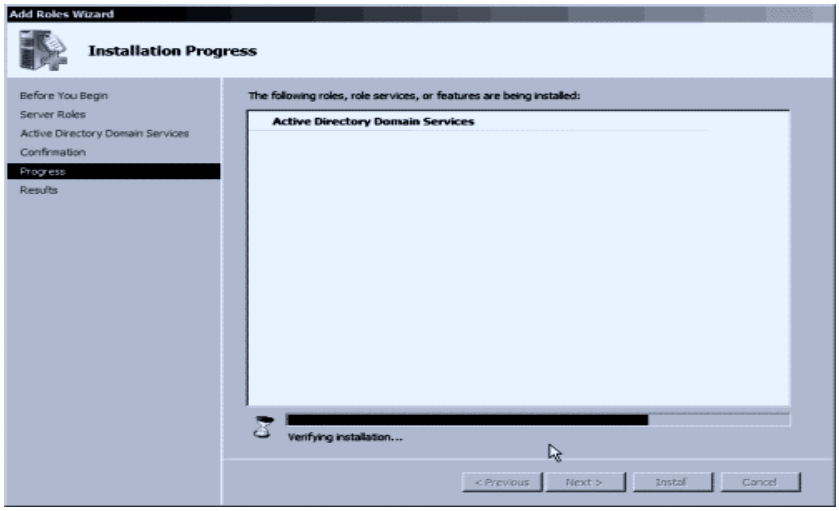
.



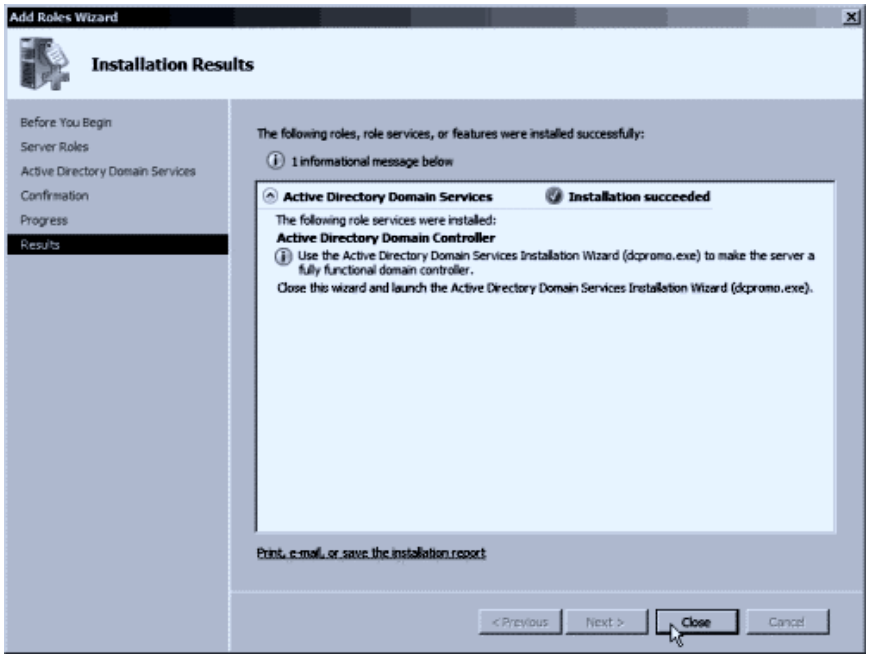
Step 6.In the Confirm Installation Selections, read the provided information if you want to, and then click **Next**.



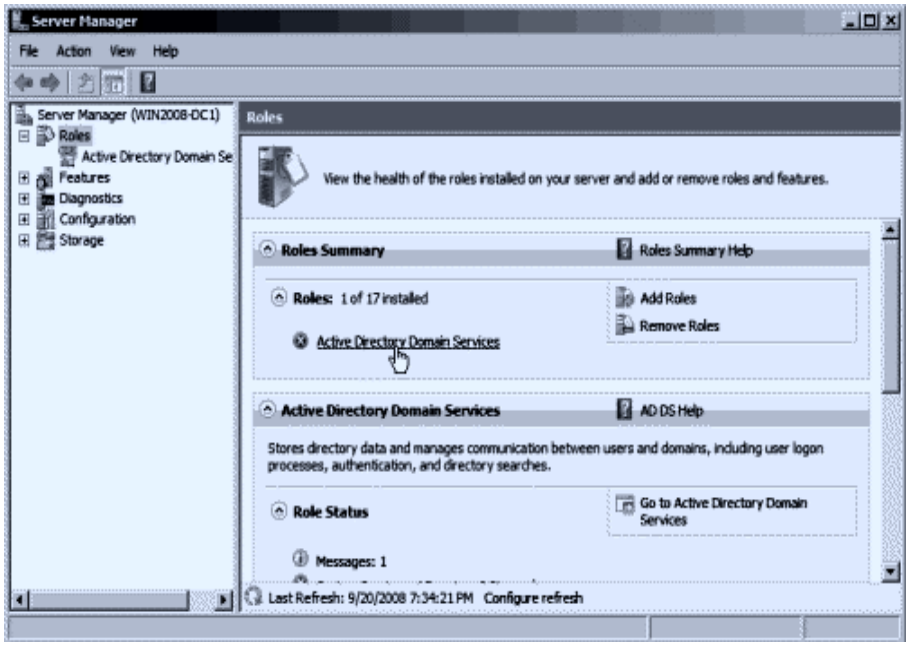
- Wait till the process completes.



Step 7.When it ends, click **Close**.



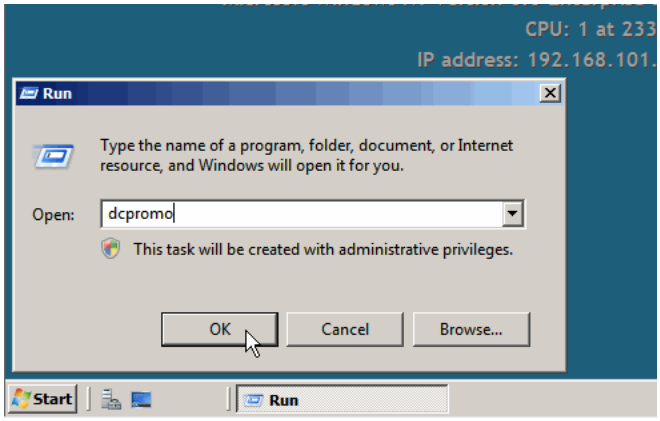
Step 8. Going back to Server Manager, click on the **Active Directory Domain Services link**, and note that there's no information linked to it, because the DCPROMO command has not been run yet.



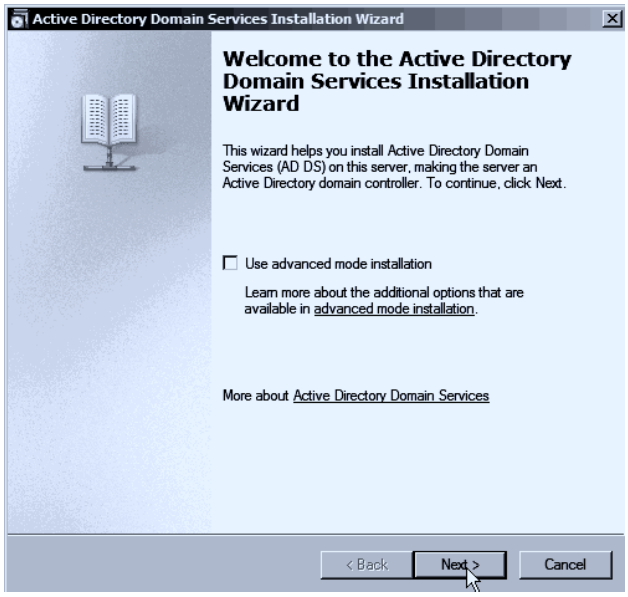
Step 9.Now you can click on the DCPROMO link, or read on.

To run DCPROMO

Step 1. enter the command in the **Run** command, or click on the DCPROMO link from **Server Manager > Roles > Active Directory Domain Services**.

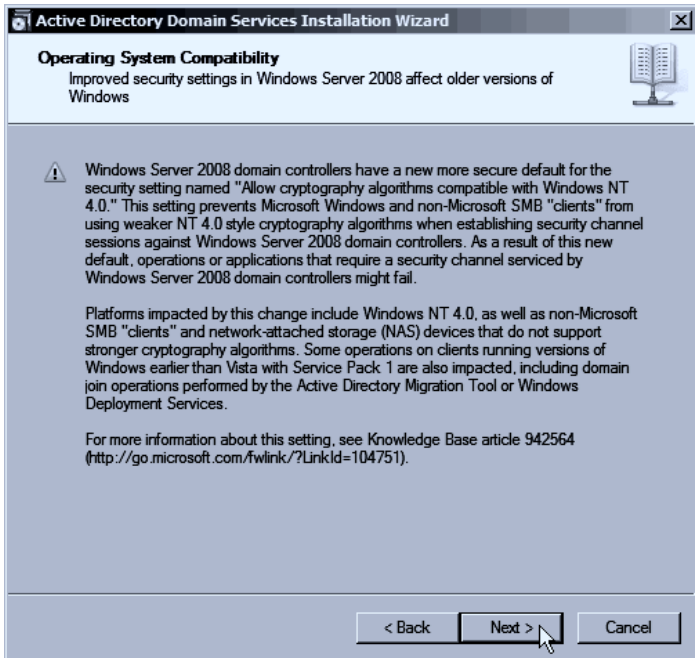


Step *2*. Depending upon the question if AD-DS was previously installed or not, the Active Directory Domain Services Installation Wizard will appear immediately or after a short while. Click **Next**.

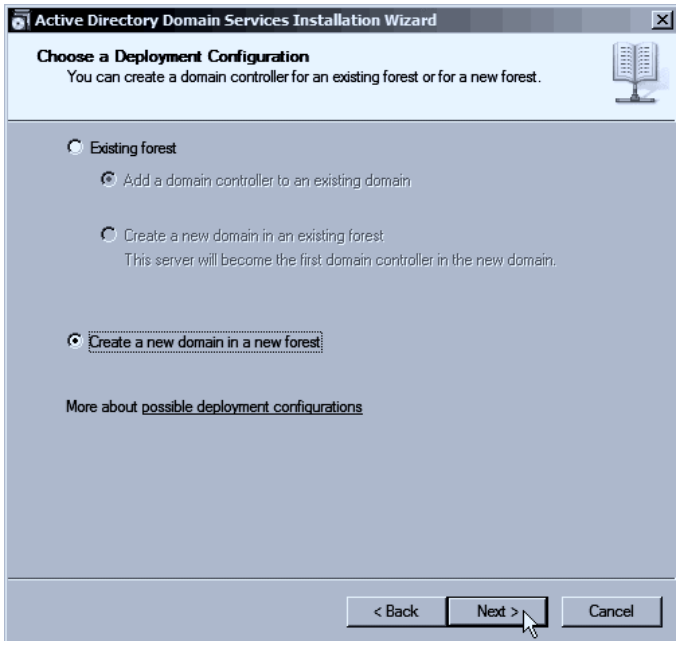


Note: The Advanced features of DCPROMO will be discussed in a future article.

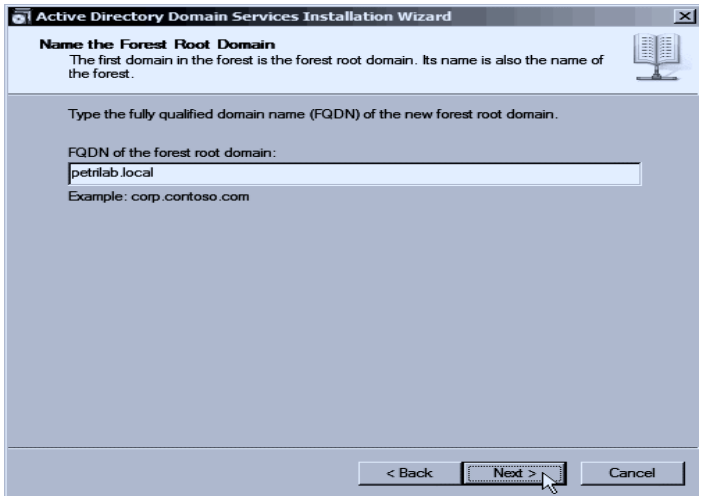
Step 10. In the Operating System Compatibility window, read the provided information and click **Next**.



Step 11. In the Choosing Deployment Configuration window, click on "**Create a new domain in a new forest**" and click **Next**.

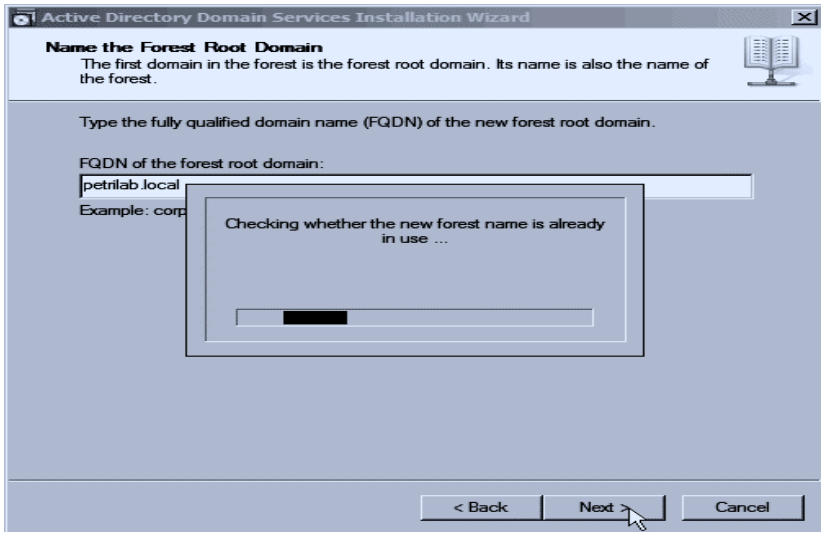


Step 12. Enter an appropriate name for the new domain. Make sure you pick the right domain name, as renaming domains is a task you will not wish to perform on a daily basis. Click **Next**.

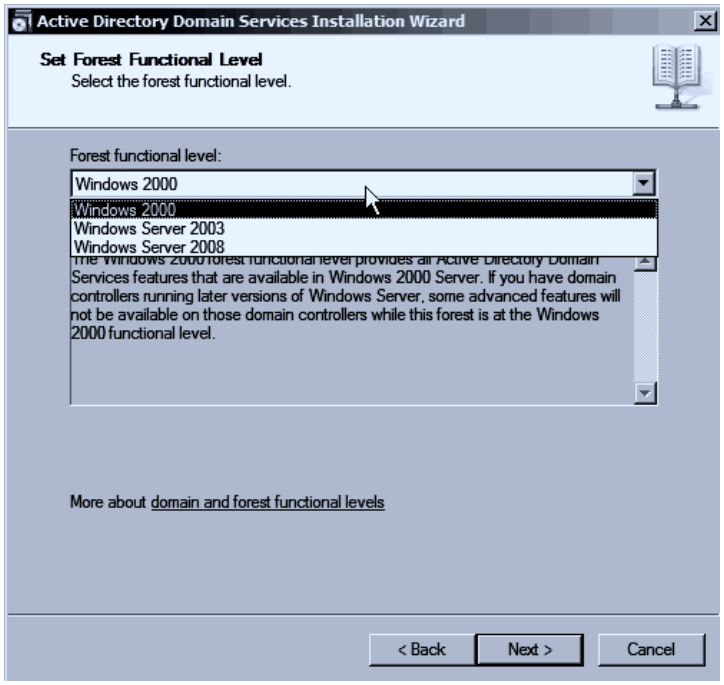


Note: Do NOT use single label domain names such as "mydomain" or similar. You MUST pick a full domain name such as "mydomain.local" or "mydomain.com" and so on.

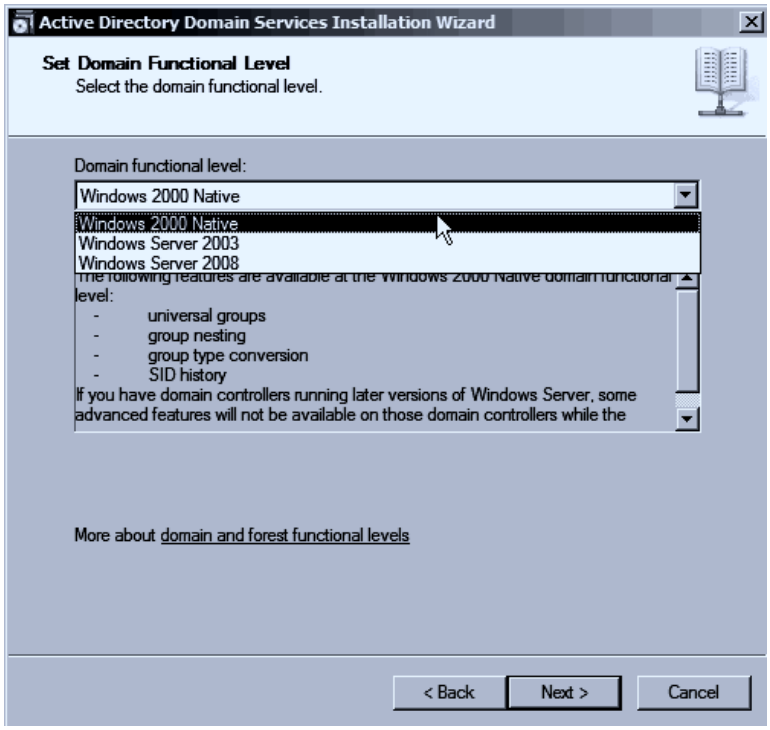
The wizard will perform checks to see if the domain name is not already in use on the local network.



Step 13. Pick the right forest function level. Windows 2000 mode is the default, and it allows the addition of Windows 2000, Windows Server 2003 and Windows Server 2008 Domain Controllers to the forest you're creating.

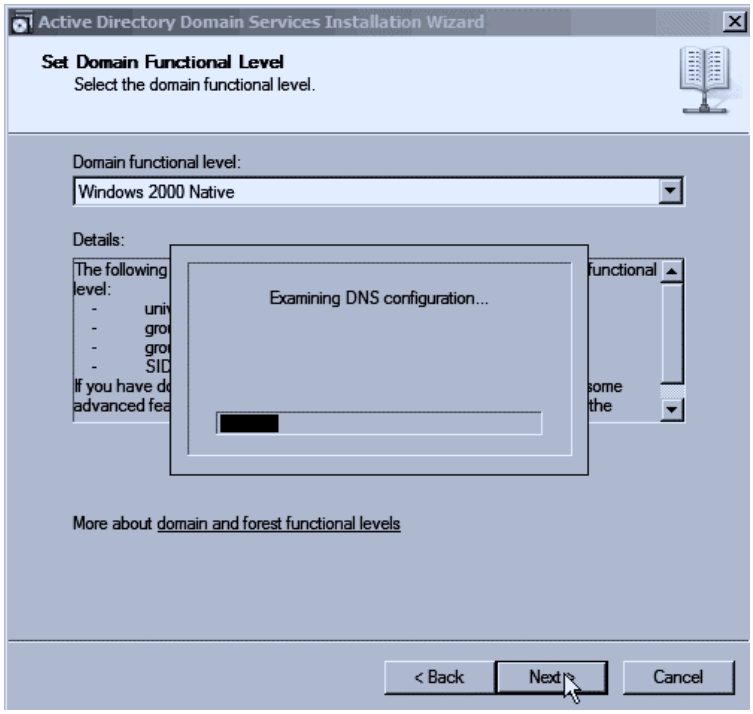


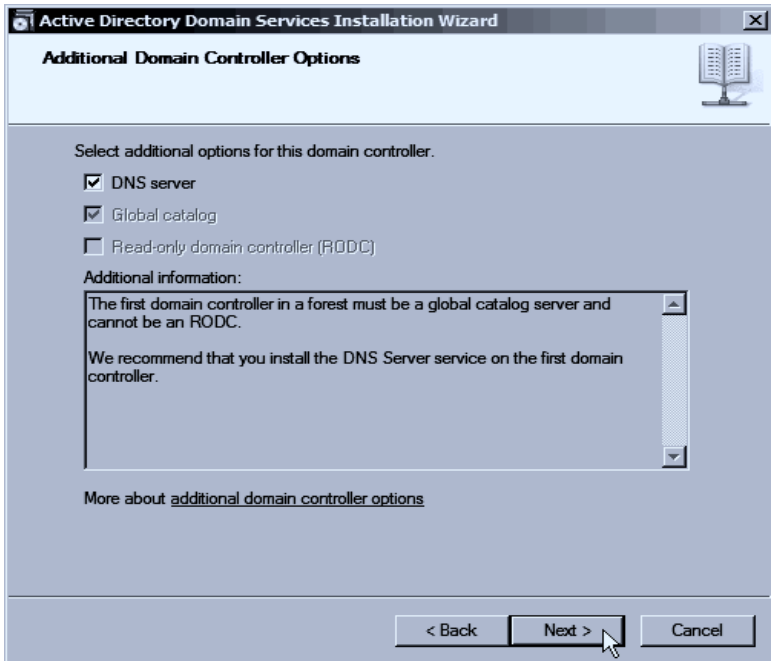
Step 14.Pick the right domain function level. Windows 2000 Native mode is the default, and it allows the addition of Windows 2000, Windows Server 2003 and Windows Server 2008 Domain Controllers to the domain you're creating.



Note: If you select "Windows Server 2008" for the forest function level, you will Not be prompted to pick a domain function level.

Step 15.The wizard will perform checks to see if DNS is properly configured on the local network. In this case, no DNS server has been configured, therefore, the wizard will offer to automatically install DNS on this server.

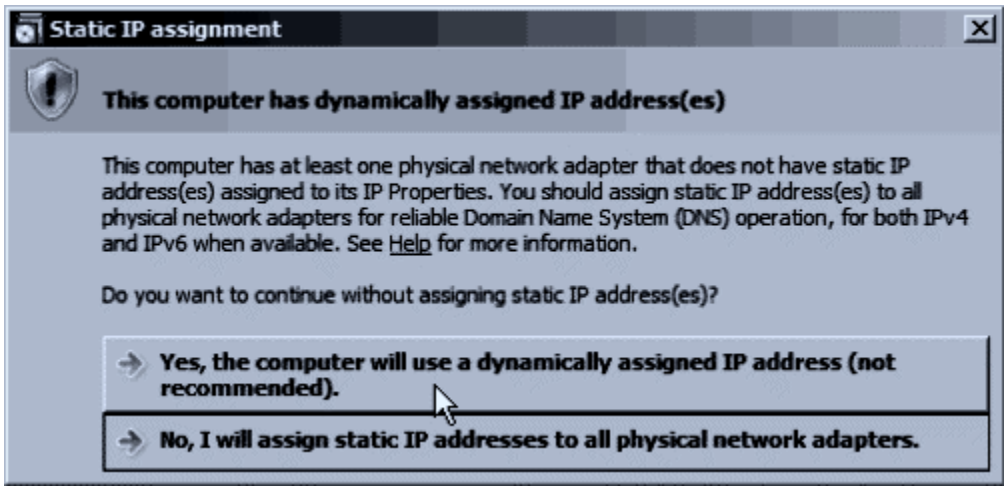


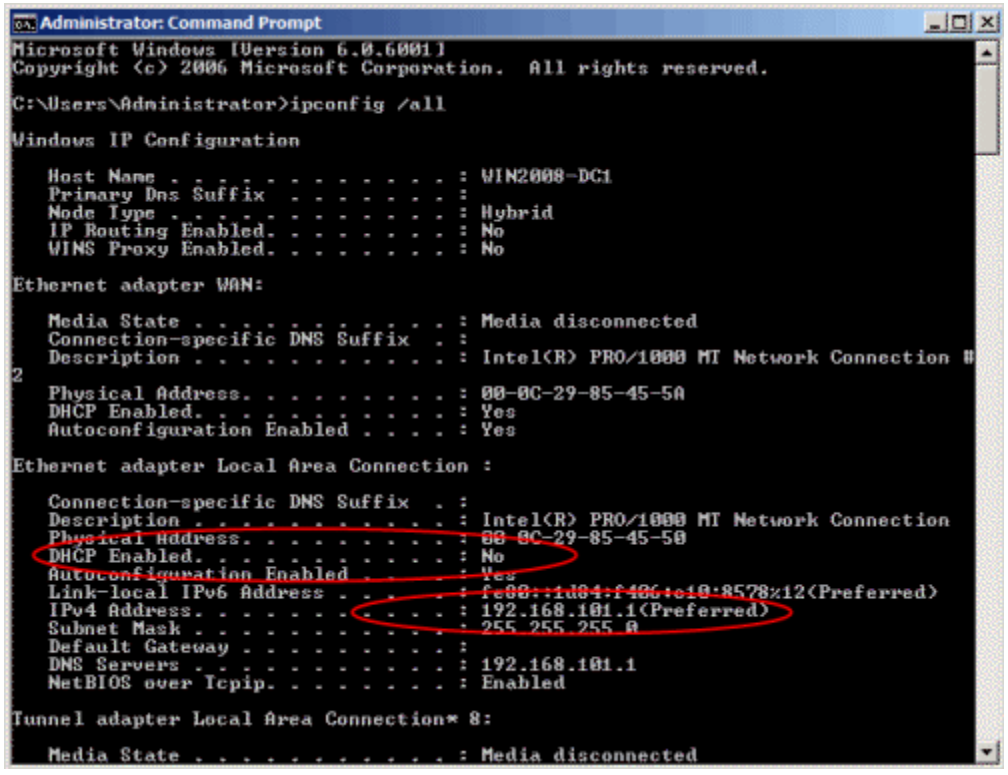


Note: The first DCs must also be a Global Catalog. Also, the first DCs in a forest cannot be a Read Only Domain controller.

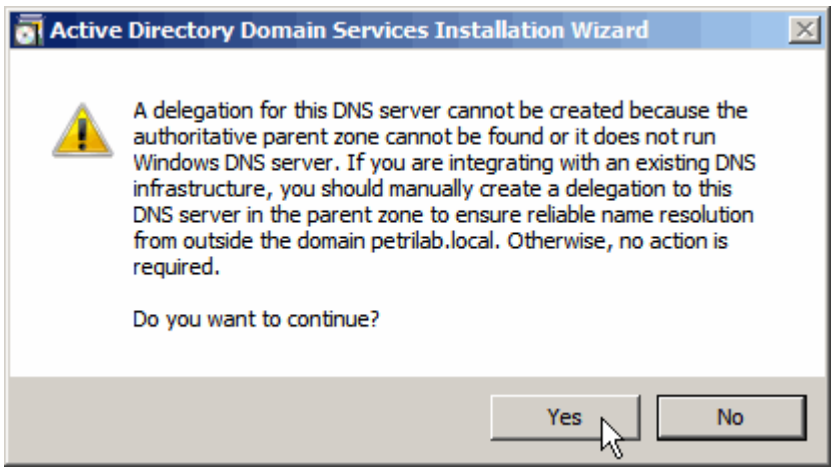
Step 16.It's most likely that you'll get a warning telling you that the server has one or more dynamic IP Addresses. Running **IPCONFIG /all** will show that this is not the case,

because as you can clearly see, I have given the server a static IP Address. So, where did this come from? The answer is IPv6. I did not manually configure the IPv6 Address, hence the warning. In a network where IPv6 is not used, you can safely ignore this warning.

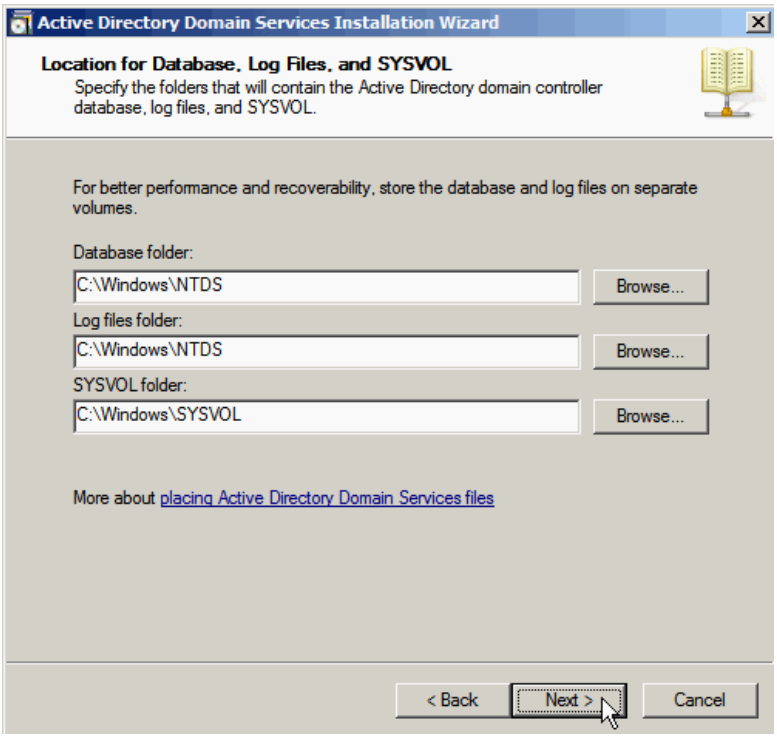




Step 17.You'll probably get a warning about DNS delegation. Since no DNS has been configured yet, you can ignore the message and click **Yes**.

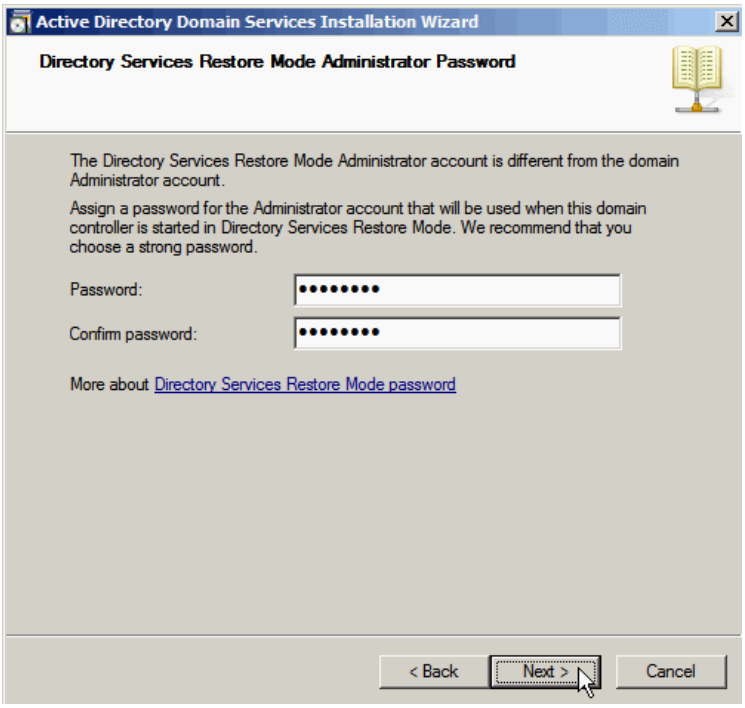


Step 18 Next, change the paths for the AD database, log files and SYSVOL folder. For large deployments, carefully plan your DC configuration to get the maximum performance. When satisfied, click **Next**.



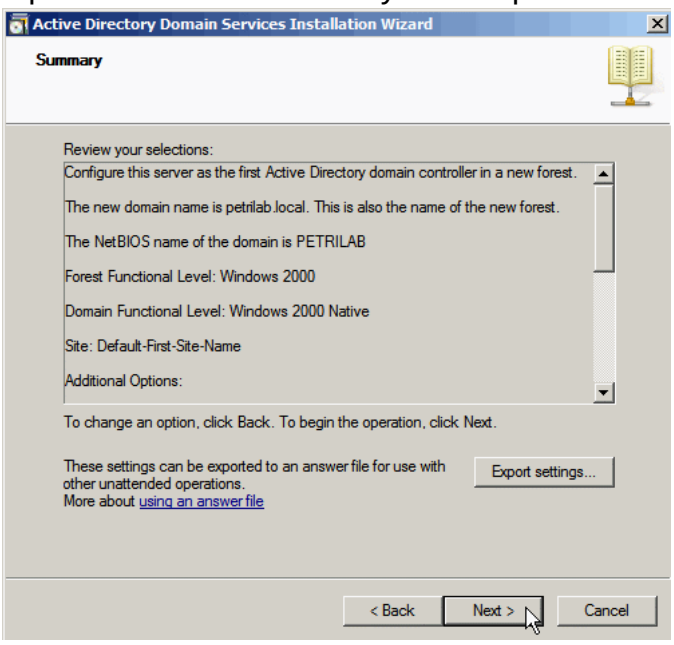
Step 19.Enter the password for the Active Directory Recovery Mode. This password must be kept confidential, and because it stays constant while regular domain user passwords expire (based upon the password policy configured for the domain, the default is 42 days), it does not. This password should be complex and at least 7 characters long. It is strongly

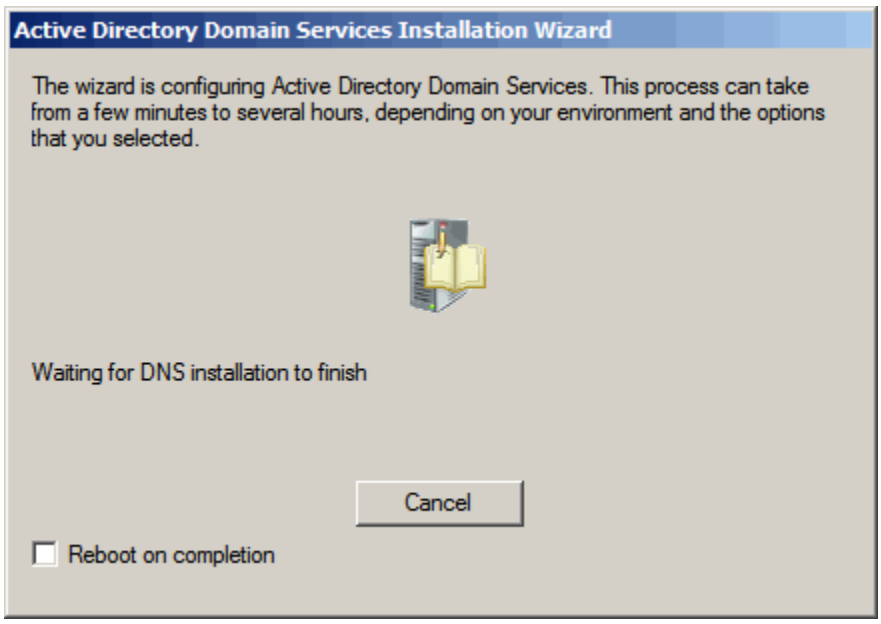
suggest that you do NOT use the regular administrator's password, and that you write it down and securely store it. Click **Next.**



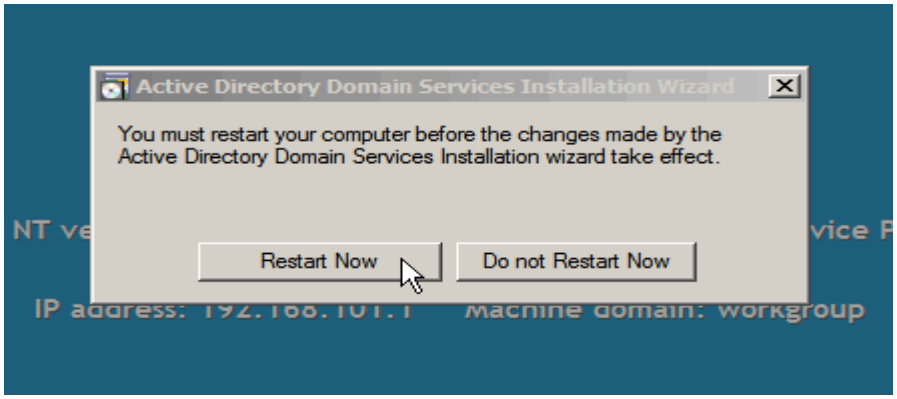
Step 20.In the Summary window review your selections, and if required, save them to an un attend answer file. When satisfied, click **Next**.

Step 21.The wizard will begin creating the Active Directory domain, and when finished, you will need to press **Finish** and reboot your computer.

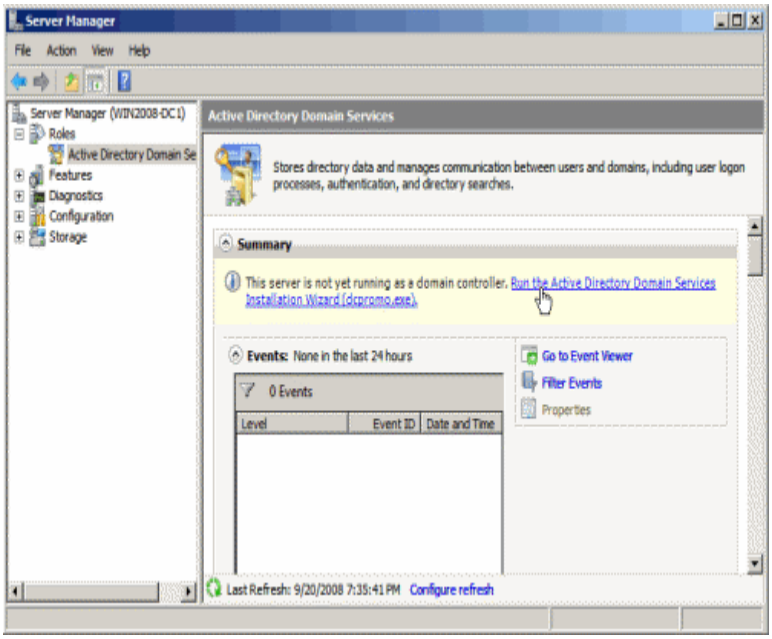



Active Directory Domain Services Installation Wizard
The wizard is configuring Active Directory Domain Services. This process can take from a few minutes to several hours, depending on your environment and the options that you selected.
Waiting for DNS installation to finish
Cancel
Reboot on completion


Active Directory Domain Services Installation Wizard
Completing the Active Directory Domain Services Installation Wizard
Active Directory Domain Services is now installed on this computer for the domain petrilab.local.
This Active Directory domain controller is assigned to the site Default-First-Site-Name. You can manage sites with the Active Directory Sites and Services administrative tool.
To close this wizard, click Finish.
< Back
Finish
Cancel



Note: You can automate the rebooting process by checking the Reboot on Completion checkbox.



Method 2 – Servermanagercmd.exe

Servermanagercmd.exe is the command prompt equivalent of the Add Roles and Add Features wizards in Server Manager. Through the use of various command line options, you can quickly and easily add or remove features and roles to or from your server, including the AD-DS role.

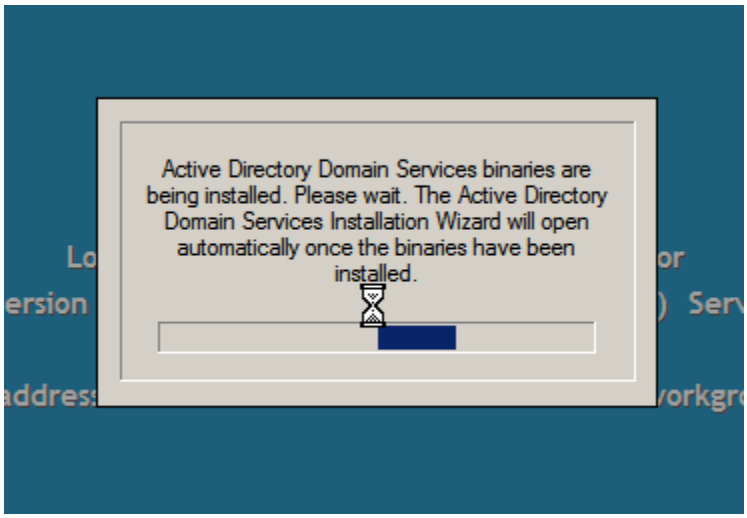
Step 1. To install AD-DS by using Servermanagercmd.exe, simply enter the following command in the Command Prompt window:

Servermanagercmd.exe –I ADDS-Domain-Controller

Let the command run and when it finishes, AD-DS will be installed on the server.

Method 3 – Letting DCPROMO do the job

Step 1.Oh yes. If you forget to install AD-DS or simply want to skip clicking on some windows, you can run DCPROMO from the Run command and before it is executed, the server will check to see if the AD-DS binaries are installed. Since they are not, they will auto-install.



Step 2.After you complete the Add Roles Wizard, either click the link to start the Active Directory Domain Services Installation Wizard, or close Server Manager and manually run DCPROMO from the Run command.

Running DCPROMO

After installing the AD-DS role, we need to run DCPROMO to perform the actual Active Directory database and function installation.

Precautions: Care should be taken while connecting with electric power

Quality criteria: install all rolls which are available in server 2008

Operation Sheet 3.1.1.1 Creating Users and User Templates in Windows Server 2008 Active Directory

Operation title: Creating a New User Account in Active Directory

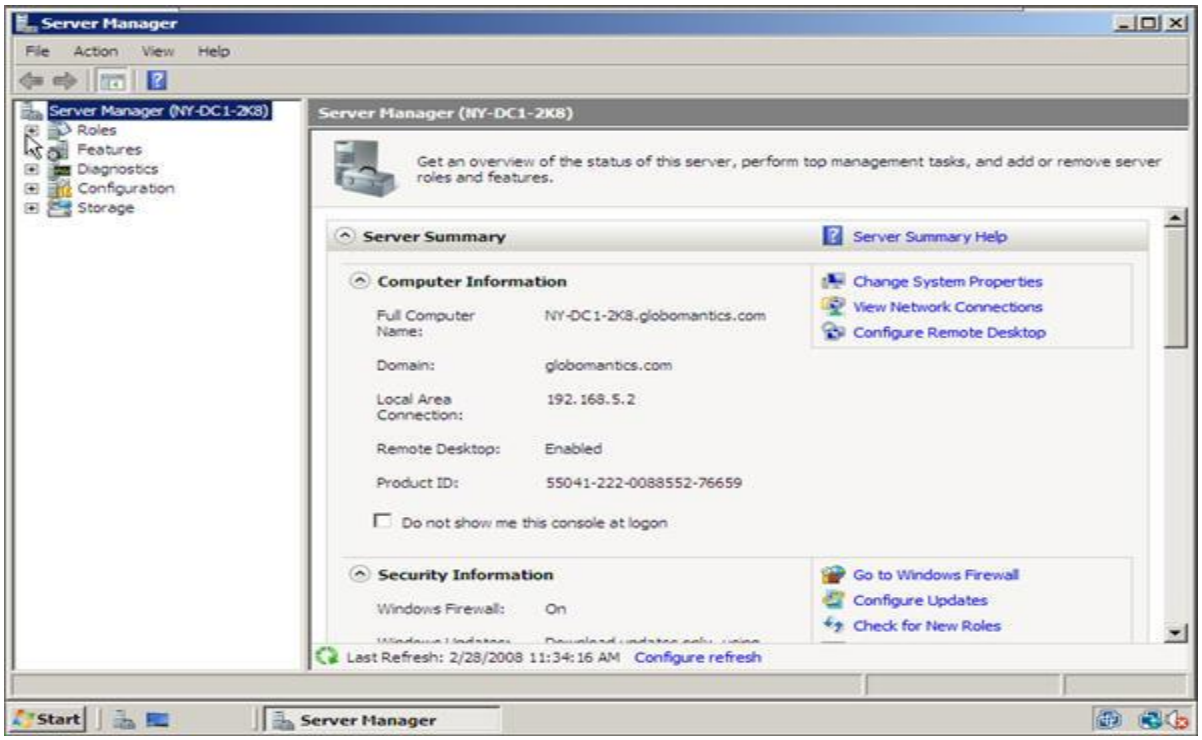
Purpose: To create user in server 2008 and use template for huge amount of user

Equipment ,tools and materials : AD installed computer

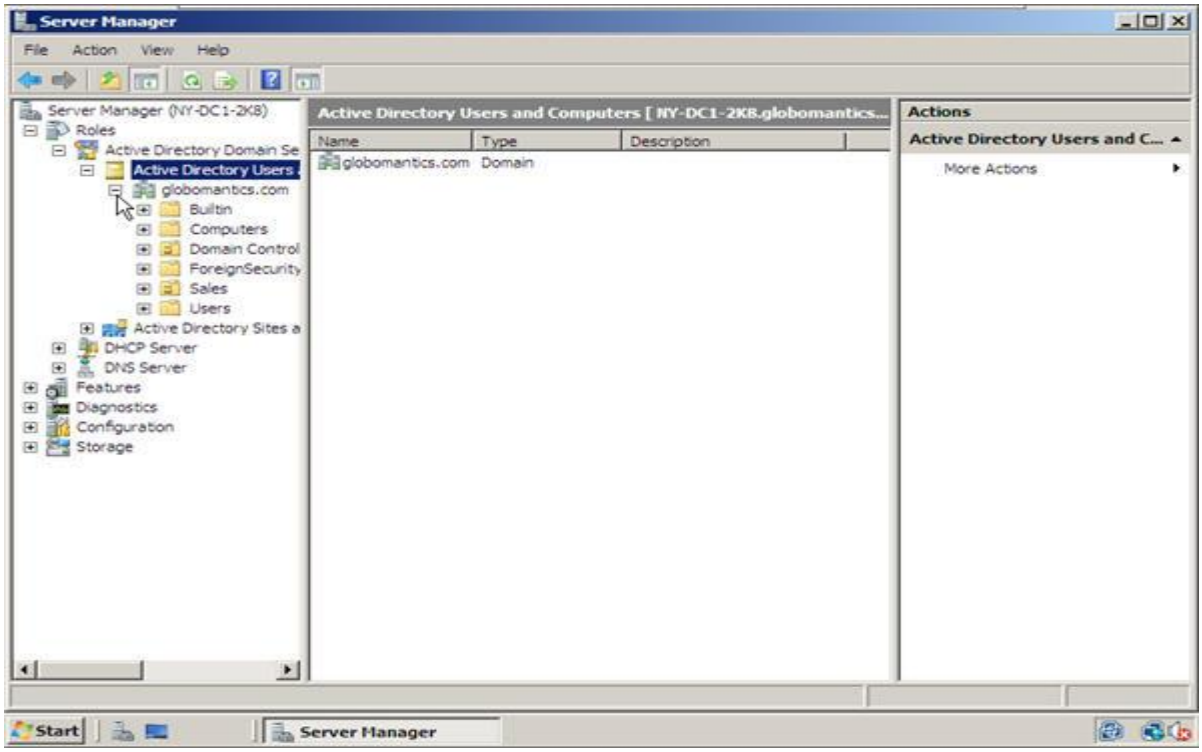
Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

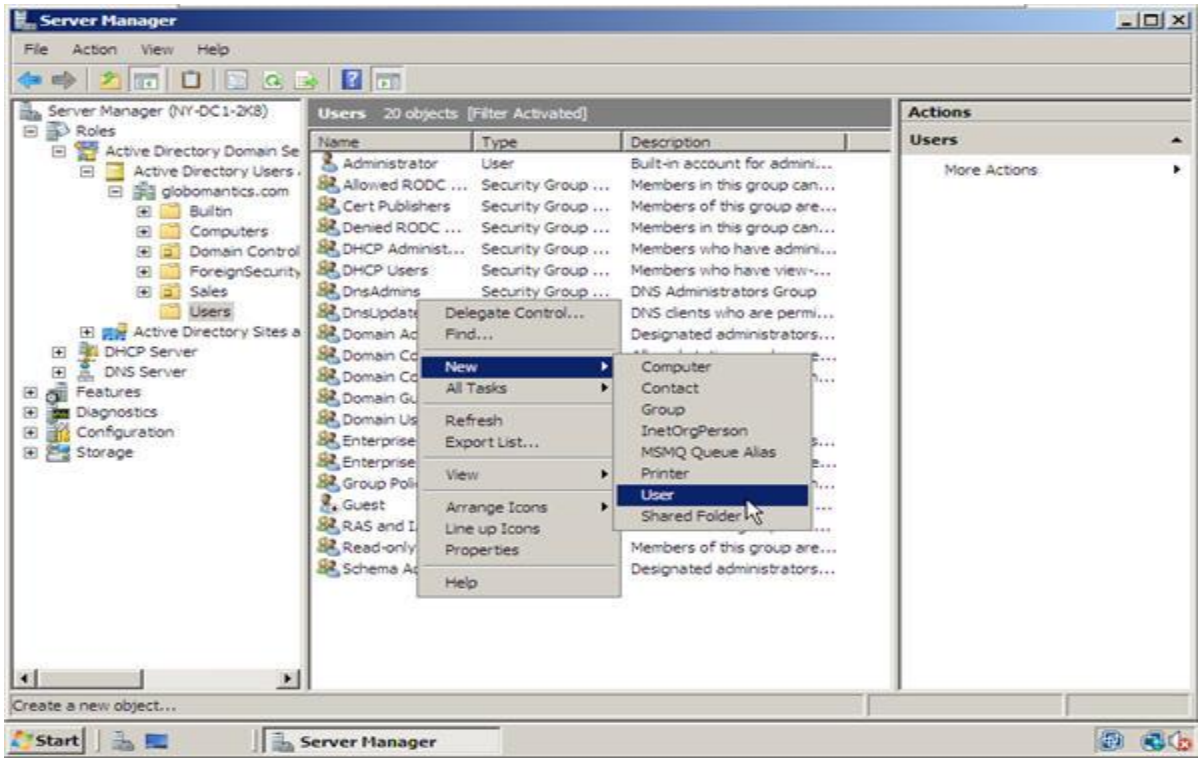
Step 1. To start let's go ahead and open up Server Manager



Step 2.Next we will open up the **Roles** section, next to **Active Directory Users and Computers** section and finally the **Active Directory Users and Computers**. You should now see your domain name.

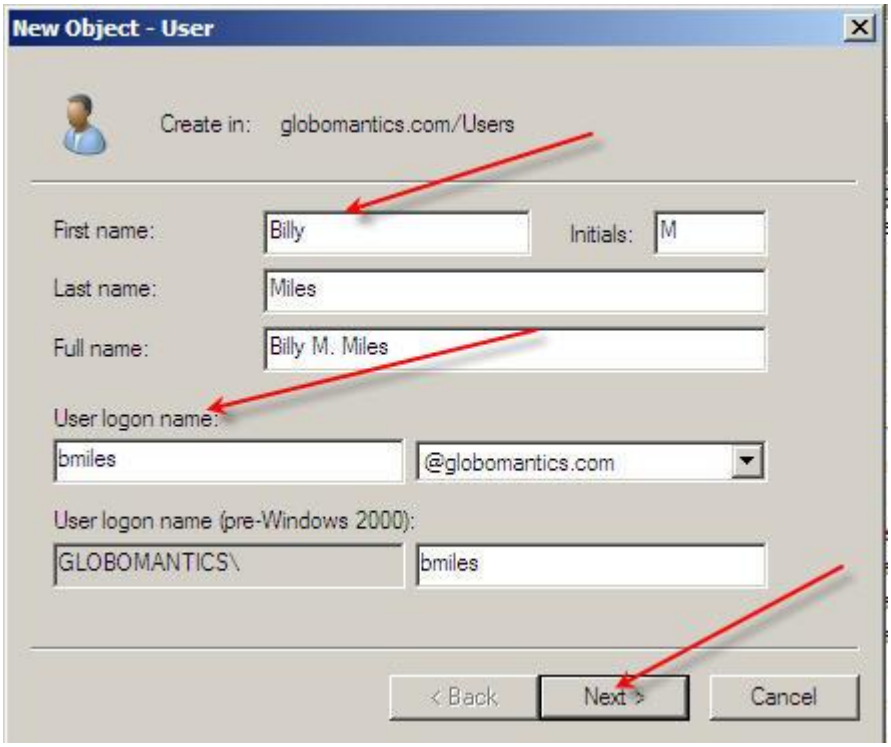


Step 3.We are going to click on our **Users** section where we are going to create a new User Account. To do so, right-click on the blank section, point to **New** and select **User**.



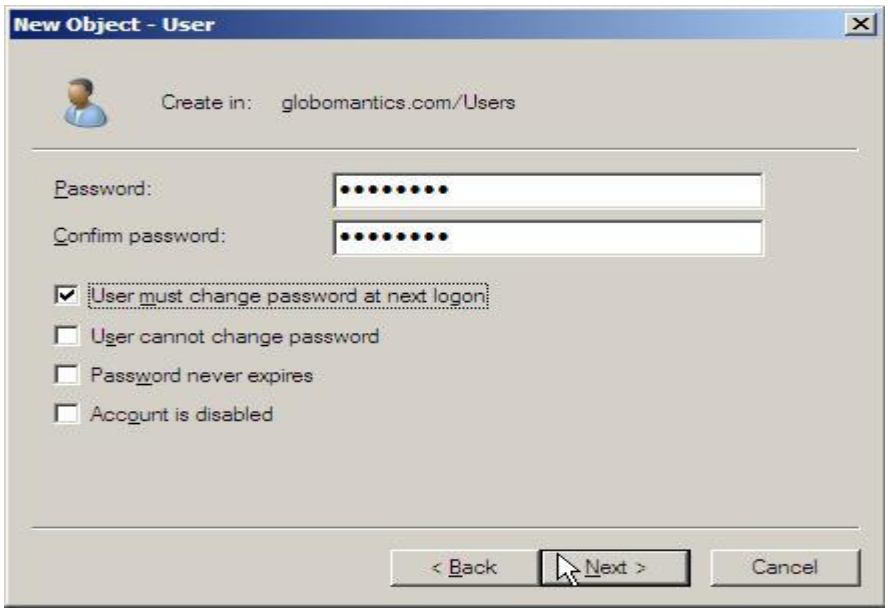
Step 4.In this window you need to type in the user's first name, middle initial and last name. Next you will need to create a user's logon name.

In our example we are going to create a user account for Billy Miles and his logon name will be bmiles. When done, click on the **Next** button.

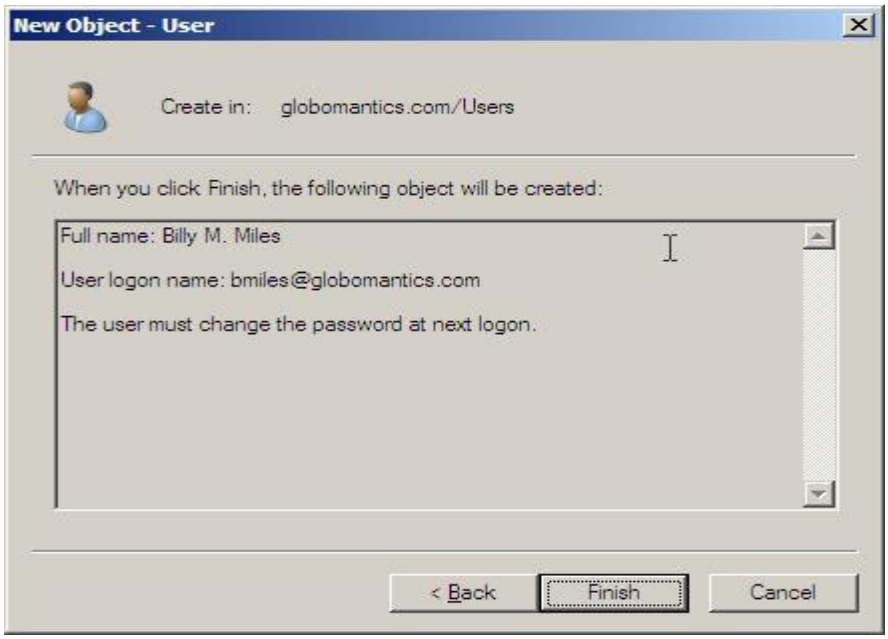


Step 5.In the next window you will need to create a password for your new user and select appropriate options.

In our example we are going to have the user change his password at his next logon. You can also prevent a user from changing his password, set the password so that it will never expire or completely disable the account. When you are done making your selections, click the **Next** button.

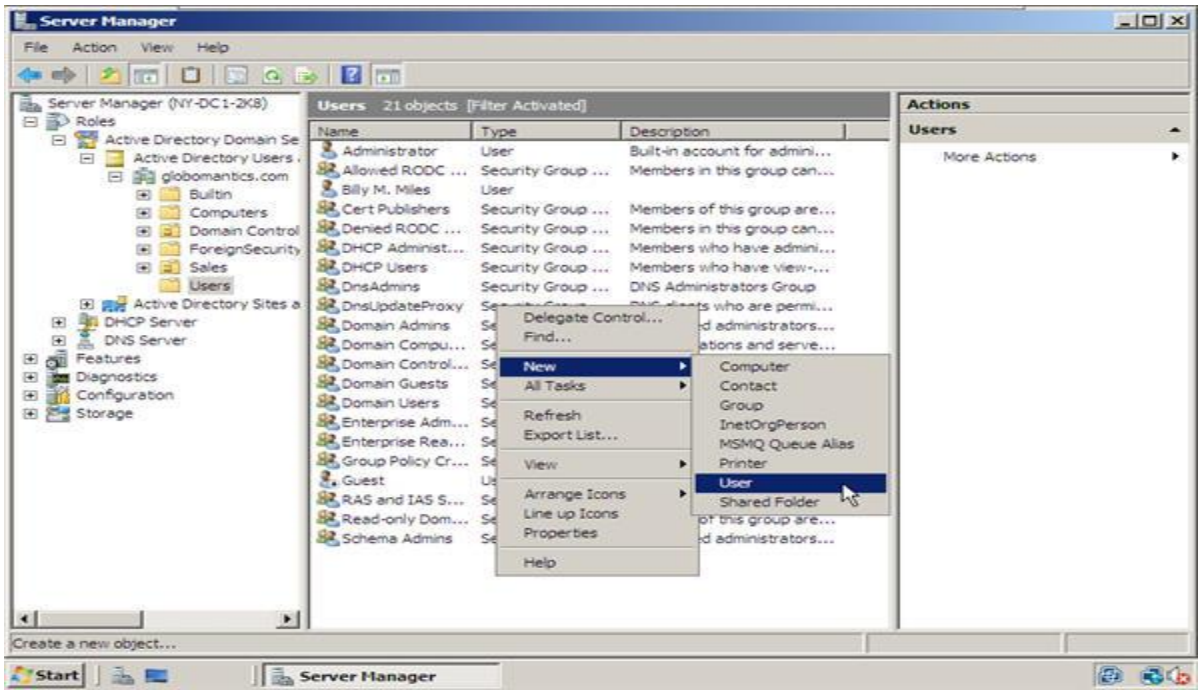


Step 6.And finally, click on the **Finish** button to complete the creation of new User Account.

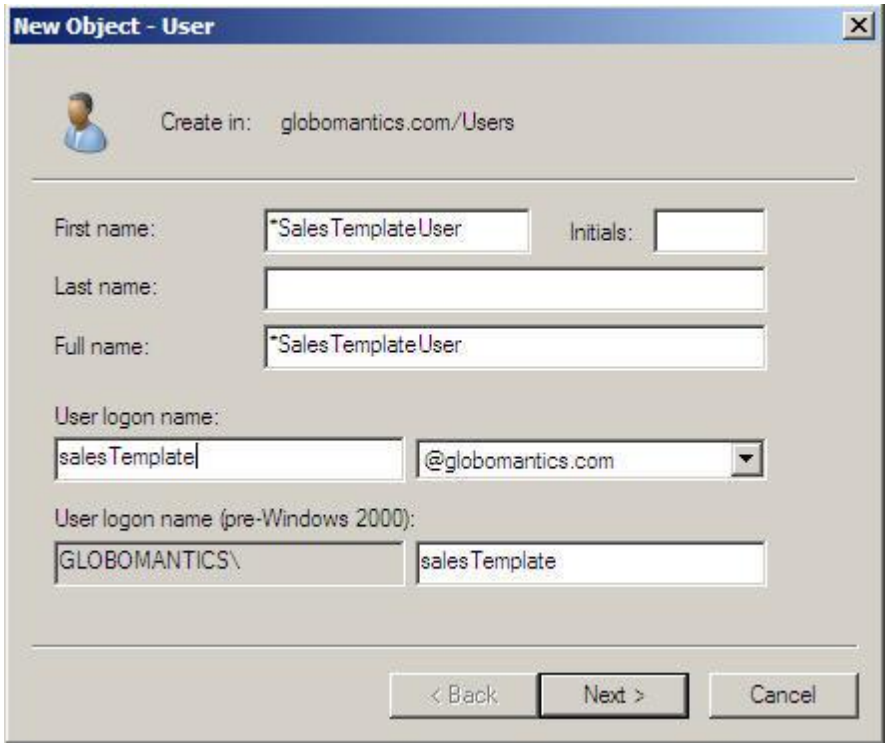


Creating user using template

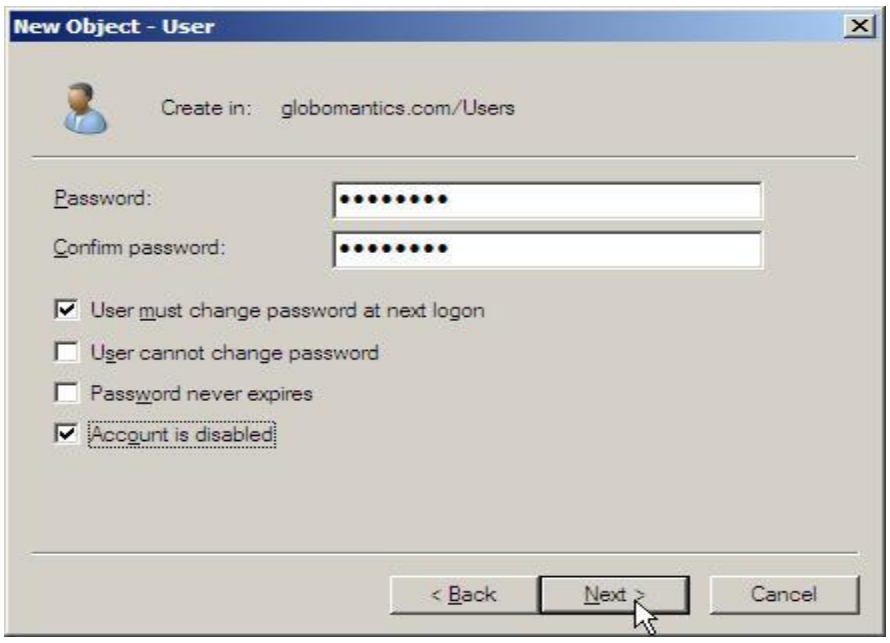
Step 1.To start out, right-click on the empty space, point to new, and select User.



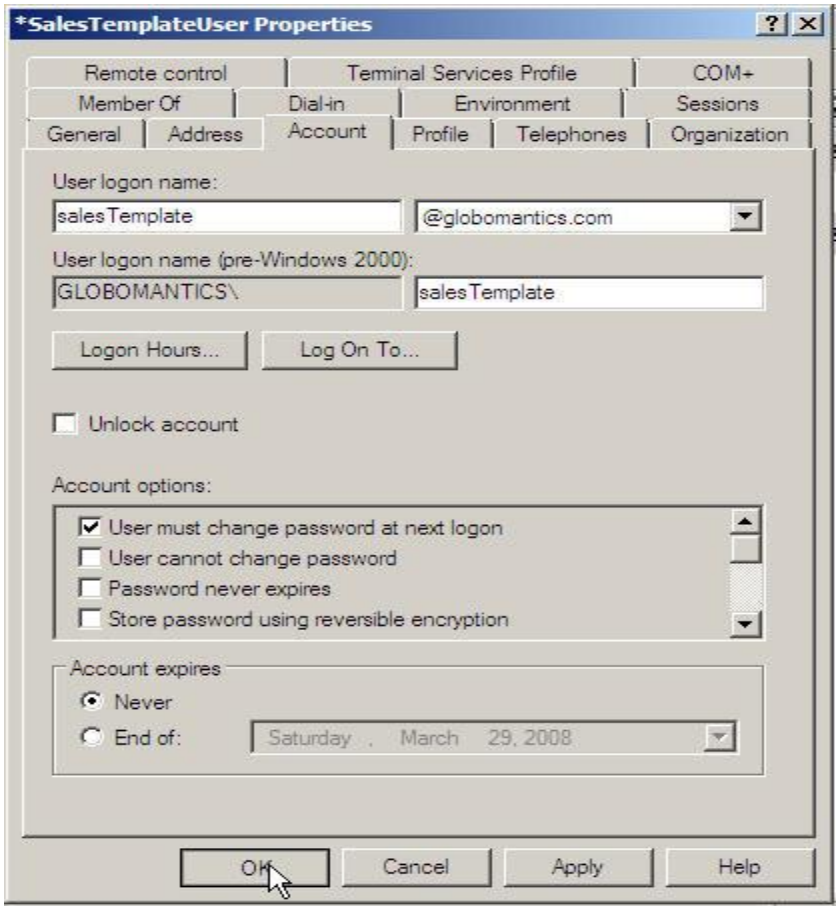
Step 2. Type in the user's name (with asterisks if so desired) and click Next.



Step 3.Create the template's password and do not forget to check the box next to the **Account is disabled** option. When ready, click Next.



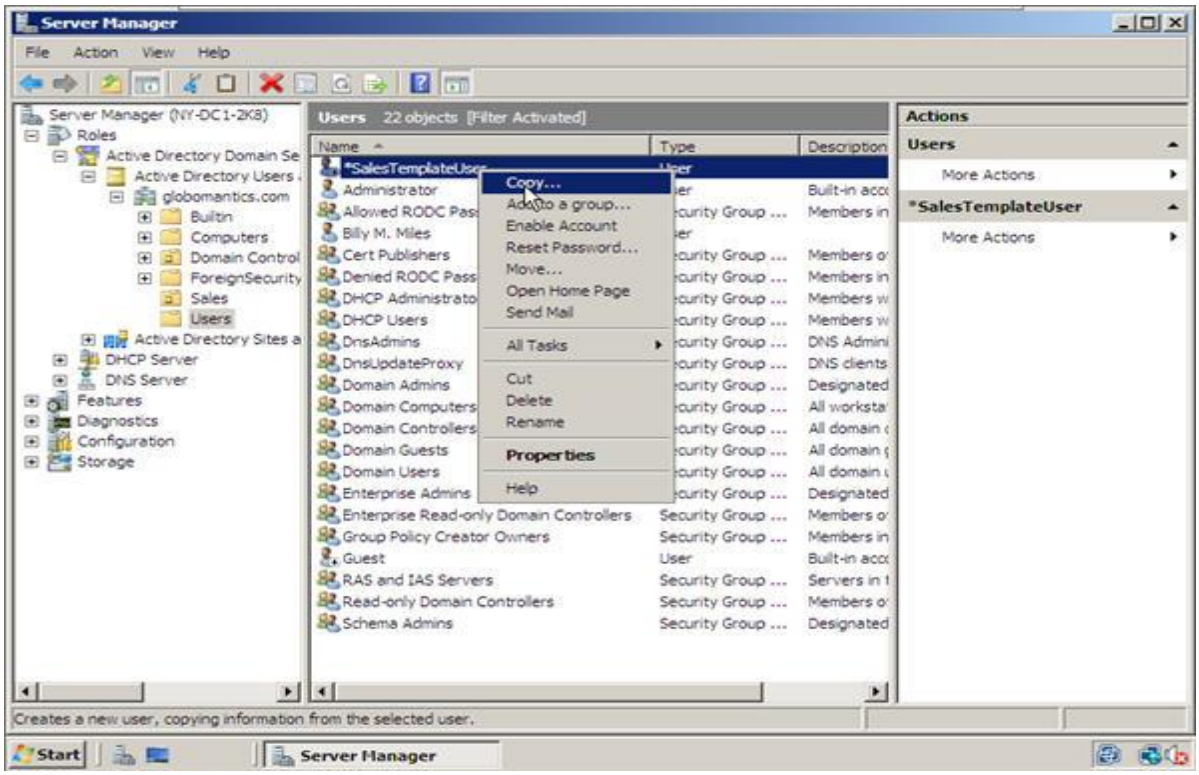
Step 4.Once the account is created, you can go ahead and add all the properties you need for that template. To do so, double-click on that account and navigate to a specific tab. Once done click OK.



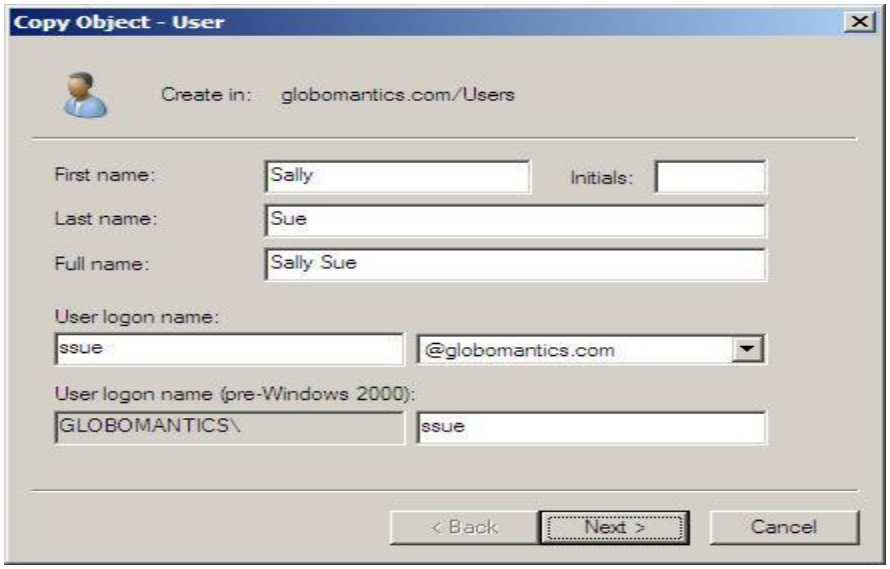
How To Use a User Template in Active Directory

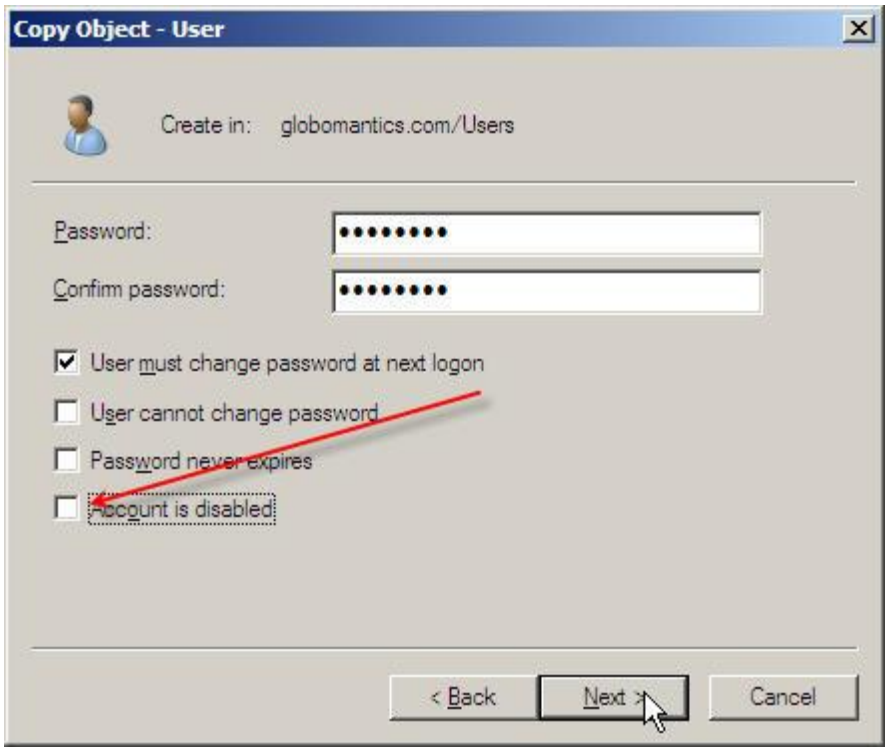
Step 1.Now in order to use that user template, we are going to select it, copy it and add the unique information such as user name, password, etc.We can do that for as many

users as needed. Let's start by right-clicking on the template and selecting **Copy**.



Step 2. Next we are going to enter the user's name, login and password information while making sure the checkbox next to **Account is disabled** is unchecked.

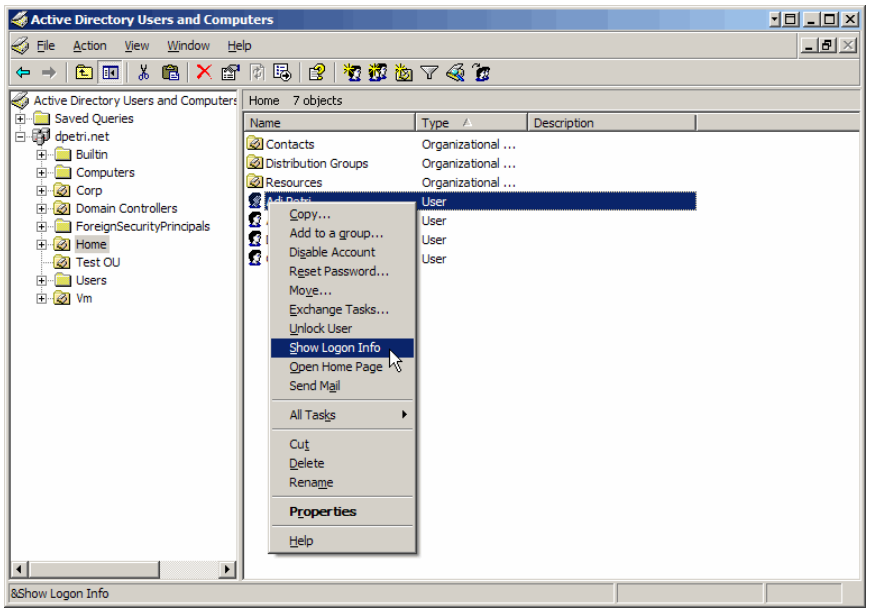




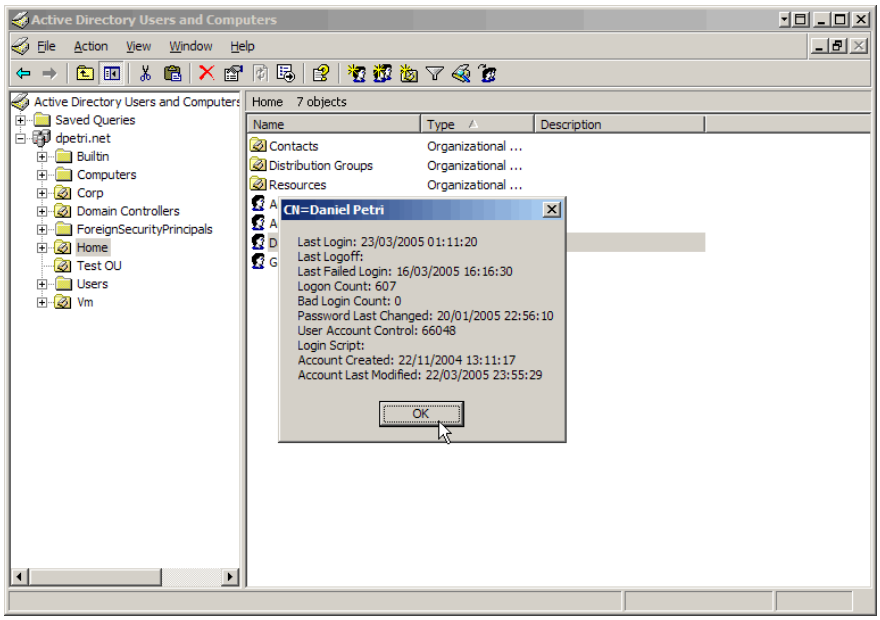
Step 3. Once we finish, our new user account is created with all the properties of the template account. Now wasn't that easy!

Logon information procedures

Right click on users and click on "Show Logon info"



Notice how a prompt is displayed showing the additional information for that user account.



Precautions: Care should be taken while connecting with electric power

Quality criteria: create a user using template

Operation Sheet 3.1.1.2 Creating group in Windows Server 2008 Active Directory

Operation title: Creating group in Active Directory

Purpose: To create group in server 2008 and add user in group

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1.Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**. The Active Directory Users and Computers MMC opens. If it is not already selected, click the node for your domain. For example, if your domain is example.com, click **example.com**.

Step 2.In the details pane, right-click the folder in which you want to add a new group.

Where?

- Active Directory Users and Computers/*domain node*/*folder*

Step 3.Point to **New**, and then click **Group**.

Step 4.In **New Object – Group**, in **Group name**, type the name of the new group.

By default, the name you type is also entered as the pre-Windows 2000 name of the new group.

Step 5.In **Group scope**, select one of the following options:

- **Domain local**
- **Global**
- **Universal**

Step 6.In **Group type**, select one of the following options:

- **Security**
- **Distribution**

Step 7.Click **OK**.

To assign group membership

Step 1.Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**. The Active Directory Users and Computers MMC opens. If it is not already selected, click the node for your domain. For example, if your domain is example.com, click **example.com**.

Step 2.In the details pane, double-click the folder that contains the group to which you want to add a member.

Where?

- **Active Directory Users and Computers**/*domain node*/*folder that contains the group*

Step 3.In the details pane, right-click the group to which you want to add a member, and then click **Properties**. The group **Properties** dialog box opens. Click the **Members** tab.

Step 4.On the **Members** tab, click **Add**.

Step 5. In **Enter the object names to select**, type the name of the user, group, or computer that you want to add, and then click **OK**.

Step 6.To assign group membership to other users, groups or computers, repeat steps 4 and 5 of this procedure.

Precautions: Care should be taken while connecting with electric power

Quality criteria: create a group and add all user in created group

Operation Sheet 3.1.1.3 Creating Organizational Unit (OU) Active Directory

Operation title: Creating Organizational Unit (OU)

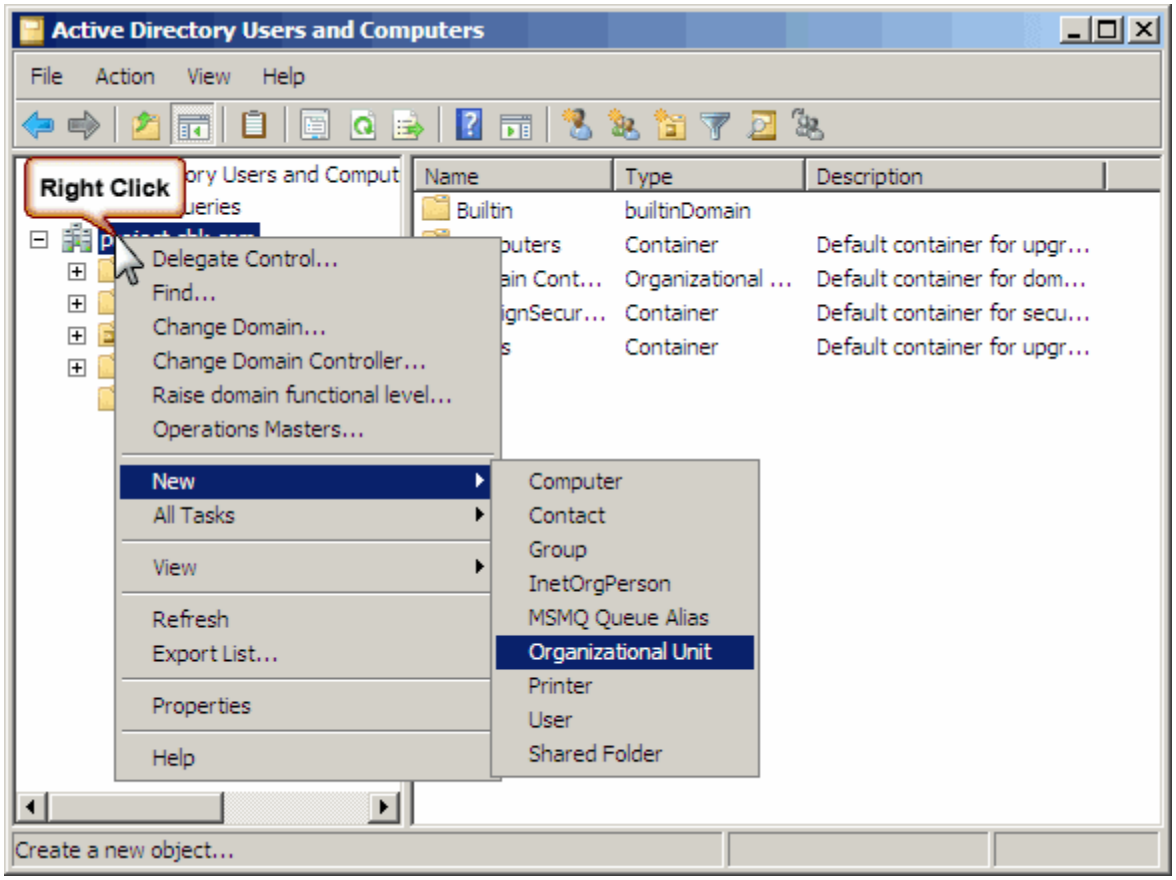
Purpose: To create OU in server 2008 and organize all group

Equipment ,tools and materials : AD installed computer

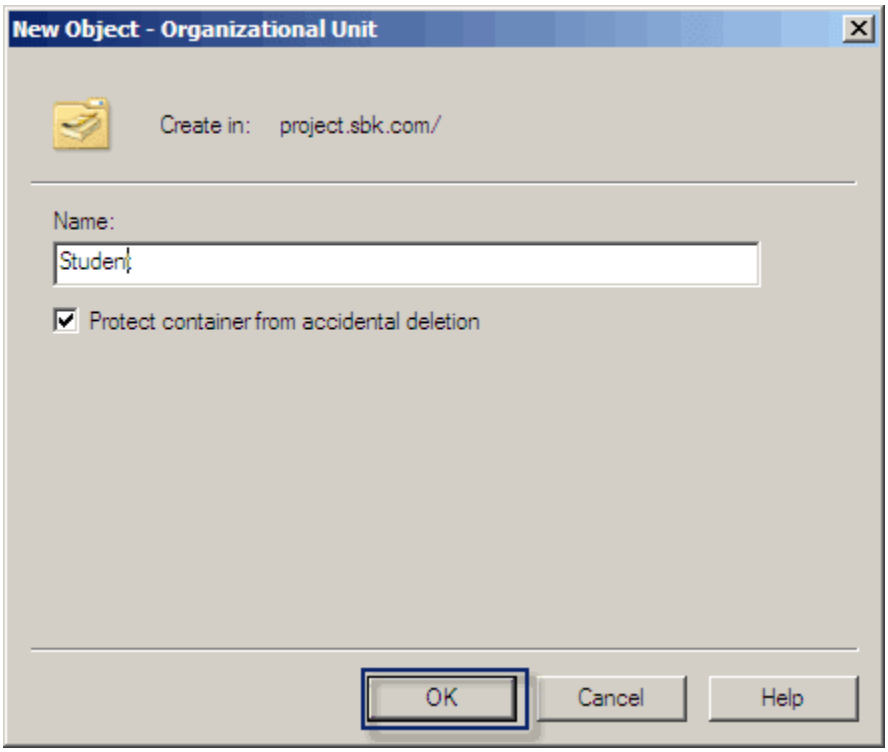
Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1.In the Active Directory Users and computers Window right click on FQDN (project.sbk.com) and in the appeared menu select New then Select Organizational Unit



Step 2.Creating OU write the require Name, check protection container option and click OK



The required OU(Student) is created below FQDN (project.sbk.com)

Precautions: Care should be taken while connecting with electric power

Quality criteria: organize all group in OU

1.1.2 DNS and DHCP servers

DNS

- Domain Name System (DNS)
  - ✓ A hierarchical, distributed, and scalable database that contains various entries known as resource records
  - ✓ To understand its workings and how it performs its functions, you must understand the structure of DNS
- DNS structure
  - ✓ To fully identify a host in the DNS hierarchy, you use a Fully Qualified Domain Name (FQDN)
    - ➢ An FQDN is a segmented name that uses a host name together with its domain names, separated by dots
    - ➢ It completely identifies a host on a TCP/IP network such as the Internet
- Understanding the DNS hierarchy makes it easy to understand the way DNS works to resolve host names to IP addresses and IP addresses to host names
- To perform all this on a Windows Server 2003 network, DNS requires two main components
  - ✓ Resolver
  - ✓ Name server
- Resolver
  - ✓ Runs on the DNS client computers
  - ✓ Is the service used to request resolution of a name from a DNS server
  - ✓ During DNS name resolution, if the client is unable to resolve the destination host name on its own, the resolver sends a query to the server configured as the primary DNS name server, requesting the required data
- Name server
  - ✓ A DNS name server is simply a server with the DNS Server service installed and running
  - ✓ While a name server usually includes one or more zone files used for authoritatively resolving queries to one or more zones, this is not required

- ✓ Servers that have no zone files are typically used to cache requests for large numbers of clients, and are known as caching-only servers

- DNS zones
  - ✓ DNS is based on the concept of zones
  - ✓ Zones are an area of authority consisting of one or more contiguous domains
  - ✓ When a server contains a particular zone, it is said to be authoritative for that zone, meaning that any query it receives for that zone can be answered with direct knowledge; no other servers must be asked
- DNS zones
  - ✓ Zones are broken into two primary types
    - ➢ Forward lookup zones
      - Standard DNS zones
      - Primarily used for resolving name-to-IP lookups using A records
    - ➢ Reverse lookup zones
      - Are used for inverse queries
      - Typically resolve IP-to-name lookups using PTR (pointer) records

Operation Sheet 3.1.2. install Domain Name System (DNS) role

Operation title: Install Domain Name System (DNS) role

Purpose: installing DNS for name resolution purpose

Equipment ,tools and materials : AD installed computer

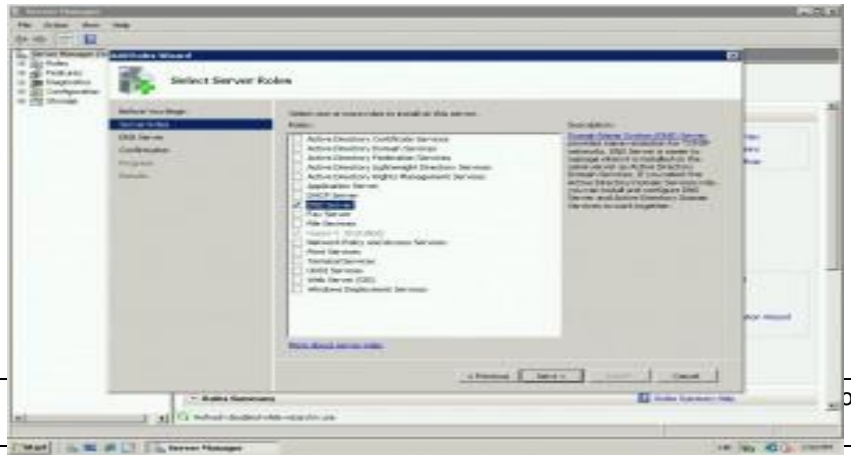
Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

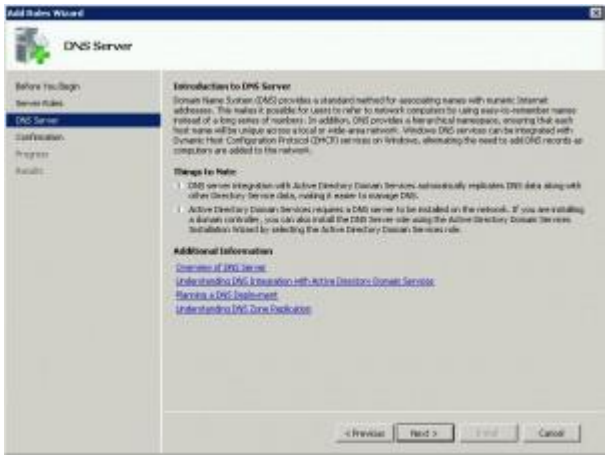
Procedures :

Step 1.In **Server Manager** window, and let's click with right mouse button on Roles and let's select **Add roles**.

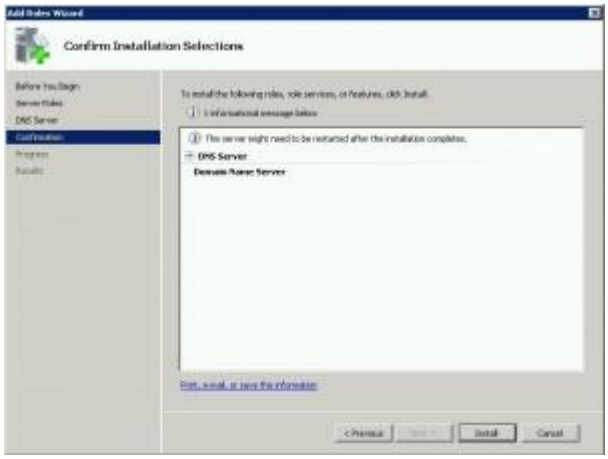
Step 2. Now we have **Add Roles Wizard**, and we have to select DNS Server role (or any other Windows Server 2008 role) in **Select Server Roles screen**. Then, click on Next.

Step 3.Now, you'll see **Introduction to DNS Server**.





Step 4. Just click on Next, and then you'll get **Confirm installation selections window**, where you have to click on **Finish**.



Step 5.Computer will then reboot and that's it, you have **Domain Name System Server installed on Windows Server 2008**.

Precautions: Care should be taken while connecting with electric power

Quality criteria: install DNS rolls which are available in server 2008 try to resolve IP to domain

DHCP

"Dynamic Host Configuration Protocol (DHCP) is an IP standard designed to reduce the complexity of administering IP address configurations." - Microsoft's definition. A DHCP server would be set up with the appropriate settings for a given network. Such settings would include a set of fundamental parameters such as the gateway, DNS, subnet masks, and a range of IP addresses. Using DHCP on a network means administrators don't need to configure these settings individually for each client on the network. The DHCP would automatically distribute them to the clients itself. The DHCP server assigns a client an IP address taken from a predefined scope for a given amount of time.

If an IP address is required for longer than the lease has been set for, the client must request an extension before the lease expires. If the client has not requested an extension on the lease time, the IP address will be considered free and can be assigned to another client. If the user wishes to change IP address then they can do so by typing "ipconfig /release", followed by "ipconfig /renew" in the command prompt.

This will remove the current IP address and request a new one. Reservations can be defined on the DHCP server to allow certain clients to have their own IP address (this will be discussed a little later on). Addresses can be reserved for a MAC address or a host name so these clients will have a fixed IP address that is configured automatically.

Most Internet Service Providers use DHCP to assign new IP addresses to client computers when a customer connects to the internet - this simplifies things at user level.

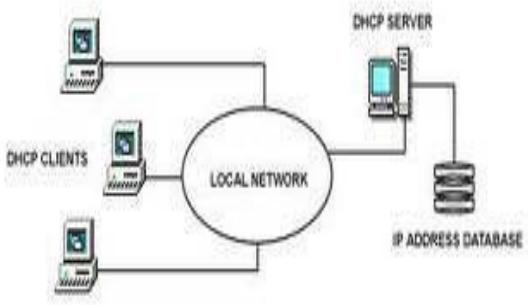


Figure 3: internet IP distribution

The above diagram displays a simple structure consisting of a DHCP server and a number of client computers on a network. The DHCP Server itself contains an IP Address Database which holds all the IP addresses available for distribution. If the client (a member of the network with a Windows 2000 Professional/XP operating system, for example) has "obtain an IP address automatically" enabled in TCP/IP settings, then it is able to receive an IP address from the DHCP server.

Forests

A forest is one or more trees connected at the tree roots by a Kerberos bidirectional transitive trust. As with a tree, this now means that every single domain in a forest trusts every other domain in the forest, even those domains in other trees. Why would you need more than one tree in the first place? Remember, a tree is a contiguous namespace. If you needed a separate namespace, maybe you wanted a domain to be named savtech.org, you could not place this into the existing savilltech.net tree. Instead, when you created this new domain you would specify that you wanted to join an existing forest and give the name of the existing tree. For example, you would give the name savilltech.net, and as with domains in a tree, a trust between the two tree roots would be created .The phrase “domain and forest functionality” refers to the scope of Active Directory features you have available in your enterprise

The Dynamic Host Configuration Protocol (DHCP)

The Dynamic Host Configuration Protocol (DHCP) is responsible for allocating IP addresses to machines on the network. Not every machine should have a dynamically allocated IP address, however. Any server that is accessed consistently by clients and that would be hampered if its IP address changed should have a static IP address

After DHCP is running on a network, configure clients to obtain IP addresses via DHCP and they automatically request an IP address upon startup.

Operation Sheet 3.1.2.1 Installing and Performing DHCP Initial Configuration

Operation title: Installing and Performing DHCP Initial Configuration

Purpose: To install and automatically assign IP address for all computer in the network

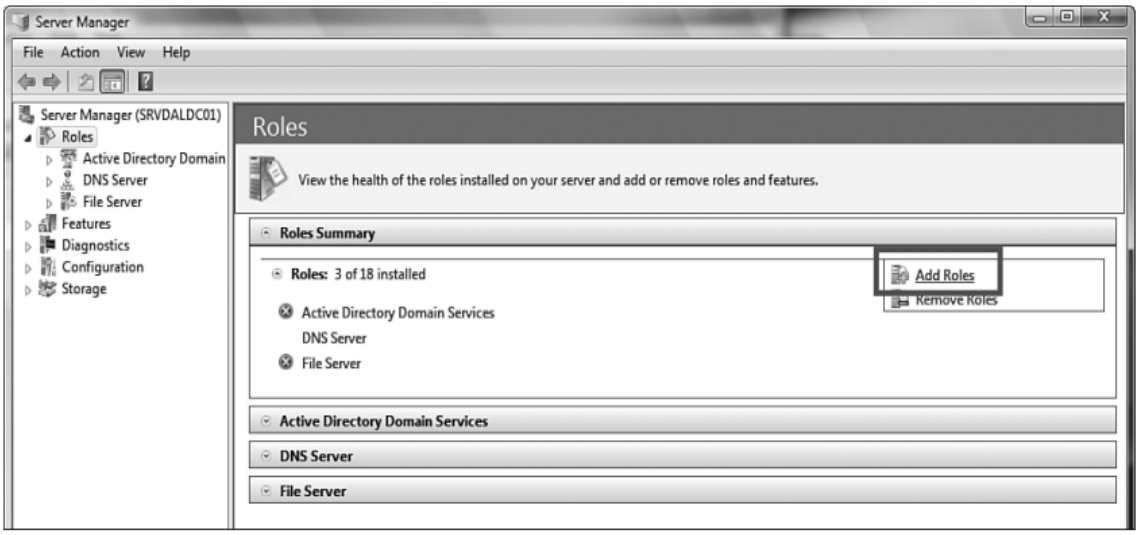
Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Installing and Performing DHCP Initial Configuration

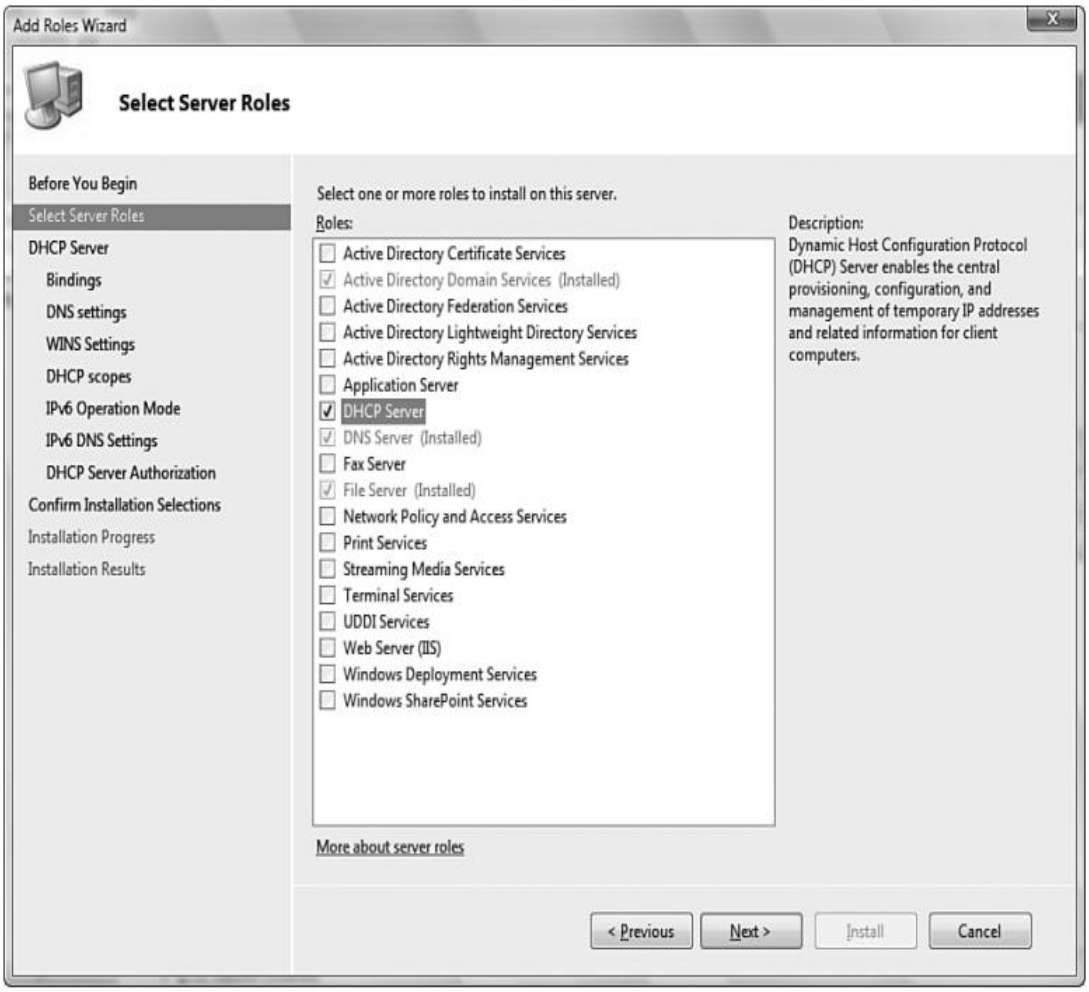
Step 1.Select the Add Roles link within the Roles section of the tool (either ICT or Server Manager)



Step 2. The Add Roles wizard is displayed and gives warnings that you should ensure the Administrator has a strong password, a static IP address, and the latest updates. Click Next

Step 3.A list of all roles is displayed. Select DHCP Server and click Next

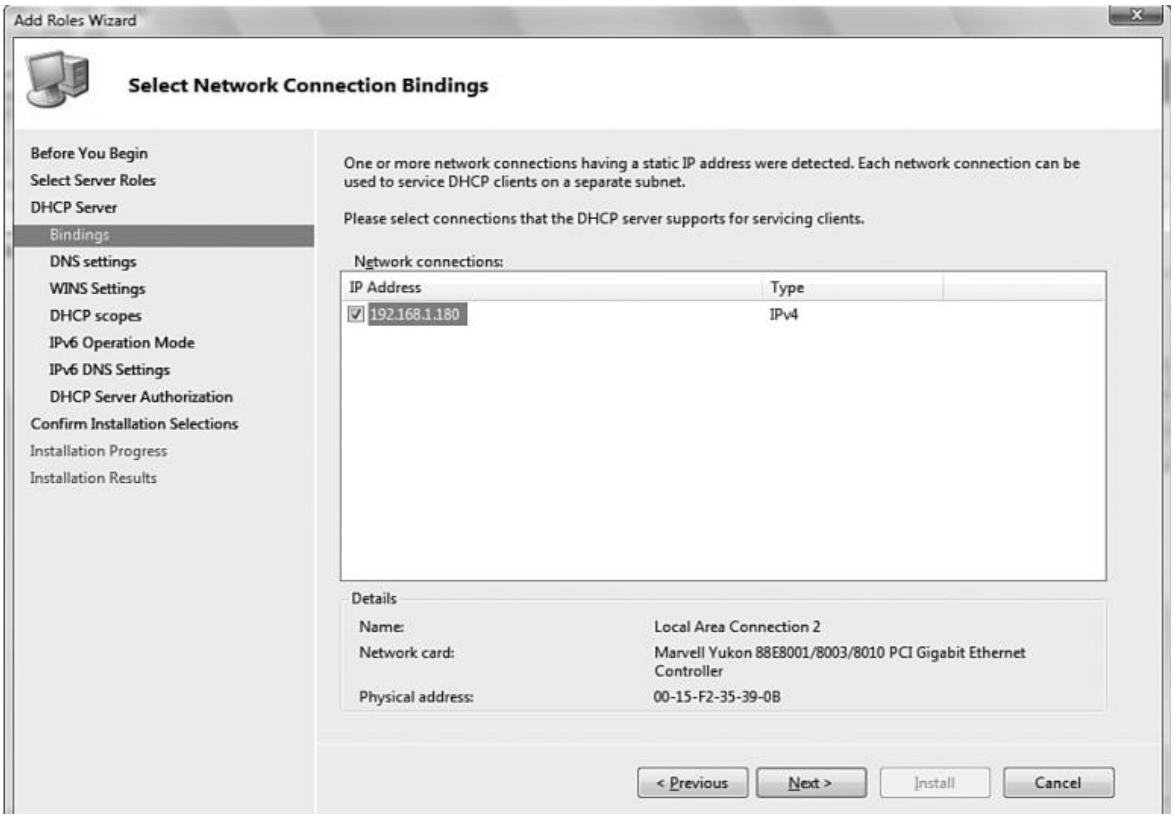
Step 4.The wizard now guides you through the basic configuration of DHCP with seven steps. Click Next.



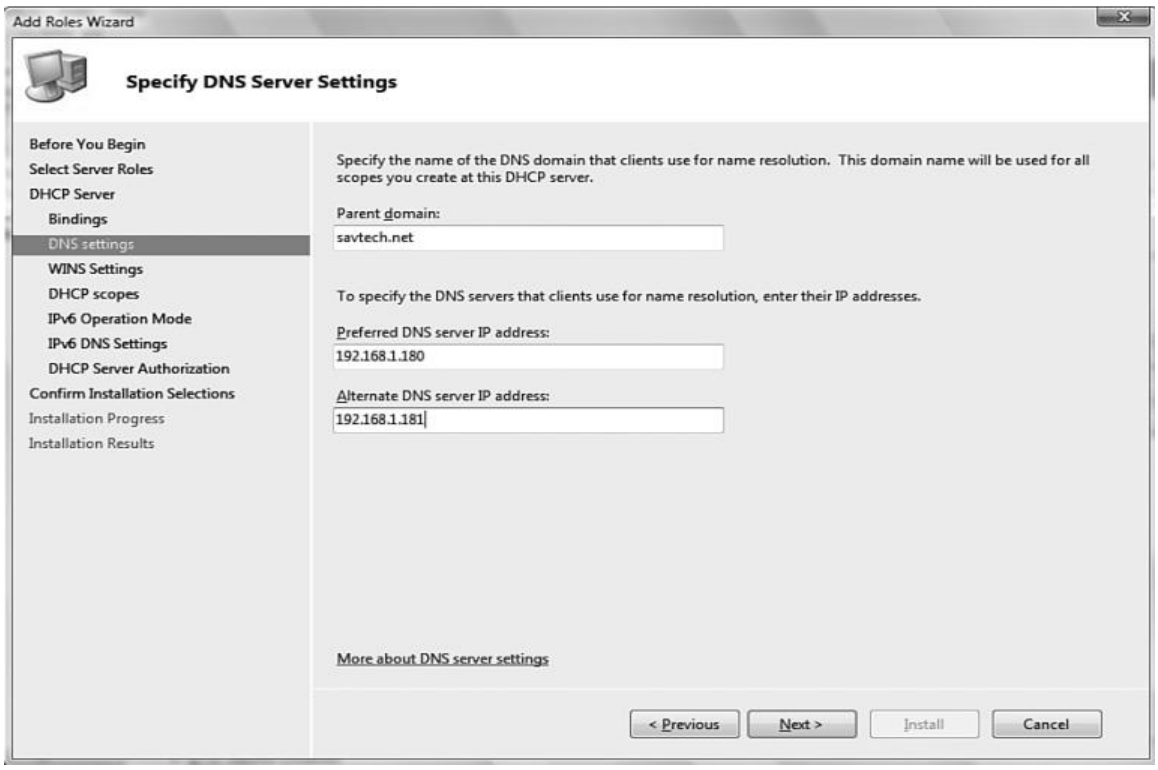
The role-based method is far more attractive than the old style Add/Remove Windows Components in previous versions.

Step 5.The first step is determining which network connections are bound for the DHCP server. All connections with a static IP address are listed. Confirm that the bindings are correct and click Next.

Step 6.The DNS information that is given to clients, including the DNS domain of the client parent, the primary DNS server, and the secondary DNS server (if available), is configured. Click Next . This configuration is set at the global level and so applies to all scopes created on the DHCP server.



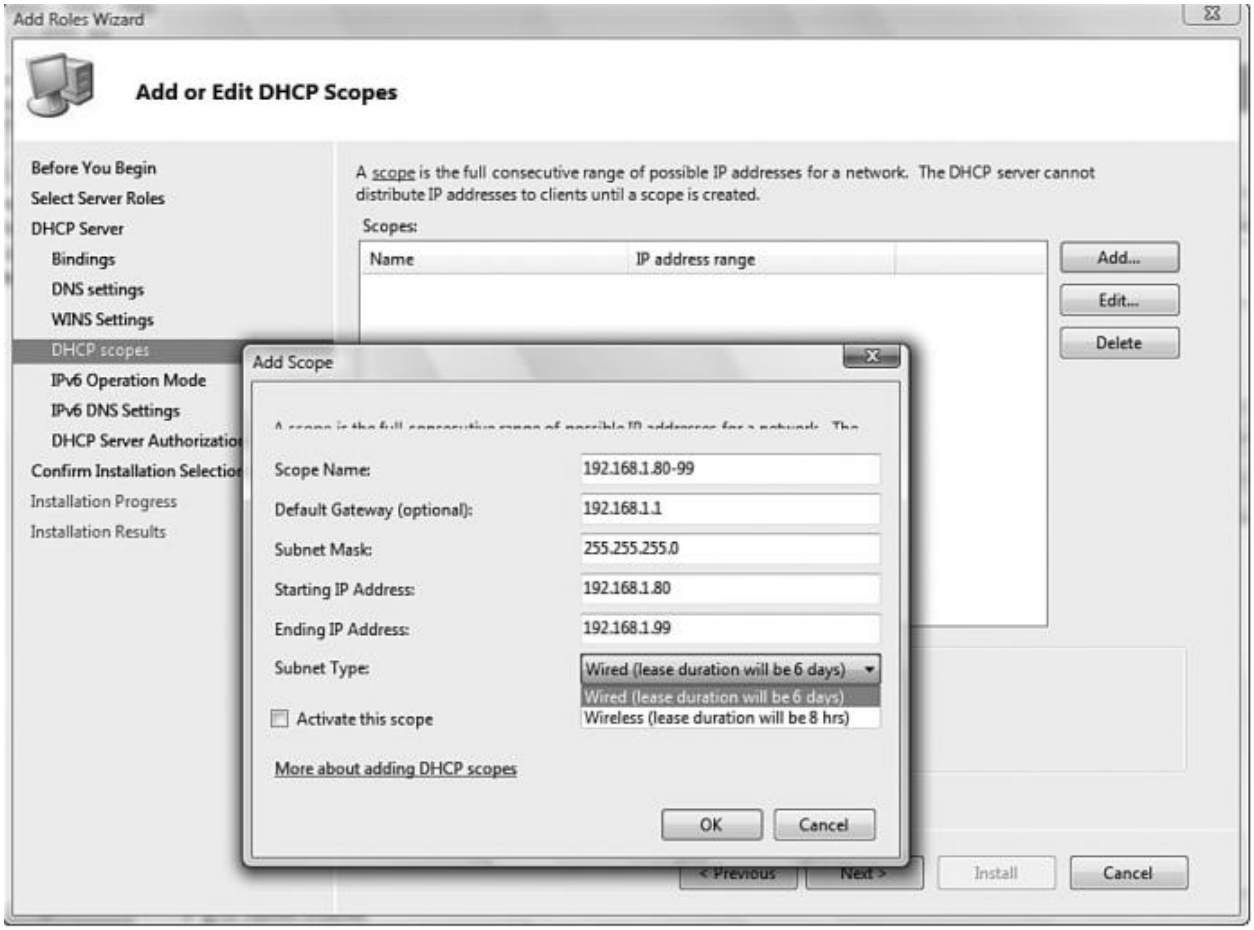
Selecting the network connections with which the DHCP server provides service.



Configuring the DNS domain and servers for the DHCP server.

Step 7.The next screen configures WINS (if required). If any of your applications still use NetBIOS names, configure the WINS servers. Click Next.

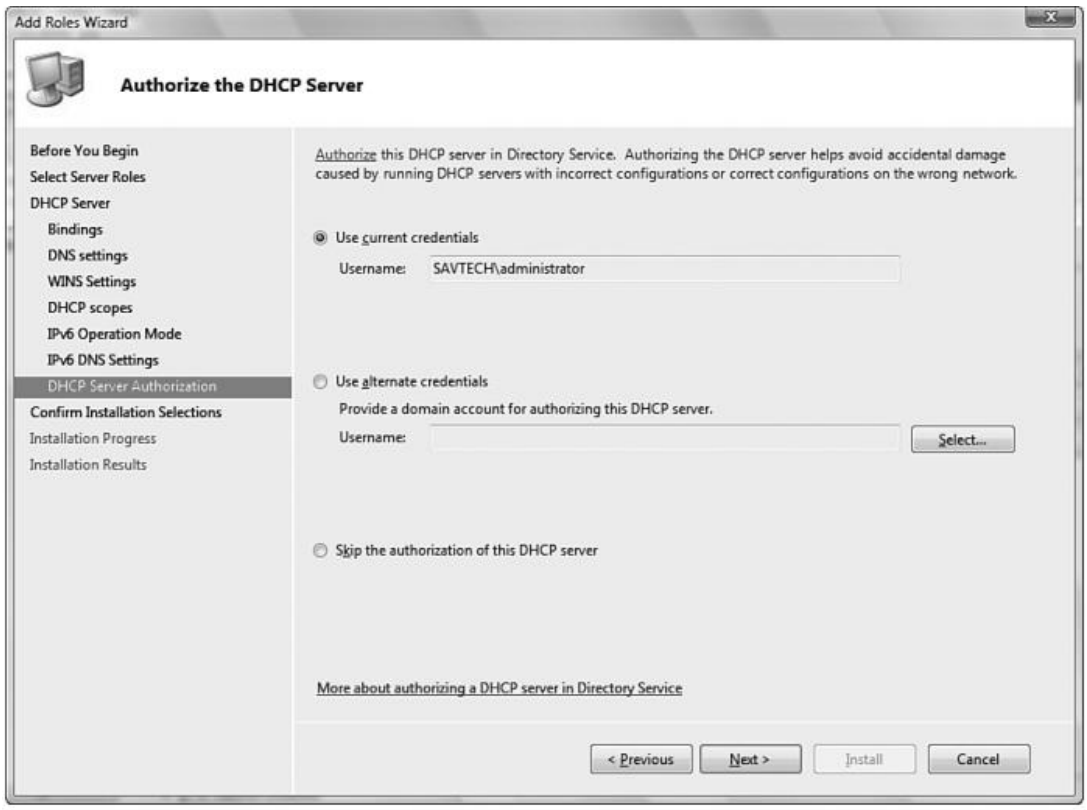
Step 8.DHCP scopes can be configured by clicking the Add button, which opens up the scope properties. Configure the name, its default gateway, subnet mask, and starting and ending IP address. You can also select the type of subnet (see Figure 7-8). If it's wireless, this generally assumes devices are connected for less time and so have a lease of only eight hours. Wired devices are normally more permanent fixtures in the environment and therefore have a lease of six days. Check the Activate the Scope option and click OK. Click Next after scopes have been defined.



Step 9.The option to enable DHCPv6 protocol on the server is displayed. It is set to Yes, so click Next. If you are not using IPv6, disable this setting for now. You can enable it in the future.

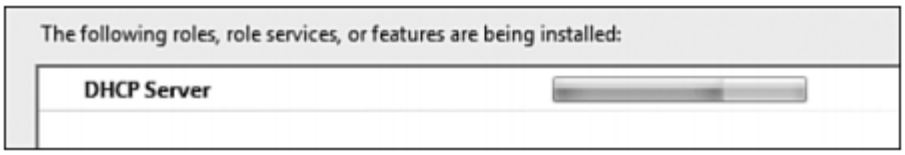
Step 10.The DNS settings for IPv6 DNS must be configured if you selected to enable DHCPv6. After the configuration is done, click Next.

Step 11**.** Finally, the DHCP server must be authorized with the current credentials or an alternate set of credentials. You can also decide to skip the authorization. Make a choice and click Next



Selecting credentials for authorizing a DHCP server.

Step 12.A summary of the configuration is displayed, which can be output to an HTML file and opened in Internet Explorer Click Install to start the DHCP installation. After the install is complete, a summary is displayed. Click Close.



DHCP server role installation progress display

Precautions: Care should be taken while connecting with electric power

Quality criteria: exclude 192.168.1.0 and 192.168.1.1 from automatically assigned IP

3.1.3 Application server IIS 7

You can use Microsoft® Web Platform Installer (Web PI) to easily install Internet Information Services (IIS) and applications that run on IIS. However, if you choose to install IIS manually, you can use this article for guidance.

IIS 7.0 is the Web server role in Windows Server® 2008 and the Web server in Windows Vista®. IIS 7.5 is the Web server role in Windows Server® 2008 R2 and the Web server in Windows® 7. Windows Server 2008 R2 and Windows Server 2008 operating systems have all the IIS features needed to support the hosting of Web content in production environments. Windows 7 and Windows Vista also include IIS features, but the available features depend on the operating system versions.

The Web server was redesigned in IIS 7.0 to enable you to customize a server by adding or removing modules to meet your specific needs. Modules are individual features that the server uses to process requests. For example, IIS 7.0 and IIS 7.5 use authentication modules to authenticate client credentials and use cache modules to manage cache activity. Both versions of IIS also provide:

- A new management interface. The interface lets you quickly and easily change the settings for each Web site. It is also possible to edit the settings of a Web site in a text-based configuration file.
- The ability to share tasks with Web site owners. A hoster with multiple sites can delegate administrative control to developers or content owners.

New in IIS 7.5

IIS 7.0 and IIS 7.5 are together known as IIS 7 or IIS 7 and above; however, IIS 7.5 and Windows Server 2008 R2 include several new features not found in IIS 7.0:

- Microsoft® ASP.NET runs on Windows Server 2008 R2 Server Core installations.
- Some of the extensions available to be added to the IIS 7.0 platform are integrated into the IIS 7.5 platform, including:

- ✓ FTP publishing.
- ✓ Web-based Distributed Authoring and Versioning (WebDAV) publishing.
- ✓ Windows PowerShell™ snap-in for IIS.
- ✓ IIS Administration Pack modules.

IIS 7.5 includes configuration logging and tracing (IIS 7.0 does not include any built-in tracing mechanisms for configuration changes).IIS 7.5 includes the Best Practice Analyzer, an automated tool for helping to ensure compliance with security best practices.

Operation Sheet 3.1.3 Installing IIS 7

Operation title: Installing IIS 7

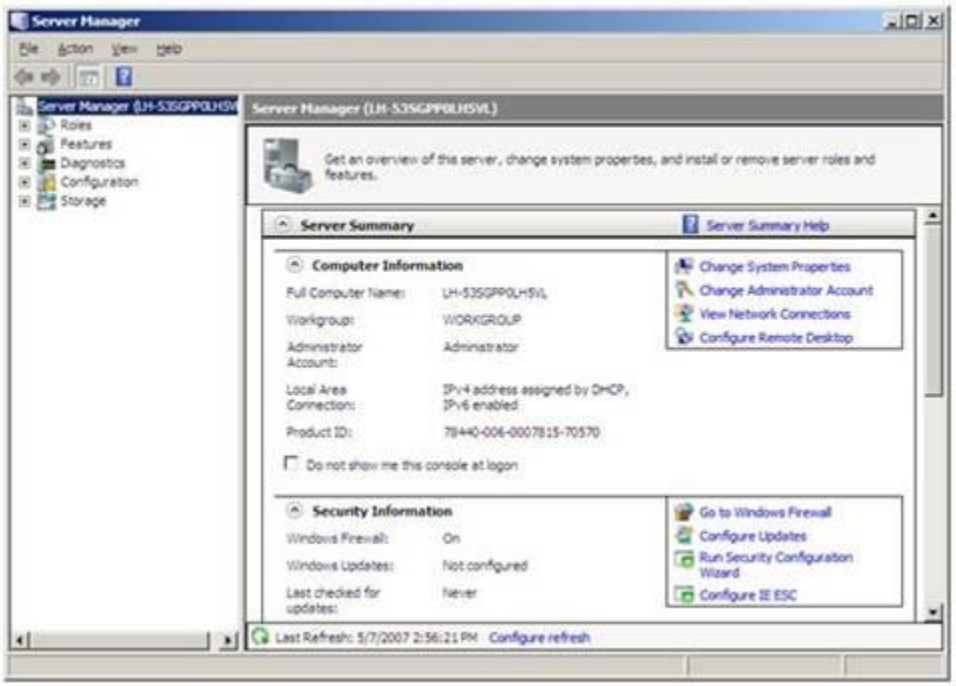
Purpose: To install IIS7 for internet service

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1.Click **Start** -> **All Programs** -> **Administrative Tools** -> **Server Manager**.



Step 2.In the **Server Manager** window, scroll down to **Roles Summary**, and then click **Add Roles**. The **Add Roles Wizard** will start with a **Before You Begin** page. The wizard asks for verification of the following:

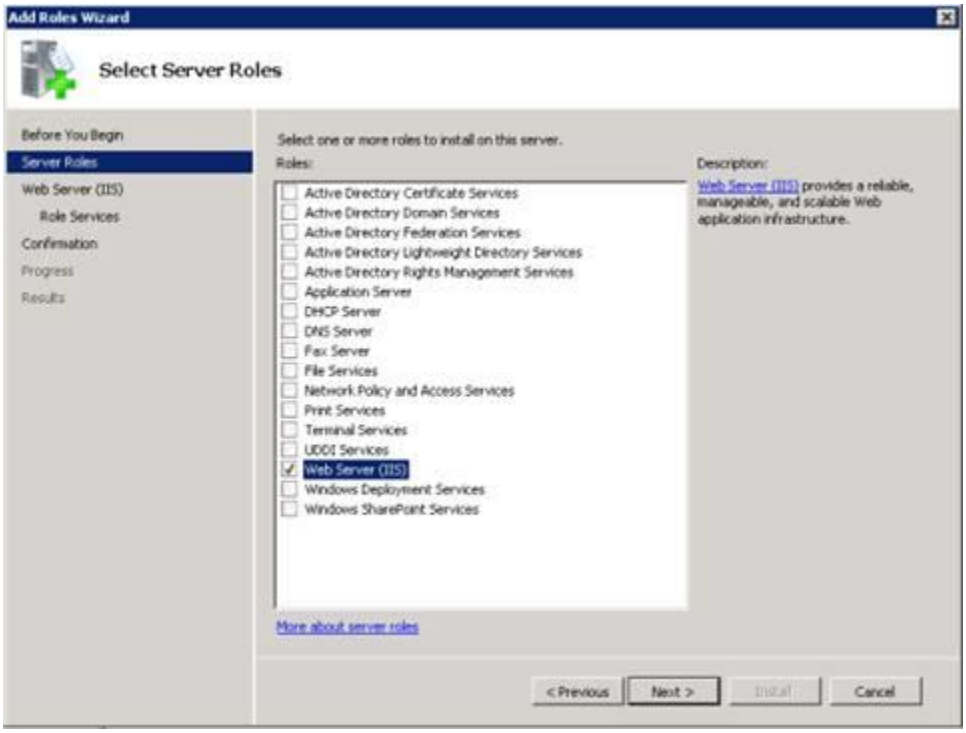
a. The administrator account has a strong password.

b. The network settings, such as IP addresses, are configured.

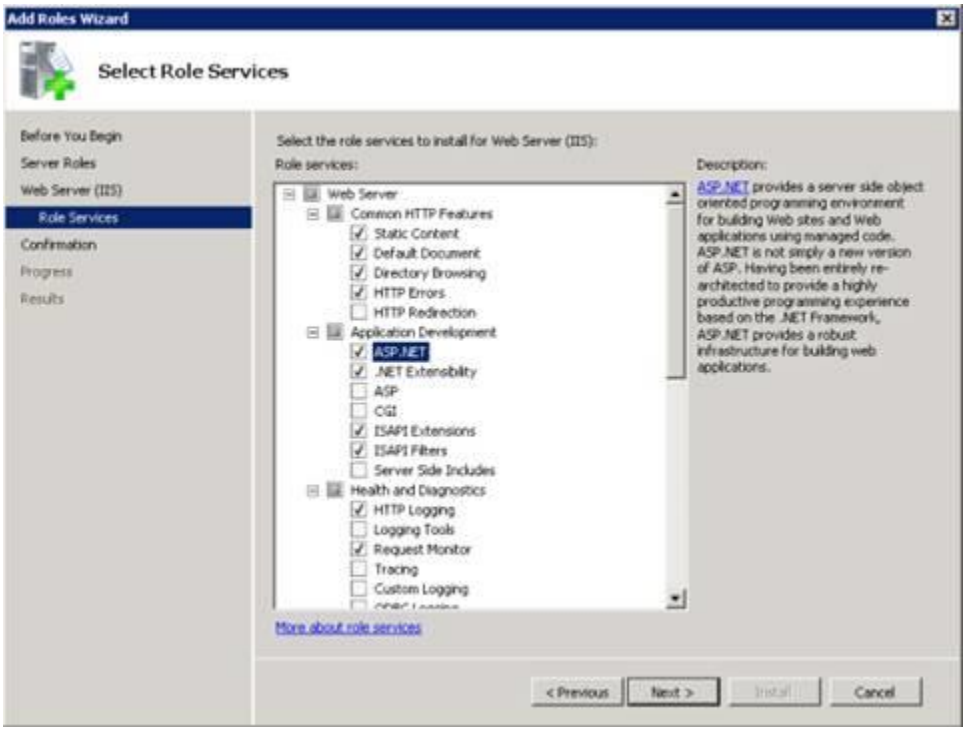
c. The latest security updates from Windows® Update are installed.

Step 3.Select **Web Server (IIS)** on the **Select Server Roles** page. An introductory page will open with links for further information.

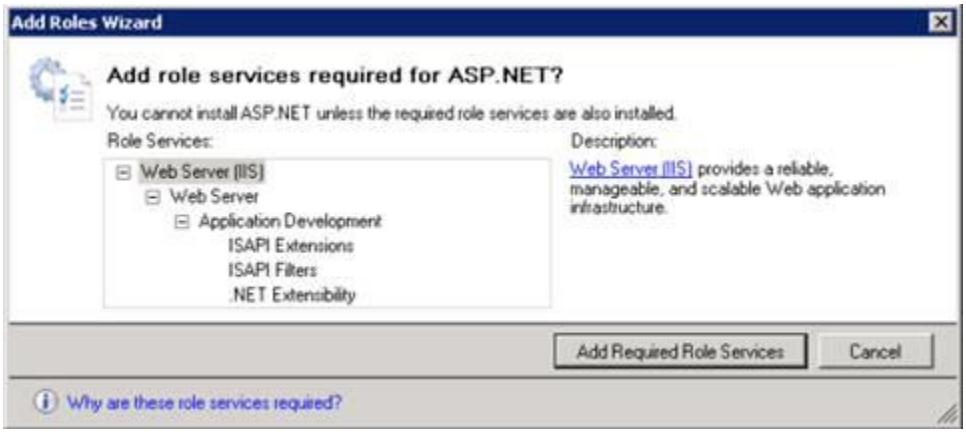
Note: When you use the **Add Roles Wizard to install** IIS, you get the default installation, which has a minimum set of role services. If you need additional IIS role services, such as **Application Development** or **Health and Diagnostics**, make sure to select the check boxes associated with those features in the **Select Role Services** page of the wizard.



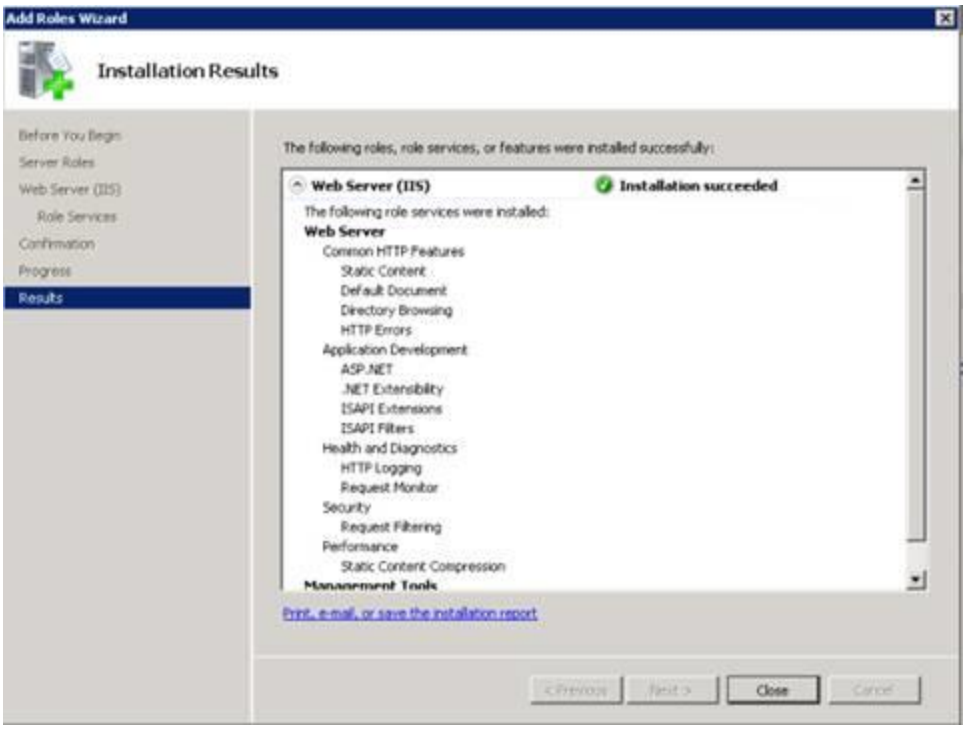
Step 4Select the IIS services to be installed on the **Select Role Services** page. Add only the modules necessary. In this case, ASP.NET is selected, and a description of ASP.NET appears in the right pane. Once desired modules are added, click **Next**.



Step 5.Add any required role services.



Step 6 IIS is now installed with a default configuration for hosting ASP.NET on Windows Server. Click **Close** to complete the process.



Step 7 Confirm that the Web server works by using http://localhost.

Note: Install only the absolutely necessary IIS services to minimize the IIS installation footprint. This also minimizes the attack surface, which is one of the benefits of IIS 7 and above.

Precautions: Care should be taken while connecting with electric power

Quality criteria: displaying default web page

FTP servers

FTP Server is a highly secure, fully featured and easy-to-administer file transfer server for Microsoft Windows® systems. FTP Server lets you create a host that makes files and folders on your server available to other people. Users can connect (via the Internet or a local area network) to your host, list folders and files, and (depending on permissions) download and upload data. Administrators can control access to data and files with granular permissions by folder, user, and group. Administrators can also create multiple hosts that function as completely distinct sites. FTP Server is proven and reliable. It is used by administrators globally to support millions of end users and enable the transfer of billions of files. WS_FTP Server complies with the current Internet standards for FTP and SSL protocols. Users can connect to the server and transfer files by using an FTP client that complies with these protocols, such as Ipswitch WS_FTP LE or IFTP Professional. FTP Server with SSH also includes support for SFTP transfers over a secure SSH2 connection.

Operation Sheet 3.1.4 Installing FTP on Windows Server 2008 R2

Operation title: Installing FTP on Windows Server 2008 R2

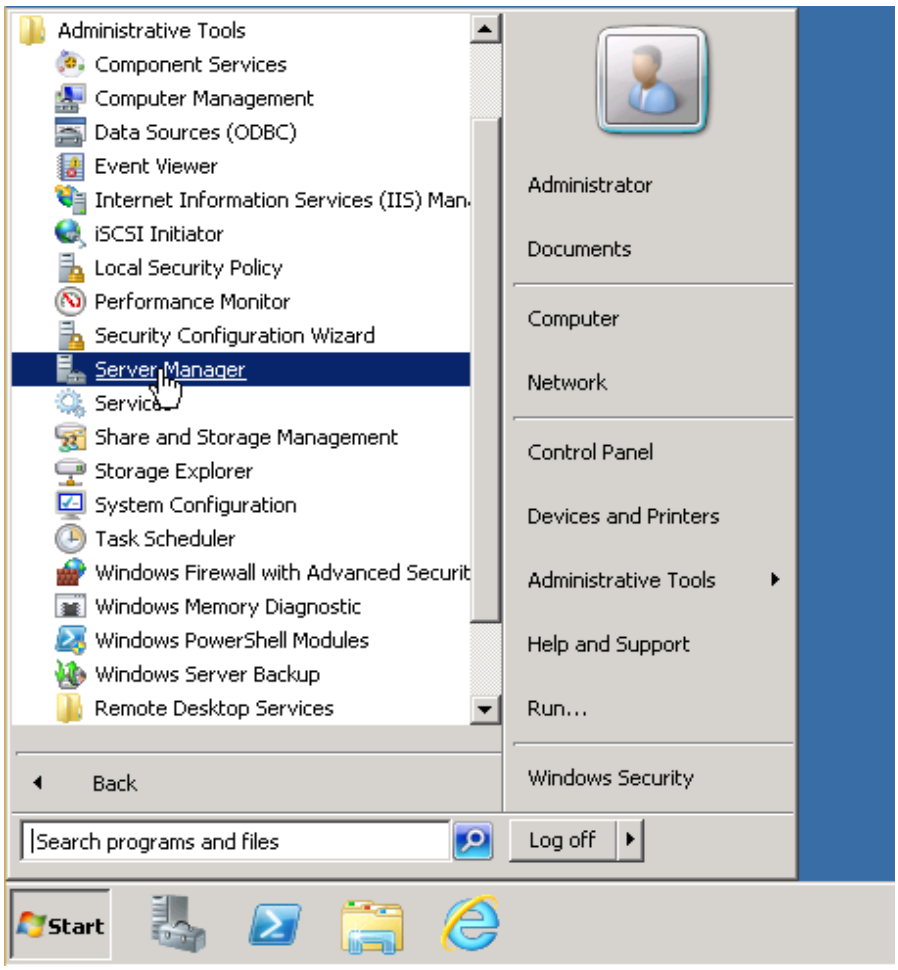
Purpose: To install FTP and transfer file

Equipment ,tools and materials : AD installed computer

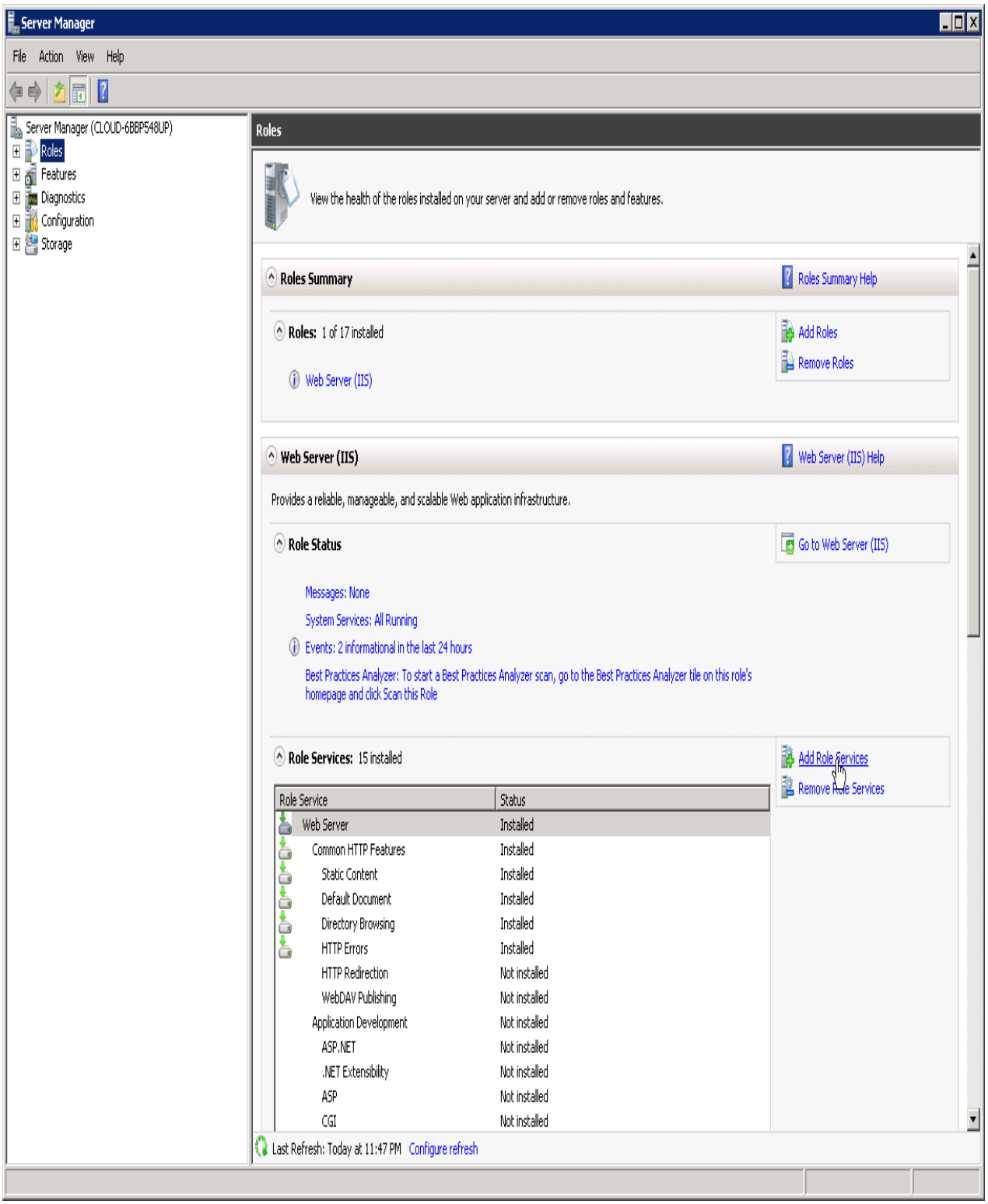
Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

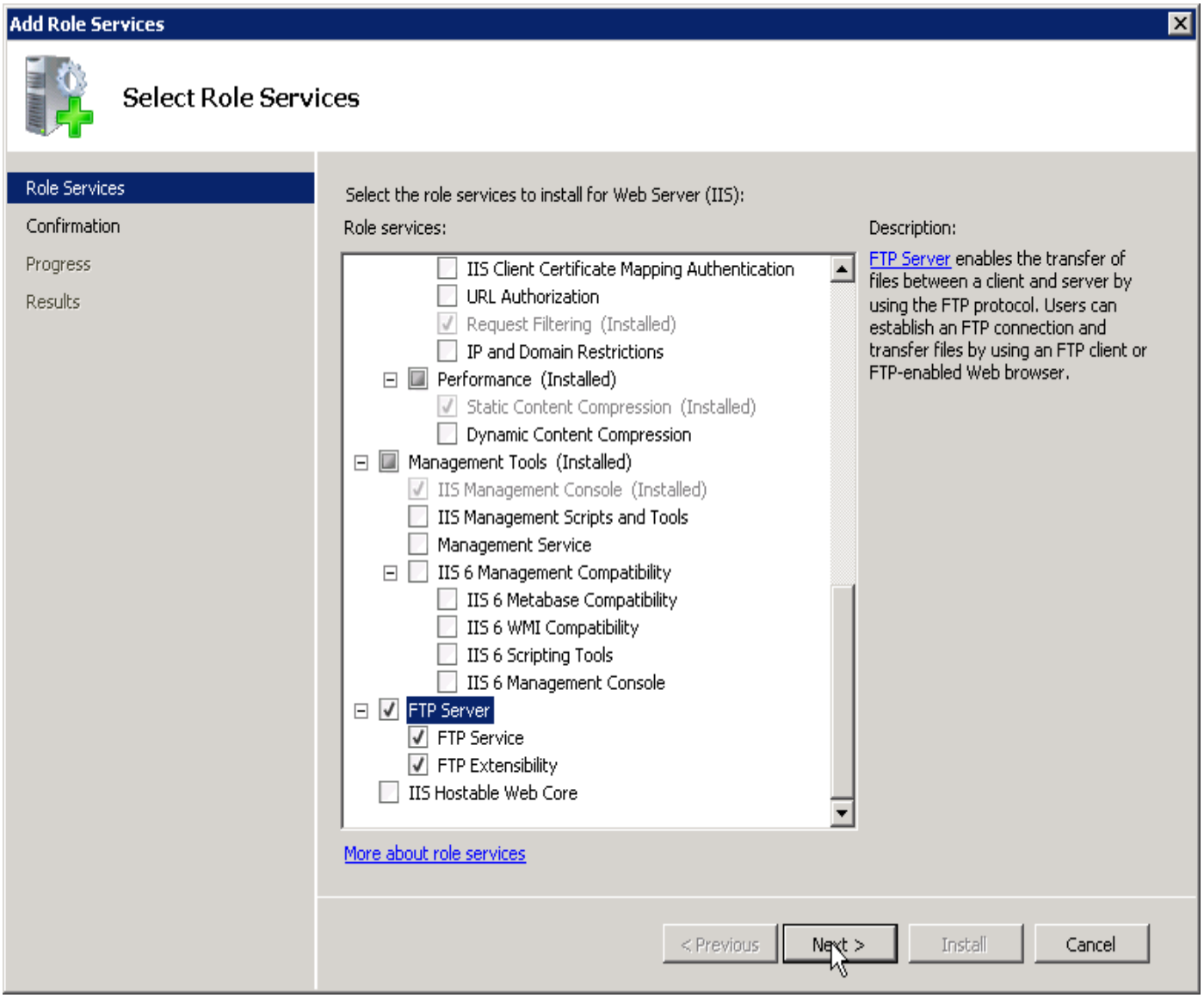
Step 1.Open Server Manager by going to Start>All Programs>Administrative Tools>Server Manager



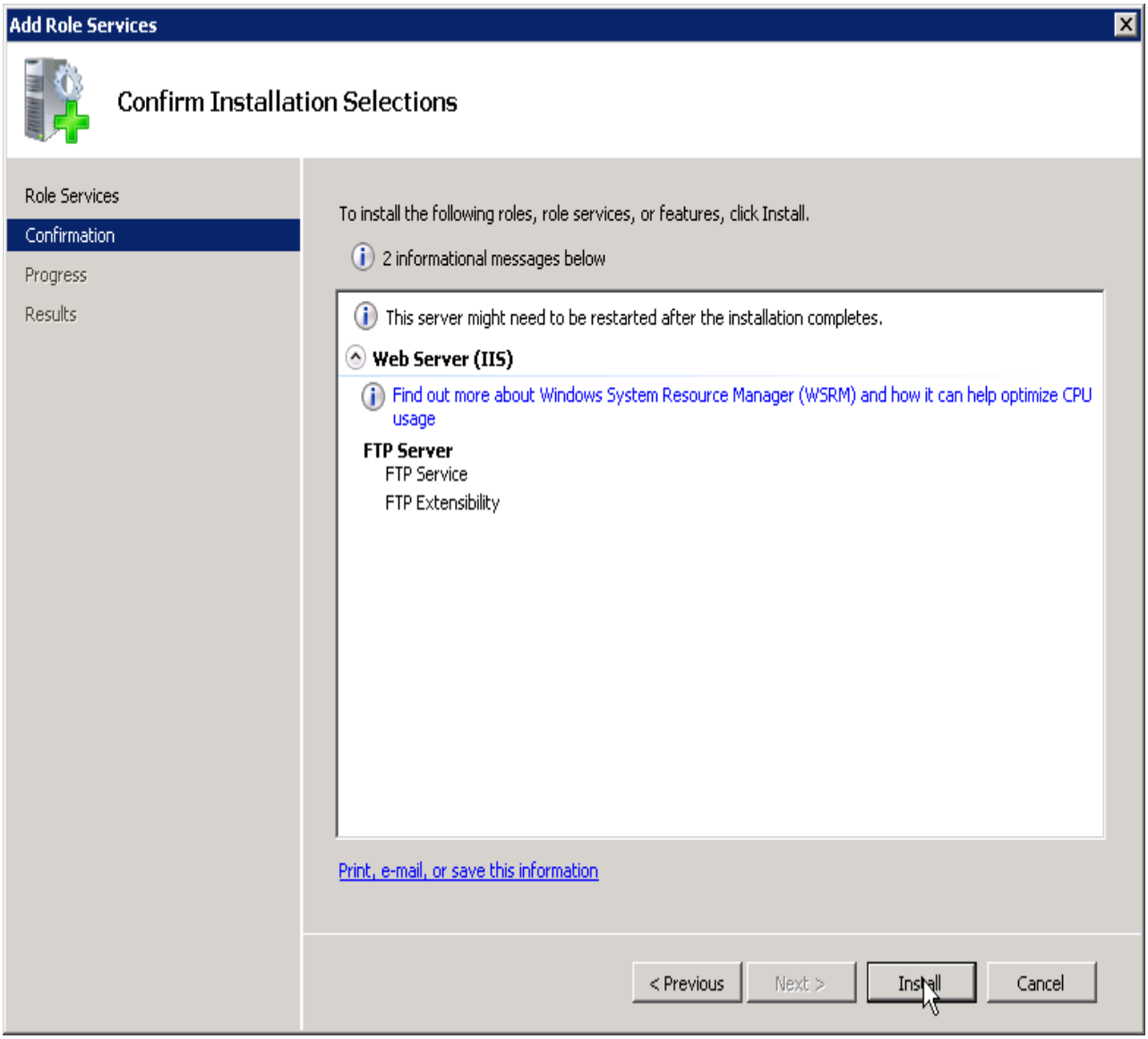
Step 2. In Server Manager, select Roles and then click on Add Role Services.



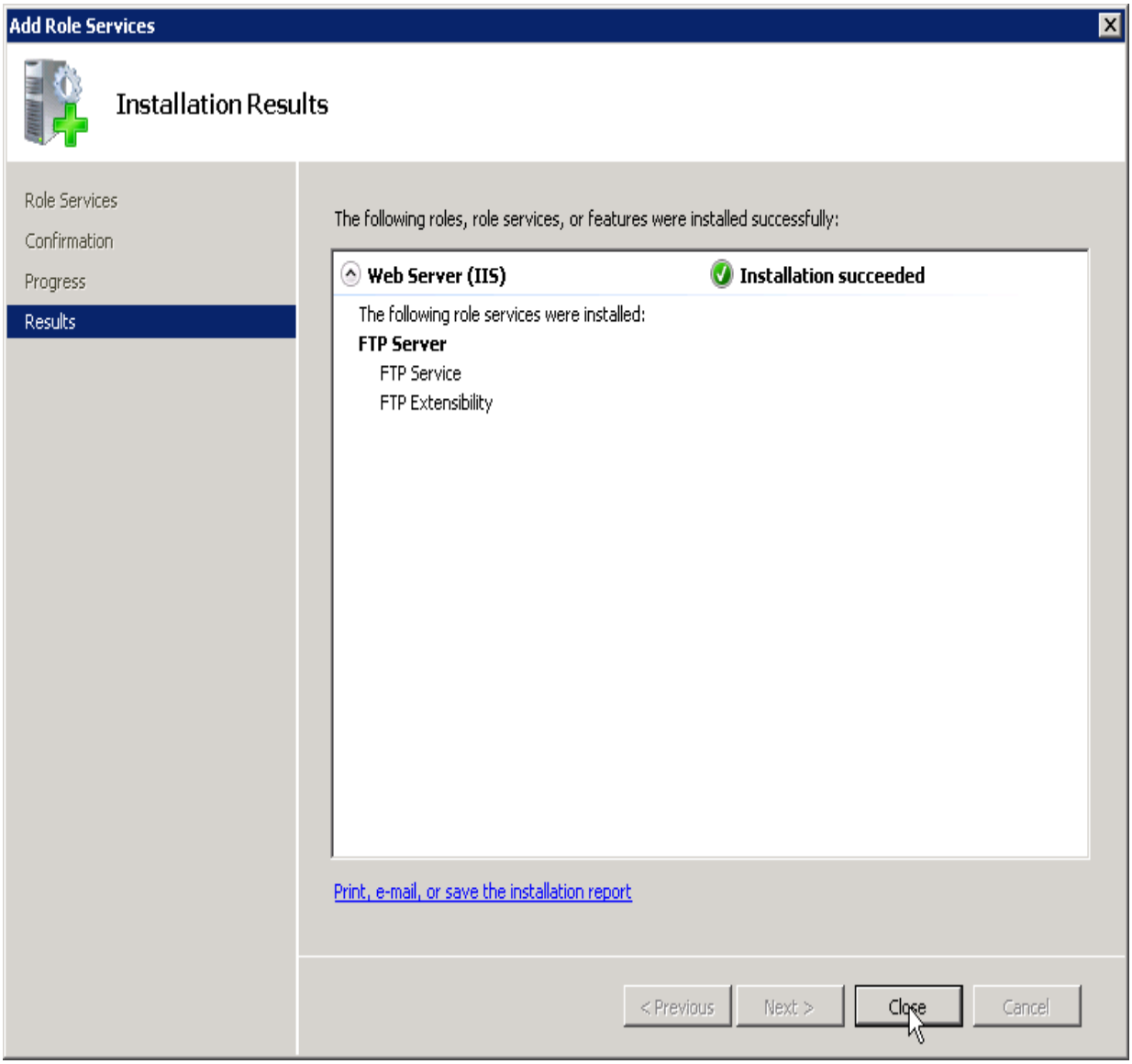
Step 3.In **Select Role Services**, scroll down and check the box next to **FTP Server.** Once done, click **Next**.



Step 4.Review what is being installed. Once ready, click **Install**.

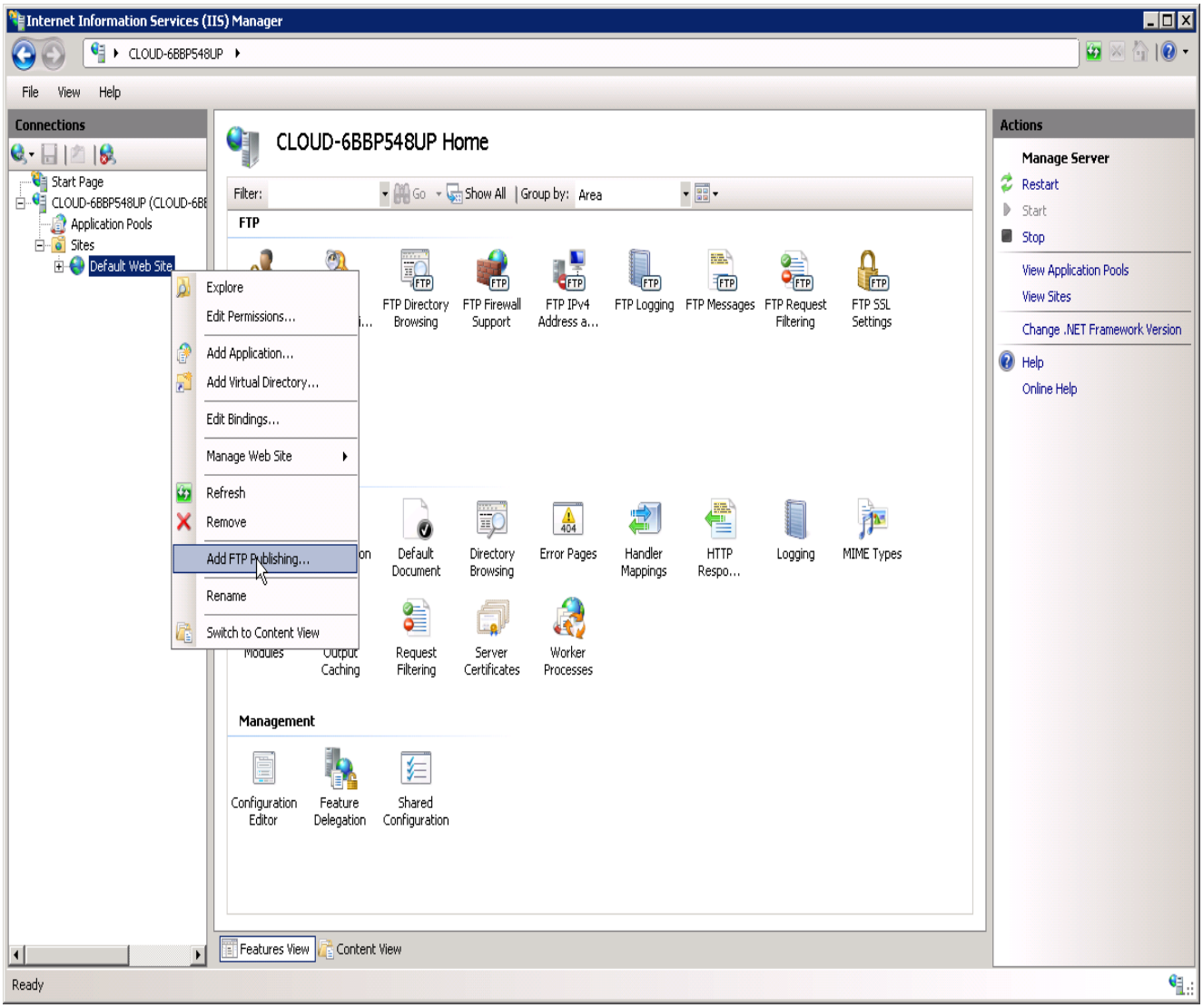


Step 5.You should then see a progress bar. Once complete, click **Close**.



Step 6.Now FTP is installed. You cannot yet connect to your Web Site via FTP. Next, you will need to Add a FTP Publishing to your site.

Step 7. Open IIS, expand your computer, expand Sites, right click on your Web Site and then click on **Add FTP Publishing…**

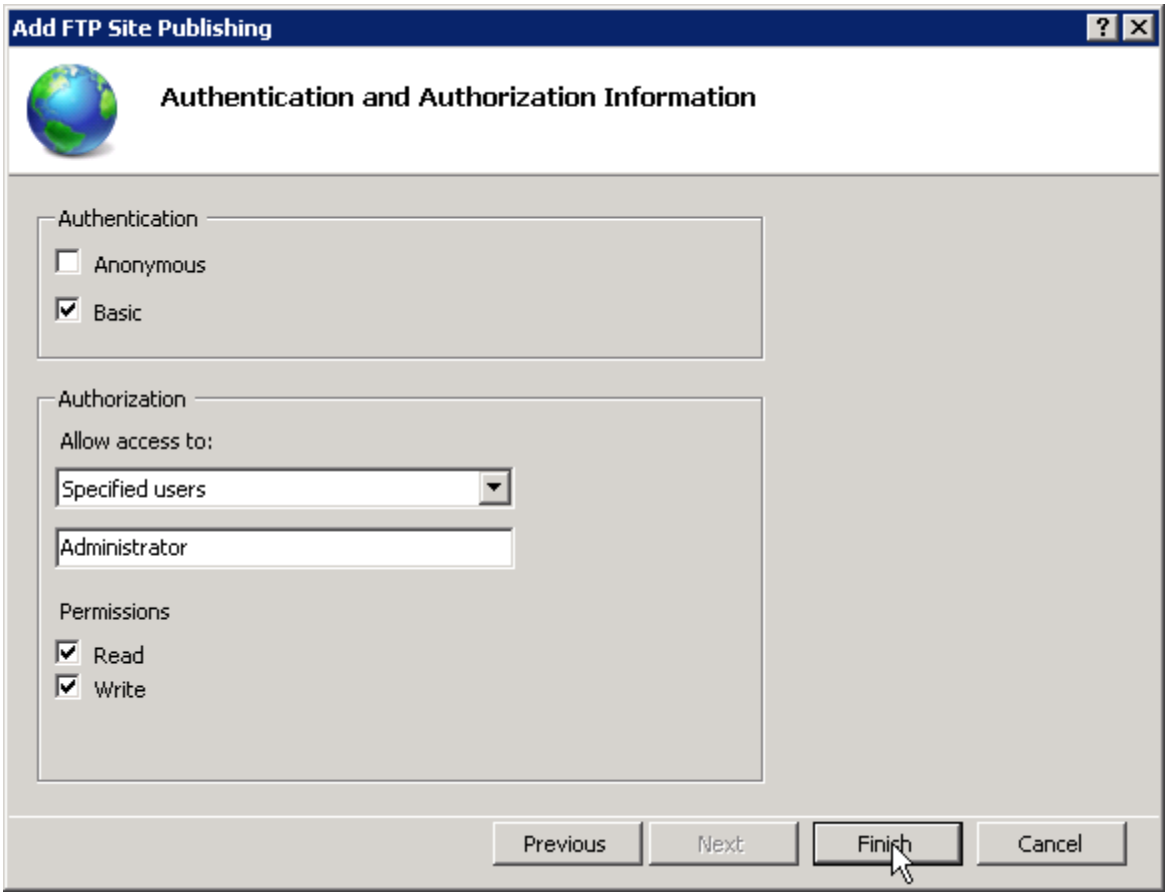


Step 8. IIS Manager: Add FTP Publishing Once the Add FTP Site Wizard comes up:

- Choose an IP address for your FTP site from the IP address drop-down, or choose to accept the default selection of “All Unassigned.”
- Normally, you would enter the TCP/IP port for the FTP site in the port box. For this how-to, choose to accept the default port of 21.
- For this how-to, we will not use a host name, so make sure that the Virtual Host box is blank.
- Make sure that the Certificates drop-down is set to “Not Selected” and that the Allow SSL option is selected.
- When you have completed these items, click Next.

Binding and SSL Setting On the Authentication and Authorization Information page:

- Select Basic for the Authentication settings.
- For the Authorization settings:
  - ✓ Choose “Specified users” from the Allow access to drop-down
  - ✓ Type “Administrator” for the user name.
  - ✓ Select Read and Write for the Permissions option.
- When you have completed these items, click Finish.

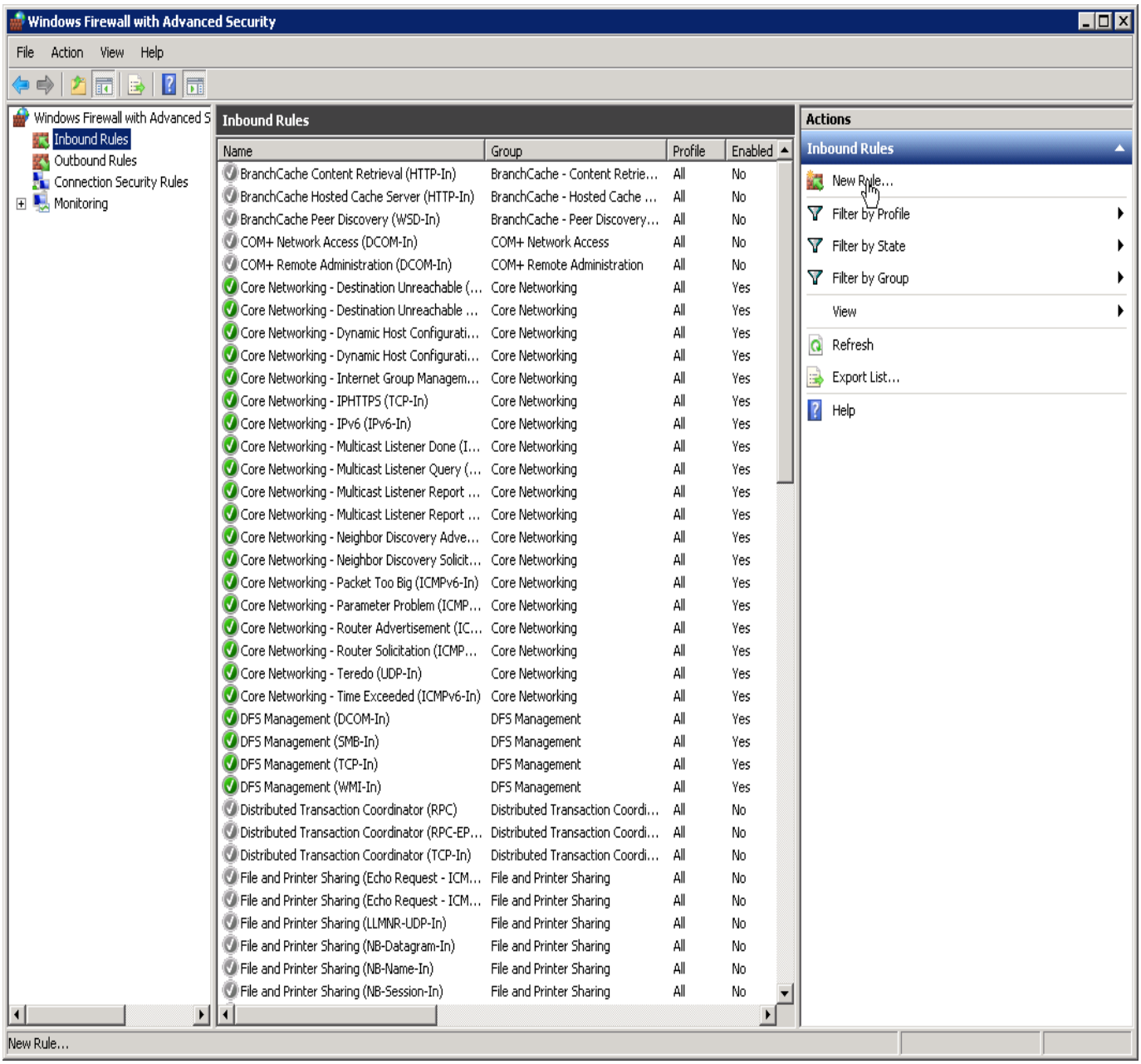


Step 9.Authentication and Authorization Last thing to make sure is if your Windows Firewall has a rule set for FTP default port 21.

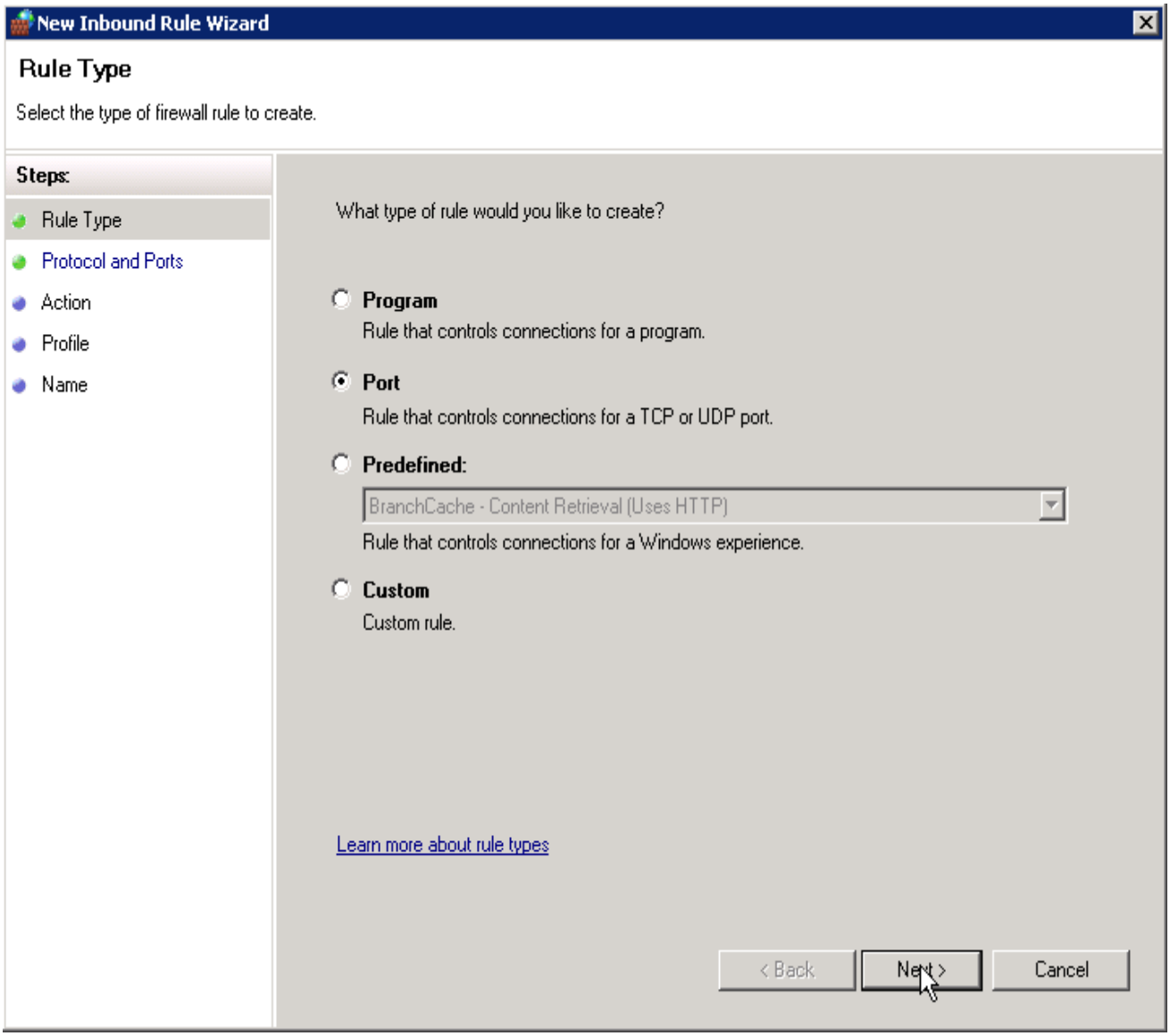
Step 10. Open Windows Firewall with Advanced Security by going to Start>All Programs>Administrative Tools>Windows Firewall with Advanced Security.

Step 11.Start: Windows Firewall and Advanced Security

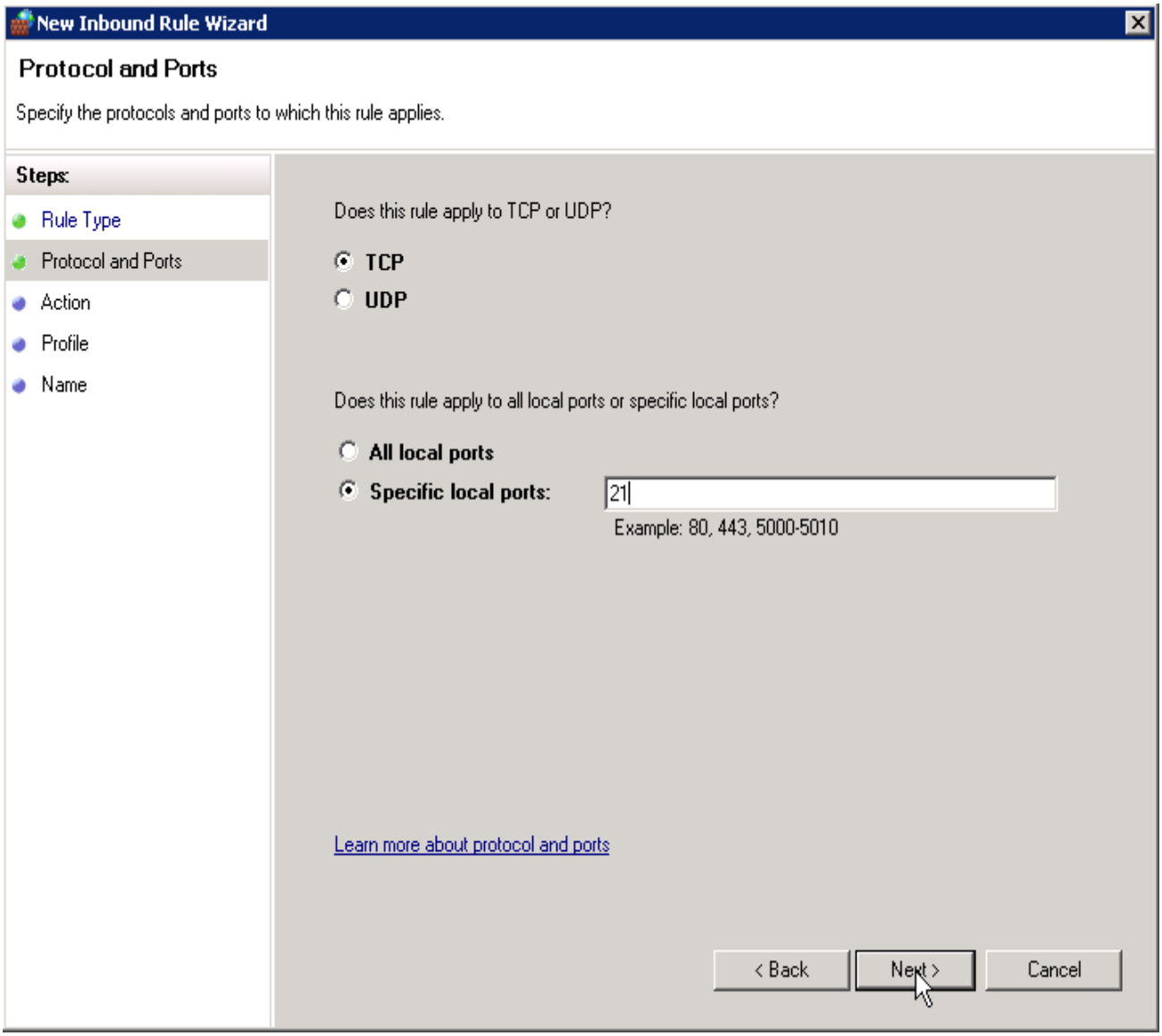
Once opened, click on **Inbound Rules** and then click on **New Rule** under the Actions Pane.



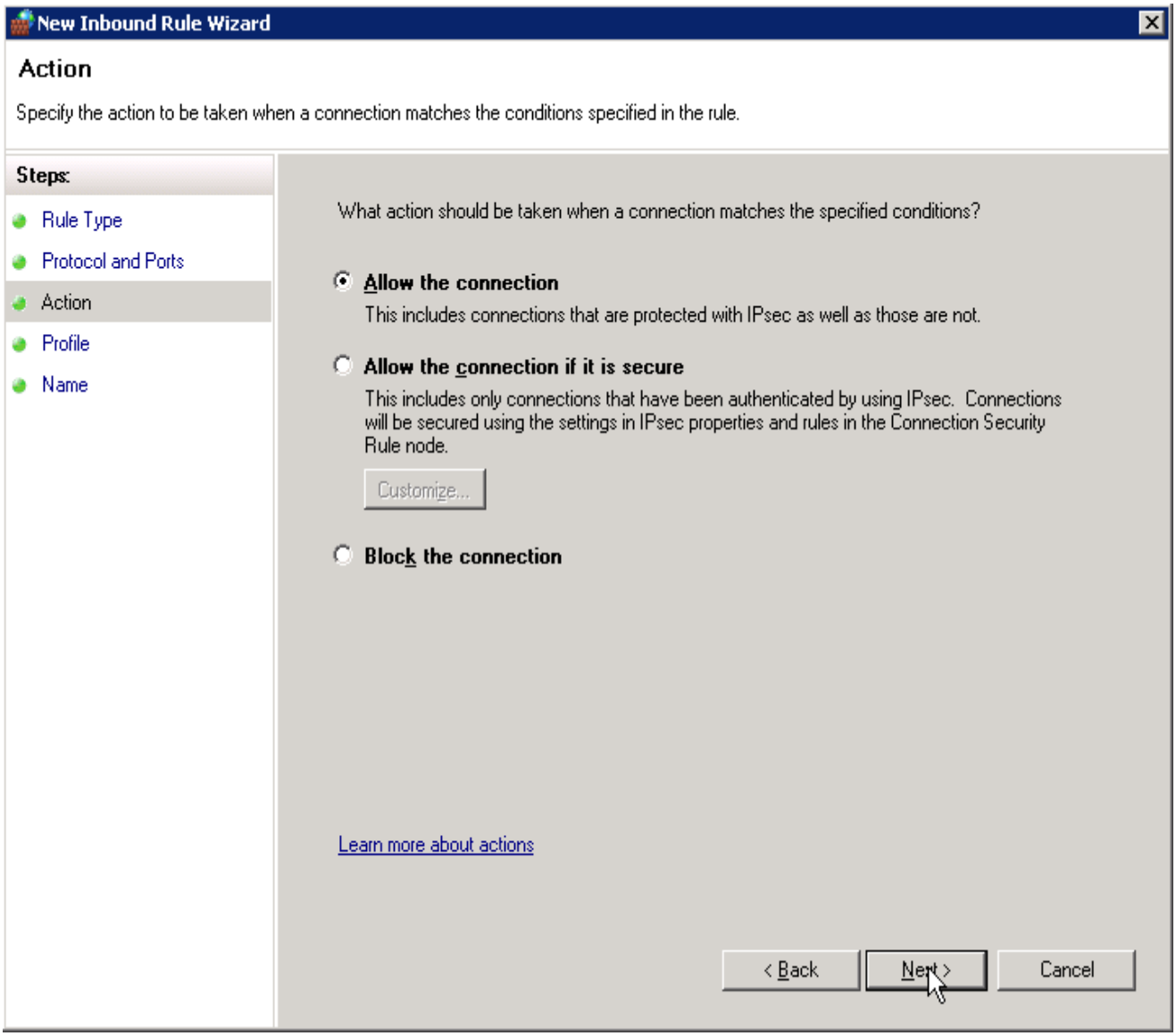
Step 12.Windows Firewall with Advanced Security The New Inbound Rule Wizard will pop up. You will select Port and click Next.



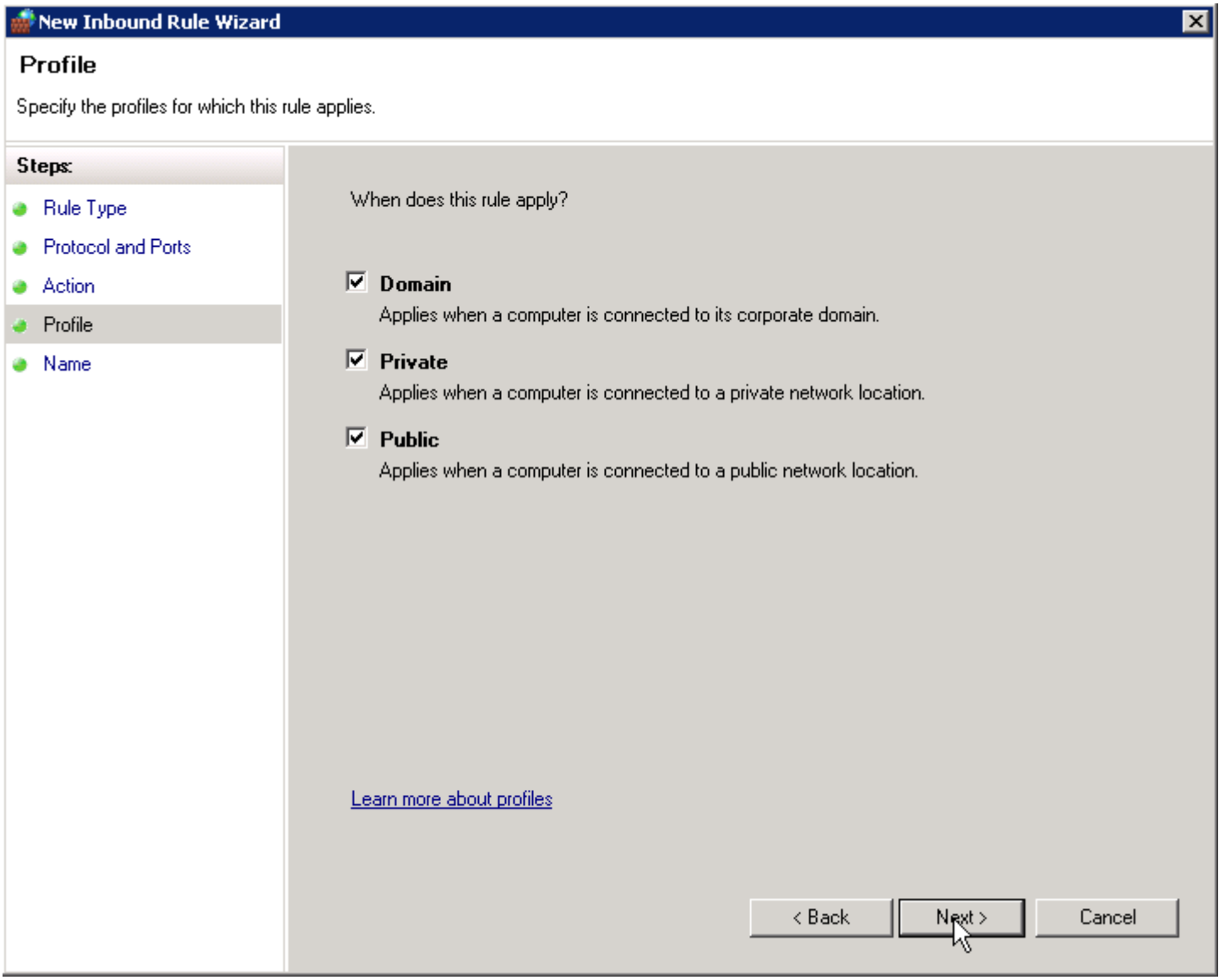
Step 13.Rule Type Since this is for the default port 21 for FTP, we will use the **TCP** protocol and 21 for the **Specific local ports**. Once done, click Next.



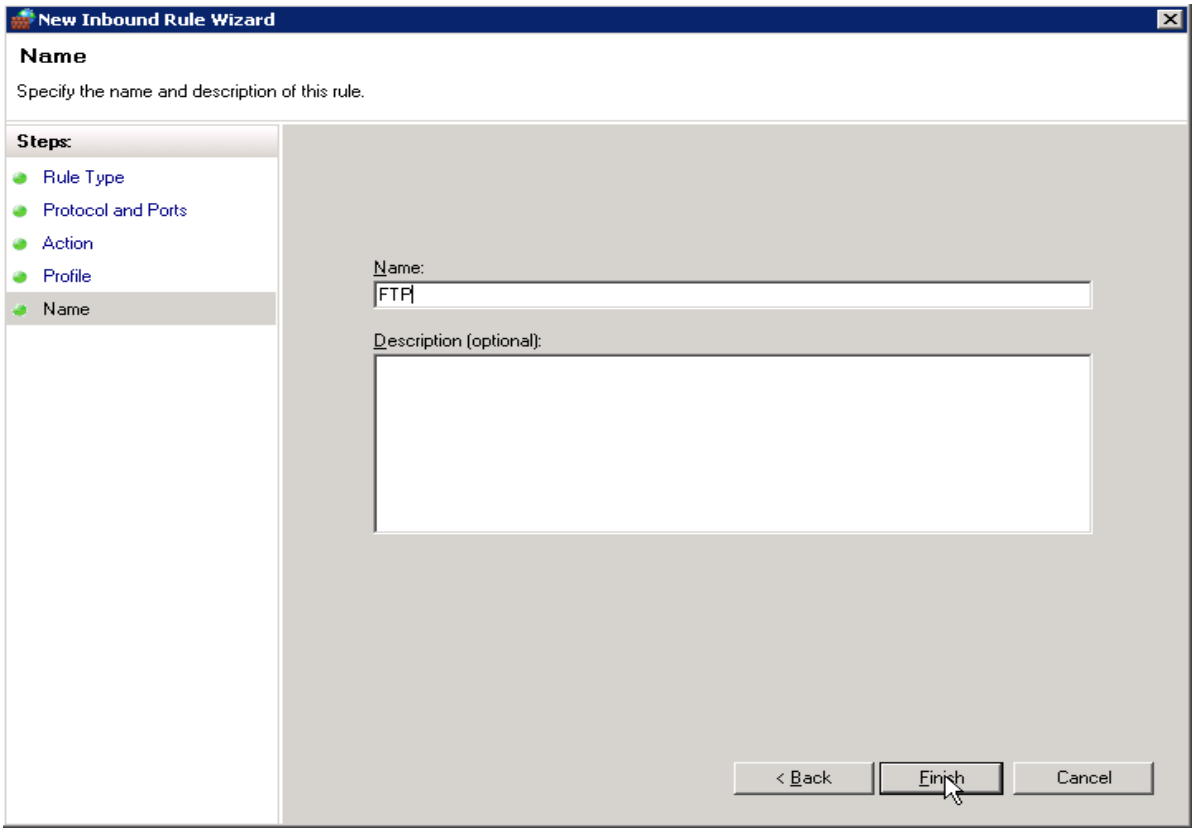
Step 14. Protocol and Ports In the Action page, we will select to **Allow the connection** and click Next.



Step 15.Action The next page is the **Profile** page, which we will check all the boxes and then click Next.

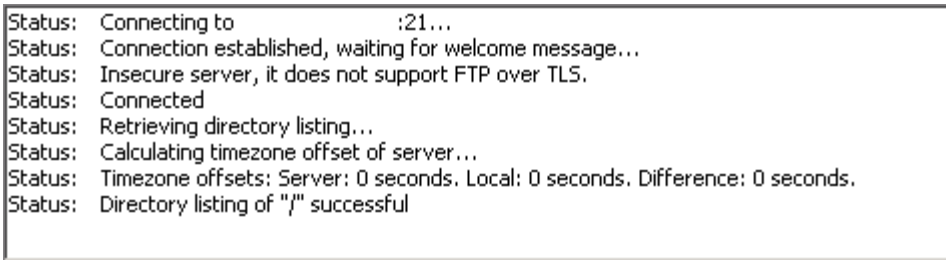


Step 16.Profile On the last page, you will need to select a name for the new rule. Here, we will name it “FTP” and then click Finish.



Step 17.Name now the firewall rule has been added for the default port 21. We can now test FTP connection to the Web Site. In this how-to, I will use FileZilla to show connection but there are many FTP clients out there to use.

With FileZilla, we will need to fill in the Host/IP Address, Username, Password and Port # to connect. Earlier, I set up FTP to use a specific user (administrator) and also used the default FTP port 21. Once you hit Connect, you will be connected to your Web Site via FTP!



Step 18.Test Connection

Precautions: Care should be taken while connecting with electric power

Quality criteria: connecting to website through FTP

Print server

Print Services in Windows Server 2008 allows you to share printers on a network and consolidate print server and network printer management tasks by using the Print Management console. The Print Service role in Windows Server 2008 includes Server Manager and Print Management.

Operation Sheet 3.1.5 Installing Print server

Operation title: Installing Print server

Purpose: To install print server and print through network

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1.In Server Manager, right click *Roles* and select *Add Roles*, this will load the Add Roles Wizard.

Step 2.On the Before You Begin page, click *Next*.

Step 3. On the Server Roles page, select the *Print Services* check box and click *Next*.

Step 4.On the Print Services page, click *Next*.

Step 5.On the Select Role Services page, select the *Print Server* and *Internet Printing* check boxes, and click *Next*.

Step 6.If IIS is not installed, in the Add Roles wizard dialog box, click *Add Required Role Services*.

Step 7.On the Select Role Services page, click *Next*.

Step 8.On the web Server (IIS) page, click *Next*.

Step 9.On the Select Role Services page, you're prompted to select the role services you want to install to support IIS. Click *Next* to accept the default settings.

Step 10.On the Confirmation page, click Install.

Step 11.On the Results page, click Close.

Precautions: Care should be taken while connecting with electric power

Quality criteria: protecting printer to not print for weekend

E-mail server

We can say that an email server (or mail server or mail server) is your digital correspondence agency. It's a machine or application responsible for handling messages. In other words, an e-mail server receives and delivers e-mails, this is its function.

So, when you send an email, your message usually goes through a series of email servers until it reaches the recipient.

The process is so fast and efficient that it looks simple, but there is a great deal of complexity behind sending and receiving e-mails.

To avoid confusion, it is important to be clear that the term email server can have different meanings depending on the context. Sometimes an email server can mean a computer or a machine that has a complete system that includes different services or applications.

At other times, the term e-mail server can be used precisely as a synonym for some of these services or applications.

In this post, we'll talk more about the following topics:

- Types of email servers.
- SMTP.
- POP3.
- IMAP.
- How is the process of sending emails.
- Email security.

Types of email servers: outgoing and incoming servers

When we use the term email server in the sense of services or applications, we can separate email servers into 2 main categories: outgoing email servers and incoming email servers.

SMTP, POP3 and IMAP

Outgoing e-mail servers are called SMTP servers (Simple Mail Transfer Protocol).

Incoming email servers are known by the acronyms POP3 (Post Office Protocol) and IMAP (Internet Message Access Protocol).

Before you ask yourself about the difference between IMAP and POP3, we answer you. With IMAP, messages are stored on the server itself. While with POP3, messages are usually kept on the device, that is, on your computer or cell phone.

In general, IMAP is more complex and flexible than POP3.

Sending emails in 4 steps

To facilitate understanding, we have created a basic step-by-step process for sending e-mail. It is a very simplified version, but it allows you to understand how an email is sent and delivered. Check out.

Step 1: Connecting to the SMTP server

When you send an email, your email service or provider, such as Gmail, Exchange, Office 365 and Zimbra, will connect to the SMTP server. That SMTP server is connected to your domain and has a specific address, such as smtp.gatefy.com. or smtp.example.com.

At this stage, your e-mail service will provide the SMTP server with some important information, such as your e-mail address, the message body and the recipient's e-mail address.

Step 2: Processing the recipient's email domain

The SMTP server will now identify and process the recipient's email address. If you are sending an email to someone else in your company, that is, to the same domain, the message will be directed directly to the IMAP or POP3 server.

Otherwise, if you are sending the message to another company, for example, the SMTP server will need to communicate with that company's e-mail server.

Step 3: Identifying the recipient's IP

At this stage, your SMTP server will need to connect with DNS (Domain Name System) to find the recipient's server.

The DNS works like a translation system. It will help to convert the recipient's domain into an IP address. By the way, the IP is a unique number that identifies a machine or server connected to the internet.

SMTP needs IP to perform its function correctly, thus being able to direct the message to the recipient's server.

Step 4: Delivering the email

But not everything is as simple as it seems. Generally, your email will go through different unrelated SMTP servers until it reaches the recipient's SMTP server.

When the recipient receives the email, the SMTP checks the message and then directs it to the IMAP or POP3 server. The email then enters a queue and is processed until it is available for the recipient to access.

There, now the email can be read. And you know the basics about incoming and outgoing mail servers. But to conclude, we still need to talk about email protection and security.

Email security

Here we show a simplified process. Sending and receiving e-mails involves different and complex processes and protocols, which, unfortunately, are usually forged or falsified.

In fact, e-mail is the main vector for cyber-attacks, the most used way by criminals and attackers to commit scams and fraud.

This means that if you have a business and want to keep it free from threats, you need to be careful with email protection. Your company's email security needs to take into account several aspects, from creating internal policies for the use of email to adopting protection solutions.

If you use G Suite, Office 365, Exchange or Zimbra, for example, read more about how to improve the protection of these platforms and, consequently, your company's information and data.

Operation Sheet 3.1.6. Installing mail server

Operation title: Installing Mail server

Purpose: To install mail server accept mail using installed server

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required, internet connection and need available power all time.

Procedures :

Step 1.Open Server Manager Console and under Features select Add Features

Step 2.Select SMTP Server option

Step 3.Click on Install wait until finish and click close

Step 4.Open IIS 6.0 Manager under Administrative Tools -> Internet Information Services 6.0

Step 5.Under [SMTP Virtual Server] second mouse click and properties

Step 6.Select Relay under Access Tab

Step 7.Select Only the list below and click on Add button

Step 8.Enter IP Address 127.0.0.1 for relay

Step 9.Send a manual email through telnet to confirm everything working successfully. Telnet local host 25 or telnet your public IP 25 and make sure you open the specific port on your firewall to be available to public.

Precautions: Care should be taken while connecting with electric power

Quality criteria: send receive mail using installed server

FIREWALL SERVER

The new features of the Windows Server 2008 Advanced Firewall and how to configure this powerful host-based firewall using the new MMC snap-in.

Since its inception, the Windows Server 2003 SP1 firewall has been a basic, inbound-only, host based, state full firewall. With Windows Server 2008, the built-in firewall has been dramatically improved. Let's find out how the new advanced firewall can help you and how to configure it using the MMC snap-in.

The benefit of using the Windows host-based firewall

Many companies today secure their network using the "hard outer shell / gooey center" approach. What this means is that they create a strong perimeter around their network with firewalls and IPS systems, protecting themselves from malicious attackers on the Internet. However, if an attacker could penetrate the outer perimeter and gain access to the internal network, there would only be Windows authentication security to stop them from gaining access to the company's most valuable assets - their data.

This is because most IT Pros don't secure their servers with host-based firewalls. Why is that? We see host-based firewalls as being "more trouble than they are worth".

After reading this article, I hope that many of you will take a second look at the Windows host-based firewall. With Windows Server 2008, the host-based firewall is built in to Windows, is already installed, now has more features, and is now easier to configure. Plus, it is really one of the best ways to secure a crucial infrastructure server. So, what can the Windows Server Advanced firewall do for you and how do you configure it? Let’s find out.

The new advanced firewall offering

New with Windows Server 2008, the built-in firewall is now “advanced”. And it isn’t just me saying that, Microsoft now calls it the “Windows Firewall with Advanced Security” (let’s abbreviate that as WFAS).

Here are the new features that help justify that new name:

- **New GUI interface** – an MMC snap-in is now available to configure the advanced firewall.
- **Bi-directional** – filters outbound traffic as well as inbound traffic.
- **Works better with IPSEC** – now the firewall rules and IPSec encryption configurations are integrated into one interface.
- **Advanced Rules configuration** – you can create firewall rules (exceptions) for Windows Active Directory (AD) service accounts & groups, source/destination IP addresses, protocol numbers, source and destination TCP/UDP ports, ICMP, IPv6 traffic, and interfaces on the Windows Server.

With the addition of being a bi-directional firewall, a better GUI, and advanced rules configuration, the Windows Advanced firewall is bordering on being as good as traditional host-based firewalls (like ZoneAlarm Pro, for example).

I know that the first concern of any server admin in using a host-based firewall is: what if it prevents critical server infrastructure apps from functioning? While that is always a possibility with any security measure, WFAS will automatically configure new rules for any new server roles that are added to the server. However, if you run any non-Microsoft applications on your server that need inbound network connectivity, you will have to create a new rule for that type of traffic.

By using the advanced windows firewall, you can better secure your servers from attack, your servers from attacking others, and really nail down what traffic is going in and out of your servers. Let’s see how it is done.

The options for configuring Windows Firewall with Advanced Security

Previously, with Windows Server, you could configure the Windows firewall when you went to configure your network adaptor or from the control panel. The configuration was very basic.

With Windows Firewall with Advanced Security (WFAS), most admins will configure the firewall either from Windows **Server Manager** or the MMC with only the WFAS snap-in.

Operation Sheet 3.1.7 Installing firewall server

Operation title: Installing firewall server

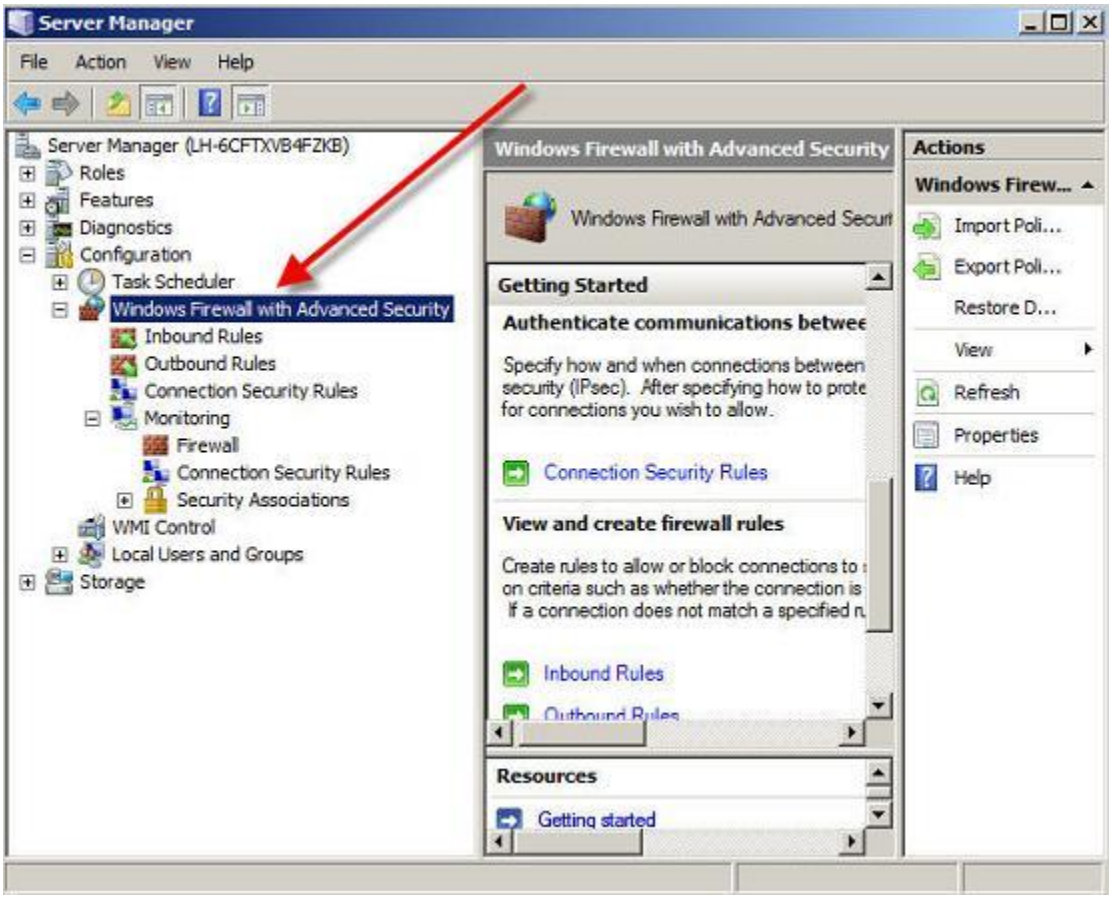
Purpose: To install firewall server and protect our server from attack

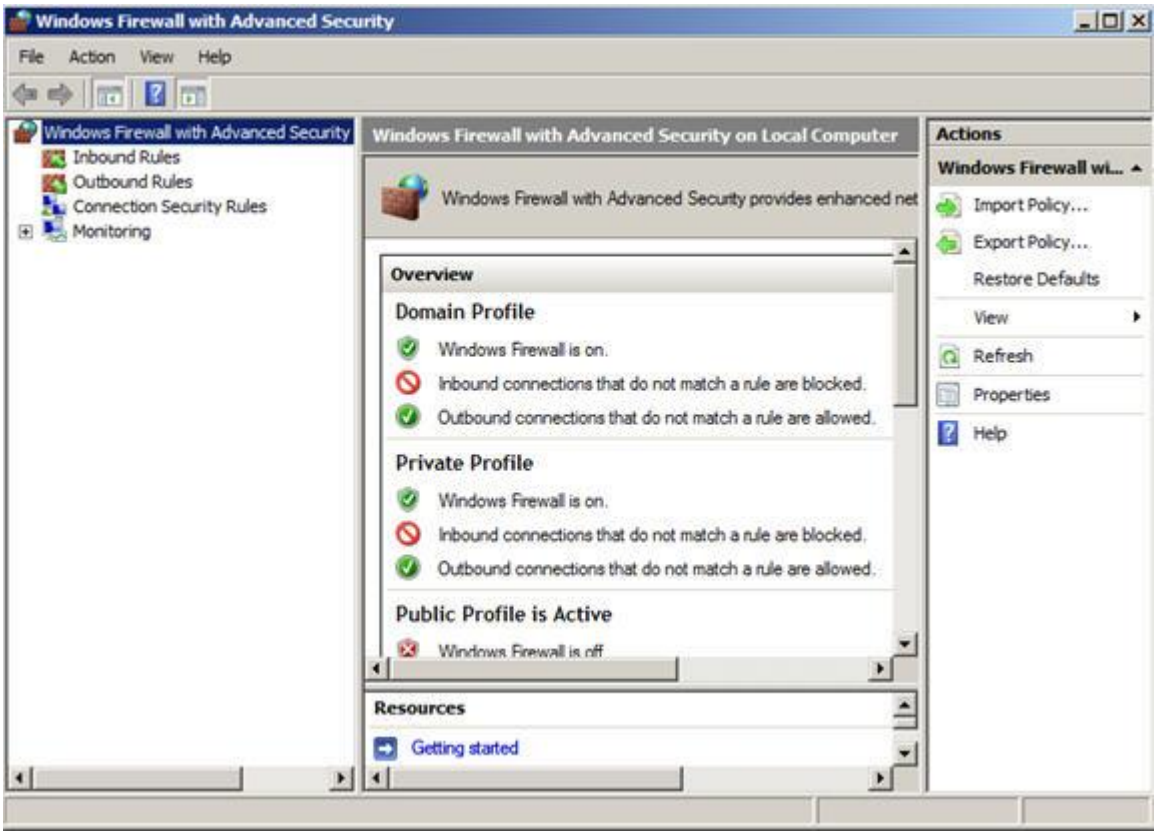
Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

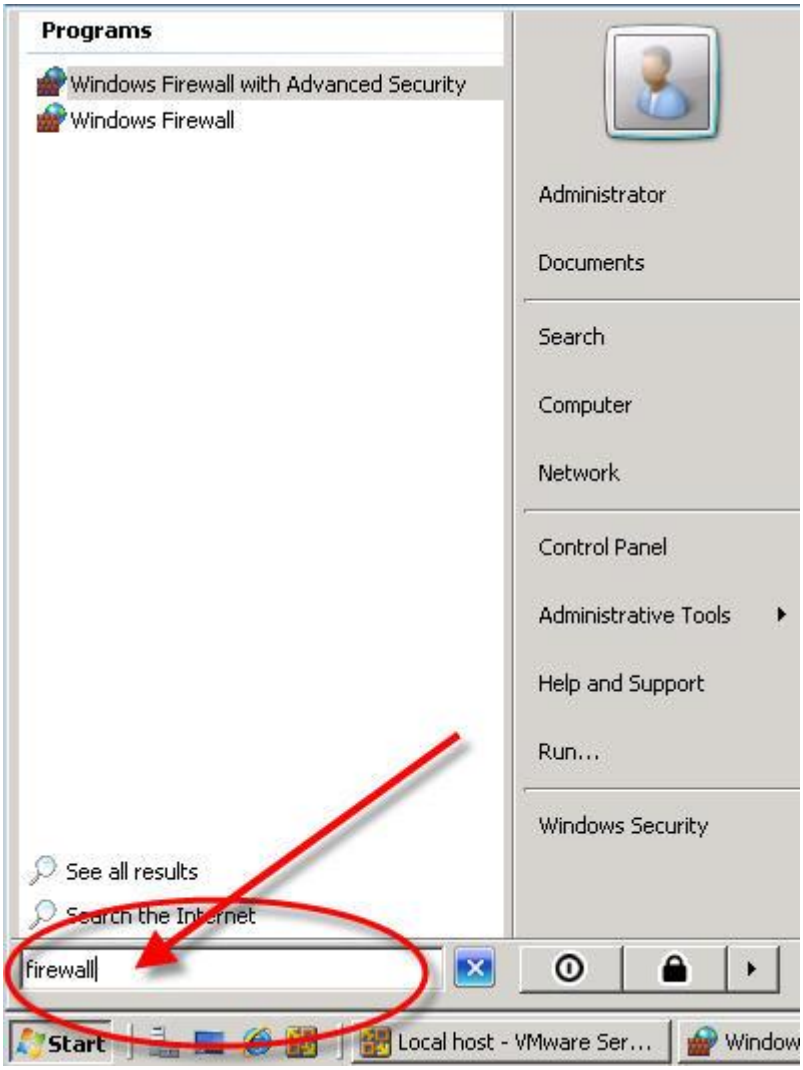
Step 1.Click Windows 2008 Server Manager





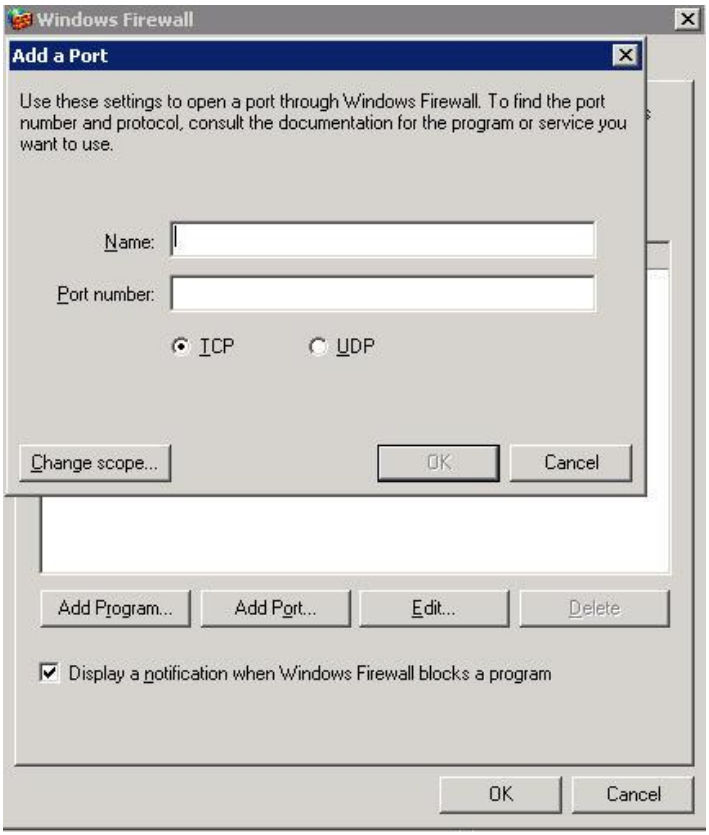
Step 2.Windows 2008 Firewall with Advanced Security MMC only

What I have found is that the quickest & easiest way to start the WFAS MMC is to just type **firewall** in the Start menu Search box, like this:

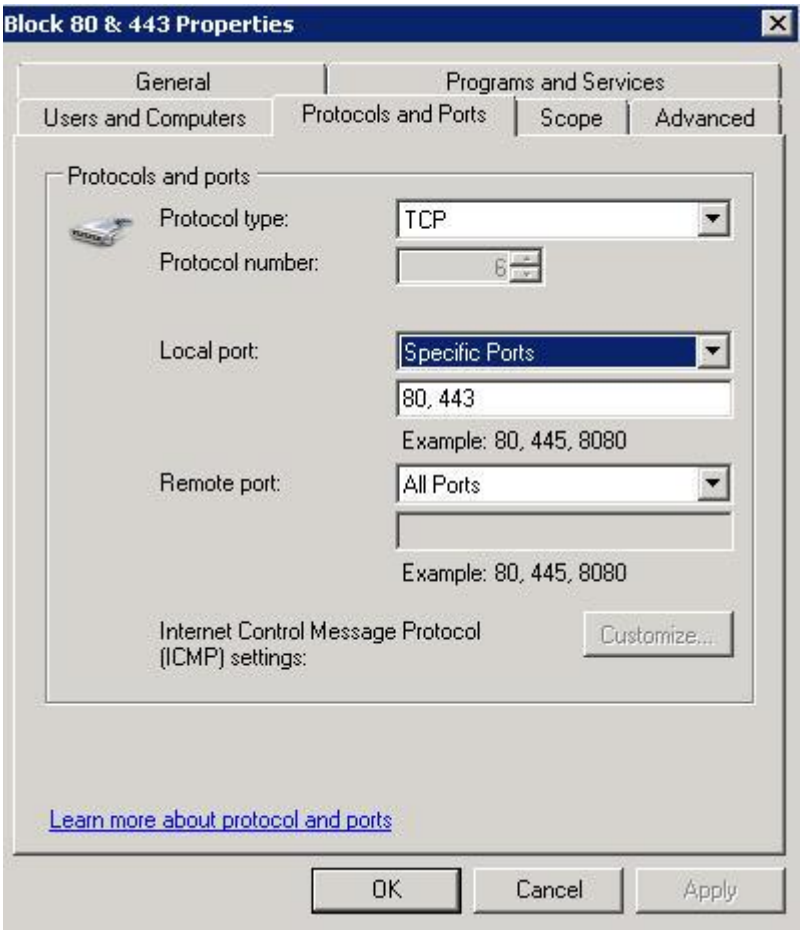


There is also a new **netsh advfirewall** CLI option for configuring WFAS.

Step 3.Profiles now available in Windows 2008 Firewall with Advanced Security



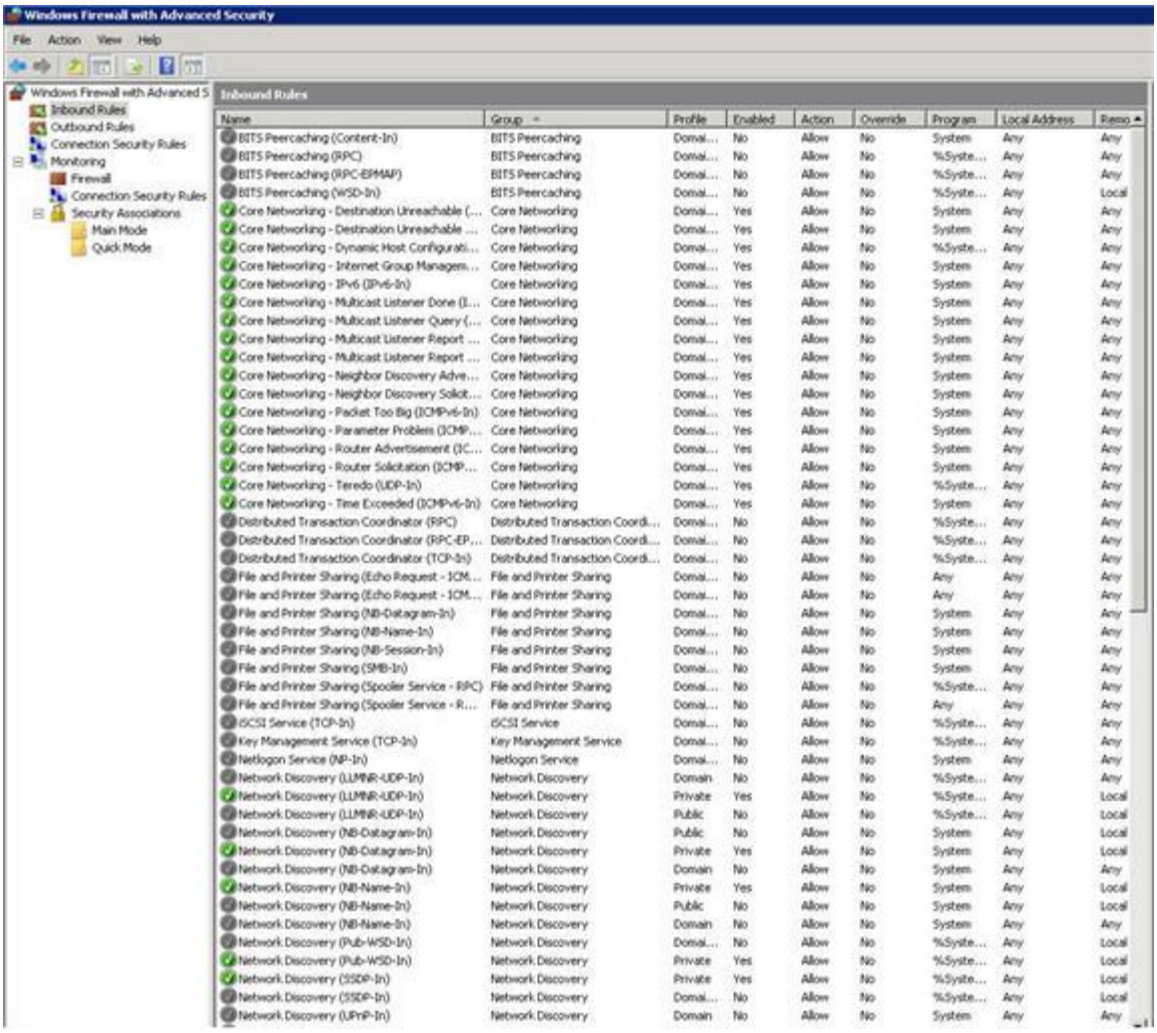
Note: Windows 2003 Server Firewall Exception window Now, let's compare that to Windows 2008 Server:



Step 4.Windows 2008 Server Advanced Firewall Exception window

Notice how the Protocols and Ports tab is just a small part of the multi-tabbed window. You can also configure rules to apply to Users & Computers, Programs and Services, and IP address Scopes. With this type of sophisticated firewall rules configuration, Microsoft has pushed WFAS more toward Microsoft's IAS server.

The number of default rules offered by WFAS is truly amazing. In Windows 2003 Server, there were the 3 default exceptions (rules). Not so in Windows Server. WFAS offers about 90 default inbound firewall rules and at least 40 default outbound rules – WOW!



Step 5. Windows 2008 Server Advanced Firewall Default Inbound Rules

Precautions: Care should be taken while connecting with electric power

Quality criteria: ready your server installed computer from any attack

3.1.8 Proxy Server

A proxy server provides a gateway between users and the internet. It is a server, referred to as an “intermediary” because it goes between end-users and the web pages they visit online.

When a computer connects to the internet, it uses an IP address. This is similar to your home’s street address, telling incoming data where to go and marking outgoing data with a return address for other devices to authenticate. A proxy server is essentially a computer on the internet that has an IP address of its own.

Proxy Servers and Network Security

Proxies provide a valuable layer of security for your computer. They can be set up as web filters or firewalls, protecting your computer from internet threats like malware.

This extra security is also valuable when coupled with a secure web gateway or other email security products. This way, you can filter traffic according to its level of safety or how much traffic your network—or individual computers—can handle.

Some people use proxies for personal purposes, such as hiding their location while watching movies online. For a company, however, they can be used to accomplish several key tasks such as:

1. Improve security
2. Secure employees’ internet activity from people trying to snoop on them
3. Balance internet traffic to prevent crashes
4. Control the websites employees access
5. Save bandwidth by caching files or compressing incoming traffic

Proxy Works

Because a proxy server has its own IP address, it acts as a go-between for a computer and the internet. Your computer knows this address, and when you send a request on the internet, it is routed to the proxy, which then gets the response from the web server and

forwards the data from the page to your computer's browser, like Chrome, Safari, Firefox, or Microsoft Edge

Getting a Proxy

Proxy servers have hardware and software versions. Hardware solutions sit between your network and the internet, where they get, send, and forward data from the web. Software proxies are typically hosted by a provider or reside in the cloud. You install an app on your computer that facilitates interaction with the proxy.

Often, a software proxy can be obtained for a monthly fee. Sometimes, they are free. The free versions tend to offer users fewer addresses and may only cover a few devices, while the paid proxies can meet the demands of a business with many devices.

Proxy Set Up

To get started with a proxy server, you have to set it up in your computer, device, or network. Each operating system has its own setup procedures, so check the steps required for your computer or network.

In most cases, however, setup means using an automatic configuration script. If you want to do it manually, there will be options to enter the IP address and the appropriate port.

The Proxy Protect Computer Privacy and Data

A proxy server performs the function of a firewall and filter. The end-user or a network administrator can choose a proxy designed to protect data and privacy. This examines the data going in and out of your computer or network. It then applies rules to prevent you from having to expose your digital address to the world. Only the proxy's IP address is seen by hackers or other bad actors. Without your personal IP address, people on the internet do not have direct access to your personal data, schedules, apps, or files.

With a proxy server in place, web requests go to the proxy, which then reaches out and gets what you want from the internet. If the server has encryption capabilities, passwords and other personal data get an extra tier of protection.

Benefits of a Proxy Server

Proxies come with several benefits that can give your business an advantage:

1. **Enhanced security**: Proxy servers can act like a firewall between your system and the internet. Without them, hackers have easy access to your IP address, which they can use to infiltrate your computer or network.
2. **Private browsing, watching, listening, and shopping**: Use different proxies to help you avoid getting inundated with unwanted ads or the collection of IP-specific data.
3. **Access to location-specific content**: You can designate a proxy server with an address associated with another country. You can, in effect, make it look like you are in that country and gain full access to all the content computers in that country are allowed to interact with.
4. **Prevent employees from browsing inappropriate or distracting sites**: You can use a proxy server to block access to websites that run contrary to your organization's principles. Also, you can block sites that typically end up distracting employees from important tasks. Some organizations block social media sites like Facebook and others to remove time-wasting temptations.

Types of Proxy Servers

While all proxy servers give users an alternate address with which to use the internet, there are several different kinds—each with its own features.

Forward Proxy

A forward proxy sits in front of clients and is used to get data to groups of users within an internal network. When a request is sent, the proxy server examines it to decide whether it should proceed with making a connection.

A forward proxy is best suited for internal networks that need a single point of entry. It provides IP address security for those in the network and allows for straightforward

administrative control. However, a forward proxy may limit an organization's ability to cater to the needs of individual end-users.

Transparent Proxy

A transparent proxy can give users an experience identical to what they would have if they were using their home computer. In that way, it is "transparent." They can also be "forced" on users, meaning they are connected without knowing it.

Transparent proxies are well-suited for companies that want to make use of a proxy without making employees aware they are using one. It carries the advantage of providing a seamless user experience. On the other hand, transparent proxies are more susceptible to certain security threats, such as SYN-flood denial-of-service attacks.

Anonymous Proxy

An anonymous proxy focuses on making internet activity untraceable. It works by accessing the internet on behalf of the user while hiding their identity and computer information.

A transparent proxy is best suited for users who want to have full anonymity while accessing the internet. While transparent proxies provide some of the best identity protection possible, they are not without drawbacks. Many view the use of transparent proxies as underhanded, and users sometimes face pushback or discrimination as a result.

High Anonymity Proxy

A high anonymity proxy is an anonymous proxy that takes anonymity one step further. It works by erasing your information before the proxy attempts to connect to the target site.

A high anonymity proxy server is best suited for users for whom anonymity is an absolute necessity, such as employees who do not want their activity traced back to the organization. On the downside, some of them, particularly the free ones, are decoys set up to trap users in order to access their personal information or data.

Distorting Proxy

A distorting proxy identifies itself as a proxy to a website but hides its own identity. It does this by changing its IP address to an incorrect one.

Distorting proxies are a good choice for people who want to hide their location while accessing the internet. This type of proxy can make it look like you are browsing from a specific country and give you the advantage of hiding not just your identity but that of the proxy, too. This means even if you are associated with the proxy, your identity is still secure. However, some websites automatically block distorting proxies, which could keep an end-user from accessing sites they need.

Data Center Proxy

Data center proxies are not affiliated with an internet service provider (ISP) but are provided by another corporation through a data center. The proxy server exists in a physical data center, and the user's requests are routed through that server.

Data center proxies are a good choice for people who need quick response times and an inexpensive solution. They are therefore a good choice for people who need to gather intelligence on a person or organization very quickly. They carry the benefit of giving users the power to swiftly and inexpensively harvest data. On the other hand, they do not offer the highest level of anonymity, which may put users' information or identity at risk.

Residential Proxy

A residential proxy gives you an IP address that belongs to a specific, physical device. All requests are then channeled through that device.

Residential proxies are well-suited for users who need to verify the ads that go on their website, so you can block suspicious or unwanted ads from competitors or bad actors. Residential proxies are more trustworthy than other proxy options. However, they often cost more money to use, so users should carefully analyze whether the benefits are worth the extra investment.

Public Proxy

A public proxy is accessible by anyone free of charge. It works by giving users access to its IP address, hiding their identity as they visit sites.

Public proxies are best suited for users for whom cost is a major concern and security and speed are not. Although they are free and easily accessible, they are often slow because they get bogged down with free users. When you use a public proxy, you also run an increased risk of having your information accessed by others on the internet.

Shared Proxy

Shared proxies are used by more than one user at once. They give you access to an IP address that may be shared by other people, and then you can surf the internet while appearing to browse from a location of your choice.

Shared proxies are a solid option for people who do not have a lot of money to spend and do not necessarily need a fast connection. The main advantage of a shared proxy is its low cost. Because they are shared by others, you may get blamed for someone else's bad decisions, which could get you banned from a site.

SSL Proxy

A secure sockets layer (SSL) proxy provides decryption between the client and the server. As the data is encrypted in both directions, the proxy hides its existence from both the client and the server.

These proxies are best suited for organizations that need enhanced protection against threats that the SSL protocol reveals and stops. Because Google prefers servers that use SSL, an SSL proxy, when used in connection with a website, may help its search engine ranking. On the downside, content encrypted on an SSL proxy cannot be cached, so when visiting websites multiple times, you may experience slower performance than you would otherwise.

Rotating Proxy

A rotating proxy assigns a different IP address to each user that connects to it. As users connect, they are given an address that is unique from the device that connected before it.

Rotating proxies are ideal for users who need to do a lot of high-volume, continuous web scraping. They allow you to return to the same website again and again anonymously. However, you have to be careful when choosing rotating proxy services. Some of them contain public or shared proxies that could expose your data.

Reverse Proxy

Unlike a forward proxy, which sits in front of clients, a reverse proxy is positioned in front of web servers and forwards requests from a browser to the web servers. It works by intercepting requests from the user at the network edge of the web server. It then sends the requests to and receives replies from the origin server.

Reverse proxies are a strong option for popular websites that need to balance the load of many incoming requests. They can help an organization reduce bandwidth load because they act like another web server managing incoming requests. The downside is reverse proxies can potentially expose the HTTP server architecture if an attacker is able to penetrate it. This means network administrators may have to beef up or reposition their firewall if they are using a reverse proxy.

Proxy Server vs. VPN

On the surface, proxy servers and virtual private networks (VPNs) may seem interchangeable because they both route requests and responses through an external server. Both also allow you to access websites that would otherwise block the country you're physically located in. However, VPNs provide better protection against hackers because they encrypt all traffic.

Choosing VPN or Proxy

If you need to constantly access the internet to send and receive data that should be encrypted or if your company has to reveal data you must hide from hackers and corporate spies, a VPN would be a better choice.

If an organization merely needs to allow its users to browse the internet anonymously, a proxy server may do the trick. This is the better solution if you simply want to know which websites team members are using or you want to make sure they have access to sites that block users from your country.

A VPN is better suited for business use because users usually need secure data transmission in both directions. Company information and personnel data can be very valuable in the wrong hands, and a VPN provides the encryption you need to keep it protected. For personal use where a breach would only affect you, a single user, a proxy server may be an adequate choice. You can also use both technologies simultaneously, particularly if you want to limit the websites that users within your network visit while also encrypting their communications.

Operation Sheet 3.1.7.1 configure client computer for joining server

Operation title: configure client computer

Purpose: configure client computer for joining server

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1.Configure the following settings for each DNS client:

- TCP/IP settings for DNS
- Host name and domain membership

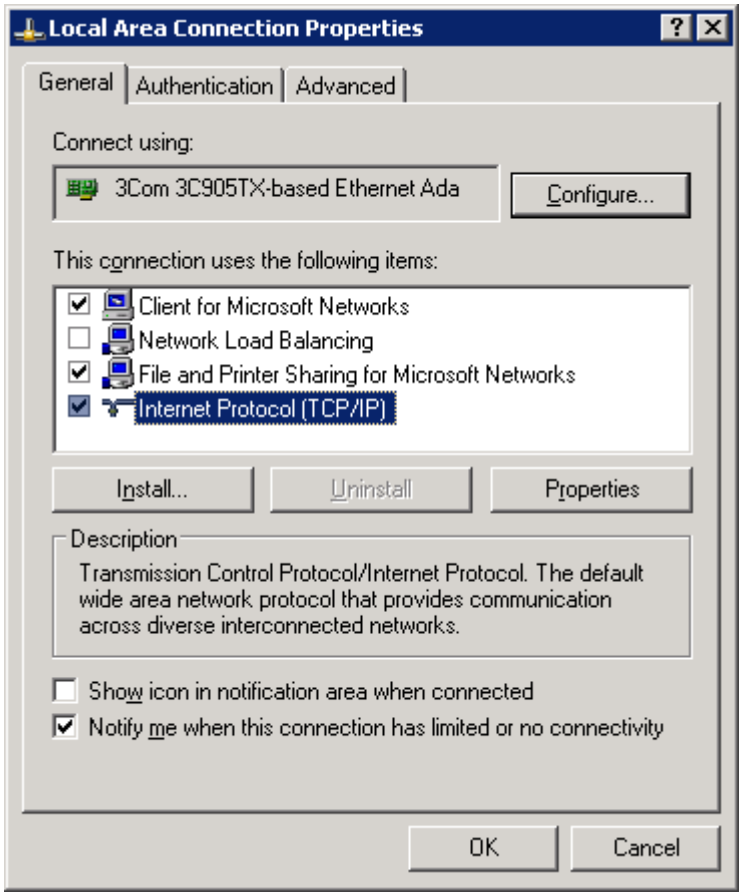
The following procedures require you to log on with an account that belongs to the Administrators group on the client computer.

To configure client settings on a computer running Windows XP

Step 2.On the computer that you want to configure to use DNS, click **Start**, point to **Control Panel**, and then click **Network Connections**.

Step 3.Right-click the network connection that you want to configure, and then click **Properties**.

Step 4.On the **General** tab, click **Internet Protocol (TCP/IP)**, and then click **Properties**.



Step 5. Click **Use the following IP address**.

Step 6.In **IP address**, type the address of the client computer.

Step 7.In **Subnet mask**, type the subnet mask of the domain controller.

Step 8 In **Default gateway**, type the address of the default gateway of the domain controller.

Step 9.Click **Use the following DNS server addresses.**

Step 10.In **Preferred DNS server**, type the IP address of the DNS server that you installed in Installing and Configuring AD DS and DNS.

Important

Do not use the IP address of a DNS server that is provided by your Internet service provider (ISP) as a primary or alternate DNS server.

Step 11.Click **OK**, and then click **Close**.

Note

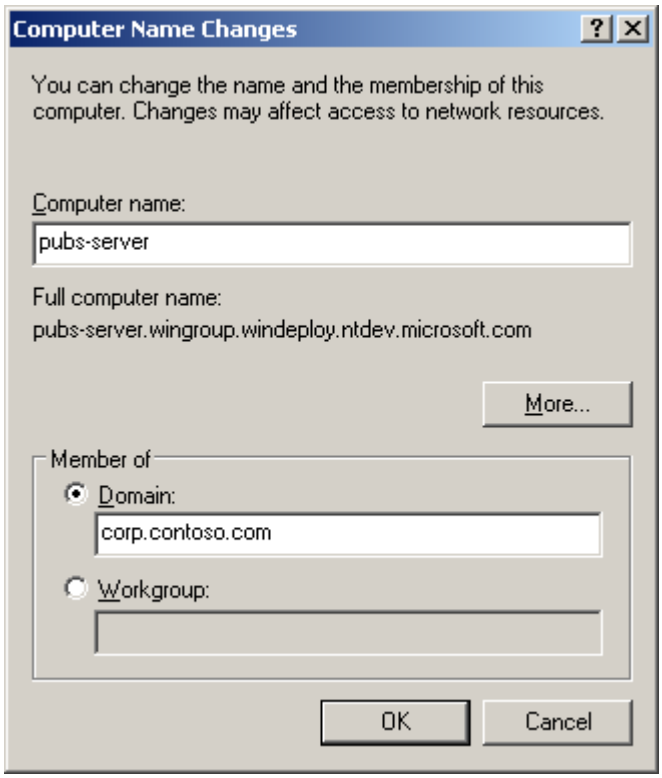
It is not necessary to restart the computer at this time if you intend to change the computer's name or domain membership in the following steps.

Step 12.In **Control Panel**, double-click **System**.

Step 13.On the **Computer Name** tab, click **Change**.

Step 14. In **Computer name**, type the name of the computer (the host name).

Step 15.Click **Domain**, and then type the name of the domain that you want the computer to join.



Step 16. If a second **Computer Name Changes** dialog box appears, in **User Name**, type the domain name and user name of an account that has permission to join computers to the domain.

Step 17.In **Password**, type the password of the account.

Separate the domain name and user name with a backslash, for example, domain\user_name.

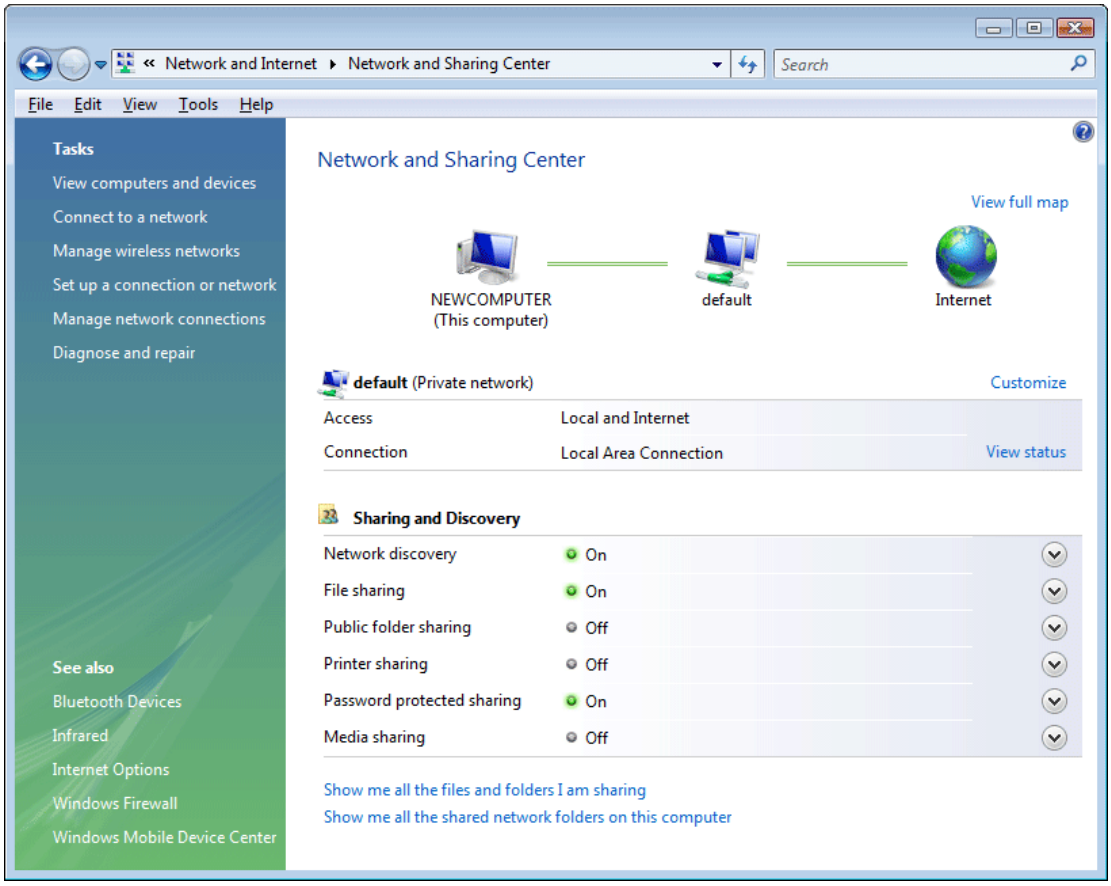
Step 18.Click **OK** to close all dialog boxes.

To configure client settings on a computer running Windows Vista

Step 1.On the computer that you want to configure to use DNS, click **Start**, and then click **Control Panel**.

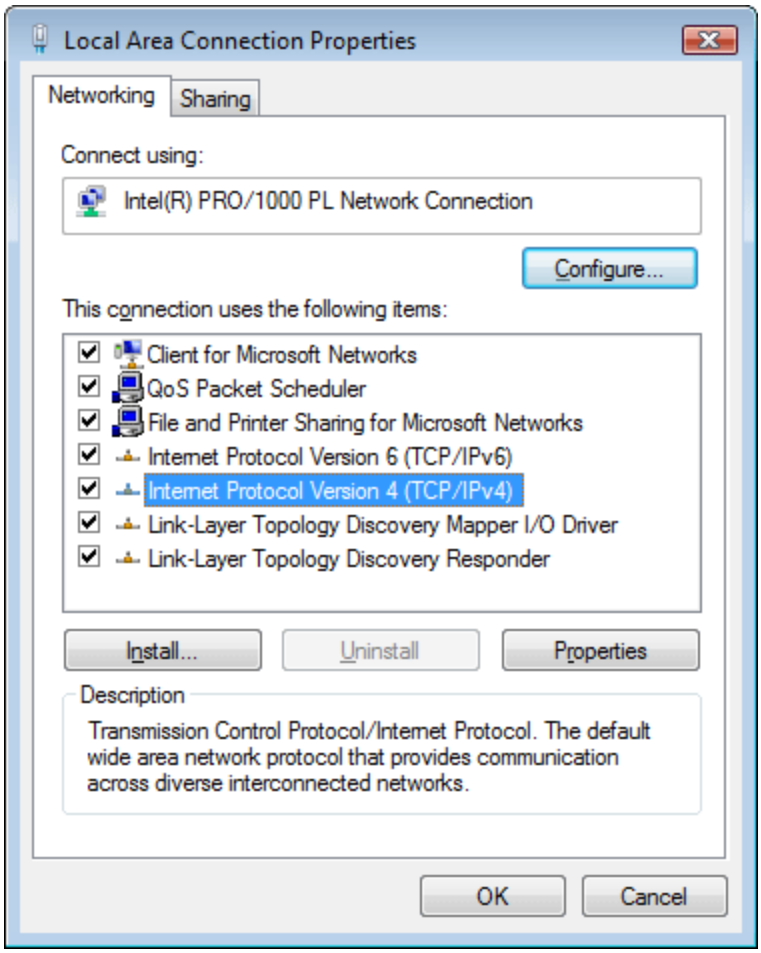
Step 2.In Control Panel, click **Network and Internet**.

Step 3.Click **Network and Sharing Center**. In the **Tasks** pane, click **Manage network connections**.



Step 4.Right-click the network connection that you want to configure, and then click **Properties**.

Step 5.On the **Networking** tab, click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.



Step 6.Click **Use the following IP address**.

Step 7.In **IP address**, type the address of the client computer.

Step 8.In **Subnet mask**, type the subnet mask of the domain controller.

Step 9.In **Default gateway**, type the address of the default gateway of the domain controller.

Step 10.Click **Use the following DNS server addresses**, and in **Preferred DNS server**, type the IP address of the domain controller that you installed in Installing and Configuring AD DS and DNS.

Important

Do not use the IP address of a DNS server that is provided by your ISP as a primary or alternate DNS server.

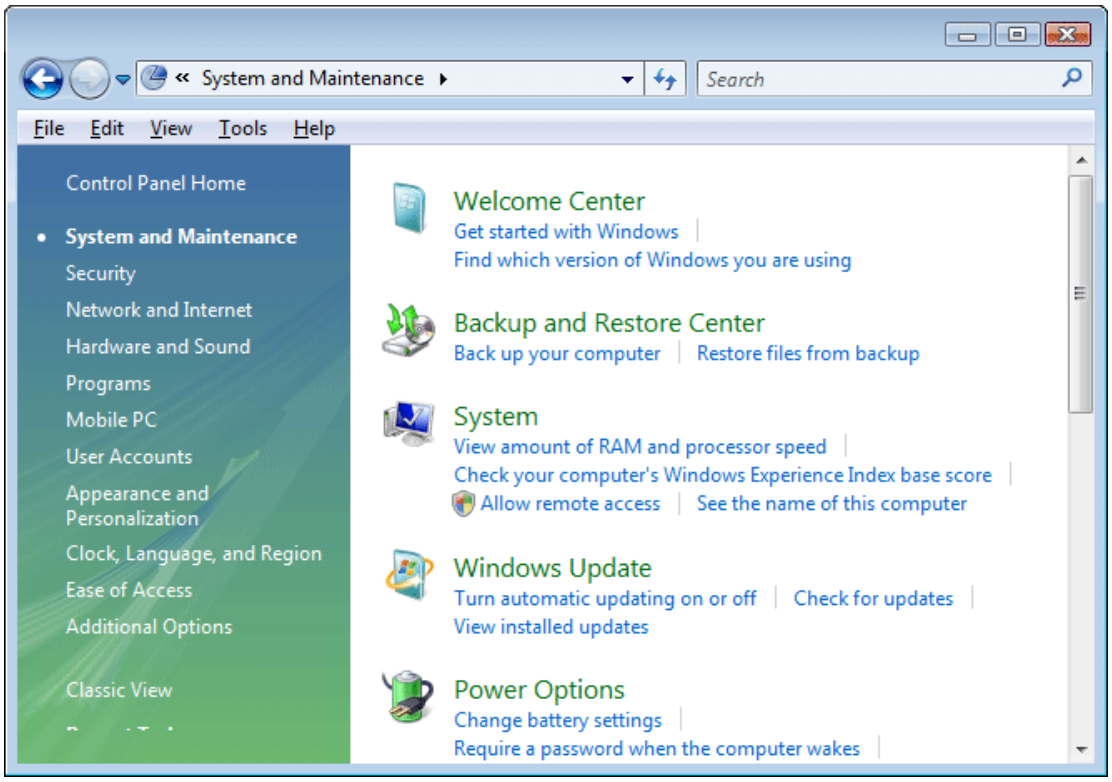
Step 11.Click **OK** to exit.

Step 12.If **Internet Protocol Version 6 (TCP/IPv6)** is selected, click it, and then click **Properties**. Perform the same steps as for TCP/IPv4, and then click **OK** and **Close**.

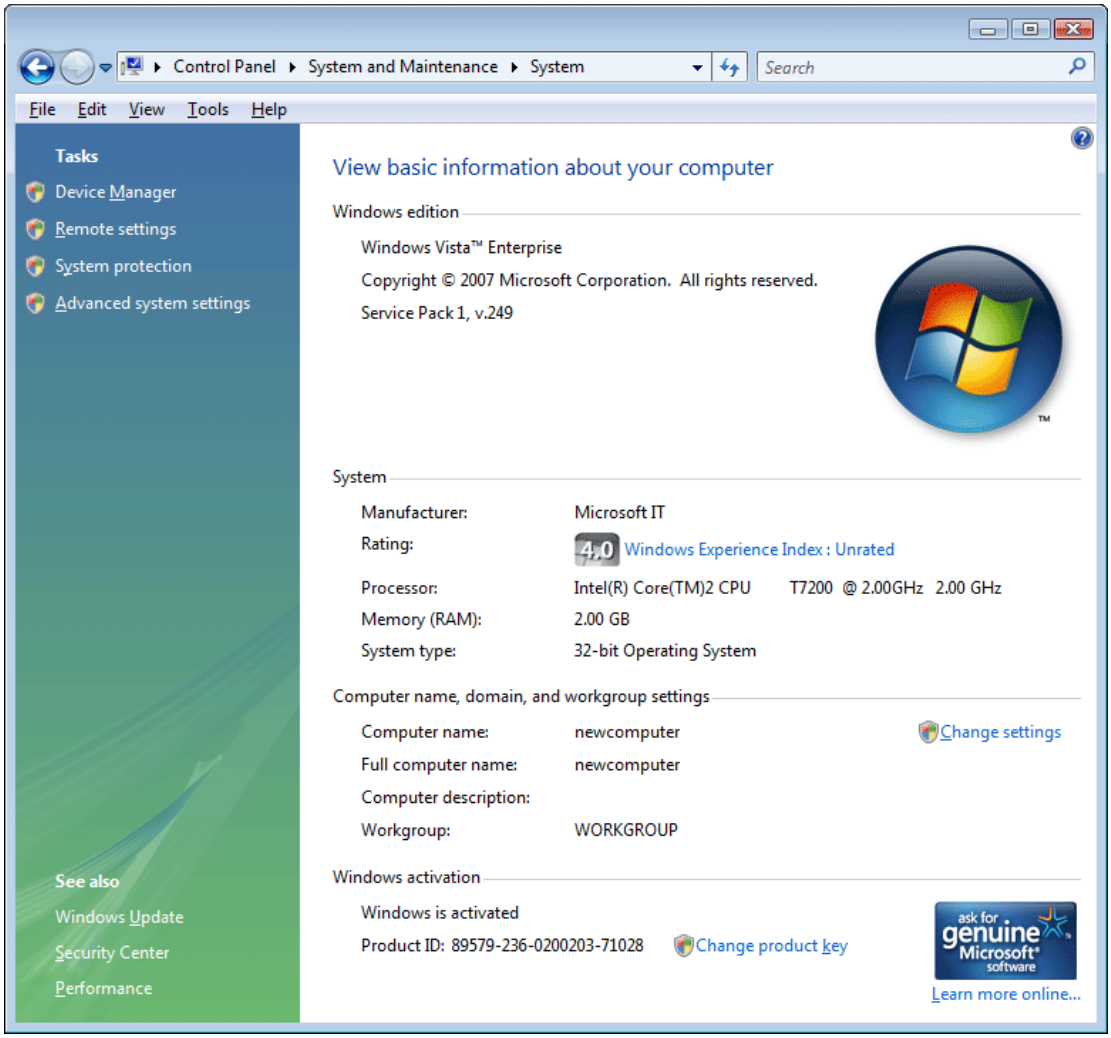
Note

It is not necessary to restart the computer at this time if you intend to change the computer's name or domain membership in the following steps.

Step 14.In **Control Panel**, click **System and Maintenance**, and then click **System**.

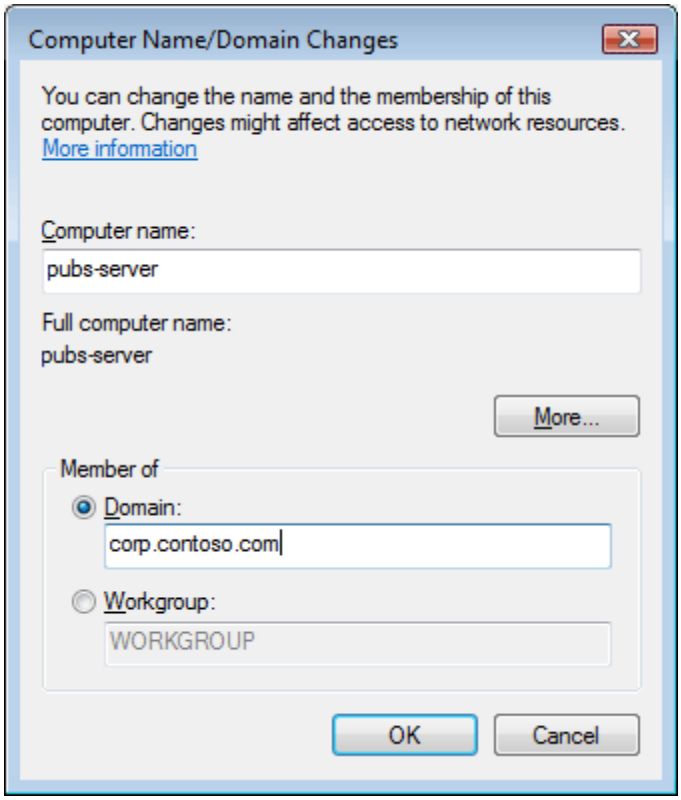


Step 15.Under **Computer name, domain, and workgroup settings**, click **Change settings**.



Step 16.On the **Computer Name** tab, click **Change**.

Step 17.In **Computer name**, type the name of the computer (the host name).



Step 18.Click **Domain**, and then type the name of the domain that you created in Installing and Configuring AD DS and DNS.

Step 19.If the **Computer Name Changes** dialog box appears:

- In **User Name**, type the domain name and user name of an account that has permission to join computers to the domain.
- In **Password**, type the password of the account. Separate the domain name and user name with a backslash, for example, *domain\user_name*.

1. Click **OK** to close all dialog boxes.

Precautions: Care should be taken while connecting with electric power

Quality criteria: join the client computer to server using administrator account

Operation Sheet 3.1.7.2 File sharing

Operation title: File sharing

Purpose: share file and access by another user

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Step 1.Create a local folder on your server computer. For example, create a folder called TVET on the C:\ drive.

Step 2.Right click the folder, and then click Properties.

Step 3.Click the Sharing tab, and then click Share.

Step 4.Enter the name of your Windows user, and click Add.

Step 5.In the Permission level column, select Read/Write, then click Share.

Precautions: Care should be taken while connecting with electric power

Quality criteria: share a folder for specific user

Operation Sheet 3.1.7.3 logon hour

Operation title: set logon hour

Purpose: set logon hour for restriction

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

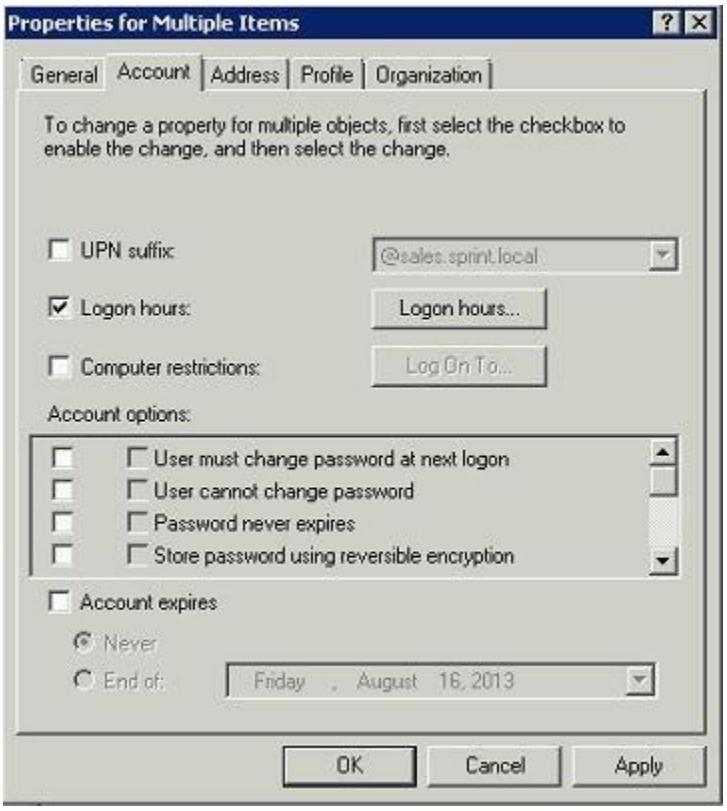
Procedures :

Logon hours restriction is done by editing a user's account in the following way:

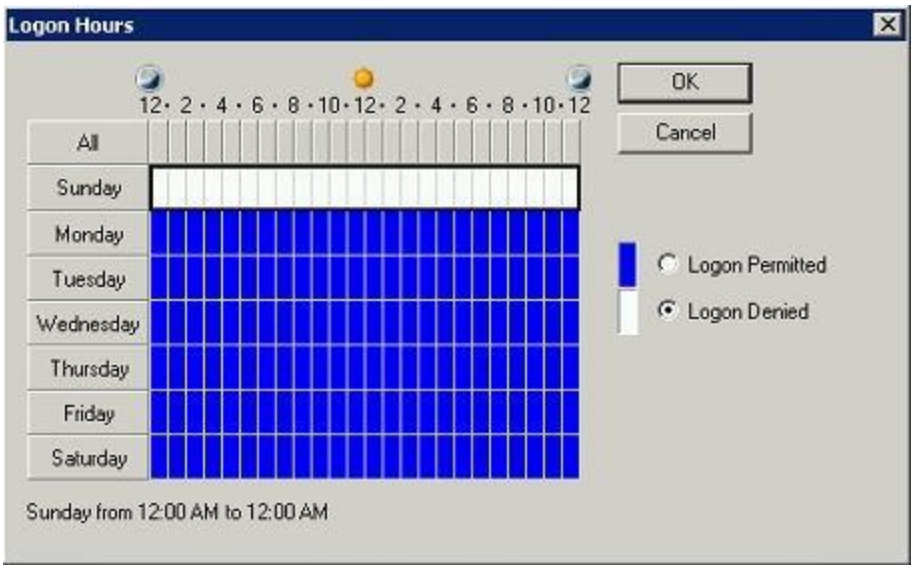
Step 1.Open the user object whose account you want to restrict logon hours for.

Step 2.Select account tab and put a check against the Logon hours box. Click Logon hours button.

Click Logon hours button.



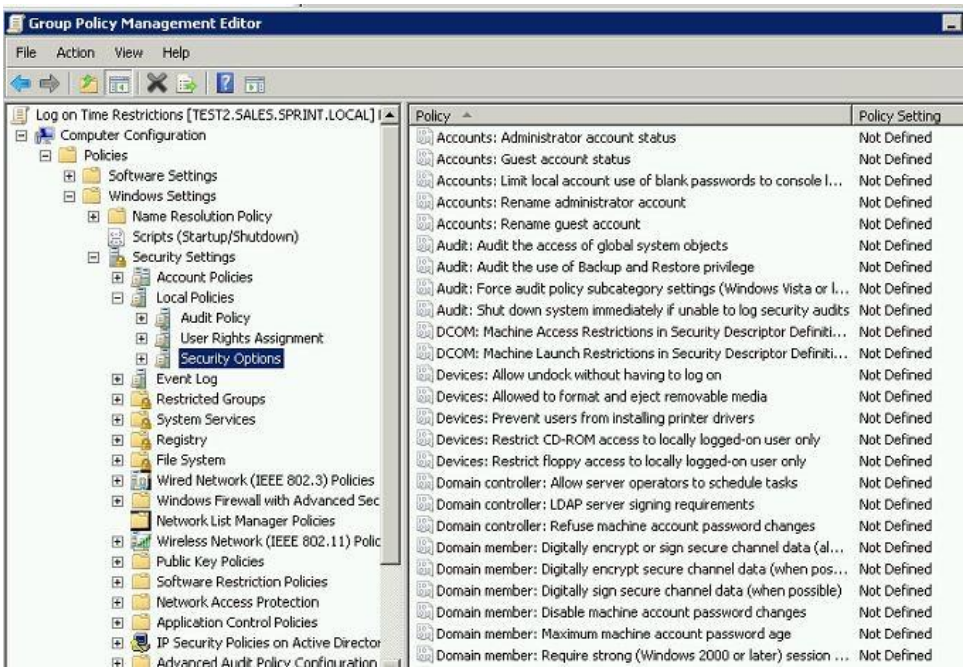
Step 3.In the next window, select the time that you want to restrict or allow them to logon.



Group policy allows you to lock a user out when their logon time expires. Follow the steps given below to configure this setting:

Step 3. Run → gpmc.msc and create a new GPO called "Logon restrictions" Right click on this GPO and click edit.

Step 4.Move to Computer configurations → Policies → Windows Settings → Security Settings → Local Policies → Security Options.



Step 5.In the right pane of the Group Policy snap-in, double-click Microsoft network server: Disconnect clients when logon hours expire. Click to select the Define this policy setting check box, click Enabled, and then click OK.

So using this GPO we can enforce clients to disconnect if there are active sessions running when the logon hours expire.

Precautions: Care should be taken while connecting with electric power

Quality criteria: restrict specific user from using in a time that is specified on logon hour

Self-Check 3.1	Written Test

Directions: Answer all the questions listed below

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1. A VPN is better suited for business use than a proxy server.
2. we can create firewall rules (exceptions) for Windows Active Directory (AD) service accounts & groups but not for TCP port.
3. Sometimes an email server can mean a computer or a machine that has a complete system that includes different services or applications.
4. IIS 7.0 and IIS 7.5 are together known as IIS 7 because they are exactly the same.
5. After we install DHCP on our server clients should configure their IP address on their own computers.

II. DIRECTION: CHOOSE THE BEST ANSWER AND ENCIRCLE THE CORRECT LETTER OF YOUR CHOICE. (each question have 2pts)

1. Server hardware configurations may need to consider:

   A. Storage device
   B. Boot sequence
   C. Specific
   D. All

2. To promote your server you need to use one of the following.

   A. DCPROMO
   B. IPCONFIG
   C.PROMO
   D.IPPROMO

3. From user object one of the following displays general descriptive information about the user, including name, email address and primary telephone number

   A. Profile
   B. Address
   C. General
   D. Account

4. ---------- is primarily used for resolving name-to-IP lookups using A records

   A. Forward look up
   B. Reverse look up
   C. Back ward look up
   D. ALL

5. Some of the extensions available to be added to the IIS 7.0 platform are integrated into the IIS 7.5 platform, including:

   A. FTP publishing
   B. WebDAV
   C. window powershell
   D. All

Note: **Satisfactory rating – 10 out of 10points**

Unsatisfactory - below 10 and 10points

Score = _____
Rating: _____

Information Sheet 3.2. Defining the scope and applicability of testing

Define the scope of testing

Integrated tests are performed during a server development project. A test is performed on the interoperability of each component. When complete, the testing process should verify that all the tests performed support the acceptance by the user of the totally integrated product.

- Tasks performed during stress and load testing of an integrated platform include
  - ✓ Establishing testing acceptance criteria and procedures
  - ✓ Performing test events
  - ✓ Diagnosing test results
  - ✓ Resolving software defects.

Test events are designed to establish operational levels at which the new server starts to fail and to measure how it performs under overloaded conditions. The failure and performance levels are compared with the acceptance criteria and are either accepted or rejected.

- Test events aim to reveal failures such as
  - ✓ Total system crashes
  - ✓ Bottlenecks in interfaces between components
  - ✓ Data corruption
  - ✓ process overloading
  - ✓ Performance degradation below a usable level.

Self-Check 3.2	Written Test

Directions: Answer all the questions listed below

I Elaborate the following question (each question 5pts)

1. What kind of failure wants test reveal ?
2. What tasks are performed during stress and load testing of an integrated platform?

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 3.3. Develop test plan

Test Plan

A **Test Plan** is a detailed document that describes the test strategy, objectives, schedule, estimation, deliverables, and resources required to perform testing for a software product. Test Plan helps us determine the effort needed to validate the quality of the application under test. The test plan serves as a blueprint to conduct software testing activities as a defined process, which is minutely monitored and controlled by the test manager.

As per ISTQB definition: “Test Plan is A document describing the scope, approach, resources, and schedule of intended test activities.”

Let’s start with following Test Plan example/scenario: In a meeting, you want to discuss the Test Plan with the team members, but they are not interested - .

.

Fig 4.

In such case, what will you do? Select your answer as following picture

Fig 5.

Importance of Test Plan?

Making Test Plan document has multiple benefits

- Help people outside the test team such as developers, business managers, customers **understand** the details of testing.
- Test Plan **guides** our thinking. It is like a rule book, which needs to be followed.
- Important aspects like test estimation, test scope, Test Strategy are **documented** in Test Plan, so it can be reviewed by Management Team and re-used for other projects.

How to write a Test Plan

You already know that making a **Test Plan** is the most important task of Test Management Process. Follow the seven steps below to create a test plan as per IEEE 829

1. Analyze the product
2. Design the Test Strategy
3. Define the Test Objectives
4. Define Test Criteria
5. Resource Planning
6. Plan Test Environment
7. Schedule & Estimation
8. Determine Test Deliverables

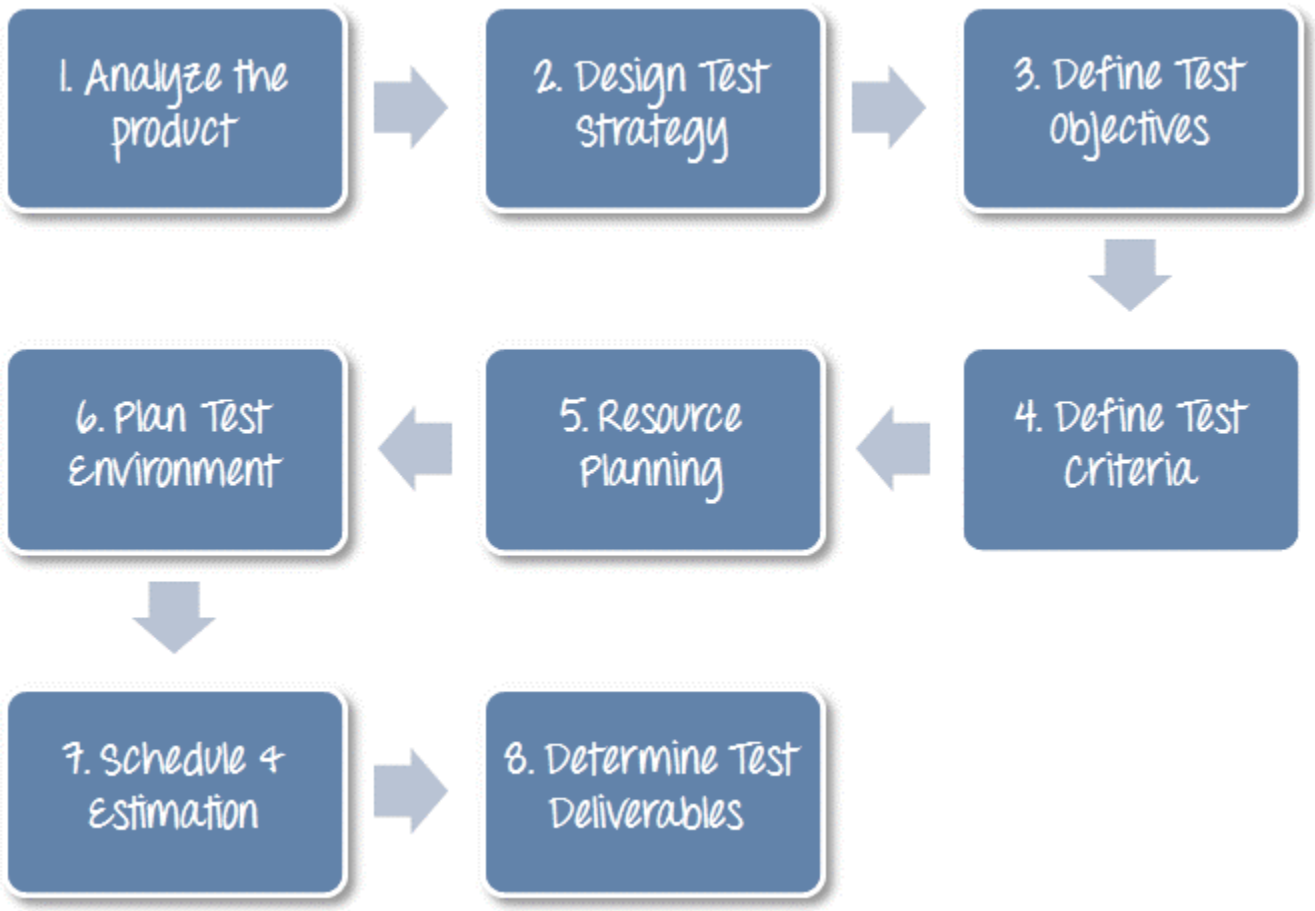


Fig 6: test plan

Step 1) Analyze the product

How can you test a product **without** any information about it? The answer is **Impossible.** You must learn a product **thoroughly** before testing it.

The product under test is Guru99 banking website. You should research clients and the end users to know their needs and expectations from the application

- Who will use the website?
- What is it used for?
- How will it work?
- What are software/ hardware the product uses?

You can use the following approach to analyze the site

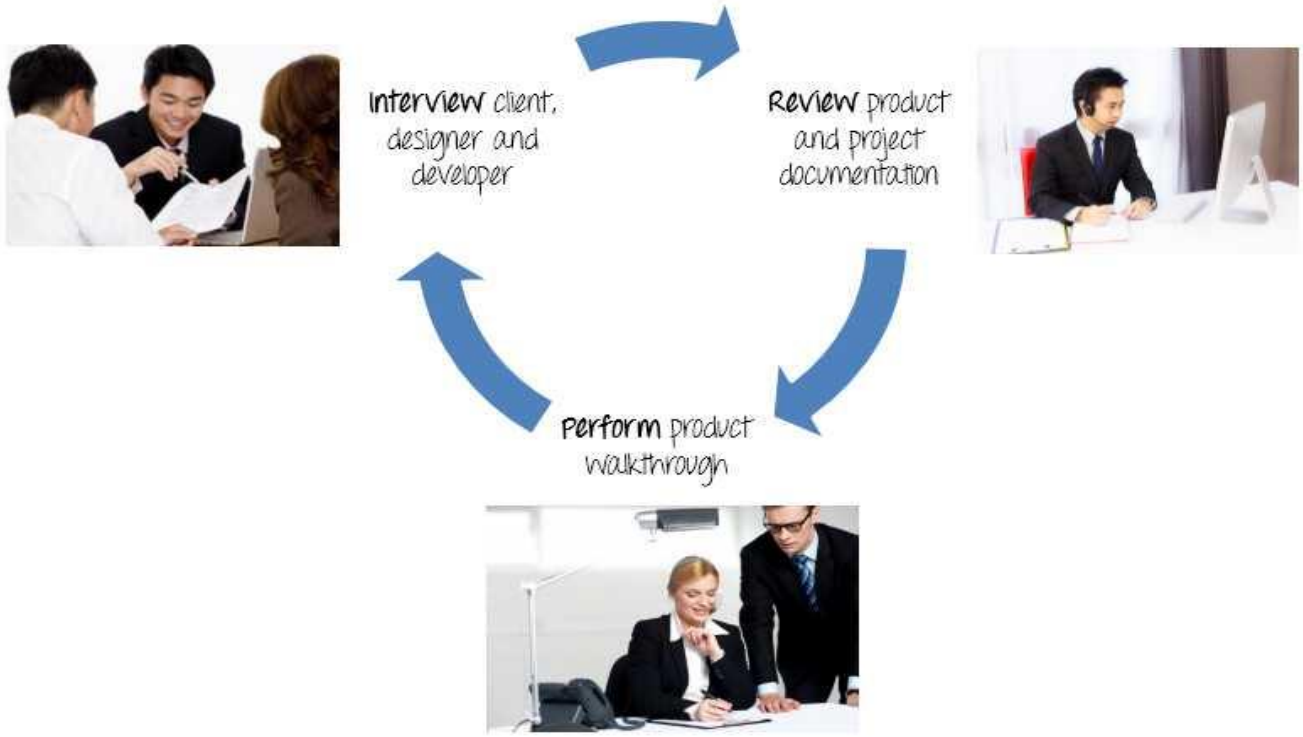


Fig 7: approach to analyze the site

Step 2) Develop Test Strategy

Test Strategy is a **critical step** in making a Test Plan in Software Testing. A Test Strategy document, is a high-level document, which is usually developed by Test Manager. This document defines:

- The project's **testing objectives** and the means to achieve them
- Determines testing **effort** and **costs**

Back to your project, you need to develop Test Strategy for testing that banking website. You should follow steps below

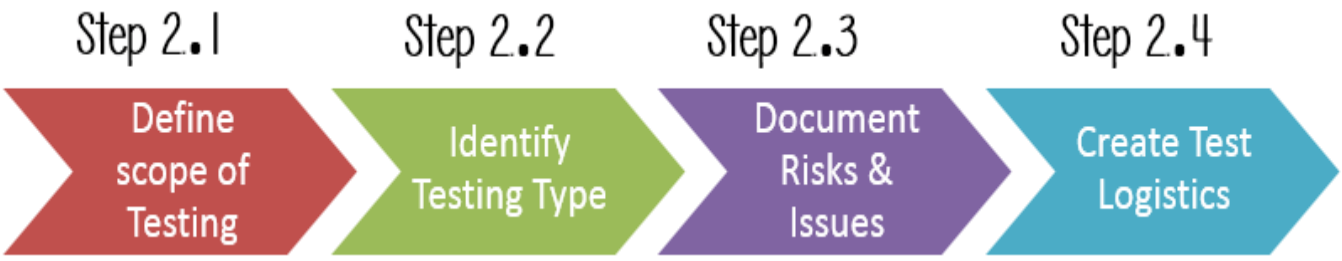


Fig 8: test strategy

Step 2.1) Define Scope of Testing

Before the start of any test activity, scope of the testing should be known. You must think hard about it.

- The components of the system to be tested (hardware, software, middleware, etc.) are defined as "**in scope**"
- The components of the system that will not be tested also need to be clearly defined as being "**out of scope**."

Defining the scope of your testing project is very important for all stakeholders. A precise scope helps you

- Give everyone a **confidence & accurate information** of the testing you are doing
- All project members will have a **clear** understanding about what is tested and what is not

How do you determine scope your project?

To determine scope, you must –

- Precise customer requirement
- Project Budget
- Product Specification
- Skills & talent of your test team

Step 2.2) Identify Testing Type

A **Testing Type** is a standard test procedure that gives an expected test outcome.

Each testing type is formulated to identify a specific type of product bugs. But, all Testing Types are aimed at achieving one common goal "**Early detection of** all the defects before releasing the product to the customer" .The **commonly used** testing types are described as following figure

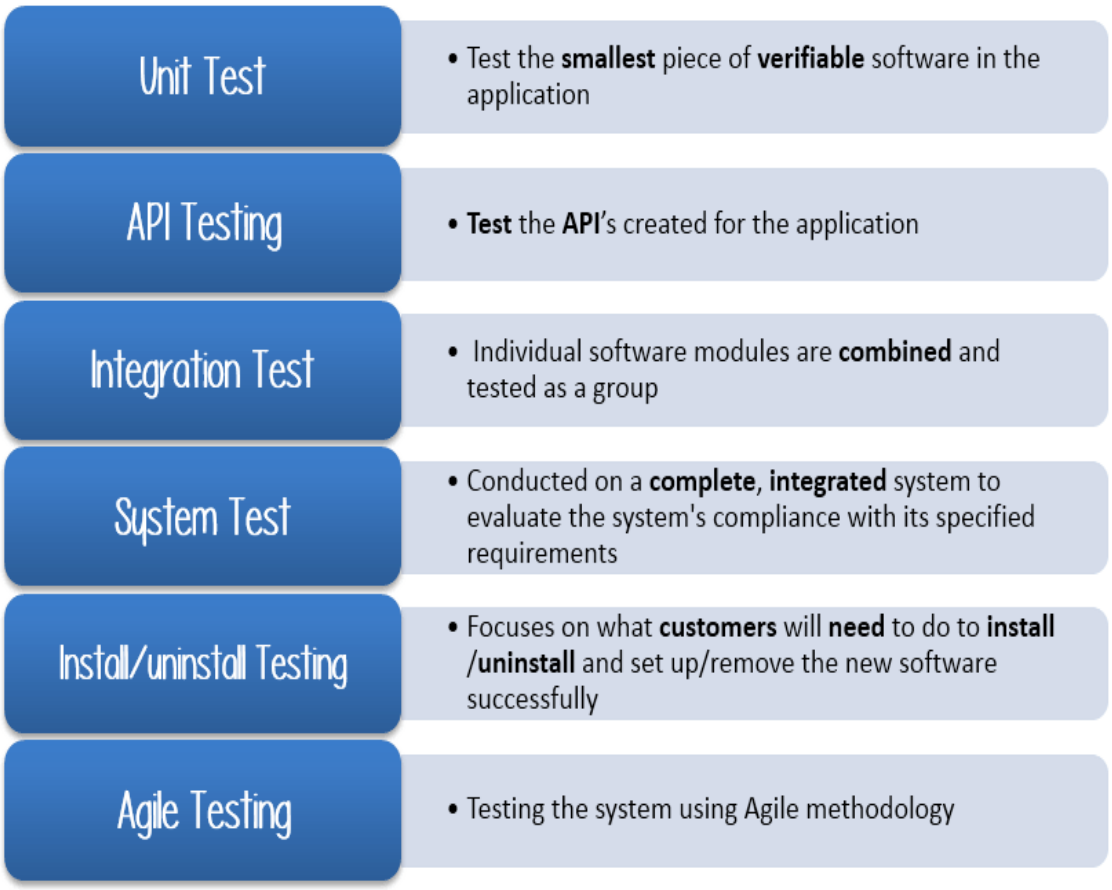


Fig 9: Test type

Commonly Used Testing Types

There are tons of Testing Types for testing software product. Your team cannot have enough efforts to handle all kind of testing. As test tanager, you must set priority of the Testing Types

- Which Testing Types should be focused for web application testing?
- Which Testing Types should be ignored for saving cost?

Step 2.3) Document Risk & Issues

- Risk is future's **uncertain event** with a probability of **occurrence** and a **potential** for loss. When the risk actually happens, it becomes the '**issue'.**
- In the article Risk Analysis and Solution, you have already learned about the 'Risk' analysis in detail and identified potential risks in the project.

Step 2.4) Create Test Logistics

In Test Logistics, the Test Manager should answer the following questions:

- **Who** will test?
- **When** will the test occur?

Who will test?

You may not know exact names of the tester who will test, but the **type of tester** can be defined.

To select the right member for specified task, you have to consider if his skill is qualified for the task or not, also estimate the project budget. Selecting wrong member for the task may cause the project to **fail** or **delay**.

Person having the following skills is most ideal for performing software testing:

- Ability to **understand** customers point of view
- Strong **desire** for quality
- **Attention** to detail
- Good **cooperation**

In your project, the member who will take in charge for the test execution is the **tester.** Base on the project budget, you can choose in-source or outsource member as the tester.

When will the test occur?

Test activities must be matched with associated development activities.

Step 3) Define Test Objective

Test Objective is the overall goal and achievement of the test execution. The objective of the testing is finding as many software defects as possible; ensure that the software under test is **bug free** before release.

To define the test objectives, you should do 2 following steps

1. List all the software features (functionality, performance, GUI…) which may need to test.
2. Define the **target** or the **goal** of the test based on above features

Let's apply these steps to find the test objective of your Guru99 Bank testing project

You can choose the '**TOP-DOWN'** method to find the website's features which may need to test. In this method, you break down the application under test to **component** and **sub-component**.

In the previous topic, you have already analyzed the requirement specs and walk through the website, so you can create a **Mind-Map** to find the website features.

This figure shows all the features which the Guru99 website may have.

Based on above features, you can define the Test Objective of the project Guru99 as following

- Check that whether website Guru99 **functionality**(Account, Deposit…) is working as expected without any error or bugs in real business environment
- Check that the external interface of the website such as **UI** is working as expected and & meet the customer need

- Verify the **usability** of the website. Are those functionalities convenient for user or not?

Step 4) Define Test Criteria

Test Criteria is a standard or rule on which a test procedure or test judgment can be based. There're 2 types of test criteria as following

Suspension Criteria

Specify the critical suspension criteria for a test. If the suspension criteria are met during testing, the active test cycle will be **suspended** until the criteria are **resolved**.

Test Plan Example: If your team members report that there are **40%** of test cases failed, you should **suspend** testing until the development team fixes all the failed cases.

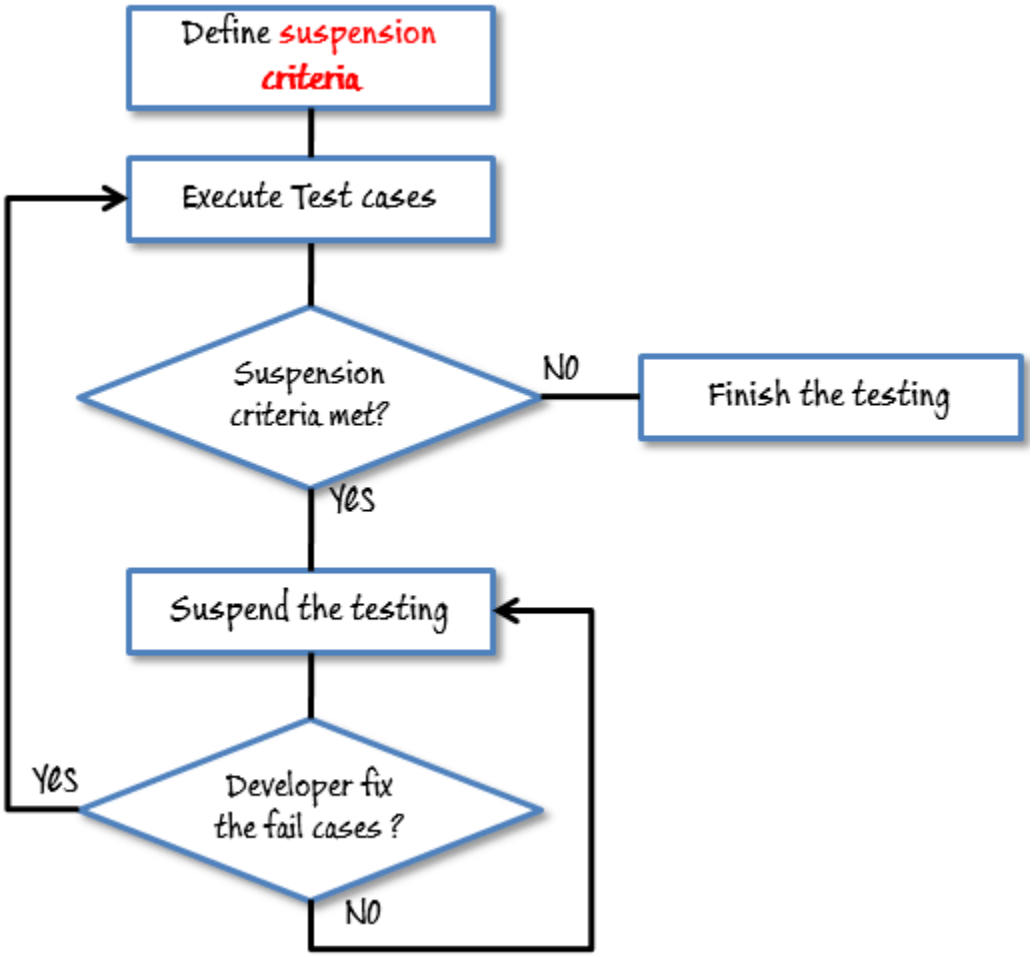


Fig 10 : **Suspension Criteria**

Exit Criteria

It specifies the criteria that denote a **successful** completion of a test phase. The exit criteria are the targeted results of the test and are necessary before proceeding to the next phase of development. Example: **95%** of all critical test cases must pass.

Some methods of defining exit criteria are by specifying a targeted **run rate** and **pass rate**.

- Run rate is ratio between **number test cases executed/total test cases** of test specification. For example, the test specification has total 120 TCs, but the tester only executed 100 TCs, So the run rate is 100/120 = 0.83 (83%)
- Pass rate is ratio between **numbers test cases passed / test cases executed**. For example, in above 100 TCs executed, there're 80 TCs that passed, so the pass rate is 80/100 = 0.8 (80%)

This data can be retrieved in Test Metric documents.

- **Run** rate is mandatory to be **100%** unless a clear reason is given.
- **Pass** rate is dependent on project scope, but **achieving high pass rate** is a goal.

Test Plan Example: Your Team has already done the test executions. They report the test result to you, and they want you to confirm the **Exit Criteria.**

Fig 11.

In above case, the Run rate is mandatory is **100%,** but the test team only completed 90% of test cases. It means the Run rate is not satisfied, so do NOT confirm the Exit Criteria

Step 5) Resource Planning

Resource plan is a **detailed summary** of all types of resources required to complete project task. Resource could be human, equipment and materials needed to complete a project

The resource planning is important factor of the test planning because helps in **determining** the **number** of resources (employee, equipment…) to be used for the project. Therefore, the Test Manager can make the correct schedule & estimation for the project.

Step 6) Plan Test Environment

What is the Test Environment

A testing environment is a setup of software and hardware on which the testing team is going to execute test cases. The test environment consists of **real business** and **user** environment, as well as physical environments, such as server, front end running environment.

How to setup the Test Environment

Back to your project, how do you set up **test environment** for this banking website?

To finish this task, you need **a strong cooperation** between Test Team and Development Team

fig 12.

You should ask the developer some questions to understand the web application under test **clearly**. Here're some recommended questions. Of course, you can ask the other questions if you need.

- What is the maximum user connection which this website can handle at the same time?
- What are hardware/software requirements to install this website?
- Does the user's computer need any particular setting to browse the website?

Step 7) Schedule & Estimation

In the article Test estimation, you already used some techniques to estimate the effort to complete the project. Now you should include that estimation as well as the schedule to the Test Planning

Then you create the **schedule** to complete these tasks.

Making schedule is a common term in project management. By creating a solid schedule in the Test Planning, the Test Manager can use it as tool for monitoring the project progress, control the cost overruns.

To create the project schedule, the Test Manager needs several types of input as below:

- **Employee and project deadline**: The working days, the project deadline, resource availability are the factors which affected to the schedule
- **Project estimation**: Base on the estimation, the Test Manager knows how long it takes to complete the project. So he can make the appropriate project schedule
- **Project Risk** : Understanding the risk helps Test Manager add enough extra time to the project schedule to deal with the risks

Step 8) Test Deliverables

Test Deliverables is a list of all the documents, tools and other components that has to be developed and maintained in support of the testing effort.

There are different test deliverables at every phase of the software development lifecycle.

Fig 13.

Test deliverables are provided **before** testing phase.

- Test plans document.
- Test cases documents
- Test Design specifications.

Test deliverables are provided **during** the testing

- Test Scripts
- Simulators.
- Test Data
- Test Traceability Matrix
- Error logs and execution logs.

Test deliverables are provided **after** the testing cycles is over.

- **Test Results/reports**
- Defect Report
- Installation/ Test procedures guidelines
- **Release notes**

Self-Check3.3	Written Test

Directions: Answer all the questions listed below

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1. In Test Logistics, the Test Manager should answer what to test.

2. Test data are provided **during** the testing.

3. Test report are provided **during** the testing.

4. The components of the system to be tested are defined as "in scope".

5. Test plan document after testing cycle is over .

II. Elaborate the following

1. List test deliverables. (3pts)

2. What skill need to perform software test .(2pts)

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 3.4. Run system test

Run system test

Test Documentation

When objectives, scope and tests have been identified, they are used to prepare the requirements documentation for each test.

- Test requirements include
  - ✓ **Test objectives**: list what the test is supposed to test
  - ✓ **Acceptance criteria**: conditions for the test passing or failing
  - ✓ **Test environment**: conditions under which the test is to be performed
  - ✓ **Roles and responsibilities**
  - ✓ **Test script**: steps to be performed during the test steps
  - ✓ **Results**: procedures for processing and authorizing results.

Determining defects

Determining critical defects

Critical defects are non-conformance of product to requirements, rendering the product unusable. System tests usually encompass multiple software modules working together to perform a user requirement. The ultimate critical defect is software causing the whole system to crash. However, common critical defects involve the interoperability of modules, the loss of data flow and poor performance.

Examples include

Data stored by one module in a system test cannot be accessed and processed by another interface to a legacy system fails a process fails to initiate another in a defined sequence System crashes at less than maximum transaction levels.

Self-Check3.4	Written Test

Directions: Answer all the questions listed below

I. List and Elaborate the following

1. What are test requirements? (10pts)

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Information Sheet 3.5. Analyzing error report and making changes

Windows Error Reporting

By using Windows Error Reporting, Windows can send descriptions of problems on your server to Microsoft and look for steps you can take to solve them. Windows Error Reporting is enabled by default.

If you choose to send generic information automatically about a problem, Microsoft will send back either the most current solution or use the information to start working on a solution.

Windows Error Reporting advanced options

On the **Windows Error Reporting Configuration** dialog box, the following two options disable Windows Error Reporting:

- **I don't want to participate, and don't ask me again**
  This option disables Windows Error Reporting, and prevents it from prompting you to send information about application failures to Microsoft.
  Ask me about sending reports every time an error occurs
  This option disables Windows Error Reporting, but allows it to prompt you to send information about application failures to Microsoft whenever a failure occurs.

The following two options enable Windows Error Reporting. Each option provides a different level of detail in the information sent to Microsoft when failures occur.

- **Yes, automatically send detailed reports. Notify me if there are possible solutions to the problem.**
  When this option is selected, if an application failure occurs, detailed reports are automatically sent to Microsoft. Portions of documents you were working on at the moment a program failed, or data you provided to Web sites or forms may be included in these reports. The contents of log files, and portions of the registry, may also be sent to Microsoft.

- **Yes, automatically send summary reports. Notify me if there are possible solutions to the problem.**

  When this option is selected, if an application failure occurs, only non-personal data is sent to Microsoft. Data about your computer's configuration, the program in which you were working, and any operations that triggered the failure is sent to Microsoft.

Self-Check3.5	Written Test

I. Elaborate the following

1. List and elaborate what are on the **Windows Error Reporting Configuration** dialog box.

Operation Sheet 3.5. Error reporting

Operation title: Error reporting

Purpose: To make it error reporting function on

Equipment ,tools and materials : AD installed computer

Conditions or situations for the operations: All tools, equipment's and materials should be available on time when required and need available power all time.

Procedures :

Error reporting

Step 1. Locate Control Panel from **Windows** startup.

Step 2. Click Control Panel> System and Security> Security and Maintenance.

Step 3.Look out **for Report** problems. **Make it** 'On'.

Precautions: Care should be taken while connecting with electric power

Quality criteria: protecting printer to not print for weekend

Information Sheet 3.6. Validating changes or additions against specifications

There is nothing worse for a user than annoying, overly persistent, inaccurate, or uninformative validation. For example, error messages that describe an error but don't specify which field contains the error are difficult to correct. However, there is no recipe for balancing validation with system requirements: what is pleasing or mandated by requirements in one application might be annoying or useless in another.

Validation is actually two processes: finding errors and presenting error messages. Finding errors can be interactive, where data is checked as it's entered, or post-validation, where the data is checked after entry. Presenting errors can be field-by-field? where a new error message is presented to the user for each error found? or it can be batched, where all errors are presented as a single message. There are other dimensions to validation and error processing, such as the degree of error that is tolerated and the experience level of the user. However, considering only the basic processes, the choice of when to error-check and when to notify the user, leads to four common approaches:

Interactive validation with field-by-field errors

The data in each field is validated when the user exits or changes the field. If there is an error, the user is alerted to that error and may be required to fix the error before proceeding.

Interactive validation with batched errors

The data in all fields is validated when the user leaves one field. If there are one or more errors, the user is alerted to these, and can't proceed beyond the current page without fixing all errors.

Post-validation with field-by-field errors

The user first enters all data with no validation. The data is then checked and errors are reported for each field, one by one. The user fixes each error in turn and resubmits the data for revalidation.

Post-validation with batched errors

The user first enters all data with no validation. The data is then checked, and all errors in the data are reported in one message to the user. The user then fixes all errors and resubmits the data for revalidation.

Self-Check3.6	Written Test

Directions: Answer all the questions listed below

I. List and Elaborate the following

1. What are the common approach error checking notify the users? (10pts)

Note: **Satisfactory rating – 10 out of 10points** **Unsatisfactory - below 10and 10points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

LAP Test 2	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, workshop, tools and materials you are required to perform the following tasks within 3 hours.

Task1: installing server 2008 operating system

2. Install Windows Server 2008 Operating System on the Server Computer
3. Establish connections among the Server and the two Clients
4. Configure the Server as a DNS and Active Directory for the Server Computer using the HRM.local as a domain name.
5. Configure server as DHCP with range of 192.168.1.2 to 192.168.1.4

Task2:-configure the server

Task3:-Create Groups of Computer using two group names **Human recourse** and **Director Office** and make sure that the Client Computers joined the groups.

Task4:-Create Users and Passwords for the two Groups as follows:

A For **Human recourse** group, Users (Alemu and Almaz), Password (Pa$$w0rd1 and Pa$$w0rd2) respectively.

B For **Director office** group, Users (Mamo and Abrehet), Password (Pa$$w0rd 3 and Pa$$w0rd 4) respectively.

Task5:-Set the Access limitation time for the **Human recourse** group users to access the network from Monday to Friday during lunch hour from 12:30AM to 1:30PM only.

Task6:-Add (join) the Client Computers to the Domain HRM local.

Task7:-Make your server secure by using Firewall

Task8:-create technical documentation for every network devices that you use on this task

Task9:-save one document on the desktop by the name documentation

Task10:-share the document for the clients alemu and almaz full control and mamo and abrehet read only

Task11:-print the shared document from the clients

Task12:-create a notepad file on server computer from client computer

List of Reference Materials

1. https://help.qlik.com/en-US/sense/February2019/Subsystems/PlanningQlikSenseDeployments/Content/Sense_Deployment/Creating-a-file-share.htm
2. https://www.photonvps.com/billing/index.php?rp=/knowledgebase/96/Installing-and-Configuring-Windows-Server-2008-SMTP.html
3. https://www.samlogic.net/articles/mail-server.htm
4. https://tipsmake.com/instructions-for-installing-drivers-for-windows-with-driverpack-solution
5. http://www.driverdoc.com/articles/articles-how-to-install-drivers.html
6. https://www.pinoytechcentral.com/installing-drivers-on-windows-server-2008-r2/
7. https://www.manageengine.com/products/active-directory-audit/kb/how-to/how-to-set-logon-hours-in-active-directory.html
8. https://www.connectingup.org/learn/articles/networks-101-introduction-server-applications
9. https://www.google.com/search?q=running+system+test&client=firefox-b-d&sxsrf=ALeKk02D1YXuw8Liskc7YvpTJwGJdAtk2g:1608895415444&tbm=isch&source=iu&ictx=1&fir=YscDdO-MaQ3mMM%252C4em_8bITFt371M%252C_&vet=1&usg=AI4_-kTwVNYHdHWYiVyiy_EEXsT2cpzplA&sa=X&ved=2ahUKEwjlg9-9guntAhUTSxUIHb1IDNoQ9QF6BAgsEAE#imgrc=YscDdO-MaQ3mMM
10. http://www.inbox.com/article/how-do-install-drivers-from-cd-or-dvd-on-windows.html
11. Microsoft Windows Server 2008 (Author Rand Morimoto)
12. Networking Bible (Author Barrie Sosinsky)

AKNOWLEDGEMENT

We wish to extend thanks and appreciation to the many representatives of TVET instructors who donated their time and expertise to the development of this TTLM.

We would like also to express our appreciation to the Federal TVET agency and Oromia Region TVET Bureaus who made the development of this curriculum and TTLM with required standards and quality possible.

This TTLM developed on December 2020 at Bishoftu BIN international hotel.

Institution name represented by the Trainer

No	Name the Trainer	College Name	Edu. Backgr ound	Address	
				Mob.	Email
1	Abebe Mintefa	Ambo TVET College	Msc.	0929352458	tolabula@gmail.com
2	Frew Atkilt	Bishoftu Polytechnic College	Msc.	0911787374	frew.frikii@gmail.com
3	Tewodiros Girma	Sheno TVET College	Msc.	0912068479	tedimutd@gmail.com
4	Tsedale Mangiste	Dukem TVET College	Msc.	0912076643	tmmeng2005@gmail.com
5	Zerihun Abate	Sebeta Polytechnic College	Msc.	0911858358	zedoabata2017@gmail.com

Answer Key for self-check
Module Title: Configuring And Administering Server

LO #1- Confirm Server Specification

Self-Check1.1.	**Written Test**

Directions: Answer all the questions listed below.

I. Elaborate the following

1.

- Mainframe architecture
- File sharing architecture
- Client/server architecture
- Web based architecture

2. NOS allows the protection of data, information, and their hardware components from unauthorized users.

- It allows to program testing routines.
- It can memory management while loading of programs.
- To detect the all errors and bugs while execution of their jobs.
- It provides the remote access to server/client machines.
- It manages the sequence of all their processing jobs.
- NOS allows to all users for creating user account, and they can manage them as well.
- It allows to all Configuration and management of entire network resources.
- It allows to all communication services.
- It can monitor as well as troubleshooting the entire network.

3.

- Hardware
- Software
- Network connections

4.

- The business case
- What the client considers the project's main objectives are, including the services that are to be performed
- What IT infrastructure is already in place
- Basic specifications
- Conflicting or overlapping requirements
- Maintenance and backup requirements
- Bandwidth issues that may affect the project
- Role definition of parties involved
- The nature of the data (e.g. text, multimedia)
- Security needs (e.g. levels of user access and privileges) Available support resources Costing.

Self-Check1.2.	**Written Test**

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.

1. True
2. False
3. True
4. True

II. DIRECTION: CHOOSE THE BEST ANSWER AND ENCIRCLE THE CORRECT LETTER OF YOUR CHOICE

1. D
2. A

Self-Check1.3.	**Written Test**

Directions: Answer all the questions listed below.

I. Elaborate the following

1. Network Interface

Network Protocol

Network Client and Server Software

2.

- New Technology File System
- Active Directory
- Microsoft Management Console
- Disk Management
- File and printer sharing
- Windows networking
- Internet Information Services

3.

- Modular design
- Extensibility
- Manageability

LO #2- Verify server compatibility and inter-operability

Self-Check2.1	**Written Test**

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.

1.TRUE

2. TRUE

3. FALSE

4.TRUE

5. TRUE

Self-Check2.2.	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: CHOOSE THE BEST ANSWER AND ENCIRCLE THE CORRECT LETTER OF YOUR CHOICE. (each question have 2pts)

1. B
2. D
3. A
4. C
5. A

Self-Check 2.3	Written Test

Directions: Answer all the questions listed below.

I. Elaborate the following

1. Purchasing and downloading from internet.

Self-Check 2.4	Written Test

Directions: Answer all the questions listed below.

DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.

1. True
2. False
3. True
4. False

5. True

Self-Check 2.5	Written Test

Directions: Answer all the questions listed below.

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1.true

2. false

3. true

4.true

5. true

LO #3- Configure and test server

Self-Check 3.1	Written Test

Directions: Answer all the questions listed below

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1. True
2. False
3. True
4. False
5. False

II. DIRECTION: CHOOSE THE BEST ANSWER AND ENCIRCLE THE CORRECT LETTER OF YOUR CHOICE. (each question have 2pts)

1. D
2. A

3. C
4. A
5. D

Self-Check 3.2	Written Test

Directions: Answer all the questions listed below

I. Elaborate the following question (each question 5pts)

1.

- ✓ Total system crashes
- ✓ Bottlenecks in interfaces between components
- ✓ Data corruption
- ✓ process overloading
- ✓ Performance degradation below a usable level

2.

- ✓ Establishing testing acceptance criteria and procedures
- ✓ Performing test events
- ✓ Diagnosing test results
- ✓ Resolving software defects

Self-Check3.3	Written Test

Directions: Answer all the questions listed below

I. DIRECTION: TRUE or FALSE. Write "TRUE" if the statement is correct or "FALSE" if the statement is incorrect.(each 2pts)

1. False
2. True
3. False
4. True

5. False

II. Elaborate the following

1. Test deliverables are provided **before** testing phase.

- Test plans document.
- Test cases documents
- Test Design specifications.

Test deliverables are provided **during** the testing

- Test Scripts
- Simulators.
- Test Data
- Test Traceability Matrix
- Error logs and execution logs.

Test deliverables are provided **after** the testing cycles is over.

- **Test Results/reports**
- Defect Report
- Installation/ Test procedures guidelines
- **Release notes**

2.

- Ability to **understand** customers point of view
- Strong **desire** for quality
- **Attention** to detail
- Good **cooperation**

Self-Check3.4	**Written Test**

Directions: Answer all the questions listed below

I. List and Elaborate the following

1.

- ✓ **Test objectives**: list what the test is supposed to test
- ✓ **Acceptance criteria**: conditions for the test passing or failing
- ✓ **Test environment**: conditions under which the test is to be performed
- ✓ **Roles and responsibilities**

- ✓ **Test script**: steps to be performed during the test steps
- ✓ **Results**: procedures for processing and authorizing results.

Self-Check3.5	Written Test

Directions: Answer all the questions listed below

I. List and Elaborate the following

1.

- **I don't want to participate, and don't ask me again**
  This option disables Windows Error Reporting, and prevents it from prompting you to send information about application failures to Microsoft.
- **Ask me about sending reports every time an error occurs**
  This option disables Windows Error Reporting, but allows it to prompt you to send information about application failures to Microsoft whenever a failure occurs.

Self-Check3.5	Written Test

Directions: Answer all the questions listed below

II. List and Elaborate the following

1.

- Interactive validation with field-by-field errors
- Interactive validation with batched errors
- Post-validation with field-by-field errors
- Post-validation with batched errors

AKNOWLEDGEMENT

We wish to extend thanks and appreciation to the many representatives of TVET instructors who donated their time and expertise to the development of this TTLM.

We would like also to express our appreciation to Federal Technical and Vocational Education and Training Agency (FTVET), Oromia TVET Bureau, TVET College/ Institutes, who made the development of this TTLM with required standards and quality possible.

This TTLM is developed on December 2020 at Bishoftu Bin International hotel.

The trainers who developed the TTLM

No	Name of Trainer	College Name	Edu. Background	Address	
				Mob.	Email
1	Abebe Mintefa	Ambo TVET College	MSc.	0929352458	tolabula@gmail.com
2	Frew Atkilt	Bishoftu Polytechnic College	MSc.	0911787374	frew.frikii@gmail.com
3	Tewodiros Girma	Sheno TVET College	MSc.	0912068479	tedimutd@gmail.com
4	Tsedale Mengiste	Dukem TVET College	MSc.	0912076643	tmmeng2005@gmail.com
5	Zerihun Abate	Sebeta Polytechnic College	MSc.	0911858358	zedoabata2017@gmail.com