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Design a program to install Windows programs via wireless networks

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ABSTRACT

Any network may be vulnerable to unauthorized access to Equipment, Data that Network operations are some measures that help maintain network security - Proper training of users to deal with security procedures -Ensuring the security of equipment and the difficulty of accessing it by unauthorized people -Protecting copper wires and hiding them from sight because they may be vulnerable to spying -Encrypting data when needed - Providing users with devices that do not contain floppy or compressed disk drives or even hard disks, and these devices connect to servers using a ROM Boot Chip and when these devices are turned on, the server loads the boot program into the device's RAM to start working. Giving permissions - for users to access data and equipment, each according to the nature of his work, and in this case, data and equipment must be shared to allow others to use it. In the second system, rights are assigned and permissions are given to each user or group of users. This system is considered more secure than the previous system and gives the network administrator greater control over each user. When entering the name and password, this information is passed to the Security Accounts Manager (SAM). If the entry is to a Workstation device, the information is compared with the local security accounts database on the device. If the entry is to a Domain, the information is sent to the SAM server, which compares it with the Domain accounts database. If the username or password is invalid, the user is prevented from entering the system. If they are correct, the security subsystem issues an access card. The system identifies the user for the period of his entry

Introduction

Computer networks began in the sixties of the twentieth century as a natural result of the computer industry. At that time, the first generation computer was large, the size of a room, and contained power generators, automatic cooling units (Mainwaring, A., 2002) and storage units. The process of transferring data from one device to another was a tremendous effort, so networks lacked a specific system for entering data at the beginning, as transfer programs were written at the time. Networks continued to develop until they became an integral part of any operating system, and with developments, the ease of their design, installation, and performance increased (Perrig, A.,2001).

For small local networks, the first main computer for networks appeared in 1940 AD. Networks are considered the ideal solution to the data transfer problems found in all workplaces, as the need for a computer in all fields and thus computer networks in transferring information and data in its various forms (written document, image, video ...) (Willig, A., & Karl, H. (2005)or even in taking advantage of the network's software and physical components and others. A computer network is two or more computers connected together in any way, with the main purpose of exchanging information, software components, or hardware components. The figure below shows the relationship between the user, software components, and hardware components (free programmable status LED, T. Atmel AVR2030).

The emergence of small computers, which caused very big changes in the field of business

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and industry, by giving users the ability to benefit from computers, resources and information that were not visible to users through networks. The typewriter continued to serve and work continuously for about 100 years and did not go out of service until the emergence of those small computers, which were called personal computers (Westhoff, D., Girao, J., & Sarma, A. (2006). Personal computers began to be linked together to form a computer network in which files are stored on a central system so that they are available to users through personal computers. Here we find several advantages of the computer network system if compared to the mainframe system, which is that in computer networks there are a number of personal computers that can use or obtain files from the main server, but each of these personal computers has the ability to operate separately from the main server. But in mainframe systems there are terminals that do not have any ability to operate and everything is loaded on the mainframe (Akyildiz, I. F. (2002).

Types of computer networks

a-Peer-to-peer network:

It is a computer network whose purpose is to perform the functions of the client and the provider at the same time, and therefore each device on the network can provide other devices connected to the network. Or in other words, it is a local computer network LAN consisting of a group of computers that have equal rights and does not contain a dedicated server, but each device on the network can be a provider or a client. (Werner-Allen, G., 2006). This type of network is also called a work group, and the work group can be understood as a group of devices that cooperate with each other to accomplish a specific task. It consists of a small number of devices in which members of the work group can see the data and resources stored on any of the devices connected to the network and benefit from them.

b-Client-Server Networks:

In client-server networks, one device acts as a server and the rest of the devices act as clients. For example, the print server manages the printer and its functions and is called a server because it performs a specific service, which is printing. The rest of the devices on the network benefit from this service (Werner-Allen, G.,2006).

Geographical division of networks:

Networks are geographically divided into types, including:

1/ Local Area Networks LAN

It is a network of small computers in one geographically limited location and are connected to each other via HUB Router - Bridge - Switch –(Ritter, H., 2005)

2/ City Networks MAN Metropolitan Area Networks

They are in a geographical area within the scope of large cities.

3/ Wide Area Networks WAN

It is a group of two or more LANs connected by a special connection method called WAN Connectivity. Examples of it include connection via Faxmodem and telephone lines or via satellite or via the Internet (Wang, H.,2003).

4/ The Internet is called the World Wide Web or the network of networks and it consists of a huge number of WANs connected to each other across the globe.

Topographic linking problem:

There are several types of networks, including:

A - BUS networks

The network depends on a fast data transfer line called BUS, and each subscriber is connected to this line via a connection point, and data is transferred from one computer to another through the connection points via the BUS fast data transfer line. This type of network is characterized by the fact that the failure of a single user does not affect the operation of the network, and it is less expensive to establish (Nahapetian, A.,2007).

B - Star network STAR

In this type of network, the main service device transfers data to users via an electronic device called a HUB that connects to the network with each subscriber via a special cable in the shape of a star STAR. More than one hub can be used. The advantage of this type of network is that it is faster and more efficient than the previous type, so that each subscriber is connected directly to a special cable. Otherwise, if the cable is broken, it is impossible to communicate

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between all subscribers connected to the same hub (Vales-Alonso, J.,2010)

C - Ring networks RING

This type of network depends on connecting all the shared computers in a closed circuit manner, and data is transferred via the closed circuit connection points. The ring network operates more densely and quickly than other networks, as data is transferred in both directions The creation and use of special network programs to organize the flow of data across the network and prevent collision or interference of data and ensure the operation of the network if one of its parts fails (Hill, J.,2004)

2 Ethernet Ethernet

It is a technology that has been adopted as a basis for implementing messaging in many local networks designed at the present time. The first version of the standards of this technology was developed in 1972 and was actually put into effect in 1975, where it helped users of local networks to broadcast their data at a speed of nearly (Mbps3) between 100 devices in the local network, then this speed was developed to reach (Mbps100) (Hill, J. L. (2003). and continued to develop until it recently reached a speed of (Gbps10).The word Ethernet is derived from the Greek language, which means air, due to the similarity between the principle in which information is exchanged across the network and the principle of exchanging conversation between people and the role of air in transmitting sound waves. Ethernet transmission combines the advantages of star and linear link architectures, and modern versions of it transmit at a rate of (100 Mbps), (1 Gbps), and (10 Gbps). These networks rely on transmitting information over the shared line between network devices in a specific way of accessing the information carrier medium (Media Access Method). The method is called Carrier Sense Multiple Access / Collision Detector (CSMA / CD), (Polastre, J. (2004). which is an algorithm that controls the rules of accessing information from the network card to the Ethernet network connection line and sensing the status of this carrier line. When there is a data block that one of the network devices wants to send to a specific target, the device listens to the carrier signal and waits for this signal until the line becomes free, at which point the node begins to conduct its correspondence in the cable without problems. But sometimes two nodes sense at the same time that the line is not busy and try to send simultaneously (representing two people talking at the same time), which causes a collision between the data sent by these two nodes so that the data becomes incomprehensible due to the noise in the cable, which is called a collision(Stankovic, J. A. (2004).).

By using this algorithm, the nodes can detect this collision and broadcast a jam signal, where these devices postpone their transmission for a period of time that varies from one device to another and randomly, after which the device with the shorter pause period tries to start sending again, relying on the same algorithm. In networks that contain a relatively large number of devices that exchange large numbers of data blocks, this leads to an increase in the number of possible collisions, which leads to a slowdown in the network's operation due to the repeated postponement of the transmission process in these devices due to the number of data sent at the same time.(Lorincz, K., 2004) All types of Ethernet networks use blocks of data in the transmission process in the form of lines (Frames) of this data, the size of which ranges between 64 bytes and 1518 bytes divided into:

Ethernet 10 2 base

Called Thin Ethernet or sometimes called Cheaper Net, 16/3 inch coaxial cables similar to TV cables are used with a section length of up to 185 meters without the need for any signal amplification. This type is based on a linear structure and supports 30 nodes in each section.

Ethernet 10 base 5

Called Thick Ethernet, it is based on thick coaxial cables with a diameter of 8/3 inches. It is based on the basics of the linear structure of networks (a type of network) and supports up to 100 nodes in each section with a length of up to 500 meters.

Ethernet 10 t Base

It is called twisted pair Ethernet, because its structure depends on the use of twisted pair cables. (SCTP, Stp, Utp) This type is widely

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used for its low cost and the network node is connected according to the star structure through the network card and using RJ45 connectors. This network can contain 1024 nodes and a cable section length of 100 meters without needing any signal booster (Bhardwaj, M.,2001).

Ethernet 10 FL Base

It is a type that uses fiber optic cables and is characterized by safety and reliability and can transmit the signal for a distance of 2000 meters in the case of single-mode fiber optics and approximately 400 meters when using multi-mode optical cables.

What are Ethernet 100 Base TX networks?

It is a type that has the same characteristics as type 0 T Base except for its high communication speed of 100 megabytes.

100 Base FX Ethernet Networks

This type is similar to the 10 base fl type in its specifications except for the transmission speed element.

1000 Base LX Ethernet Networks

This type deals with fiber optic cables of both types (single and multi-mode) and the section length varies according to the type of cable, as a multi-mode cable with a diameter of 62.5 micrometers can transmit data for distances of 440 meters, while a cable of the same type but with a diameter of 50 micrometers can transmit data for a distance of 550 meters, while a single-mode cable with a diameter of 9 micrometers can transmit data for a distance of 3 kilometers (Cardei, M., & Du, D. Z. (2005).

1000 Base T Ethernet networks

This type depends on the use of UTP cables of CAT 6 type and a distance of 100 meters.

About the system: -

Windows Server is considered one of the best versions of the Windows Server family, and includes all the functions that the user needs to perform his requirements.

These functions include:

Security.

Reliability.

Availability.

In addition, the performance of this Windows as a server has been improved, to improve and integrate the benefits of Windows Net to connect people, systems and devices around the world. This version is designed to suit the needs of the average home user and small businesses with limited work, and has the following benefits (Chen, M. M.,2004):-

-Supports file printing sharing.

-More protection when connecting to the Internet.

- Publishing the use of a central computer

It was created for sensitive and dangerous tasks for the server's work, and it can be considered the following in functions:-

A platform for choosing applications, and for publishing websites services, and infrastructure, it gives very high reliability, and accuracy in performance, and gives the work the highest value of good results

It has the following benefits:-

- Complete functions in the server operating system, and supports the number of processors up to 8 processors, supports memory up to 32 GB.

- Supports different types of processors, such as (Intel Itanium, AMD, Intel Xeon).

- Available in a version with 32-bit support and also 64-bit.

4-2: Types of Windows 2003 Server

WINDOWS SERVER 2003 Standard Edition/ 1

WINDOWS SERVER 2003 Enterprise Edition /2

WINDOWS SERVER 2003 Datacenter Edition/3

WINDOWS SERVER 2003 Web Edition /4

How to install Windows Server

The process of installing Windows 2003 Server is very similar to the process of installing Windows 2000 Server, as you will notice in the Windows installation pictures.There are several cases for how to install Windows 2003 Server, and I will assume that the installation process will be on a new device, and there is no other system on it previously. And that you will install it from a Windows 2003 Server CD supporting the boot process (Chen, M. M.,2006).

The other cases of installing Windows 2003 Server are that it is a second system with another Windows system on the same device or that one

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of the older systems is upgraded to Windows 2003 Server, but of course the upgrade is not permissible on Windows 95 or Windows 98 or Windows Millennium, only the upgrade is done from Windows 200 or 2003.Before starting the installation process for Windows 2003 Server, you must know the following in advance (Ilyas, M., & Mahgoub, I. (2005).:-

. 1- Allocate a special part of the hard disk to install Windows on it, so that you will format it on the NTFS file system (Li, M., Ganesan, D., & Shenoy, P. (2009).

2- Determine whether you want to work on a workgroup

Assign a special name to the device, such as (Server, Main, PC1,…) 3- Also specify the domain name later, which is either a name that indicates your institution or business, or your own name (Paksuniemi, M.,2006). Now the first stage of the installation process begins with you, and before that you must configure the BIOS settings for the initial boot process so that you choose whether it will be from the disks or from the CD drive. After you have prepared the BIOS for the initial boot from the CD, turn on the computer, then put the Windows 2003 Server copy in the CD drive, and then the following image will appear (Muslm, I. F. (2021), Muslm, I. F. (2024))

It tells you to press any key to boot from the CD. Then you will see the following image. It indicates that the installation setup scans the computer's hardware and after a while the following image will appear:

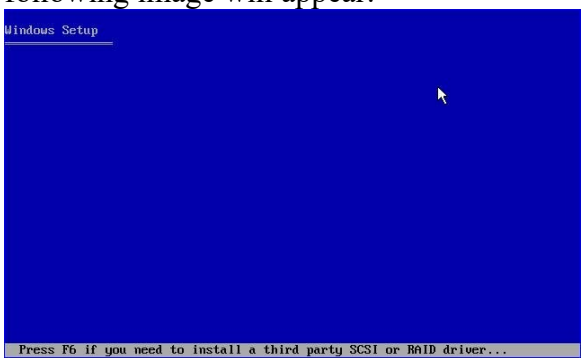

Figure (1) This is the initial preparation for the Windows 2003 Server setup process.

Then the first stage of the installation begins, and it has 3 options (either starting the installation of Windows 2003 Server now, and then you must press (Recovery Console) or repairing the Windows 2003 Server copy from errors, i.e. using the (ENTER) key

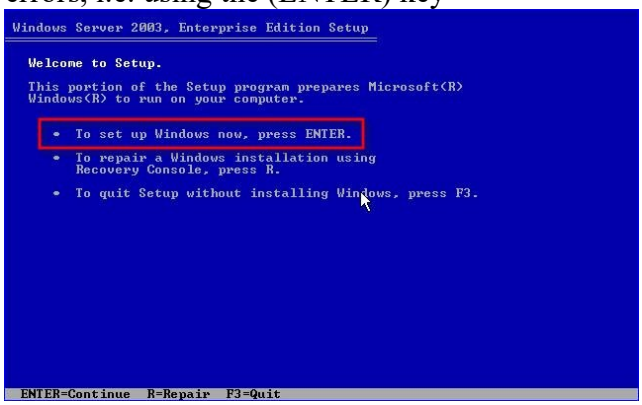

Figure (2) (Quit Setup), or exiting the setup completely from the installation (R) by pressing the key (F3) and then you must press the key as in the following picture....

Of course, in our case, we must press the (ENTER) key to continue the setup. And now comes the stage of accepting the license agreement for the Windows 2003 Server version. Press the (F8) key to accept it and continue the installation, as in the following image.

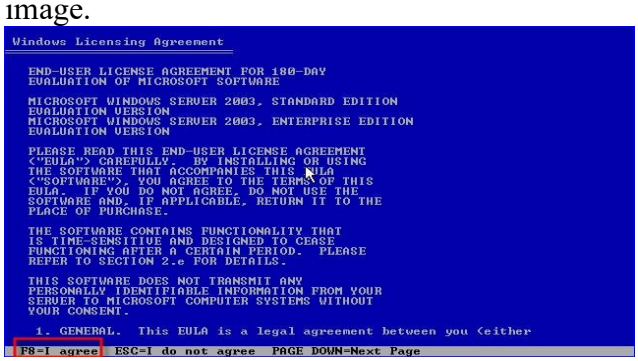

Figure (3) Now we specify the location of the installation of Windows 2003 Server files on the hard disk, and then continue by pressing the ENTER key as in the following image.

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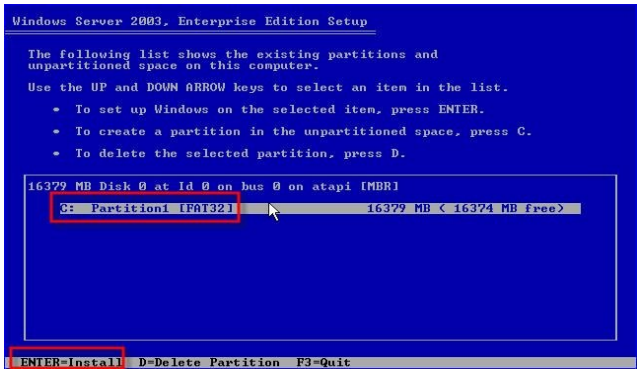

Figure (4) After that comes the process of formatting the hard disk if you want, and of course it is preferable now to format it to the file system because its purpose is to work under a server environment, so it is better for it to be like that... see the following image NTFS

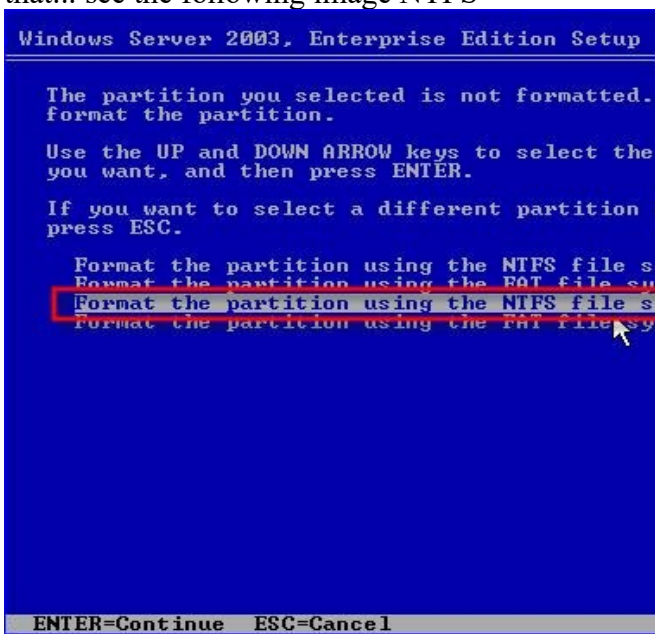

Figure (5) The disk will now be formatted and converted to a file system.

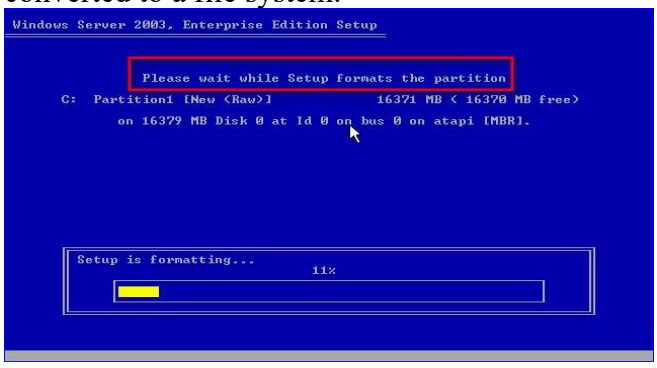

Figure (6) The process of transferring files to the hard disk will now start as shown in the following image...

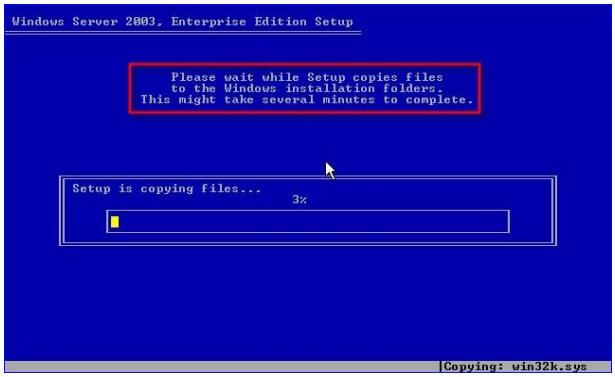

Figure (7) After transferring important files to the hard disk, including startup files from the hard disk, Setup automatically restarts the computer……..(ENTER or by pressing the key(As in the following picture...

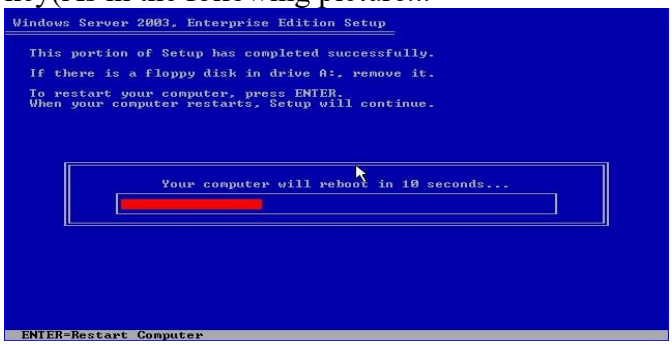

Figure (8) As usual with Microsoft, the variety of colors for operating systems varies from one system to another.

Figure (9) The Windows Server operating system took the gray color. Wait a little while to collect information about the installation process as in the following image. Which shows the process of modifying the language and timing properties. It is preferable to install and support the Arabic language from now on, so that the installation process is complete with the language. We return again to continue the installation, by pressing the NEXT key.

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Figure (10) Then the data filling stage begins, and the following image is for putting the name and company

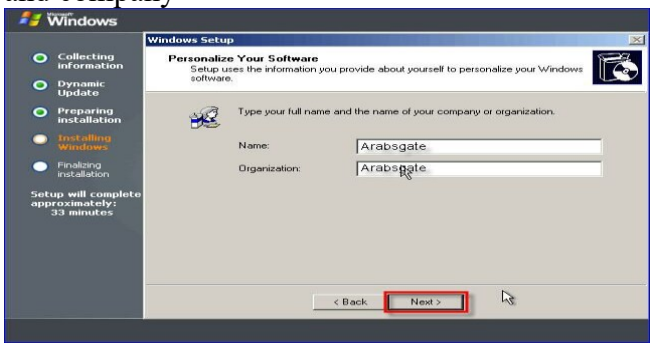

Figure (11) You are now required to enter the number of the Windows version you are installing, which consists of 25 digits. As in the following image.

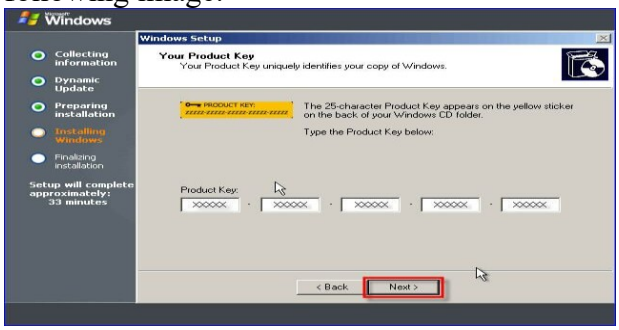

Figure (12) The Windows 2003 Server license (Licensing mode) now appears and asks you to specify the number of devices connected to the network with the server. The first option (Per Server) is the one we use, as it means that you are using only one server device and you have a license to connect it to a number of other devices. The second option (Per seat) means that there is a licensed copy of the Windows 2003 operating system for you and it must be placed on every device you have on the network. The most suitable option for us is the first, with the appropriate number for the number of devices in the network being built.

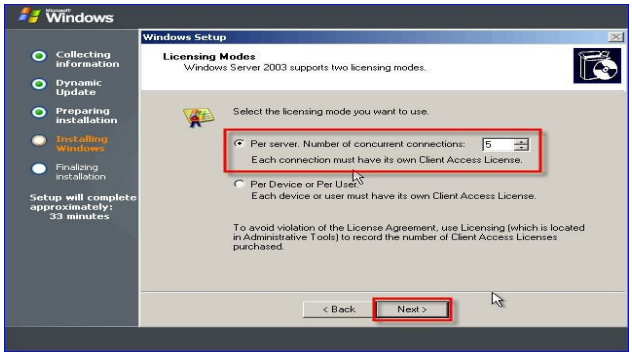

Figure (13) One of the important things now is to specify the name of the computer that works as a server and also specify the password for the network administrator to enter. The following image shows this.

Figure (14) The process of setting a password for Windows 2003 Server is one of the security aspects of the computer. In some cases, you are not required to specify a password during installation, as you can do so through the control panel in Windows 2003 Server. The screen for specifying the time, date, and time zone now appears, and you must modify the time in your country.

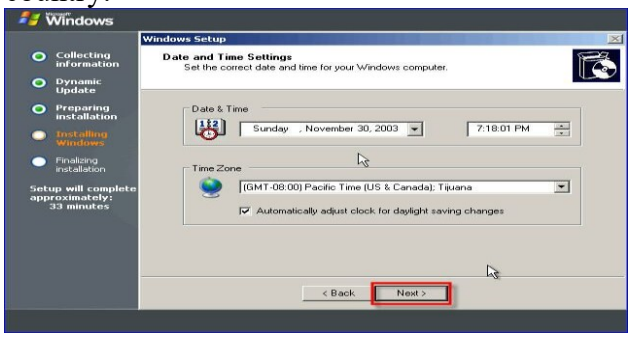

Figure (15) Now the Windows installation process and now the network installation process as in the following image

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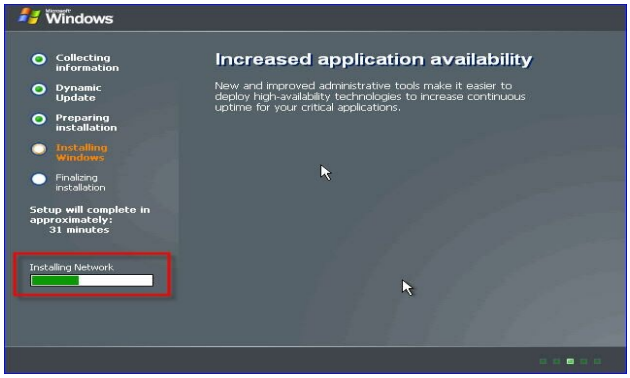

Figure (16) : finish for program

Conclusions and Recommendations

During the early stages of community development, most people need to acquire and master new practical skills. One of the most important of these skills is the need to use a computer connected to the network, which means familiarity with many aspects of knowledge of computer networks, as the world is moving towards this technology at record speeds. We also notice the trend of most companies and various public and private institutions towards using and developing the computer networks they own. It is easy to predict the future in this aspect, but it is difficult to make these predictions correct in several aspects, including:-

1/ Interoperability:

Interoperability will continue to replace (openness) as companies continue to offer an increasing number of products designed to work together.

2/ Distributed processing:

Increasing spread of distributed processing as an alternative to central processing.

3/ Diversity:

The industry will continue to offer several alternatives for sharing information and facilities.

4/ Wireless connections:

There are many problems due to the congestion of the spectrum, but alternative means of LAN-MAN-WAN interconnection systems will continue to increase.

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