Basic Network Introduction & Installation

(for Skill Enhancement Course)

By

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Basic Network Introduction & Installation

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Definition and Applications

Computer Network is defined as the interconnection of two or more computers. It is done to enable the computers to communicate and share available resources.

Applications of Computer Network

- Sharing of resources such as printers
- Sharing of expensive software's and database
- Communication from one computer to another computer
- Exchange of data and information among users via network
- Sharing of information over geographically wide areas

The Uses of Computer Network

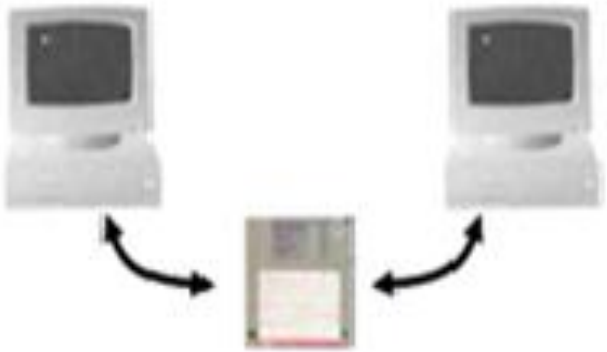
Computer Network can be used in various areas as given bellow.

- **Business Applications:** online buying
- **Home Applications:** mail and chat
- **Mobile Users:** wireless-laptops, PDA, mobile, in plane etc.
- **Social Issues:** Social network applications whatsapp
- And **Many mores**.

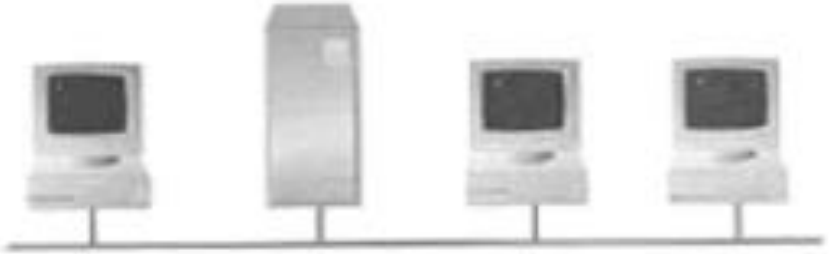
The Uses of Computer Network

For Sharing or data communication Which one method do you prefer

- **Do you prefer these?**



- **Or this?**



THE USE OF COMPUTER NETWORK

- **Sharing hardware or software**
  - **E.g. print document**

- **Centralize administration and support**
  - **E.g. Internet-based, so everyone can access the same administrative or support application from their PCs**

COMPONENTS OF COMPUTER NETWORK

- Two or more computers
- Cables as links between the computers
- A network interfacing card(NIC) on each computer
- Switches
- Software called operating system(OS)

NETWORK BENEFITS

- The network provided to the users can be divided into two categories:
  i. Sharing
  ii. Connectivity

SHARING RESOURCES

- **Types of resources are:**
  1. **Hardware: A network allows users to share many hardware devices such as printers , modems, fax machines, CD ROM, players, etc.**
  2. **Software: sharing software resources reduces the cost of software installation, saves space on hard disk.**

OTHER BENEFITS OF COMPUTER NETWORK

- Increased speed
- Reduced cost
- Improved security
- Centralized software managements
- Electronic mail
- Flexible access

DISDAVATAGES OF NETWORKS

- High cost of installation
- Requires time for administration
- Failure of server
- Cable faults

Types of Networks

By their scope or scale or area network:

- **LAN:** Local Area Network
- **WAN:** Wide Area Network
- **WLAN:** Wireless Local Area Network. A LAN based on Wi-Fi wireless network technology.
- **MAN:** Metropolitan Area Network. A network spanning a physical area larger than a LAN but smaller than a WAN, such as a city. A MAN is typically owned and operated by a single entity such as a government body or large corporation.
- **SAN:** Storage Area Network, System Area Network, Server Area Network, or sometimes Small Area Network

- **CAN:** Campus Area Network, Controller Area Network, or sometimes Cluster Area Network. System Area Network. Links high-performance computers with high-speed connections in a cluster configuration.
- **PAN**: Personal Area Network. A network that surrounds an individual. A wireless PAN (WPAN) might be created between Bluetooth devices.
- **Campus Area Network:** A network spanning multiple LANs but smaller than a MAN, such as on a university or local business campus. Storage Area Network: Connects servers to data storage devices through technology like Fiber Channel.
- **Passive Optical Local Area Network:** A POLAN serves fiber by using fiber optic splitters to allow a single optical fiber to serve multiple devices.

2. Installing Network Operating System Server and Windows 2008 Server

- In most cases, the best way to install Windows Server 2008 is to perform a new install directly from the DVD installation media.

- Although upgrade installs are possible, your server will be more stable if you perform a new install. (For this reason, most network administrators avoid upgrading to Windows Server 2008 until it's time to replace the server hardware.)

- To begin the installation, insert the DVD distribution media in the server's DVD drive and then restart the server.

This causes the server to boot directly from the distribution media, which initiates the setup program.

The setup program proceeds with,
two distinct installation phases

- **Phase 1: Collecting Information**
- **Phase 2: Installing Windows**

Phase 1: Collecting Information

In the first installation phase, the setup program asks for the preliminary information that it needs to begin the installation.

A setup wizard prompts you for the following information:

- **Language:** Select your language, time-zone, and keyboard type.

- **Product Key:** Enter the 25-character product key that came with the installation media. If setup says you entered an invalid product key, double-check it carefully. You probably just typed the key incorrectly.

- **Operating System Type:** The setup program lets you select Windows Server 2008 Standard Edition or Core. Choose Standard Edition to install the full server operating system; choose Core if you want to install the new text-only version.

- **License Agreement:** The official license agreement is displayed. You have to agree to its terms in order to proceed.

- **Install Type:** Choose an Upgrade or Clean Install type.
- **Disk Location:** Choose the partition in which you want to install Windows.
- **Upgrade to NTFS:** If you want to upgrade a FAT32 system to NTFS, you'll need to say so now.

Phase 2: Installing Windows

In this phase, Windows setup begins the actual process of installing Windows. The following steps are performed in sequence:

- **Copying Files:** Compressed versions of the installation files are copied to the server computer.
- **Expanding Files:** The compressed installation files are expanded.
- **Installing Features:** Windows server features are installed.

- **Installing Updates:** The setup program checks Microsoft's website and downloads any critical updates to the operating system.

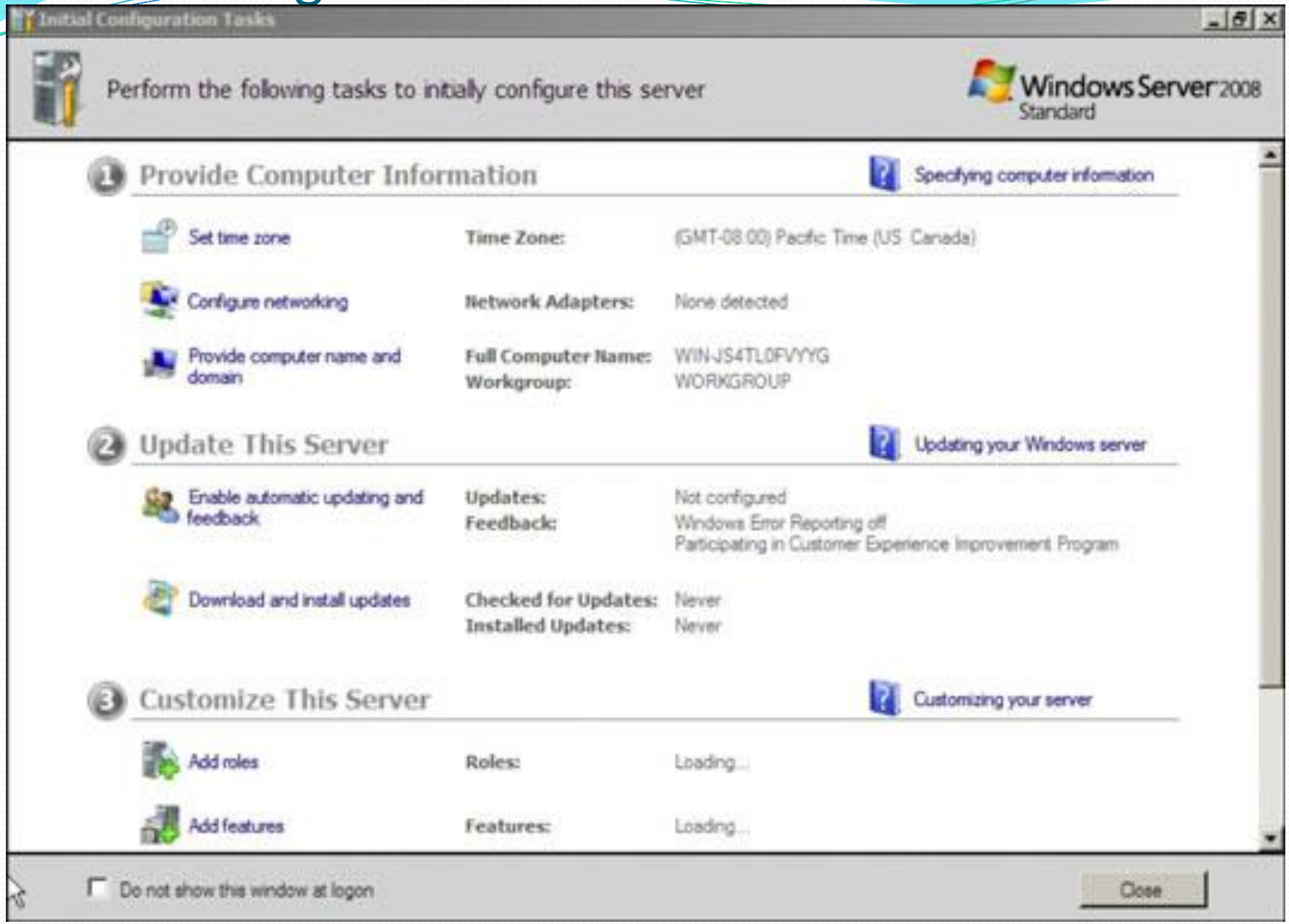
- **Completing Installation:** When the updates are installed, the setup program reboots so it can complete the installation.

- **Configuring Your Server**

Configuring Your Server

- After you've installed Windows Server 2008, the computer automatically reboots, and you're presented with the Initial Configuration Tasks Wizard. This wizard guides you through the most important initial tasks for configuring your new server.

Initial Configuration Tasks



The following list describes the server configuration settings available from this wizard:

- **Set the Administrator Password:** The very first thing you should do after installing Windows is set a secure administrator password.

- **Set the Time Zone:** This is necessary only if the indicated time zone is incorrect.

- **Configure Networking:** The default network settings are usually appropriate, but you can use this option to change the defaults if you wish.

- **Provide Computer Name and Domain:** This option lets you change the server's computer name and join a domain.
- **Enable Automatic Updating:** Use this option if you want to let the server automatically check for operating system updates.
- **Download and Install Updates:** Use this option to check for critical operating system updates.
- **Add Roles:** This option launches the Add Roles Wizard, which lets you configure important roles for your server.

- **Add Features:** This option lets you add more operating system features.

- **Enable Remote Desktop:** Use this option to enable the Remote Desktop feature, which lets you administer this server from another computer.

- **Configure Windows Firewall:** If you want to use the built-in Windows firewall, this option lets you configure it.

3. Cable Crimping

- A Cable **crimping** is technique to conjoin two pieces of metal by deforming one or both of them in a way that causes them to hold each other.

  The result of the crimping tool's work is called a **crimp**.

- A good example of crimping is the process of affixing a connector to the end of a cable.

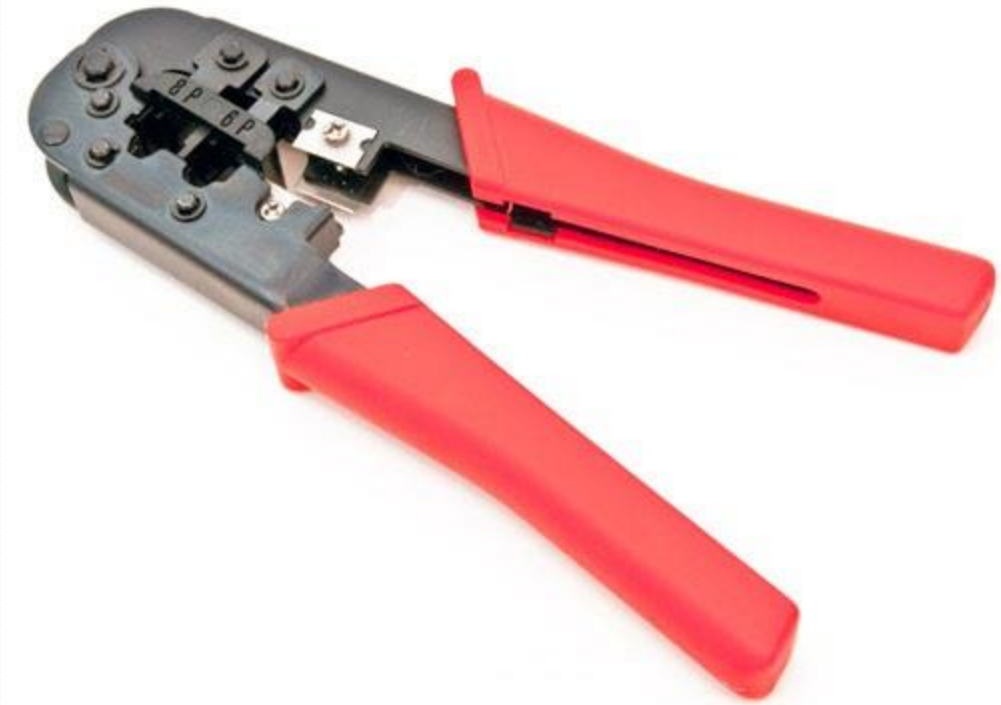
- For instance, network cables and phone cables are created using a crimping tool.

Why Crimping?

- Crimping is a **quick** and **reliable** method of jointing that is **easy to deploy** in the field since unlike soldering it does not require time to be spent waiting for a soldering iron to heat up (**less time**), and poses **no burn risk** to the operator when working in confined spaces.

Crimping Tool

RJ-11 (6-Pin) and RJ-45 (8-Pin) Crimping Tool



5. Internet Connections

As technology grows, so does our need for bigger, better and faster Internet connections. Over the years the way content is presented via the Web has also changed drastically. Ten years ago being able to center, bold, and produce text in different colors on a webpage was something to admire.

Today, Flash, animations, online gaming, streaming video, database-driven websites, ecommerce and mobile applications etc. are standards.

Types of Internet Connections

- *Analog: Dial-up Internet Access*
- *ISDN - Integrated Services Digital Network*
- *B-ISDN - Broadband ISDN*
- *DSL – Digital Subscriber Line*
- *ADSL - Asymmetric Digital Subscriber Line*
- *ADSL+2 - ADSL Extension*
- *SDSL - Symmetric Digital Subscriber Line*

- *VDSL - Very High DSL*
- *Cable - Broadband Internet Connection*
- *Wireless Internet Connections*
- *T-1 Lines – Leased Line*
- *Bonded T-1*
- *T-3 Lines – Dedicated Leased Line*
- *OC3 - Optical Carrier*
- *Internet over Satellite*

Analog: Dial-up Internet Access

- Also called dial-up access, an analog Internet connection is both economical and slow. Using a modem connected to your PC, users connect to the Internet when the computer dials a phone number (which is provided by your ISP) and connects to the network. Dial-up is an analog connection because data is sent over an analog, public-switched telephone network. The modem converts received analog data to digital and vice versa. Because dial-up access uses normal telephone lines the quality of the connection is not always good and data rates are limited. Typical Dial-up connection speeds range from 2400 bps to 56 Kbps. Today, analog has been widely replaced by broadband (Cable and DSL).

ISDN - Integrated Services Digital Network

- Integrated services digital network (ISDN) is an international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires. Typical ISDN speeds range from 64 Kbps to 128 Kbps.

Cable - Broadband Internet Connection

- Through the use of a cable modem you can have a broadband Internet connection that is designed to operate over cable TV lines. Cable Internet works by using TV channel space for data transmission, with certain channels used for downstream transmission, and other channels for upstream transmission. Because the coaxial cable used by cable TV provides much greater bandwidth than telephone lines, a cable modem can be used to achieve extremely fast access. Cable providers typically implement a cap to limit capacity and accommodate more customers. Cable speeds range from 512 Kbps to 20 Mbps.

Wireless Internet Connections

- Wireless Internet, or wireless broadband is one of the newest Internet connection types. Instead of using telephone or cable networks for your Internet connection, you use radio frequency bands. Wireless Internet provides an always-on connection which can be accessed from anywhere as long as you geographically within a network coverage area. Wireless access is still considered to be relatively new, and it may be difficult to find a wireless service provider in some areas. It is typically more expensive and mainly available in metropolitan areas.

6. e-Mail- communications medium

- **Electronic mail** (**email** or **e-mail**) is a method of exchanging messages ("mail") between people using electronic devices. Invented by Ray Tomlinson, email first entered limited use in the 1960s and by the mid-1970s had taken the form now recognized as email. Email operates across computer networks, which today is primarily the Internet.

- Early email systems required the author and the recipient to both be online at the same time

- Today's email systems are based on a store-and-forward model. Email servers accept, forward, deliver, and store messages. Neither the users nor their computers are required to be online simultaneously; they need to connect only briefly, typically to a mail server or a webmail interface for as long as it takes to send or receive messages.

Steps to create email account?

Follow the steps below to create email account at mail.com for free:

- Click on the Free Sign Up Button
- Enter all mandatory fields (First Name, Last Name, Gender, etc.)
- Type in your desired Email Address out of our huge selection of 200 available domains(e.g. biker.com, accountant.com, chef.net, etc.)
- Choose a secure Password (at least 8 characters, mixing letters, numbers, lower and upper case, and using special characters)

- Select your Security Question, type in your Answer
- Verify your registration by typing the numbers in the captcha picture
- Click the "Accept" - Button underneath
- That's it! You're done.
- Enjoy your new email account immediately on any device of your choice!

7. Cloud networking

- What is cloud networking?

  Cloud networking refers to hosting or using some or all network resources and services - virtual routers, bandwidth, virtual firewalls, or network management software-from the cloud, whether public, private, or hybrid.

- The network can be either
  - cloud-enabled or
  - entirely cloud-based

Cloud-enabled networking

- In cloud-enabled networking, the network is on premises, but some or all resources used to manage it are in the cloud. Core network infrastructure packet forwarding, routing, and data remains in-house, but things like network management, monitoring, maintenance, and security services are done through the cloud. One example is using a SaaS-based firewall to protect an on-premises network.

Cloud-based networking

- In cloud-based networking, the entire network is in the cloud. This includes network management resources and physical hardware. Cloud-based networking is used to provide connectivity between applications and resources deployed in the cloud.

Why cloud networking?

- Use of cloud networking reduces the number of management devices and the amount of investment needed for networks.
- The third-party service provider manages, secures and maintains the network, while the company using the service can access resources on-demand, and can easily scale, customize and virtualize their network.

8. Google Drive

- **Google Drive** is a file storage and synchronization service developed by Google. Launched on April 24, 2012, Google Drive allows users to store files on their servers, synchronize files across devices, and share files.

- Google Drive is a free cloud-based storage service that enables users to store and access files online. The service syncs stored documents, photos and more across all of the user's devices, including mobile devices, tablets and PCs.

How to use Google Drive

- You can store (15 GB of space in your Drive for free)your files securely and open or edit them from any device using Google Drive.

- **Step 1: Go to drive.google.com**
- On your computer, go to drive.google.com.
- You'll see "My Drive," which has:
- Files and folders you upload or sync
- Google Docs, Sheets, Slides, and Forms you create

- **Step 2: Upload or create files**
- You can upload files from your computer or create files in Google Drive.
- Upload files and folders to Google Drive
- Work with Office files
- Create, edit, and format Google Docs, Sheets, and Slides

- **Step 3: Share and organize files**
- You can share files or folders, so other people can view, edit, or comment on them.
- Share files from Google Drive
- Share folders from Google Drive
- Make someone else the owner of a file
- To see files that other people have shared with you, go to the "Shared with me" section

Google Drive Features

- **15GB space**

  With a Google Account, you get 15 GB of storage for free. Storage gets used by Google Drive, Gmail, and Google Photos, so you can store files, save your email attachments, and back up photos and videos. For more than 15 GB, you can upgrade to Google One.

- **Keep any file**

  Photos, videos, presentations, PDFs – even Microsoft Office files. No matter what type of file it is, everything can be stored safely in Drive.

- **Share how you want**

  Files in Drive are private, until you decide to share them. You can quickly invite others to d edit any file or folder you choose. It's online collaboration made easy.

- **Safe and secure**

  Your file security is crucial. That’s why every file in Drive stays safe no matter what happens to your smartphone, tablet or computer. Drive is encrypted using SSL, the same security protocol used on Gmail and other Google services.

9. SkyDrive : is now called OneDrive.

- **SkyDrive is a cloud storage service** similar to **Dropbox** and **Google Drive**. Developed by **Microsoft**, SkyDrive offers **7GB** of storage space for free, although you can buy more if needed. You need a Microsoft account to use SkyDrive, although publicly shared files can be accessed by anyone. In addition to storing and sharing files, you can also embed your uploads onto your personal website.

Features of Skydrive:

- Everyone wants to work smarter, and SkyDrive helps users and organizations do so in **two ways**:
    - **file sharing** and **access**.

Other **Features** are-

- **Ease of use**
- **Few requirements**
- **Quick setup**
- **SkyDrive Desktop**
- **One-click access**
- **Easy file access**
- **Plenty of room**
- **Lightweight apps**
- **Simultaneous sharing**
- **Tight security**
- **Third-party add-ons**
- **Remote access**

10. Dropbox

- **Dropbox is the word's first smart workspace.**

- Dropbox is a **cloud storage service**, which means you can copy your files to the cloud and access them later, even if you're using a different device. Dropbox will not automatically copy all the files on your computer if you're on a personal plan, so you will have to pick and choose which you want to save.

- Once you've done that, it will make them available in the cloud if you need them again

With Dropbox - Access files anywhere

- With Dropbox Basic, it's easy to get to your files from multiple devices- computers, phones, and tablets for free:

- Windows and Mac: Install our desktop app, and everything in your account will appear in the Dropbox folder on your computer.

- Web: Sign in to dropbox.com to access everything you've stored on Dropbox from any browser—no software installation required.

- iOS and Android: Take your files on the go with our mobile app, and preview over 175 file types from anywhere.

With Dropbox -Back up files

- From photos and videos to presentations and tax paperwork, Dropbox Basic helps you keep all your most important—and irreplaceable—files safe:
- File sync: Back up anything by storing it in the Dropbox folder on your computer. And with our desktop and mobile apps, you can automatically upload photos and videos to Dropbox from your phone, camera, or SD card.
- File recovery: Accidentally deleted a file from your Dropbox? No problem. You can easily restore anything you've deleted in the past 30 days from dropbox.com.
- Version history: If you ever change your mind, you can roll a file back to any version saved to Dropbox in the past 30 days.

With Dropbox -Share and collaborate on files

- Copying files over to a USB stick and “file too big to attach” errors are a thing of the past. Dropbox Basic makes it easy to securely send large files to anyone, and collaborate easily on the files you share.

- Shared links: Easily create a link for any file in your Dropbox that you can paste into an email, chat, or text. Recipients won’t need a Dropbox account-they can click the link to view and download the file.

- File previews: Anyone visiting your shared links can preview over 175 file types and add comments-no special software required.

- Seamless collaboration: It’s hard to keep track of important attachments in a crowded inbox. Dropbox makes it easy to connect and collaborate, whether you’re sharing files with a friend or working with a large team.