5) Mail & Other Servers

Section Topics

* + Mail Servers

A mail server (or email server) is a computer system that sends and receives email. Mail servers send and receive email using standard email protocols.

* + File Servers

A file server is a computer attached to a network that provides a location for shared disk access, which is shared storage of computer files that can be accessed by the workstations that are able to reach the computer that shares the access through a computer network

* + Database Servers

A database server is a server which houses a database application that provides database services to other computer programs or to computers.

* + Other Types of Servers

Web Server - A Web Server serves static content to a Web browser by loading a file from a disk and serving it across the network to a user's Web browser.

Application Server - Application servers occupy a large chunk of computing territory between database servers and the end user, and they often connect the two.

FTP Server - File Transfer Protocol makes it possible to move one or more files securely between computers while providing file security and organization as well as transfer control.

5.1) Mail Servers

* Downloaded Mail
  + What is SMTP / POP3?

SMTP and POP3 are the two protocols which take care of the email flow (send and receive respectively) on the internet. SMTP (“Simple Mail Transfer Protocol”) is used for sending and delivering from a client to a server: it’s the outgoing server. On the contrary, POP (“Post Office Protocol”) allows the user to pick up the message and download it into his own inbox: it’s the incoming server.

* + What are some common Mail Clients

An email client, or mail client is a computer program used to access and manage a user's email. Some very popular and common mail clients are Microsoft Outlook, Mail and Calendar, eM Client, Mailbird Pro, and TouchMail. A mail client is

* + What are some advantages of downloaded mail?

Once downloaded to a device or computer, we can read and see the mail afterwards, even with no internet connection.

* Web Based Mail
  + What are some common Browser Based Mail Services

Browser Based Mail is any email client implemented as a web application running on a web server. Examples of webmail software are Roundcube and SquirrelMail. Examples of webmail providers are AOL Mail, Gmail, Outlook.com/Hotmail.com, Rackspace Email, Yahoo! Mail and IceWarp Mail Server.

* + What are some advantages of browser based mail?

Convenience - If you travel frequently and work from remote locations, this can be the most crucial advantage of webmail. You can access and use it from any computer with an Internet connection. All your messages will be accessible no matter where you access your account.

Cost - Basic webmail services from the big providers are usually free.

* Mail Servers
  + Where is mail stored in the Internet?

Mail can be stored on the client or on the server side, or in both places.

* + How is mail delivered across the Internet?

In both cases, whether the message is created by an email client or by an automated system, it is specially formatted to be transmitted over the Internet using a standard called “Simple Mail Transfer Protocol” (SMTP). Then the receiving server accepts the message so that it can be delivered to the recipient.

* + What special Hardware & Software is required for a mail server?

Software: In order to set up a Web server, you need a dedicated computer (PC or Macintosh) running Windows/95, Windows/NT, or Linux or a Macintosh computer running MacOS. You also need a direct Internet connection and TCP/IP software. You can download shareware HTTP software for these platforms and operate your own Web server.

Hardware: A Processor, RAM, HDD, Microsoft Azure Virtual Machine Configuration is recommended.

5.2) File Servers

* Cloud Based Storage
  + What are some Cloud Storage Services (applications) ?

Some Cloud Storage Services are IDrive, SugarSync, SpiderOak ONE, Microsoft OneDrive, CertainSafe Digital Safety Deposit Box, Google Drive, Apple iCloud Drive, Box.

* + What are some advantages of cloud based storage over local storage?

Because local storage means that all files are only stored in one place, local storage leaves your data more vulnerable to physical theft of the device. Responding to the shortcomings of local storage, cloud storage offers greater flexibility, accessibility, and scalability for small business data storage. It is cost-effective, and maintenance is not an issue as cloud storage providers handle all of the upgrades and troubleshoot any issues that arise. Accessibility is also an advantage because data stored on the cloud is easily accessed on any device that has an internet connection.

* File Servers
  + What special Hardware & Software is required for a file server?

Hardware:

* 64 Bit Processors, Single or Dual CPU, 4 or 8 Core per CPU
* Min of 24 GB of RAM or better recommended
* Fast SAS/SCSI/raid controller (with fast caching)
* Raid 10 configuration, fast SCSI / SAS hard disk drives 15,000 RPM, SSD Drives recommended.
* UPS battery to protect file server

Software:

* Windows Server 2012 R2 or Higher, Standard/ Enterprise/ Datacenter
* Microsoft SQL Server 2014/ 2016 or Higher, Standard/ Enterprise

5.3) Database Servers

* What is a Database?

A database is an organized collection of data, generally stored and accessed electronically from a computer system.

* + What is SQL?

SQL is a domain-specific language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system.

* + What type of information is stored in a database?

Data in a database is primarily stored in database tables, which are organized into columns that dictate the data types stored.

* + How are databases used and combined with web pages?

One of the most common types of combined web pages is the database driven type. This means that you have a web page that grabs information from a database (the web page is connected to the database by programming,) and inserts that information into the web page each time it is loaded.

* Database Servers
  + What are some common Database products?

Some common and popular Database products are Oracle RDBMS, IBM DB2, Microsoft SQL Server, SAP Sybase ASE, Teradata, ADABAS, MySQL and FileMaker.

* + What special Hardware & Software is required for a database server?

Hardware:

* Minimum 1 GHz processor (dual processor 3 GHz or better is recommended)
* Minimum of 2 GB RAM (8GB or better is recommended)
* SCSI RAID Disk Array with a minimum of 100 GB free disk space (250 GB or better is recommended).

Software:

* Microsoft SQL Server: Versions 2005 or higher (Express Edition or better)
* PostgreSQL 9.0 or higher.
* Microsoft Azure SQL DB.

5.4) Other Servers

* Describe some other types of internet servers not covered by the slides above.

Collaboration Server - Collaboration software designed to enable users to collaborate, regardless of location, via the Internet or a corporate intranet and to work together in a virtual atmosphere.

List Server - List servers offer a way to better manage mailing lists, whether they be interactive discussions open to the public or one-way lists that deliver announcements, newsletters or advertising.

Web Server - A Web Server serves static content to a Web browser by loading a file from a disk and serving it across the network to a user's Web browser.

Application Server - Application servers occupy a large chunk of computing territory between database servers and the end user, and they often connect the two.

FTP Server - File Transfer Protocol makes it possible to move one or more files securely between computers while providing file security and organization as well as transfer control.

6) Network Routing & ISPs

* Section Topics
  + Internet Service Provider (ISP)
  + Internet Connection Technologies
  + Network Routers & Switches

6.2) Internet Connection Technologies

* Describe some internet connection technologies using telephone lines.  
  DSL
* Describe some internet connection technologies using Wi-Fi.
* Xfinity.
* Comcast.
* HughesNet.
* AT&T.
* CenturyLink.
* Cox.
* Frontier.
* Spectrum.
* Describe some internet connection technologies using fibre optics cables.
* AT&T Fiber
* Optimum Fiber
* Frontier Fiber
* Bell Fibe
* EPB Fiber

6.3) Network Routers & Switches

* What is a "Routing Table"?

It is a data table stored in a router or a networked computer that lists the routes to particular network destinations, and in some cases, metrics associated with those routes.

* How are data packets sent through the internet between a client and a server?

Each packet carries the information that will help it get to its destination: the sender's IP address, the intended receiver's IP address, something that tells the network how many packets this e-mail message has been broken into and the number of each particular packet.

* What special hardware & software is required for a network router / switch?

Hardware:

* The Processor (CPU)
* RAM.
* NVRAM.
* ROM.
* Flash memory.

Software:

* Interfaces
* Internetwork Operating System (IOS)
* RXBoot Image.

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