Systems and Networks Administration

Software and Platform Services

Introduction

- **Software services** are services that employees in an organization use that allow them to do their daily job functions. For example: word processors, Internet browsers, email clients, chat clients and so on.
- **Platform services**: provide a platform for developer to code, build and manage software applications. For example: web services, databases.

Software Services

In software services, there are some major services:

- ✓ Communication service
- ✓ Security service
- ✓ Productivity service

Communication Services

- There are many communication services, communication software.
- ✓ IRC: Internet Relay Chat protocol: free, but old app.
- ✓ Paid for options: Slack, MS Teams, Google Chat, Discord.
- ✓ XMPP Protocol: Pigdim, Adium.

- ✓ Supplemental Readings:
- ✓ https://zapier.com/blog/best-team-chat-app/
- ✓ https://jabber.at/p/clients/?os=any

Mail Services

- Email is used everywhere.
- To be able to configure email services, we need to have a domain name set up, so we can have address like: rathpisey@itc.edu.kh.
- There are two ways to set up email for a company.
- ✓ The first is to run your own managed server. Using this option, you set up the email service software on a server, then you create a DNS record for your mail server.
- ✓ Another is to use email service provider, like Google Suite.

Mail Services

- There are a lot of email protocols.

- The most common ones are POP3, IMAP and SMTP

Post Office Protocol

- Post Office Protocol, or POP version 3, is an email protocol that downloads email from an email server onto your local device. It then deletes the email from the email server. If you want to retrieve your email through POP3, you can only view it from one device.
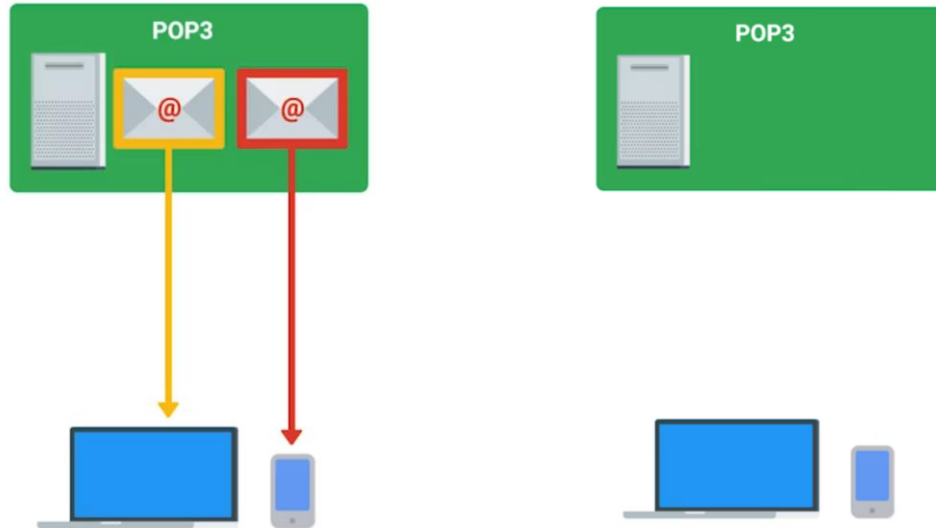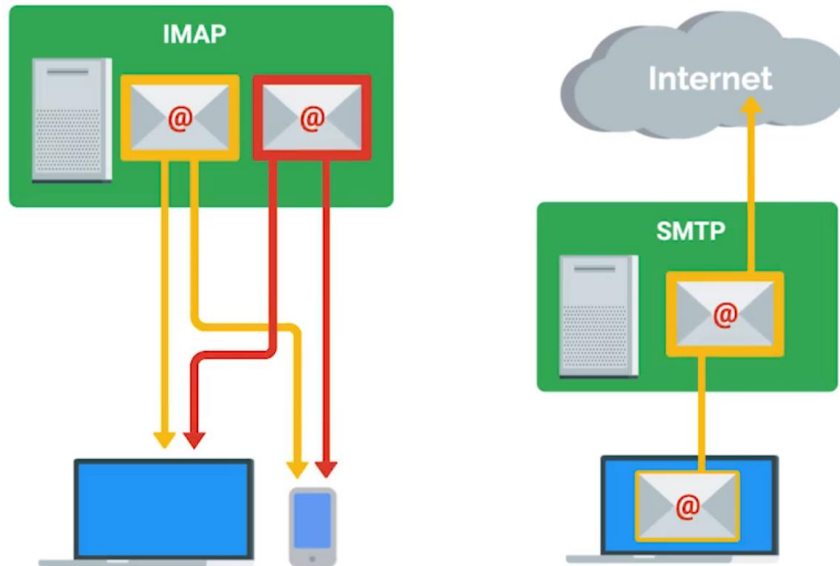
Post Office Protocol

- Benefits:
- Keep email storage under certain quota, if storage has limitation.
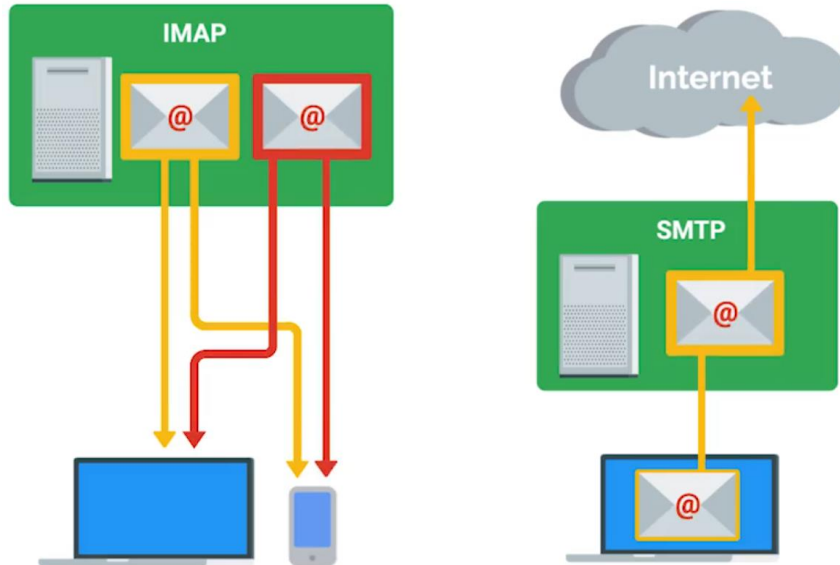- Privacy, email can only be seen from your local device.

IMAP and SMTP

- IMAP allows email download. It keep messages on email server.
- SMTP used to send emails. Only this one.

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IMAP and SMTP

- Read more:
- https://blog.servermania.com/what-protocols-send-receive-email-with-the-mail-server/
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Productivity Services

- Software that employees need to do their jobs need to be installed.

- Software used as a consumer won't be the same as software used as a business.

- In a business or commercial setting, most software distributors will have a separate agreement. In most cases, you can buy ten licenses, and any ten people in your company can use it.

- When considering software licenses, it's important to review the terms and agreement, then move forward with whatever option works best for your company.

Security Services

- Security is super important. There are a lot to talk about.

- There are lots of different security protocols that are put in place for all sorts of things, keeping data encrypted, authentication, etc.

- For example: HTTPS, or Hypertext Transfer Protocol Secure is a secure version of HTTP. It makes sure the communication your web browser has with the website is secured through encryption.

- HTTPS is also referred to as HTTP over TLS or HTTP over SSL.

- Transport Layer Security protocol, or TLS, which is the most popular way to keep communications secure over a network.

- **how do you enable TLS on the server so that the site can be using HTTPS?**

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Security Services

- We need to get a digital certificate of trust from an entity called a **certificate authority**. The certificate authority grants a certificate to your website saying that it trusts that you control the web server. And verifies that you are who you say you are.
- Once it does that, you can install the certificate on your web server. That way, when users visit your site, they'll see the HTTPS in the URL instead of just HTTP.

File Storage Services

- File storage services allow us to centrally store files and manage access between files and groups. You can set up a file storage server that will let users access a shared directory to modify or add files and much, much more.
- These days Cloud file storage service is more popular.
- Read more: https://www.cloudwards.net/comparison/

Network File Storage

- Very few file systems can be used across all major Oses.
- FAT32 is a popular file system that's compatible with Windows, Linux, and Mac Oses.
- But it has severe limitations on the amount of data you can store on a volume. What happens if you have multiple users that want to share files between each other? Well, they need to store the files somewhere and they need to be able to retrieve the files over a network.

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- Network file system, or NFS, allows us to do this. It's a protocol that enables files to be shared over a network. It is compatible on all major operating systems.

Network File Storage

- The easiest way to setup an NFS server is by using a Linux environment. You can install NFS server software that modify the configuration files for the directories that you want to allow shared access to.
- Once you do that, the NFS service will be running in the background of the server. On each client machine that wants to access a server, you just mount the file system the way you would any other file system.
- NFS server software you can configure for Linux:

  http://www.linuxfromscratch.org/blfs/view/cvs/basicnet/nfs-utils.html

Network File Storage

- While NFS works with all major operating systems there are still interoperability issues with **Windows.** If your fleet consists mostly of Windows machines you might want to look at using something like **Samba.**
- The only reason you might want to consider Samba over NFS, is because it works better with Windows operating systems.
- You may hear the term Samba or SMB. These two are different. SMB is a protocol that Samba implements. When you create a Windows shared folder it's actually using the SMB protocol, Samba itself is a software service suite used for file services.
- Read more: https://technet.microsoft.com/en-us/library/hh831795(v=ws.11).aspx

Platform Services

- A web server that we deploy our web applications to, or the development software that we use to code our applications are both examples of platform services.
- A web server stores and serves content to clients through the Internet. You can access web service using a domain name like google.com. A web server itself stores web files and runs an HTTP service or HTTP server, that processes HTTP requests.
- HTTP is how the Web formats and transfer's web pages.

Platform Services

- When your web browser makes a request to fetch a web page from a URL, it sends an HTTP request that gets processed by the HTTP server. hen the HTTP server sends out and HTTP response with the content that you requested.
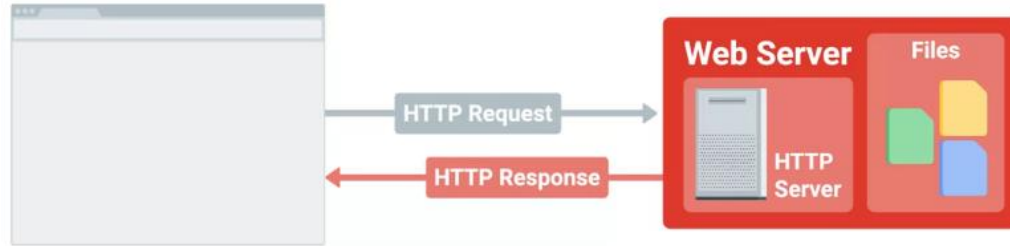
Platform Services

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- the most widely used is the Apache HTTP server, most commonly referred to as Apache. Apache is a free and open source. It helps serve a large percentage of web pages on the Internet.
- Read more: https://stackshare.io/stackups/apache-httpd-vs-microsoft-iis-vs-nginx
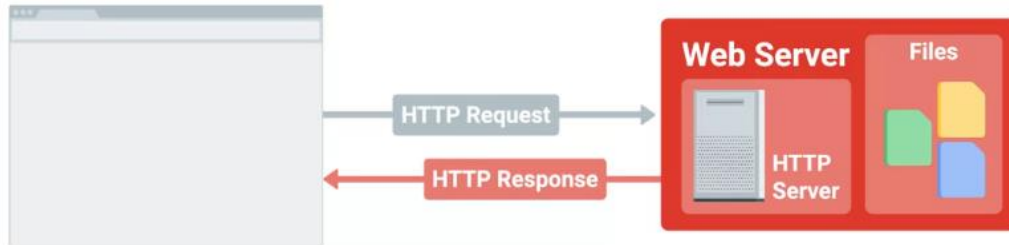
Platform Services

- When you run a service that operates on the web, you need to have a web server that serves web pages to clients that request it and you may also need to store information.
- Have you ever thought about what happens to your information when you create an account online for a website? Where do they store that info? Do they put it in a folder on a web server?
- Customer information, like news articles, videos, large amounts of text, image or audio files generally get stored in a database.
- Databases allow us to store query, filter, and manage large amounts of data. When you build a web product, you'll probably store the data in a database.

Platform Services

- Common database systems like MySQL and PostgreSQL are widely used in application and web development and data analytics.
- Administrating and managing a database can be incredibly complex. Losing precious data could cost the company dearly. There's actually an entire job specialization within IT that deals with databases just like that called database administrators.
- Read more about:
- ✓ Database admin jobs: https://www.bls.gov/ooh/computer-and-information-technology/database-administrators.htm
- ✓ Database types: https://www.digitalocean.com/community/tutorials/sqlite-vs-mysql-vs-postgresql-a-comparison-of-relational-database-management-systems

Troubleshooting Web services

- HTTP status codes are codes or numbers that indicate some sort of error or info messages that occurred when trying to access a web resource.
- The dreaded **404 Not Found**. A 404 error indicates that the URL you entered doesn't point to anything.
- Depending on the website HTTP error messages could be displayed right on the page when you try to access it. However, to be absolutely sure you can just view the HTTP response itself.
- Browsers today have built in tools that help people diagnose issues with the web browser or website itself. Developer Tools is a great resource for testing and debugging issues with the website or browser.

Troubleshooting Web services

- HTTP status codes that start with 4xx indicate an issue on the client-side. The client try to do something that it couldn't, like enter a bad URL. Access something it was not authorized to do, etc.

- The other common HTTP status codes that you might see start with 5xx. These errors indicate an issue on the server-side. The web server that hosts this web content is experiencing issues.

- HTTP status codes when our request is successful, which is denoted by the codes that begin with 2xx.

- For a list of HTTP status code: https://en.wikipedia.org/wiki/List_of_HTTP_status_codes

Next Session

- Directory Service

Quiz

- Until midnight.