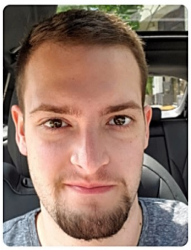
Welcome to our site

Cloud Technology

Let's bring the world together

learn about us!

About Us



Ido Tanne

Hey There! I am a Third Year student here at NJIT. I'm currently studying Information Technology with a specialization in Web Applications. At NJIT I am a part of two organizations. The first organization is the NJIT Esports Team, I am the Events Director, Game Manager for Minecraft, and a player on the D2 Valorant team. The second organization is the NJIT Learning Community were I occupy the role of Peer Mentor and, behind the scenes, I am on the Media Committee were I manage the Learning Community Discord. I hope you enjoy our site and hopefully learn a thing or two about cloud technology!

Cindy Gonzalez

Hello! I am a student at NJIT. I am currently in my first semester and I am majoring in Human-Computer Interaction. I am very interested in cognitive design and will hopefully be able to pursue this specialization in the upcoming years. I have always loved art and I am a very creative person and I am very excited about being able to implement my passion in the technology field. I am a full-time student and I also tutor middle schoolers at Phillips Academy. I hope you enjoy this site and learn a lot as you click through the pages.

Our Site

We have researched about multiple topics in technology and we have arranged the information into multiple pages so you can enjoy it, and learn from it in the best way possible. Here you will find information about the cloud, virtualization and containerization techniques, the most relevant technologies being used in today's world, and even a tutorial on how to set up docker. We hope that you make the most of the information found here and we invite you to click through the pages to start learning.

Docker Tutorial

Difference between an Image and a Container:

An Image is a read only version of our files. We can imagine it as the original file which has no personal files in it. While a container is a copy of an image. A carbon copy if you want to call it. In the container we can add whatever files we want without harming the original image.

Installing Docker:

Prerequisites

Windows:

- Must have Windows 10 or later, Does not matter if you have the Pro or Home edition
- Hyper-V and Container Windows features must be enabled
  - You can find more information on how to enable them here
- For Hyper-V to be enabled you'll need the following:
  - 64-bit processor (You most probably have this if you bought your computer with the past 5-10 years)
  - 4GB system RAM
  - BIOS-level hardware virtualization support, which can be enabled in the BIOS setting.
- Up to Date Linux kernel WSL2 Package
  - You can download the package here

Installing Docker on Windows

1. Double-click Docker Desktop Insstaller.exe to boot up the installer. If you haven't yet, download the **Docker Desktop Installer** here
2. When prompted, ensure the **Enable Hyper-V Windows Feature** option is selected on the Configuration Page
3. Follow the instructions on the installation wizard to proceed and finish the installation
4. When prompted that the installation is done, you may click on the **Close** button.

Setting up Apache Image

Windows

1. Press on the "(Windows Icon)"Windows Icon
2. Type in "CMD" and press right click on (img) and select "Run as administrator"
3. After the Command Prompt opens up, type the following command "docker pull ubuntu"
4. Once docker is finished pulling the image, you need to run the image, so we make a container for it. You will do so by typing "docker run -it ubuntu:latest /bin/bash"
5. After the Docker container is set up and running, while in the Ubuntu instance type the command "apt-get update"
6. After the updates for Ubuntu are installed we'll need to download our Apache web server, we do so by typing "apt-get install apache2"
   1. You will most likely be prompted to type 'Y' or 'N' make sure to type 'Y' as not doing so will prevent you from moving on
   2. When prompted with the geographical location type the region your machine currently reside in. *My machine was in the US, so I typed in '12'*
   3. You will now be prompted with selecting the time-zone of your machine, type in the time-zone region for your machine. *My machine was in the Eastern Standard Time-Zone, so I selected '5'*
7. Once Apache2 is all set up we will now need to install our document editor, type in "apt-get install vim"
8. After all is set up, open another command prompt instance
9. Once your command prompt is open, type in "docker ps"
10. Since this our first time using docker you should only see 1 container, but in the instance this isn't your first time with docker look for the docker container with "ubuntu:latest" in it's name and copy the container ID.
11. We are now going to make our Apache Web Server Image, type "docker commit <container ID> <new image name>"
12. After the commit is set up you may now close the command prompt that was used to run our Ubuntu instance
13. Now it is time to boot up our Apache Web Server. We will do so with this command "docker run -it -p 127.0.0.1:80:80 -v FolderOnMachine:/var/www/html new image name /bin/bash"
    1. Do not set up the folder on your 3D Objects, Desktop, Downloads, Documents, Video, Music, or Pictures directories
14. After the Apache2 instance boots up, type "cd /var/www/html"
15. To make a index.html file, type "vim index.html"
16. After vim opens, press 'i'
17. Type in basic html site content. Example below:

```
<html>

    <head>

        <title>Page Name</title>

    </head>

    <body>

        <h1>Hello world!</h1>

        <p>Falalalala these are some words</p>

    </body>

</html>
```

18. Press on 'ESC' then type ":wq" finally press 'enter'
19. Type "cd /"
20. Type "etc/init.d/apache2 restart"
    Your Apache Web Server is now setup!

Viewing Your Local Website

To view your local server open your browser and type in the IP you input after -p in line 13. By default, it will be '127.0.0.1' Do not type :80:80. Press Enter and you should be able to see your site!

Adding Files to Your Web Server

To add files to your Web Server go to the folder used to host the web server and just add files to the folder. You'll know you're in the right place if you see the 'index.html' file that we set up from before.

Data Center

What are Data Centers?

Data Centers are buildings dedicated to hosting numerous computers which we know as a server. Servers have a plethora of capabilities, but when a company has a lot of users they need a lot of servers. Which leads them to purchasing and developing data centers.

Different types of Data Centers

Server Platform

Server platform is the fundamental hardware or software for a system which acts as an engine that drives the server.

It is often used synonymously with an operating system.
Will usually be the brain or the head of a server

Application Server

Also known as a type of middleware, it occupies a substantial amount of computing region between database servers and the end user, and is commonly used to connect the two.

You'll see this when opening a Google Drive file or looking at videos on YouTube. This does not PLAY videos or sounds

Audio/Video Server

It provides multimedia capabilities to websites by helping the user to broadcast streaming multimedia content.

Will play music or videos required for websites.

Chat Server

It serves the users to exchange data in an environment similar to Internet newsgroup which provides real-time discussion capabilities.

Slack is a perfect example of this. Omegel is also an example of a server like this. Even Discord.

Fax Server

It is one of the best options for organizations that seek minimum incoming and outgoing telephone resources, but require to fax actual documents.

Not used a lot anymore since faxing is an old technology, but these are used to host fax services

FTP Server

It works on one of the oldest of the Internet services, the file transfer protocol. It provides a secure file transfer between computers while ensuring file security and transfer control.

AFS is a version of a FTP server. Google drive and OneDrive are also examples of FTP servers

Groupware Server

It is a software designed that enables the users to work together, irrespective of the location, through the Internet or a corporate Intranet and to function together in a virtual atmosphere.

This is how Google Docs, Google Sheets, Google Slides work

IRC Server

It is an ideal option for those looking for real-time discussion capabilities. Internet Relay Chat comprises different network servers that enable the users to connect to each other through an IRC network.

WebEx,Zoom,Skype, and Discord as well work off this server.

List Server

It provides a better way of managing mailing lists. The server can be either open interactive discussion for the people or a one-way list that provides announcements, newsletters or advertising.

Highlander Hub, the website we use to present event information, has a feature which uses a List Server for organizations to email their members

Mail Server

It transfers and stores mails over corporate networks through LANs, WANs and across the Internet.

Gmail, Yahoo Mail, Hotmail, etc. all work off mail servers

News Server

It serves as a distribution and delivery source for many public news groups, approachable over the USENET news network.

CNN, FOX, CNBC, The New York Times, Etc. all work off News servers for their sites

Proxy Server

It acts as a mediator between a client program and an external server to filter requests, improve performance and share connections.

Some services will require that you connect to a proxy before using the service

Telnet Server

It enables the users to log on to a host computer and execute tasks as if they are working on a remote computer.

AFS also works like this since you access a Linux instance off the NJIT servers

Virtual Servers

A virtual server is just like a physical computer because it is committed to an individual customer's demands, can be individually booted and maintains privacy of a separate computer. Basically, the distance among shared and dedicated (hosting) servers is reduced providing freedom to other customers, at a less cost. Now, it has become omnipresent in the data center.

This has helped companies bring down the cost of work computers, by having beefy servers that can host a large number of virtual machines.

Web Server

It provides static content to a web browser by loading a file from a disk and transferring it across the network to the user's web browser. This exchange is intermediated by the browser and the server, communicating using HTTP.

Other types of servers include Open source servers, Gopher server (like a plain document, similar to WWW and the hypertext being absent), and Name server (applies name-service protocol).

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The various servers can be categorized according to their applications. Servers along with managing network resources are also dedicated, i.e., they perform no other task other than their server tasks.

Data in the Cloud

So, the funny thing is... The cloud doesn't exist. At least not how you think it does. It's not some alien space craft that hovers around earth that we communicate with in order to run our daily lives. The cloud is a concept for all the servers listed above. By storing your files and running virtual machines off servers that are hosted in data centers, this is what the cloud refers to.