

HW 1: Networking Terminology

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1. UNIX and vi are useful when working on the UT CS servers, which will be where a lot of our work will be turned in. In terms of web programming, many web applications on Linux, which we interact with using UNIX commands.
2. Setting up an SSH key allows the server to recognize your computer everytime you try to connect. This allows the user to connect to the server anywhere. In our case, without being on the utexas network or vpn.
3. Our 5 layers for the internet model are included in the OSI model with the addition of 2 more: session and presentation. These two go between the transport and application layer. The session layer starts and stops the communication between the user and application, and presentation encrypts and translates data so that it's useful in the application layer.
4. A datagram is what the network processes as a basic unit of information. The advantage would depend on the application. If speed is a higher priority, then UDP is advantageous; however, the cost is less reliability.

5. In circuit switching, there is a dedicated circuit for each connection. For example, in a landline telephone call, there is a unique line connecting you with the person calling. An advantage of this is since the connection is unique, you aren't competing or sharing connection with anybody else. Two disadvantages are that this dedicated line is practically wasted when not in use, and if the connection is broken, there cannot be communication until the connection is fixed. In packet switching, a document is split into packets, labeled, and then sent through network routers until they reach their final destination.

6. Token ring networks require specialized processors and licensed MAC firmware for each interface, whereas Ethernet included the firmware and lower licensing cost in the MAC chip, making it simpler.

A repeater amplifies and retransmits signals to amplify the range of the network. They operate in the physical layer.

A bridge filters traffic on a network to reduce collision domains. They operate in the data link layer.

A switch uses hardware to forward frames to a specific port, increasing efficiency. They operate in the data link layer.

A router connects different networks and exchanges data based on IP addresses. They operate in the network layer.

7. Apache Web Server is an open source software and is available across all platforms, making it platform independent. This is opposite to IIS since IIS is mainly windows centric and proprietary, pairing very well only when working with Microsoft services.

8. While all are email communication protocols, SMTP is used for outgoing mail flow while IMAP and POP handle incoming mail flow.

9. The browser notes the type specification and helps it interpret and render the data properly.

10. First, the web browser gets the ip address of web server and establishes a TCP connection. The browser then sends an HTTP request for data, and the server sends back an HTTP response. POST requires additional headers like Content-Type, Content-Length, Content-Disposition, Cookie, and Authorization.