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CTEC 415

Week 1 Study Guide

1. Wide Area Network – connection of computers that extends over a large geographic area

|  |  |  |
| --- | --- | --- |
| LAN | Both | WAN |
| Close range connection (In-building) | Network and Internet connectivity | Long rang connection (City to city or larger) |

1. Host – a computer on a network

Host 🡪 LAN 🡪 Network device / Host 🡪 LAN 🡪 WAN

1. End systems – another term used for a computer connected to a network

End system 🡪 Network 🡪 Internet

1. Bandwidth – the maximum amount of data that can be transmitted over a network connection

Device (sending 20 Mb) -1 Mbps-> Device (receives full message after 20 seconds)

1. Bit rate – number of bits processed per unit of time

|  |  |  |  |
| --- | --- | --- | --- |
| 1 bit per second |  |  |  |
| 1024 bps | 1 Kilobit per second |  |  |
| 1048576 bps | 1024 Kbps | 1 Megabit per second |  |
| 1073741824 bps | 1048576 Kbps | 1024 Mbps | 1 Gigabit per second |

1. Latency – delay in sending and receiving a byte over a network

Remote desktop: mouse click(remote device) 🡪 2s 🡪 mouse click (host device)

1. URL – uniform resource locator; address of a resource on the internet

<https://www.google.com>: accesses the webpage and related data to that website

1. Net Neutrality – principle that ISPs must treat all data over the Internet equally

|  |  |  |
| --- | --- | --- |
| **Website** | **Connection w/ Net Neutrality** | **Connection w/out** |
| Netflix | 10 Mbps | 30 Mbps |
| Bowie State | 10 Mbps | 5 Mbps |

1. Packet switches – transfer of small pieces of data across a network

|  |  |  |
| --- | --- | --- |
| Image piece 1 | Image piece 3 | Image piece 5 |
| Image piece 2 | Image piece 4 | Image piece 6 |

Image from sender device 🡪

* Image on receiver device

1. Packet - a small segment of a larger message

|  |  |  |
| --- | --- | --- |
| Image packet 1 | Image packet 3 | Image packet 5 |
| Image packet 2 | Image packet 4 | Image packet 6 |

Image 🡪

1. Routers – network device that forwards packets between computer networks

sender 🡪 message 🡪 LAN 🡪 Router 🡪 Router 🡪2nd LAN 🡪 receiver

1. Route – the path packets travel to reach the destination

|  |  |  |  |
| --- | --- | --- | --- |
|  | Router 1 🡪 | Router 5 **v** |  |
| Sender 🡪 | Router 2 **^** | Router 6 **v** |  |
|  | Router 3 | Router 7 **v** |  |
|  | Router 4 | Router 8 🡪 | Receiver |

1. Path – name and location of a file on a computer system

C:\\Desktop\Google Chrome

1. Hosts – a device that communicates with other devices on a network

Host 🡪 LAN 🡪 2nd Host

1. Edge router – routers that are gateways to a network and enable connectivity between an internal and external network

Device 🡪 router 🡪 LAN 🡪 edge router 🡪 WAN/Internet

1. Clients – a device on a network that access a resource

Server 🡪 resource 🡪 LAN 🡪 client

1. Servers – a device on a network that provides a resource

FTP server 🡪 file transfer service 🡪 LAN

1. Digital subscriber Line – communication medium used to transfer digital signals over telephone lines

Computer 🡪 digital signal 🡪 DSL modem 🡪 phone line (analog signal) 🡪 network

1. Internet Service Providers – company that provides web access to consumers

Home 🡪 LAN 🡪 ISP 🡪 Internet

1. Protocols – established set of rules that determine how data is transmitted between devices

TCP/IP – Application 🡪 Transport 🡪 Network 🡪 Physical

1. Wireless network – local network not connected by wires

Device 🡪 radio frequency communication 🡪 wireless access point 🡪 LAN

1. Utility program - a program that performs specific tasks related to computer management

File compressors: compile multiple files into a smaller space, File manager: allows for the access, creation, deletion, etc. of files on a system

1. Splitter – device used to split a cable signal to send it to more than one device

Output 1

Device 🡪 splitter -<

Output 2

1. Passive optical networks – network that uses fiber optics to transport data and has unpowered splitters to route data from a central location to destinations

ISP 🡪 data 🡪 fiber optics 🡪 splitter 🡪 devices 1/2/3

1. Active optical networks – fiber optic network that routes signals to specific devices using powered splitters

ISP 🡪 data 🡪 fiber optics 🡪 splitter (power A) 🡪 device A

1. Cable Internet access – broadband internet access that provides internet access through cable television infrastructure

Cable modem 🡪 computer

ISP/Cable provider 🡪 coaxial cable -<

Cable box 🡪 television

1. Transmission Control Protocol – connection-oriented protocol that facilitates the exchange of messages between devices on a network

Computer 🡪 data 🡪 TCP protocol 🡪 receiver

1. Requests for comments – formal document that details a standard network protocol or network function

RFC 0001 – describes how host computers communicate with each other on ARPANET

1. HTTP – hypertext transfer protocol; protocol used for exchanging files on the world wide web

Requesting computer 🡪 website request 🡪 HTTP 🡪 web server 🡪 web page 🡪 requesting computer

1. SMTP – simple mail transfer protocol; protocol for transferring email over the internet

Sending computer 🡪 email 🡪 SMTP 🡪 mail server 🡪 SMTP 🡪 receiving computer

1. Distributed applications – application stored and executed on one or more servers and accessible by any computer on the network

|  |  |  |
| --- | --- | --- |
| Computer |  | Computer |
| Server | Web Browser | Server |
|  | Server |  |
|  | Computer |  |