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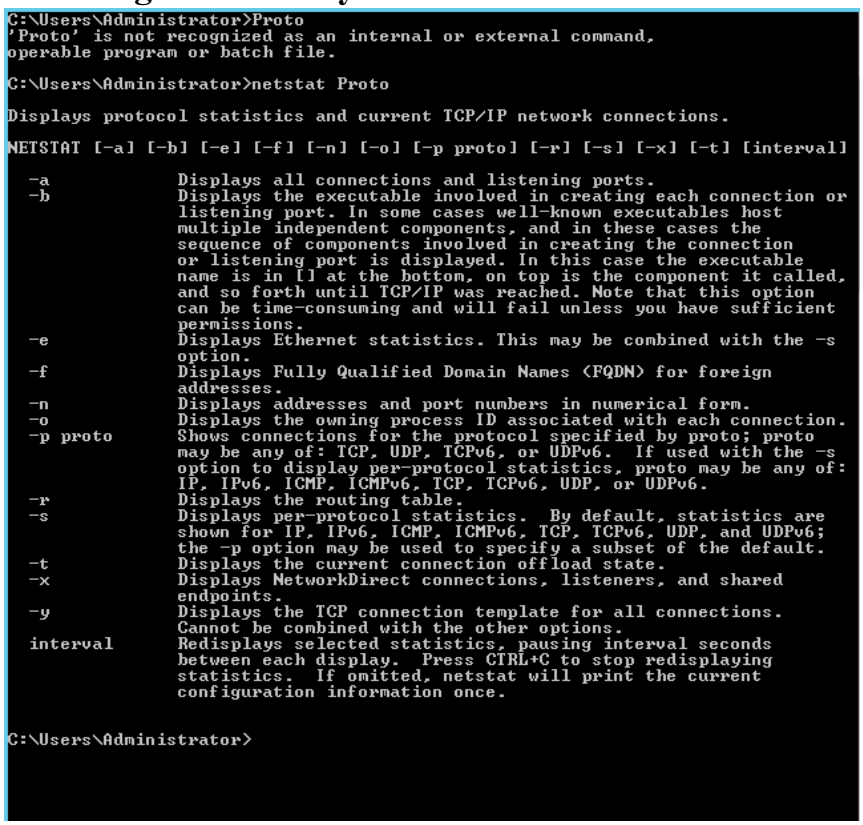
Homework 3

1. If your friend who is a Time Warner Digital Subscriber complains to you about her Internet surfing is very slow during the evening time. She called Time Warner but they told her everything is working fine including her computer. However her neighbor who is using DSL does not have the same problem. In your opinion, what is the problem you can think of that causes the Internet to slow down? How do you solve it?

In theory, cable connection should be faster than DSL. In practice however, this is to always true. Cable modem connection will slow down when there are many people in your service area connected at the same time. This is increasingly common today when a single person can often have 3 devices connected to the internet at the same time, a computer, a tablet, and a smartphone. To solve this problem, merely make sure to minimize the number of devices you are using at any given time in order to maximize the experience on a singular device.

2. Please do a research about your firewall program of your windows server computer with the command prompt command “netstat”. Do not use other means other than netstat.

a. What arguments are you allowed to use with netstat?



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C:\Users\Administrator>Proto
'Proto' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Administrator>netstat Proto

Displays protocol statistics and current TCP/IP network connections.

NETSTAT [-a] [-b] [-e] [-f] [-n] [-o] [-p proto] [-r] [-s] [-x] [-t] [interval]

  -a            Displays all connections and listening ports.
  -b            Displays the executable involved in creating each connection or
                listening port. In some cases well-known executables host
                multiple independent components, and in these cases the
                sequence of components involved in creating the connection
                or listening port is displayed. In this case the executable
                name is in [] at the bottom, on top is the component it called,
                and so forth until TCP/IP was reached. Note that this option
                can be time-consuming and will fail unless you have sufficient
                permissions.
  -e            Displays Ethernet statistics. This may be combined with the -s
                option.
  -f            Displays Fully Qualified Domain Names (FQDN) for foreign
                addresses.
  -n            Displays addresses and port numbers in numerical form.
  -o            Displays the owning process ID associated with each connection.
  -p proto      Shows connections for the protocol specified by proto; proto
                may be any of: TCP, UDP, TCPv6, or UDPv6.  If used with the -s
                option to display per-protocol statistics, proto may be any of:
                IP, IPv6, ICMP, ICMPv6, TCP, TCPv6, UDP, or UDPv6.
  -r            Displays the routing table.
  -s            Displays per-protocol statistics.  By default, statistics are
                shown for IP, IPv6, ICMP, ICMPv6, TCP, TCPv6, UDP, and UDPv6;
                the -p option may be used to specify a subset of the default.
  -t            Displays the current connection offload state.
  -x            Displays NetworkDirect connections, listeners, and shared
                endpoints.
  -y            Displays the TCP connection template for all connections.
                Cannot be combined with the other options.
  interval      Redisplays selected statistics, pausing interval seconds
                between each display.  Press CTRL+C to stop redisplaying
                statistics.  If omitted, netstat will print the current
                configuration information once.


C:\Users\Administrator>
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b. What ports are open in your system?

Ports 21, 42424, 135, 3343, 137-139, 67, 2535, 389, 445, 53, 143, 993, 110, 995, 593, 445, 20, 443

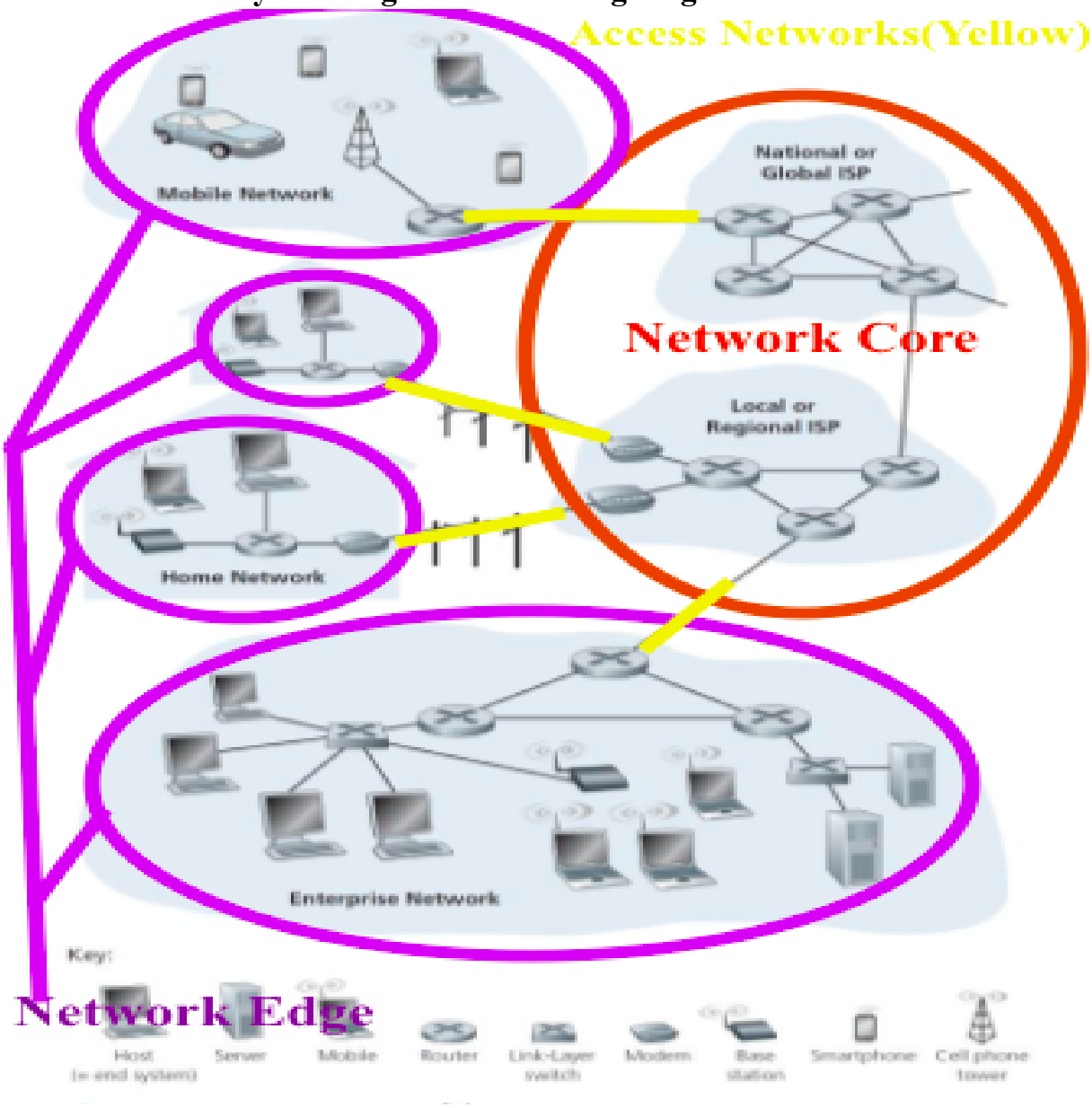
c. Research how to close a port with instructions and examples.

1. Open the command prompt
2. Type in “netstat -a -n -o”
3. Type in “taskkill /f /im [pid of the port from previous command]”

d. List the opened ports and their functionality. For example, port 21 for FTP, ...

Port	Functionality
21	FTP Control
42424	ASP.Net
135	RPC
3343	Cluster Services
137-139	NetBIOS
67	DHCP Server
2535	MADCAP
389	LDAP Server
445	SMB
53	DNS
143	IMAP
993	IMAP over SSL
110	POP3
995	POP3 over SSL
593	RPC over HTTP
445	SMB
20	FTP default data
443	HTTPS

3. Please indicate the "core of Internet", the "edge of the Internet" and the "access network" by drawing in the following diagram.



4. Please design a protocol with specific instructions, actions and objects so your computer is able to retrieve a document, "Hay_Jude.mp3" from a web server.

5. Please first find out the name of the acronyms then explain the functions of the following terms “in your own words”:

DSLAM stands for digital subscriber line multiplexer. It is a network device that receives signals from multiple DSL connections and transfers the signals to a high-speed backbone by using multiplexing.

CO stands for commitment ordering. It is a class of interoperable serializability techniques. With an increase in multicore processors, it has been increasingly utilized in concurrent programing, transactional memory and software transactional memory.

CMTS stands for cable modem termination system. It is a piece of equipment which is used by a cable company to provide high speed services such as cable internet or voice.

FTTH stands for fiber to the home. It is the installation and use of fiber optic cable. It allows high-speed internet access to be transmitted from a central point directly to individual buildings.

AON stands for application-oriented networking. It uses network devises to help computer to computer application integration. They manipulate structure-based data and convert it into a human readable format.

PON stands for passive optical network. It allows a single optical fiber to be split and sever multiple endpoints through a point-to-multipoint architecture.

IFTTT stands for if this then that. It is a web-based service for creating applets. Applets are chains of simple conditional statements. This service is offered to the user for free.

OLT stands for optical line termination. It is a device known as an optical line terminal which serves as the endpoint of a passive optical network.

IXP stands for internet exchange point. This is a physical infrastructure which allows internet service providers to exchange internet traffic with content delivery networks.

LEO stands for Lyons Electronic Office. It was the first computer to be used for commercial business applications.