

CSE 524 (Fall 2004): Final Exam

NAME (please print): _____

1. (20 pts)

a. (5 pts)

List one advantage of circuit-switching versus packet switching

List one disadvantage of circuit-switching versus packet switching

b. (5 pts)

List one advantage of Manchester encoding versus Return to Zero

List one disadvantage of Manchester encoding versus Return to Zero

c. (5 pts)

List one advantage of using CIDR versus classful routing

List one disadvantage of using CIDR versus classful routing

d. (5 pts)

List one advantage of token rings versus Ethernet

List one disadvantage of token rings versus Ethernet

2. MAC protocols (10 pts)

a. (5 pts) Explain why CSMA/CD does not work for shared wireless networks

b. (5 pts) List one difference between Pure Aloha (i.e. unslotted) and CSMA

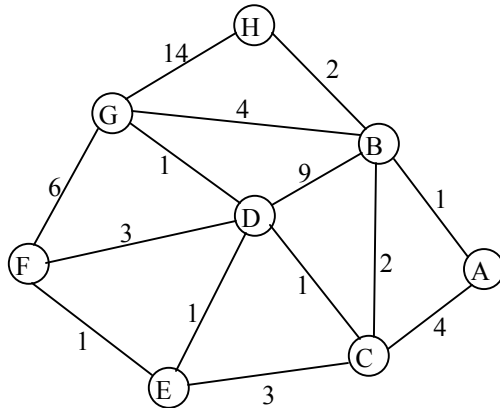
3. Distance Vector (10pts)

a. (5 pts) Explain what causes the counting-to-infinity phenomenon

b. (5 pts) Explain how split-horizon with poisoned reverse attempts to fix the counting-to-infinity phenomenon

4. Link-State (20pts)

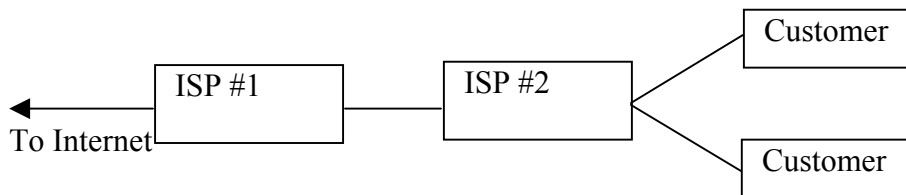
Given the following network



Run Dijkstra's algorithm on node A. In what order are nodes added to the SPT? Break ties alphabetically (e.g. choose A before G if their costs are equal)

Run Dijkstra's algorithm on node H. In what order are nodes added to the SPT? Break ties alphabetically (e.g. choose A before G if their costs are equal)

5. (20 pts) ISP #1, a backbone provider, allocates ISP #2 a range of IP addresses to give out to customers as shown below.

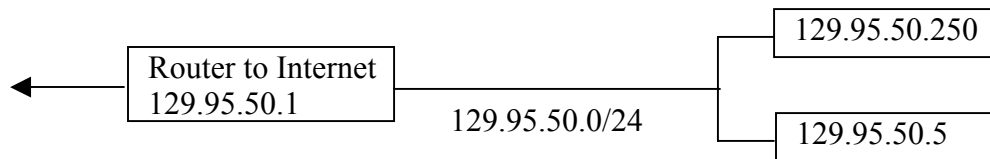


Suppose ISP #2 has been given a range of 195.195.0.0 to 195.195.19.255. Using CIDR aggregation, what is the minimum number of routes that ISP #2 would need to advertise to ISP #1? What are these route(s) in Prefix/PrefixLength format (e.g. 10.0.0.0/24)?

Suppose ISP #2 has been given a range of 195.195.0.0 to 195.195.31.255. Using CIDR aggregation, what is the minimum number of routes that ISP #2 would need to advertise to ISP #1? What are these route(s) in Prefix/PrefixLength format (e.g. 10.0.0.0/24)?

6. (20 pts)

A class C network with statically configured routers and hosts is set up below



The router (129.95.50.1) and hosts (129.95.50.250 and 129.95.50.5) of this network are properly configured with netmasks of 255.255.255.0 and the hosts are properly configured with default routes going to the router (129.95.50.1). A new system administrator is then hired to manage the network and proceeds to add a new host onto the network using an IP address of 129.95.50.10. The administrator correctly configures the default route on the new machine to go to 129.95.50.1, but misconfigures the netmask of the host to 255.255.255.128.

After bringing the machine up, suppose he runs the following: `ping 129.95.50.5`

Describe the first packet that is sent onto the network in terms of its type and payload

After bringing the machine up, suppose he runs the following: `ping 129.95.50.250`

Describe the first packet that is sent onto the network in terms of its type and payload

Finally, he runs the following command: `ping 66.218.71.95`

Assuming this same command is successful in getting a ping reply from host 129.95.50.5, will this command be successful on the newly misconfigured machine? Why or why not?