Lectures 5.2 5.3 Distance Vector & Link State Routing Quiz ANS

1. What is the Bellman-Ford equation used for?
A) Calculating the bandwidth of a link
B) Computing the shortest path in Distance-Vector routing
C) Encrypting packets for secure transmission
D) Converting IPv4 addresses to IPv6

ANS:

2. In Distance-Vector routing, what information does a node send to its neighbors?
A) The entire network topology map
B) Only the cost to its direct neighbors
C) Its entire distance vector (estimates to all destinations)
D) The list of all packets it has received

ANS:

3. What triggers a node to send a routing update in a Distance-Vector protocol?
A) Only when a timer expires
B) Only when the administrator manually reboots the router
C) When a local link cost changes or it receives an update from a neighbor
D) Every time it forwards a packet

ANS:

4. What is the 'Count-to-Infinity' problem?
A) A loop where routing updates bounce back and forth, incrementing costs indefinitely
B) When a router runs out of memory
C) When a packet takes too many hops to reach the destination
D) When the network bandwidth is infinite

ANS:

5. Which technique prevents a routing loop between two immediate neighbors?
A) Poisoned Reverse
B) Infinite Bandwidth
C) Manual Configuration
D) Using IPv6

ANS:

6. Does Poisoned Reverse solve all counting-to-infinity loops?
A) Yes, it solves all loops permanently
B) No, it only works for loops involving 2 nodes
C) No, it only works for loops involving 3 or more nodes
D) It creates more loops

ANS:

7. What defines the 'state' of a node in Distance-Vector routing?
A) Its physical location
B) Its distance vector (costs to all destinations) and its forwarding table
C) The amount of RAM it has
D) The number of cables plugged in

ANS:

8. How does 'Good News' propagate in Distance-Vector routing?
A) Very slowly (count-to-infinity)
B) Fast
C) It never propagates
D) It causes loops

ANS:

9. How does 'Bad News' propagate in Distance-Vector routing?
A) Very fast
B) Slowly
C) Instantly
D) It is ignored

ANS:

10. What is a key disadvantage of Distance-Vector routing?
A) It requires a central server
B) It suffers from slow convergence and routing loops
C) It uses too much bandwidth for good news
D) It cannot handle more than 5 routers

ANS:

11. In Distance-Vector, does a node know the full network topology?
A) Yes, it has a complete map
B) No, it only knows costs to neighbors and estimates to destinations
C) Yes, but only for Class A networks
D) No, it knows nothing at all

ANS:

12. What does RIP stand for?
A) Routing Information Protocol
B) Real-time Internet Protocol
C) Rapid Inter-domain Protocol
D) Rest In Peace

ANS:

13. In Distance-Vector, if neighbor V advertises a cost of 5 to destination Y, and the link cost c(x,v) is 2, what is x's cost to Y via V?
A) 2
B) 5
C) 7
D) 3

ANS:

14. When does the Distance-Vector algorithm terminate?
A) Never, it runs forever
B) When there are no more updates to send (quiescence)
C) After exactly 10 iterations
D) When the administrator stops it

ANS:

15. Why is Poisoned Reverse not a complete solution?
A) It is too expensive to implement
B) It only prevents loops of size 2, not larger loops
C) It stops forwarding all packets
D) It requires manual configuration

ANS:

16. What is the fundamental difference between Link-State (LS) and Distance-Vector (DV)?
A) LS is slower
B) LS provides every router with a complete map of the network topology
C) LS only works for small networks
D) LS does not use costs

ANS:

17. Which algorithm is typically used in Link-State routing to compute paths?
A) Bellman-Ford
B) Dijkstra's Algorithm

C) Diffie-Hellman
D) Round Robin

ANS:

18. What information is flooded in a Link-State protocol?
A) The entire forwarding table
B) Distance vectors to all destinations
C) Link State Advertisements (LSAs) containing neighbors and link costs
D) User data packets

ANS:

19. What is the time complexity of Dijkstra's algorithm with a naive implementation?
A) O(1)
B) O(N^2)
C) O(N log N)
D) O(N)

ANS:

20. How does a router in LS ensure it has the latest topology information?
A) By polling the central server
B) Through Reliable Flooding of LSAs
C) By guessing
D) By rebooting every 5 minutes

ANS:

21. What happens if different routers in LS have different views of the topology (inconsistent state)?
A) Nothing bad happens
B) Routing loops can form
C) The network becomes faster
D) Security is improved

ANS:

22. In Link-State, does a router send its forwarding table to neighbors?
A) Yes, always
B) No, it only sends link state info (LSAs)
C) Only to the root node
D) Only during startup

ANS:

23. What prevents an LSA from looping forever during flooding?
A) Sequence numbers and checking if the LSA is new
B) It loops forever until power off
C) LSAs have no TTL
D) The administrator deletes them

ANS:

24. Why might route oscillation occur in Link-State routing?
A) Because cables are loose
B) If link costs depend on traffic load
C) Because Dijkstra's algorithm is random
D) It never happens

ANS:

25. Comparing LS and DV: Which one generates more control traffic initially?
A) DV
B) LS (due to flooding the whole topology)
C) They are exactly the same
D) Neither generates traffic

ANS:

26. Comparing LS and DV: Which one typically converges faster?
A) DV
B) LS
C) They are the same
D) DV never converges

ANS:

27. What is the robustness issue with Distance Vector?
A) A single router broadcasting incorrect costs can screw up the whole network
B) It is too secure
C) It requires too much CPU
D) It fails if one cable breaks

ANS:

28. What is the robustness issue with Link State?
A) A router can advertise incorrect link costs, but only for its own links
B) It crashes the internet
C) It cannot handle large tables
D) It deletes files

ANS:

29. Why don't we use Link-State for the entire Internet (Inter-domain)?
A) Dijkstra is too hard to spell
B) Privacy and Scalability
C) It is too fast
D) IS-IS is patented

ANS:

30. In Link-State routing, what is Dijkstra's Algorithm used to calculate?
A) The physical distance between routers in kilometers
B) The shortest path tree from the source node to all other nodes in the network
C) The total number of packets dropped in the last hour
D) The encryption key for secure communication

ANS: