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|  | **NSS COLLEGE OF ENGINEERING, PALAKKAD**  Govt. Aided College Affiliated to APJ Abdul Kalam Technological University Approved by AICTE  ***Department of Computer Science & Engineering***  **CST 303 COMPUTER NETWORKS**  **(FIFTH SEMESTER) (AY:2023-24)**  **TUTORIAL 4 scheme** |

**(Answer ALL Questions)**

**MODULE 3**

**Time: 1 Hr**

1. Consider the following subnet. Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The measured delays to B, D, and E, are 6, 3, and 5, respectively. What is C’s new routing table? Give both the outgoing line to use and the expected delay



Ans: Going via B gives (11, 6, 14, 18, 12, 8).

Going via D gives (19, 15, 9, 3, 9, 10).

Going via E gives (12, 11, 8, 14, 5, 9).

Taking the minimum for each destination except C gives (11, 6, 0, 3, 5, 8).

The next hops are (B, B, -, D, E, B).

1. Describe the difference between the warning bit method and the Random Early Detection (RED) method.

Ans:

Warning Bit: A special bit in the packet header is set by the router to warn the source when congestion is detected. The bit is copied and piggy-backed on the ACK and sent to sender.The sender mentions the number of ACK (acknowledgment) packets, it receives with the warning bit set and adjusts its transmission rate accordingly.

Random Early Detection (RED): This is a proactive approach in which the router discards one or more packets before the buffer becomes completely full. Each time a packet arrives, the RED algorithm computes the average queue length.

1. Explain the characteristics of Routing Information Protocol (RIP).

Ans: **Routing Information Protocol** (RIP) is a dynamic routing protocol that uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance-vector routing protocol .

RIP is implemented as a process that uses the service of UDP on the well-known port number 520. In BSD, RIP is a daemon process (a process running in the background), named routed (abbreviation for route daemon and pronounced route-dee). This means that, although RIP is a routing protocol to help IP route its datagrams through the AS, the RIP messages are encapsulated inside UDP user datagrams, which in turn are encapsulated inside IP datagrams. In other words, RIP runs at the application layer, but creates forwarding tables for IP at the network later.

RIP has two types of messages: request and response. A request message is sent by a router that has just come up or by a router that has some time-out entries. A request message can ask about specific entries or all entries. A response (or update) message can be either solicited or unsolicited. A solicited response message is sent only in answer to a request message. It contains information about the destination specified in the corresponding request message. An unsolicited response message, on the other hand, is sent periodically, every 30 seconds or when there is a change in the forwarding table.

1. A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps?

Ans: New tokens are added at the rate of r bytes/sec=1Mbps

Capacity of the [token bucket](http://en.wikipedia.org/wiki/Token_bucket) (b) = 8 Mbits

Maximum possible transmission rate (M) = 8Mbps

So the maximum burst time = b/(M-r) = 8/(6-1) = 1.6 seconds

1. Illustrate the Count to Infinity problem in routing.

Ans:

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| **Quest.No** | **1** | **2** | **3** | **4** | **5** |
| **COs** | **CO:5** | **CO:5** | **CO:5** | **CO:5** | **CO:5** |
| **POs** | **PO1, PSO2** | **PO1, PSO2** | **PO1, PSO2** | **PO1, PSO2** | **PO1, PSO2** |

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