COMPUTER AND COMMUNICATION NETWORKS

SEC-A

END EVALUATION PROJECT REPORT

GROUP-14

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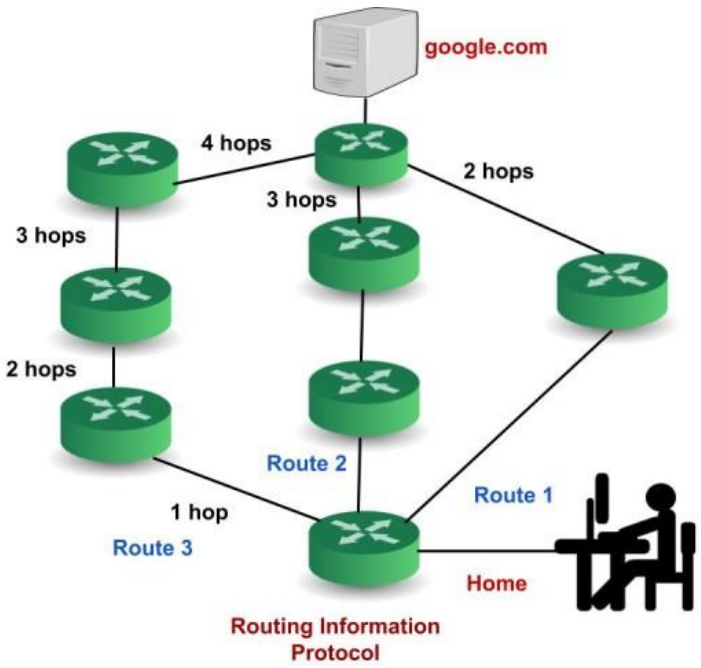
PROJECT TITLE

ROUTING INFORMATION PROTOCOL

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 that has an AD value of 120 and works on the Network layer of the OSI model. RIP uses port number 520.

Hop count is the number of routers occurring in between the source and destination network. The path with the lowest hop count is considered as the best route to reach a network and therefore placed in the routing table. RIP prevents routing loops by limiting the number of hops allowed in a path from source and destination. The maximum hop count allowed for RIP is 15 and a hop count of 16 is considered as network unreachable.



Implementation scenario, platform, and methodology:

- We have to transfer data from the shortest path from node **7 to 4** and node **2 to 5**.
- We are using **ns2 simulation** for demonstrating **RIP(Routing Information Protocol).**
- The main TCL file is **Group14.tcl** and there are **3 awk files named as 14_delay.awk, 14_packet_delivery.awk and 14_throughput.awk and one trace file 14_pract.tr.**
- Ns2 Simulation Video :- **Group14.mp4**
- Simulation starts at t=0.5ms, initial paths are:

  Path 1(Blue): 7-8-5-4

  Path 2(Red): 2-3-4-5

- Link between node 8 to 5 breaks down at t=1ms, then changes in the path are:

  Path 1(Blue): 7-6-5-4

  Path 2(Red): 2-3-4-5

- Link between node 2 to 3 breaks down at t=2ms, then changes in the path are:

  Path 1(Blue): 7-6-5-4

  Path 2(Red): 2-1-0-3-4-5

- Link between node 5 to 8 restored at t=2.5ms, then changes in the path are:

  Path 1(Blue): 7-6-5-4

  Path 2(Red): 2-1-0-8-5

- Link between node 0 to 8 breaks down at t=3.5ms, then changes in the path are:

  Path 1(Blue): 7-6-5-4

Path 2(Red): 2-1-0-3-4-5

- Link between node 2 to 3 restored at t=5ms, then changes in the path are:

  Path 1(Blue): 7-6-5-4

  Path 2(Red): 2-3-4-5

- Link between node 0 to 8 restored at t=5.5ms, then no changes.
- Transmission stops at t=6ms.

Calculation:

Throughput and latency calculation:-

Latency = Finish time – Start time

Finish time=6.04ms and Start time =0.062ms

Latency = 5.977245ms

Throughput = (finish time*8)/latency

Throughput = 2291711.315163ms

Packet-Delivery Ratio calculation:-

Total packets sent = 803

Total packets received =78,300.00002

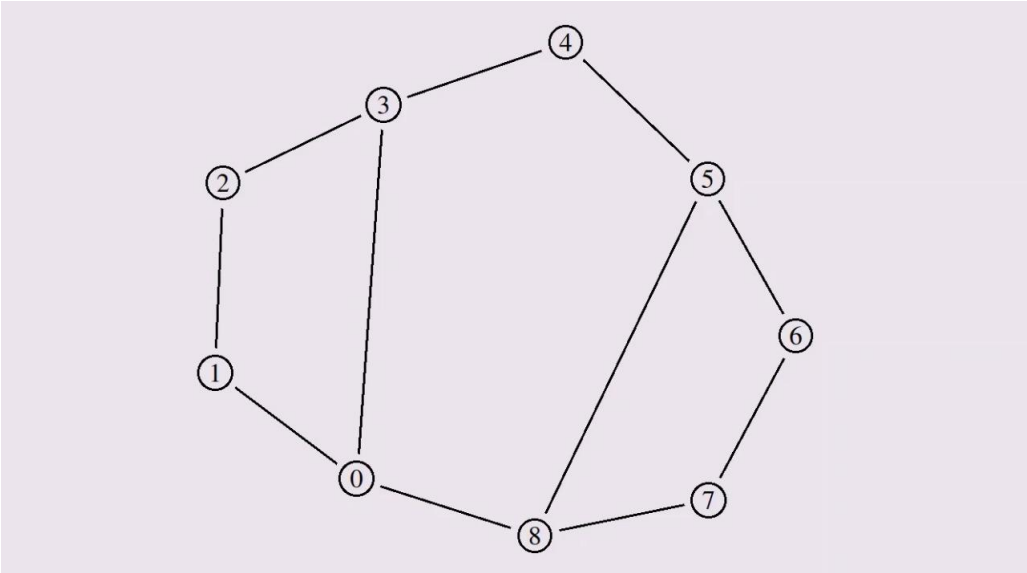
Total packets dropped = 20

Packet-Delivery ratio = Total packets received/ Total packets sent

Packet-Delivery ratio = 97.509340

Average end-to-end delay = 181.172495

Screenshots of output:



Observation and Conclusion: We observed that when a link between two nodes breaks, a new path establishes with the help of DV algorithm and number of HOPs.And packet loss is also observed.