ELEC3500 TELECOMMUNICATIONS NETWORKS

Question Set – 8

8.1 Compare and contrast the properties of a centralised algorithm and a distributed routing algorithm. Give an example of a routing protocol that takes (i) a centralised approach, and (ii) a decentralised approach.

8.2 How is a least-cost path calculated in a decentralised routing algorithm?

8.3 Consider Figure 8.1, enumerate the paths from **y** to **u** that do not contain any loops.

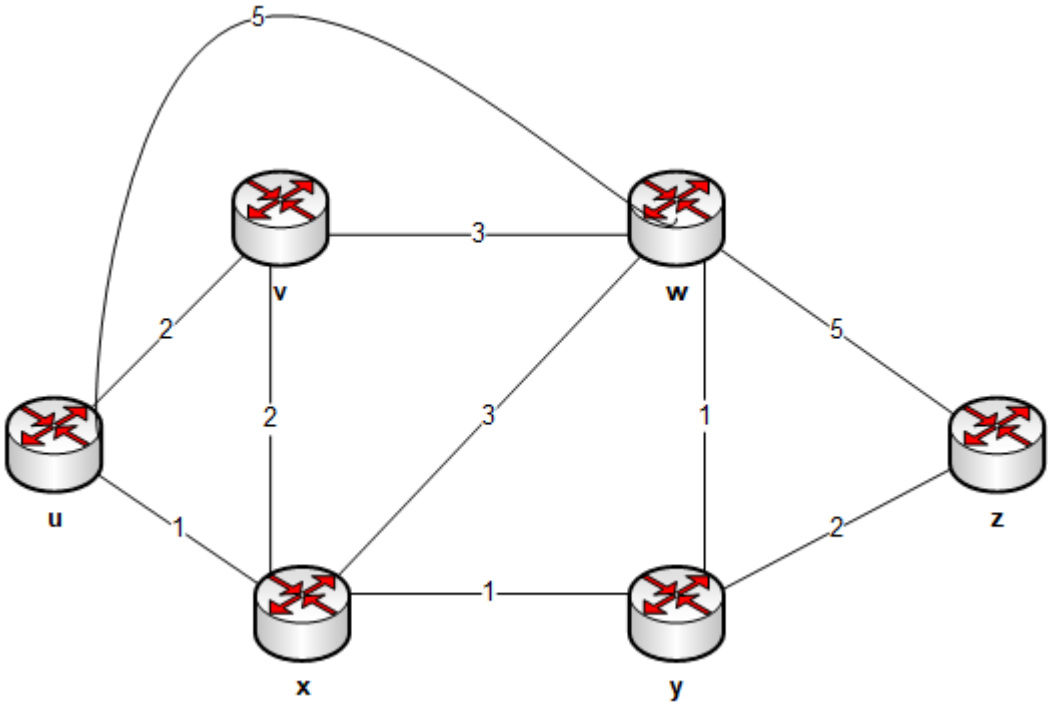

Figure 8.1

8.4 Consider network in Figure 8.1. With the indicated link costs, use the Dijkstra's least-cost path algorithm to compute the least-cost paths from node **x** to all other nodes in the network. Develop the routing table for node **x**.

8.5 Consider the network shown in Figure 8.2. Assume that each node initially knows the cost to each of its neighbours. Consider the distance-vector algorithm and show the distance table entries at node **z**.

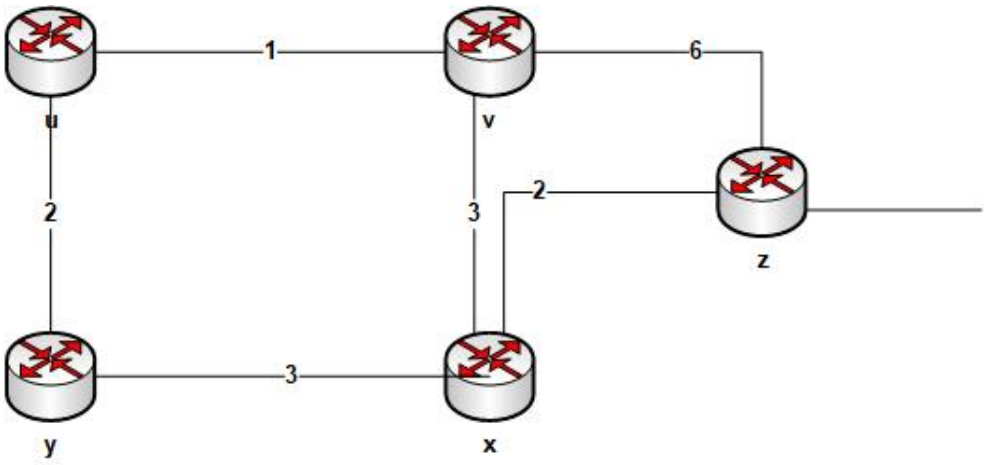

Figure 8.2

8.6 Consider the three-node topology shown in Figure 8.3. Compute the distance tables after the initialisation step and after each iteration of a synchronous version of the distance-vector algorithm.

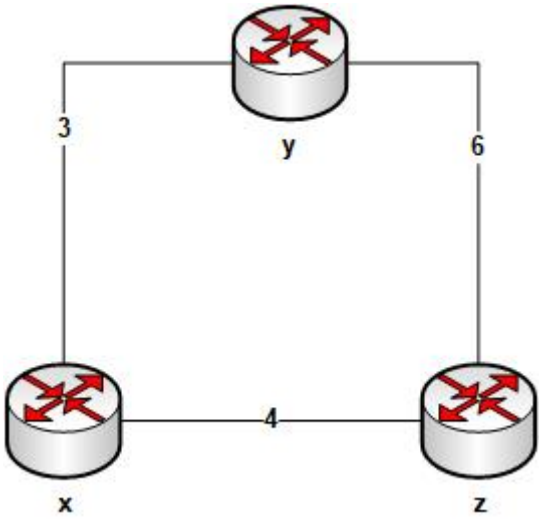

Figure 8.3

8.7 Compare the link state and the distance-vector routing algorithms in terms of message complexity, speed of convergence and robustness.

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