

COMP2322 Computer Networking Homework Five

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Question 1

(a) Router 3c learns about x from eBGP, as it is a gateway router that obtains advertisements about x from a neighboring AS.

(b) Router 1d learns about x from iBGP, as it is an internal router that obtains advertisements about x from a router within the same AS.

Question 2

(a) I will be set to I_1 , since I_1 indicates the shortest path to the local gateway router 1c, who is on the path to x.

(b) I will be set to I_2 , since I_2 indicates the shortest path to one of the local gateway routers, 1b, given that the costs of the two AS paths are equal.

(c) I will be set to I_1 , because in that case, the path of AS3-AS4 is shorter than the path of AS2-AS5-AS4, and I_1 indicates the path to the gateway router 1c, who is on the shorter path AS3-AS4. However, if the hot potato routing policy is used, I will be set to I_2 , because the hot potato routing policy chooses the path with the least cost to the next hop router 1b.

Question 3

(a) If $L = 1000$ bytes, the transmission overhead is:

$$\frac{5 \times 8}{(5 + 1000) \times 8} \approx 0.4975\%.$$

If $L = 100$ bytes, the transmission overhead is:

$$\frac{5 \times 8}{(5 + 100) \times 8} \approx 4.7619\%.$$

(b) If a packet consists of L bytes of data and 5 bytes of header, the packetization delay is:

$$\frac{(L + 5) \times 8}{128} = \frac{L + 5}{16} \text{ msec.}$$

If $L = 1000$ bytes, the packetization delay is $\frac{1005}{16} = 62.8125$ msec; if $L = 100$ bytes, the packetization delay is $\frac{105}{16} = 6.5625$ msec.