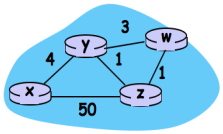
COMP 431
Internet Services & Protocols

HW 7
Solution Sketch

Jasleen Kaur

April 23, 2020

Qn 4



- (a) Distance values:
  - » z -> y, D(x) = infinity; z -> w, D(x) = 5
  - » w -> y, D(x) = 6; w -> z, D(x) = infinity
  - » y -> w, D(x) = 4; y -> z, D(x) = 4
- If cost(x,y) increases to 60, there will be count-to-infinity problem
  - » y -> w, D(x) = infinity; y -> z, D(x) = 9 (y relies on w)
  - » z -> y, D(x) = infinity; z -> w, D(x) = 10 (z relies on y)
  - » w -> z, D(x) = infinity; w -> y, D(x) = 11 (w relies on z)
  - » y -> w, D(x) = infinity; y -> z, D(x) = 14 (y relies on w)
  - » … till 29th step
- Infinity

Qn 5

- Forwarding table:

Prefix Match	Link Interface
11111110	0
11111111 00000000	1
11111111	2
otherwise	3

Destination Address	Link Interface
254/8	0
255.0/16	1
255/8	2
otherwise	3

3

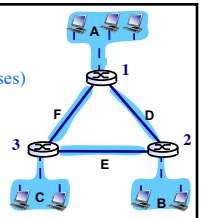
Qn 6

- 223.1.17.0/25
- 223.1.17.128/26
- 223.1.17.192/26

4

Qn 7

- From 152.83.254/23:
  - A: 152.83.255/24 (256 addresses)
  - B: 152.83.254.0/25 - 152.83.254.0/29 (128-8 = 120 addresses)
  - C: 152.83.254.128/25 (128 addresses)
  - D: 152.83.254.0/31 (2 addresses)
  - E: 152.83.254.2/31 (2 addresses)
  - F: 152.83.254.4/30 (4 addresses)
- Use (___ ___ : 10011000 01010011)



Router 1:

___ ___ 11111111	A
___ ___ 11111110 1	F
___ ___ 11111110 0	D
___ ___ 11111110 0000000	D
___ ___ 11111110 0000001	D /F
___ ___ 11111110 000001	F

Router 2:

___ ___ 11111110 0	B
___ ___ 11111111	D
___ ___ 11111110 1	E
___ ___ 11111110 0000000	D
___ ___ 11111110 0000001	E
___ ___ 11111110 000001	E /D

Router 3:

___ ___ 11111110 1	C
___ ___ 11111111	F
___ ___ 11111110 0	E
___ ___ 11111110 0000000	E /F
___ ___ 11111110 0000001	E
___ ___ 11111110 000001	F

5

Router 1:

___ ___ 11111111	A
___ ___ 11111110 1	F
___ ___ 11111110 0	D
___ ___ 11111110 0000000	D
___ ___ 11111110 0000001	D /F
___ ___ 11111110 000001	F

Router 2:

___ ___ 11111110 0	B
___ ___ 11111111	D
___ ___ 11111110 1	E
___ ___ 11111110 0000000	D
___ ___ 11111110 0000001	E
___ ___ 11111110 000001	E /D

Router 3:

___ ___ 11111110 1	C
___ ___ 11111111	F
___ ___ 11111110 0	E
___ ___ 11111110 0000000	E /F
___ ___ 11111110 0000001	E
___ ___ 11111110 000001	F

Router 1:

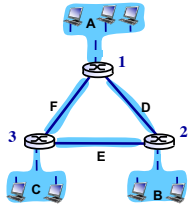
___ ___ 11111111	A
___ ___ 11111110 1	F
___ ___ 11111110 0	D
___ ___ 11111110 000001	F

Router 2:

___ ___ 11111110 0	B
___ ___ 11111111	D
___ ___ 11111110 1	E
___ ___ 11111110 0000000	D
___ ___ 11111110 00000	E

Router 3:

___ ___ 11111110 1	C
___ ___ 11111111	F
___ ___ 11111110 0	E
___ ___ 11111110 000001	F



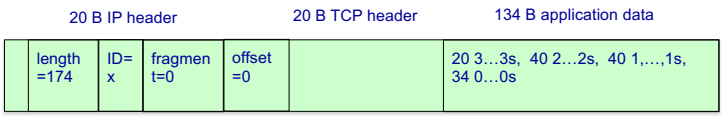
6

Qn 9

- Z can advertise routes to Y
- But Y can re-advertise those routes to X.
- Z can do nothing (using BGP alone) to prevent traffic from X transiting through Z.
  - » Z can, in theory, use filters on its data path, such that packets with source addresses coming from X are dropped at its ingress routers – but this would violate regulatory policies

7

Qn 10



8