Assignment

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dre.

1. Original datagram - 5000B
   20B - IF header

   MTU - 1420 B
   Data = 1400 B , 20B - Ip heads   or

   len = 1420 | IP = 105 | Freg flag=1 | offret = 0
   len = 1420 | IP = 105 | Frag flag=1 | offset = 175
   len = 1420 | ID = 105 | lag flag =1 | offset = 350
   len = 740 | ID = 105 | Flag flag = 0 | offset = 525

   x = 148.76.75.19

   Y = 153.52.17.80

   Home network : 128:119:40:54

   Assume rand assignment of address in hom n/u

   192.163.1.1 - 192.163.1.32
   192.163.1.33 - 192.163.1.64
   192.163.1.65 - 192.163.1.96
   192.163.1.97 - 192.163.1.128

   NAT
   At x_1

   148.76.38.19 | 5001
   → 192.163.1.32 | 3221

   148.76.38.19 | 5002
   → 192.163.1.64 | 3202

At y,

$$153.52.17.60/2000$$
$$\rightarrow 192.163.1.128/3204$$

$$153.52.17.60/2001$$
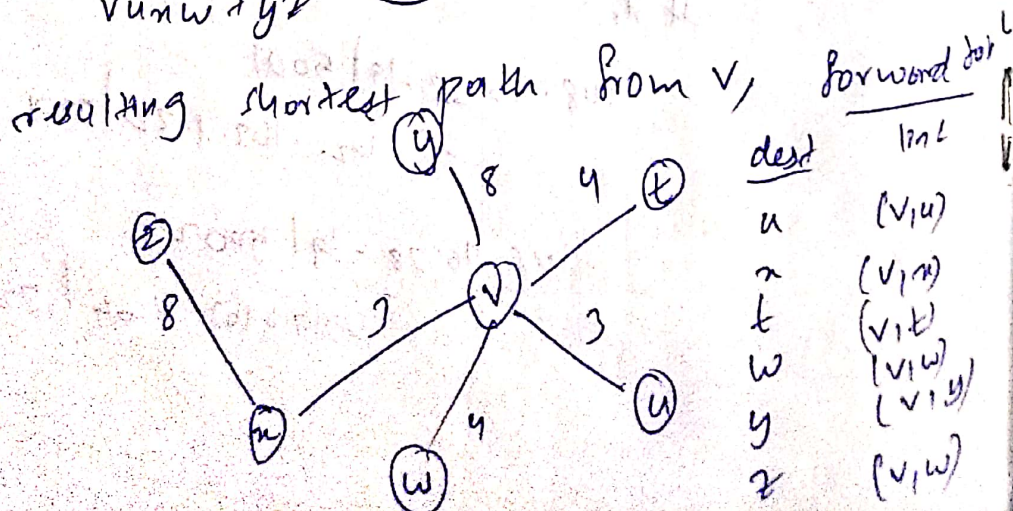$$\rightarrow 192.163.1.128/3205$$

3) So B every 30sec
→ gets encapsulated in TCP segment and then in IP datagram

20B header (TCP) & 20B header (datagram)
150 h data = 90B.

over head = $\frac{40}{90} \times 100 = 44.4\%$

Appdata = $\frac{50}{90} \times 100 = 55.5\%$

4)

Step	N'	D(y) p(y)	D(t) p(t)	D(u) p(u)	D(w) p(w)	D(n) p(n)
0	v					
1	vu	8,u	4,v	(3,v)	4,v	(3,v)
2	vun	8,v	4,u		4,v	(3,v)
3	vunw	8,v	(u,v)		(u,v)	
4	vunwt	8,v	(4,v)			
5	vunwty	(8,v)				
6	vunwtyz					

resulting shortest path from v, forward out link

dest	link
u	(v,u)
n	(v,n)
t	(v,t)
w	(v,w)
y	(v,y)
z	(v,w)

Step	N'	D(y) P(y)	D(t) P(t)	D(u) P(u)	D(w) P(w)	D(x) P(x)	D(z) P(z)
0	v	8,v	7,u	3,v	4,v	2,v	∞
1	vu	8,v	5,u	3,v	4,v	2,u	∞
2	vun	8,v	5,u		4,v		11,x
3	vunw	8,v	5,u				11,x
4	vunwt	8,v	5,u				11,r
5	vunwty	8,v					11,r
6	vunwtyz						11,x

→ vunwtyz (or) vunwtyz possible

v de tub v→t is 7 & 6 v→u→t→6

Datagram len = 3820 B

  IP header = 20 B

  Data = 3800 B

  mtu = 1400 B

    1380 B — data within

    20 B — header

len = 1396 | id=x | fragflag =1 | offset =0

len = 1396 | id=x | frag flag =1 | offset =174

len = 1024 | id=x | fragflag =0 | offset =344

       3 fragment created

Total = 3

initial routing table

Dest	Next hop	Dist
B	B	2
C	-	0
D	D	1

B/

Dest	Next hop	Dist
A	A	2
C	C	3
D	D	4

Dest	Next hop	Dist
A	0	

D/

Dest	Next hop	Dist
A	A	1
B	B	4
C	C	6

A,C,D → D

Dest	Dist	Hop
A	8	A
C	2	C
D	3	A
B	0	B

A,B,C → D

Dest	Dist	Hop
A	1	A
B	3	A
C	10	D
D	0	D

B,D

Dest	Dist	Hop
A	0	A
B	2	D
C	5	B
D	1	D

A,C,D → B

Dest	Dist	Hop
A	5	B
D	3	B
C	0	C
D	6	B

A,B,C → D

Dest	Dist	Hop
A	1	A
D	3	A
C	6	A
D	0	D

7) Initial state of routing

	A	B	C	D	E
A	0	7	∞	∞	1
B	7	0	1	∞	8
C	∞	1	0	2	∞
D	∞	∞	2	0	2
E	1	8	∞	2	0

D→E

	A	B	C	D	E
A	0	7	∞	∞	1
B	1	0	1	∞	5
C	0	1	0	2	2
D	∞	∞	2	0	2
E	1	8	4	2	0

B→A

	A	B	C	D	E
A	0	7	8	∞	1
B	7	0	1	∞	8
C	∞	1	0	2	∞
D	∞	∞	2	0	2
E	1	8	4	2	0

E→A

	A	B	C	D	E
A	0	7	5	3	1
B	7	0	1	∞	8
C	∞	1	0	2	∞
D	∞	∞	2	0	2
E	1		8	4	2	0

(→)B

	A	B	C	D	E
A	0	7	5	3	1
B	2	0	1	3	8
C	8	1	0	2	0
D	8	0	2	0	2
E	1	8	4	2	0

E→A

	A	B	C	D	E
A	0	7	5	3	1
B	2	0	1	3	8
C	8	1	0	2	0
D	3	10	2	0	2
E	1	8	4	2	0

C→D

	A	B	C	D	E
A	0	7	5	3	1
B	2	0	1	3	8
C	8	1	0	2	0
D	3	3	2	0	2
E	1	8	4	2	0

D→A

	A	B	C	D	E
A	0	7	5	3	1
B	2	0	1	3	8
C	8	1	0	2	0
D	3	2	2	0	2
E	1	8	4	2	0

D→C

	A	B	C	D	E
A	0	7	5	3	1
B	2	0	1	3	8
C	8	1	0	2	0
D	3	3	2	0	2
E	1	8	4	2	0

D→E

	A	B	C	D	E
A	0	7	5	3	1
B	3	0	1	3	8
C	8	1	0	2	0
D	3	3	2	0	2
E	1	8	4	2	0

B

Dijkstra

	A	E	C
A	7	9	6
C	12	12	1
D	10	10	3
E	8	8	6

A

Dijkstra

	D	E
B	7	6
C	8	5
D	10	3
E	12	1

D

Dijkstra

	C	E
A	8	2
B	3	10
C	3	

E

Dijkstra

	A	B	D
A	1	15	12
B	8	6	9
C	9	9	4
D	11	11	