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Subject : computer network

section : BS (SE) 6A

Assignment : Two

Q.1

A)

Object size = 1,600,000 bits

Transmission rate = 54 mbps

HTTP response request time = 3 sec

Average time = $L/R = \frac{16000000}{5400000} = 0.02962$

B)

$\Rightarrow$ B $\Rightarrow$ $\Delta b = 0.02962 \times 24 = 0.7104$

Average delay = $\frac{A}{1-bA} = \frac{0.02962}{1-0.7104} = 0.1022$ sec

Average internet delay = 3 sec

Total average response time = 0.1022 + 3 = 3.1022 sec

B) Hit rate = 1 − miss rate

1 − 0.3

0.7

Total respons time = 0.7 × 0.1022 + 0.3 (0.1022 × 3) = 0.1002 sec

Q.2

A) Overday network.

↳ Number of nodes (N): active peers in overday network and no. of edge (M): Total router through which TCP connection pause

↳ Therefore the co-corresponding overday network has N nodes & $N(N-1)/2$ edges.

B) SMTP & HTTP

* SMTP:

↳ Marks end with a single Period for the body message.

* HTTP:

↳ user headers like content length or Transaparent encoding to marks end.

HTTP does not use a stand alone character like SMTP

c) HTTP/2

* non-interleaved:
  - All 5000 video frames sent first without interleaving
* interleaved:
  - Assuming frames are interleaved.
  - 5000 + 4x3 frames times needed all three images are sent

Q. 3.

N	u	client server	Peer to Peer
10	2	500	500
10	10	100	100
10	100	10	10
100	2	5000	50
100	10	1000	10
100	100	100	1
1000	2	50000	5
1000	10	10000	1
1000	100	1000	0.1

Q4

* Bandwidth of 3G = 2000 Kbps
  - For 300 Kbps video will play more smoothly because 300 < 2000
  - For 1000 Kbps video will be a less smooth than 300 Kbps & it may buffered
  - for 3000 Kbps ~~the~~ video will buffer because 3000 > 2000.

Q. 5

N = 10

Server upload rate (U_s) = 30 Gbps → 30,000 Mbps
Peer download rate (d_i) = 2 Mbps
Peer upload rate (U) = 300 Kbps → 0.3 Mbps
file size (F) = 15 Gbits = 15000 Mbits.

* for client-server distribution.

$$D = F/U_s$$
$$= \frac{15000}{30000}$$
$$= 0.5 \text{ sec.}$$

* for P2P distribution:

$$D = F/\min(U, d_i)$$
$$= \frac{15000}{\min(U, d_i)}$$
$$= \frac{15000}{0.3} = 50000$$

N = 100

Server upload rate (U_s) = 30 Gbps = 30,000 Mbps
Peer to Peer download rate (d_i) = 2 Mbps
Peer upload rate (U) = 700 Kbps = 0.7 Mbps.
file size (F) = 15 Gbits = 15000 Mbits.

* for client-server distribution:

$T = f/U_s$

$= \frac{15000}{30000} = 0.5$ sec

* For P2P distribution:

$T = f/\min(U, d_i)$

$= \frac{15000}{\min(U, d_i)}$

$= \frac{15000}{0.7} = 21,428.59$ sec

N = 1000

Server upload rate (U_s) = 30 Gbps = 30000 Mbps

Peer download rate (d_i) = 2 Mbps

Peer upload rate (U) = 2 Mbps

File size (f) = 15 Gbits = 15000 Mbits.

* For client-server distribution.

$T = f/U_s = 15000/30000 = 0.5$ sec.

* for P2P distribution:

$T = f/U_s = 15000/\min(2, 2) = 15000/2 = 7500$ sec.

N	U	Client Server (sec)	P2P (sec)
10	300 Kbps	0.5	50,000
10	700 Kbps	0.5	21,429
10	2 Mbps	0.5	7500
100	300 Kbps	0.5	50000
100	700 Kbps	0.5	21429
100	2 Mbps	0.5	7500
1000	300 Kbps	0.5	50000
1000	700 Kbps	0.5	21429
1000	2 Mbps	0.5	7500