

Question 1 - Latency through a Network

The router should take 1 msec to process a packet and the network has two hops with distances of 1000km and 5000km and a bandwidths of 1 Mb/s and 20 MB/s . the processing delay of two hops should be 2 msec. The delay of transmission for this first hop is 8 msec and for the second one it is 0.4 msec, and as it goes with propagation delay for the first hop is 4 msec and for the second one it looks like it is 20 msec. After adding these two we get end to end delay of 34.4 msec. So all of this tells if there is other traffic at the router, it will definitely increase the queuing delay , leading to higher end to end delay .

Question 2 - Packet switching and Circuit switching

In circuit switching , the 2Mbps link should support a family of 2 since each require 1 Mbps. When it comes to packet switching more users can share the link, but the other side is the there will be queuing if the total demand exceeds a certain limit , though if two or fewer users transmit , there will be no queuing delay because it will not exceed the link capacity. If three users transmit 20% of the time , so the probability that all three transmit simultaneously is 0.8% and hence the queue will grow during this time.

Question 3 - Peer to Peer (P2P) and Client Server

The client server distribution time should be 10000 seconds cause the server upload time is 500 seconds and the peer download time is 10000 seconds. For a p2p distribution the time will depend upon total upload capacity which will include the server and all peers. The time of distribution should be a maximum of server upload time , peer download time and the file size divide by the total upload capacity. Due to dynamic peer selection and chn based sharing the BitTorrent will perform better.

Question 4 - HTTP

The header is separated from the body through a blank line in HTTP, which makes it easier to parse. HTTP could have been designed without it but the blank line simplifies the parsing process. And for a persistent connection and to determine where the message ends the content Lenth header is necessary.

Question 5 - Caching and DNS

The browser retrieve the page and images from the proxy cache and perform a DNS lookup of the web page and images are cached and the domain is not cached in the local DNS. The browsers send an HRRP request to the origin server and retunes the page and images if the web page is not cached

but the domain is cached. If neither the web page nor the domain is cached the browser perform a DNS lookup and sends and HTTP request for the page and request the image. For a user in Adelaide accessing a site in Sydney the total time would be around 150-250 ms due to multiple round trip times over ADSL

Question 7 - HTTP Head vs HTTP Get

The Httpd get request return both the headers and the body compare to that the HTTP head request only return the headers of the response. This allows the client to receive metadata about a resource without downloading the entire content.

Question 6 - Topics to Review

I would like to review latency calculations in networks, P2P vs client-server distribution, and HTTP protocol details such as headers and caching.