

CS610 Assignment No1 Spring 2023

Answer1:

To calculate the time required to transfer the entire file over a network with a bandwidth capacity of 1Mbps, we need to consider the file size and the network bandwidth.

Given:

File size = 25.0 MB

Packet size = 1KB (1 kilobyte)

Bandwidth capacity = 1Mbps (1 megabit per second)

First, we need to convert the file size and bandwidth to a consistent unit. Since the file size is given in megabytes (MB) and the bandwidth capacity is given in megabits per second (Mbps), we need to convert the file size to megabits (Mb).

1 megabyte (MB) = 8 megabits (Mb) $25.0 \text{ MB} = 25.0 * 8 = 200.0 \text{ Mb}$

Next, we can calculate the total number of packets required to transfer the file:

Total number of packets = File size / Packet size

Total number of packets = $200.0 \text{ Mb} / 1\text{KB} = 200,000$ packets

To calculate the time required to transfer each packet, we divide the packet size by the network bandwidth: Time to transfer one packet = Packet size / Bandwidth capacity

Time to transfer one packet = $1\text{KB} / 1\text{Mbps} = (1 * 8) / 1 = 8$ milliseconds (ms)

Finally, to calculate the total time required to transfer the entire file, we multiply the time to transfer one packet by the total number of packets:

Total transfer time = Time to transfer one packet * Total number of packets
Total transfer time = 8 ms * 200,000 packets = 1,600,000 ms

Converting milliseconds to seconds:

Total transfer time = 1,600,000 ms / 1000 = 1600 seconds

Therefore, it will take approximately 1600 seconds to transfer the entire file over the network with a bandwidth capacity of 1Mbps.

Q2:

You are required to use ping command for testing the reachability to www.vu.edu.pk in two phases, for phase 1 you have to use ping command with 10 bytes of data for each packet and for phase 2, you need to send 10,000 bytes of data for each packet. Perform the mentioned task in your computer / laptop, take the screenshots clearly showing ping command and the result for both scenarios (Phase 1 and Phase 2) and paste in the MS Word file as solution. At the end, also compare the results of both scenarios / phases, provide the average time difference in milli-seconds in the same file and upload the file on VU-LMS within the due date.

```
Command Prompt
Microsoft Windows [Version 10.0.19045.2965]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>ping -n 5 -l 10 www.vu.edu.pk

Pinging dl-www.vu.edu.pk [111.68.103.36] with 10 bytes of data:
Reply from 111.68.103.36: bytes=10 time=43ms TTL=51
Reply from 111.68.103.36: bytes=10 time=47ms TTL=51
Reply from 111.68.103.36: bytes=10 time=46ms TTL=51
Reply from 111.68.103.36: bytes=10 time=46ms TTL=51
Reply from 111.68.103.36: bytes=10 time=115ms TTL=51

Ping statistics for 111.68.103.36:
    Packets: Sent = 5, Received = 5, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 43ms, Maximum = 115ms, Average = 59ms

C:\Users\ASUS>
```

Screen shot 2.

```
Command Prompt
Microsoft Windows [Version 10.0.19045.2965]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>ping -n 5 -l 10000 www.vu.edu.pk

Pinging dl-www.vu.edu.pk [111.68.103.36] with 10000 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 111.68.103.36:
    Packets: Sent = 5, Received = 0, Lost = 5 (100% loss),

C:\Users\ASUS>
```

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