

COL334-A1

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1 Networking Tools

1.1 (a)

ISP	IP Address
Reliance	49.36.178.104
Airtel	106.202.88.237

1.2 (b)

Name	DNS Server	<i>www.google.com</i>	<i>www.facebook.com</i>
Default Ubuntu Server	127.0.0.53	142.250.192.4	157.240.198.35
Reliance	192.168.29.1	142.250.192.164	157.240.198.35
OpenDNS Home	208.67.222.222	142.250.194.196	157.240.198.35
Cloudflare	1.1.1.1	142.250.77.68	31.13.79.35
Google	8.8.8.8	142.250.192.228	157.240.198.35
Quad9	9.9.9.9	172.217.21.4	31.13.66.35
CleanBrowsing	185.228.168.9	142.250.195.36	157.240.235.35

Source for servers' addresses: [List](#).

1.3 (c)

<i>Stats for www.iitd.ac.in</i>		
Number of times pinged	Packet size*(in bytes)	Able to ping?
5	64	YES
5	128	YES
5	1024	YES

*Does not include Header Data which is 8 bytes. For example, if value is 64 then the data packet sent will be of size 72.

The maximum size ping can send is **65527**, but the maximum size that IITD server allows is **65507**. The maximum size for the domains in part (b) is the same as that of ping. However, I was only able to send data packets of sizes: (i.e. transmitted and recieved without any data loss)

- *www.iitd.ac.in* 1472
- *www.google.com* 68
- *www.facebook.com* 1452

Therefore, the maximum sizes of ping was different for all the DNS.

1.4 (d)

I tried with *www.google.com*

- **Reliance ISP:**
We can see all the routers use *IPv4*. Some private servers don't reply to the *traceroute*. The reason for this is that *traceroute* by default uses UDP protocol and in such case the servers don't always reply to the requests, therefore there are *x * * ** sequences.
To make the servers always reply, we can use the *ICMP* option in the settings.

2 Packet Analysis

2.1 (a)

For the first query, time for the DNS request-response to complete were 0.0768 seconds.

2.2 (b)

The number of HTTP requests generated were 12.
Looking at the data, I gather that first text/HTML is generated, then CSS, JavaScript objects and finally images are generated in the structure of the web page. Also, different objects may be stored on different servers. Persistent TCP connections are also used.

2.3 (c)

- Time at which the first request was issued = 1.11 seconds.
- Time at which the last content object was recieved = 2.95 seconds.
- Time taken to download the whole page = $2.95 - 1.11 = 1.84$ seconds.

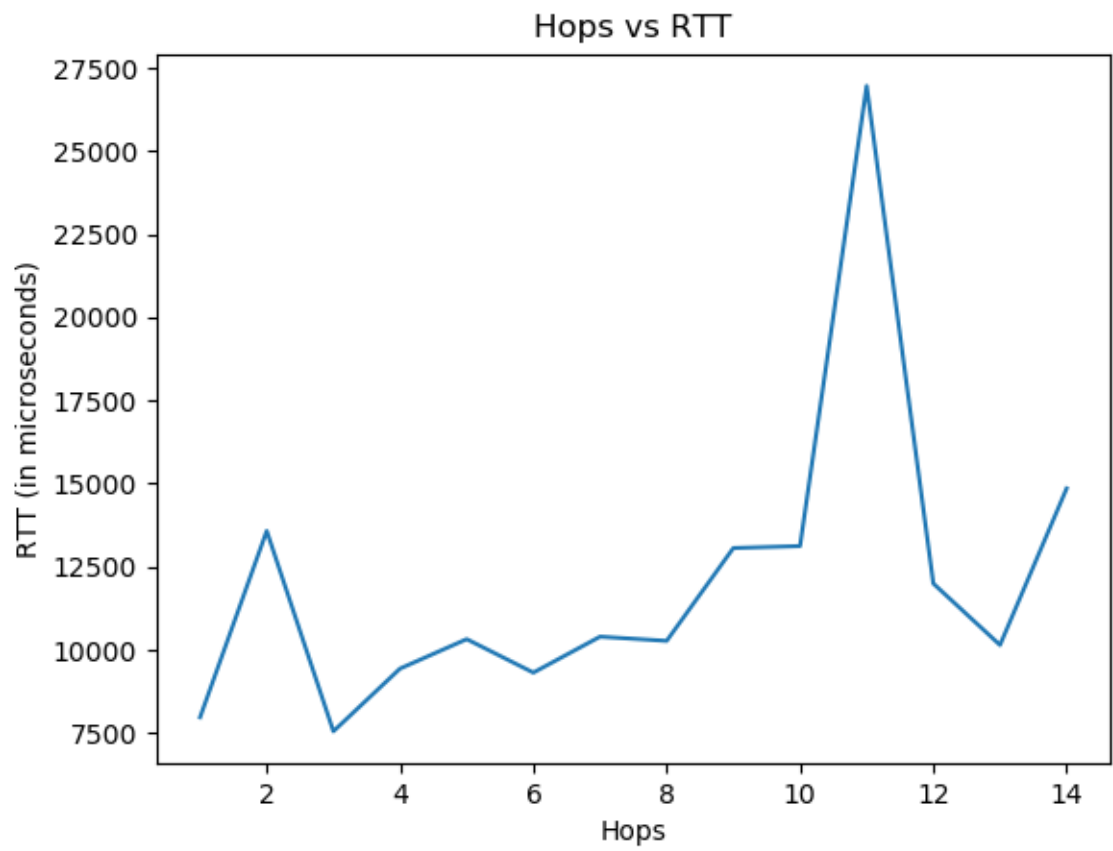
2.4 (d)

No, I was not able to find any HTTP traffic.

The reason is that <http://www.cse.iitd.ac.in> operates on HTTPS protocol while <http://apache.org/> still operates on HTTP protocol.

3 Traceroute using Ping

Following is the graph noticed for *www.facebook.com*



hops	rtt	ip
1	7975	192.168.29.1
2	13580	10.9.152.1
3	7553	172.16.18.29
4	9439	192.168.96.236
5	10325	172.26.111.116
6	9318	172.26.111.131
7	10399	192.168.44.48
8	10273	192.168.44.47
9	13065	172.25.115.24
10	13124	172.16.18.28
11	26964	157.240.73.118
12	11997	157.240.50.169
13	10149	157.240.39.7
14	14858	157.240.198.35