Computer Networks Lab (CS 353): Lab 11

Total Marks: 10

Question

In this lab, you will examine some practical aspects of networking in daily life. The commands specified are for Windows command line, but you may use similar commands on Linux/MacOS.

1. Find the IP address of your system using <*ipconfig*>. Record the result. Record the subnet mask.
2. Find another IP address within your subnet (you can guess this from your subnet mask. Not all the IPs in your subnet may be allocated). Ping that IP address (<*ping ip_address*>) and record the result.
3. What is the address of the default gateway? In the list of IP addresses allowed by the subnet mask, do you find anything special about the address of the default gateway?
4. Find your external IP address using https://www.whatismyip.com/. Is this different from the address you found above? If yes, why?
5. Click on the IP address provided by https://www.whatismyip.com and explore further. What is the name of the ASN that you belong to? What is its number?
6. What is the ISP of your network?
7. Give an example of another IP address belonging to the same ASN. To which organisation does it belong?
8. Use tracert (same as traceroute) to trace the path to <*iiitg.ac.in*> What do you find? Explain the entries.
9. Find the ip address of the domain (of I I T Guwahati) iitg.ac.in using <*ping iitg.ac.in>.* Does this machine belong to the same ASN as IIIT Guwahati? Who is their ISP?
10. Check your ARP cache using *arp -a.* Now ping an IP address that is reachable from your machine, to which you have not yet connected. Check your ARP cache again. Do you see a difference? Why?
11. Find the routing table and the list of interfaces on your system using <*netstat -r*> . What is the MAC address of the interface using which you are connected to the network?
12. Find the address of your DHCP server. When was your IP address granted? For how long is the lease? (Use *ipconfig /all*)
13. Compare the round-trip times to:

    www.berkeley.edu (California)
    www.mit.edu (Massachusetts)
    www.ucl.ac.uk (London)
    www.usyd.edu.au (Sydney)
    www.uct.ac.za (Cape Town)

    Ignore the domain from which you do not get responses.