CO223 – Computer Communication Networks I

Semester-3, 2016

Laboratory Session 1

Network components and the different pieces of the Internet: Introduction

---

Instructions:

- You are required to do each step as instructed below.
- You are advised to discuss with the Instructors if you are not clear about any issues.
- You are required to write a report and submit within a week from your practical session. In your report, each problem/question should be addressed.
- Time: 2 hours.

---

a. Links

Get familiar with different types of network cables such as twisted pair, coaxial, and optical fibers, and connectors such as Registered Jack 45 (RJ-45).

- Find about the specific types in each category such as UTP (Cat5….), and STP, and single-mode and multi-mode fibers.
- Identify the different pairs of conductors in the twisted pair cable and their usage, and the color codes.
- Identify the difference and the usage of straight through- and crossover- cables.
- Search and find about 'Auto-MDIX' and briefly describe about how the cables are used in this case [homework].
- Discuss with the Instructors and get to know about 'wireless-links'.

b. Systems/nodes

Get familiar with network devices other than computers/PCs (end systems) such as routers, Ethernet switches, and hubs.

- Find out about different interfaces/ports such as Ethernet interfaces, serial interfaces, and other wide-area network interfaces in the devices, and the associated cables and connectors.
- Identify the console port/interface and get to know about how this port is used.

c. A network

- See how PCs, Ethernet switches, and routers (systems/nodes) are connected with network cables (links) to form a *network* as shown below.

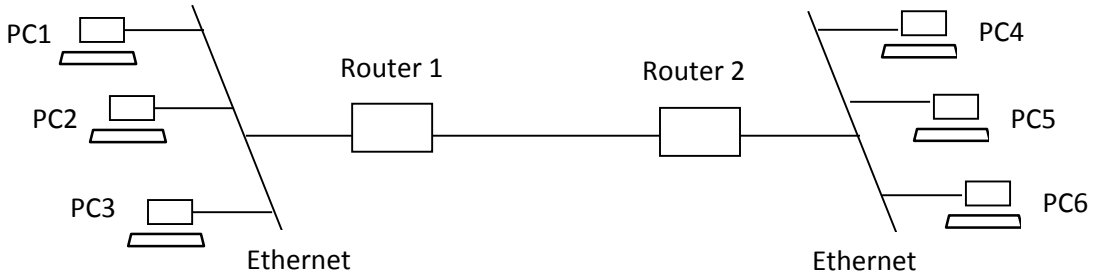

Fig. 1 A network

- Check the network by running a network application such as downloading webpage contents from a server (e.g., PC4) to a client (e.g., PC1).

d. Addresses to interfaces in the network

- Discuss with the Instructors and get to know about 'addresses' in networks.
- Observe how 'addresses' have been assigned to network interfaces (of PCs and routers). In Fig.1, label/mark the addresses assigned to interfaces.

e. The department network

- Have a close look on the Ethernet switch installed in the switch-rack at the laboratory, which connects to the rest of the department network (and the university network).
- Identify the different cables connected to it.
- Visit each floor (of the Computer Engineering Department) and identify the network switches, links, wireless networks, etc.
- Discuss with the Instructors and draw the diagram of the entire department network. Label the nodes with the type of node and model (e.g., Ethernet switch, Cisco abcd 1234) and links.

f. The university network and the Internet

- Discuss with the Instructors on how the department network is connected to other switches and routers in the University.
- Get to know about the overall university network. Provide a diagram of the university network. Label/mark the devices and cable-types in your diagram.
- Discuss with the Instructors and describe how the university network is connected to the Internet or how the university network becomes part of the Internet.