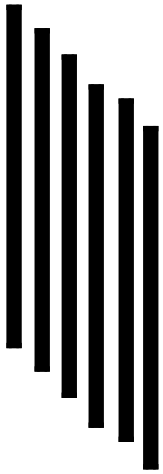
International College

Lab Report on
Computer Network (Device and Cables)



B.Sc (CSIT) 4th Semester
Lab Report Number 1

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Lab Report 1

Understanding of Network equipment, wiring in details

- **Introduction**

  The process of communication/transmission of data between devices is called networking. Different devices like Hub, Switch, Router are used in order to communicate with different devices.

- **Objective**

  Study of following Network Devices in Detail and study of different types of Network Cables.

  - Repeater
  - Hub
  - Switch
  - Bridge
  - Router
  - Gateway

- **Procedure**

  - **Repeater:**

    Functioning at Physical Layer. A repeater is an electronic device that receives a signal and retransmits it at a higher level and/or higher power, or onto the other side of an obstruction, so that the signal can cover longer distances. Repeater have two ports, so cannot be use to connect for more than two devices

  - **Hub:**

    An Ethernet hub, active hub, network hub, repeater hub, hub or concentrator is a device for connecting multiple twisted pair or fiber optic Ethernet devices together and making them act as a single network segment. Hubs work at the physical layer (layer 1) of the OSI model. The device is a form of multiport repeater. Repeater hubs also participate in collision detection, forwarding a jam signal to all ports if it detects a collision.

  - **Switch:**

    A network switch or switching hub is a computer networking device that connects network segments. The term commonly refers to a network bridge that processes and routes data at the data link layer (layer 2) of the OSI model. Switches that additionally process data at the network layer (layer 3 and above) are often referred to as Layer 3 switches or multilayer switches.

  - **Bridge:**

    A network bridge connects multiple network segments at the data link layer (Layer 2) of the OSI model. In Ethernet networks, the term bridge formally means a device that behaves according to the IEEE 802.1D standard. A bridge and switch are very much alike; a switch being a bridge with numerous ports. Switch or Layer 2 switch is often used interchangeably with bridge. Bridges can analyse incoming data packets to determine if the bridge is able to send the given packet to another segment of the network.

- **Router:**

  A router is an electronic device that interconnects two or more computer networks, and selectively interchanges packets of data between them. Each data packet contains address information that a router can use to determine if the source and destination are on the same network, or if the data packet must be transferred from one network to another. Where multiple routers are used in a large collection of interconnected networks, the routers exchange information about target system addresses, so that each router can build up a table showing the preferred paths between any two systems on the interconnected networks.

- **Gate Way:**

  In a communications network, a network node equipped for interfacing with another network that uses different protocols.

  o A gateway may contain devices such as protocol translators, impedance matching devices, rate converters, fault isolators, or signal translators as necessary to provide system interoperability. It also requires the establishment of mutually acceptable administrative procedures between both networks.
  o A protocol translation/mapping gateway interconnects networks with different network protocol technologies by performing the required protocol conversions.

➢ **Different types of Network Cables.**

Apparatus (Components): RJ-45 connector, Crimping tool, Twisted pair cable

➢ **Procedure**

To do these practical following steps should be done:

Steps 1: Strip

Using the stripping razor on the crimp tool, strip 3-5 millimetres off the sheath at the end of the cable. After you strip, you'll find 8 color-coded wires inside.

Step 2: Arrange

For making a standard cat 5 cable, you'll want to arrange the colorcoded wires in the same order on both ends. It actually doesn't matter which order you put the colours in, as long as it's the same on both ends.

The 568B ordering is

1. White/orange striped.
2. Solid orange.
3. White/green striped.
4. Solid blue.
5. White/blue striped.

6. Solid green.
7. White/brown striped.
8. Brown.

Step 3: Crimp

Insert the coloured wires into the cat 5 plug. Once they're in the right order in the plug, push them flush against the tip. Then, insert the plug into the crimp tool and squeeze. Then, insert the plug into the crimp tool and squeeze.

➢ **Diagram**

Cable Diagrams

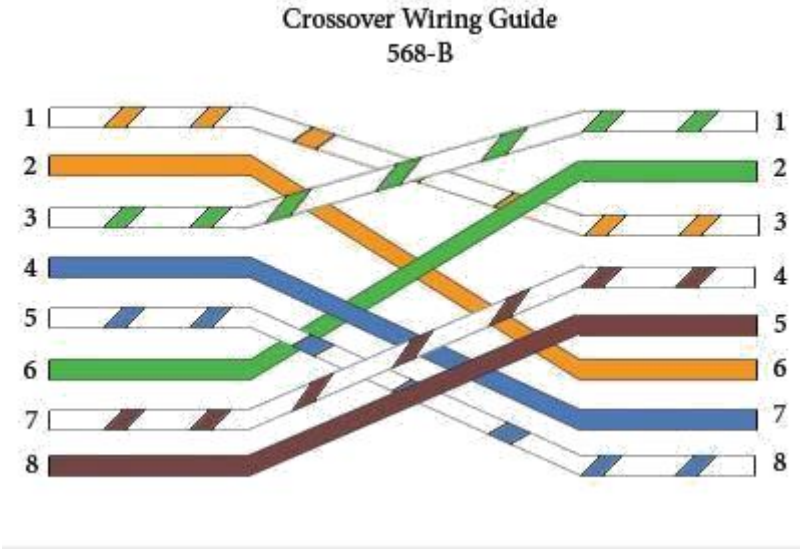

Fig: Crossover Wiring Guide

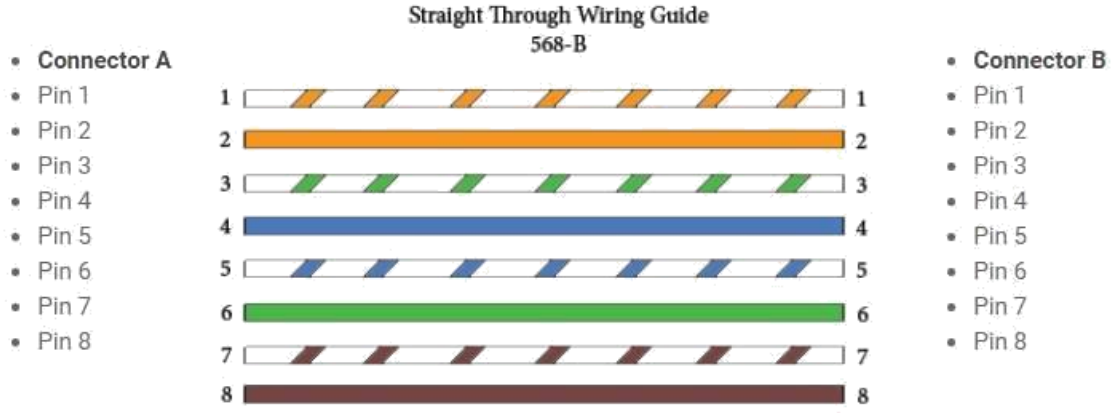

Fig: Straight Through Wiring Guide

➢ **Conclusion**

After completing this lab, we learned about the networking devices and different network cables.