

WEEK - 5

Connecting to the Internet

Wired Networking :

- **Dial - up, Modems & Point to point protocols** : Dial - up connections are transmitted data through a device called "Modem". Modem stands for Modulation & Demodulation.
- **DSL (Digital Subscriber Lines)**
 - **ADSL (Asymmetric)** : Here **Download** and **Upload** speed varies.
 - **SDSL (Symmetric)** : Here **Download** and **Upload** speed does not vary.

Broadband Connections : Any connectivity technology that isn't dial-up internet.

Fiber Connections : Fiber connections use light instead of electric current for data transfers. The fiber connections are of various types.

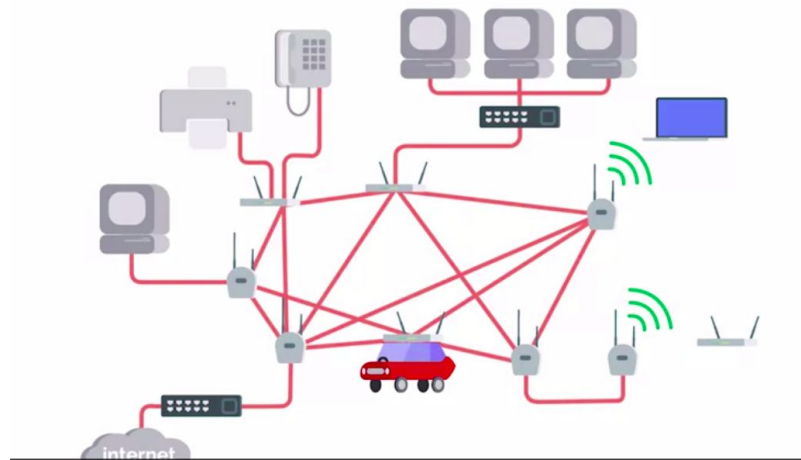
- **FTTX** - Fiber to the X
- **FTTN** - Fiber to the neighborhood
- **FTTB** - Fiber to the buildings
- **FTTH** - Fiber to the home

Optical Network Terminator : It converts data from protocols the fiber network can understand, to those that more traditional, twisted-pair copper networks can understand.

Wireless Networking :

The Wireless Networking standard is set by IEEE 802.11. Here the communication is carried out through radio waves.

- **Frequency Band** : A certain section of the radio spectrum that's been agreed upon to be used for communications. Most commonly, Wi-Fi operates in the frequency of **2.4GHz** and **5GHz**.
- **Wireless Network Configurations** :
 - **Ad - hoc Networks** : Nodes that all speak directly to each other.
 - **WLAN (Wireless LANs)** : One or more access points act as a bridge between a wireless and a wired network.
 - **Mesh Network** : It is a kind of a hybrid of the above two.



A Mesh Network

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- **Wireless Channels** : Individual, smaller sections of the frequency band used by a wireless network.
- **Wireless Security** :
 - **WEP (Wired Equivalent Privacy)**: An encryption technology that provides a very low level of privacy. It uses a **48 bit** key.
 - **WPA (Wifi Protected Access)**: It uses a **128 bit** key.
 - **WPA2** : Now mostly , we use the **WPA2** algorithm for security. It uses a **256 bit key**. **WPA2** is an update of **WPA**.