SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

DEPARTMENT OF ELECTRONICS & COMMUNICATION

OPTICAL AND MICROWAVE ENGINEERING

III YEAR / VI SEM

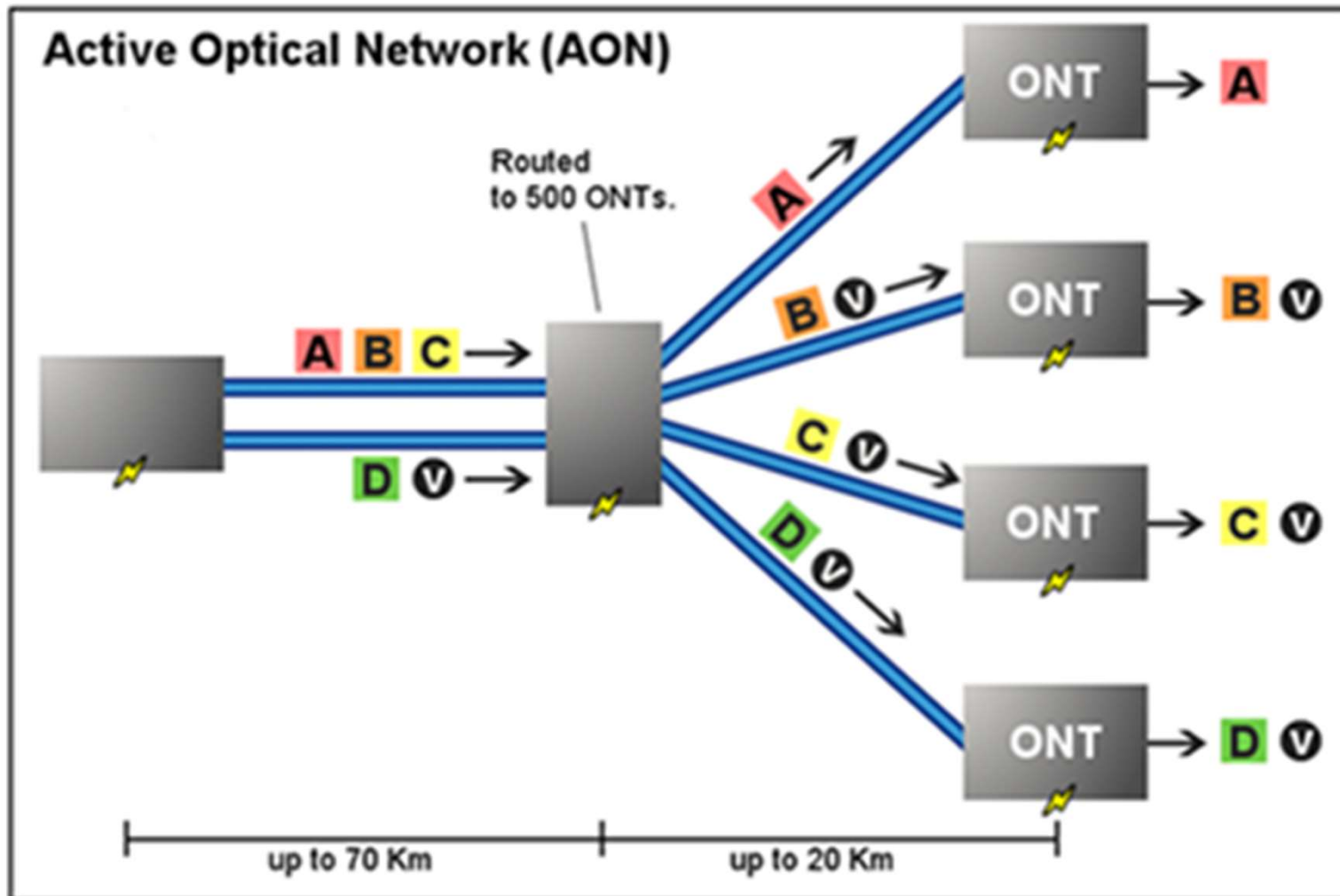## UNIT 5 – OPTICAL NETWORKS

FTH

AON /PON

- FTTH is a form of fiber-optic communication delivery that reaches one living or working space.

- The fiber extends from the central office to the subscriber's living or working space.

- There are two common systems available in FTTH networks: AON (active optical network) and PON (passive optical network).

Active Optical Network
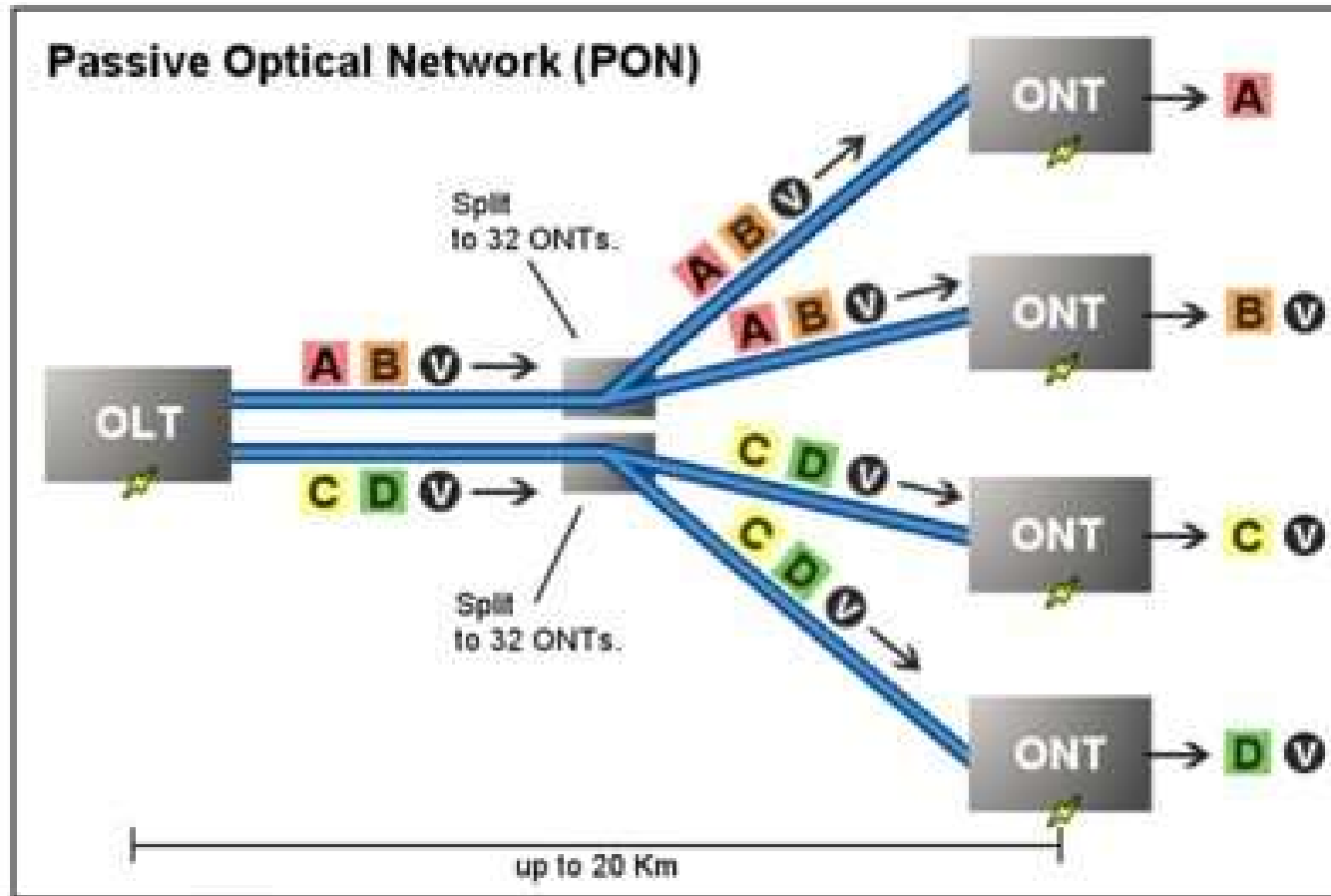
Active Optical Network

The AON arrangement is a point-to-point structure (PTP), meaning that each user has his own dedicated fiber optical line terminated on an optical concentrator.

In an active optical system, environmentally electrical switching equipment are deployed, such as a router or a switch aggregator, to manage signal distribution and route data to proper places.

Passive Optical Network

Passive Optical Network

• Passive optical network, just as its name shows, it only uses fiber and passive components like optical splitters rather than active components like amplifiers, repeaters, or shaping circuits.

• Its arrangement is a point to multi-point (PMP) network. That is to say a passive optical network shares fiber optic strands for portions of the network.

• In passive optical system, a single fiber from a central office optical line terminal (OLT) is connected to optical network terminals (ONTs) or optical network units (ONUs) at customer premises.

Where is the fiber?

- Where is the bulk of telephone cabling?
  - 10% is long distance
  - 10% is local loop (metropolitan)
  - 80% is subscriber loop
- Long distance and local loop are virtually all fiber
- Is FTTx just completing the system?

Why FTTx? Why Now?

- Both AON and PON provide feasible solutions for FTTH network connection.

- They are growing in popularity as the demands for greater bandwidth increase. FS.COM offers several PON equipment for FTTH network, such as PON splitters, OLTs, ONUs, and ONTs.
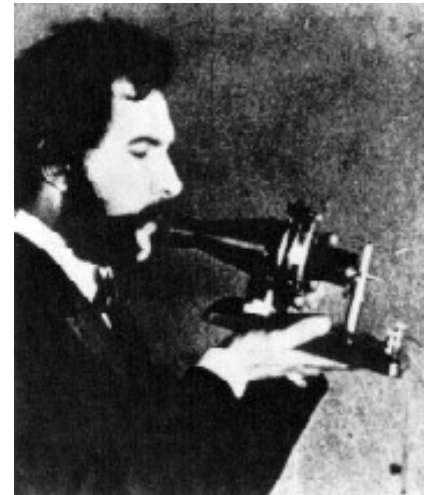
AON vs. PON

- Each system has its own virtual points and shortcomings.

- As for AON subscribers, the bandwidth in each port is dedicated to each individual without sharing of it.

- Thus, higher bandwidth per port is possible through AON compared with PON. In addition, because of its dedication to specific individual, it is easier to detect fiber faults or problems in AON.

- However, an AON system requires active equipment to manage signal transmission, which means power supply and potentially higher costs.

Reference

- www.google.com

- www.wikipedia.com

- www.studymafia.org

THANKS