**Thapar Institute of Engineering & Technology**
**(Deemed to be University)**
Bhadson Road, Patiala, Punjab, Pin-147004
Contact No. : +91-175-2393201
Email : info@thapar.edu

THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

# Course: Computer and Communication Networks

## Topic: SONET


### Faculty Name

**Dr. Amanpreet Kaur**

Assistant Professor

Department of Electronics and Communication Engineering,

Thapar Institute of Engineering and Technology, Patiala.

www.thapar.edu

# *Outline of the lecture*

- *Synchronous Optical Networking (SONET)*
- *SONET Devices*
- *SONET Layers*
- *SONET Network*

✓*Linear*

✓*Ring*

✓*Mesh*

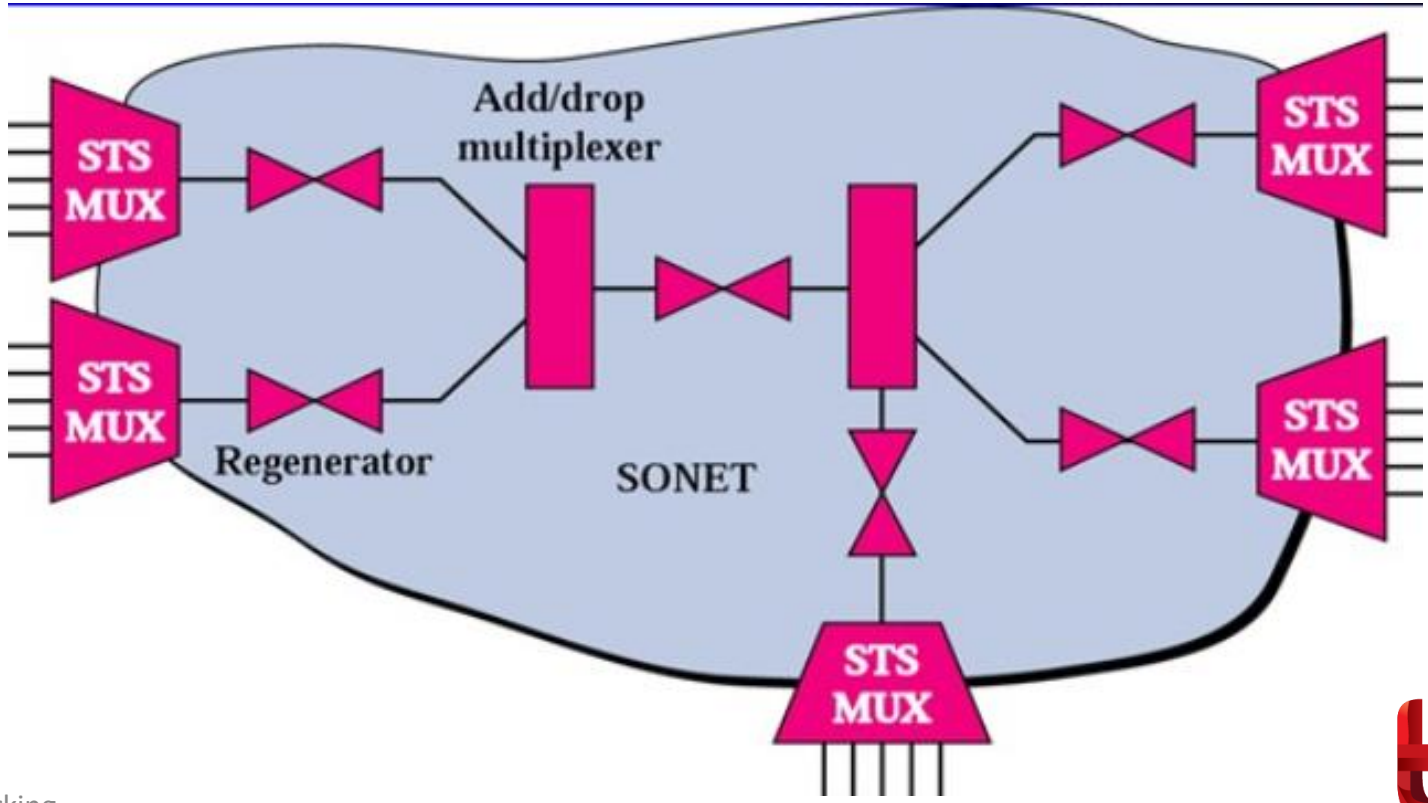
# *Synchronous Optical Networking (SONET)*

- SONET is a standardized protocols that transfer multiple digital bit streams synchronously over optical fiber using lasers or highly coherent light from light emitting diodes (LEDs).
- Synchronous network is a standard for optical communication transport formulated by American National Standards Institute (ANSI).
- SONET is a synchronous network using synchronous TDM multiplexing.
- The average frequency of all clocks in the system will be the same (synchronous) or nearly the same.

==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

# *SONET Devices*

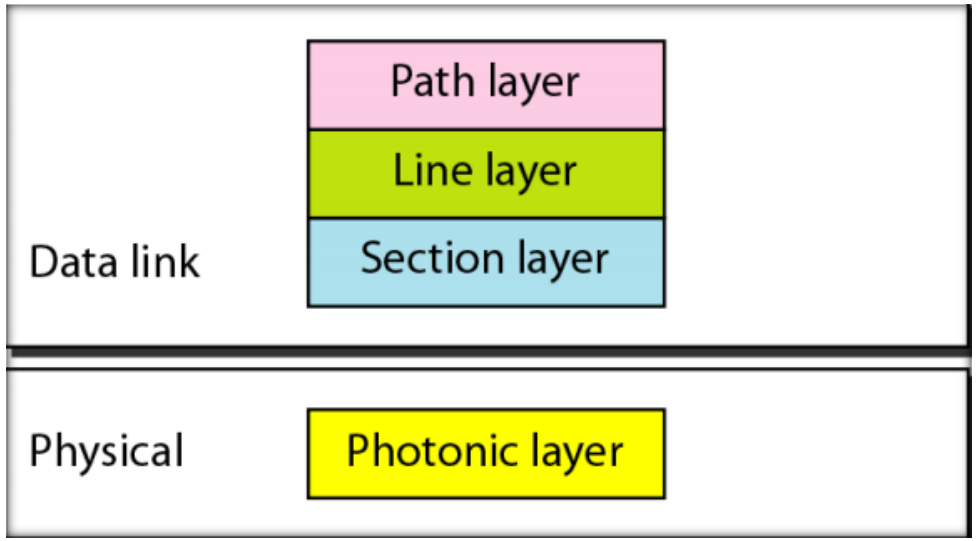
- Synchronous Transport signal (Multiplexers / De- Multiplexers)
- Regenerator
- Add/Drop Multiplexers




==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

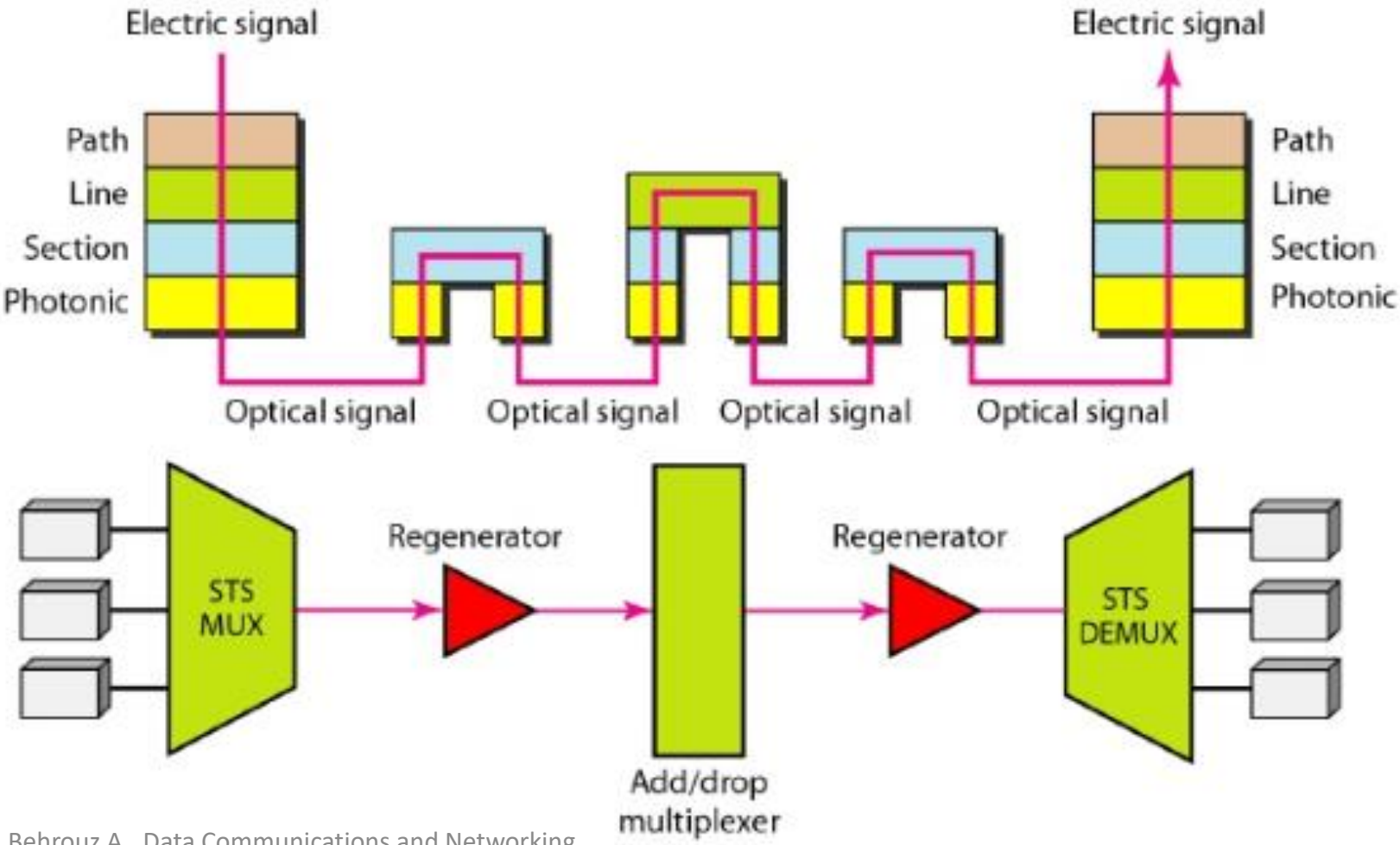
# *SONET Layers*

- The **path Layer** is responsible for the movement of a signal from its optical source to its optical destination.
- The **line layer** is responsible for the movement of a signal across a physical line.
- The **section layer** is responsible for the movement of a signal across a physical section.
- The **photonic layer** corresponds to the physical layer of the OSI model.



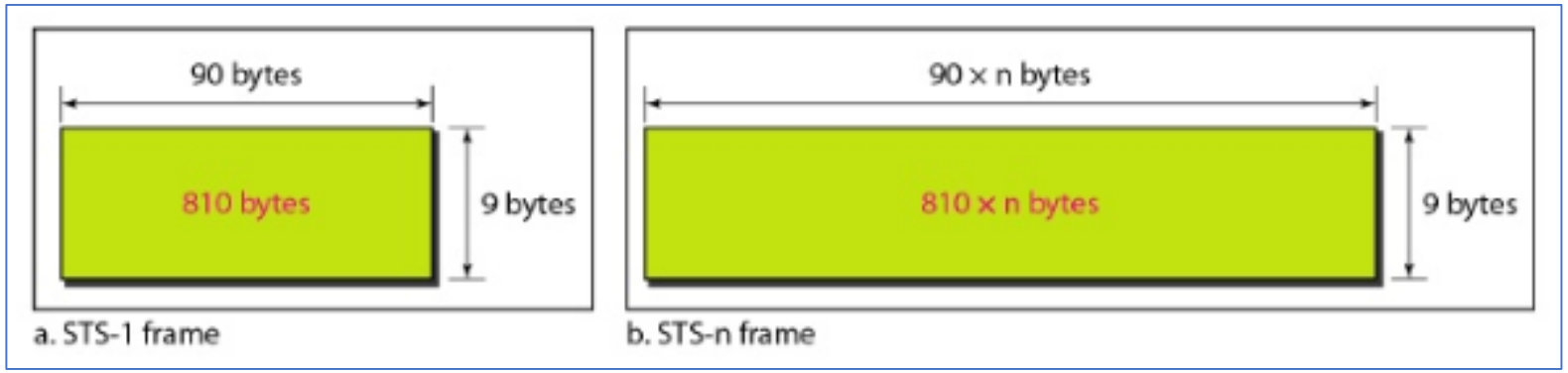

==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

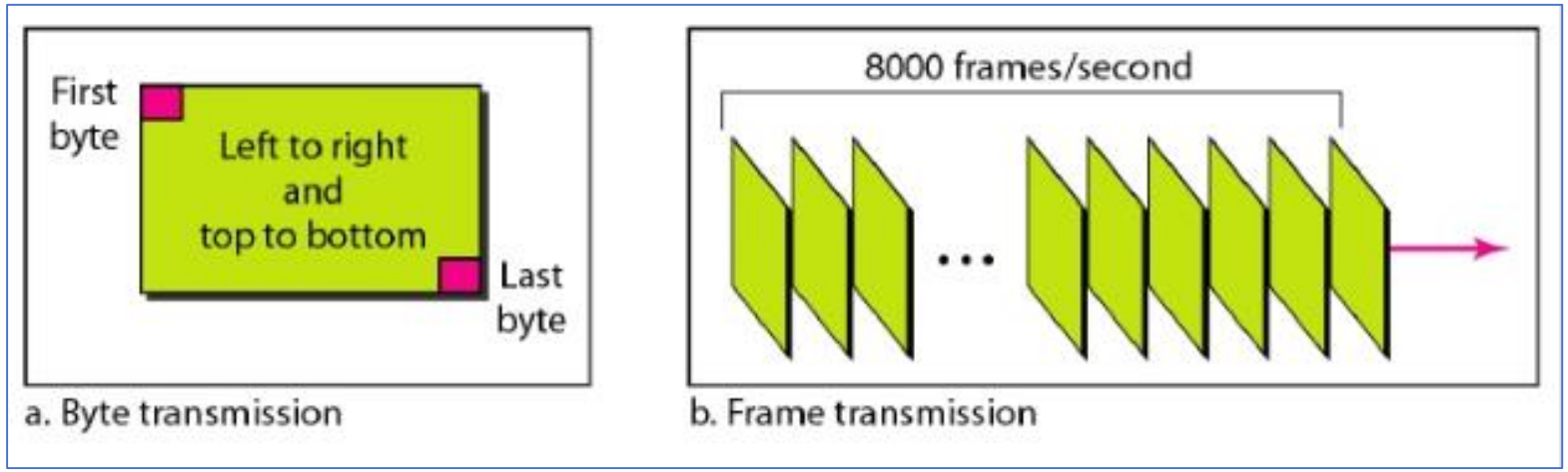
# Device-Layer Relationships




==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

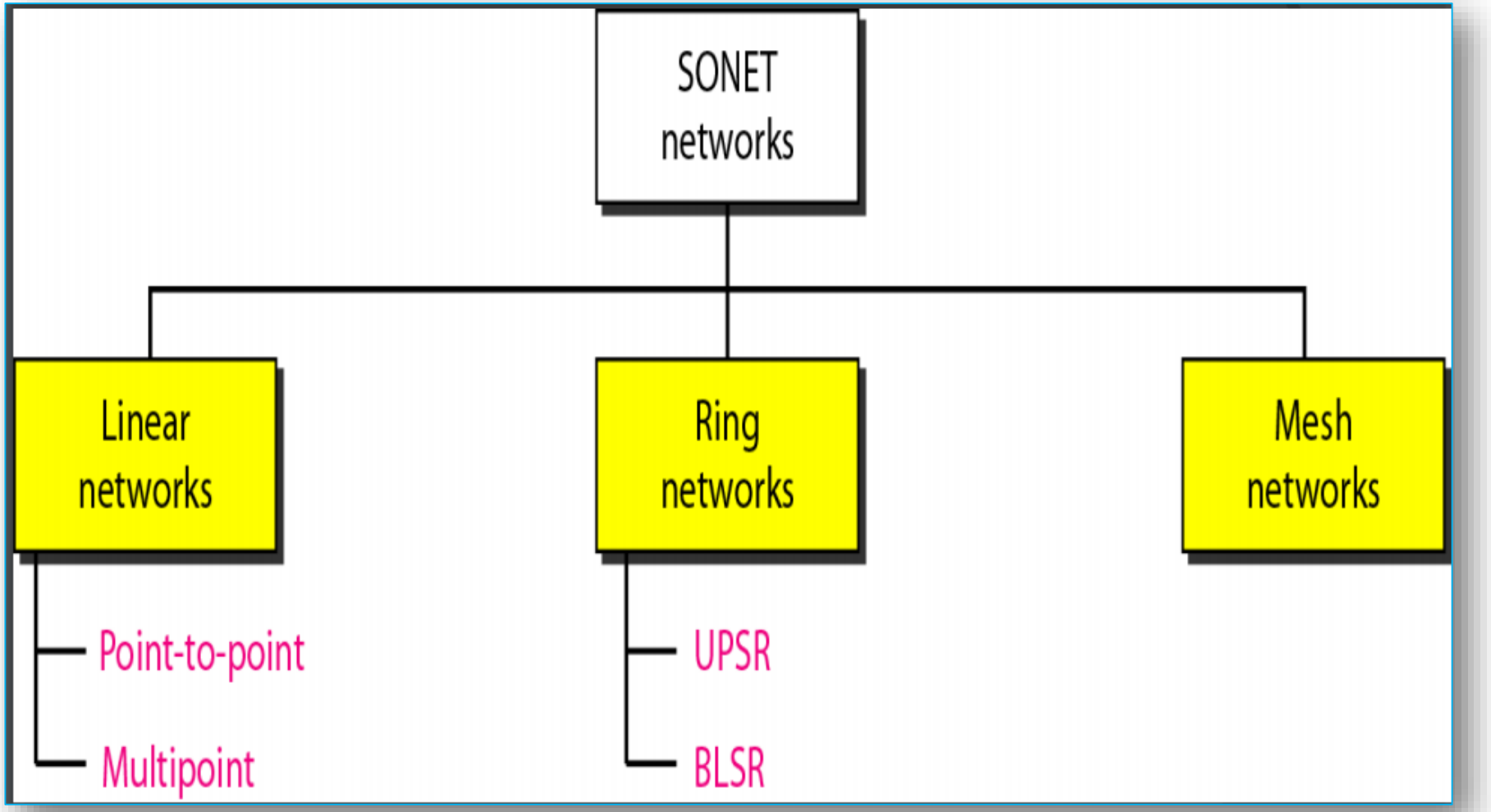
# SONET Frames




==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

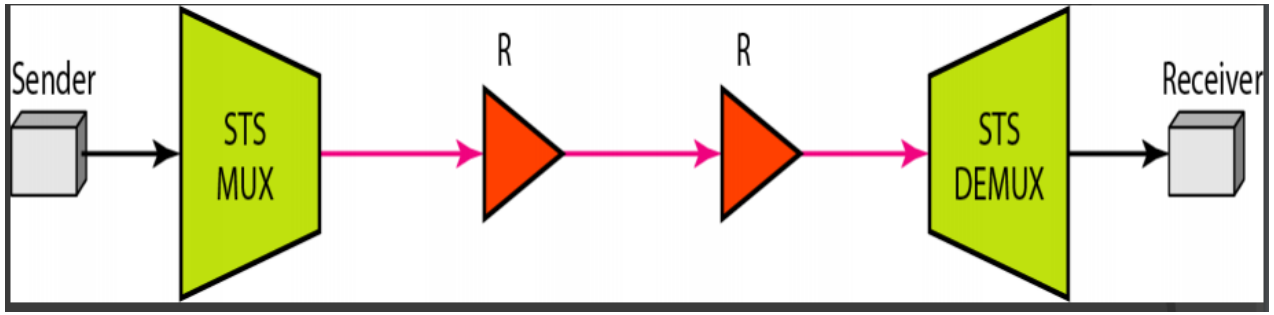
# SONET Network



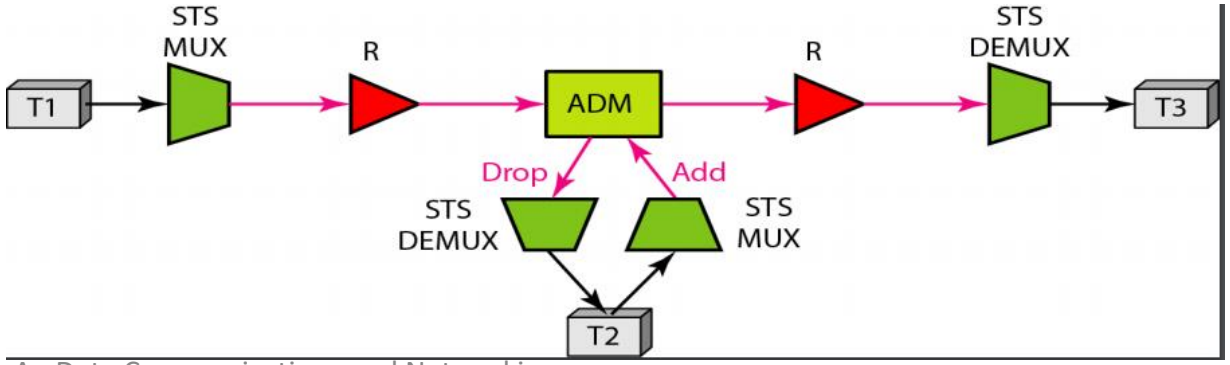

Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

# *Linear Network*

- Point to Point Network



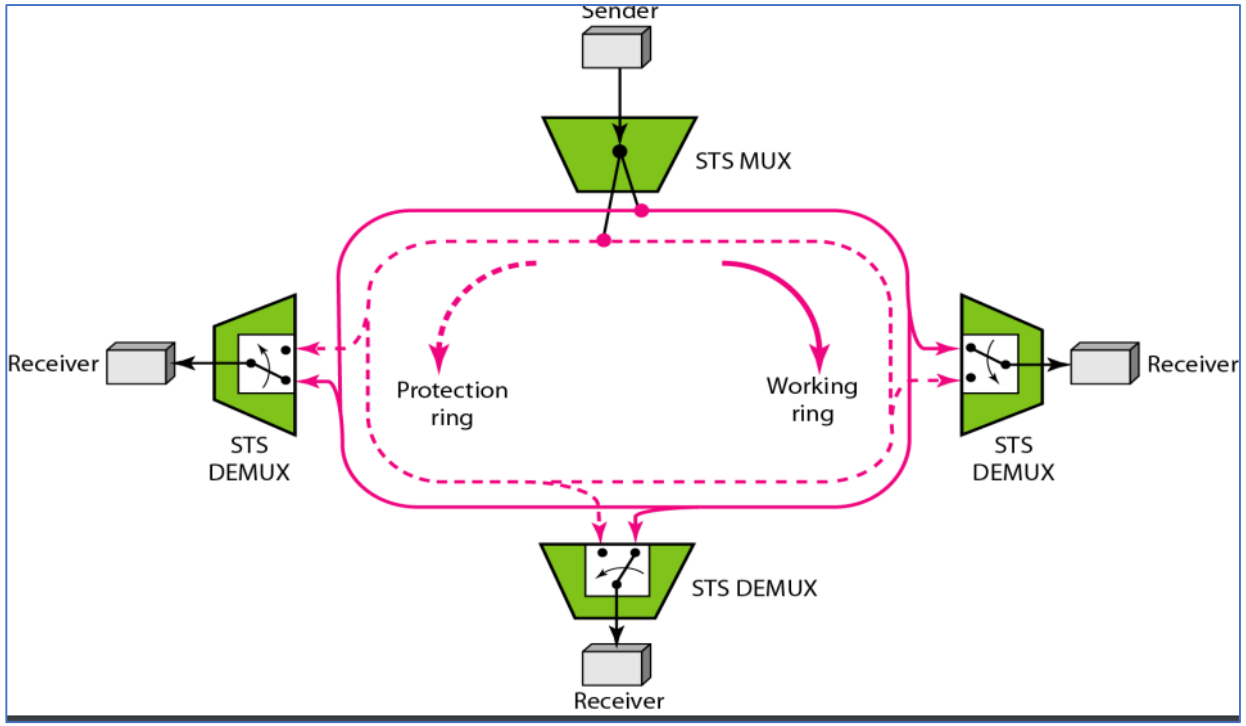

## Multipoint Network



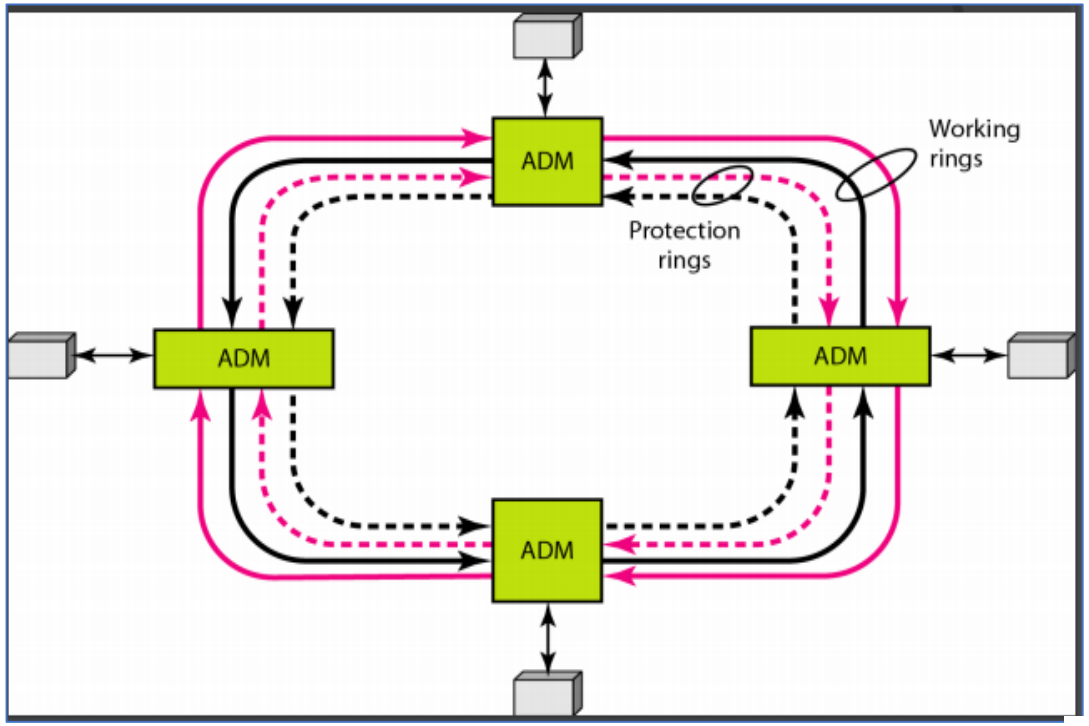

==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

# Ring Network`

- *Unidirectional Path Switching Ring*



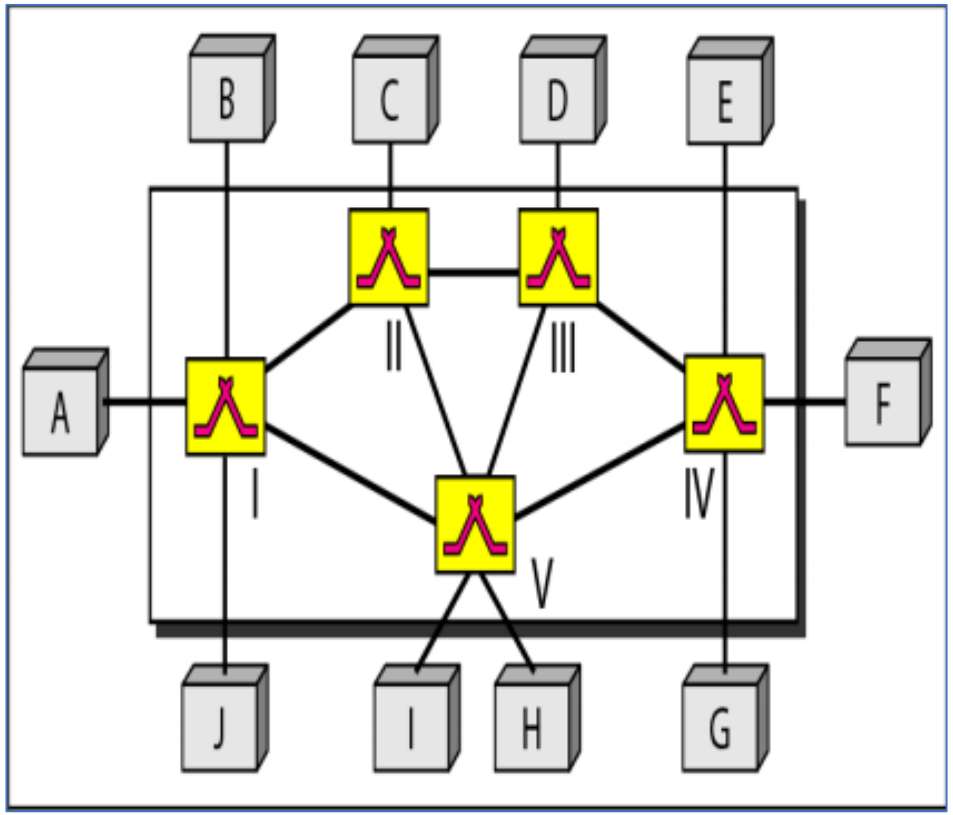

*Bidirectional Line Switching Ring*



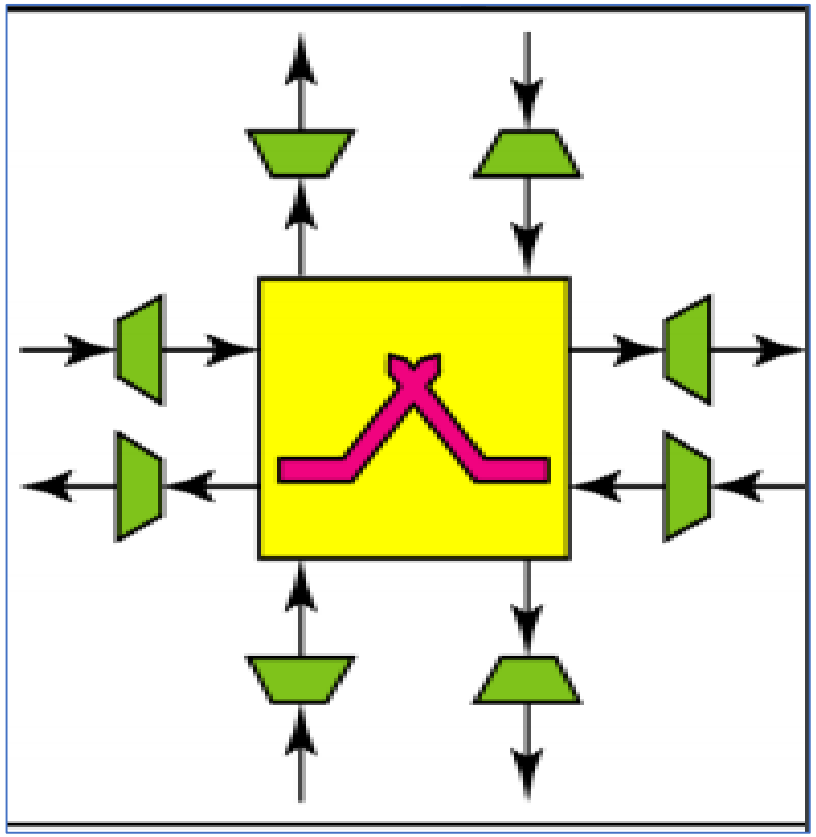

==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking

# *Mesh Network*

SONET mesh network




Cross-connect switch



==Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking


Thank You