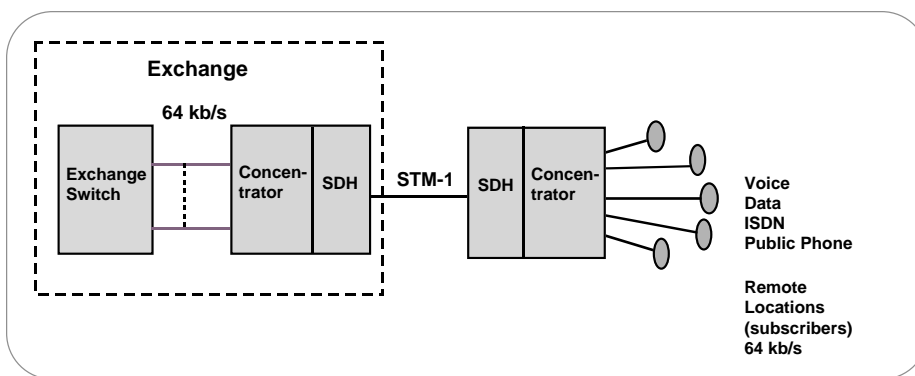


SDH Telecommunications Standard

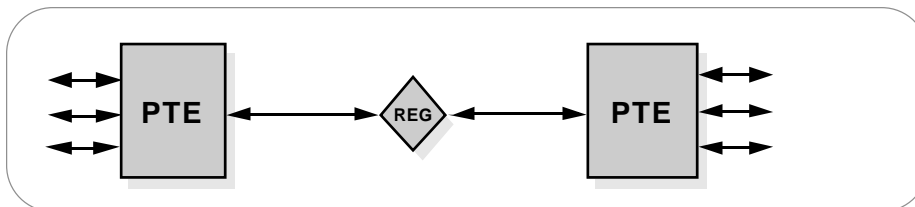
► Primer

Flexible Multiplexer

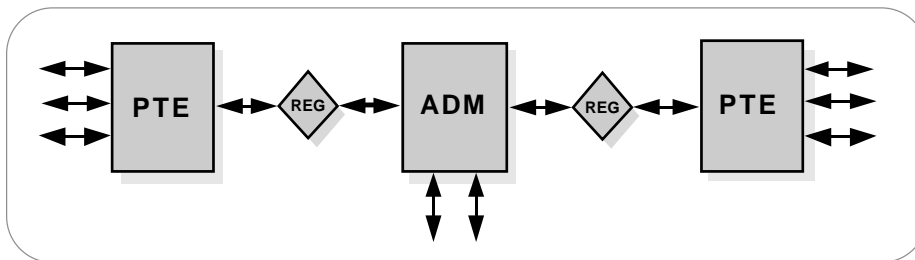
The Flexible Multiplexer (see Figure 24) may be considered a concentrator of low-speed services before they are brought into the local exchange for distribution. If this concentration were not done, the number of subscribers (or lines) that an exchange could serve would be limited by the number of lines served by the exchange. The Flexible Multiplexer itself is actually a system of multiplexers and switches designed to perform some traffic concentration and limited switching at a remote location.



► **Figure 24.** Flexible multiplexer example.



► **Figure 25.** Point-to-point.



► **Figure 26.** Point-to-multipoint.

SDH Network Configurations

Point-to-Point

The simplest network configuration involves two terminal multiplexers linked by fibre with or without a regenerator in the link (see Figure 25).

In this configuration, the SDH path and the Service path (for example, E1 or E3 links end-to-end) are identical and this synchronous island can exist within an asynchronous network world. In the future, point-to-point service path connections will span across the whole network and will always originate and terminate in a multiplexer.

Point-to-Multipoint

A point-to-multipoint (linear add/drop) architecture includes adding and dropping circuits along the way (see Figure 26). The SDH ADM (add/drop multiplexer) is a unique network element specifically designed for this task. It avoids the current cumbersome network architecture of demultiplexing, cross-connecting, adding and dropping channels, and then re-multiplexing. The ADM typically is placed in an SDH link to facilitate adding and dropping tributary channels at intermediate points in the network.

Mesh Architecture

The meshed network architecture accommodates unexpected growth and change more easily than simple point-to-point networks. A cross-connect function concentrates traffic at a central site and allows easy re-provisioning of the circuits (see Figure 27).

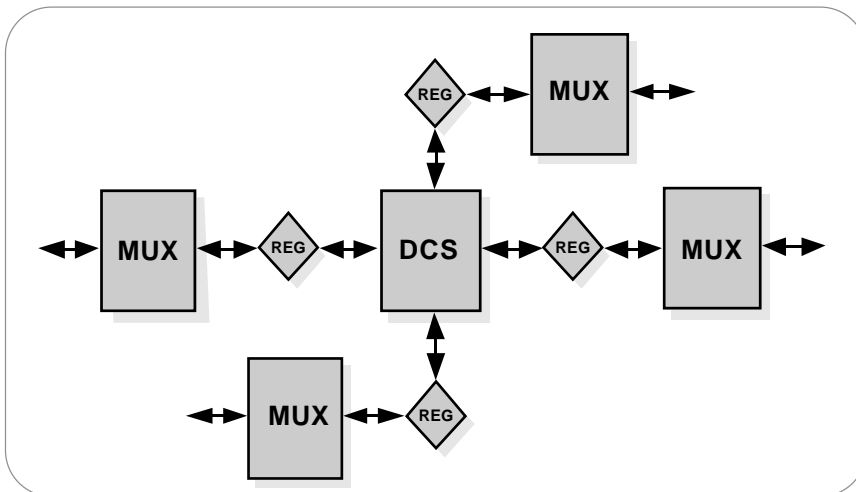
There are two possible implementations of this type of network function:

1. Cross-connection at higher-order path levels, for example, using AU-4 granularity in the switching matrix.
2. Cross-connection at lower-order path levels, for example, using TU-12 granularity in the switching matrix.

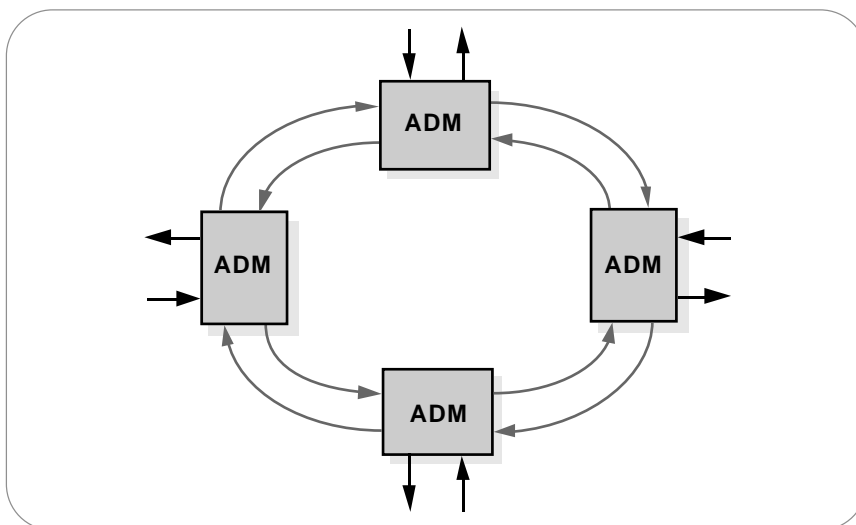
Ring Architecture

The SDH building block for a ring architecture is the ADM (see Figure 28). Multiple ADMs can be put into a ring configuration for either Bi-directional or Uni-directional traffic. The main advantage of the ring topology is its survivability; if a fibre cable is cut, for example, the multiplexers have the local intelligence to send the services affected via an alternate path through the ring without a lengthy interruption.

The demand for survivable services, diverse routing of fibre facilities, flexibility to rearrange services to alternate serving nodes, as well as automatic restoration within seconds, have made rings a popular SDH topology.



► **Figure 27.** Mesh architecture.



► **Figure 28.** Ring architecture.