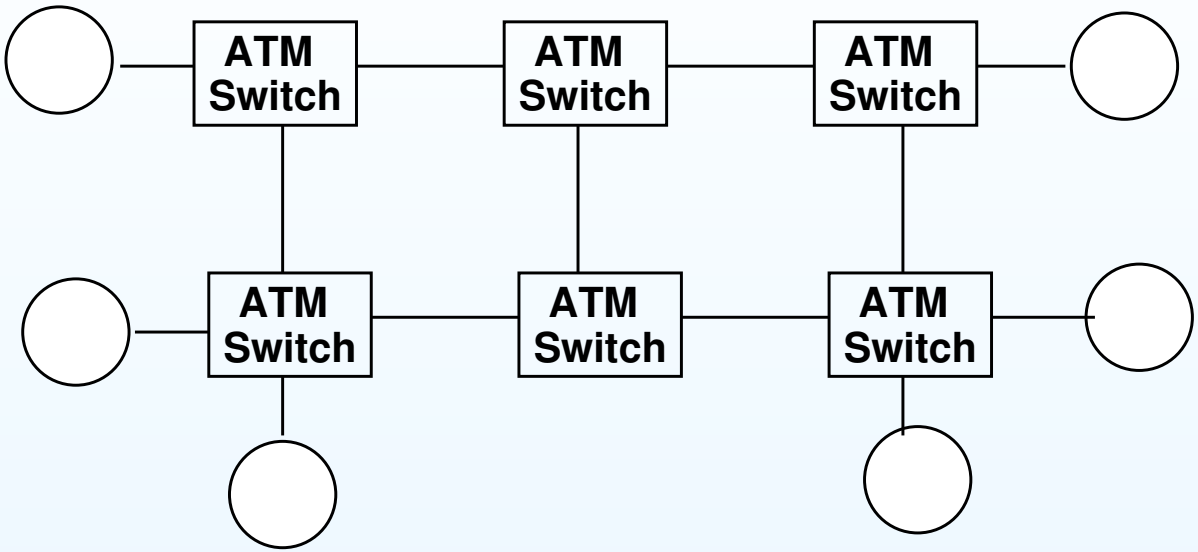
Virtual Circuits

- Packet switched networkwith defined paths or circuits.
- Each switch must maintain a list of virtual circuits.

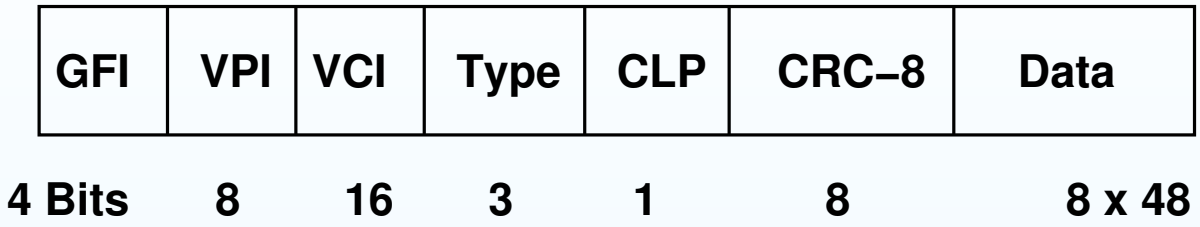
Asynchronous Transfer Mode



ATM Switching Network

- A switching system based on cell switching.
- Cell switching is packet-switching with fixed length packets.
- The advantages are high switching rates with packet switching flexibility.
- ATM uses a virtual-circuit, connection-oriented approach.

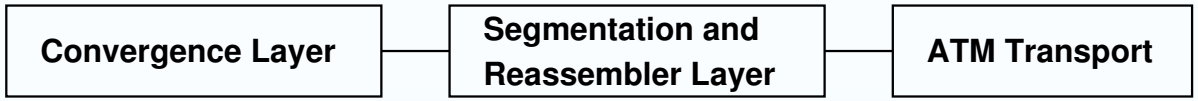
ATM Cell Format



ATM Cell Format

- GFC specifies general flow control options
- VPI is the Virtual Path Identifier
- VCI is the Virtual Circuit Identifier
- Cell type, congestion indicator and user signaling
- CLP Priority, 1 = drop this packet before others
- CRC-8

The ATM Hierarchy



ATM Hierarchy

These are actually upper layers that make the cell format less disagreeable to work with by providing useful interfaces.

ATM Adaption Layer 1 (AAL1)

For continuous bit transmission

Convergence Layer - divide the stream into 47 byte packets

SAR - Add a header byte to make the 48 byte cell. 1 bit signaling bit
3 bit sequence count
3 bit CRC over first 4 bits
1 bit parity over 7 bits

ATM Adaption Layer 5 (AAL5)

Variable length packet transport. Replaces AAL3/4

Convergence Layer - add a trailer to a 65,536 byte packet. 0 - 47 bytes to pad the last cell
1 byte user defined data
2 byte data length
4 byte CRC

SAR - Divide into 48 byte groups