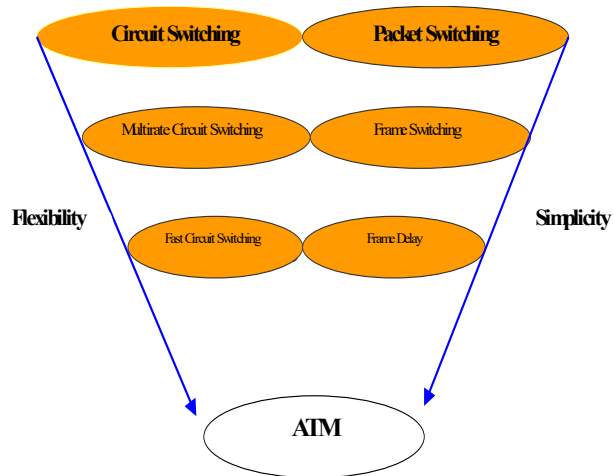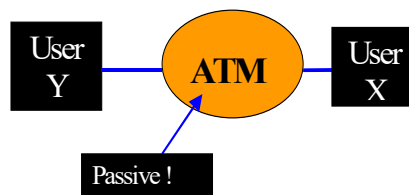# Evolution of ATM-1

- Characteristics of today's services
  - Heterogeneity.
  - Burstiness.
  - Quality of Service (QoS).
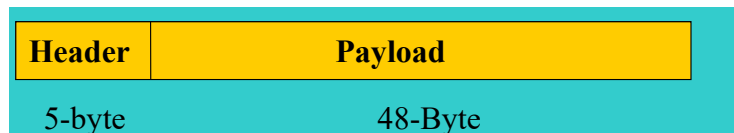
Circuit Switching Packet Switching

Multirate Circuit Switching Frame Switching

Flexibility Fast Circuit Switching Frame Delay Simplicity

ATM

Evolution of ATM-2

- High-Performance of Fiber Optics
- Intelligent Hosts
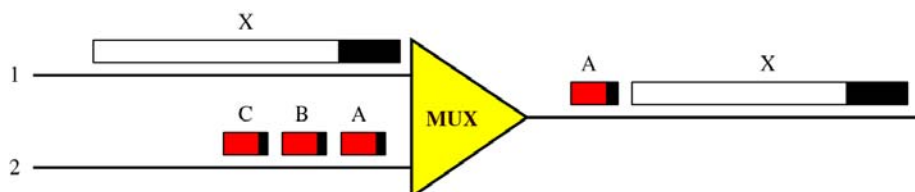
User Y — ATM — User X

Passive !

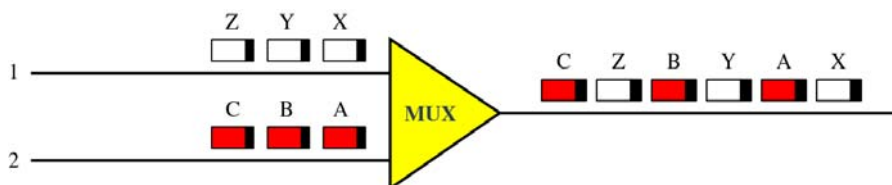# ATM Basic Principle

- Cell Switching based on:
    - Asynchronous time division multiplexing (as STDM)

    - The use of fixed length cells:
        - Minimum delay
        - Minimum switch complexity (Little processing and simple memory management)
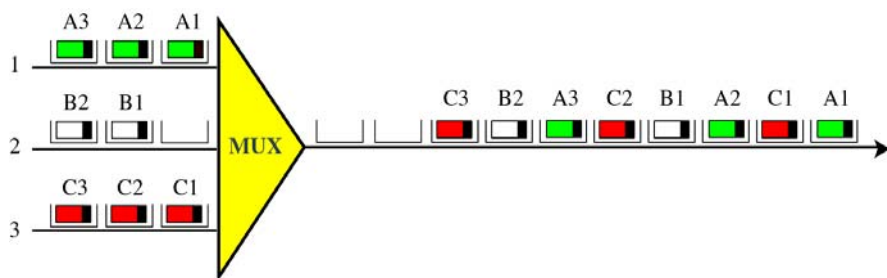
Header	Payload
5-byte	48-Byte

Multiplexing Using Different Packet Sizes

Multiplexing Using Cells

ATM Multiplexing

ATM Layer

From AAL Layer

Segment
48 bytes

A
T
M

Header
5 bytes

53 bytes

ATM Header

GFC: Generic flow control
VPI: Virtual path identifier
VCI: Virtual channel identifier

PT: Payload type
CLP: Cell loss priority
HEC: Header error control

GFC	VPI
VPI	VCI
VCI	
VCI	PT	CLP
HEC	
Payload data	

UNI Cell

VPI	
VPI	VCI
VCI	
VCI	PT	CLP
HEC	
Payload data	

NNI Cell
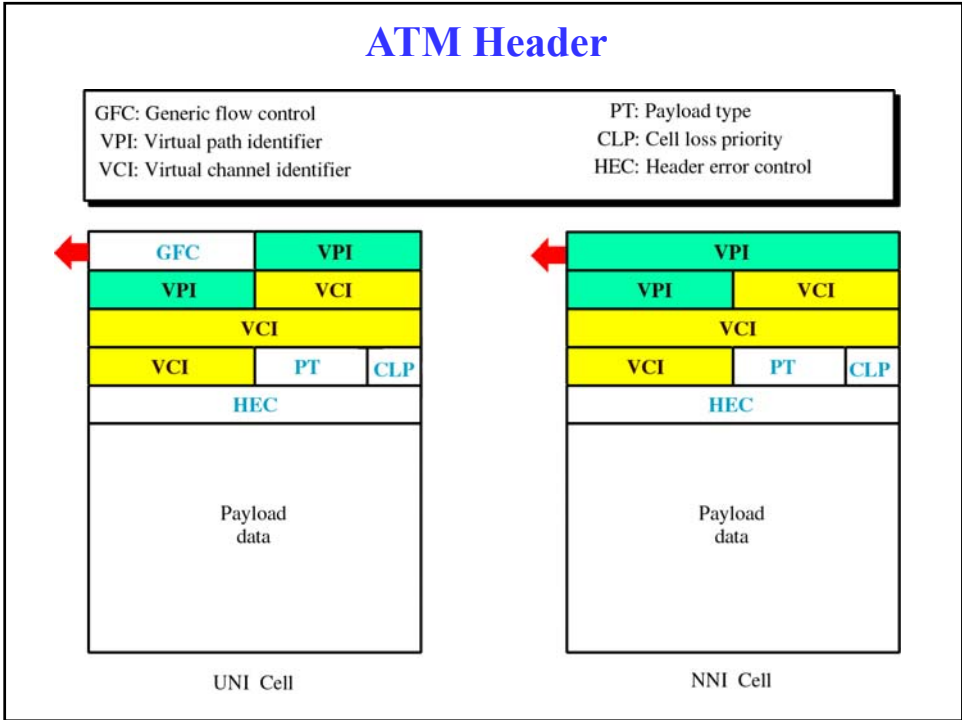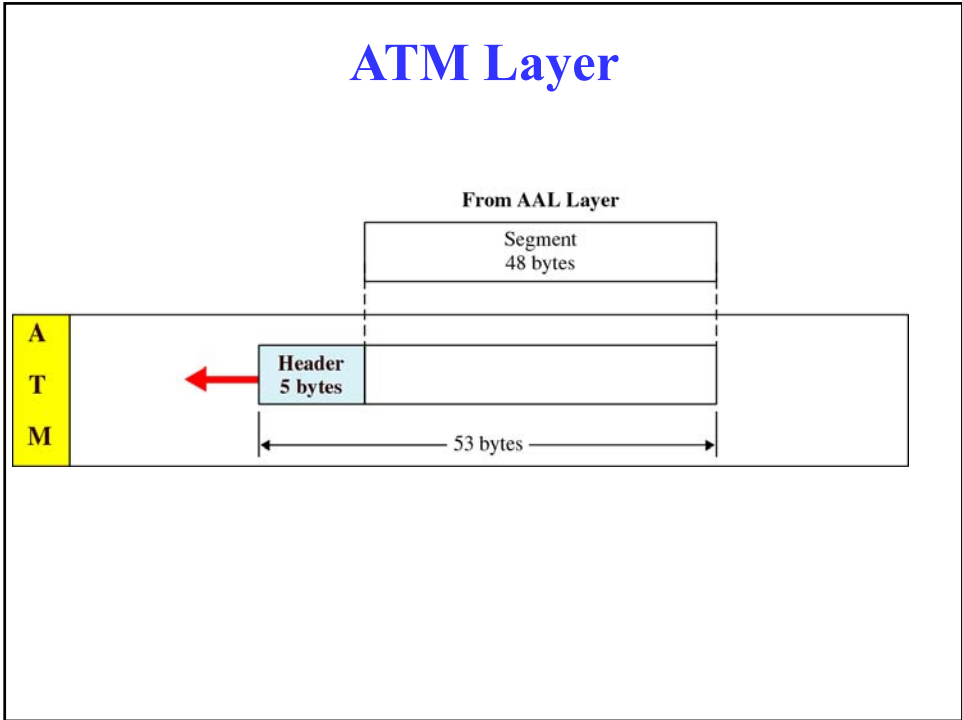
Connection Identifiers

VCI = 21
VCI = 32
VCI = 45
VCI = 70
VCI = 74
VCI = 45

VPI = 14
VPI = 18

This virtual connection is
uniquely defined using the pair:

(14 21)

VPI   VCI

VPI = 14
VPI = 18

VCI = 21
VCI = 32
VCI = 45
VCI = 70
VCI = 74
VCI = 45