CprE 489
Lecture 21

Fall Semester 1997

Cell Format in ATM

4	8	16	3	1	8
GFC	VPI	VCI	PTI	P	HEC

Followed by 48 bytes of data

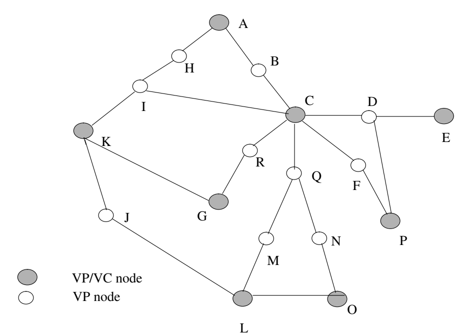
GFC: General Flow Control
VPI: Virtual Path Identifier
VCI: Virtual Channel Identifier
PTI: Payload Type
CLP: Cell Loss Priority
HEC: Header Error Check

Concept of VC and VP

- VPs and VCs used for cell transport in ATM
- VP is a set of contiguous links
- VC is a contiguous set of VPs
- ATM addresses:
  - VPI and VCI
  - Every VP on a given physical link has a unique VPI
  - Every VC traversing a VP has a unique VCI

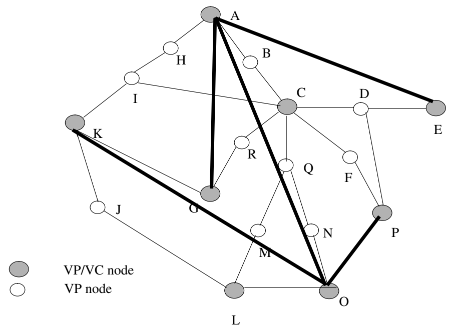
A Physical Topology

- ATM Network Example



A Logical Topology

- ATM Virtual path Set up from Node A and O (all paths not shown)



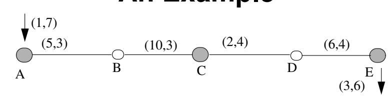
Cell Switching in ATM

- Cells routed by label-changing switches
- VP/VC switch: terminates/originates a VP
- VP switch: does not terminate/originate any VP
- VP/VC switches use both VPI and VCI
- VP switches use only VPI

Routing Tables

- VP switch:
  - Has only VP Table
  - Looks up VP Table to determine outgoing cell's VPI
- VP/VC switch
  - Has VC and VP Tables
  - VP Table to determine if VP terminates at node
  - For terminated VP, VC Table determine cell's label
  - Otherwise works like a VP switch
- VP Tables are set up when VPs are established
- VC Tables are set up when VCs are established

An Example



- VP Table Contents:
  - VPT [A][AA][1] = VPT [C][BC][10] = VPT [E][DE][6] = nil
- VC Table Contents before set up:
  - VCT [A][AA][7] = empty
  - VCT [C][BC][3] = empty
  - VCT [E][DE][4] = empty
- VC Table Contents after set up:
  - VCT [A][AA][7] = (AB,5,3)
  - VCT [C][BC][3] = (CD,2,4)
  - VCT [E][DE][4] = (EE,3,6)