A T M

- **Cell Switched Technology**
  - Fixed Length - 53 bytes
- **not SMDS**
- **Defacto Standard**
  - Multimedia capable
  - Use with SONET or SDH

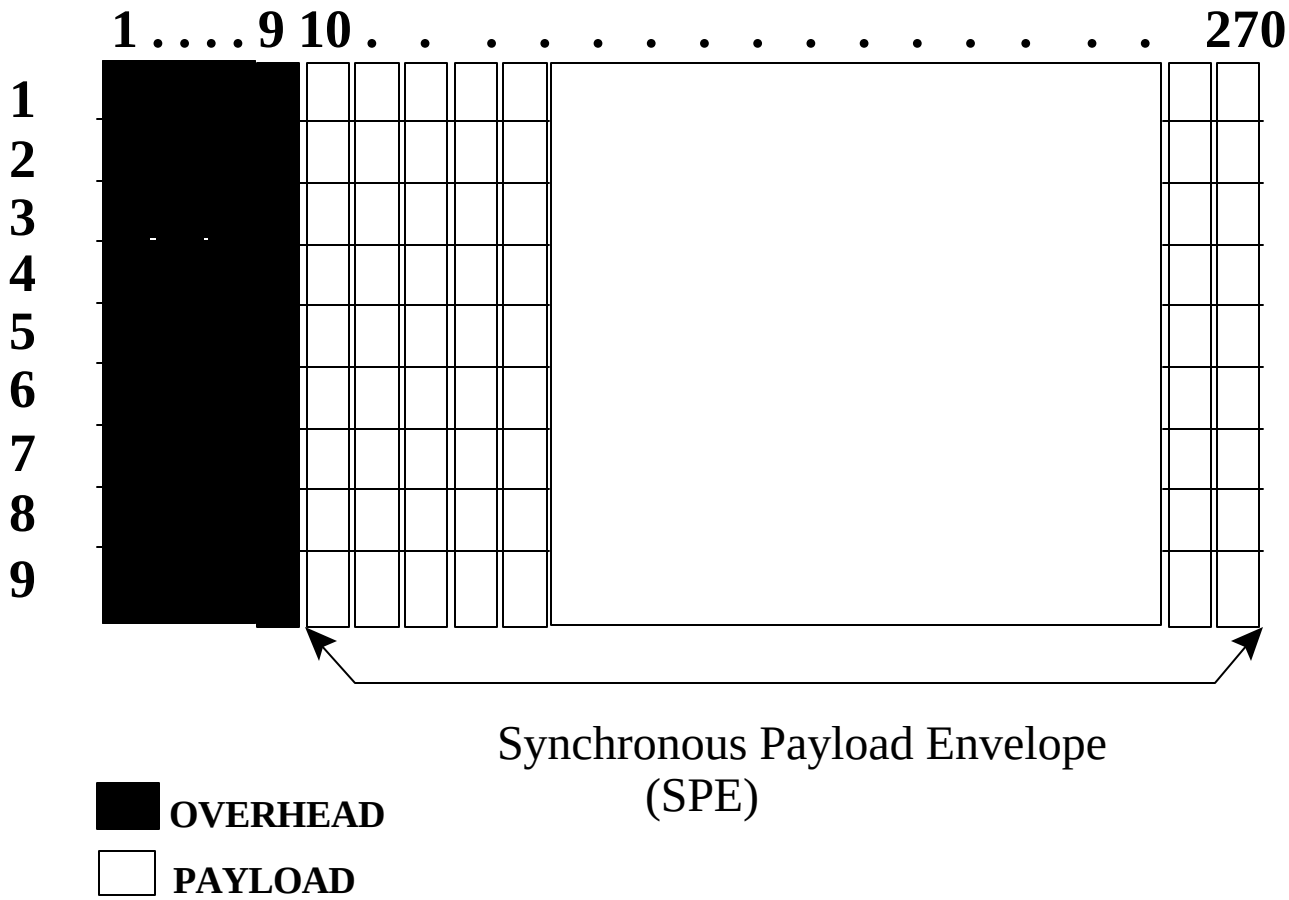
SONET Optical Carrier (OC) Rates and SDH Synchronous Transport Module (STM) Modules

Line Rate (Mbps)	SONET Level	SDH Level
51.840	OC-1	
155.520	OC-3	STM-1
466.560	OC-9	
622.080	OC-12	STM-4
933.120	OC-18	
1244.160	OC-24	STM-8
1866.240	OC-36	STM-12
2488.320	OC-48	STM-16

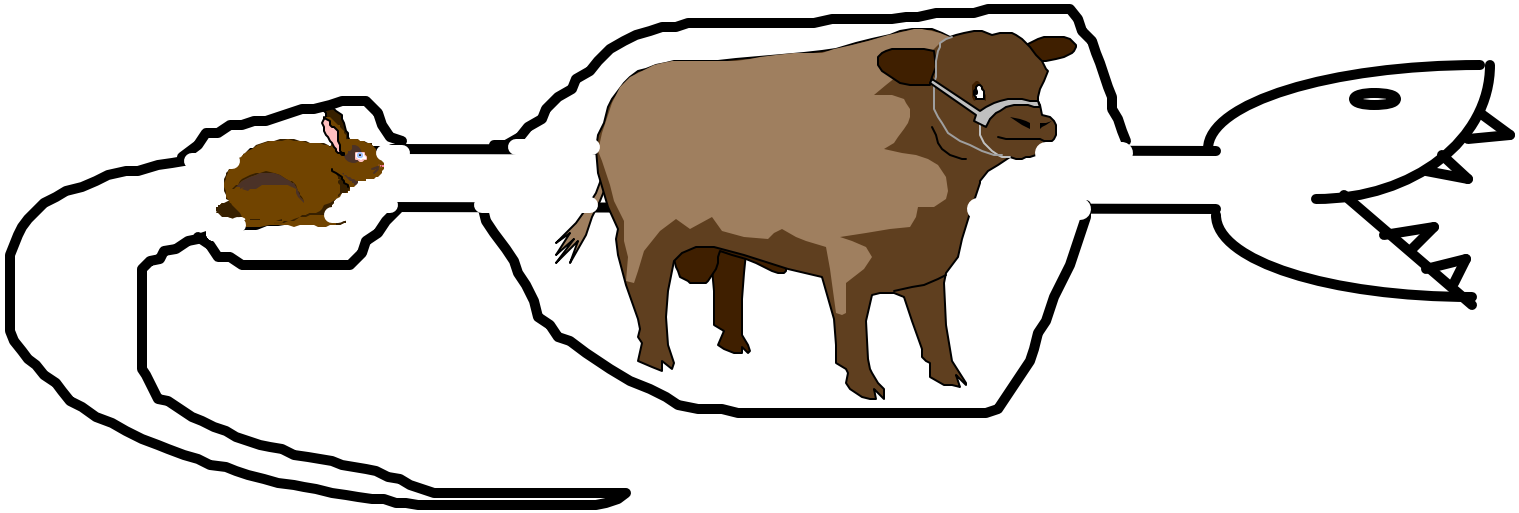
©SCTE

STM-1 Frame

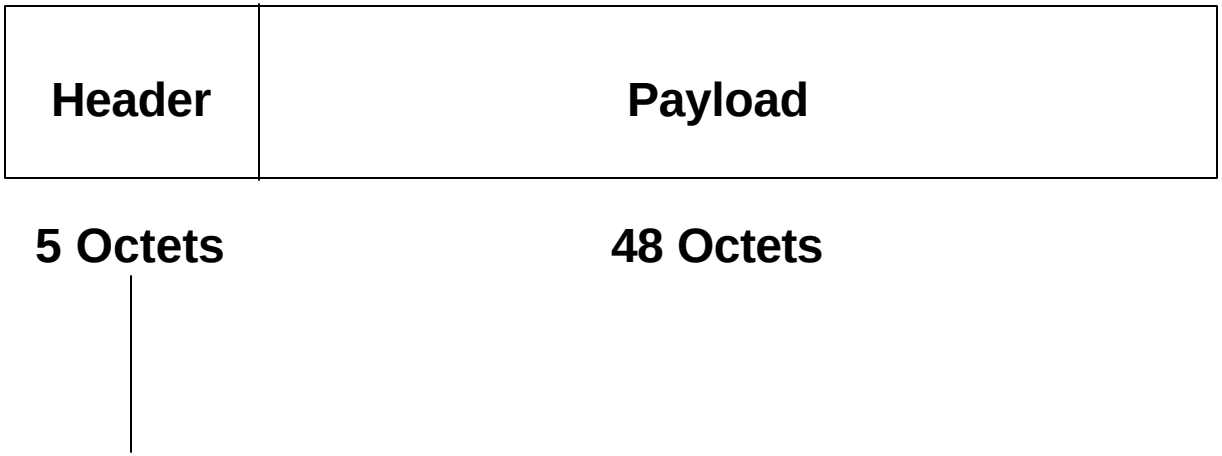
9 X 270 Bytes
8000 times per second

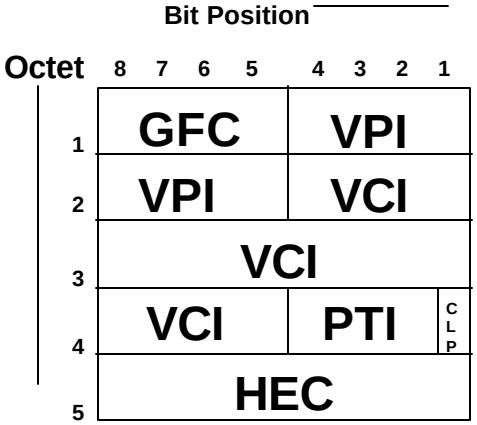


ATM Users Receive as Much Bandwidth as They Require, When Required



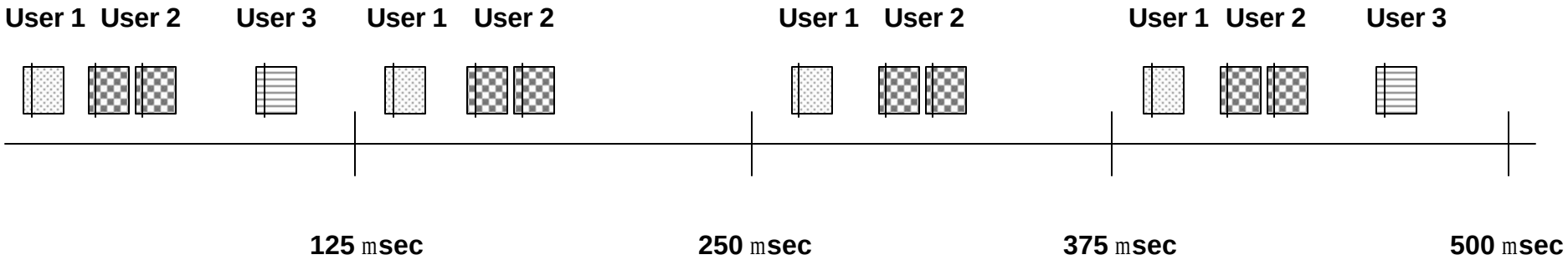
ATM Cell Structure



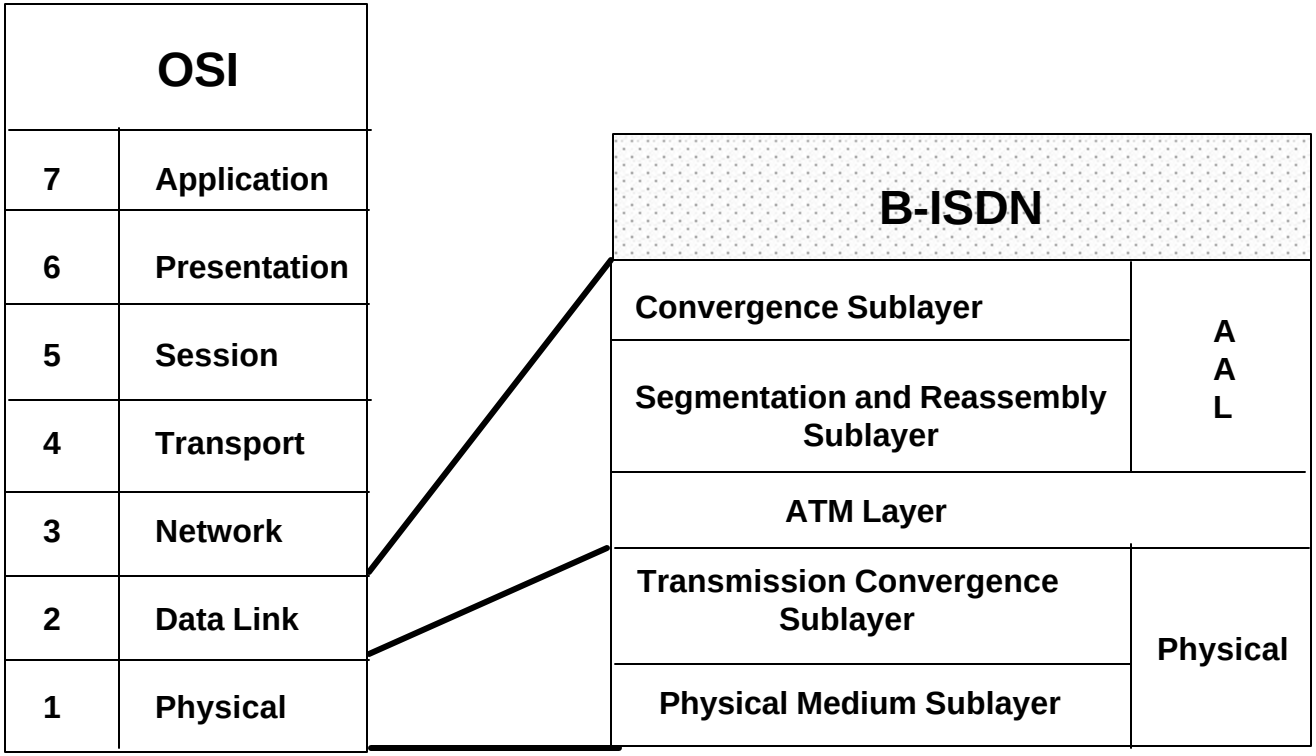


VCI = Virtual Channel ID
VPI = Virtual Path ID
PTI = Payload Type Identifier
GFC = Generic Flow Control
CLP = Cell Loss Priority
HEC = Header Error Control

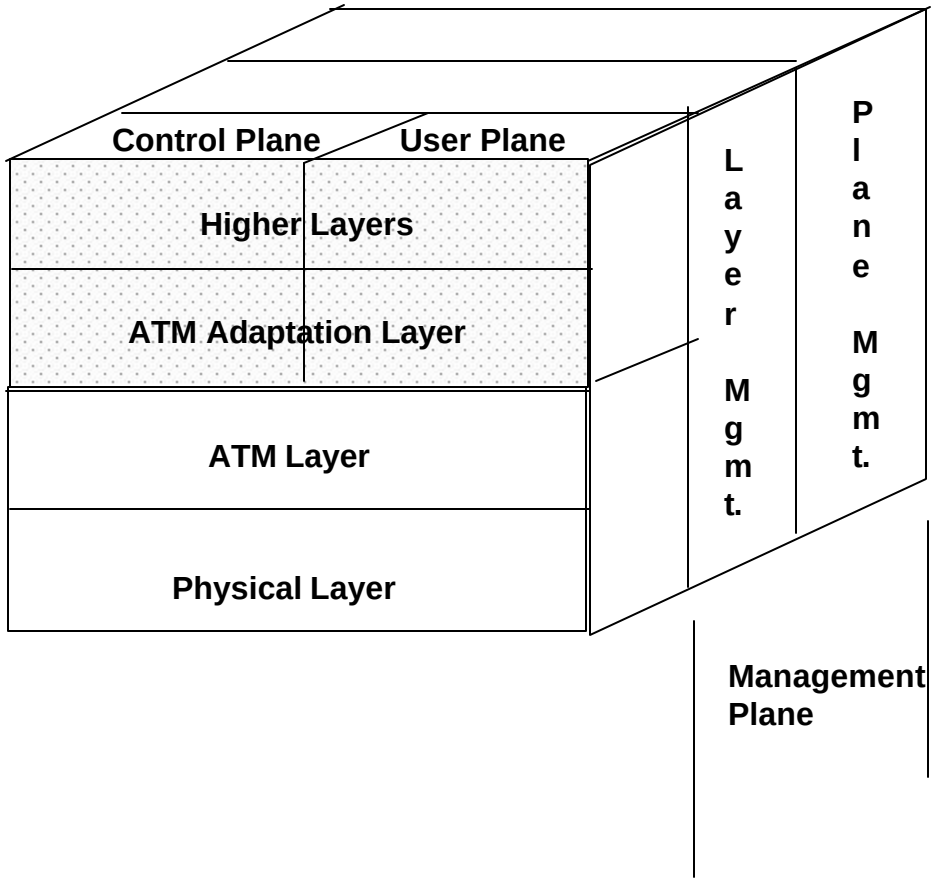
Bandwidth Utilization



ATM Protocol Layers



ATM in B-ISDN Protocol Model

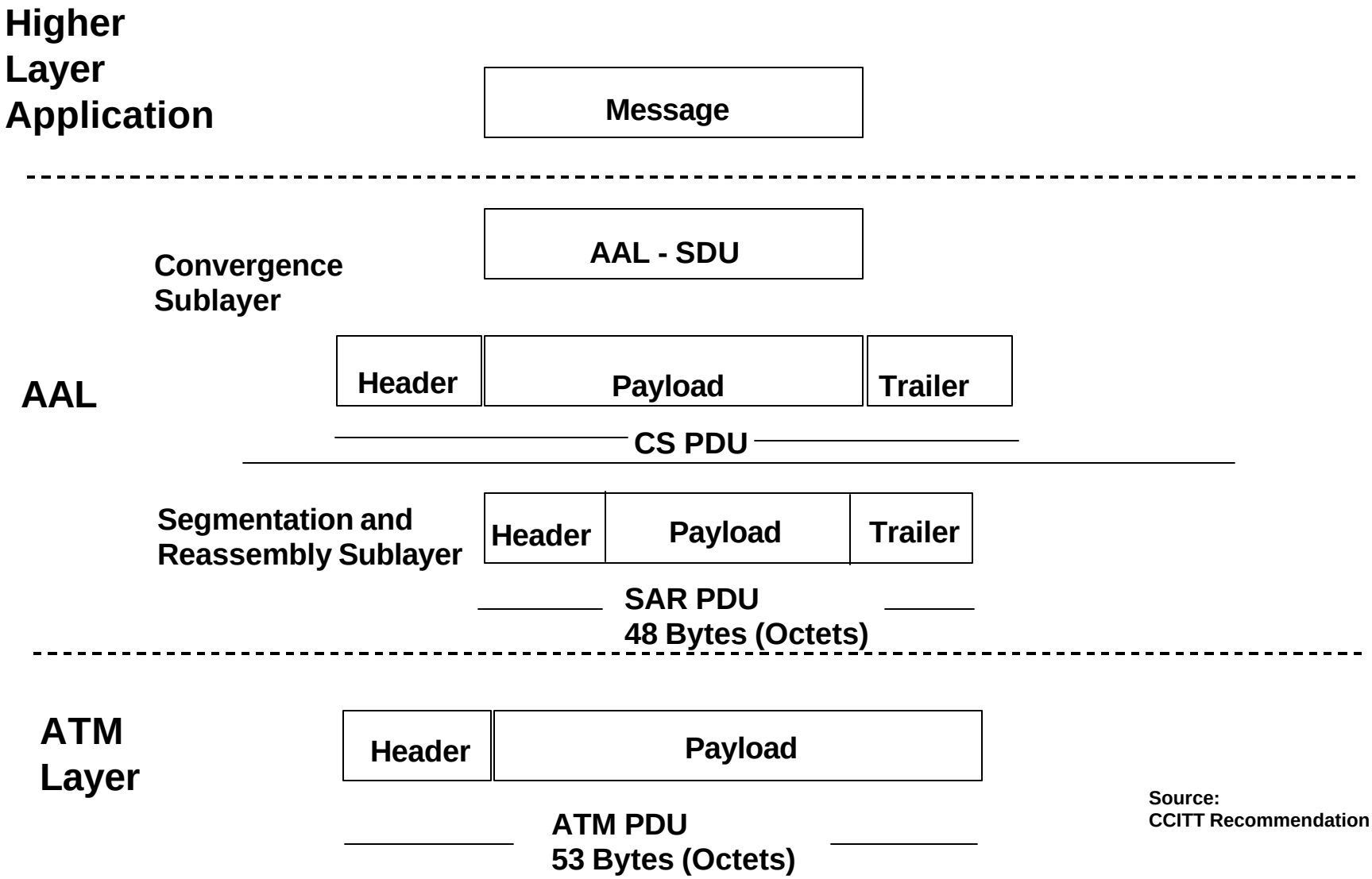


AAL Types

	Class A	**Class B**	**Class C**	**Class D**
Synchronization between sender and Receiver	Required	Required	Not Required	Not Required
Bit Rate	Constant	Variable	Variable	Variable
Connection Mode	Connection Oriented	Connection Oriented	Connection Oriented	Connectionless
AAL Type	1	2	3,4,5	4

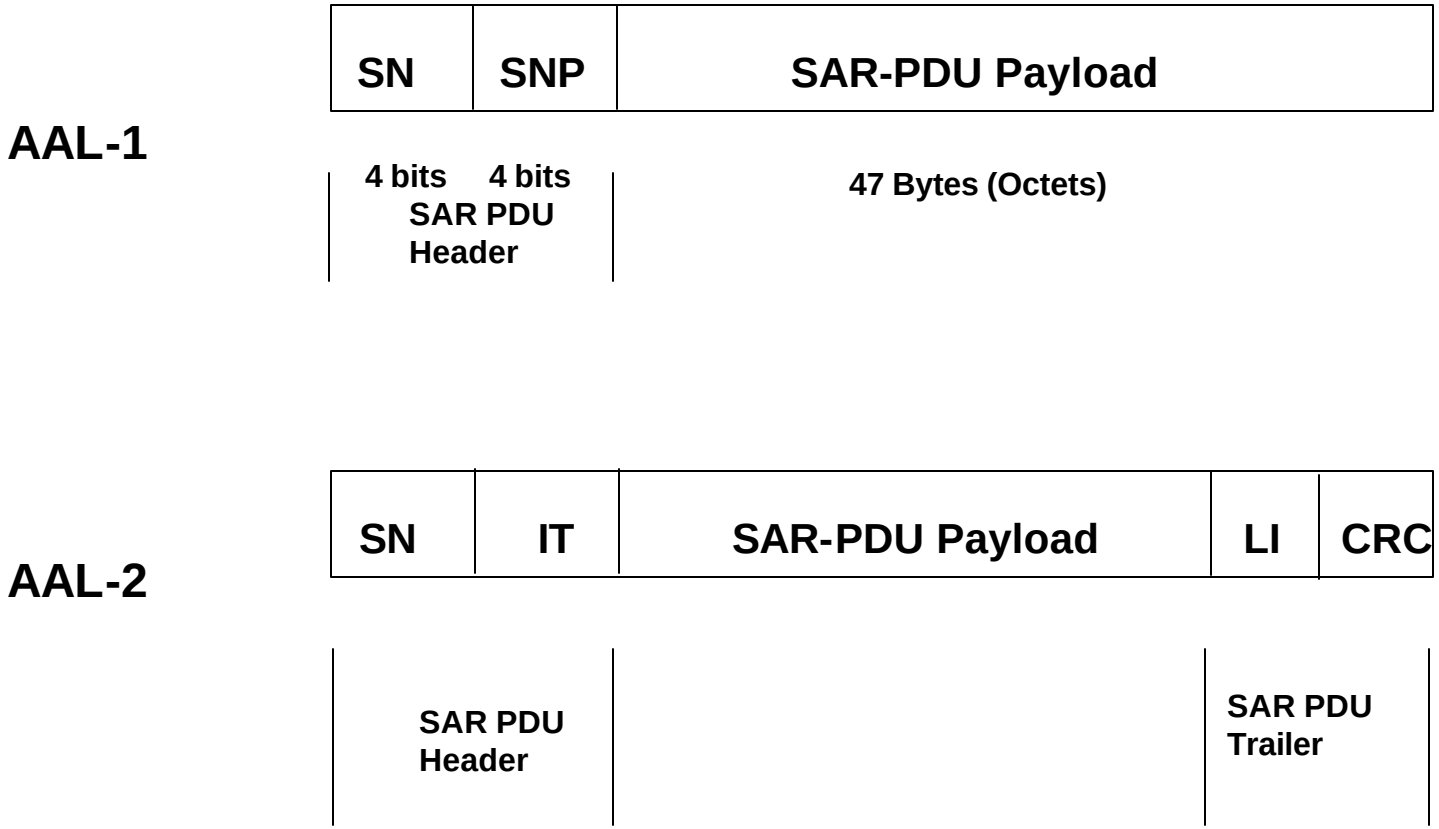
Source: Adaptations of CCITT Recommendations

Sublayers within Adaptation Layers



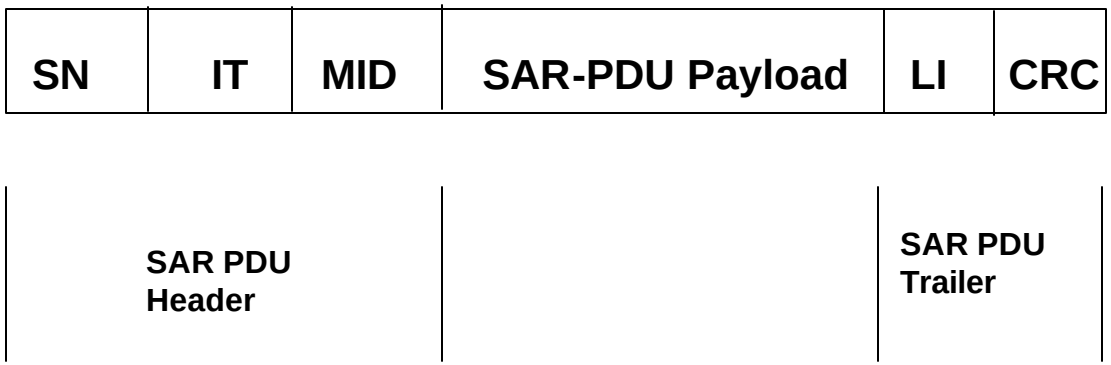
Source:
CCITT Recommendation I.363

AAL-1 & AAL-2 SAR PDU



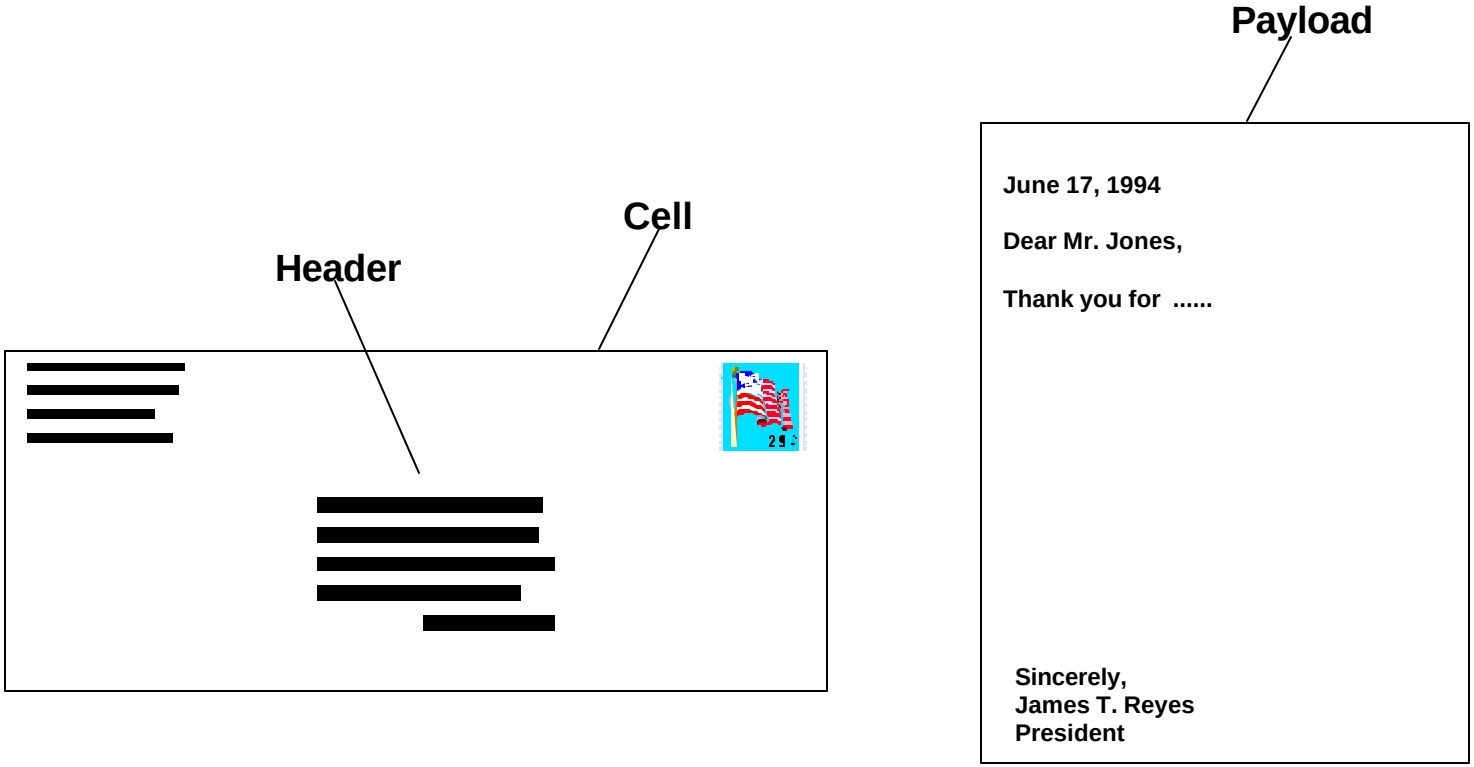
Source: CCITT Recommendation I.363

AAL- 3/4 SAR PDU



Source: CCITT Recommendation I.363

ATM Cell Structure
vs.
Mailed Letter

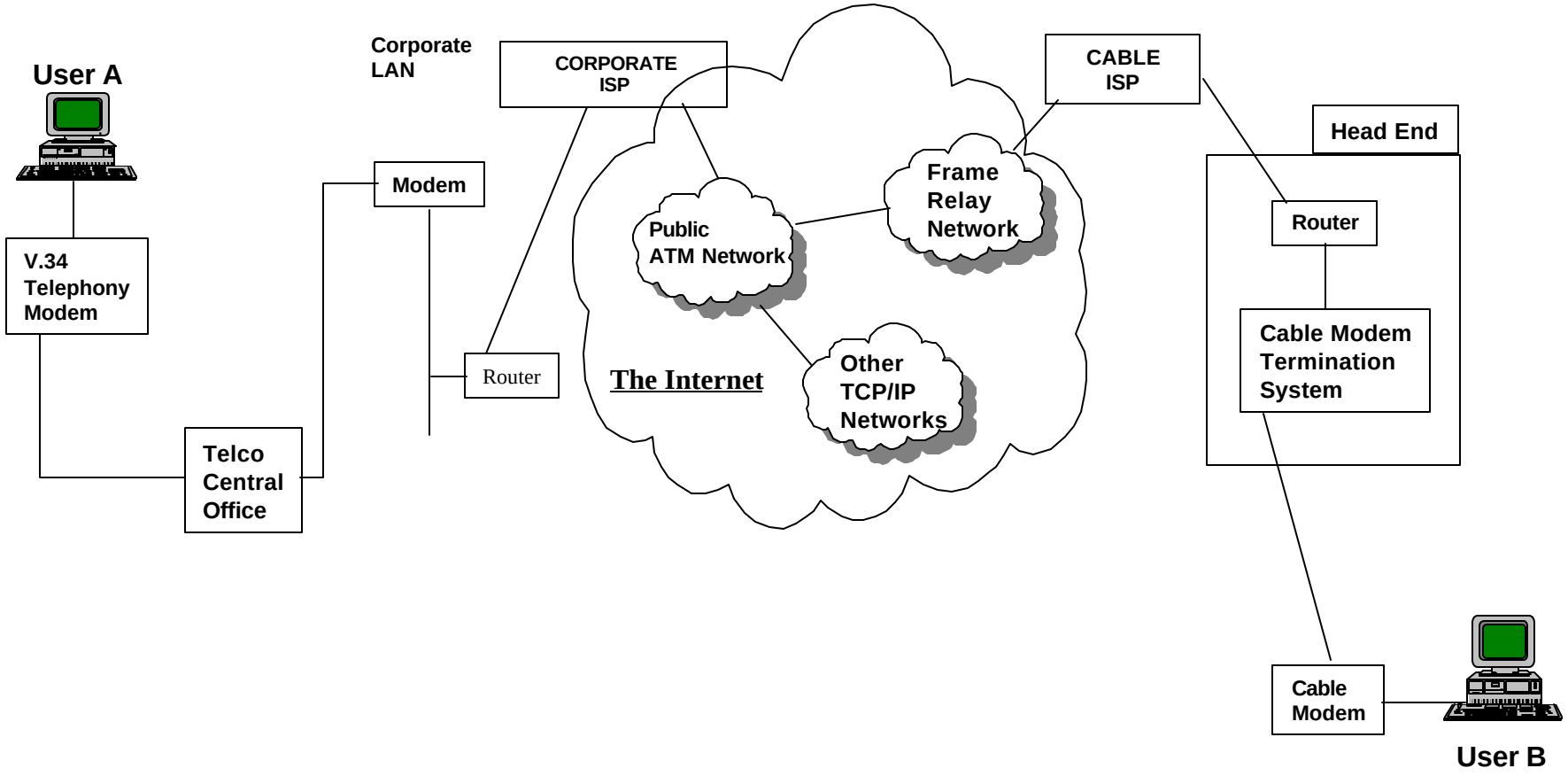


ATM Summary

- **End-to-end multimedia communications**
- **Standards Instability**
- **ATM in Public Network Backbones**
- **ATM in Private Network Backbones**
- **ATM-LAN Interfaces**
- **ATM in CATV Networks**

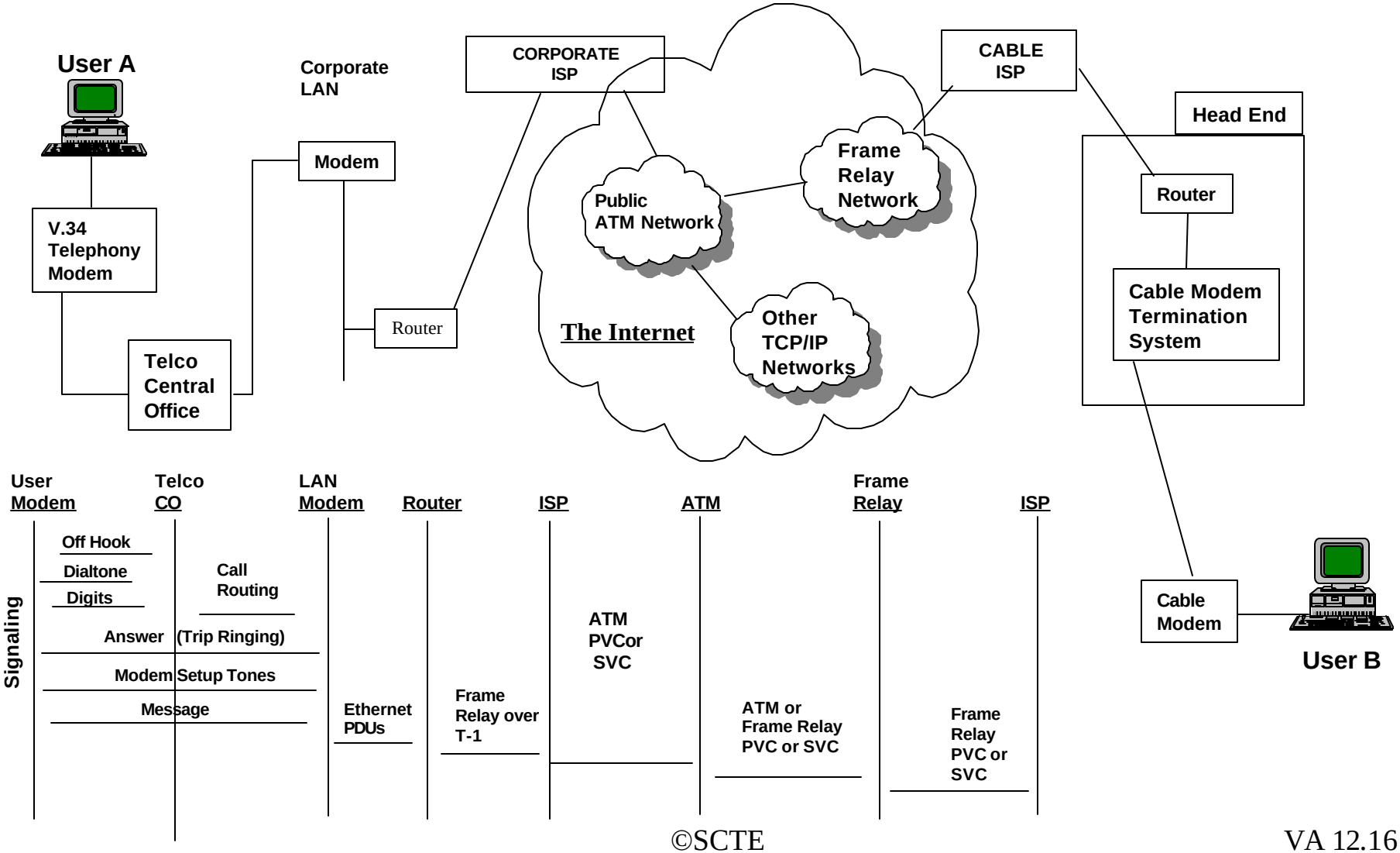
End to End Data Communications

Using Commercial ISPs



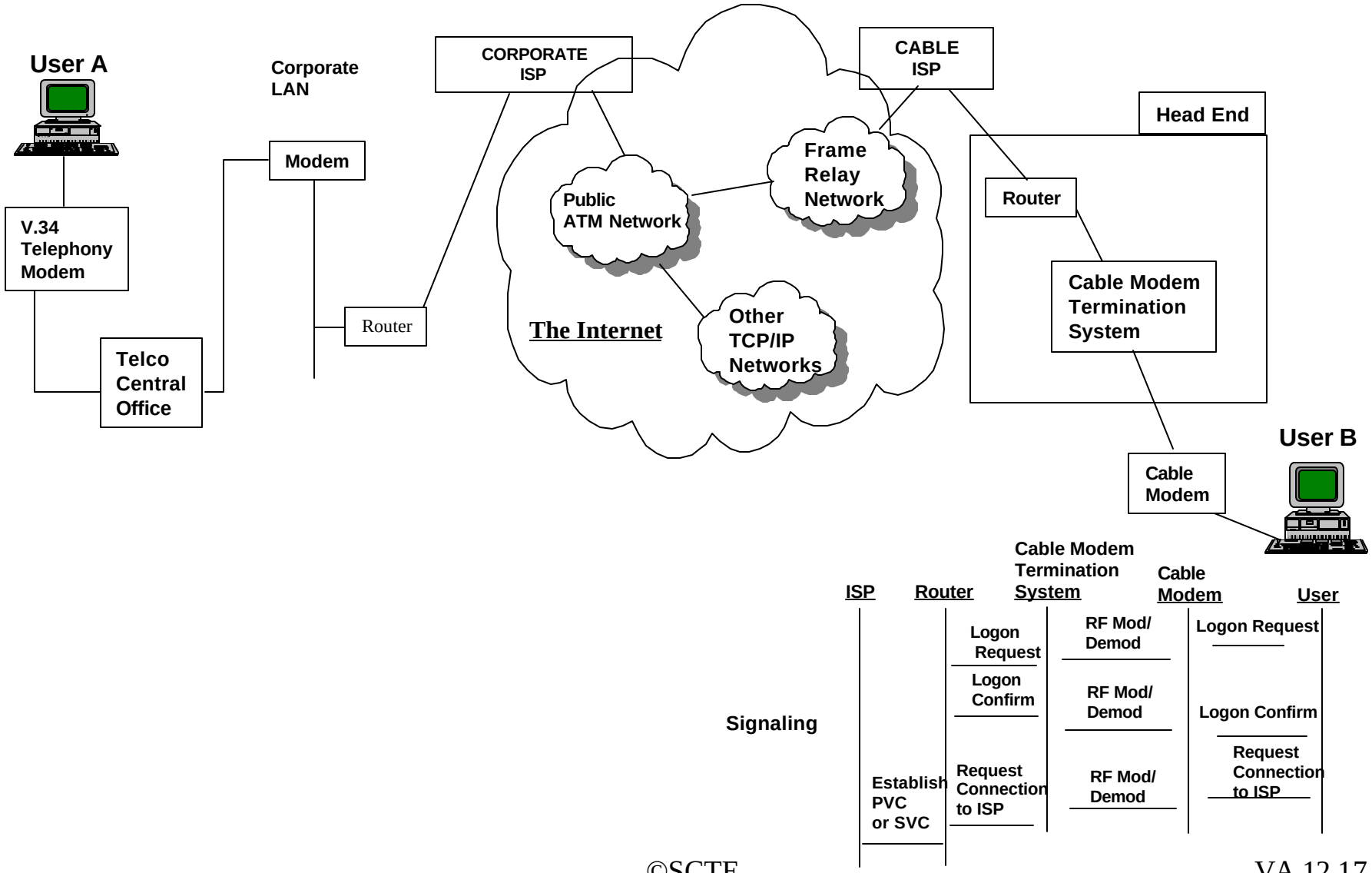
End to End Data Communications

Sending Email Using Commercial ISPs



End to End Data Communications

Email Retrieval Using Commercial ISPs



Summary

Asynchronous Transfer Mode

SONET/SDH

ATM Cell

Bandwidth on Demand

ATM Protocol Layers

B-ISDN Protocol

Adaptation Layer

End-to-End Data Communications