ROUTER BASICS

MM Clements

Introduction

- WAN introduction and devices
- MODEM technologies
- Router Functions
- Router Hardware
- Connecting to a router for the first time

Router Function

- Linking WANs and LANs
- Interconnecting communication lines
- Path determination and packet switching
- Application of security rules (ACLs)
- Protocol conversion (encapsulation)
  - E.g. HDLC, PPP etc.

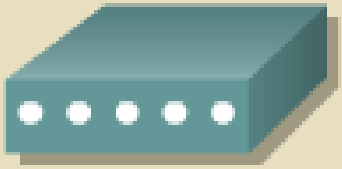
Introduction to WANs

- A wide area network (WAN) is a data communications network spanning a large geographic area such as a region, country or the entire planet
- A WAN may interconnect LANs
- May use microwave, satellite, fibre-optic, phone lines etc. to cover distances

WAN Devices

Router

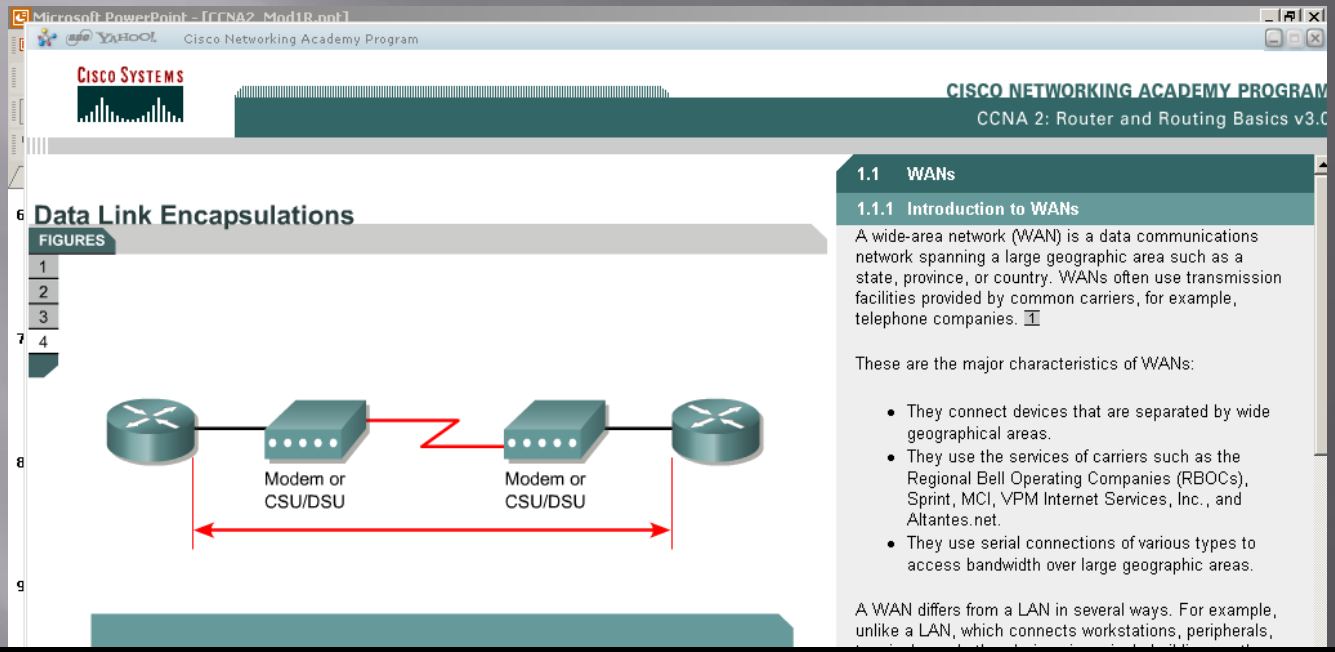
Workgroup Switch



Modem or CSU/DSU

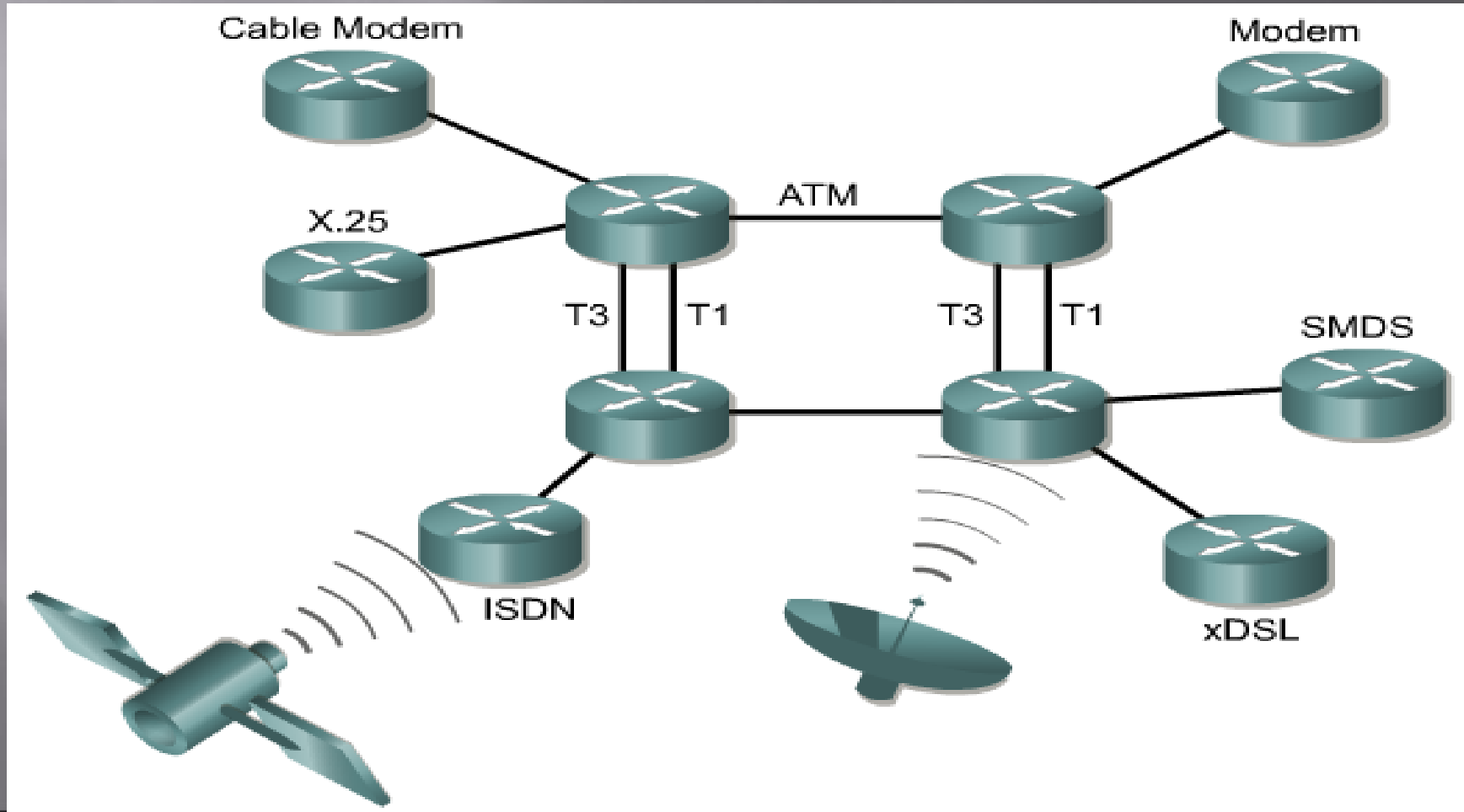
Communication Server

Use of MODEM in WANs



- MODEM = Modulator and Demodulator
- Translates between Ethernet and WAN technology and back again
- Permits long distance communications

Routers Connected by WAN Technologies



Some WAN Terminologies

- T1=1.544 Mbps, T3=44.736 Mbps , X.25, SMDS (SWITCHED MULTIMEGABIT DATA SERVICE), ATM, xDSL, Modem, Cable Modem, ISDN, OC-x
- X.25 and ISDN are used less today than in the past but can still be found in operation

Cisco Routers

- Operating system is known as Internetwork Operating System (IOS)
- Held in Flash memory (non-volatile)
- CLI not GUI
- Based on UNIX heritage

Router Operation

- Layer 3 device
- Accepts PDUs on incoming network
- Examines PDU data
- Makes decision(s) for next stage of PDU journey
- May modify PDU contents (not payload)
- Passes PDU on to outgoing network