SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution

Coimbatore-35

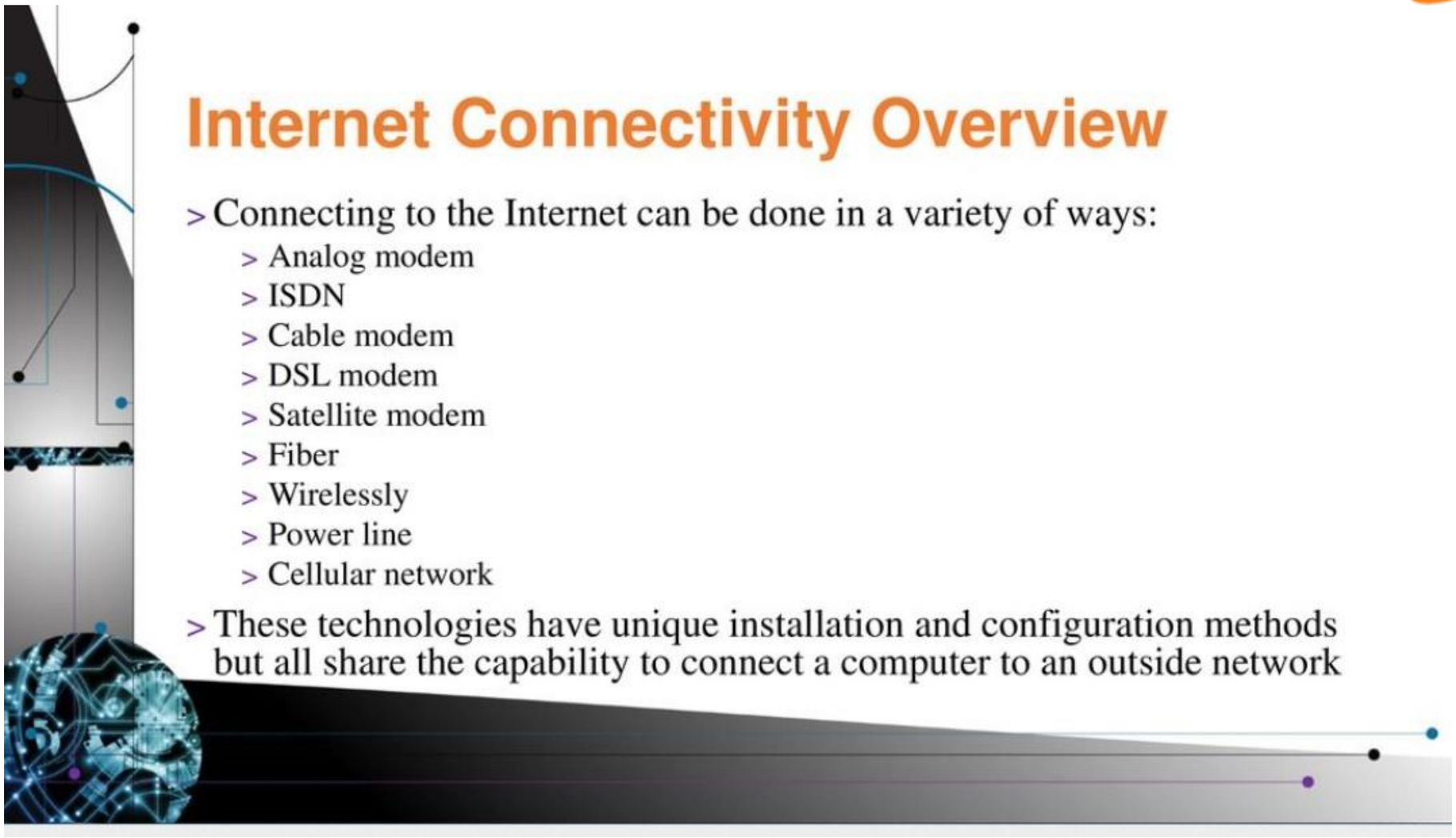
Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECT308-WIRELESS TECHNOLOGIES FOR IoT

UNIT 2 – ARCHITECTURE AND DESIGN PRINCIPLES FOR IoT

TOPIC –1 INTERNET CONNECTIVITY



Internet Connectivity Overview

- Connecting to the Internet can be done in a variety of ways:
  - Analog modem
  - ISDN
  - Cable modem
  - DSL modem
  - Satellite modem
  - Fiber
  - Wirelessly
  - Power line
  - Cellular network
- These technologies have unique installation and configuration methods but all share the capability to connect a computer to an outside network

Modems Overview

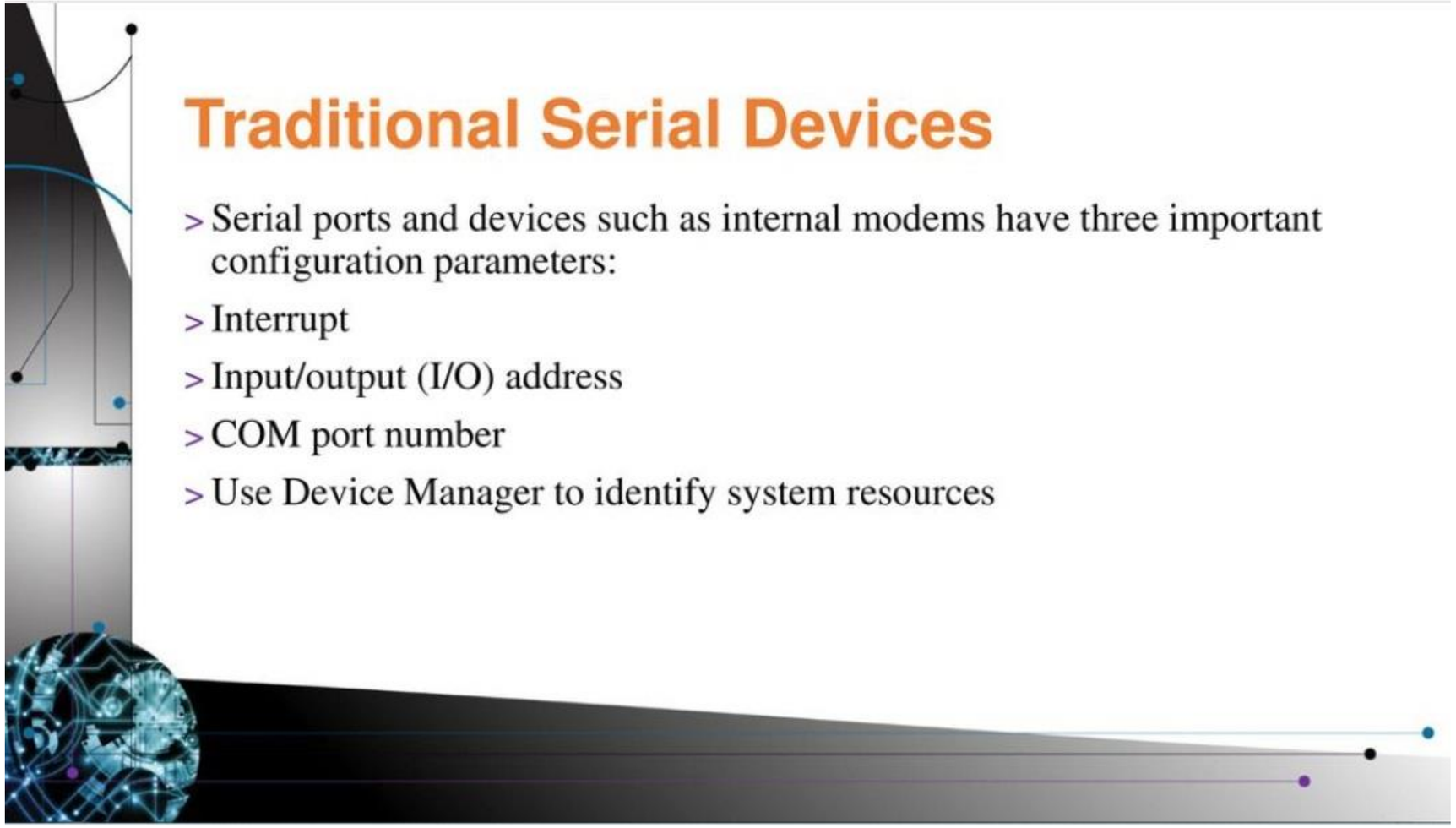
- A modem (modulator/demodulator) connects a computer with the outside world through a phone line
- Frequently called a dial-up network because the modem uses the traditional phone line to "dial up," or call, another modem
- Modems can be internal or external peripheral devices
  - An internal modem is an adapter installed in an expansion slot
  - An external modem attaches to a USB port
- A modem converts a signal transmitted over the phone line to digital 1s and 0s to be read by the computer and modulates them onto the carrier signal and sends the data over the phone line
- Modems normally connect to a remote modem through the phone line

Internal Modem Ports

Serial Communication Overview

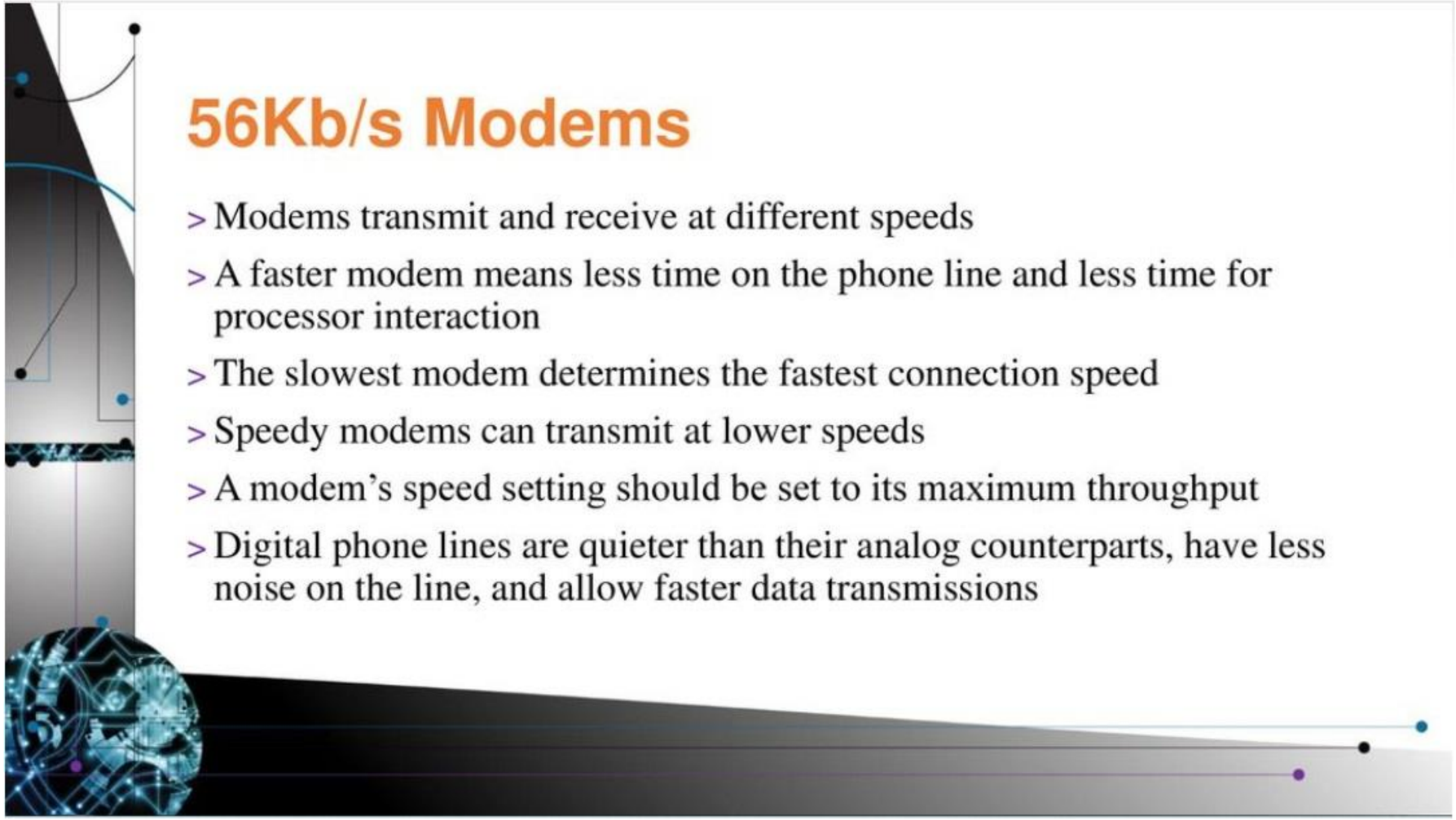
- A serial device such as a modem transmits or receives information 1 bit at a time and is traditionally connected to a serial port
- A USB-to-serial converter is used to attach an external serial device such as a modem
- An internal modem may be on an adapter
- Serial ports are also known as asynchronous ports, COM ports, or RS232 ports
- Asynchronous transmissions add extra bits to the data to track when each byte starts and ends
- Synchronous transmissions rely on an external clock to time the data reception or transmission

Internal Modem Ports



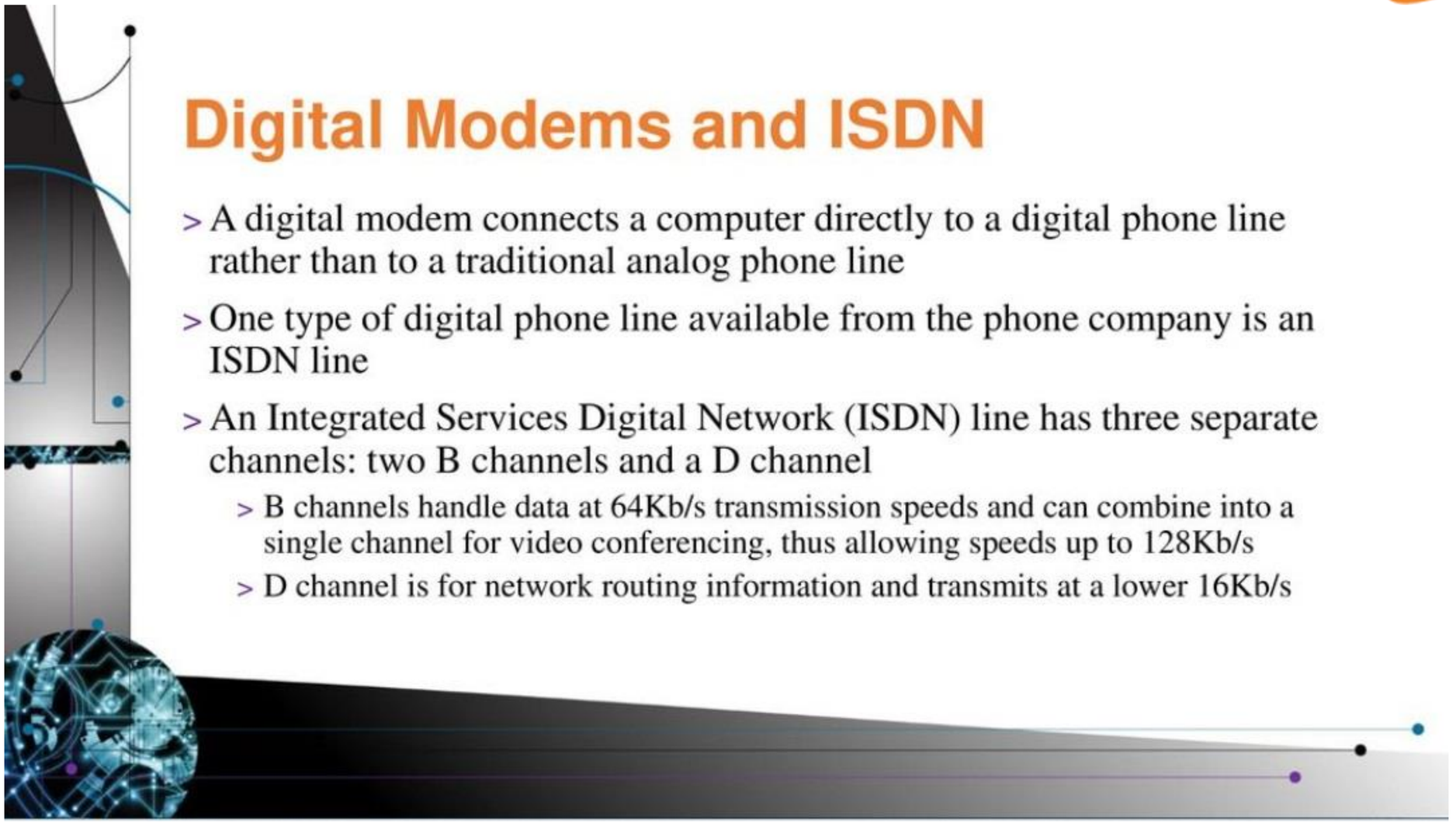
Traditional Serial Devices

- Serial ports and devices such as internal modems have three important configuration parameters:
- Interrupt
- Input/output (I/O) address
- COM port number
- Use Device Manager to identify system resources



56Kb/s Modems

- Modems transmit and receive at different speeds
- A faster modem means less time on the phone line and less time for processor interaction
- The slowest modem determines the fastest connection speed
- Speedy modems can transmit at lower speeds
- A modem's speed setting should be set to its maximum throughput
- Digital phone lines are quieter than their analog counterparts, have less noise on the line, and allow faster data transmissions



Digital Modems and ISDN

- A digital modem connects a computer directly to a digital phone line rather than to a traditional analog phone line
- One type of digital phone line available from the phone company is an ISDN line
- An Integrated Services Digital Network (ISDN) line has three separate channels: two B channels and a D channel
  - B channels handle data at 64Kb/s transmission speeds and can combine into a single channel for video conferencing, thus allowing speeds up to 128Kb/s
  - D channel is for network routing information and transmits at a lower 16Kb/s

VoIP and Quality of Service (QoS)

VoIP

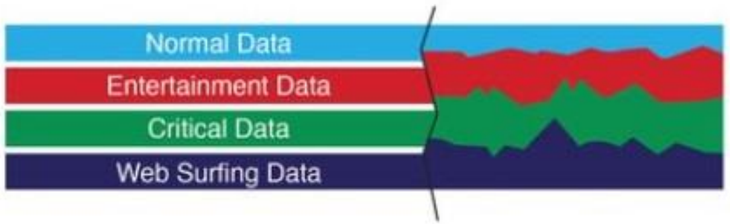
- Voice over IP (VoIP) uses a corporate data network and/or the Internet for phone traffic rather than using the traditional public switched telephone network (PSTN)
- Free and purchased VoIP software can be used so you can call someone for free using the Internet

Quality of Service (QoS)

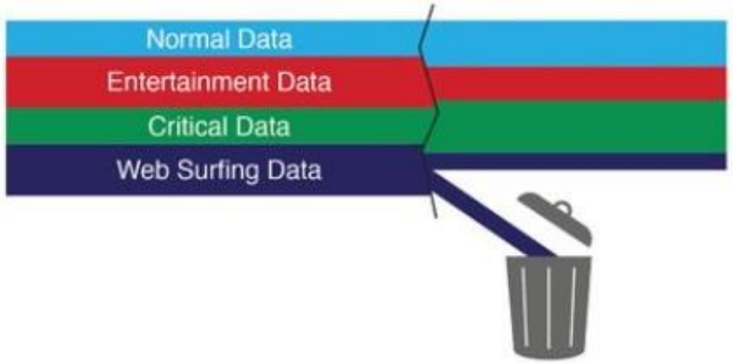
- QoS prioritizes traffic so important traffic like business transaction traffic and VoIP traffic are sure to get through

Bandwidth Use and QoS

Bandwidth Use with No QOS



Bandwidth Use with QOS Implemented



Cable Modems

- Connects a computer to a cable TV network
- Can be internal or external devices, but commonly are external
- If a cable modem is external, two methods commonly exist for connectivity to a PC
  - (1) A NIC built into the motherboard is used or an adapter is installed; a cable attaches between the NIC and the cable modem or
  - (2) the cable modem connects to a USB port on the computer

Cable modem and USB/NIC connectivity

Satellite Modems

- Satellite relays communication back to receivers on Earth
- Satellite connectivity requires a satellite dish and a satellite modem at a minimum
  - It may also require an analog modem and other equipment, depending on the satellite provider

Assessment

How to maintenance a modem for a systems

THANK YOU