

Modem Classification - II

- Facsimile modems
 - Error correction and data compression
- Modem for fiber-optics circuits
 - Digital-electrical to digital-optical
- Cable modems
 - DTE to cable television system cable
 - Data Over Cable Service Interface Specification (DOCSIS) by CableLabs
 - For large files and not logon process

Modem Classification - III

- Reverse channel
 - Slow speed reverse channel for signaling one another
- Auto dial/auto answer
 - Hayes Microcomputer Product, Inc.
 - Command AT for attention
 - Internet service provider usage
 - Dial-backup public telephone network connection for leased telephone line
- Internal modem
 - Single circuit card
 - No switch to change the parameters and operations

Modem Interfaces

- Between modem and line
- Between DTE and modem

Between Modem and Line

- Two- to four-wire cable
- RJ-11 plug

Between Modem and DTE

- RS-232-C interface
- V.24 interface
- RS-232-D interface
- RS-449 interface
- RS-336 interface
- X.21 interface
- X.21bis interface
- Current loop interface

RS-232-C Interface

- By EIA and ITU-T V.24
- Characteristics
 - 25-pin connector at both end
 - digital and serial
 - Female for DCE and male for DTE
 - Pins 2 and 3 to pass data, other for signaling
- Limitations
 - 50 -100 feet cable length
 - 2,400 - 9,600 bps
 - Hard to difference 0 and 1 when speed is high and cable is long

RS-232-D Interface

- Specifications for the 25-pin connector
- Addition of a shield on the cable
- Redefinition of protective ground and some pins

RS-449 Interface

- 37 pins
- 4,000 feet cable
- Not well accepted

RS-336 Interface

- Automatic dialing from computer to remote terminals for data collection
- Not for high speed transmission

X. Interfaces

- X.21 interface
 - Digital connection to a digital public telephone network
- X.21bis interface
 - Terminal to packet switch network via analog line

Current Loop Interface

- Represent 1 and 0 by presence or absence of an electrical current
- Simple and inexpensive
- Nonstandard
- Teletywriter system

Other Modem Functions

- Reverse channel for signal one another to determine the speed
- Auto dial/auto answer
- Modem diagnostics
 - Loop back for accuracy checking

Modem Selection Criteria

- Digital or analog signals
- Asynchronous or synchronous
- Speed
- Distance
- Type of line
- Cost
- Functions

Spread Spectrum

- Analog signal for analog or digital data
- Frequency hopping and direct sequence
- Generated by Pseudo random number generator

Points to Remember

- Circuit
- Mode of transmission
- Digital transmission
- Analog transmission for digital signals - modems
 - Methods
 - Classification
 - Interfaces
 - Functions
 - Selection Criteria

Discussion

- Design the data transmission and modem specification for a bank