RS232 Interface

Key Terms

Half duplex
Transmission can occur in both directions, but not simultaneously

Full duplex
Transmission can occur in both directions simultaneously

Simplex
Transmission can occur only in one direction

DTE - Data Terminal Equipment
Computer, terminal

DCE - Data Communications (Circuit Terminating) Equipment
Modem

RS-232 Pins

In a typical RS-232 connection, there is a transmit and a receive clock, but they are not the same clock.

In the original RS-232, there were 25 pins that were defined.

Both ends share the same ground. This is a possible source for noise.

Link Establishment Phase
DTR A sends a phone number to DCE A. The DCE sends the phone number, which causes a ring tone.

DCE B asserts RI (Ring Indicator)
DTE B asserts DTR (Data Terminal Ready)
DCE B generates a carrier signal and asserts DSR (Data Set Ready)

DCE A asserts CD (Carrier Detect) and DSR (Data Set Ready)

DCE A generates a carrier signal and sends it down to the other end.

DCE B detects the carrier and asserts CD back to its terminal device

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DTE A asserts RTS (Request to Send)
DCE A asserts CTS (Clear to Send)
DTE A sends data to the modem.

This is done on a circuit switching network, like what the telephone company uses in the local loop.

Everything is initiated on one end. There is handshaking going on between terminal and modem. Then the modem has to establish a connection with the other end … ring tone, etc.

Once the link is established, there is handshaking done between the terminal and the modem to ensure that the modem does not get overloaded.