

ISDN - Integrated Services Digital Network

Synchronous, switched, end-to-end networking - allowing simultaneous transmissions

Common US ISDN switch types are **National ISDN-1 (NI-1)**, **AT&T 5ESS** and **North**

U interface is a *two-wire* (single pair) interface from the phone switch. It supports full-duplex data transfer over a single pair of wires, therefore only a single device can be connected to a U interface. This device is called an Network Termination 1 (NT-1). The situation is different elsewhere in the world, where the phone company is allowed to supply the NT-1, and thereby the customer is given an S/T interface.

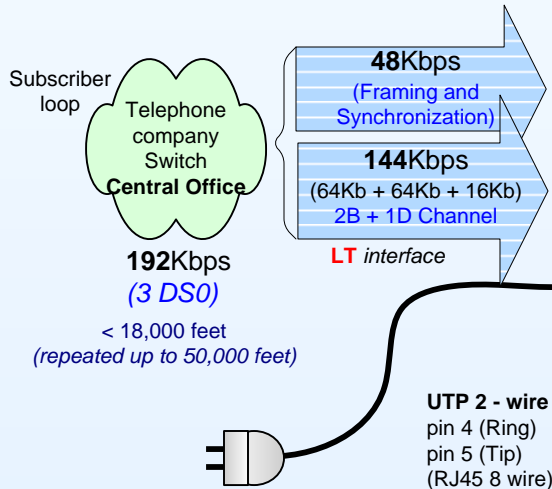
DS0 64Kbps	1 channel
DS1 1.544Mbps	24 channels T1
DS3 44.736Mbps	672 channels T3

ISDN Dual Stack Requirement

D Channel Usage
 Data-Link Layer (2) **Q.921** (Signaling)
 Network Layer (3) **Q.931** (Call Set

D Channel - sends signaling for setting up calls and dynamically allocating the remaining bearer channels.

Echo cancellation is used to reduce noise, and data encoding schemes (2B1Q in North America, 4B3T in Europe) permit this relatively high data rate over ordinary single-pair local loops.



(Used to direct traffic) Handles layers 2 & 3 ISDN protocols

(D) Data Channel
 16Kbps - D Channel LAPD Framing Protocol

(B) Bearer Channels
 64Kbps - B1

Service Profile Identifier (SPID) - Identifies the ISDN line. Maybe required based on the type of switch. The format is usually a 10-digit phone number, plus a prefix and possibly a suffix.

ISDN Basic Rate Interface

Primary Rate Interface

each at 64 Kbps, and

23B+1D (T1) 1.544 Mbps

30B+1D (E1) 3.120 Mbps

Note that the