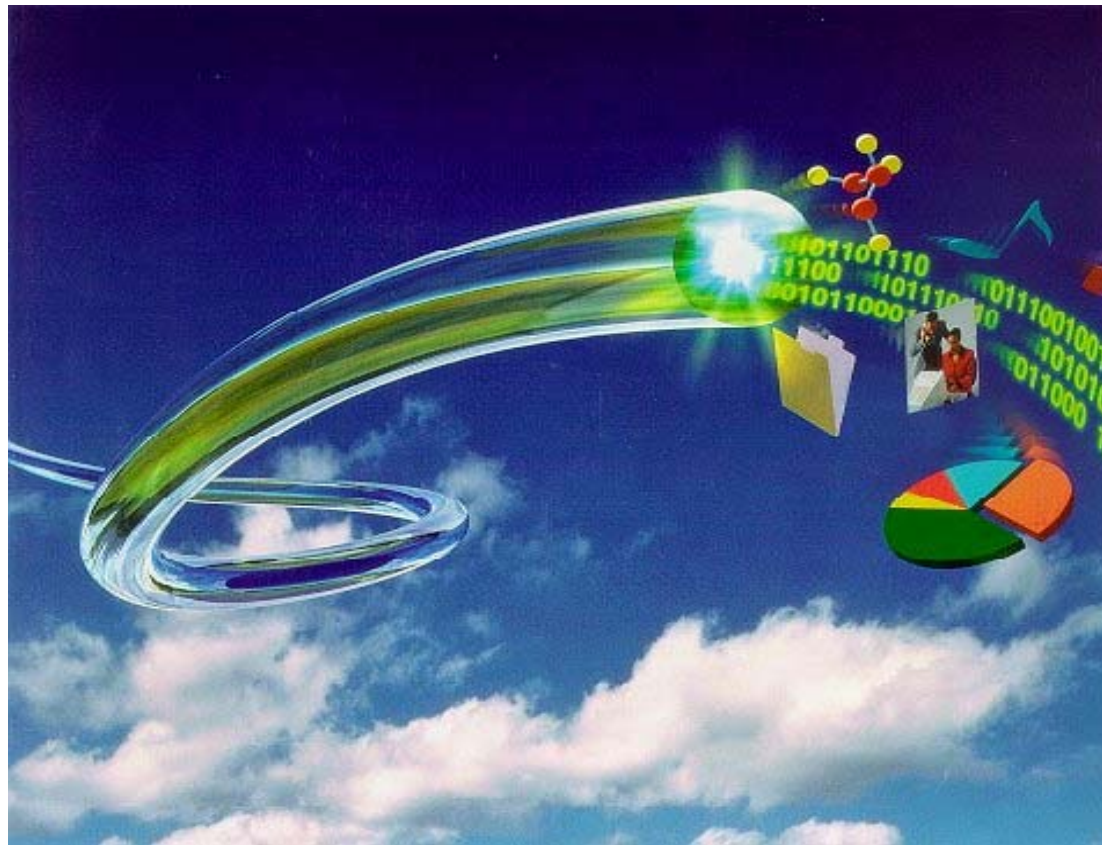


Gemini Communication Ltd.

Training Manual *ISDN*

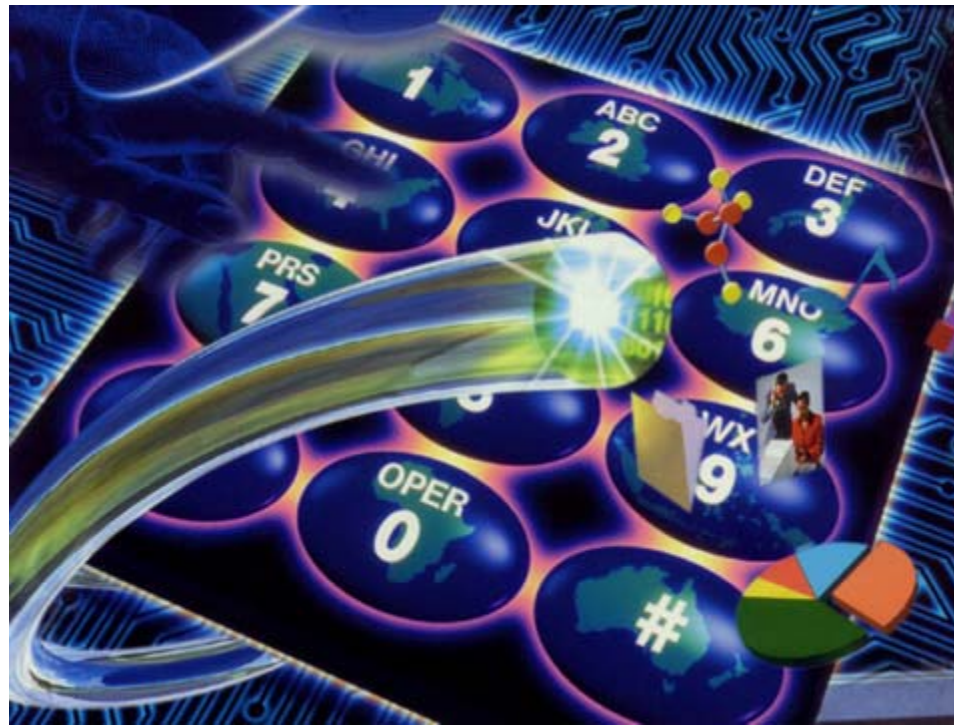
ISDN CONCEPT



What is ISDN?

- *ISDN stands for **Integrated Services Digital Network** - the name for digital telephone service that works over existing copper telephone wiring.*
- *ISDN access from the customers premises gives you the ability to make possible end-to-end digital connections that can support a wide variety of services such as speech, video telephony, video conference, facsimile, data and image transfer.*
- ***The essential difference between ISDN and the conventional telephone System is that it is digital not analogue***

What does ISDN offer?



- ❖ Simplicity - One access various services;
- ❖ Reliability - high quality error free transmission;
- ❖ Flexibility because it is a switched digital network;

What does ISDN offer? Contd...

- ❖ A solutions today because ISDN is proven;
- ❖ Enhanced productivity because of increased speed and capacity; and
- ❖ Cost savings because of reduced cost of many existing communication applications

What does ISDN give you?

Basic Rate

- ❖ **It is provided through a Basic Rate Interface (BRI)**
- ❖ BRI consists of two 64 kbps B channels and one 16 kbps D channel for a total of 144 kbps
- ❖ **Access to the network is called Basic Rate Access (BRA)**
- ❖ Note that, in ISDN terminology, "K" means 1000 (10^3), not 1024 (2^{10})

BASIC RATE INTERFACE (BRI)

Two B Channels



One BRI =
2 B + D

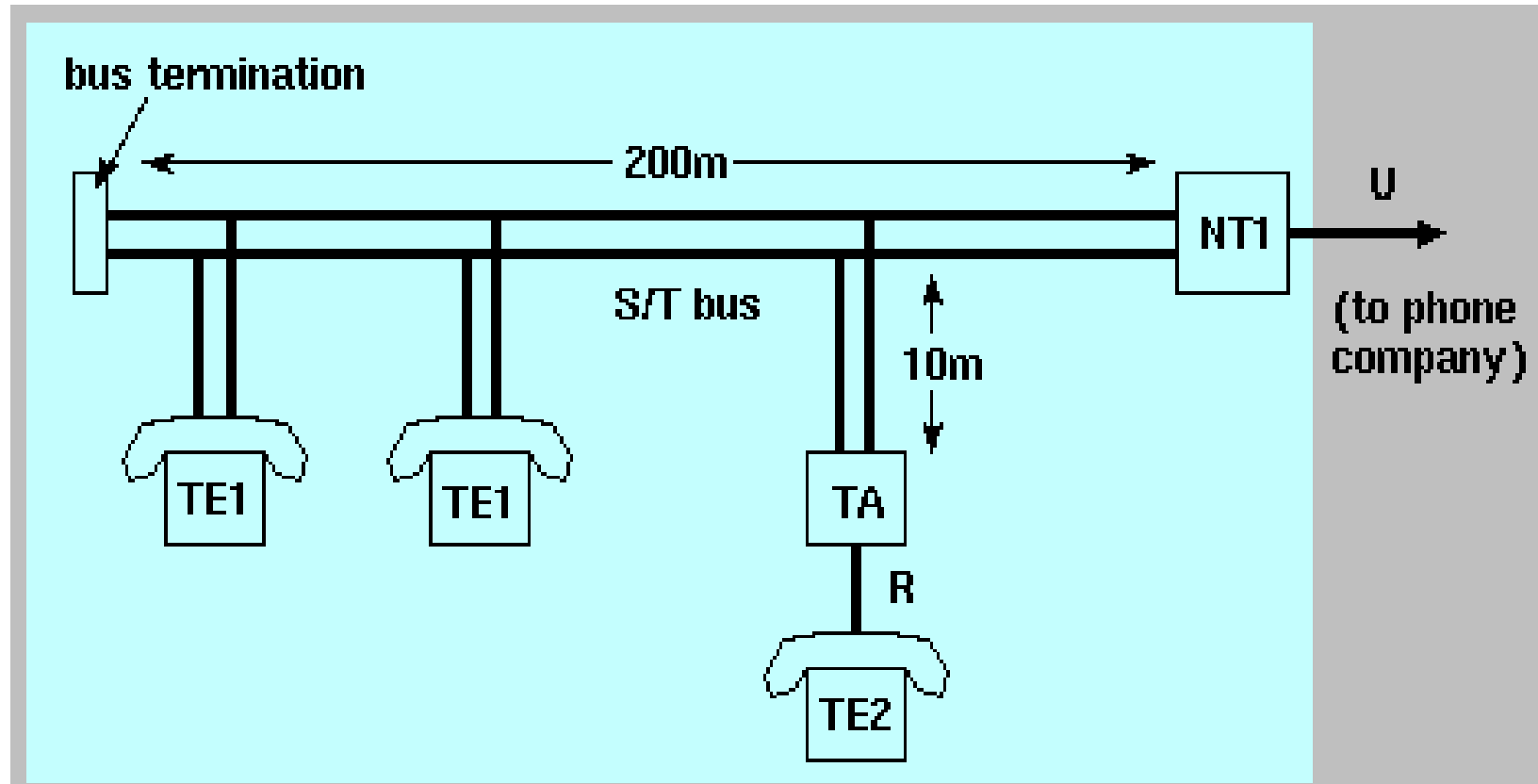
16 Kbps D Channel



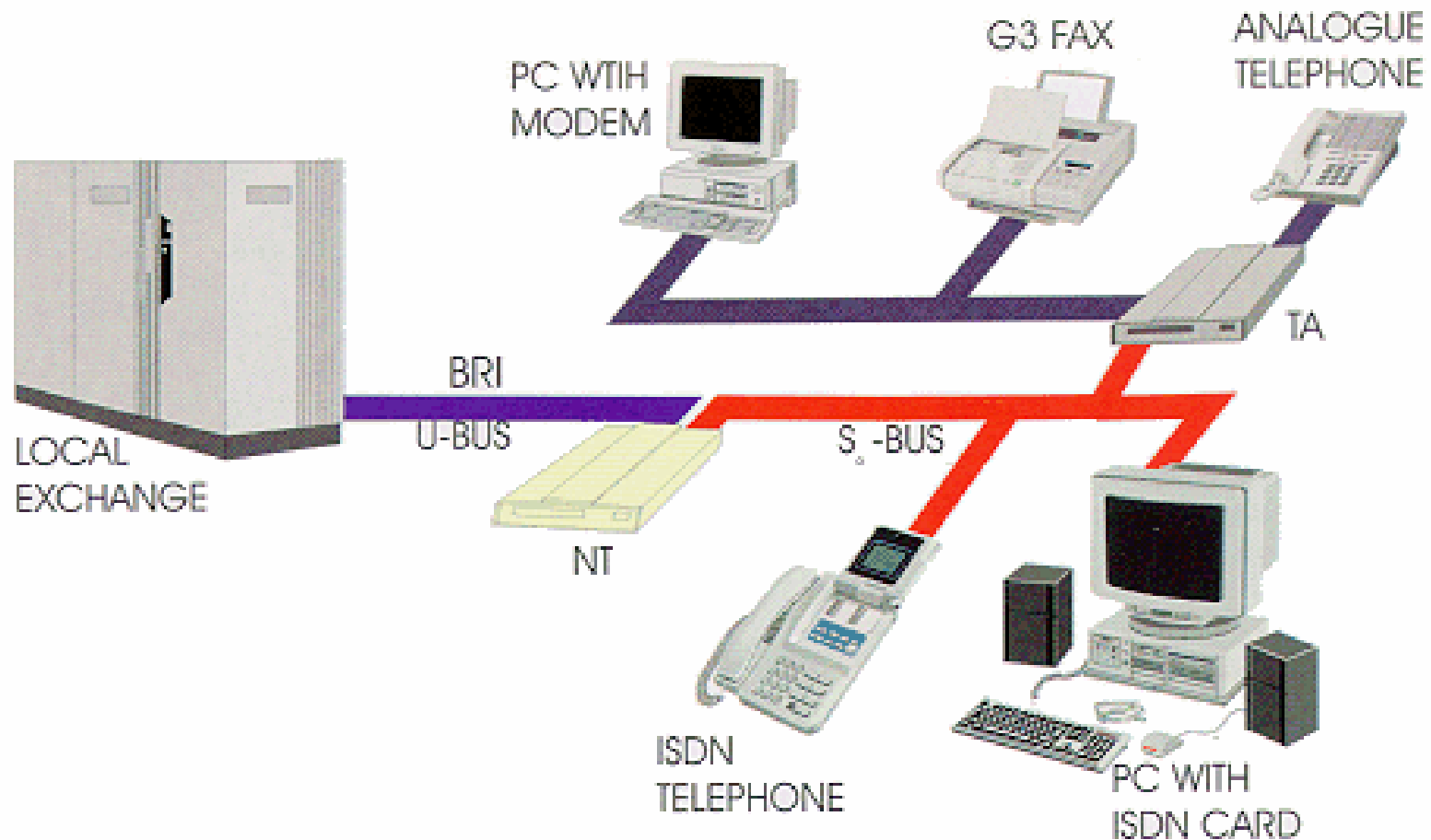
B Channels - User Voice, Data, Image, Sound

D Channels - Call Signalling, Set - up, User Packet Data

CPE: Your house's network (S/T or S0 reference points)



Example of a Basic Rate Network



H channels

H channels provide a way to aggregate B channels. They are implemented as:

- ✓ H0=384 kbps (6 B channels)
- ✓ H10=1472 kbps (23 B channels)
- ✓ H11=1536 kbps (24 B channels)
- ✓ H12=1920 kbps (30 B channels) - International (E1) only

Primary rate interface (PRI)

✓ PRIs are dedicated trunks that connect medium and large locations to a telephone company central office.

Virtually all modern telephone and computing systems can be connected to ISDN through a PRI including PBXs, mainframe and distributed systems, LANs and WANs, multiplexers and ISDN controllers, videoconferencing units, and more.

✓ PRIs are designed to maximize the use of these systems by allocating dynamically, or call by call, the number and type of channels (e.g.: data, voice in, voice out) required for each application.

PRI

One PRI =

United States: 23 B + D

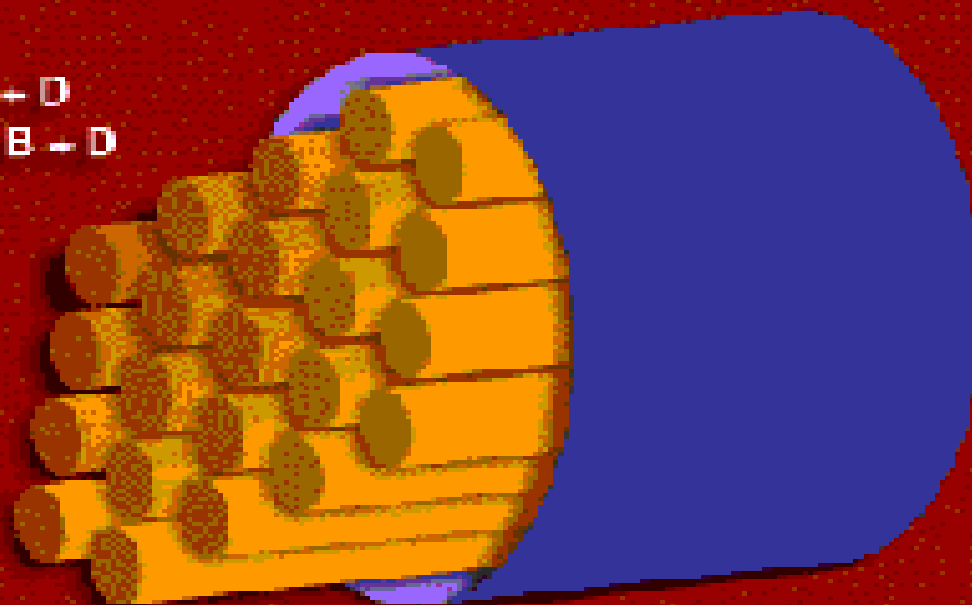
Europe/Asia: 30/31 B + D

B Channels -
User Voice, Data
Image, Sound

64 Kbps / B Channel

D Channels -
Call Signalling,
Set-up, User
Packet Data

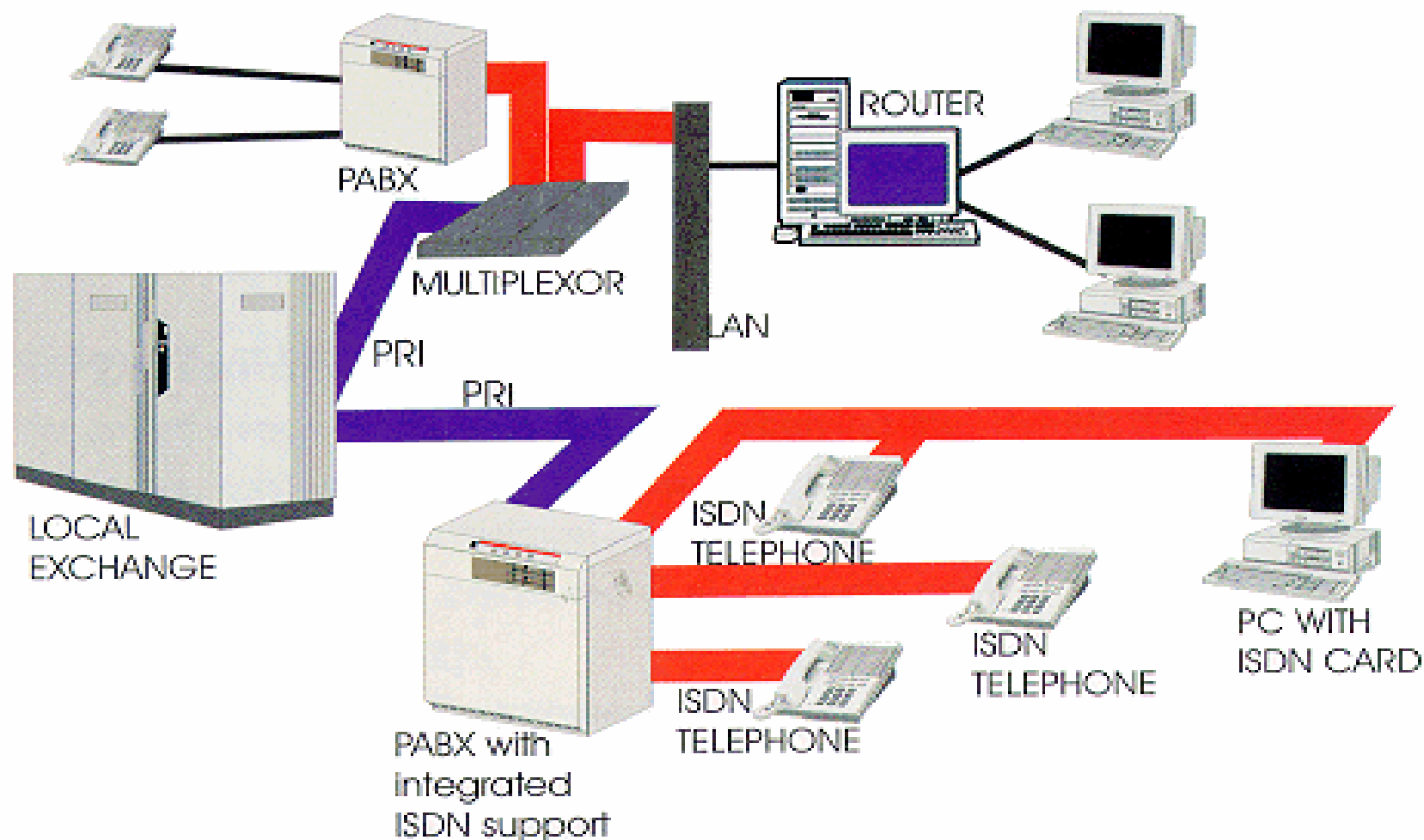
64 Kbps D Channel



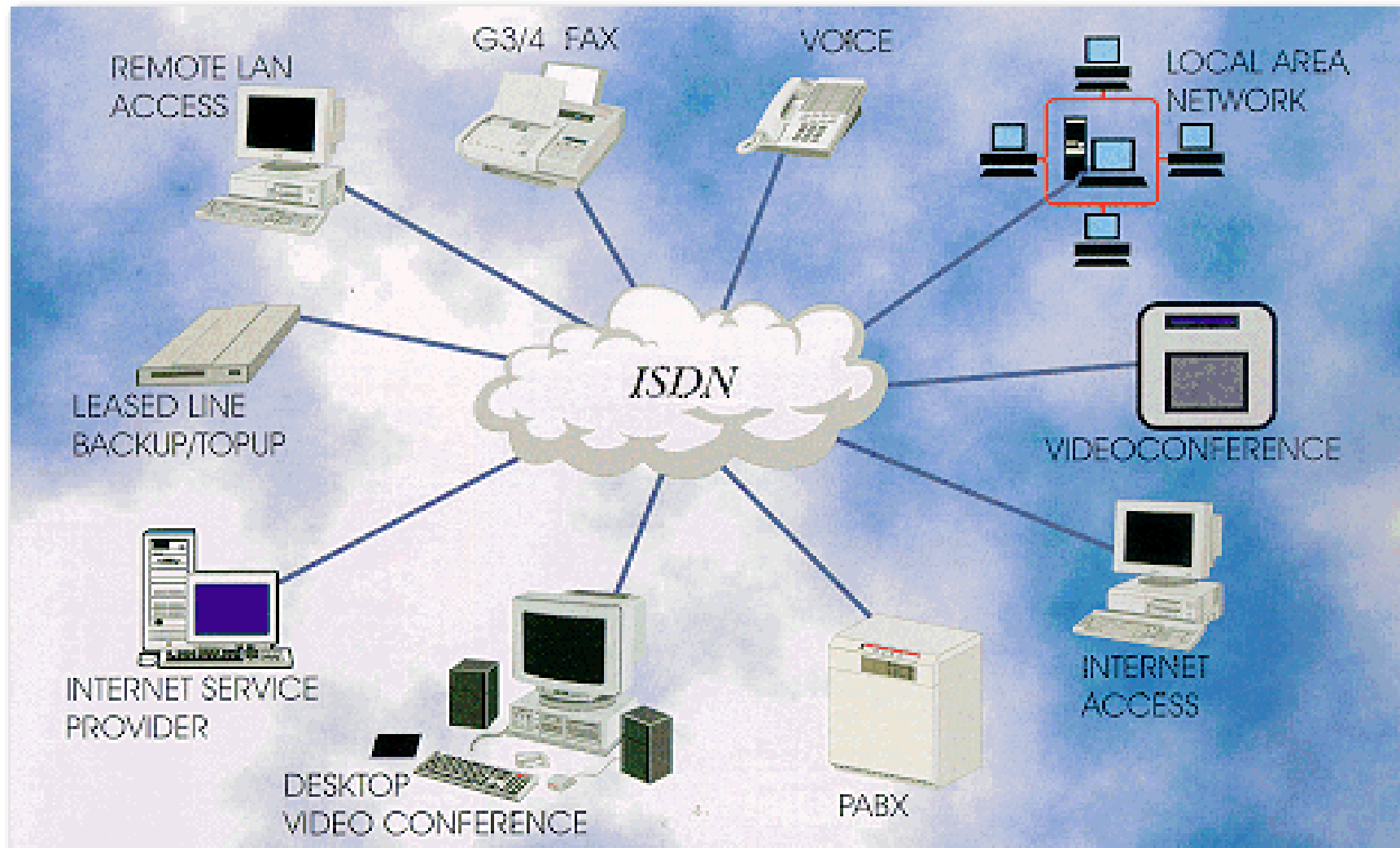
PRI Channels

- In Europe and the Pacific Rim, the PRI is supplied through a standard 2.048Mb/s E-1 channel, and consists of 30B+D or 31B+D
- The PRI Interface in the United States consists of 23B+D connection, it is designed for transmission through a standard North American T-1 trunk.

Example of a Primary Rate Network

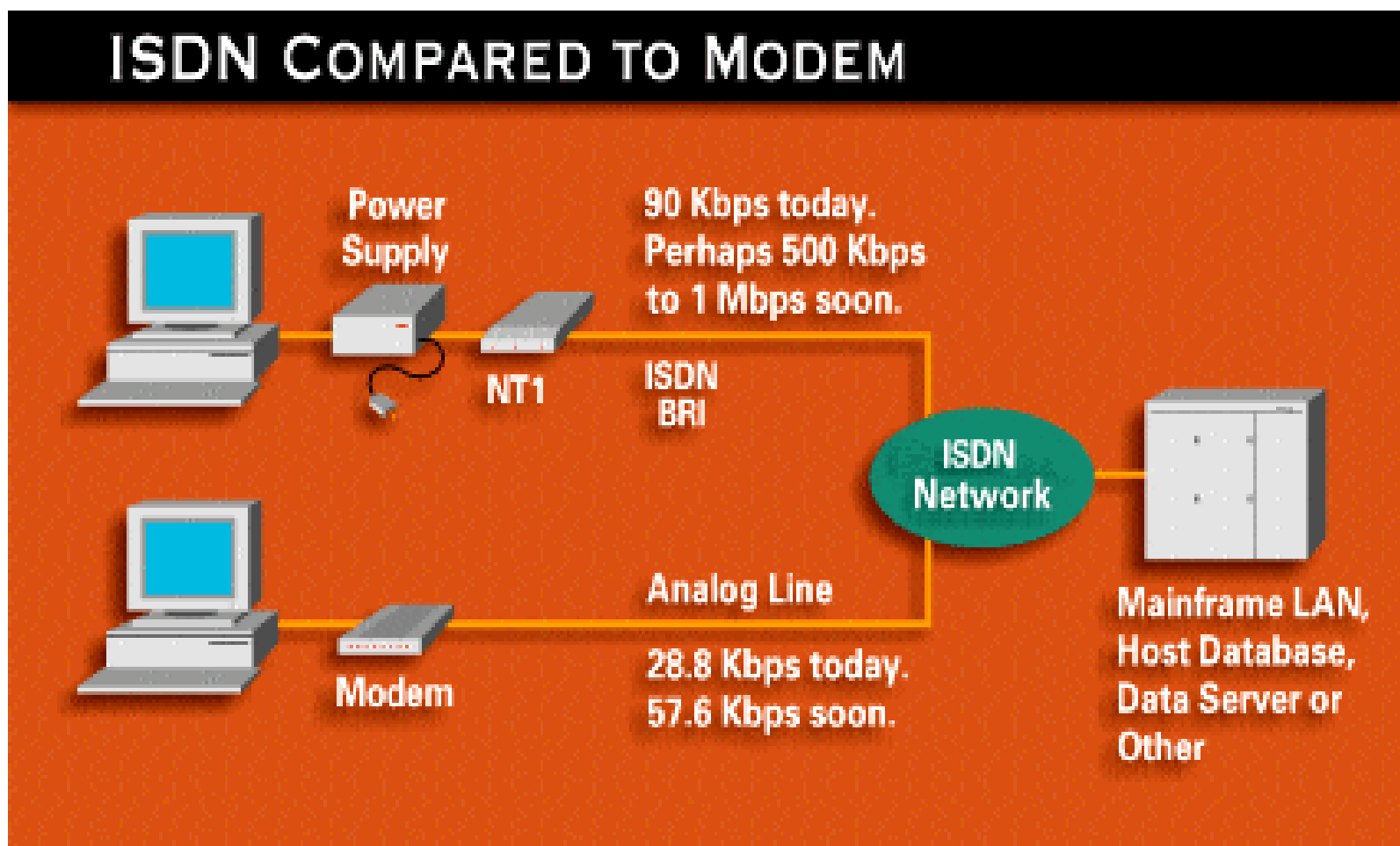


Description of the network



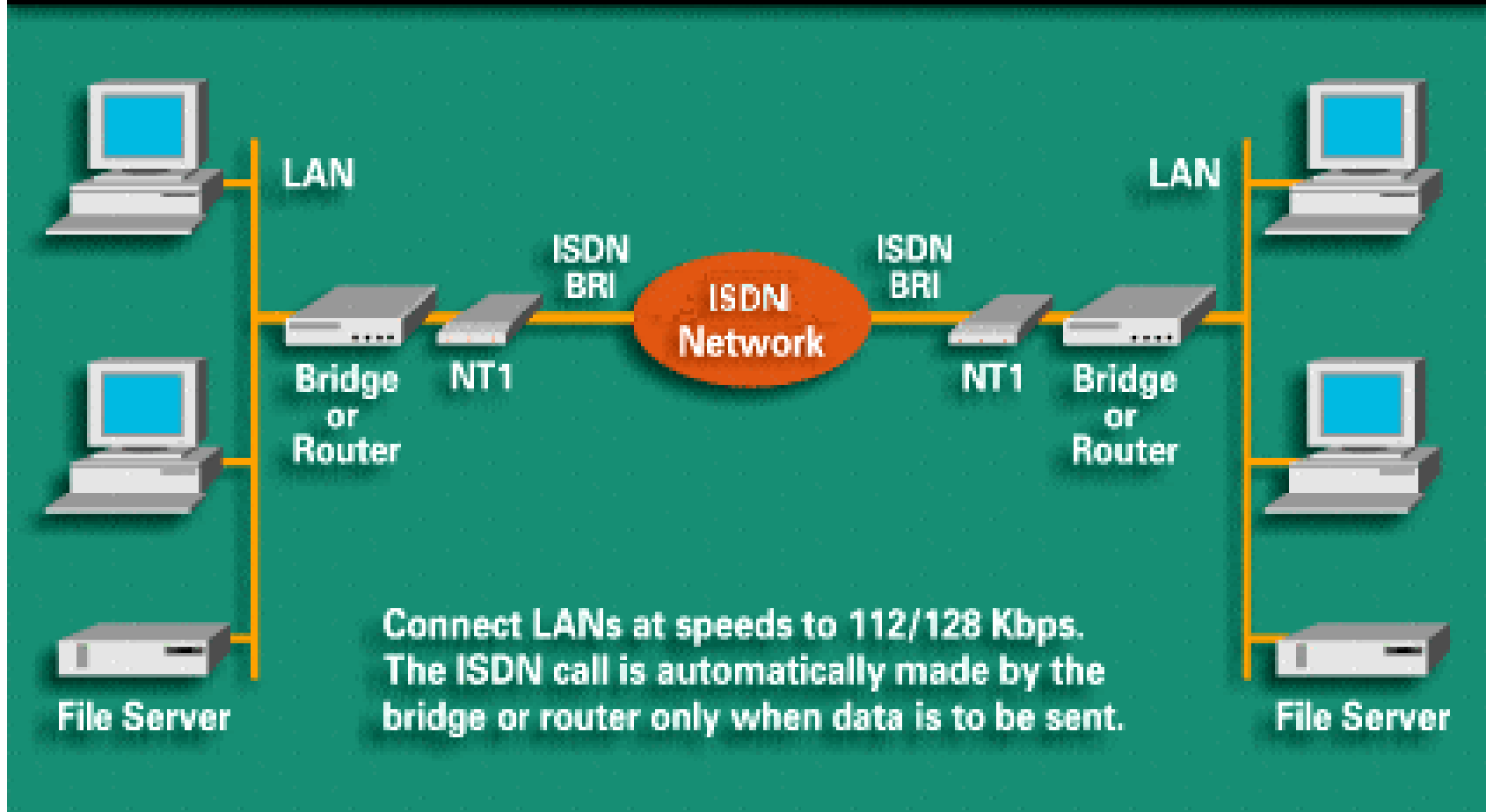
INTERNET ACCESS

ISDN COMPARED TO MODEM



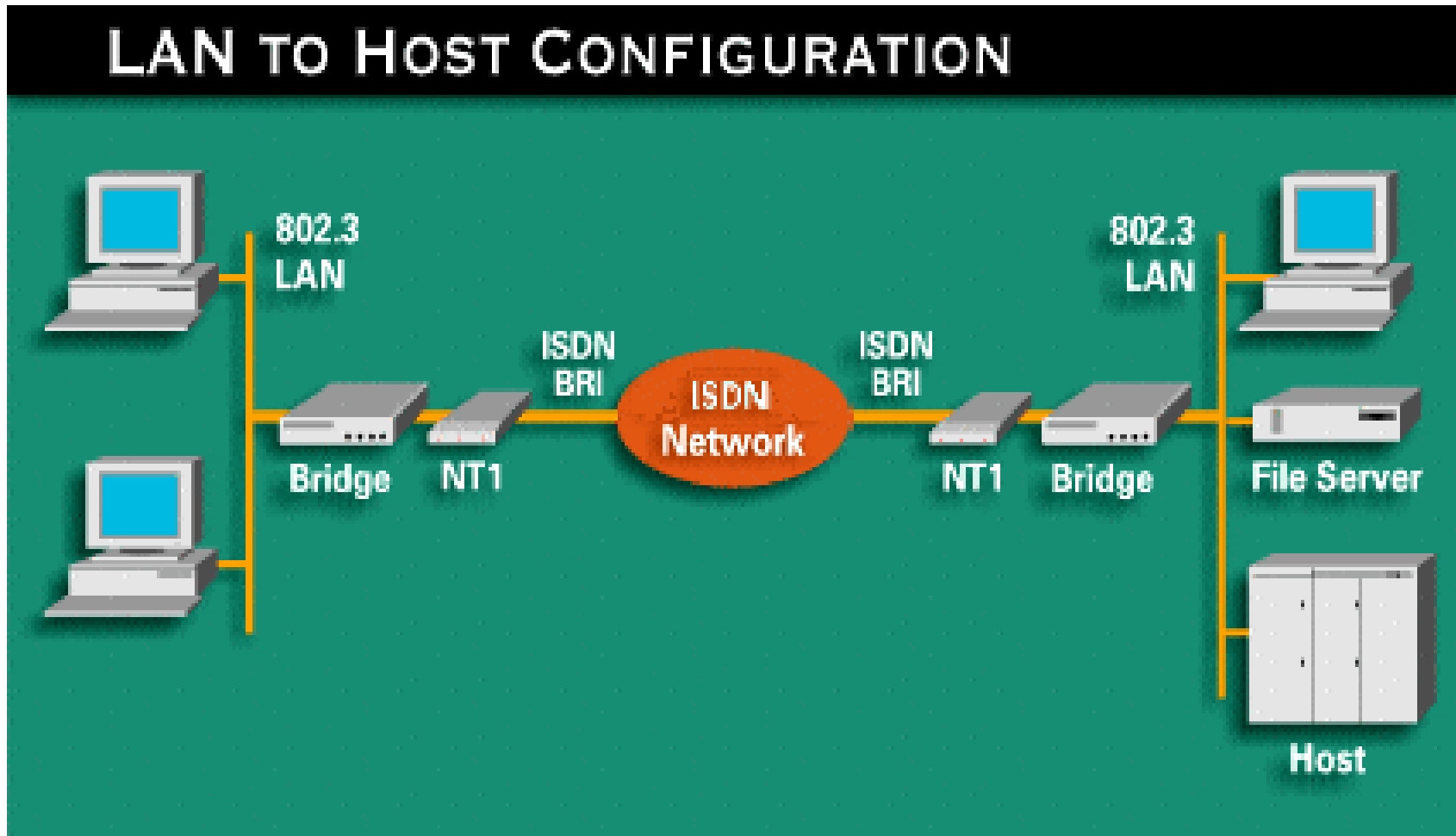
BRIDGING AND ROUTING

LAN TO LAN CONFIGURATION



REMOTE LAN ACCESS

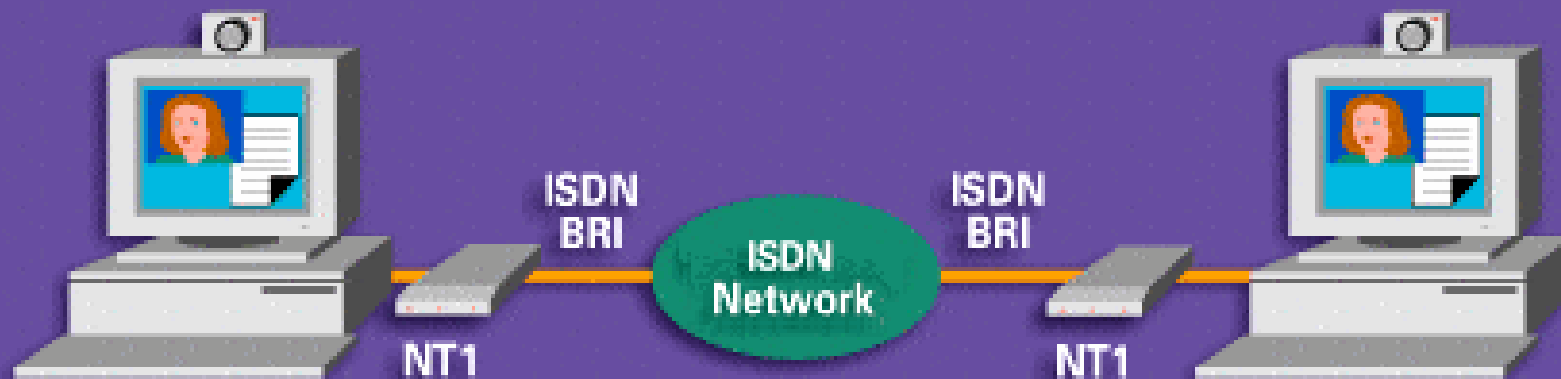
LAN TO HOST CONFIGURATION



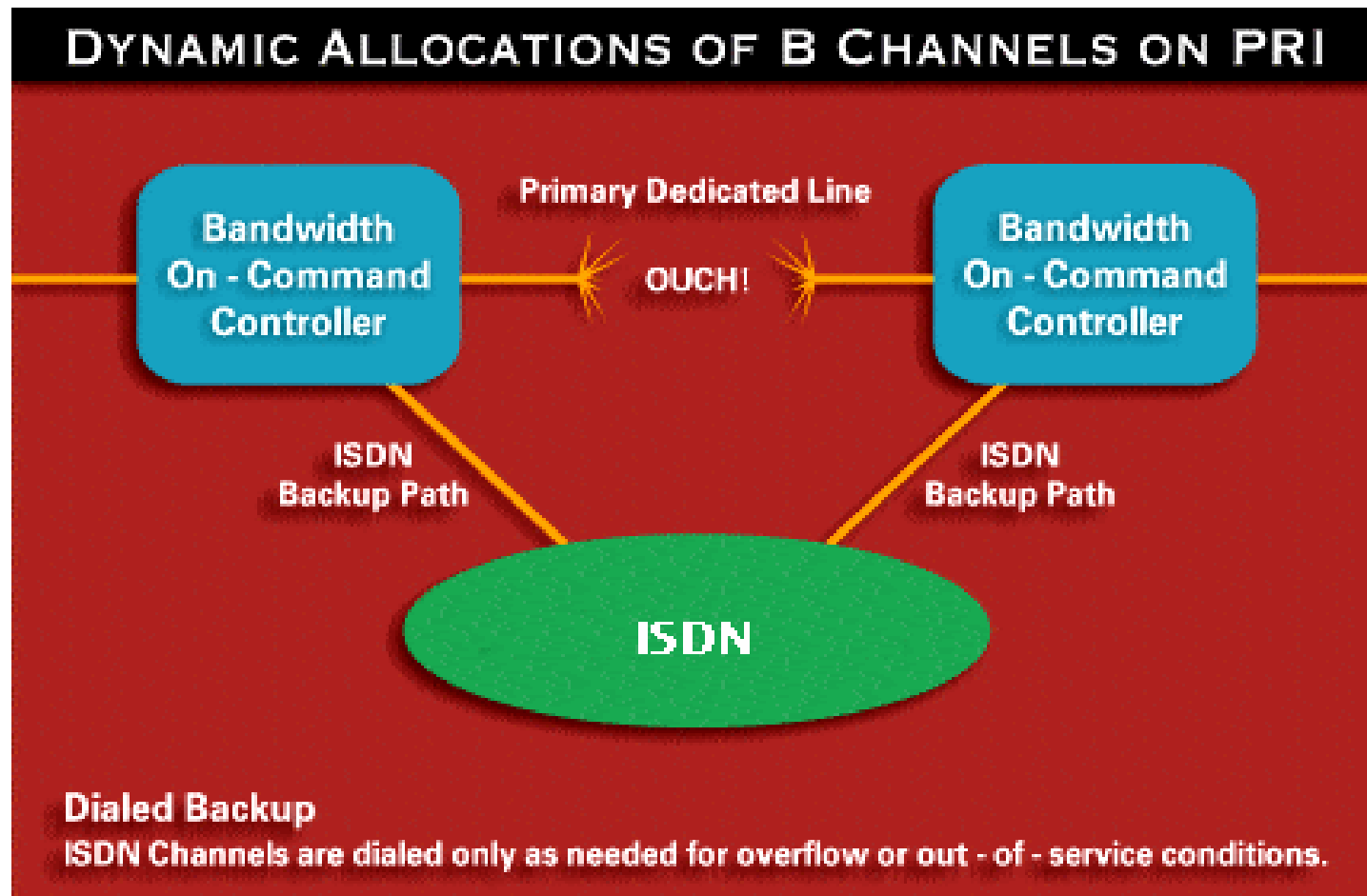
DESK-TOP CONFERENCING

DESKTOP VIDEO SYSTEMS

Desktop video systems let users see and talk to each other, and work together on documents or files.



LEASED-LINE BACK-UP/TOP-UP



Summary

- **Bearer services provide connections between users across the network.**
- **Network services provide control and signaling between the user and the network.**
- **ISDN is provided either as Basic rate or as Primary rate.**
- **Basic rate provides 2 user channels.**
- **Primary rate provides either 30 or 23 user channels.**

Summary-Contd...

- Within an interface, the B channels are numbered. In a BRI they are numbered 1 & 2; in a PRI, they are numbered 1 to 30 (or 23 in North America).
- The D channel carries the ISDN Network Services between the user and the network. It maintains the user's relationship with the network
- Two users communicating over a B channel have 64 000 bits per second available to them. There is nothing they can do to reduce this bandwidth.

Summary-Contd...

- **B channels and D channels share time on the interface.**
- **B channels cannot be sub-divided to provide less bandwidth**
- **More than one B channel can be used together to provide more bandwidth**

THANK YOU
ALL