Satellite Stations, Radio-Links and WAN

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The Abdus Salam International Centre for Theoretical Physics

Trieste-Italy 11 February - 1 March 2002

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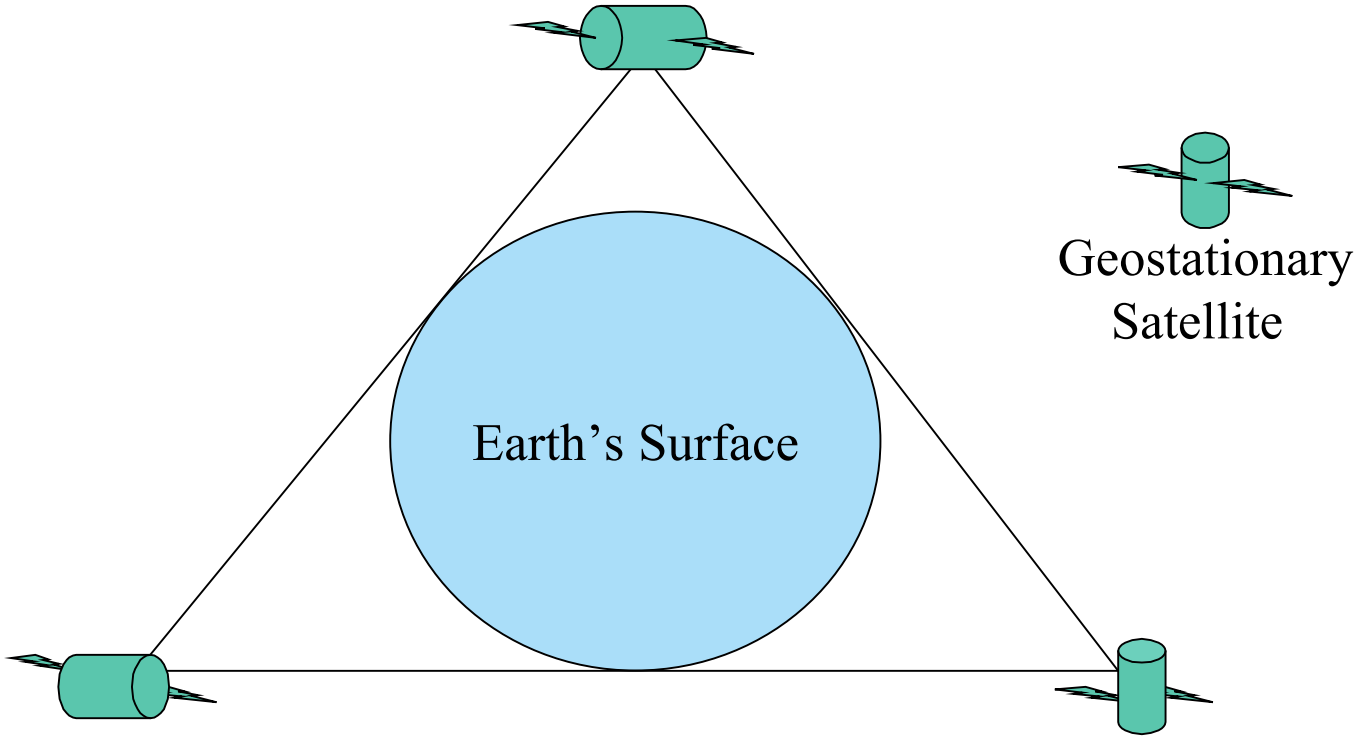
Geostationary Satellites I

- It Orbits around of Earth over The Equator approximately to 35000 Km, a complete turn take 24 hours, so the satellite is all the time in the same point over Earth's surface.
- Three Geostacionary Satellites cover the Earth's surface, if they are placed separately 120º.

Geostationary Satellites II



Satellite Stations SCPC I (Single Carrier Per Channel)

- The antenna is the 2.4 mt and 3.8 mt of diameter.
- It is intalled in a superficial base or in a mast embed (digged) in the ground.
- Oudoor: Transceiver, Low Noise Amplifier, Feed (Focus, Polarizer).
- Indoor: The Modem has an interface for conect to the other equipments.
- The Transceiver is connected to modem by two cables RG 58-59, one for Tx and the Other for Rx.

Satellite Stations SCPC II (Single Carrier Per Channel)

- It can be implementated for applications simplex o dúplex between two or more geografic places.
- It permit communications of voice, data and video.
- Data from 19.2 Kbps to up 2048 Kbps.
- It can gives analogical signals of 7.5 KHz and 15 KHz.
- SCPC offers a digital or analog services for only one channel by carrier (SCPC) with a good quality

Satellite Stations SCPC III (Single Carrier Per Channel)

- SCPC are Clear Channel.
- *Protocols*: X.25, Async (X.3/X.28/X.29), SDLC, TCP/IP and more.
- *Range of Frequency*: Ku-band, Ka-band, C-band.
- *Bit Error Rate support*: Up to 10^{-7}
- *Interfaces*: V.24, V.35, RS-449.

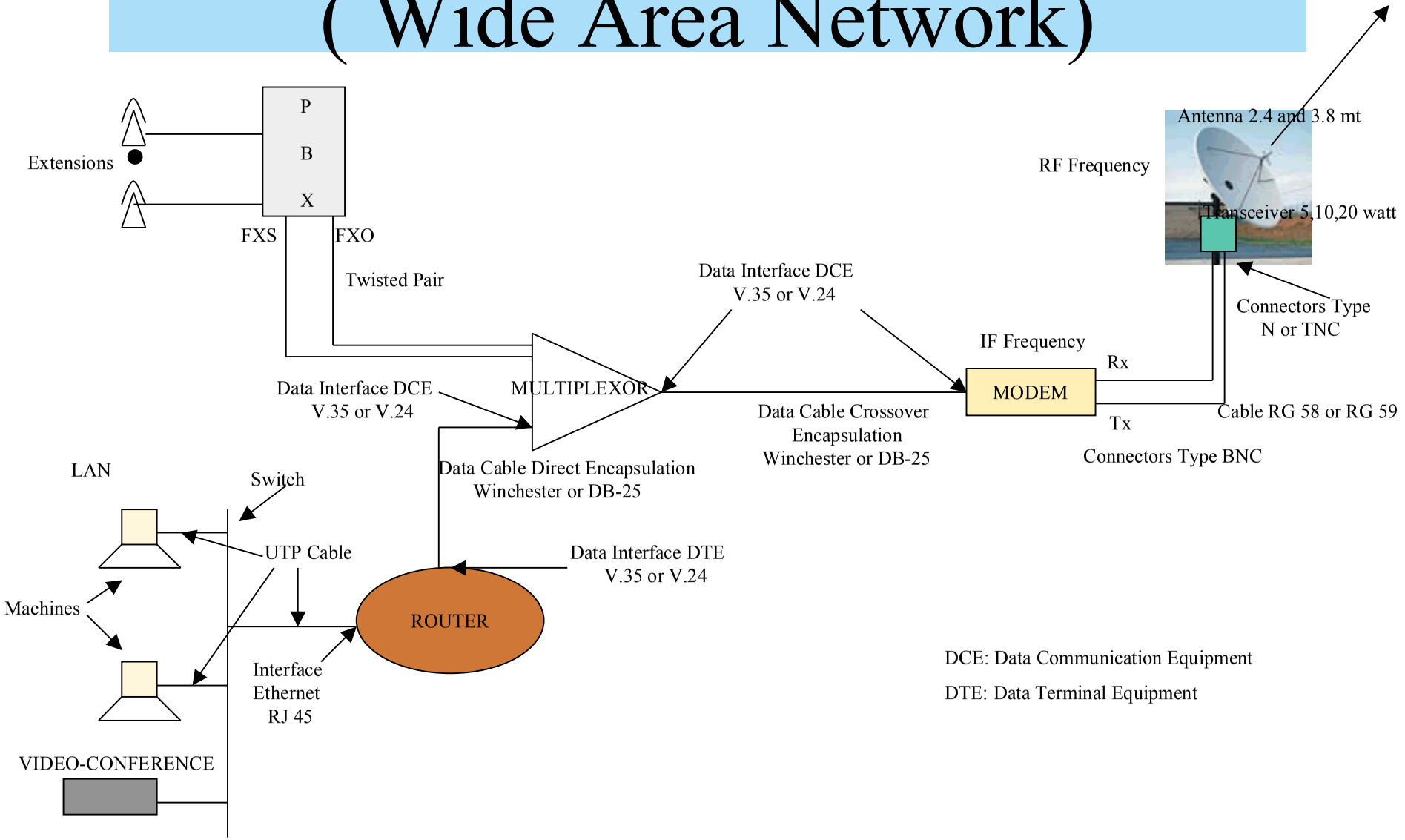
Satellite Stations SCPC IV (Single Carrier Per Channel)

- *Ports*: DCE o DTE.
- Time Division Multiplexing.
- *Speed*: 19.2 kbps to 2048 Kbps,
- Configurable by software or by display
- *Modulation*: BPSK, QPSK.
- *Voltage*:110 V, 220 V.

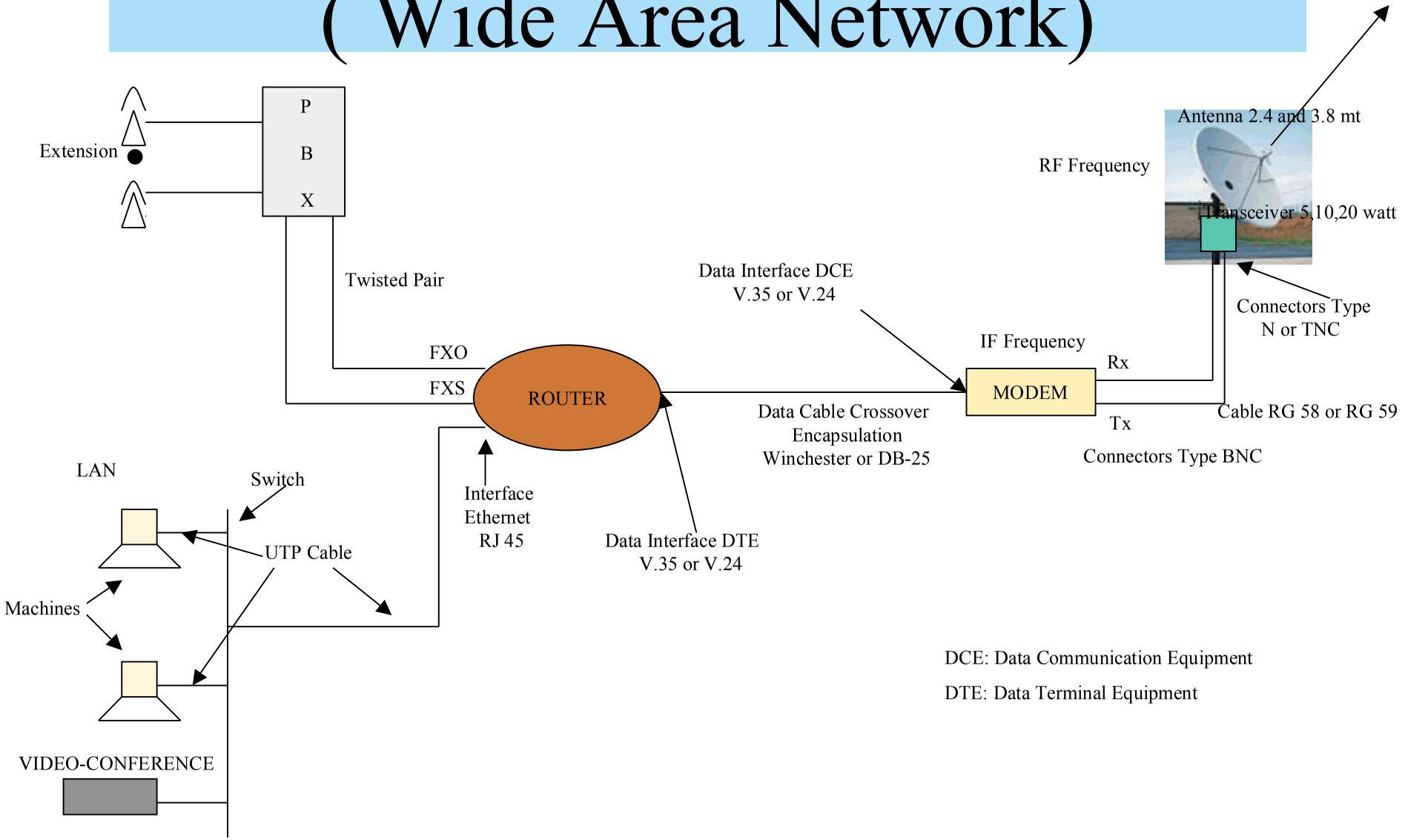
Satellite Stations SCPC V (Single Carrier Per Channel)

- Clock Master is received from the Network (Backbone) and Clock Slave take the remote clock and return.
- SCPC can be connected to diferent Multiplexing Networks and permits the connection to diferent channels: Clear Channel, Frame-Relay, etc.

WAN I
(Wide Area Network)



WAN II
(Wide Area Network)



Radio-Links I

- Radio-Links are point to point
- Almost It used like solution of last Km, although some Radio-Links cover a big distances (150 Kms.).
- Always it is necessary the antennas are aligned.

Radio-Links II

- Outdoor Unit, ODU.
- Indoor Unit, IDU.
- Antenna.
- The ODU and the IDU is connected by coaxial cables one for Transmission and the other for Reception.

Radio-Links III

- ODU and IDU do Radio-Frecuency Modulator and Transmiter in the Transmission.
- ODU and IDU do Radio-Frecuency Demodulator and Receiver in the Reception.
- In the ODU is the Polarizer.

Radio-Links IV

- Radio-links are Clear Channel.
- *Protocols*: X.25, Async (X.3/X.28/X.29), SDLC, TCP/IP and more.
- *Range of Frequency*: 900 MHz. Up to 42 GHz.
- *Bit Error Rate support*: Up to 10^{-7}
- *Interfaces*: V.24, V.35, RS-530, RS-449, Ethernet.

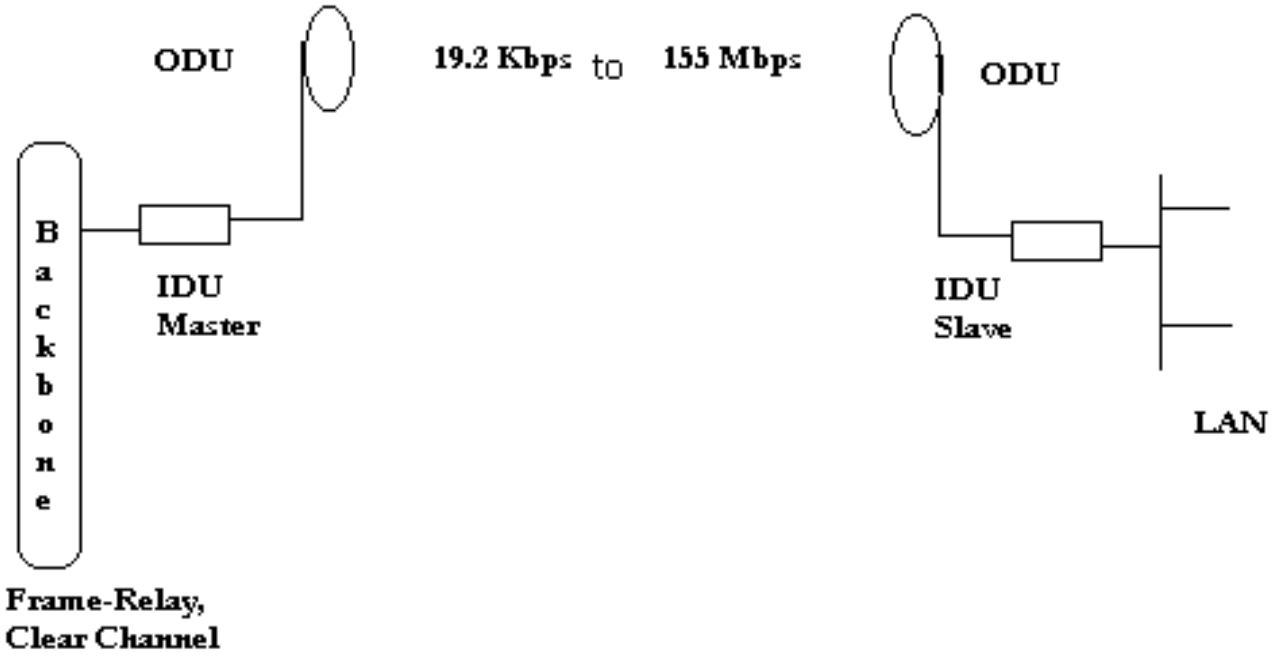
Radio-Links V

- *Ports*: DCE o DTE
- *Data Format* : Synchronous or Asinchronous
- Time Division Multiplexing.
- *Speed*: 19.2 kbps a 155 Mbps,
- Configurable by software or display
- *Modulation*: BPSK, QPSK, QAM
- *Voltage*:110 V, 220 V, 10-48 a VDC.

Radio-Links VI

- Clock Master is received from the Network (Backbone) and Clock Slave take the remote clock and return.
- Radio-Links can be connected to diferent Multiplexing Networks and permits the connection to diferent channels: Clear Channel, Frame-Relay, etc.

Radio-Links VII



Radio-Link point to point

THANK YOU

FOR YOUR ATTENTION