NEWTON's TELECOM DICTIONARY

The Official Dictionary of Telecommunications
Networking and Internet

STAY INFORMED

To be alerted by email to updates and corrections
go to **www.cmpbooks.com/newton**

NEWTON's TELECOM DICTIONARY

email: Harry_Newton@HarryNewton.com
personal web site: www.HarryNewton.com
business web site: www.TechnologyInvestor.com

Published by CMP Books
An imprint of CMP Media Inc.
Converging Communications Group
12 West 21 Street
New York, NY 10010

For individual or quantity orders
CMP Books
6600 Silacci Way Gilroy, CA 95020
Tel: 1-800-500-6875 or 1-408-848-5296
Fax:408-848-5784
Email: cmp@rushorder.com
Web:www.cmpbooks.com
Distributed to the book trade in the U.S. and Canada by
Publishers Group West
1700 Fourth St., Berkeley, CA 94710
Phone: 510-528-1444
ISBN Number 1-57820-069-5

February 2001

Seventeenth Edition

Matt Kelsey, Publisher
Christine Kern, Manager
Ray Horak, Managing Editor
Omar Mirabel, Cover Artist
Danel Roldan, Inside Layout Artist

Manufactured in the United States of America
Von Hoffmann Graphics
Owensville, MO 65066

ets in addition to the ones that contain user data. The PAD is responsible for packetizing the data from the transmitting device before it is forwarded through the packet network. On the receiving end of the transmission, the PAD strips away the control information contained in the header and trailer in order to get at the original text or payload, in effect disassembling the packets and reconstituting the original set of data in its native or original form. The PAD may be in the form of a standalone DCE device on the customer premise and supporting one or more terminals, or in the form of a printed circuit board which fits into an expansion slot of the terminal. Smaller users generally rely on the carrier to provide the PAD, which is embedded in the packet switch.

Packet Buffer Memory set aside for storing a packet awaiting transmission or for storing a received packet. The memory may be located in the network interface controller or in the computer to which the controller is connected. See Buffer.

Packet Burst Protocol A protocol built on top of IPX that speeds the transfer of NCP data between a workstation and a NetWare server by eliminating the need to sequence and acknowledge each packet. With packet burst, the server sends a whole set (or burst) of packets before it requires an acknowledgement.

Packet Controller The hub of the AT&T ISDN system. It acts as a fast packet switch providing virtual circuit services to the devices hooked to the system.

Packet Driver The specification developed by John Romkey at FTP Software to allow TCP/IP and other transport protocols to share a common network interface card. Packet Drivers have been written for a variety of network interface cards, and in many cases provide NetWare compatibility.

Packet Filtering Packet filtering is the recognition and selective transmission or blocking of individual packets based on destination addresses or other packet contents. Packet filtering can be an elementary form of firewall in that it can accept or reject packets based on predefined rules. This ability helps to control network traffic. See Packet Filtering Firewall.

Packet Filtering Firewall A packet filtering firewall is a router or a computer running software that has been configured to block certain types of incoming and outgoing packets. A packet-filtering firewall screens packets based on information contained in the packets' TCP and IP headers, including some or all of the following: Source address; Destination address; Application or protocol; Source port number; and Destination port number. See Packet Filtering.

Packet Forwarding Copying the packet to another node without looking at the destination address.

Packet Handler Function The packet switching function within an ISDN switch, for the packet mode bearer service.

Packet Interleaving Refers to the process of multiplexing multiple incoming packets from multiple channels on to a single outgoing channel by sampling one or more packets from the first channel, then the next, and so on.

Packet Level In packet data networking technology, level 3 of X.25. Defines how user messages are broken into packets, how calls are established and cleared over the packet data network (PDN) and how data flows across the entire PDN. The packet level also handles missing and duplicate packets.

Packet Level Procedure PLP. A full-duplex protocol that defines the means of packet transfer between a X.25 DTE and a X.25 DCE. It supports packet sequencing, flow control (including maintenance of transmission speed), and error detection and recovery.

Packet Mode Bearer Service An ISDN term for X.25 packet data transmission over the D channel in a BRI application. Always a part of the ITU-T (nee CCITT) standards, the service has only recently been made available. The 16-Kbps D channel can accomplish its primary responsibilities for signaling and control while still leaving 9.6 Kbps free for end user transmission of low-speed data. Retailers make extensive use of this service for credit card authorization. Only in the very recent past has the D channel been made available to end users like you and me. See also AO/DI, BRI and ISDN.

Packet Overhead A measure of the ratio of the total packet bits occupied by control information to the number of bits of data, usually expressed as a percent.

Packet Radio Packet Radio is the transmission of data over radio using a version of the international standard X.25 data communications protocol adapted to radio (AX.25). It takes your information, and breaks it up into "packets" which are each sent and acknowledged separately. This assures error-free delivery from sender to receiver. A packet is a stream of characters consisting of a header, the information the user is sending, and a check sequence. The header gives the destination call sign, the call sign of the sender, and any digipeaters (digital repeater) call signs that will be used for relaying the packet. The check sequence makes certain that the data received is what was sent. AlohaNET, a packet radio network developed for a number of years ago for use at the University of Hawaii, was an early packet radio network for LAN networking among the islands and laying a foundation for subsequent packet networks, both wired and wireless. Packet radio data networks recently have been deployed by a number of carriers serving mobile and fleet applications, with such carriers including ARDIS, RAM Mobile Data and Nextel.

Packet Size The length of a packet, expressed in bytes (B). Packet size is of specified and fixed length in X.25 and other true packet networks. The size of the "packet" in other networks may be variable within limits, as is the case with an Ethernet frame or a Frame Relay frame.

Packet Sniffer This sounds like something naughty. It is, but not the way you might have thought. A packet sniffer is program used by an intruder to monitor a data stream for a pattern such as a password or credit card number. Packet sniffers also have a more salutary purpose when used for network analysis and troubleshooting by the system administrator.

Packet Switching Sending data in packets through a network to some remote location. The data to be sent is assembled by the PAD (Packet Assembler/Disassembler) into individual packets of data, involving a process of segmentation or subdivision of larger sets of data as specified by the native protocol of the transmitting device. Each packet has a unique identification and each packet carries its own destination address. Thereby, each packet is independent, with multiple packets in a stream of packets often traversing the network from originating to destination packet switch by different routes. Since the packets may follow different physical paths of varying lengths, they may experience varying levels of propagation delay, also known as latency. Additionally, they may encounter varying levels of delay as they are held in packet buffers awaiting the availability of a subsequent circuit. Finally, they may be acted upon by varying numbers of packet switches in their journeys through the network, with each switch accomplishing the process of error detection and correction. As a result, the packets may also arrive in a different order than they were presented to the network. The packet sequence number allows the destination node to reassemble the packet data in the proper sequence before presenting it to the target device.

Originally developed to support interactive communications between asynchronous computers for time-share applications, packet switched networks are shared networks, based on the assumption of varying levels of latency and, thereby, yielding a high level of efficiency for digital data networking. Isochronous data such as realtime voice and video, on the other hand, are stream-oriented and highly intolerant of latency. As a result, packet switched networks are considered to be inappropriate for such applications. Recent development of certain software and making use of complex compression algorithms, however, has introduced packetized voice and video to the corporate intranets and the Internet, which was the first public packet-switched data network and remains by far the most heavily used.

Here is another way of explaining packet switching: There are two basic ways of making a call. First, the one everyone's familiar with — the common phone call. You dial. Your local switch finds an unused path to the person you called and joins you. While you are speaking, the circuit is 100% all yours. It's dedicated to the conversation. This is called circuit switched. Packet switching is different. In packet switching, the "conversation" (which may be voice, video, images, data, etc.) is sliced into small packets of information. Each packet is given a unique identification and each packet carries its own destination address — i.e. where it's going. Each packet may go by a different route. The packets may also arrive in a different order than how they were shipped. The identification and sequencing information on each packet lets the data be reassembled in proper sequence. Packet switching is the way the Internet works. Circuit switching is the way the worldwide phone system works, also called the PSTN (Public Switched Telephone Network).

Packet and Circuit Switching each have their own significant advantages. Packet switching for example does a wonderful job getting oodles of data into circuits. Think about a voice conversation. When you are talking, he's listening. Therefore half the circuit is dead. There are pauses between your voice. Packet switching takes advantage of those pauses to send data. Packet switching has been used primarily for data. But with the growth of the Internet, it has been used also for voice. Because of the need to re-assemble packets and other reasons, there's up to a half second delay between talking and the person at the other end hearing anything. Packet voice on the Internet is not as clear as circuit switched voice. But that's changing as the packets come faster and the technology improves. See Internet, IP Telephony and TAPI 3.0

Packet Switching Exchange PSE. The part of a packet switching network