NEWTON'S TELECOM DICTIONARY

The Official Dictionary of Telecommunications & the Internet

• IP Telephony • LANs & Intranets • Call Centers & Computer Telephony • Fiber Optics, SONET and DWDM • Satellites • Voice, Data, Image & Video Networking • Wired and Wireless Telecom • VoIP • T-1, T-3, T-4, E-1, E-3 • ISDN & ADSL • Cable Modems • Cellular, PCS & GSM • Windows 95, 98, NT, NetWare, Apple, Sun & Unix Networking • Ecommerce

Updated 15th Expanded Edition

by Harry Newton

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email: Harry_Newton@HarryNewton.com
personal web site: www.harrynewton.com

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jointly developed by Compaq and Texas Instruments. APO dynamically adjusts critical parameters for minimum latency, minimum host CPU utilization and maximum system performance. This technology ensures that the capabilities of the PCI interface are used for automatically tuning the controller to the specific system in which it is operating.

Apocalypse, Four Horsemen Of The four horsemen of the Apocalypse were War, Plague, Famine and Death.

Apogee The point on a satellite orbit that is most distant from the center of the gravitational field of the Earth. The point in an orbit at which the satellite is closest to the Earth is known as the perigee. In commercial application, the terms have most significance with respect to LEOs (Low Earth Orbiting) and MEOs (Middle Earth Orbiting) satellite constellations, which travel in elliptical orbits. See LEO and MEO.

Apologize To lay the foundation for a future offense.

APON ATM Passive Optical Network. A passive optical network running ATM. See also ATM, Fiber Optics and SONET.

Apparent Power The mathematical product of the RMS current and the RMS voltage. Identical to the VA rating.

APPC Advanced Program-To-Program Communications. In SNA, the architectural component that allows sessions between peer-level application transaction programs. The LUs (Logical Units) that communicate during these sessions are known as LU type 6.2. APPC is an IBM protocol analogous to the OSI model's session layer: it sets up the necessary conditions that enable application programs to send data to each other through the network.

APPC/PC An IBM product that implements APPC on a PC.

Appearance Usually refers to a private branch exchange line or extension which is on (i.e. "appears") on a multi-button key telephone. For example, extension 445 appears on three key systems.

Appearance Test Point The point at which a circuit may be measured by test equipment.

Append To add the contents of a list, or file, to those of another.

APPGEN A shortened form of the words APPlications GENerator.

Apple Computer, Inc. Cupertino, CA. Manufacturer of personal computers. Heavy penetration in the graphics/desktop publishing business and in education. Apple was formed on April Fool's Day, 1976, by Steve Wozniak and Steve Jobs, aided greatly by Mike Markkula.

Apple Desktop Bus The interface on a Mac where non-peripheral devices, such as the keyboard, attaches. A Mac keyboard or mouse is called an ADB device. Contrast with peripherals, which attach through the SCSI interface. See also USB, which is a new bus for use on PCs but fulfilling essentially the same function as the Apple Desktop Bus.

Apple Desktop Interface ADI. A set of user-interface guidelines, developed by Apple Computer and published by Addison-Wesley, intended to ensure that the appearance and operation of all Macintosh applications are similar.

Apple Menu The Apple icon in the upper left hand corner of the Apple Macintosh screen. The Apple menu contains aliases, control panels, the chooser and other desk accessories.

Apple Pie Both an American icon, and the name chosen for Apple Computer's Personal Interactive Electronics (PIE) division, chartered with extending the company into new growth areas such as Personal Digital Assistants (PDAs), e.g. the Apple Newton. The PIE division includes Apple Online Services, Newton and Telecommunications group, publishing activities, and ScriptX-based multimedia PDA development.

Apple Remote Access ARA is Apple Computer's dial-in client software for Macintosh users allowing remote access to Apple and third party servers.

Apple URP Apple Update Routing Protocol. The network routing protocol developed by Apple for use with Appletalk.

AppleShare Apple Computer's local area network. It uses AppleTalk protocols. AppleShare is Apple system software that allows sharing of files and network services via a file server in the Apple Macintosh environment. See APPLETALK.

Applet Mini-programs that can be downloaded quickly and used by any computer equipped with a Java-capable browser. Applets carry their own software players. See JAVA.

AppleTalk Apple Computer's proprietary networking protocol for linking Macintosh computers and peripherals, especially printers. This protocol is independent of what network it is layered on. Current implementations exist for LocalTalk (230.4 Kbps) and EtherTalk (10 Mbps).

AppleTalk Zone and Device Filtering Provides an additional level of security for AppleTalk networks. On AppleTalk networks, network managers can selectively hide or show devices and/or zones to ARA clients. See ARA.

Application A software program that carries out some useful task. Database managers, spreadsheets, communications packages, graphics programs and word processors are all applications.

Application Based Call Routing In addition to the traditional methods of routing and tracking calls by trunk and agent group, the latest Automatic Call Distributors route and track calls by application. An application is a type of call, for example, sales or service. Tracking calls in this manner allows accurately reported calls, especially when they are overflowed to different agent groups. See ACD.

Application Binary Interface ABI. The rules by which software code is written to operate specific computer hardware. Application software, written to conform to an ABI, is able to be run on a wide variety of system platforms that use the computer hardware for which the ABI is designed.

Application Bridge Aspect Telecommunications' ACD to host computer link. Originally it ran only over R2-232 serial connections, but it now runs over Ethernet, using the TCP/IP link protocol. See also OPEN APPLICATION INTERFACE.

Application Class An SCSA term. A group of client applications that perform similar services, such as voice messaging or fax-back services.

Application Entity A cellular radio term. An Application Entity provides the service desired for communication. An Application Entity may exist in an M-ES (Mobile End System) (i.e., mobile application entity) or an F-ES (Fixed End System). An Application Entity is named with an application entity title.

Application Equipment Module AEM. A Northern Telecom term for a device within the Meridian 1 Universal Equipment Module that supports Meridian Link Modules. The Meridian Link Module (MLM) is an Application Module, specially configured to support the Meridian Link interface to host computers.

Application For Service A standard telephone company order form that includes pertinent billing, technical and other descriptive information which enables the company to provide communications network service to the customer and its authorized users.

Application Framework This usually means a class library with a fundamental base class for defining a complete program. The framework provides at least some of the facili-

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Of Presence at which ISPs (Internet Service exchange traffic and routes at Layer 2 (Link Layer) model.

r "population." One "pop" equals one person. In the dustry, systems are valued financially based on the of the market served.

fice Protocol. An e-mail server protocol used in the ou use POP to get your mail and download it to sing SMTP (Simple Mail Transfer Protocol). POP3 rent version, as defined in RFC 1725. POP is ly being replaced by IMAP.

P stands for Post Office Protocol. POP is a proto- n the Internet to retrieve electronic mail from a mail u use POP to get your mail from the server it is sit- d to download it to your PC. Most e-mail software s called e-mail clients) use the POP protocol. A few ewer IMAP (Internet Message Access Protocol). wo versions of POP. The first, called POP2, became in the mid-1980s and requires SMTP (Simple Mail rotocol) to send messages. The newer version, be used with or without SMTP. POP3 servers are a invention because, if they are attached to the hey are independent of the transport mechanism cess them. For example, my main email address is wton@email.msn.com. MSN stands for the Network. Let's say I'm in Singapore and I want to mails. I jump onto the Internet, using any local rvice Provider (ISP). I then instruct my email client se Microsoft Outlook) to go find my MSN POP3 erver, whose address happens to be il.msn.com. It finds that server. The server asks me myself by telling who I am and what my password t starts sending me my emails. By being a POP3 N is particularly useful because it means I can pick ails from wherever I am in the world — even those ch MSN doesn't serve (which is most of them). It s that I can pick up my emails with typically only a ne call. When you are choosing an email provider, that email provider places your email on a POP3 that you can retrieve your email from anywhere. panies claim to have "POP3" servers but, for some chnical, security or incompetence), they don't allow your mail over the Internet. When I wrote an article ject of POP3 servers, many readers wrote me that "POP3" and "POP3" servers. Thus my warning to eck, check."

A call center term. A button that displays, on several items from which you can choose (by click- or example). In effect, this is a list box that you don't ou push button. Pop-ups always have double lines ght and bottom sides.

Electronic Mail An electronic mail system that erminate-and-stay-resident program (typically with- id can be popped up inside any application to send ail. Our office, we have a TSR electronic mail pro- ops up. It is called Noteworks and we really love it.

Program A memory-resident program that is memory but isn't visible until you press a certain nation or until a certain event occurs, such as message. See also TSR.

ellular industry term for its customers or its poten- ers. (It varies with usage.) POPS, short for "popu- ll, sort of) refers to members of the population. to Ron Schneiderman's book on Wireless, "if the

coverage area of a cellular carrier include a popular base of one million people, it is said to have one million POPS. The financial community uses the number of potential users as measuring stick to value cellular carriers."

Populated Occupied by chips on printed circuit boards.

Port 1. noun. An entrance to, and/or an exit from a network.
2. noun. The physical or electrical interface through which one gains access. A point in the computer or telephone system where data may be accessed. Peripherals — like call accounting devices — are connected to ports. The two most common ports are the parallel and serial ports.
3. noun. The interface between a process or program and a communications or transmission facility.
4. verb. To move a process, program or subroutine from one processor to controller to another ("port it over").
5. noun. Network access point for data entry or exit. In Internet terms, it is the identifier (16-bit unsigned integer) used by Internet transport protocols to distinguish among multiple simultaneous connections to a single destination host.

Port Aliasing Imagine a switch on a local area network. It switches one port to another via a common backplane. We're having trouble and we're looking to do some diagnosis. So we grab all the information flowing through the switch and mirror it (i.e. forward it, but keep it going elsewhere in the switch) to a special port, which we can hook up equipment to and then monitor and check for problems in the resulting data flow — errors in packets, etc.

Port Connection The point of entry into a public frame relay network service.

Port Group A collection of switch interfaces through which packets can be switched. Port groupings can be distinct for different types of destination addresses: multicast, broadcast, and unicast sprays.

Port Identifier The identifier assigned by a logical node to represent the point of attachment of a link to that node.

Port Level VLAN VLAN based on source port ID. This is a multiple bridge configuration of a switch.

Port Multiplier A local area network interconnect, a concentrator providing connection to a network for multiple devices.

Port Per Pillow A goal set by colleges seeking to install network connections in the bedrooms of every student on campus.

Port Replicators Low-cost docking station substitutes that provide one-step connection to multiple desktop devices.

Port Selector Another name for a dataPBX. Since the advent of LANs (local area networks) these devices have been getting a bad rap. Not fair. These gadgets are really great at transmitting and switching huge number of low-speed asynchronous lines. If you put this sort of traffic on a LAN, you could severely mess up its performance. Some port selectors have data throughput in excess of 20 million bits per second.

Port Sharing 1. A system which connects multiple lines to a single port by means of a manual or automatic line selection method.
2. In frame relay, where multiple virtual connections share the same port connection.

Port Sharing Device A system which connects multiple lines to a single port by means of a manual or automatic line selection method.

Port Switching According to 3Com, port switching is merely an electronic patch panel function, not the genuine switching capability that provides a performance boost. Port switching lets administrators configure their networks, allocating any port to any backplane on their hub. Unlike true switching, it doesn't increase the bandwidth available to the network manager.

Portability 1. The ability of a customer to take his telephone number from place to place and, for 800 numbers, from one long-distance company to another.
2. The ability of software designed for one computer system to be used on other systems. Little software outside MS-DOS software for IBM and IBM clone computers is portable. UNIX software is portable to an extent.

Portable A one-piece, self-contained cellular telephone — easily carried in a brief case or purse. Portables normally have a built-in antenna and rechargeable battery and operate with six-tenths of one watt (0.6 watt) of power. Car cellular phones operate with three watts.

Portable Cellular Phone Also known as a "hand-held phone". Refers to a lightweight, compact cellular handset that incorporates a battery power supply, and can be used without any peripheral power or antenna. See PORTABLE.

Portable Teletransaction Computers PTC. These are typically handheld devices used for retail (inventory), healthcare (tracking supplies), mobile field repair (reporting fixes), insurance (visiting car wrecks and other disasters), etc. The devices typically have telecommunications capabilities, sometimes wireless, sometimes landlines. And they typically include microprocessors, memories, displays, keyboards, touchscreens, character recognition software, barcode readers, printers, modems and local and/or wide area data radios.

Portal Site The classic definition of a portal is a door, gate, or entrance, especiallyone of imposing appearance, as to a palace. In the Internet business, aportal is a site on the Internet, which the owner positions (throughmarketing) as an entrance to other sites on the Internet. The concept isthat he convinces visitors to the Internet to visit his site first, andsavor the advertising on his site (his way of making money). A portaltypically has, at minimum, search engines, free email, instant messaging andchat, personalized home pages and Web hosting. In the past, companies likeAmerica Online and CompuServe would have been called portals. Many browsers(e.g., Netscape Navigator and Internet Explorer) point you to a Web site —their own Web site, which they are endeavoring to position as a "portal."Once there, you might then want to use a search engine (e.g., AltaVista,Excite, Infoseek, Lycos, Yahoo). You are then taken to their Web site.These sites serve as your secondary portal, or point of entry, into theWeb. At each of these Web sites you are assailed with advertisements atevery opportunity. Also, cookies are embedded in your computer so they cantrack your movement and activities on the Web to get a feel for yourbuying preferences and, ultimately, develop a profile on you for purposesof targeted on-line advertising. You can change your initial portal, if youlike, perhaps pointing your browser to the Web site of favorite financialinformation provider (e.g. Bloomberg or Nasdaq), rather than that ofNetscape or Internet Explorer. Portals are BIG business. In July 1998, WaltDisney Co. offered approximately $900 million for 43 percent interest inInfoseek, a 4-year old startup with fewer than 200 employees and annualsales of about $35 million. At the time, Infoseek had never made a profit. See also Portal Service.

Portal Service First, read my definition for Portal above. Then add these words. Portal Service is a whole architectural concept surrounding and including a point of entry. Portal Service is a whole architectural concept surrounding and including a point of entry. Portal Service introduces the con-

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lication protocol. In addition to PRA and ISUP, the r ISDN protocol in the delivery of advanced network s TCAP, a CCS7 application protocol that provides m to support non-circuit related, transaction-based n exchange between network entities. This capabil- luired by transaction-based services that must information between a pair of signaling nodes in a vork. Examples of these services include enhanced ervice, automated credit card calling and virtual pri- rking. The TCAP protocol enables these services to lote databases called service control points (SCPs) part of the call. The SCP supplies the translation g data needed to deliver advanced network services nslating a dial calls into the required routing num- is useful also in coordinating some enhanced call- vices. For example, network ring again requires the l of two users when both stations become idle. In TCAP is used to coordinate between the users' hile waiting for each line to become idle. And it can hout tying up network trunks.
major advantages of TCAP is that it provides a set building blocks for use in a variety of service def- ne TCAP building blocks are subdivided into the sublayer and the component sublayer. For more ee the 1988-3 issue of Northern Telecom's Telesis l.

rrier Administration System. Provides mechanized the facility maintenance and administration center centralized administration and control of the digi- .

g Check Frame. Last step in a series of signals in nission called a training sequence, designed to let r adjust to telephone line conditions.

e A New York Jewish word meaning trinkets, best l by the giveaway junk we often pick up at telecom- s trade shows.

Circuit Identification Code. Only relevant to SS7. hat uniquely identifies a trunk between an origina- code and a destination point code. An example etween two telephone company switches.

ommunications Industry Forum. A voluntary spe- rest group under ATIS (Alliance for nications Industry Solutions). TCIF addresses as electronic commerce, including bar coding and (Electronic Data Interchange). g/atis/tcif/index.html See also ATIS.

veling Class Mark.

Trellis Coding Modulation.

Time Compression Multiplexing. A digital trans- nique that permits full duplex data transmission compressed bursts of data in a "ping-pong" fash-

Telecommunications Manager. The TCM is the he department that plans, controls, and adminis- hony and telecommunications assets of the com- sures that the telephone and telecommunications well-run and functioning smoothly. These assets the PBX and ISDN, T-1, local and long distance nes, telephone sets, authorization codes, cable , Fax machines, voice mail systems, automated teractive voice response systems, automatic call multiplexors, modem pools, etc. The internal s such as LANs and routers may be under the n of the TCM, or could be the responsibility of

the Management Information Systems (MIS) department. But since the TCM has responsibility for both the inside wiring and the outside Carrier facilities, close coordination would be required if the internal data facilities are controlled by the MIS department.
The following are the functions of the TCM;
- Operating, administering, monitoring, and maintaining the existing telecommunications systems.
- Dealing with the various vendors and providers, including verifying and paying the bills.
- Preparing and managing the Telecommunications budget.
- Keeping abreast of changes in technology, services, industry structure, and rates.
- Assisting company management in developing a corporate telecommunications policy that meets business objectives.
- Developing and implementing company telephone and telecommunications procedures for efficient and cost effective use, and training company employees in these procedures.
- Upgrading, procurement, selecting, contracting, or purchasing a system, new system, equipment, or services.
- Planning and analyzing for growth, new requirements, or future functionality.

The goal of the TCM is to provide good telecommunications services for an organization and its employees at the lowest possible cost. This definition courtesy, Robert J. Perillo, Perillo@dockmaster.ncsc.mil.

TCNS Thomas Conrad Networking System is a 100 million bit per second proprietary networking system (LAN) based on ARCnet that can use most standard ARCnet drivers on any network operating systems.

TCO Total Cost of Ownership. A term coined by The Gartner Group to bring attention to the actual, total cost to the enterprise of owning a PC. The most figure in 1997 was $29,353 for owning a standard, networked, Windows 95 PC for a period of three years. Gartner cites the cost of a NetPC (Thin Client) at a much lower cost. The point is clear and fairly obvious — consider not only the acquisition/implementation cost of a workstation (networked or not), but also consider the total cost, including administration, maintenance, support, software upgrades and training.

TCP 1. Transmission Control Protocol. ARPAnet-developed transport layer protocol. Corresponds to OSI layers 4 and 5, transport and session. TCP is a transport layer, connection-oriented, end-to-end protocol. It provides reliable, sequenced, and unduplicated delivery of bytes to a remote or local user. TCP provides reliable byte stream communication between pairs of processes in hosts attached to interconnected networks. It is the portion of the TCP/IP protocol suite that governs the exchange of sequential data. See TCP/IP for a much longer explanation.
2. An ATM term. Test Coordination Procedure: A set of rules to coordinate the test process between the lower tester and the upper tester. The purpose is to enable the lower tester to control the operation of the upper tester. These procedures may, or may not, be specified in an abstract test suite.

TCP/IP According to Microsoft: Transmission Control Protocol/Internet Protocol (TCP/IP) is a networking protocol that provides communication across interconnected networks, between computers with diverse hardware architectures and various operating systems. TCP (Transmission Control Protocol) and IP (Internet Protocol) are only two protocols in the family of Internet protocols. Over time, however, "TCP/IP" has been used in industry to denote the family of common Internet protocols. The Internet protocols are a result of a Defense Advanced Research Projects Agency (DARPA) research project on network interconnection in the late 1970s. It was mandated on all United States defense long-haul networks in 1983 but was not widely accepted until the integration with 4.2 BSD (Berkeley Software Distribution) UNIX. The popularity of TCP/IP (Harry's note: it's the Internet's networking protocol) is based on:
- Robust client-server framework. TCP/IP is an excellent client-server application platform, especially in wide-area network (WAN) environments.
- Information sharing. Thousands of academic, defense, scientific, and commercial organizations share data, electronic mail and services on the connected Internet using TCP/IP.
- General availability. Implementations of TCP/IP are available on nearly every popular computer operating system. Source code is widely available for many implementations. Additionally, bridge, router and network analyzer vendors all offer support for the TCP/IP protocol family within their products.

TCP/IP is the most complete and accepted networking protocol available. Virtually all modern operating systems offer TCP/IP support, and most large networks rely on TCP/IP for all their network traffic. Microsoft TCP/IP provides cross-platform connectivity and a client-server development framework that many software vendors and corporate developers are using to develop distributed and client-server applications in heterogeneous enterprise networks over TCP/IP.
How TCP Works: TCP is a reliable, connection-oriented protocol. Connection-oriented implies that TCP first establishes a connection between the two systems that intend to exchange data. Since most networks are built on shared media (for example, several systems sharing the same cabling), it is necessary to break chunks of data into manageable pieces so that no two communicating computers monopolize the network. These pieces are called packets. When an application sends a message to TCP for transmission, TCP breaks the message into packets, sized appropriately for the network, and sends them over the network.
Because a single message is often broken into many packets, TCP marks these packets with sequence numbers before sending them. The sequence numbers allow the receiving system to properly reassemble the packets into the original message. Being able to reassemble the original message is not enough, the accuracy of the data must also be verified. TCP does this by computing a checksum. A checksum is a simple mathematical computation applied, by the sender, to the data contained in the TCP packet. The recipient then does the same calculation on the received data and compares the result with the checksum that the sender computed. If the results match, the recipient sends an acknowledgment (ACK). If the results do not match, the recipient asks the sender to resend the packet. Finally, TCP uses port IDs to specify which application running on the system is sending or receiving the data.
The port ID, checksum, and sequence number are inserted into the TCP packet in a special section called the header. The header is at the beginning of the packet containing this and other "control" information for TCP.
How IP Works: IP is the messenger protocol of TCP/IP. The IP protocol, much simpler than TCP, basically addresses and sends packets. IP relies on three pieces of information, which you provide, to receive and deliver packets successfully: IP address, subnet mask, and default gateway.
The IP address identifies your system on the TCP/IP network. IP addresses are 32-bit addresses that are globally unique on a network. They are generally represented in dotted decimal

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