

TECHNICAL GLOSSARIES AND ABBREVIATIONS



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Technical Glossaries

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Access network : Network to which customer premises equipment is directly connected, giving access to services. (cf. "core network").

Accounting rates : System which sets out the pricing principles to be used in interconnection agreements between international operators, to enable the revenue for international calls to be shared between the operator in the country that originates traffic and the operator in the country that delivers the traffic. For calls to a given international destination, the operator in the country originating the traffic sets the retail price, which is called the collection rate. At the same time, this operator and the operator in the destination country negotiate a settlement rate. The settlement rate is used to determine the sum paid by the operator originating traffic to the operator which delivers the traffic. The settlement rate is often half of the accounting rate.

ACTE (Approval Committee for Terminal Equipment) : Committee chaired by the European Commission (DG XIII), responsible for implementing the terminal equipment directive (98/13/EC), by drafting common technical regulations (CTRs) for network access.

ADSL (Asymmetric Digital Subscriber Line) : An xDSL technology designed to enhance the performance of access networks, particularly the subscriber line of the conventional telephone copper access network. Two modems are used, one on the customer's premises, and the other on the subscriber line before the main distribution frame, to increase data rates 70-fold. ADSL uses a line splitter to enable it to carry voice, upstream data (user to network) and a greater proportion of downstream data (network to user). Filtering at both ends of the line ensures acceptable voice quality, by removing interference. ADSL technology is particularly well suited to the local loop, as throughput diminishes over distance. It is relatively inexpensive, and therefore constitutes an attractive alternative to cable networks for high speed Internet access.

AFA (Association des Fournisseurs d'Accès à Internet) : French association of Internet access providers.

ANFr (Agence Nationale des Fréquences) : National Frequencies Agency. Body responsible for managing the RF spectrum, sharing frequencies between the different bodies and administrations with allocations in France (ART, CSA, defence ministry, etc.), dealing with interference and participating in international negotiations on frequencies.

AMPS (Advanced Mobile Phone System) : First Generation *Cellular Radio* standard developed in the USA. It is an analogue system which uses different frequency carriers to create communications channels in a technique known as Frequency Division Multiple Access (FDMA). AMPS is still widely used and forms the basis for a number of other cellular radio standards such as *TACS* and *D-AMPS*.

Asymmetric regulation : Regulation which imposes specific obligations on the incumbent because of its dominant position on the market, e.g. special interconnection obligations, retail tariff control, and universal service duties.

ATM (Asynchronous Transfer Mode) : A packet-switching technique using the cell relay transmission method, i.e. fixed-size cells, to provide high-speed transport of digital data. ATM permits ultra-fast transmission and enhances line capacity, making it particularly well suited to high-speed multiservice networks. By improving core network performance and optimising network resources, it supports high traffic flow, while maintaining high service quality.

Audiotel : Shared revenue services provided by France Télécom, which can generally be accessed by dialling a number beginning with "08 36". They enable users to access information, games, etc., via an audiotex-type voice server, which guides the caller with pre-recorded messages.

ANSI (The American National Standards Institute) : ANSI is a voluntary organization that creates standards for the computer industry. For example, ANSI C is a version of the C language that has been approved by the ANSI committee. In addition to programming languages, ANSI sets standards for a wide range of technical areas, from electrical specifications to communications protocols.

ASP (Application Service Provider) : An Application Service Provider (ASP) is a company which provides a location-independent, web-based application, frequently on a pay-per-seat or pay-per-user basis. Demand for and provision of ASP services is forecast to increase hugely and will be a key driver of the next phase of the bandwidth revolution.

Backbone (a.k.a. core network) : A telecommunications network comprises two parts:
- the local loop or access network which is composed of subscriber lines, i.e. in a fixed-wire network the part of the network where each subscriber line, generally built from copper pairs, is physically individualised
- the backbone consisting of all the transmission and switching media starting with the local exchange.

Bandwidth : Expressed in hertz, bandwidth is the range of frequencies that allow a data channel to be transported. It is defined as the difference between the lowest and highest frequencies transmitted. In IT, it is often confused with the transfer rate or capacity expressed in bits per second.

BAS (Broadband Access Server) : Server used to manage data transport in ATM mode for ADSL-based Internet access offerings. Each BAS on the France Télécom network is connected to approximately 10 DSLAMs (*q.v.*) and groups the traffic handled by those devices. Consequently, the area covered by a BAS is referred to by France Télécom as a platform. Two ATM circuits, one "incoming" and one "outgoing", are put in place between the client and the BAS to which he or she is connected.

Baudrate : Baud was the prevalent measure for data transmission speed until replaced by a more accurate term, bps (bits per second).

Beauty contest : Method for the selection of candidates for the use of a limited resource (e.g. wireless local loop or UMTS licences and frequencies). It consists of defining a certain number of criteria and rating the candidates accordingly in order to select the most suitable candidates. It is not the same as an auction, where the price of the resource is the only criterion that taken into account.

BER : The bit error rate (BER) is the percentage of bits that have errors relative to the total number of bits received in a transmission, usually expressed as ten to a negative power.

bit/s : bits per second; basic measurement of the speed with which data can be transmitted. Larger units are sometimes used to denote high data speeds. One kilobit per second (kbit/s, kbps) is equal to 1,000 bit/s. One megabit per second (Mbit/s) is equal to 1,000,000 bit/s or 1,000 kbit/s.

Bluetooth : A wireless personal area network (PAN) technology from the Bluetooth Special Interest Group (www.bluetooth.com) founded in 1998 by Ericsson, IBM, Intel, Nokia and Toshiba. Bluetooth is an open standard for short-range transmission of digital voice and data between mobile devices (laptops, PDAs, phones) and desktop devices. It supports point-to-point and multipoint applications.

Bluetooth provides up to 720 Kbps data transfer within a range of 10 meters and up to 100 meters with a power boost. Unlike IrDA, which requires that devices be aimed at each other (line of sight), Bluetooth uses omnidirectional radio waves that can transmit through walls and other non-metal barriers. Bluetooth transmits in the unlicensed 2.4GHz band and uses a frequency hopping spread spectrum technique that changes its signal 1600 times per second. If there is interference from other devices, the transmission does not

stop, but its speed is downgraded.

The name Bluetooth comes from King Harald Blatan (Bluetooth) of Denmark. In the 10th century, he began to Christianize the country. Ericsson (Scandinavian company) was the first to develop this specification.

Broadband : A term applied to telecommunications systems capable of simultaneously supporting multiple information formats at relatively high speeds such as voice, high-speed data services and video services on demand. Overall transmission speeds are typically hundreds to thousands of times faster than those of Narrowband systems.

Bypass : Usually refers to the practice of avoiding local telephone companies' long-distance access fees to local operators by routing traffic from private networks directly to the long-distance carrier – ie bypassing the local carrier. With the advent of *Mobile Satellite Systems*, bypass may also now refer to the bypassing of national carriers to establish international connections.

Cable Modem : A cable modem connects a PC to a cable TV line, providing a gateway for uploading and downloading data transmission at asymmetrical speeds. While cable modems offer greater capabilities, bandwidth is shared among all users on a line. This can reduce connection speeds considerably as more users connect.

Call back : The user dials a number in the country which operates "call back". There is no call set-up so no charge. An automatic device calls the number back and sets up the call on an international line. The user then dials the number of his correspondent. The call is billed at the tariff charged by the chosen foreign operator. This system thus enables users to enjoy the tariffs charged in the country called.

Carrier (or long distance operator) : Telecommunications company which carries national long distance and /or international calls.

Carrier selection : Possibility for customers to choose between several carriers. Carrier selection only concerns long distance and international calls.

CBR : Constant Bit Rate, needed for time-sensitive applications such as Voice over IP, audio/video streaming video-on-demand etc.

CCR (Commission Consultative des Radiocommunications) and CCRST (Commission Consultative des Réseaux et Services de Télécommunications) : The radiocommunications consultative committee

and the telecommunications networks and services consultative committee are advisory committees created by the Telecommunications Act of 26 July 1996. They report to the telecommunications minister and to the ART chairman.

CDN : A Content Distribution Network (CDN) service places the content that is viewed by the end user as close as possible to them on the network, enhancing the user experience by bypassing internet traffic jams and preserving bandwidth.

CDMA (Code Division Multiple Access) : Technology straddling second generation and third generation (3G) mobile Cellular Radio systems. Under CDMA, communications channels are created by assigning a special coding scheme to information flows. CDMA-based second generation cellular radio systems are in use in parts of Asia and North and South America. New variations of CDMA are likely to provide the base for many third generation cellular systems.

CEI (Commission électronique internationale) : International Electrotechnical Commission

Cellular Radio : Cellular Radio is the technology that has made wide scale mobile telephony possible – before cellular radio the problem with the mobile phone as a concept was how to get large numbers of users to share small amounts of radio spectrum. Cellular radio solved this problem by allowing the re-use of the same radio frequencies by assigning them to cells which were far enough apart to prevent noticeable interference. Frequency Division Multiple Access (FDMA) was the basis for first generation cellular radio systems. Second generation cellular radio systems - the current generation - use digital techniques such as TDMA and CDMA to support high bit rate voice and limited data communications. Third generation (3G) systems will support voice and high bit rate data allowing mobile multimedia applications (see also Narrowband, Wideband).

Circuit Switching : Means of creating telecoms connections by setting up an end-to-end circuit. The circuit remains open for the duration of the communication and a fixed share of network resources is tied up with no one else able to make use of them until the connection is closed. The main advantage of circuit-switching is that it enables performance guarantees to be offered.

CEN (Comité Européen de Normalisation) : European Committee for Standardisation

CENELEC (Comité Européen de Normalisation Electrotechnique) : European Committee for Electrotechnical Standardisation

CEPT (European Conference of Postal and Telecommunications Administrations) : Regional regulatory telecommunications organisation of which most European countries are members. It partakes in regulatory and technical co-operation (particularly on frequencies).

CNI : Customer Network Interface (CNI) is the interface between the Customer Premises Equipment and the customer's equipment and local network.

Co-location : In France Télécom's standard interconnection offer, physical interconnection is possible using three different techniques:

- co-location: the operator installs its equipment on France Télécom's premises
- interconnection link: France Télécom installs its equipment on the operator's premises.
- in-span interconnection: a solution half-way between these two systems, where the point of interconnection is located on the public domain, for example.
- Co-location of equipment is also necessary in the case of local loop unbundling, to enable operators to connect their equipment to France Télécom's, at the main distribution frame. Co-location therefore, need not necessarily take place on France Télécom's premises.

Conseil Constitutionnel : (lit. Constitutional Council), France's supreme court.

Conseil d'Etat : Literally: "State Council". Highest administrative court in France and government adviser on questions arising in connection with legislation.

CTR (Common Technical Regulation) : Rule governing the connection of terminal equipment to networks. CTRs are drawn up, under the provisions of the EU directive 98/13/EC by TRAC and ETSI, at the request of ACTE, which is chaired by the European Commission. These rules apply to all EU member states.

Conformity certification : Terminal equipment intended to be connected to a telecommunications network (telephone sets, faxes, modems, etc.) as well as radio transmitters (remote control units, CB devices etc.) must conform with quality and security standards before being placed on the market. Until the incorporation of EU Directive 99/5/EC of 9 March 1999, telecoms legislation sets out assessment procedures leading to the issue by ART of conformity certificates. Equipment which has been conformity certified carries a special sticker.

Consumer basket : Statistical market information tool, enabling, the average change in users' bills to be measured, at constant consumption. ART has established two consumer baskets to observe the average yearly change in telephone tariffs.

Convergence : Refers to two different trends:
- convergence between the broadcasting and telecommunications sectors. Advances in technology make it possible to use different media (cable networks, terrestrial and satellite radio relay systems, computer terminals and television sets) to carry and process all kinds of information and services, including sound, images and data. This type of convergence is due to a revolution in technology (digitisation). It has economic and regulatory implications.

- fixed/mobile convergence. Increasingly similar technologies are used and services provided by fixed telephone and mobile telephone systems. This type of convergence opens up prospects for operators to propose the same services to all users, regardless of the technology or networks they use.

CPT (Code des postes et télécommunications) : The Posts and Telecommunications Code

CST (Conseil Supérieur de la Télématique) : French authority for telematics services.

CT (Commutateur de transit) : See trunk exchange

CTA (Conseil de la Télématique Anonyme) : French advisory committee on telematics services.

CUG (Closed user group) : The posts and telecommunications code defines an independent network as a network that is shared or used for a private purpose. It "is for private use, if use is reserved for the physical or legal person that set it up, and it is for shared use if use is reserved for several physical or legal persons which have set up one or several closed user groups, in order to exchange communications within that same group". ART clarified this definition by adding that a CUG must be "based on a community of interest that is stable enough to be identifiable and that predates the creation of the network". The term 'closed user group' is also used to define a virtual private network on a public network.

Data communication network : Communication network designed, deployed and managed for data communication purposes. It includes backbone, interconnection (peerings) with other service providers,

customer's access connections. Data communication services is a general term including , ATM, Frame Relay, IP, IP Telephony, X.25 etc

D-AMPS (Digital Advanced Mobile Phone System) : TDMA-based second generation cellular radio standard originated in North America. Sometimes D-AMPS is also referred to as TDMA although it is not the only form of TDMA, with others including GSM and PDC. D-AMPS is widely used throughout the Americas, and uses frequencies in the 800 MHz and 1900 MHz frequency bands.

DECT (Digital Enhanced Cordless Telecommunication) : European digital radio transmission standard for mobile or fixed telephony (wireless local loop).

DES/3DES : Data Encryption Standard developed in 1975 and standardised by ANSI in 1981 as ANSI X.3.92. DES uses a 56-bit key. Also TripleDES, a data encryption standard that produces three DES algorithm iterations consecutively to improve the security of data.

Digital block : A number of calls batched on the same physical transmitting medium using a technique known as multiplexing. With PDH (Plesiochronous Digital Hierarchy), the transmission standard generally used for telecommunications networks, calls can be batched firstly into primary digital blocks (PDBs) comprising 30 calls, then into secondary digital blocks (SDBs) of 120 calls, then into tertiary digital blocks (TDBs, 480 calls), and then into quaternary digital blocks (QDBs, 1,920 calls). Each digital block corresponds to a transfer rate or capacity expressed in bits per second, where the bit is the basic digital binary unit (which has two values: 1 or 0). The transfer rate of a PDB is 2Mbit/s. For interconnection purposes, pricing can be based on the transmission capacity, expressed in PDBs.

Digital link : Link over which information is carried in a digital format. Digital means that all the information (sound, text, image) has been encoded and transformed into a series of binary digits, as opposed to analogue, which is the direct representation of a waveform.

DNS : A Domain Name System (DNS) is designed to link user-friendly text names with specific (less memorable) IP addresses. You use DNS to identify your business on the Internet as www.yourcompany.com. In DNS, each host on your network belongs to your domain. When you use both the host name and the domain name, you're using a Fully Qualified Domain Name (FQDN).

Domain name : Name that designates an entity to which an Internet site belongs and which comes at the end of the address of the site (e.g. ".fr" or ".com").

DSLAM (Digital Subscriber Line Multiplexer) : One of the devices used to convert conventional telephone lines into ADSL lines for high-speed data transmission, particularly for Internet access. The DSLAM is installed on the main distribution frame of the local operator's network. It amalgamates several ADSL lines on a single medium, which routes data to and from these lines.

DSL : Digital Subscriber Line (DSL) is equipment which transforms standard telephone lines into high-speed data communications links. See ADSL, HDSL, SDSL, VDSL, and XDSL.

Direct interconnection : Call termination service, in which an operator terminates a call to one of France Télécom's subscribers. The call is routed by the operator to the interconnection point; it is then carried by France Télécom over its network from the point of interconnection to the subscriber's customer premises equipment.

Distributor (a.k.a. mobile communications service provider) : Company selling and managing mobile telephony subscriptions, on behalf of an operator.

Dual trunk exchange interconnection : Service listed in France Télécom's standard interconnection offer, enabling an operator that is interconnected to a trunk exchange to reach subscribers in another trunk exchange area, anywhere in France. It thus enables all subscribers in France to be reached.

DWDM : Dense wavelength division multiplexing (DWDM) is a technology that puts data from different sources together on a fibre optic.

E-1 : Data connection digital line with a baudrate of 2Mbit/s, or 32 timeslots. The net data communication speed (bandwidth) used on a E-1 circuit is 1984kbit/s or 30 timeslots, 2 timeslots being retained for data communication signaling.

E-3 : Data connection digital line with a baudrate of 34Mbit/s or 17E-1. The net data communication speed (bandwidth) is 32Mbit/s or 16E-1

EBITDA : Abbreviation for **Earnings Before Interest, Taxes, Depreciation and Amortisation**. EBITDA is an approximation for operating cash flow of a company. By not including non-operating cash flow items such as interest and taxes and non-monetary items such as depreciation and amortisation, you can clearly see the amount of money a company is bringing in (or spending if negative).

Economic regulation : The regulatory authority has to ensure that competition is effective, fair and sustainable. It does this by using precise knowledge of market developments, and the legal instruments at its disposal (e.g. dispute settlement, approval of technical and financial interconnection conditions, penalties, in-depth evaluation of operators' costs).

EDGE (Enhanced Data Rates for GSM Evolution) : An enhanced modulation technique designed to increase network capacity and data rates on GSM networks. EDGE, due to be introduced in 2000-2001, promises to provide a three-fold improvement to current data rates without requiring new network infrastructure. Instead it is based on a major change in the GSM standard to support 8-PSK (Phase Shift Keying) based signal modulation as well as existing GSM modulation.

ECTRA (European Committee of Telecommunications Regulatory Affairs) : CEPT (*q.v.*) committee responsible for regulatory affairs. Its permanent office is the European Telecommunications Office (ETO).

ERC (European Radiocommunications Committee) : Organisation answerable to the European Conference of Postal and Telecommunications Administrations (CEPT), responsible for regulatory cooperation on radiocommunications issues. Its permanent office is the European Radiocommunications Office (ERO).

ERP : Enterprise Resource Planning (ERP) is a generic term for any pan-organisational application which focuses on the management of company resources.

Ethernet : The most widely used local area network (LAN) access method, defined by the IEEE as the 802.3 standard. Ethernet has become so popular that a specification for "LAN connection" or "network card" generally implies Ethernet without saying so. All Macs and many PCs come with 10/100 Ethernet ports for home use, not just to create a small home network, but to connect to the Internet via a DSL or cable modem, which requires it. A 10/100 port means that it supports both 10BaseT at 10 megabits per second (Mbps) and 100BaseT at 100 Mbps. Ethernet is normally a shared media LAN. All stations on the segment share the total bandwidth, which is either 10 Mbps (Ethernet), 100 Mbps (Fast Ethernet) or 1000 Mbps (Gigabit Ethernet). With switched Ethernet, each sender and receiver pair has the full bandwidth.

Twisted pair Ethernet (10BaseT) uses economical telephone wiring and standard RJ-45 connectors, often taking advantage of installed wires in a building. It is wired in a star configuration and requires a hub or switch. Fast Ethernet (100BaseT) is similar, but uses two different twisted pair configurations (see 100BaseT). Today's Ethernet network adapters, hubs and

switches generally support both 10BaseT and 100BaseT (10/100) and automatically sense and adapt to the transmitted speed. The earlier versions of 10 Mbps Ethernet used coaxial cable (see 10Base5 and 10Base2).

Fiber-optic Ethernet (10BaseF and 100BaseFX) is impervious to external radiation and is often used to extend Ethernet segments up to 1.2 miles. Specifications exist for complete fiber-optic networks as well as backbone implementations. FOIRL (Fiber-Optic Repeater Link) was an earlier standard that is limited to .6 mile distance.

Ethernet transmits variable length frames from 72 to 1518 bytes in length, each containing a header with the addresses of the source and destination stations and a trailer that contains error correction data. Higher-level protocols, such as IP and IPX, fragment long messages into the frame size required by the Ethernet network being employed (see MTU).

Ethernet uses the CSMA/CD technology to broadcast each frame onto the physical medium (wire, fiber, etc.). All stations attached to the Ethernet are "listening," and the station with the matching destination address accepts the frame and checks for errors. Ethernet is a data link protocol (MAC layer protocol) and functions at layers 1 and 2 of the OSI model.

Ethernet was invented by Robert Metcalfe and David Boggs at Xerox PARC in 1973, which first ran at 2.94 Mbps. Metcalfe later joined Digital where he facilitated a joint venture between Digital, Intel and Xerox to collaborate further on Ethernet. Version 1 was finalized in 1980, and products shipped in the following year. In 1983, the IEEE approved the Ethernet 802.3 standard.

ETNO (European Public Telecommunications Network Operators' Association) : Association set up to foster cooperation among operators.

ERMES (European Radio Messaging System) : European radio paging standard.

ETSI (European Telecommunications Standards Institute) : Body set up by the European Commission to handle telecommunications standardisation for the CEPT (*q.v.*).

Exchange : An assembly of switching devices used to route calls to their destination by establishing temporary connections between two telecommunications network circuits, or by routing data packets. France Télécom's network comprises a hierarchical system of exchanges. The higher the exchange in this system, the greater the number of subscribers it serves.

Extranet : A private network that uses Internet protocols (IP) to enable businesses or organisations to exchange digital data with their main

correspondents (subsidiaries, customers, suppliers, etc.). Hypertext Markup Language (HTML) makes the presentation of data user-friendly, using hyperlinks to permit user to browse through screen pages (as on a web site).

FD : Full Duplex (simultaneous two-way communication path)

Flat-rate interconnection : Under a flat-rate interconnection system, no variable charges per minute or per call would be invoiced. Only a fixed interconnection charge, determined in advance, would be payable. Flat rate interconnection should enable operators to provide Internet access providers with flat rate Internet traffic collection offers (independent of the volume collected).

Frame Relay (FR) : High speed transmission method, switching packets of data through its network to their destination. Access to the network is via Frame Relay Access Devices (FRADs) which translate the data (eg Ethernet, Token Ring) into frame relay packets. The network sets up a virtual circuit which is a path to the destination. Frame relay is more popular in the US than in Europe, but the main European carriers offer frame relay service. Frame relay can operate at speeds of up to 45 Mbps, since it is a lightweight system without error correction, relying on the integrity of the fibre optic hardware.

FRAD : A Frame Relay Access Device (FRAD) is used for connecting into a Frame Relay network.

Freephone number : Generally called a "numéro vert" (green number) by France Télécom. These numbers are free for the caller. They are paid for by the people, companies and organisations which have requested their assignment to enable themselves to be reached free of charge. Freephone numbers begin with 0800.

FTP : File Transfer Protocol (FTP), a standard Internet protocol, is the simplest way to exchange files between computers on the Internet. FTP is commonly used to transfer Web page files from their creator to the computer that acts as their server for everyone on the Internet. It's also commonly used to download programs and other files to your computer from other servers.

FRIACO : Flat Rate Internet Access Call Origination. British Telecom's flat rate Internet access offer in the UK.

FWA (Fixed Wireless Access) : Term describing a general means of providing the last "mile" link to fixed telecommunications network

subscribers through the use of radio technology. FWA is typically deployed in rural areas where the cost of cabled local loops can be particularly high and for projects where the rapid deployment of new telecommunications subscriber connections is particularly important.

GCT (Groupe Consultatif Terminaux) : Voluntary working group comprising the various parties interested in telecommunications terminal equipment, such as operators, manufacturing unions, test laboratories and users. The group is responsible for drafting national technical regulations, which are used for terminal equipment conformity assessment. ART is the group facilitator.

GPRS (General Packet Radio Services) : Packet Switched data radio technology for GSM networks. GPRS connections are always open giving mobile terminal users the same kind of network availability they may be used to from corporate networks. There are no set up and clear down times associated with data calls made via GPRS. Terminals can therefore effectively become a part of the Internet.

GSM (Global System for Mobile Communications) : TDMA-based second generation mobile Cellular Radio technology, originated in Europe but now used in over 100 countries around the world. GSM supports voice, data and text messaging and allows roaming between different networks – which means that GSM users can take their phones with them to many parts of the world. GSM systems currently operate at 800 MHz, 900 MHz, 1800 MHz or 1900 MHz.

GTR (Groupe de Travail sur les Radiocommunications Professionnelles) : Working group on business radiocommunications, set up within the radiocommunications consultative committee.

HDSL : High Bit-Rate Digital Subscriber Line (HDSL) is widely used for expensive E-1/ T-1 service from the telephone companies. It is symmetrical, with a maximum 1.5Mbit/s up and downstream over two copper phone lines. It requires two phone lines as opposed to SDSL's one.

HSCSD (High Speed Circuit Switched Data) : Dedicated Circuit Switched data communications technology for GSM systems which boosts GSM data speeds from the regular 9.6 kbps to 14.4 kbps in a single traffic channel and, by using multiplexing techniques, up to 57.6 kbps. EDGE will boost HSCSD rates even further.

IAB : Internet Architecture Board

ICP : An Internet Content Provider (ICP) puts material on the Internet (e.g. the CNN website or IKEA's online catalogue).

IDSL : IDSL delivers a symmetric 144 kbit/s without the dial-up and usage charges of an ISDN service.

IETF : Internet Engineering Task Force

IMT 2000 : Worldwide standards for third generation mobile systems which enable mobility services to be improved, thanks to new features. The ITU selected five terrestrial radio interfaces for third-generation mobile systems and these therefore bear the IMT 2000 label. UMTS was one of the five selected.

Independent network (a.k.a private network) : See "Closed User Group"

IN (Intelligent Network) : A telephone network architecture where the switching and service functions are separated. This adds great flexibility to the design of telephone networks by allowing services to be added or changed without having to redesign switching equipment. A certain portion of a dialled number can trigger a request for a specific service which can then be dealt with by equipment other than the telephone switch itself.

Indirect interconnection : Call collection service, in which an operator collects a call from one of France Télécom's subscribers. The subscriber dials a prefix to select the operator. The call is carried by France Télécom from the subscriber's customer premises equipment to the point of interconnection, and from this point by the new selected operator.

Interconnection : The linking of telecommunications networks in order to allow one operators' subscribers to communicate with another operators' subscribers.

Interconnection agreement : Private contract negotiated and signed by two operators, on a case-by-case basis, to determine their terms of conditions for interconnection. Generally, when an agreement is concluded with a operator with significant market power, it is based on this operator's standard interconnection offer. If the service is not listed in that offer, new interconnection conditions are laid down.

Interconnection interface : All the technical specifications necessary to practically implement interconnection by establishing a dialogue between networks. It defines the physical interconnection arrangements, services and advanced functions accessible between the networks concerned, the control mechanism for these services and their billing and operating arrangements.

Interconnection link : See "Co-location"

In-span interconnection : See "Co-location"

International Settlement Rate : Amount paid by one operator to another as part of the international accounting rates system.

Internet : A world-wide network of computer networks in which users at any one computer can, if they have permission, get information from any other computer. The idea was conceived by the Advanced Research Projects Agency (ARPA) of the US government in 1969 and was first known as Arpanet. Since then it has been demilitarised and commercialised and augmented by a series of inventions and innovations, not least of which is the web browser invented by a team led by Tim Berners-Lee in 1991 at CERN, the European Laboratory for Particle Physics. This is the basis for the World Wide Web which has been so successful that it is now often confused in popular conversation with the Internet itself.

Internet Protocol (IP) : Telecommunications protocol used on networks which support Internet, enabling the transmission of data packets, from one end system to another based on address information carried in the message. The Transmission Control Protocol, is used to with IP to guarantee reliable stream transport, by providing acknowledgements between the source and destination, hence reference is often made to the two protocols together (TCP / IP).

IP Telephony : Also known as Internet Telephony or Voice over IP (VoIP). Use of Internet Protocol (IP, see TCP/IP) to carry and route two-way voice communications. IP Telephony can support telephone to telephone links through suitable adapters but also voice communications from telephone to IP terminal (such as a PC with sound card) or from IP terminal to IP terminal. The technique promises drastically reduced costs to carriers and therefore prices to end users – but it still suffers problems with quality.

ISP (Internet Service Provider) : Point of access to the Internet for small business and individual users. The ISP provides its customers with dial-up access to its router which relays traffic to web servers on the Internet.

Interoperability : Service interoperability is the possibility for different services to operate on different networks. The technical specifications at the

interconnection interface determine, in part, service interoperability between different operators.

Intranet : A corporate network using Internet Protocol, reserved for internal data exchange. Hypertext Markup Language (HTML) makes the presentation of data user-friendly, using hyperlinks to permit user to browse through screen pages (as on a web site).

IP Address : Address identifying a terminal connected to the Internet network.

IRG (Independent Regulators' Group) : Informal body comprising the regulatory authorities of the European Union and European Economic Area.

ISDN (Integrated Services Digital Network) : A fully digital telecommunications network access method which works over copper wires. There are two types of ISDN, basic rate and primary rate. Basic rate ISDN provides subscribers with two 64 kbps information channels and a single 16 kbps control channel. Primary rate provides users with thirty 64 kbps information channels and a 64 kbps control channel.

ISO : International Standard Organisation.

ITU (International Telecommunication Union) : United Nations specialised intergovernmental agency responsible for the regulation, standardisation and development of telecommunications of all kinds.

LAN (Local Area Network) : A LAN is a means of interconnecting computers at relatively high speed within a relatively small geographic area. Peer-to-peer LANs assign equal status to all the computers connected to them. A server-based LAN runs applications and stores data on a computer designated as the server with the other computers acting as workstations. A LAN may serve as few as a handful of users or as many as several thousand.

Leased line : From a technical viewpoint, this is a permanent link (as opposed to a switched link, which is temporary) comprising one or several parts of a public network, which is reserved exclusively for a user. From a legal viewpoint, a leased line, which is also called a dedicated line, is defined in the posts and telecommunications code as: "a contract between the public operator and a user for the provision of transmission capacity between given termination points of the public network. The user has no control over switching". This type of service is used by businesses for their corporate network, and also by telecommunications service providers which do not have their own infrastructure or wish to increase their capacity.

Least cost routing : Optimal routing using a system enabling the least expensive links to be chosen systematically, depending on the destination and time of the call.

LEO : Low Earth Orbit satellite

Licence : The Telecommunications Act of 26 July 1996 states that there are no restrictions on telecommunications activities. However, it stipulates that some of these activities require a licence (also known as an "authorisation"). For example, a licence must be obtained from the telecommunications minister, after applying to ART, to set up and operate a public network, to provide a public telephone service and to provide the public with telecommunications services using microwave frequencies. ART issues authorisations to set up and operate independent networks.

Line interface module : A module of the local exchange which converts analogue signals into digital format.

LMDS (Local Multipoint Distribution Service) : Technology supporting high speed transmission, which uses microwave signals to transmit voice, video and data, thus giving access to the telephone service, Internet and television programmes. This type of transmission is particularly well suited to scarcely populated areas which do not have cable coverage. However, its development is hindered at present by technical barriers such as signal attenuation, caused on the one hand by the weather (rain), and on the other hand by shadow areas (buildings, leafy trees, hills) which interfere with radio wave propagation.

Local exchange interconnection service : Service listed in France Télécom's standard interconnection offer, enabling an operator to interconnect at France Télécom's local exchange. It enables 30 000 lines to be reached.

Local call service area : The local loop operator carries calls within this area, regardless of the numbering sequence dialled by the caller. Calls outside this area are conveyed by the carrier chosen by the caller. In France, the local service area generally corresponds to the administrative area called the *département*.

Local exchange : Exchange to which subscribers are connected, by a line interface module. In France Télécom's tier system, this is the lowest ranking exchange on the network. The higher level exchanges are called trunk exchanges.

Local loop : The wire or radio connections between the customers premises and the local exchange. The local loop is the part of a network which gives the operator direct access to the customer.

Local loop unbundling : Local loop unbundling, also known as unbundled access to the local network, consists in allowing new operators to use the incumbent operator's local network, made up of copper pairs, in order to serve their subscribers directly. New entrants will naturally compensate the incumbent for the use of its network. Consequently, the customers of a new entrant will no longer be required to take out a subscription with France Télécom to access their operator's services. This broad definition encompasses several options. The preparations for the public consultation exercise conducted by ART in 1999 identified five such options: Three of these five emerged during deliberations concerning the possibility of accessing the incumbent's local loop on an unbundled basis: This unbundled access may entail: physical unbundling of the local loop, where the new operator gets direct access to the copper pair. This is known as **raw copper access** (option 1), access to transmission capacities, comprising **bitstream access** (option 2) and **access to a permanent virtual circuit** (option 3). The two remaining options are equivalent to a resale business, namely **local traffic resale** (option 4) and **subscription resale** (option 5)

Local operator (or local loop operator) : Telecommunications company that has installed subscriber lines.

Local exchange area : On France Télécom's network, the exchange area is the area in which subscribers are served by an (or several) exchange(s) of a given level. For local exchanges (lowest level) the area is called the local exchange area, and for trunk exchanges it is called the trunk exchange area.

Long-run average incremental costing : The 1996 Telecommunications Act stipulates that the interconnection tariffs of SMP operators must be set according to the actual costs incurred by the operator that provides the interconnection service. Two methods can be used to determine these costs: the first consists in using the operator's historic network costs; the second consists in evaluating the cost of building a new network at current and future prices, which are generally lower than historic costs because of progress in technology. Long-run average incremental costing aims to reconcile these two methods by comparing two evaluations:

- one based on the operator's accounts,
- another based on a technical and economic model of network roll-out and operations.

Combining these two assessments enables a better understanding of the various types of network costs and how they relate to the various interconnection services.

Main distribution frame : Apparatus in the local exchange where the copper cables terminate. It enables the distribution of several subscriber lines over a single cable.

Mobile radio network : Network using radio frequencies to connect mobiles to the fixed or mobile network.

MRC (Milestone Review Committee) : Advisory group set up jointly by ECTRA (*q.v.*) and the ERC (*q.v.*) within the CEPT (*q.v.*), in order to ensure that the various regulatory systems fulfil their requirements.

MSS (Mobile-Satellite Service) : A satellite communications system designed principally to support mobile terminals. Some MSS use Low Earth Orbit (LEO) satellite systems for their infrastructure. Each LEO satellite has the advantage of being smaller and cheaper to build and launch than geostationary satellites. And, because of their lower heights, they can be accessed more easily by mobile handsets. They can also cover parts of the world where it would otherwise be uneconomical to provide a telecommunications infrastructure. MSS operators include Globalstar, Inmarsat, ICO and Iridium.

Modem (MOdulator/DEModulator) : Device which converts the digital signals from a computer into the analogue tones which are compatible with all telephone networks, and back again. It effectively allows computers to use telephone networks for communication with other computers. The term ISDN modem which is in current usage is strictly speaking incorrect as the signal at both ends of an ISDN modem is in fact digital. The correct term should be ISDN terminal adapter.

MVNO (Mobile Virtual Network Operator) : A Mobile Virtual Network Operator is a mobile operator that usually would not have a license to use radio spectrum, but would have access to the radio networks of one or more of the current mobile operators and would be able to offer services to customers using that spectrum.

Narrowband : A term applied to telecommunications facilities capable of carrying only voice, facsimile images, slow-scan video images and data transmissions at kilobit speeds. Narrowband facilities, unlike broadband facilities, cannot handle full-colour, full-motion video images or data transmissions at megabit speeds. The term is commonly applied to voice-grade analogue facilities and to digital facilities operating at speeds of less than 1.544 Mbps.

NAS (Network Access Server) : Device used by operators to provide Internet access services through the switched telephone network (STN). An NAS converts telephone calls into IP-based data streams, interfacing between the STN and the IP data transport network.

Network : Combination of telecommunications resources, e.g. exchanges, wire links (copper cable, optical fibre) and terrestrial or satellite radio transmission links.

NMT (Nordic Mobile Telephone) : One of the earliest commercial Cellular Radio systems developed jointly by organisations in the countries of Northern Europe, Denmark, Finland, Iceland, Norway and Sweden. It comes in two variants – NMT450 – the original specification operating in the 450 MHz band and particularly suited to covering wide areas with low usage densities – and NMT900 – introduced in the late 1980s and designed to support handheld portable devices in urban environments.

Non-geographic number : Number beginning with 08, among which the services can be distinguished by type e.g. general mobile services, virtual private network services, and by pricing, e.g. freephone services, shared-cost services and shared revenue services.

Number portability : Possibility for subscribers to retain their telephone number when changing local loop operator (service accessible since 1st January 1998 if the subscriber does not change address) or when changing geographic location or local loop operator, or both (service accessible from 1 January 2001).

ONP (Open Network Provision) : Rules enabling the incumbent's network to be used by new operators, as network ownership is separated from its commercial operation. The European "ONP" directives aim to harmonise so that ONP conditions can be applied to all telecommunications services. The harmonised conditions guarantee open and efficient access to telecommunications networks.

Operator with significant market power (a.k.a SMP operator) : The Telecommunications Act requires ART to draw up annually a list of operators with significant market power (meaning which have significant power on a relevant telecommunications market). According to EU directives, SMP operators have to meet special obligations that depend on the market under consideration (e.g. interconnection tariffs aligned on costs, publication of a standard interconnection offer, etc.). Any operator which has over 25% market share of a relevant telecommunications market is deemed to have significant market power. When drawing up this list, ART also takes into

account the operator's turnover in relation to the size of the market, and its control of access to the end user.

Packet Switching : Means of creating connections by breaking up the information to be sent into packets of bytes, sending them along a network with other information streams and reassembling the original information flow at the other end. The main advantage of packet-switching is that it makes very efficient use of fixed capacity. The disadvantage is that the quality of service of an information channel cannot be guaranteed. See also Circuit Switching.

PDC (Personal Digital Communications) : TDMA-based second generation Cellular Radio technology originated in, and mainly used in, Japan. PDC-based services operate in the 800 MHz and 1500 MHz frequency bands.

PDH (Plesiochronous Digital Hierarchy) : A digital transmission method based on dividing information up into identical time intervals.

Peering : The exchange of traffic and the reciprocal use of networks that support the Internet.

PMR (Private Mobile Radio networks) : Mobile radio networks for business users. In France the distinction is drawn between:
3RP: trunked private mobile radio network
3RPC: trunked public access commercial mobile radio networks
RPN: digital trunked private mobile radio networks, using Tetra or Tetrapol technology
2RC: trunked private mobile radio networks for commercial purposes
3R2P: trunked private mobile radio networks for private purposes
RPX: local trunked networks (new category of networks)

PoP (Point of Presence) : Interconnection point located on the new entrant's premises.

POI (Point of Interconnection) : Interconnection point located on the incumbent's premises.

Public network : Telecommunications network established or used for the provision of public telecommunications services.

Public telephone service : Service defined by law as "commercial provision to the public of a service consisting in the conveyance of direct, real-time

voice telephony between public switched telephone networks for mobile and fixed users.

Radio interface : System enabling a mobile terminal to communicate with the network. Numerous discussions were held within ETSI in 1997 on the standardisation of a radio interface for UMTS. On 29 January 1998 the SMG committee adopted the UMTS Terrestrial Radio Access standard (UTRA). (Terrestrial as opposed to satellite). The standard is a compromise between two originally competitive components: WCDMA and TD/CDMA. UTRA was adopted by the ITU in March 1999 as a radio interface standard for IMT 2000.

Radio paging : Mobile communications system enabling users equipped with pagers to receive call alert signals (beeps) and messages composed of numbers (numeric) or combinations of numbers and letters (alphanumeric).

Radio relay link : Terrestrial radio link between fixed points.

Regulation : In the telecommunications sector, regulation may be defined as the enforcement, by the competent authority, of all the legal, economic and technical provisions enabling telecommunications activities to be carried out freely, as stipulated by law. Telecommunications regulation is essentially economic regulation, which is not the case in the broadcasting sector, where content is also regulated in accordance with cultural objectives.

RLAN : Radio Local Area Network

RLR (réseaux locaux radioélectriques) : Radio Local Area Network (see RLAN).

Router : A device, or in some cases software in a computer, that determines the next network point to which a packet should be forwarded on its way to its destination. Typically, a packet will travel through a number of network points with routers before arriving at its destination.

RPN : Digital trunked private mobile radio networks, using Tetra or Tetrapol technology.

RPS (Radiocommunications Professionnelles Simplifiées) : Short-range business radio.

RPX : Local trunked networks (new category of networks).

RRI (réseau radioélectrique indépendant) : See PMR - Private Mobile Radio networks.

Satellite network : Network using radio frequencies relayed by satellite.

SDH (Synchronous Digital Hierarchy) : Before SDH, networks were extremely rigid and creating a new link between two points was time consuming. It could take months to set up new services. In the late 1980s operators and suppliers standardized first on SONET and then SDH standards for optical transmission. By using add/drop multiplexers new signals can be added to or dropped from the network quickly and easily. The network can then be monitored centrally, adding to both flexibility and reliability. When a fault does occur, the traffic can be re-routed so quickly that the user does not even realise there was anything wrong.

SDSL : Symmetrical Digital Subscriber Line (SDSL) is a symmetrical (equal upstream and downstream speed) DSL service.

SFCA (Services et Fonctionnalités Complémentaires et Avancés) : Ancillary and Advanced services.

Single trunk exchange interconnection : Service listed in France Télécom's interconnection offer. It enables an operator interconnected at a trunk exchange to reach the subscribers served in that trunk's exchange area, which usually means approximately two million lines.

Shared-cost service : Service in which the cost is divided between the calling and called parties.

Shared revenue service : Service in which the called party receives a payment from the telecommunications service provider.

Signalling : On a telecommunications network, signalling supports the exchange of the internal network data needed for call routing. It can be compared with the road signs on a road network. It includes the information required to identify the user for billing or calling line identification. When carried out by the network that carries the calls to subscribers, it is integrated in the exchange. It can also be performed by a separate network, called the semaphore network.

SMG (Special Mobile Group) : ETSI (*q.v.*) committee responsible for mobile communications work.

SMP operator : cf. Operator with significant market power

SNG : Satellite News Gathering

SNMP : Simple Network Management Protocol (SNMP) is a set of protocols for managing complex networks.

SLA : A Service Level Agreement (SLA) is a contractual document between a communication service provider and a customer that specifies, usually in measurable terms, what services are provided, in what locations, with what quality parameters and the methods used for the calculation of the fulfilled quality parameters.

SONET : Short for Synchronous Optical Network, a standard for connecting fibre-optic transmission systems. SONET defines interface standards at the physical layer of the OSI seven-layer model. The standard defines a hierarchy of interface rates that allow data streams at different baudrates to be multiplexed. The international equivalent of SONET, standard is SDH.

S-PCS : Satellite Personal Communication Services

Speed : The amount of data passing through a network during a given period.

SPIROU (Signalisation Pour l'Interconnexion des Réseaux Ouverts) : New signalling interface developed by the French interconnection committee at ART's initiative, in order to adapt the French network to the ETSI European standard, ISUP. This interface comprises the specifications governing the signalling of basic telephone call commands, advanced services and functions, interworking functions with user access signalling and intelligent network protocols.

Standard interconnection offer : Technical interconnection offer and prices that operators designated by ART as having significant market power, pursuant to Article L. 36-7 of the posts and telecommunications code, are required to publish annually so as to enable other operators to establish their own commercial offers and prices. The standard interconnection offer also sets out the conditions governing physical interconnection between the incumbent and other operators.

STM-1 : Data connection digital line with a baudrate of 155Mbit/s. Is equivalent to OC-1 (Optical Carrier level) and includes a set of signal rate multiples for transmitting digital signals.

STN : Switched telephone network

Switch : An assembly of switching devices used to route calls to their destination by establishing temporary connections between two

telecommunications network circuits, or by routing data packets. France Télécom's network comprises a hierarchical system of exchanges. The higher the exchange in this system, the greater the number of subscribers it serves.

Switching : On a telecommunications network, switching means routing traffic by setting up temporary connections between two or more network points. This is done by devices located at different locations on the network, called switches (or exchanges). The basic structure of a telecommunications network therefore comprises transmission media, interconnected by exchanges. "Packet" and "circuit" switching are two techniques used by telecommunications networks. The first is used by IP networks, and the second by traditional networks (PSTN).

TACS (Total Access Communications System) : A first generation Cellular Radio system which is a derivative of AMPS. Designed originally for the UK market but later adopted in many countries across the world including Hong Kong and Japan, TACS improved upon AMPS by offering features necessary to more densely populated markets.

TBR (Technical Basis for Regulation) : Harmonised standard established by ETSI (*q.v.*). TBRs are used as the basis of technical regulations, which lay down the essential requirements with which terminal equipment must comply.

TCP/IP (Transmission Control Protocol/Internet Protocol) : Collective name for the set of protocols on which the Internet is based. TCP and IP are the best known of this set, but they are by no means the only ones. TCP guarantees that every byte sent from one port arrives at the other in the same order and without duplication or loss. IP assigns local IP addresses to physical network addresses providing a structure which can be recognised by Routers. Other members of the TCP/IP family include the Telnet protocol which allows a remote terminal to log in to another host, the Domain Name System (DNS) which allows users to refer to hosts by name rather than having to know their numeric IP addresses, the File Transfer Protocol (FTP) which defines a mechanism for storing and retrieving files, and HyperText Transfer Protocol (HTTP) which allows information to be transferred from host computers to computers equipped with web browsers.

TDMA (Time Division Multiple Access) : TDMA is a general approach to creating second generation mobile Cellular Radio systems where communications channels are created by assigning time slots to information flows. TDMA is the base technology for the D-AMPS, GSM and PDC digital cellular radio systems.

Telco : Telecommunications operator or carrier

Telecommunications : Transmission or reception of signs, signals, text, image, sound or other information, by wire, optical fibre, radio or other electromagnetic means.

Télétel : Database consultation service offered by France Telecom using Minitel teletex terminals.

Terminal equipment : Equipment intended to be connected directly or indirectly to the termination point of a network in order to send, process or receive information. e.g. telephone, fax, modem, etc.

2.5G : refers to technology that increases the speed of data communication on second-generation mobile networks (GPRS and EDGE). This upgrading process can be situated between the second and third generations.

2G : Second generation mobile systems (GSM in Europe)

2RC : Trunked private mobile radio networks for commercial purposes.

3G : Third-generation mobile systems. The 3G networks should provide users with access to a wide range of new services. Leading the way among these will be high-speed Internet access as a result of the gradual introduction on the mobile networks of packet-switching technology.

3GPP (Third Generation Partnership Project) : Global body bringing together worldwide standards organisations, including ETSI (q.v.) and US (Committee T1), Japanese (ARIB and TTC) and Korean (TTA) members. Its mandate is to reach an agreement on a common radio interface in order to determine a standard for third-generation mobile telecommunications systems (UMTS). ETSI transferred the work carried out within the SMG committee on UMTS to the 3GPP. Some of the 3GPP's partners are the GSM Association, UMTS Forum and Ipv6 Forum.

3R2P : Trunked private mobile radio networks for private purposes.

3RP : Trunked private mobile radio network.

3RPC : Trunked public access commercial mobile radio networks.

Third-party billing : Service enabling new operators to entrust the incumbent with billing for the services offered to their customers via interconnection. In the case of special services, third-party billing cannot be used for services that are free for the caller, but only for those that are

charged. As the market develops, this service is essential for effective competition.

Third-party collection : Interconnection service, which enables a network operator to collect traffic from the incumbent's network on behalf of another operator that does not have infrastructure in the geographic area concerned. This service is particularly used by L.34-1 licensed telephone service providers wanting to provide their service over an extensive area without having to roll out a network.

TRAC (Technical Regulations Applications Committee) : CEPT committee traditionally set up to draft common technical regulations (CTRs) for terminal equipment.

Transmission : On a telecommunications network, transmission is the carriage of information from one network point to another. The medium used may be copper cables, optical fibres or radio relays.

Trunk exchange : See Local Exchange.

Twisted pair : A common form of copper cabling used for telephony and data communications, a twisted pair consists of two copper lines twisted around each other; the twisting protects the communications from electromagnetic frequency and radio frequency interference.

Universal service : Principle component of the public telecommunications service, defined by law. Its includes the provision of a telephone service to all at an affordable price, the carriage of emergency calls free of charge, the provision of an information service and a directory in printed and electronic form, and the supply of public phone booths on the public domain. It also sets out special technical conditions and prices for disabled and low-income users.

UMTS (Universal Mobile Telecommunications System) : European-standard third-generation mobile telecommunications system, designed to support a wide range of services. At ITU level these systems are called IMT 2000.

VHE (Virtual Home Environment) : Within *IMT-2000* systems, the Virtual Home Environment will allow users to retain their "home" set-up on their handsets regardless of their geographic location. In other words wherever they are the attributes and configuration of the handset (telephone number,

local operator, user options etc.) will appear to be the same as if the user were at home – subject of course to factors such as the degree of cooperation between the home and remote networks, their relative technical capabilities and the compatibility of the user's handset. VHE is an example of a truly Intelligent Network.

Virtual Private Network : Network facility provided over one or several public networks for a closed user group. It responds to a need for both internal communication (within the user group), and external communication (to public network users). For businesses whose sites are spread over a wide area, the virtual private network can function like a private network, with its own private numbering plan. In this case it is an attractive alternative, as it saves the business from investing in a costly private automatic branch exchange (PABX).

Voice telephony : The ONP "voice telephony" directive of 26 February 1998 defines voice telephony as "a service available to the public for the commercial provision of direct transport of real-time speech via the public switched network or networks, such that any user can use equipment connected to a network termination point at a fixed location to communicate with another user of equipment connected to another termination point." The term "voice telephony" is used in Community directives to designate the traditional Plain Old Telephone Service.

VPN (Virtual Private Network) : Looks for all intents and purposes like a private network but is actually just access to a shared network. Careful management and guarantees of quality of service levels ensure that corporate customers get the privacy and facilities they want but at a lower cost.

VSAT (Very Small Aperture Terminal) : Satellite telecommunications services using a narrow part satellite capacity and a very small transmitter-receiver for low or medium speed data transmission.

WAP (Wireless Application Protocol) : WAP is being jointly developed in the mainstream of Internet standardisation activities, with the broad support of many vendors. It provides the basis for a whole host of new wireless information applications by offering a gateway between the Internet and mobile telephones. If an application can be put on the Internet, it can be made available to mobile terminal users through WAP.

WCDMA (Wideband Code Division Multiple Access) : An access mode proposed for the radio interface of 3G or third generation Cellular Radio systems. It divides available radio spectrum into highly efficient information

carriers based on a special coding scheme. It is characterised by high capacity, small cell radius and spread spectrum radio transmission.

WDM (Wave Division Multiplexing) : Means of getting more information down a fibre optic cable by using different wavelengths of light – ie different colours within the light frequency spectrum – to act as multiple carriers. Typical numbers of wavelengths being used are 4, 8 and 16, although in the labs the laser has been split into 32 and even 100 channels. Theoretically WDM could allow all US data traffic to be carried on just one fibre optic pair.

Wideband : Somewhere between Narrowband and Broadband. While capable of supporting communications links of up to megabit speeds and therefore moving images and very fast information downloads, this may be done at the cost of overall bandwidth availability to other applications and other users.

Wireless local loop : Local loop network where the traditional copper wires are replaced with wireless network technology, giving greater flexibility in infrastructure deployment.

Wireline network : Network using metal cables or optical fibres as a transmission medium.

WRC (World Radiocommunication Conference) : International coordination in the field of Radiocommunication. This coordination is essential for intelligent use of the frequency spectrum. This conference is held every three years. The results, once incorporated into radiocommunications regulations, constitute international treaty. Prior to the conference, the Radiocommunication Assembly is held. After the conference, a preparatory meeting is held to prepare for the next conference. In 2000, 2,363 delegates from 150 member states and 95 organisations such as manufacturers, operators and international and telecommunications organisations attended.

X.25 : The X.25 is a data transmission protocol that allows computers on different public networks (such as CompuServe, Tymnet, or a TCP/IP network) to communicate through an intermediary computer at the network layer level.

xDSL : Collective description for a range of Digital Subscriber Line technologies designed to provide high speed data links over ordinary copper telephone lines. Asynchronous DSL (ADSL), for example, is called asynchronous because the downstream (to the customer) speed is faster than the upstream (to the telco) speed. ADSL speeds are typically 1.5 – 6 Mbps downstream and 64 kbps upstream. Very high data rate DSL (VDSL) is

similar to ADSL, but operates at 12 – 51 Mbps downstream and 1.6 – 2.3 Mbps upstream. Rate Adaptive DSL (RADSL) is also similar to ADSL but the transfer rate can be altered allowing it to work over poorer quality lines or over longer distances, albeit at lower speeds. High Bit Rate Digital Subscriber Line (HDSL) uses the same modulation as ISDN on a wider bandwidth and with more sophisticated processing. It operates at speeds of up to 2 Mbps at distances up to 4 km.

Zero Chamber : In the case of remote co-location (interconnection and unbundling of local loop), the use of France Télécom equipment by new operators (distribution frame cables and France Télécom premises in the case of unbundling; to install their equipment; POI or LE for interconnection.

Technical Abbreviations

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

3D	3-Dimensional
4GL	Fourth Generation Language
5B6B	5 data Bits, 6 transmission Bits
16-QAM	16 (points) Quadrature Amplitude Modulation
A/D	Analog / Digital (converter)
AAAI	American Association for Artificial Intelligence
AAB	Auto Answer Back
AAL	ATM Adaptive Layer
ABA	American Banks Association
ABI	Application Binary Interface (Unix)
ABM	Asynchronous Balanced Mode
AC	Alternating Current (CA)

ACE	Advanced Computer Environment
ACIA	Asynchronous Communications Interface Adapter
ACK	Acknowledge (char 06 - 06H)
ACM	Association for Computing Machinery
ACTA	American Carriers Telecommunication Association
ADC	Analog Digital Converter (A/D)
ADCCMP	Advanced Data Communications Control Procedures (ANSI X3.66)
ADPCM	Adaptive Differential Pulse Coded Modulation
ADSL	Asymmetrical Digital Subscriber Line
AEA	American Electronics Association
AFC	Automatic Frequency Control
AFNOR	Association Française de Normalization
AGC	Automatic Gain Control
AGC	Automatic Generation Control
AI	Artificial Intelligence
AIN	Advanced Intelligent Network
AKA	Also Known As
ALN	Adaptive Logic Network
ALU	Arithmetic and Logic Unit
AM	Amplitude Modulation
AM/FM	Automatic Mapping / Facility Management
AMI	Alternate Mark Inversion
AMPS	Advanced Mobile Phone System (TIA 553)

AMR	Automatic Meter Reading
ANI	Automatic Number Identification (tel)
ANOVA	Analysis Of Variance
ANSA	Advanced Network System Architecture
ANSI	American National Standards Institute (NY)
APD	Avalanche Photo Diode
API	Application Program Interface
APPC	Advanced Program to Program Communication (IBM)
APPN	Advanced Peer to Peer Networking (IBM)
ARCnet	Attached Resource Computer Network
ARO	After Receipt of Order
ARP	Address Resolution Protocol (Layer 3)
ARQ	Automatic Repeat request
ASA	American Standards Association
ASAP	As Soon As Possible
ASCII	American Standard Code for Information Interchange (7 bits - ANSI - CCITT N; 5)
ASIC	Application Specific Integrated Circuit
ASK	Amplitude Shift Keying
ASME	American Society of Mechanical Engineers
ASN.1	Abstract Syntax Notation 1 (ISO 8824 8825)
AT	Apple Talk
AT	Attention (Hayes Modems Command Prefix)
AT&T	American Telegraph & Telephone

ATE	Automatic Test Equipment
ATM	Asynchronous Transfer Mode (Cell-Switching, Fast Packet)
ATM	Automated Teller Machine
ATV	Advanced TeleVision
AUI	Attachment Unit Interface (Ethernet, 15-pin)
AVC	Automatic Volume Control
AWG	American Wire Gauge

B

B&W	Black and White (TV)
BACnet	Building Automation and Control Network
BABT	British Approval Board for Telecommunications
Balun	Balanced-Unbalanced
BASIC	Beginners' All-purpose Symbolic Instruction Code
BAW	Bulk Acoustic Wave
BBS	Bulletin Board Service
BCC	Block Check Character
BCD	Binary Coded Decimal
BCH	Bose Chaudhuri Hocquenguem (code)
BER	Bit Error Rate
BERT	Bit Error Rate Tester
BFT	Binary File Transfer
BGP	Border Gateway Protocol
BHC	Busy Hour Calls (tel)
BiCMOS	Bipolar Complementary Metal Oxide Silicon

B-ICI	Broad band Inter-Carrier Interface
BIL	Basic impulse Insulation Level
BIOS	Basic Input/Output System
B-ISDN	Broad band Integrated Services Digital Network
BISUP	Broad band ISdn User Part
BISYNC	Bisynchronous (BSC IBM)
bit	Binary digit
BITNET	Because It's Time Network
BNC	Bayonet (Baby?) Normalized Connector
BNF	Backus-Naur Form
BOF	Birds Of a Feather
bpi	Bits Per Inch
bps	Bits Per Second
BPSK	Binary Phase Shift Keying
BQFP	Bumpered Quad Flat Pack
BRA	Basic Rate Access
BRI	Basic Rate Interface (ISDN: 2x64+16 kbps)
BSC	Binary Synchronous Communication protocol (BISYNC - IBM)
BSD	Berkeley System Distribution (Unix)
BSI	British Standards Institution (London)
BSP	Binary Space Partition (tree)
BSS	Broad band Switching System
BZT	Bundesamt f'r Zulassungen in der Telecommunication (Germany)

C

C-MOS	Complementary Metal-Oxide Silicon
CAD	Computer Aided Design
CAI	Computer Aided Instruction
CAM	Computer Aided Manufacturing
CAM	Content Addressable memory
CAMAC	Computer Automated Measurement And Control
CAN	Controller Area Network (Bosch Intel)
CASE	Computer Aided Software Engineering
CAST	Computer Aided Software Testing
CAT	Computerized Axial Tomography
CATV	Community Antenna (Cable?) Television
CB	Citizens Band
CBDS	Connectionless Broadband Data Service
CBR	Constant Bit Rate
CCD	Charge-Coupled Device
CCIR	Comit%o Consultif International des Radiocomunications œ (ITU - Gen^ve)
CCITT	Comit%o Consultif International T%ol%oographique et T%ol%ophonique œ (ITU - Gen^ve)
CCS	Common Channel Signaling (SS7) (tel)
CCTV	Closed Circuit Television
CD	Carrier Detect (V24)
CD	Compact Disc

CD-A	Compound Document Architecture
CD-R	Compact Disc Rewriteable
CD-ROM	Compact Disc Read Only Memory
CDDI	Copper Distributed Data Interface
CDE	Common Desktop Environment
CDMA	Code Division Multiple Access (Cellular, IS-95)
CDPD	Cellular Digital Packet Data
CEBus	Consumer Electronic Bus
CEPT	Conference Europeenne de Postes et Telecommunications
CERT	Computer Emergency Response Team (cert@cert.org - 412 268 7090)
cfm	Cubic Feet by Minute
CGI	Computer Generated Images
CGM	Computer Graphics Metafile
CHAP	Challenge Handshake Authentication Protocol
CHRL	Common Hardware R Platform (Power PC)
CIDR	Classless InterDomain Routing
CIE	Commission International de l'Eclairage (Paris)
CIF	Cargo, Insurance & Freight
CIGRE	Conference Internationale des Grandes Reseaux Electriques (Paris)
CIM	Computer Integrated Manufacturing
CIPM	Comite Internationale des Poids et Mesures (Paris)
CIR	Committed Information Rate

CIRC	Cross Interleaved Reed-Salomon Code
CISC	Complex Instruction Set Computer
CITEL	Commission Interamericana de Telecomunicaciones
CLNP	Connectionless Network Protocol (ISO)
CLNS	Connection Less Network Service (ISO 8473)
CMIP	Common Management Information Protocol (ISO)
CMOS	Complementary Metal Oxide Semiconductor
CMRR	Common Mode Rejection Rate
CMYK	Cyan Magenta Yellow black
CNR	Carrier to Noise Ratio
COBOL	Common Business Oriented Language
CORBA	Common Request Object Broker Architecture
COS	Corporation of Open Systems (International)
CPE	Customer Premises Equipment
cpi	Characters Per Inch
cps	Characters Per Second
CPU	Central Processor Unit
CR	Carriage Return (char 13 - ODH)
CRC	Cyclic Redundancy Check
CRCC	Cyclic Redundancy Check Character
CRT	Cathode Ray Tube
CSA	Canadian Standards Association (Rexdale)
CSMA/CD	Carrier Sense with Multiple Access/Collision Detection (Ethernet IEEE 802.3)

CSU	Channel Service Unit
CT	Cordless Telephony
CTD	Charge Transfer Device
CTI	Computer-Telephony Integration
CTIA	Cellular Telecommunications Industry Association
CTM	Centralized Technical Management
CTR	Common Technical Requirement (Europe)
CTS	Clear To Send
CW	Continuous Wave

D

D/A	Digital to Analog Converter (DAC)
DA(S)	Distribution Automation (System)
DAB	Digital Audio Broadcasting
DAC	Digital to Analog Converter (D/A)
DAMA	Demand Assigned Multiple Access
DAT	Digital Audio Tape
dB	DeciBel
dBm	DeciBels (relative to 1 mw)
DBMS	Data Base Management System
DBS	Direct Broadcast Satellite
DBS	Direct Broadcast Service
DBT	Deutsche Bundespost Telecom
DC	Direct Current

DCC	Digital Compact Cassette
DCE	Data Circuit-terminating Equipment
DCE	Distributed Computing Environment (OSF)
DCFL	Direct Coupled Field effect transistor Logic
DCML	Differential Current Mode Logic
DCN	Data Communications Network
DCS	Desktop Color Separation
DCS	Distributed Control System
DCS	Dynamic Channel Selection
DCT	Digital Cordless Telephone
DCT	Discrete Cosine Transform
DCTL	Direct Coupled Transistor Logic
DDCMP	Digital Data Communications Message Protocol (DEC)
DDD	Direct long Distance Dialing (tel)
DDE	Dynamic Data Exchange (MS Windows)
DDS	Digital Data System
DDS	Digital Data Standard (tapes)
DEA	Data Encryption Algorithm
DECNET	Digital Equipment Corporation Network
DECT	Digital European Cordless Telecommunications
DES	Data Encryption Standard (NBS)
DFR	Digital Fault (/transient) Recorder
DFT	Discrete Fourier Transform
DFSK	Double Frequency Shift Keying

DHCP	Dynamic Host Configuration Protocol
DID	Direct Inward Dialing
DIMM	Dual In line Memory Module
DIN	Deutsche Industrie Norm (Germany)
DIP	Dual In-line Package
DIU	Data Interface Unit
DIX	Digital Intel Xerox (Ethernet)
DIW	type D Inside Wire (STP)
DLC	Data Link Control (sub-layer 2)
DLC	Digital Loop Carrier
DLE	Data Link Escape (char 16 - 10H))
DLG	Digital Line Graph (vector map files format)
DLL	Dynamic Link Library (Windows)
DLSw	Data Link Switching
DM	Delta Modulation
DMA	Direct Memory Access
DME	Distributed Management Environment
DMI	Desktop Management Interface
DMM	Digital MultiMeter
DMS	Distribution Management System
DMTF	Desktop Management Task Force
DNIC	Data Network Identification Code (X-121)
DNS	Domain Name System (Internet)

DO	Diode Outlook
DPDT	Double-Pole Double-Throw (switch)
dpi	Dots Per Inch
DPSK	Differential Phase Shift Keying
DQPSK	Differential Quaternary Phase Shift Keying
DQDB	Distributed Queue Dual Bus
DRAM	Dynamic Random Access Memory
DS-3	Digital Signaling level 3 (44.768 Mbps)
DS/CDMA	Direct Sequence CDMA
DS/SS	Direct Sequence Spread Spectrum
DSI	Digital Speech Interpolation
DSL	Digital Subscriber Line
DSM	Demand Side Management
DSO	Digital Storage Oscilloscope
DSP	Digital Signal Processing
DSS1	Digital Subscriber Signaling System 1 (tel)
DSU	Data Service Unit
DTE	Data Terminal Equipment
DTL	Diode-Transistor Logic
DTMF	Dual Tone MultiFrequency (signalling)
DTP	DeskTop Publishing
DTR	Data Terminal Ready
DTU	Data Terminal Unit
DVD	Digital Video (Versatile?) Disc

DVI	Digital Video Interactive (Intel)
DVM	Digital Volt Meter
DVST	Direct View Storage Tube
DXF	Drawing exchange file Format
DXI	Data exchange Interface

E

E&M	rEceive & transMit (telef, signalling) (Ear & Mouth?)
E1	European 1 (2048 bps, 30-channel PCM)
EBU	European Broadcast Union
EBCDIC	Extended Binary Coded Decimal Interchange Code (IBM)
EC	European Commission
EC	European Community
ECB	Electronic Code Book (DES)
ECG	ElectroCardioGram
ECL	Emitter-Coupled Logic
ECM	Electronic Counter Measures
ECMA	European Computer Manufacturers Association (Gen [^] ve)
ECU	European Currency Unit
EDFA	Erbium Doped Fiber Amplifier
EDH	Electronic Data Handling
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange For Administration, Commerce and Trade

EDO	Extended Data Out (memory)
EDP	Electronic Data Processing
EDT	Eastern Daylight-saving Time
EEPROM	Electrically Erasable Programmable Read-Only-Memory
EFT	Electronic Funds Transfer
e.g.	Exempli Gratia
EGA	Enhanced Graphics Adapter
EGP	Exterior Gateway Protocol
EHV	Extra High Voltage
EIA	Electronic Industries Association (Washington)
EIRP	Effective Isotropic Radiated Power
EISA	Extended ISA (PC Bus - 32 bits)
EL	Electro-Luminescent
ELD	Electro-Luminescent Display
EM	Electro-Magnetic
EMC	Electro-Magnetic Compatibility
EMF	Electro-Motive Force
EMI	Electro-Magnetic Interference
EMP	Electro-Magnetic Pulse
EMR	Electro-Magnetic Radiation
EMS	Energy Management System
EMS	Expanded Memory Specification
EOF	End Of File
EOF	End Of Frame

EOP	End Of Packet
EOS	Electrical Overstress
EOT	End Of Transmission (char 4 - 04H)
EPA	Environment Protection Agency
EPP	Enhanced Parallel Port
EPRI	Electric Power Research Institute (Palo Alto)
EPROM	Erasable Programmable Read-Only-Memory
EPS	Encapsulated Post Script
EQ	Equipment Qualification
E-R	Entity-Relationship (diagram)
ERC	European Radio Commission
ERP	Effective Radiated Power
ESC	Escape (char 027 - 1BH)
ESD	Electronic Software Distribution
ESD	ElectroStatic Discharge
ESDI	Enhanced Small Device Interface
ESN	Electronic Serial Number
ESPRIT	European Strategic Program for Research and development of Information Technology
EST	Eastern Standard Time
ETB	End of Text Block (char 023 - 17H)
ETC	Enhanced Throughput Cellular
ETSI	European Telecommunications Standards Institute (Cedex - F)
ETX	End of TeXt (char 3 - 03H)

EV	Electric Vehicle
eV	Electron Volt (1,602x10 ⁻¹⁹ J)
EVC	Enhanced Video Connector (VESA)
EXOR	EXclusive OR

F

FAQ	Frequently Asked Questions
FAT	File Allocation Table
FAX	Facsimile
FBW	Fly By Wire
FC	Fibre Channel
FCC	Federal Communications Commission (Washington)
FCS	Frame Check Sequence
FD	Flexible (Floppy) Disk
FDDI	Fiber Distributed Data Interface (ISO 9314)
FDM	Frequency Division Multiplex
FDX	Full Duplex
FEA	Finite Elements Analysis
FEC	Forward Error Correction
FEP	Front End Processor
FERAM	Ferro Electric Random Access Memory
FET	Field Effect Transistor
FEXT	Far End cross Talk
FFT	Fast Fourier Transform

FH/SS	Frequency Hopping Spread Spectrum
FHP	Fractional Horse Power (motor)
FHT	Fast Hartley Transform
FIFO	First In, First Out
FIP	Factory Information Protocol
FIPS	Federal Information Processing Standard
FITL	Fiber In The Loop
FLAG	Fiber optic Link Around the Globe
FLC	Fuzzy Logic Control
FLOP	Floating point Operation
FLP	Fluorescent Panel
FM	Frequency Modulation
FOB	Free On Boards
FOIRL	Fiber Optic Inter Repeater Link (Ethernet - IEEE 802.3c .3d)
FOR	Forced Output Rate
FORTTRAN	Formula Translator
FOT	Fiber Optic Transceiver
FP	Flat Pack (SMD)
FP	Function Points
FPD	Flat Panel Display
FPDI	Flat Panel Display Interface
FPGA	Field Programmable Gate Array
FPU	Floating Point Unit

FR	Frame Relay
FRAD	Frame Relay Access Device
FSK	Frequency Shift Keying
FT1	Fractional T1
FTAM	File Transfer, Access and Management
FTP	File Transfer Protocol
FTP	Foiled Twisted Pair (ScTP)
FTTC	Fiber To The Curb
FTTH	Fiber To The Home
FTZ	Fernmelde Technischen Zentralamt (Darmstadt)
FWHM	Full-Width at Half Maxima
FYI	For Your Information

G

GaAs	GAlium ArSenide
GaAsP	Gallium ArSenide Phosphide
GaN	Gallium Nitride
GEO	Geosynchronous Earth Orbit
GIF	Graphics Interchange Format
GII	Global Information Infrastructure
GIGO	Garbage In, Garbage Out
GII	Global Information Infrastructure
GIS	Gas Insulated Switchgear
GIS	Geographical Information System

GKS	Graphical Kernel System
GMSK	Gaussian Minimum Shift Keying
GMT	Greenwich Meridian Time
GND	Ground (0V)
GoS	Grade Of Service
GOSIP	Government OSI Profile
GPIB	General Purpose Instruments Bus (HP-IB, IEEE-488)
GPS	Global Positioning System
GSC	Global Standards Collaboration
GSM	Global Standard for Mobile
GSM	Group Special Mobile
GTO	Gate Turn-Off (thyristor)
GUI	Graphical User Interface

H

HBT	Heterojunction Bipolar Transistor
HD	Hard Disk
HD	High Density
HDB	High Density Bipolar (code)
HDB3	High Density Bipolar 3-level (code)
HDD	Hard Disk Drive
HDF	Hierarchical Data Format
HDI	High Density Interface (connector)
HDL	Hardware Description Language

HDLC	High level Data Link Control (IBM, Layer 2) (ISO 4335)
HDSL	High rate Digital Subscriber Loop (Line?)
HDTV	High Definition TeleVision
HDX	Half Duplex
HF	High Frequency
HERF	High Energy Radio Frequency
HFC	Hybrid Fiber/Coaxial network
HI	Host Interface
Hiperlan	High Performance Radio LAN
HiPPI	High Performance Parallel Interface
HLL	High Level Logic
HLN	High Level Network
HLS	Hue Lightness Saturation (color)
HMA	High Memory Area
HMD	Head Mounted Display
HMI	Human-Machine Interface
HP	Horse Power (746 W)
HP-IB	Hewlett Packard Instrument Bus (GPIB)
HP-PCL	Hewlett Packard Plotter Control Language
HPCC	High Performance Computing and Communications
HPGL	Hewlett Packard Graphic Language
HSB	Hue Saturation Brightness (color)
HSL	Hue Saturation Lightness (color)
HSSI	High Speed Serial Interface

HSTP	High Speed Transport Protocol
HSV	Hue Saturation Value (color)
HT	Horizontal Tab (TAB, char 09 - 09H)
HTL	High Threshold Logic
HTML	HyperText Mark-up Language (WWW)
HUD	Head Up Display
HV	High Voltage
HVAC	Heating, Ventilation and Air Conditioning
HVC	Hue Value Chroma (color)
HVDC	High Voltage Direct Current

I

I&A	Identification & Authentication
IBDN	Integrated Building Distribution Network
IBOC	In Band On Channel
IBS	Intelsat Business Services
IC	Integrated Circuit
IC	Inter-exchange Carrier
I-CASE	Integrated Computer -Aided Software Engineering
ICEA	Insulated Cable Engineers Association
ICMP	Internet Control Message Protocol
ICO	Intermediate Circular Orbit
ICW	Interrupted Continuous Wave
ID	IDentity, IDentifier

IDE	Integrated Drive Electronics (interface)
IDF	Intermediate Distribution Frame (tel)
IDF	Interface Definition Language
IDLC	Integrated Digital Loop Carrier
IDP	Internet Data Packet
IDRP	InterDomain Routing Protocol (ISO)
IEC	Inter Exchange Carrier
IEC	International Electrotechnical Commission (Gen [^] ve)
IEE	Institute of Electrical Engineers (London)
IEEE	Institute of Electric and Electronics Engineers (NY)
IETF	Internet Engineering Task Force
IF	Intermediate Frequency
IFL	Inter-Facility Link
IGBT	Insulated Gate Bipolar Transistor
IGES	Initial Graphics Exchange Standard
IGFET	Insulated Gate Field Effect Transistor
IGP	Interior Gateway Protocol
ILD	Injection Laser Diode
ILS	Instrument Landing System
IMA	Interactive Multimedia Association
IMAP	Internet Message Access Protocol
IMD	InterModulation Distortion
IMPATT	IMPact Avalanche Transit Time

IMTS	Improved Mobile Telephone System
IN	Intelligent Network
INA	Integrated Network Architecture
INMARSAT	INternational MARitime SATellite
INTELSAT	INternational TELEcommunications SATellite organization
I/O	Input/Output
IP	Internetwork Protocol (layer 3)
IPng	Internet Protocol Next Generation (IETF)
IPv6	Internet Protocol Version 6
IPX	Internet Packet Exchange (Netware, layer 3)
IR	InfraRed
IREDD	InfraRed Emitting Diode
IRL	Inter Repeater Link (Ethernet)
IRQ	Interrupt ReQuest line (vector)
IS	Interim Standard (EIA)
ISA	Industry Standard Architecture (PC bus)
ISA	Instrumentation Society of America
ISBN	International Standard Book Number
ISCC	Inter-Society Color Council
ISDN	Integrated Services Data Network
IS-IS	Intermediate System-Intermediate System routing exchange protocol (layer 3, ISO)
ISM	Instrumentation, Scientific and Medical (Band)
ISO	International Standards Organization (Gen [^] ve)

ISP	Internet Service Provider
ISR	International Simple Resale
ITR	Integrated Thyristor / Rectifier
ITS90	International Temperature Scale 1990
ITSC	International Telecommunications Standards Conference
ITU	International Telecommunications Union (Gen [^] ve)
ITU-R	ITU Telecommunications Union - Radio Communications Sector
ITU-T	ITU Telecommunications Union - Telecommunications Sector
ITU-TS	ITU Telecommunications Standardization
IVA	Integrated Voice Application
IVDLAN	Integrated Voice/Data Local Area Network (IEEE 802.9)
IVHS	Intelligent Vehicle Highway System

J

JCL	Job Control Language
JDC	Japan's Digital Communications
JEDEC	Joint Electron Devices Engineering Council
JEIDA	Japan Electronic Industry Development Association
JIS	Japan Industry Standard
JIT	Just In Time
JPEG	Joint Photographic Experts Group
JTC	Joint Technical Committee

K

KB Knowledge Base (AI)

KB KiloBytes

kbps Kilo Bits Per Second

KWIC KeyWord In Context

L

LAN Local Area Network

LAP Link Access Procedure

LAP-B Link Access Procedure, Balanced (Multilink operation procedure, X25)

LAP-D Link Access Procedure, D Channel

LAP-M Link Access Procedure for Modems

LASER Light Amplification by Stimulated Emission of Radiation

LAT Local Area Transport (DEC, Ethernet)

LATA Local Area Terminal Access (USA)

LCD Liquid Crystal Display

LD Laser Disc

LDF Low Density Foam (cables)

LEC Local Exchange Carrier

LED Light Emitting Diode

LEO Low Earth Orbit

LERP Low End Reference Platform

LF Line Feed (char 10 -OAH)

LIBOR London Inter Bank floating Rate

LIDAR Light Detection And Ranging

LIF	Low Insertion Force
LIFO	Last in, First Out
LIM EMS	Lotus-Intel-Microsoft Expanded Memory Specification
LIP	Large Internet Packet
LLC	Logical Link Control
LMI	Link Management Interface (Frame Relay)
LNA	Low Noise Amplifier
LNC	Low Noise Converter
LNM	LAN Network Management (IBM)
LP	Linear Programming
LPC	Linear Predictive Coding
Ipi	Lines Per Inch
LQ	Letter Quality
LSAP	Link layer Service Access Point
LSB	Least Significant Bit
LSI	Large Scale Integration
LUN	Logical Unit Number
LUT	Look Up Table
LZ-78	Lempel & Ziv 1978 (compression)
LZW	Lempel, Ziv & Welch

M

MAC	Media Access Control (sub-layer 2)
MAC	Multiplexed Analog Components (TV)

MAN	Metropolitan Area Networks
MAP	Manufacturing Automation Protocol
MAPs	Multiple Access ProtocolS
MAS	Multiple Address System
MASER	Microwave Amplification by Stimulated Emission of Radiation
MAU	Medium Attachment Unit (Ethernet)
MBE	Molecular Beam Epitaxy
MBone	Multicast backBONE (Internet)
MC	Micro Channel (IBM)
MCA	Micro Channel Architecture (IBM)
MCGA	MultiColor Graphics Array
MCM	Multi Chip Module
MCPC	Multiple Channel Per Carrier
MD	Mini Disk
MDA	Monochrome Display Adapter
MDF	Main Distribution Frame (tel)
MDI	Medium Dependent Interface
MEMS	Micro Electro Mechanical Systems
MEO	Medium Earth Orbit
MESFET	MEtal Semiconductor Field Effect Transistor
MFLOPS	Million of FLoating point OPerationS
MFM	Modified Frequency Modulation
MHS	Message Handling Services

MIB	Management Information Base
MIC	Media Interface Connector
MIC	Monolithic Integrated Circuit
MICR	Magnetic Ink Character Recognition
MIDI	Musical Instruments Digital Interface
MIF	Management Information File
MIL	MILitary standard (USA)
MILSPEC	MILitary SPECification (USA)
MIME	Multipurpose Internet Mail Extensions
MIPS	Millions of Instructions Per Second
MIS	Management Information System
MIT	Massachusetts Institute of Technology (USA)
MITI	Ministry of International Trade and Industry (Japan)
MJTC	MultiJunction Thermal Converter
MKSA	Meter Kilogram Second Ampere (SI)
MMI	Man Machine Interface
MMIC	Monolithic Microwave Integrated Circuit
MMW	MilliMeter Waves
MNOS	Metal Nitride Oxide Semiconductor
MNP	Microcom Networking Protocol
MO	Magneto Optical (disk)
MO/CD-R	Magneto Optics Compact Disc Rewriteable
Modem	MOdulator-DEModulator
MOS	Metal-Oxide Silicon/Semiconductor

MOSFET	Metal-Oxide Silicon Field Effect Transistor
MOV	Metal-Oxide Varistor
MPC	Multimedia Personal Computer
MPEG	Motion Picture Experts Group
MPGA	Mask Programmable Gate Array
MPP	Massively Parallel Processing
MPS	Message Passing System
MPU	Micro Processor Unit
MS	Master Station
MSB	Most Significant Bit
MS-DOS	MicroSoft Disk Operating System
MSI	Medium Scale Integration
MSK	Minimum Shift Keying
MSS	Mobile Satellite Service
MTA	Message Transfer Agent
MTBF	Mean Time Between Failures
MTS	Mobile Telephone System
MTTR	Mean Time To Repair
MUX	MUltipleXor
MV	Medium Voltage
MVS	Multiple Virtual Storage (IBM)
MW	Mega Watt
MW	Micro Wave

MXI Multisystem eXtension Interface (bus)

N

N/A Not Applicable

NA Numeric Aperture

NAP Network Access Point

NAU Network Addressable Unit

NBS National Bureau of Standards œ(NIST)

NC Network Congestion (No Connection)

NC Numeric Control

NCC Network Control Center

NCGA National Computer Graphics Association

NCP Network Control Protocol (IBM)

NCS National Communications System (USA)

NEC National Electric Code (USA)

NEMA National Electric Manufacturers Association (USA)

NEP Noise Equivalent Power

NESC National Electric Safety Code (USA)

NET Normes Europœennes de Tœlœcommunications

NEXT Near-End Cross Talk

NF Noise Figure

NFS Network File Services

NIC Network Information Center (Internet)

NIC Network Interface Card

NiCad	Nickel CADmium (battery)
NII	National Information Infrastructure
NiMH	Nickel Metal Hydride (battery)
NIST	National Institute of Standards & Technology
NIU	Network Interface Unit
NLM	Network Loadable Module (Netware)
NMF	Network Management Forum
NMOS	Negative Metal Oxide Silicon
NMR(I)	Nuclear Magnetic Resonance (Imaging)
NMRR	Normal Mode Rejection Rate
NMS	Network Management System
NMT	Nordic Mobile Telephone
NNI	Network Node Interface
NOC	Network Operating Center
NPN	Negative-Positive-Negative
NPR	Non Polarized Radial
NRAM	Non Volatile RAM
NRZ	Non Return to Zero
NRZI	Non Return to Zero Inverted
NSAP	Network Service Access Point
NSF	National Science Foundation
NSFNet	National Science Foundation NET
NTC	Negative Temperature Coefficient
NTSC	North american Television Standards Committee

NVP Nominal Velocity of Propagation

NVRAM Non-Volatile RAM

O

OA&M Operations, Administration & Maintenance

OBP Open Bridging Protocol

OC-1 Optical Carrier level 1 (51.84 Mbps)

OCR Optical Character Recognition

OCWR Optical Continuous Wave Reflectometer

OD Outside Diameter

ODA Office Document Architecture (ISO 8613)

ODBC Open Data Base Connectivity

ODI Open Data-Link Interface (Netware)

ODIF Office Document Interchange Format (ISO 8613)

OEIC OptoElectronic Integrated Circuit

OEM Original End-product Manufacturer

OIG OSPF Interoperability Group

OLTP On Line Transaction Processing

OLE Object Linking and Embedding

OMG Object Management Group

OMT Ortho Mode Transducer (satellite)

ONU Optical Network Unit

OODB Object Oriented Data Base

OOP Object Oriented Programming

OpAmp	Operational AMPLifier
OPGW	overhead OPTical Ground Wave
OPI	Open Prepress Interface
OQPSK	Offset Quad Phase Shift Keying
ORB	Object Request Brokers
ORL	Optical Return Loss
OS	Operating System
OSF	Open Software Foundation
OSI	Open Systems Interconnection (ISO 7498)
OSPF	Open Shortest Path First
OSS	One-Stop Shopping
OTDR	Optical Time Domain Reflectometer

P

PABX	Private Automatic Branch eXchange
PACS	Personal Access Communications Services/System
PAD	Packet Assembler Disassembler (X.3,X.25)
PAL	Phase Alternating Line (TV)
PAL	Programmable Array Logic
PAM	Pulse Amplitude Modulation
PAMR	Public Access Mobile Radio (SMR)
PAP	Password Authentication Protocol
PAX	Private Automatic eXchange
PBA	Printed Board Assembly

PBX	Private Branch eXchange
PC	Personal Computer
PC	Program Counter
PCB	Printed Circuit Board
PCCA	Portable Computer and Communications Association
PCI	Protocol Control Information
PCI	Peripheral Components Interconnect (bus)
PCM	Pulse Code Modulation
PCMCIA	Personal Computer Memory Card International Association
PCN	Personal Communications Network (Europe)
PCS	Personal Communications Services (USA)
PCSN	Private Circuit Switching Network
PDA	Personal Digital Assistant
PDC	Personal Digital Cellular (Japan)
PDF	Portable Document Format
PDFA	Praseodymium Doped Fiber Amplifier
PDH	Plesiochronic Digital Hierarchy
PDMA	Polarization Division Multiple Access
PDN	Public Data Network
PDS	Processor Direct Slot
PE	PolyEthylene
PECC	Partially Error Controlled Connections
PERL	Practical Extraction and Report Language

PERM	Pre-Embossed Rigid Magnetic
PERT	Program Evaluation and Review Technique
PET	Positron Emission Tomography
PHIGS	Programmer's Hierarchical Interactive Graphics System
PHS	Personal Handy phone System (Japan)
PIA	Programmable Interface Adapter
PICS	Platform for Internet Content Selection
PID	Proportional Integral Differential
PIKS	Programmer's Imaging Kernel System
PIN	Personal Identification Number
PIN	Positive Intrinsic Negative (Diode)
PING	Packet INternet Grouper (RFC-792)
PIV	Peak Inverse Voltage
PKC	Public Key Criptosystem
PL/1	Programming Language (version) 1
PLA	Programmable Logic Array
PLC	Power Line Carrier
PLC	Programmable Logic Controller
PLCC	Plastic Leadless Chip Carrier
PLD	Programmable Logic Device
PMPO	Peak Music Power Output
PMOS	Positive Metal Oxide Silicon
PMR	Public/Private (?) Mobile Radio
PMU	Phasor Measurement Unit

PNNI	Private Network to Network Interface
PNP	Positive-Negative-Positive
PON	Passive Optical Network
POP	Point Of Presence
POP	Post Office Protocol (RFC 1125)
POS	Point of Sale
POSIX	Portable Operating System Interface (IEEE)
POTS	Plain Old Telephone Service
PPD	Postscript Printer Description
ppm	Parts Per Million
PPP	Point to Point Protocol
PPS	Packets Per Second
PQFP	Plastic Quad Flat Pack
PRA	Primary Rate Access (2Mb/s - ISDN)
PRI	Primary Rate Interface (ISDN)
PROM	Programmable Read-Only Memory
PS	Post Script
PSDN	Packet Switched Data Network
PSI	Packet Switched Interface (DEC)
PSI	Peripheral System Interconnect
psi	Pounds per Square Inch
PSK	Phase Shift Keying
psRAM	Pseudo Static Random Access Memory

PSTN	Public Switched Telephone Network
PSW	Processor Status Word
PTB	Phisikalisch-Technische Bundesanstalt (Braunschweig)
PTC	Positive Temperature Coefficient
PTM	Packet Transfer Mode
PTM	Pulse Time Modulation
PTP	Peak To Peak (voltage)
PTT	Post, Telegraph and Telephone
PU	Per Unit
PV	Photo Voltaic
PVC	Permanent Virtual Circuit/Connection
PVC	Poly Vinyl Chloride
PVQ	Pyramid Vector Quantization (codification)
PWM	Pulsed Wave Modulation
PWM	Pulse-Width Modulation

Q

QA	Quality Assurance
QAM	Quadrature Amplitude Modulation
QBE	Query By Example
QC	Quality Control
QFP	Quad Flat Pack
QHE	Quantum Hall Effect
QoS	Quality Of Service

QPSK Quadrature/Quaternary Phase Shift Keying

QWIP Quantum-Well Infrared Photo detector

R

R&D Research and Development

RACE Research & development for Advanced Communications in Europe

RAD Rapid Application Development

RADAR RAdio Detection And Ranging

RAID Redundant Array of Inexpensive Disks

RAM Random Access Memory

RARP Reverse Address Resolution Protocol

RBOC Regional Bell Operating Company (USA)

RCA Radio Corporation of America

RCL Resistance, Capacitance and inductance(L)

RDAC Remote Data Acquisition and Control

RDBMS Relational Data Base Management System

RELP Residually Excited Linear Predictive

RETMA Radio Electronics Television Manufacturers Association

RF Radio Frequency

RFC Request For Comment (Internet)

RFI Radio Frequency Interference

RG Radio Guide (Hw catalog)

RGB Red Green Blue

RIP	Raster Image Processor
RIP	Router Information Protocol
RISC	Reduced Instruction Set Computer
RJE	Remote Job Entry (IBM)
RLAP	Radio data Link Adapter Protocol
RLL	Radio Local Loop
RLL	Relay Ladder Logic
RLL	Run-Length Limited (code)
RMA	Return Merchandise Authorization
RMON	Remote MONitoring
RMS	Root Mean Square
ROI	Return On Investment
ROM	Read-Only Memory
RPC	Remote Procedure Call
RPG	Report Program Generator
rpm	Revolutions Per Minute
RS	Recommended Standard (EIA)
RS	Remote Station
RS	Reed Salomon (code)
RSA	Rivest Shamir & Adleman (encryption)
RSIs	Repetitive Stress Injuries
RSVP	resource ReSerVation Protocol
RSVP	Répondez S'il Vous Plait
RT	Room Temperature

RTC	Real Time Clock
RTD	Resistive Temperature Detector
RTF	Rich Text Format
RTOS	Real Time Operating System
RTS	Request To Send
RTT	Round Trip Time
RTU	Remote Telemetry Unit
R/W	Right of Way
RWM	Read-Write Memory
RX	Reception
RXD	Received Data

S

S&H	Shipping & Handling
SA	Service Availability (tel)
SAL	SQL-windows Application Language
SAM	Sequential Access Memory
SAP	Service Access Point
SAP	Services Advertising Protocol (Netware)
SAR	Synthetic Aperture Radar
SAT	Site Acceptance tests
SARM	Set Asynchronous Response Mode (HDLC)
SAW	Surface Acoustic Wave

SBC	Single Board Computer
SBO	Select-Before-Operation (SCADA)
SCADA	Supervisory Control And Data Acquisition
SCI	Scalable Coherent Interface (IEEE 1596 - 1 Gbit/s)
SCPC	Single Channel Per Carrier (Satellite)
SCPI	Standard Commands for Programmable Instruments
SCR	Silicon Controlled Rectifier
SCS	Silicon Controlled Switch
SCSI	Small Computer System Interface
ScTP	Screeened Twisted Pair (FTP)
SDF	System Data Format
SDH	Synchronous Digital Hierarchy
SDLC	Synchronous Data Link Control
SDMA	Space Division Multiple Access
SDSL	Symmetric Digital Subscriber Line
SDU	Service Data Unit
SEAL	Simple and Efficient Adaptation Layer (AAL5 - ATM)
SECAM	SEquentiel Couleur Avec Memoire (TV)
SER	Sequence of Events Recording
SFTP	Shielded Foil Twisted Pair
SGML	Standard Generalized Mark-up Language
SHN	Self-Healing Networks
SI	Syst ^e me International
SIA	Satellite Industry Association

SIC	Silicon Carbide
SIDF	System Independent Data Format
SIMM	Single In-line Memory Module
SINAD	Signal, Noise And Distortion
SIP	Single In-line Package
SIS	Superconductor-Insulator-Superconductor
SIS	Standardiseiringskommissionen I Sverige (Stockholm)
SJTC	Single-Junction Thermal Converter
SLED	Single Large Expensive Disk (RAID)
SLIP	Serial Line Internet Protocol
SM	Single Mode (fiber)
SM	Surface-Mount
SMA	SubMiniature A connector (RF-FO)
SMD	Surface-Mounted Device
SMDL	Standard Music Description Language
SMDS	Switched Multimegabit Data Service
SMF	Single Mode Fiber
SMPTE	Society of Motion Pictures and Television Engineers
SMR	Specialized Mobile Radio
SMT	Surface Mount Technology
SMTP	Simple Message Transfer Protocol (Internet - RFC 822)
SNA	System Network Architecture (IBM)
SNAP	Sub-Network Access Protocol

SNI	Standard Network Interface
SNMP	Simple Network Management Protocol
SNR	Signal to Noise Ratio (S/N)
SNRM	Set Normal Response Mode (HDLC)
SOE	Sequence Of Events (recording)
SOH	Start Of Header (char 01 - 01H)
SOHO	Small Office - Home Office
SOIC	Small-Outline Integrated Circuit (SMD)
SOJ	Small-Outline J-lead (SMD)
SOL	Small-Outline Leaded (SMD)
SONET	Synchronous Optical NETwork
SOS	Silicon-On-Sapphire
SPC	Stored Program Control
Spec	SPECification
SPEC	Standard Performance Evaluation Corporation
SPST	Single Pole Single Throw (switch)
SPX	Sequenced Packet Exchange (layer 4, Netware)
SQE	Signal Quality Error (Heartbeat) (Ethernet)
SQID	Super conductive Quantum Interference Device
SQL	Structured Query Language
SRAM	Static Random Access Memory
SRP	Suggested Retailer's Price
SRT	Source Route Transport (Token Ring)
SRP	Source Routing Protocol

SS	Spread Spectrum
SS7/CCS	Signalling System 7 / Common Channel Signalling (tel)
SSB	Single Side Band
SSR	Solid State Relay
SST	Spread Spectrum Technology
Std	STanDard
STB	Set Top Box (TV)
STN	Super Twisted Nematic (LCD)
STP	Shielded Twisted Pair
STP	Spanning Tree Protocol (IEEE)
STX	Start of TeXt (char 02 - 02H)
SVCs	Switched Virtual Circuit
SVD	Simultaneous Voice and Data
SVID	System V Interface Definition (Unix)
SVP	Surge Voltage Protector
SWC	Surge Withstand Capability
SWEDAC	SWEDish board for technical ACcreditation
SWIFT	Society for World-wide Inter-bank Financial Telecommunications
SWR	Standing Wave Ratio

T

T1	Trunk 1 (1544 bps, 24-channel PCM)
T3	Trunk 3 (44.736 Mb/s)
TAB	Tape Automated Bonding

TACS	Total Access Communications System
TAPI	Telephone Application Program Interface
TCC	Telephone Country Code
TCM	Trellis Coded Modulation
TCP	Tape Carrier Package
TCP	Transmission Control Protocol (layer 4)
TCP/IP	Transmission Control Protocol/Internet Protocol
TDM	Time Division Multiplex
TDMA	Time Division Multiple Access
TDR	Time Domain Reflectometry
TE	Transverse Electric
TEM	Transverse Electro Magnetic
TFE	TetraFluoro Etilene (Teflon)
TFT	Thin Film Transistor
TFTP	Trivial File Transfer Protocol
THD	Total Harmonic Distortion
THF	Tremendously High Frequency
TIA	Telecommunications Industries Association
TIFF	Tag Image File Format
TM	Transverse Magnetic
T&M	Test and Measurement
TMN	Total/Telecommunications Management Network (ITU-TS M.3010)
TNC	Threaded Normalized Connector

TO	Transistor Outlook
TOP	Technical and Office Protocol (LAN)
TPC	Transaction Performance Council
TPF	Transaction Processing Facility (IBM)
tpi	Tracks Per Inch
TQC	Total Quality Control
TQM	Total Quality Management
TSOP	Thin Small Outline Package (SMD)
TSR	Terminate and Stay Resident (DOS)
TTL	Transistor-Transistor Logic
TTX	TeleTeXt
TTY	TeleTYpe
T>V	Technische >berwachungs Verein (Germany)
TVC	Thermal Voltage Converter
TWT	Traveling Wave Tube
TX	Telex
TX	Transmission
TXD	Transmitted Data
TXT	TeXT

U

UART	Universal Asynchronous Receiver - Transmitter
UDP	User Datagram Protocol (layer 4)
UHF	Ultra High Frequency (300-3000 MHz)

UIT	Union Internationale des Télécommunications (ITU - Genève)
UJT	UniJunction Transistor
UL	Underwriters Laboratories (USA)
ULS	User Location Service
UMTS	Universal Mobile Telecommunications System
UNI	User to Network Interface
UPC	Universal Product Code (bar code)
UPS	Uninterruptible Power Supply
UPS	United Parcel Service (USA)
UPT	Universal Personal Telecommunications
URL	Universal Resource Locator (Internet)
USAT	Ultra-Small Aperture Terminal
USB	Universal Serial Bus (Intel)
USD	United States' Dollar
USDC	United States' Digital Communications
UT	Universal Time
UTC	Universal Time Coordinated
UTE	Union Technique de l'Electricité (Paris)
UTP	Unshielded Twisted Pair (Ethernet)
UUCP	Unix to Unix Copy Protocol
UV	UltraViolet

V

VAN	Value-Added Network
VAR	Value Added Reseller
VAR	Volt-Ampere Reactive
VAX	Virtual Memory eXtension (DEC)
VBR	Variable Bit Rate
VC	Virtual Circuit
VCA	Voltage Controlled Amplifier
VCI	Virtual Channel Identifier (ATM)
VCO	Voltage Controlled Oscillator
VCR	Video Cassette Recorder
VDE	Verband Deutscher Elektrotechniker (Germany)
VDR	Voltage Dependent Resistor
VDSL	Very-high-rate Digital Subscriber Line
VDT	Video Display Terminal
VDU	Video Display Unit
VESA	Video Electronics Standards Association
VF	Voice Frequency
VGA	Video Graphics Adapter
VHDL	VHSIC Hardware Description Language
VHF	Very High Frequency (30-300 MHz)
VHS	Video Home System
VHS-C	Video Home System Compact
VHSIC	Very High Scale Integrated Circuit

VI	Virtual Instrument
VIA	Versatile Interface Adapter
VINES	Virtual NEtwork Software (Banyan)
VLB	VESA Local Bus (VL bus)
VL bus	VESA Local BUS (VLB)
VLIW	Very Long Instruction Word
VLSI	Very Large Scale Integration
VLM	Virtual Loadable Module (Netware)
VMEbus	Versa Module Eurocard BUS (IEEE 1014)
VMS	Virtual Memory System (DEC)
VMS	Voice Message System
VOD	Video On Demand
VOR	Vhf Omnidirectional Range
VOX	Voice Operated relay
VP	Virtual Path
VPI	Virtual Path Identifier (ATM)
VPN	Virtual Private Network
VR	Virtual Reality
VR	Voltage Regulator
VRAM	Video Random Access Memory
VRC	Vertical Redundancy Check (parity)
VRMS	Volts Root Mean Square
VSAT	Very Small Aperture Terminal

VSB	Vestigial Side Band
VSELP	Vector Sample/Sum Excited Linear Prediction (code-Motorola)
VT	Video Terminal (DEC)
VT	Virtual Terminal
VTR	Video Tape Recorder
VU	Volume Unit (tel)
VXI	Vmebus eXtensions for Instrumentation

W

W3	World Wide Web (WWW)
W3C	World Wide Web Consortium
WACS	Wireless Access Communications System
WAN	Wide Area Networks
WAN	Wide Area Information Service
WARC	World Administrative Radio Conference
WLL	Wireless in the Local Loop
WDM	Wave Division Multiplexing
WEC	World Energy Council
WMF	Windows Meta File
wpm	Words Per Minute
WORM	Write Once, Read Many
WWAN	Wireless Wide Area Networks
WWN	World Wide Net
WWW	World Wide Web

X

XLPE	cross Linked PolyEthylene
XMS	eXtended Memory Specification (>1024kB)
XNS	Xerox Network Specification
XOR	eXclusive OR
XTP	eXpress Transfer Protocol
XYZ	color description (CIE)

Y

YIQ	Y(luminance) Intensity Q(crominance) (color NTSC)
YAG	Yttrium Aluminum Garnet

Z

ZD	Zero Defects
ZIF	Zero Insertion Force

What is Broadband and what can it do for me?

'Broadband' is an umbrella term for a number of high speed Internet access options.

ADSL, Cable and Satellite* all fall into the Broadband category, giving you a number of options for enjoying an amazing online experience.

You see, the thing that all Broadband access methods have in common is incredible speed. These are among the fastest ways for you to surf, share, download, upload and play games online.

Broadband is an 'always on' service so that you don't have to dial-up each time you want to access the Internet[^], giving you full use of your phone service. So you can keep calling, chatting and faxing while you're connected.

What is ADSL and what can it do for me?

ADSL (Asymmetric Digital Subscriber Line)* is a new broadband technology that lets you enjoy super-fast Internet access without the need for lots of mind-boggling equipment.

In fact, ADSL uses everyday copper phone lines to deliver broadband Internet at superfast speeds. For example, on the 500MB Plan, you can surf the net at speeds of up to 256kbps (kilobits per second) and on the 10GB plan, up to 1.5mbps (megabits per second). As a comparison, most computers come with a dial-up modem that can only cope with speeds up to 56 kbps (kilobits per second).

So to put it simply, the potential top speed of an ADSL connection is up to 20 times faster than a standard dial-up connection[^]. Fasten your seatbelt - you'll be gaming and downloading at blistering rates.

ADSL lets you enjoy some exciting differences

- **You can download large files fast.** ADSL makes super-fast broadband Internet access easy. Even large downloads take a lot less waiting. And the ADSL connection is far more robust than dial-up, so you won't have to start again because the line dropped out.
- **You can still use your phone lines while you're on the web.** Have a chat, answer calls, send faxes, whatever. Everything works just like it did before.
- **You can save on call costs and extra line rental.** With ADSL, you only need one phone line. And forget about busy signals, drop-outs, call costs, or renting an extra phone line just for the Internet.

You don't need to dial-up and wait. Because ADSL doesn't affect your phone, there's no need for you to turn it off. And there are no time limits from our end either, so the Internet can be there whenever you want it. Just leave your ADSL modem set up to connect from the moment you turn your computer on.