

# Glossary of Commonly Used Wireless, Networking and Voice-Over-IP Terms

**10BASE-T:**

IEEE 802.3 standard for a twisted-pair Ethernet network. 10 Mbps transmission rate over baseband using unshielded, twisted-pair cable.

**802.11:**

The IEEE 802.11 standard defines both frequency hopping and direct sequence spread spectrum solutions.

**802.11a:**

The portion of the 802.11 specification that defines the 54 Mbps data rate.

**802.11b:**

The portion of the 802.11 specification that defines the 11 Mbps data rate.

## A

**Access Point:**

Provides a bridge between Ethernet wired LANs and the wireless network. Access points are the connectivity point between Ethernet wired networks and devices (laptops, hand-held computers, point-of-sale terminals) equipped with a wireless LAN adapter card.

**Analog Phone:**

Comes from the word “analogous,” which means similar to. In telephone transmission, the signal being transmitted from the phone/voice, video or image--is analogous to the original signal.

**Antenna-Directional:**

Transmits and receives radio waves off the front of the antenna. The power behind and to the sides of the antenna is reduced. The coverage area is oval with the antenna at one of the narrow ends. Typical directional antenna beam width angles are from 90° (somewhat directional) to as little as 20° (very directional). A directional antenna directs power to concentrate the coverage pattern in a particular direction. The antenna direction is specified by the angle of the coverage pattern called the beam width.

**Antenna-Omni-directional:**

Transmits and receives radio waves in all directions. The coverage area is circular with the antenna at the center. Omni-directional antennas are also referred to as whip or low-profile antennas.

**Association:**

The process of determining the viability of the wireless connection and establishing a wireless network's root and designated access points. A mobile unit associates with its wireless network as soon as it is powered on or moves into range.

**ATM:**

Asynchronous Transfer Mode. A type of high-speed wide area network.

## B

**Backbone:**

A network that interconnects other networks, employing high-speed transmission paths and often spanning a large geographic area.

**Bandwidth:**

The range of frequencies, expressed in hertz (Hz), that can pass over a given transmission channel. The bandwidth determines the rate at which information can be transmitted through the circuit.

**Bandwidth Management:**

Functionality that allocates and manages RF traffic by preventing unwanted frames from being processed by the access point.

**BC/MC:**

Broadcast frames; Multicast frames.

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**Beacon:**

A uniframe system packet broadcast by the AP to keep the network synchronized. A beacon includes the Net\_ID (ESSID), the AP address, the Broadcast destination addresses, a time stamp, DTIM (Delivery Traffic Indicator Maps) and the TIM (Traffic Indicator Message).

**BFA Antenna Connector:**

Miniature coaxial antenna connector manufactured by MuRata Manufacturing Corporation.

**Bluetooth:**

See Wireless Personal Area Networks.

**Bridge:**

A device that connects two LANs of the same or dissimilar types. It operates at the Data Link Layer, as opposed to routers. The bridge provides fast connection of two collocated LAN segments that appear as one logical network through the bridge.

**Buffer:**

A segment of computer memory used to hold data while it is being processed.

## C

**CAM:**

Continuous Aware Mode: Mode in which the adapter is instructed to continually check for network activity.

**Card and Socket Services:**

Packages that work with the host computer operating system, enabling the wireless LAN adapter to interface with host computer configuration and power management functions.

**Cellular Phone:**

Low-powered, duplex, radio/telephone that operates between 800 and 900 MHz, using multiple transceiver sites linked to a central computer for coordination. The sites, or "cells," cover a range of one to six or more miles in each direction.

**Centrex:**

Business telephone service offered by a local telephone company from a local telephone company office. Centrex is basically a single line phone system leased to businesses as a substitute for a business that is buying or leasing its own on-premises phone system or PBX.

**CDMA and TDMA:**

The Code Division Multiple Access and Time Division Multiple Access standard for wireless communications on wide area networks (WANs) in North America.

**Circuit Switching:**

The process of setting up and keeping a circuit open between two or more users so that users have exclusive and full use of the circuit until the connection is released.

**Client:**

A computer that accesses the resources of a server.

**Client/server:**

A network system design in which a processor or computer designated as a server (such as a file server or database server) provides services to other client processors or computers.

**CODEC:**

Coder-Decoder. Audio compression/decompression algorithm that is designed to offer excellent audio performance. Converts voice signals from their analog form to digital signals acceptable to modern digital PBXs and digital transmission systems. It then converts those digital signals back to analog so that you may hear and understand what the other person is saying.

**Computer Telephony Integration:**

Technology that integrates computer intelligence with making, receiving, and managing telephone calls. Computer telephony integrates messaging, real-time connectivity, and transaction processing and information access.

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### D

**Data Terminal:**

Computer transmit and receive equipment, including a wide variety of dumb terminals or terminals without embedded intelligence in the form of programmed logic. Most data terminals provide a user interface to a more capable host computer, such as a mainframe or midrange computer.

**Decryption:**

Decryption is the decoding and unscrambling of received encrypted data. The same device, host computer or front-end processor, usually performs both encryption and decryption.

**Desktop Conferencing:**

A telecommunications facility or service on a PC that permits callers from several diverse locations to be connected together for a conference call.

**Digital Phone System:**

Proprietary phone system provided by a vendor. The signal being transmitted in a digital phone system is the same as the signal being transmitted in an analog phone system. The system can consist of a proprietary PBX system that converts voice signals from their analog form to digital signals, and then converts those digital signals back to analog. Alternatively, the conversion from analog-to-digital can occur in a digital phone.

**Direct Inward Dialing (DID):**

The ability for a caller outside a company to call an internal extension without having to pass through an operator or attendant. In large PBX systems, the dialed digits are passed from the PSTN to the PBX, which then completes the call.

**Direct-Sequence (DS) Spread Spectrum:**

Direct sequence transmits data by generating a redundant bit pattern for each bit of information sent. Commonly referred to as a "chip" or "chipping code," this bit pattern numbers 10 chips to one per bit of information. Compared with frequency hopping, direct sequence has higher throughput.

**Diversity Reception:**

The use of two antennas attached to a single access point to improve radio reception. The second antenna is used only for receiving radio signals, while the primary is used for both transmitting and receiving.

**Driver:**

A program routine that links a peripheral device, such as a mobile unit's radio card, to the computer system.

### E

**Element-level Management:**

Level of technologies aimed at small or medium-sized businesses.

**Encryption:**

Entails scrambling and coding information, typically with mathematical formulas called algorithms, before the information is transmitted over a network.

**Ethernet:**

A local area network used for connecting computers, printers, workstations, terminals, servers, and so on, within the same building or campus. Ethernet operates over twisted wire and over coaxial cable at speeds up to 100 Mbps, with 1 Gbps speeds coming soon.

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### F

**Filtering:**

Prevents user-defined frames from being processed by the access point.

**Fragmentation Threshold:**

The maximum size for directed data packets transmitted over the radio. Larger frames fragment into several packets this size or smaller before transmission over the radio. The receiving station reassembles the transmitted fragments.

**Frame Mode:**

A communications protocol supported by the OEM Modules. The frame protocol implements synchronous serial Point-to-Point (PPP) frames similar to those used by serial Internet protocols.

**Frequency Hopping (FH) Spread Spectrum:**

Hedy Lamarr, the actress, is credited in name only for inventing frequency hopping during World War II. As its label suggests, frequency hopping transmits using a narrow band carrier that changes frequency in a given pattern. There are 79 channels in a 2.4GHz ISM band, each channel occupying 1MHz of bandwidth. A minimum hop rate of 2.5 hops per channel per second is required in the United States. Frequency hopping technology is recognized as superior to direct sequence in terms of echo resistance, interference immunity, cost and ease-of-installation.

**FTP (File Transfer Protocol):**

A common Internet protocol used for transferring files from a server to the Internet user. It uses TCP/IP commands.

### G

**Gain, dB:**

Gain (a ratio of output divided by input) expressed in decibels; in antennas, the Directive Gain in a given direction.

**Gain, dBd:**

Antenna gain, expressed in decibels referenced to a half wave dipole.

**Gain, dBi:**

Antenna gain, expressed in decibels referenced to a theoretical isotropic radiator.

**Gain, dBic:**

Antenna gain, expressed in decibels referenced to a theoretical isotropic radiator that is circularly polarized.

**Gatekeeper:**

Software that performs two important functions to maintain the robustness of the network: address translation and bandwidth management. Gatekeepers map LAN aliases to IP addresses and provide address lookups when needed.

**Gateway:**

Optional element in an H.323 conference. Gateways bridge H.323 conferences to other networks, communications protocols, and multimedia formats. Gateways are not required if connections to other networks or non-H.323 compliant terminals are not needed.

**GHz:**

International unit for measuring frequency is Hertz (Hz), which is equivalent to the older unit of cycles per second. One Gigahertz (GHz) is one billion Hertz. Microwave ovens typically operate at 2.45 GHz.

**GSM:**

The Global System for Mobile Communications standard for worldwide wireless communications on wide area networks (WANs).

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### H

**H.323:**

An umbrella standard from the International Telecommunications Union (ITU) that addresses call control, multimedia management, and bandwidth management for point-to-point and multi-point conferences, as well as interfaces between LANs and other networks.

**Hand-held PC (HPC):**

The term adopted by Microsoft and its supporters to describe hand-held computers employing Microsoft's Windows CE operating system.

### I

**Interactive Voice Response:**

System used to access a database access application using a telephone. The voice processing acts as a front-end to appropriate databases that reside on general purpose computers. For instance, DTMF (touch tone) input of a Personal Identification Number can be required for access, or more unusual and expensive techniques such as voice recognition and voice print matching.

**Internet:**

World's largest network often referred to as the Information Superhighway. The Internet is a virtual network based on packet switching technology. The participants on the Internet and its topology change on a daily basis.

**Internet Commerce:**

Electronic business transactions that occur over the Internet. Samples of Internet commerce applications include electronic banking, airline reservation systems, and Internet malls.

**Internet Phone:**

Device used to transmit voice over the Internet, bypassing the traditional PSTN and saving money in the process. An Internet phone can be a small phone or a multimedia C with a microphone, speaker, and modem.

**Interoperability:**

The ability of equipment or software to operate properly in a mixed environment of hardware and software, from different vendors. Enabled by the IEEE 802.11 open standard.

**IP (Internet Protocol):**

The Internet standard protocol that defines the Internet datagram as the unit of information passed across the Internet. Provides the basis of the Internet connectionless best-effort packet delivery service. The Internet protocol suite is often referred to as TCP/IP because IP is one of the two fundamental protocols.

**International Roaming:**

Ability to use one adapter worldwide.

**Intranet:**

A private network that uses Internet software and Internet standards. In essence, an intranet is a private Internet reserved for use by people who have been given the authority and passwords necessary to use that network.

**ISDN:**

Integrated Services Digital Network. Emerging network technology offered by local phone companies that are designed for digital communications, computer telephony, and voice processing systems.

**ISM Band:**

ISM bands—instrumental (902-928MHz), science (2.42.4835GHz), and medical (5.725-5.850 GHz)—are the radio frequency bands allocated by the FCC for unlicensed continuous operations for up to 1W. The most recent band approved by the FCC for WLANs was the medical band in January 1997.

**ITU:**

International Telecommunications Union. Standards body that defined H.323 and other international standards.

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### J

**Jitter:**

Noise on a communications line that is based on phase hits, causing potential phase distortions and bit errors.

### K

**Kerberos:**

A widely deployed security protocol that was developed at the Massachusetts Institute of Technology (MIT) to authenticate users and clients in a wired network environment and to securely distribute encryption keys.

**Key Telephone System:**

A system in which the telephone has multiple buttons permitting the user to directly select central office phone lines and intercom lines. Key phone systems are most often found in relatively small business environments, typically around 50 telephones.

### L

**Layer:**

A protocol that interacts with other protocols as part of an overall transmission system.

**LPD (Line Printer Daemon):**

A TCP-based protocol typically used between a Unix server and a printer driver. Data is received from the network connection and sent out over the serial port.

### M

**MAC (Media Access Control):**

Part of the Data Link Layer, as defined by the IEEE, this sub-layer contains protocols for gaining orderly access to cable or wireless media.

**MD5 Encryption:**

An authentication methodology when MU is in foreign subnet.

**MIB (Management Information Base):**

An SNMP structure that describes the specific device being monitored by the remote-monitoring program.

**Microcell:**

A bounded physical space in which a number of wireless devices can communicate. Because it is possible to have overlapping cells as well as isolated cells, the boundaries of the cell are established by some rule or convention.

**Modem:**

Equipment that converts digital signals to analog signals and vice versa. Modems are used to send digital data signals over the analog PSTN.

**MMCX Antenna Connector:**

Miniature coaxial antenna connector in use by several major wireless vendors.

**Mobile IP:**

The ability of the mobile unit to communicate with the other host using only its home IP address, after changing its point of attachment to the Internet and intranet.

**Mobile Unit (MU):**

May be a PC device with a wireless adapter, bar code scanner, or other mobile computing device.

**Mobile Unit Mode:**

In this mode, the WLAN adapter connects to an access point (AP) or another WLAN installed system, allowing the device to roam freely between AP cells in the network. Mobile units appear as network nodes to other devices.

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**Modulation:**

Any of several techniques for combining user information with a transmitter's carrier signal.

**Multipath:**

The signal variation caused when radio signals take multiple paths from transmitter to receiver.

**Multipath Fading:**

A type of fading caused by signals taking different paths from the transmitter to the receiver and, consequently, interfering with each other.

## N

**Node:**

A network junction such as a switch or a routing center.

## P

**Packet Switching:**

Refers to sending data in packets through a network to some remote location. In a packet switched network, no circuit is left open on a dedicated basis. Packet switching is a data switching technique only.

**PBX Phone System:**

Private Branch eXchange. Small version of the phone company's larger central switching office.

An alternative to a PBX is to subscribe to a local telephone company's Centrex service.

**PCMCIA (Personal Computer Memory Card International Association) PC card:**

A credit card-size device used in laptop computers and available as removable network adapters.

**PCS:**

Personal Communications Service. A new, lower powered, higher-frequency competitive technology to cellular. Whereas cellular typically operates in the 800-900 MHz range, PCS operates in the 1.5 to 1.8 GHz range. The idea with PCS is that the phones are cheaper, have less range, and are digital. The cells are smaller and closer together, and airtime is cheaper.

**Peer-to-peer Network:**

A network design in which each computer shares and uses devices on an equal basis.

**Ping:**

A troubleshooting TCP/IP application that sends out a test message to a network device to measure the response time.

**PLD (Data Link Protocol):**

A raw packet protocol based on the Ethernet frame format. All frames are sent to the wireless network verbatim—should be used with care as improperly formatted data can go through with undesirable consequences.

**Plug and Play:**

A feature that allows a computer to recognize the PCI adapter and configure the hardware interrupt, memory, and device recognition addresses; requires less user interaction and minimizes hardware conflicts.

**Pocket PC:**

The term adopted by Microsoft® and its supporters to describe hand-held computers employing Microsoft's Pocket PC operating system.

**Point-of-Sale Device:**

A special type of equipment that is used to collect and store retail sales data. This device may be connected to a bar code reader and it may query a central computer for the current price of that item.

**POTS:**

Plain Old Telephone Service. The basic service supplying standard single line telephones, telephone lines, and access to the public switched telephone network.

**Power Management:**

Algorithms that allow the adapter to sleep between checking for network activity, thus conserving power.

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### **PSP (Power Save Polling):**

Stations power off their radios for long periods. When a mobile unit in PSP mode associates with an access point, it notifies the AP of its activity status. The AP responds by buffering packets received for the MU.

### **PSTN:**

Public Switched Telephone Network. Refers to the worldwide voice telephone network accessible to all those with telephones and access privileges. In the U.S., the PSTN is provided by AT&T.

## Q

### **QoS:**

Quality of Service. Measure of the telephone service quality provided to a subscriber. QoS refers to things like: Is the call easy to hear? Is it clear? Is it loud enough?

## R

### **RBOC:**

Regional Bell Operating Company. One of the seven Bell operating companies set up after the divestiture of AT&T, each of which own two or more Bell Operating Companies (BOCs).

### **Roaming:**

Movement of a wireless node between two microcells. Roaming usually occurs in infrastructure networks built around multiple access points.

### **Repeater:**

A device used to extend cabling distances by regenerating signals.

### **Router:**

The main device in any modern network that routes data blocks from source to destination using routing cables and determining the best path dynamically. It functions as an addressable entity on the LAN and is the basic building block of the Internet.

## S

### **SNMP (Simple Network Management Protocol):**

The network management protocol of choice for TCP/IP based intranets. Defines the method for obtaining information about network operating characteristics, change parameters for routers and gateways.

### **Scanning:**

A periodic process where the mobile unit sends out probe messages on all frequencies defined by the country code. The statistics enable a mobile unit to re-associate by synchronizing its frequency to the access point. The MU continues communicating with that access point until it needs to switch cells or roam.

### **Site Survey:**

Physical environment survey to determine the placement of access points and antennas, as well as the number of devices necessary to provide optimal coverage, in a new or expanding installation.

### **Spread Spectrum:**

A transmission technique developed by the U.S. military in World War II to provide secure voice communications, spread spectrum is the most commonly used WLAN technology today. It provides security by "spreading" the signal over a range of frequencies. The signal is manipulated in the transmitter so that the bandwidth becomes wider than the actual information bandwidth. De-spreading the signal is impossible for those not aware of the spreading parameters; to them, the signal sounds like background noise. Interference from narrowband signals is also minimized to background noise when it is de-spread by the receiver. Two types of spread spectrum exist: direct sequence and frequency hopping.

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**Stream Mode:**

A communications protocol supported only by the Telnet and TCP protocols. Stream mode transfers serial characters as they are received by encapsulating them in a packet and sending them to the host.

## T

**T1:**

A type of dedicated digital leased-line available from a public telephone provider with a capacity of 1.544 Mbps. A T1 line can normally handle 24 voice conversations, each one digitized at 64 Kbps. With more advanced digital voice encoding techniques, it can handle more voice channels. T1 is the standard for digital transmission in the U.S., Canada, Hong Kong, and Japan.

**TCP/IP:**

Networking protocol that provides communication across interconnected networks, between computers with diverse hardware architectures, and various operating systems. TCP/IP is used in the industry to refer to the family of common Internet protocols.

**TCP (Transport Communication Protocol):**

Controls the transfer of data from one client to one host, providing the mechanism for connection maintenance, flow control, retries, and time-outs.

**Telnet (Terminal Emulation Protocol):**

A protocol that uses the TCP/IP networking protocol as a reliable transport mechanism. Considered extremely stable.

**Terminal:**

An endpoint, which provides for real-time, two-way communications with another terminal, gateway, or mobile unit.

**Token Ring:**

A ring type of local area network (LAN) in which a supervisory frame, or token, must be received by an attached terminal or workstation before that terminal or workstation can start transmitting.

## U

**UDP (User Datagram Protocol):**

UDP/IP is a connection-less protocol that describes how messages reach application programs running in the destination machine; provides low overhead and fast response and is well suited for high-bandwidth applications.

## V

**Video Conferencing:**

Video and audio communication between two or more people via a video CODEC (coder/decoder) at either end and linked by digital circuits.

**Voice Mail System:**

Device or system that records, stores, and retrieves voice messages. The two types of voice mail devices are those which are "stand alone" and those which offer some integration with the user's phone system.

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### W

#### **Wi-Fi:**

A logo granted as the “seal of interoperability” by the Wireless Ethernet Compatibility Alliance (WECA). Only select wireless networking products possess this characteristic of IEEE 802.11b.

#### **Wireless AP Support:**

Access Point functions as a bridge to connect two Ethernet LANs.

#### **Wireless Local Area Network (WLAN):**

A wireless LAN is a data communications system providing wireless peer-to-peer (PC-to-PC, PC-to-hub, or printer-to-hub) and point-to-point (LAN-to-LAN) connectivity within a building or campus. In place of TP or coaxial wires or optical fiber as used in a conventional LAN, WLANs transmit and receive data over electromagnetic waves. WLANs perform traditional network communications functions such as file transfer, peripheral sharing, e-mail, and database access as well as augmenting wired LANs. WLANs must include NICs (adapters) and access points (in-building bridges), and for campus communications building-to-building (LAN-LAN) bridges.

#### **Wireless Personal Area Network (WPAN):**

Personal area networks are based on a global specification called Bluetooth™, which uses radio frequency to transmit voice and data. Over a short range, this cable-replacement technology wirelessly and transparently synchronizes data across devices and creates access to networks and the Internet. Bluetooth is ideal for mobile professionals who need to link notebook computers, mobile phones, PDAs, PIMs, and other hand-held devices to do business at home, on the road, and in the office.

#### **Wireless Wide Area Network (WWAN):**

Wide area networks utilize digital mobile phone systems to access data and information from any location in the range of a cell tower connected to a data-enabled network. Using the mobile phone as a modem, a mobile computing device such as a notebook computer, PDA, or a device with a stand-alone radio card can receive and send information from a network, your corporate intranet, or the Internet.

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