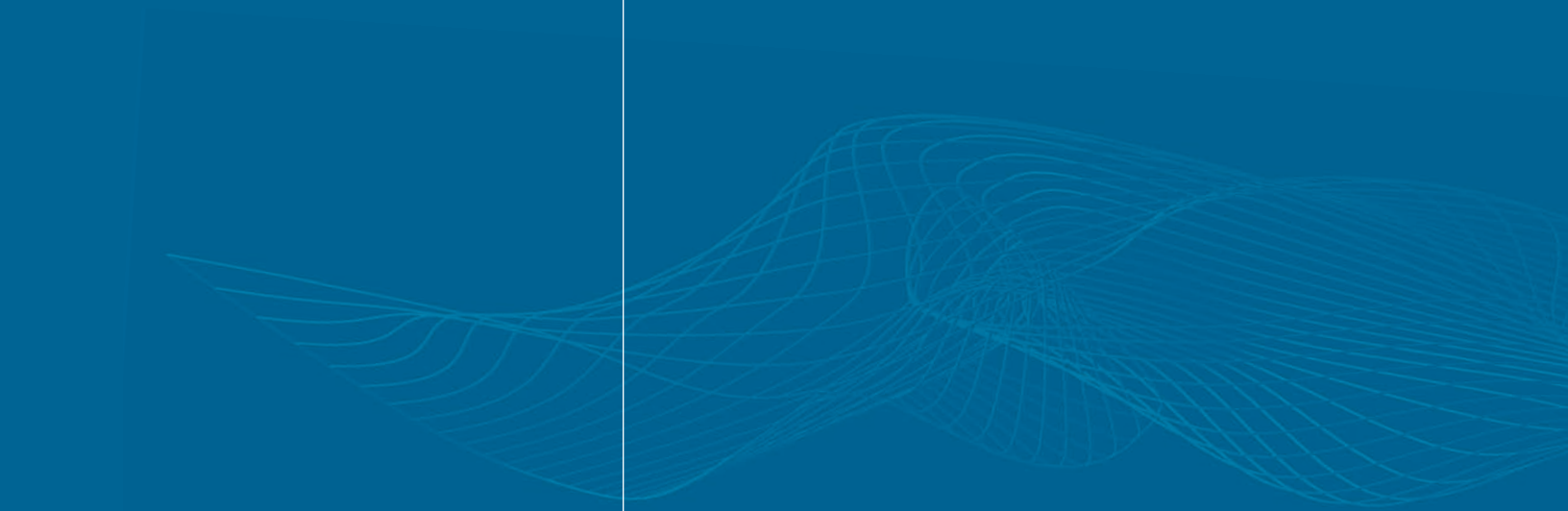
BELDEN

SENDING ALL THE RIGHT SIGNALS

Wireless Solution

Glossary



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#

2G
The second generation of mobile telephony systems. It uses digital encoding and supports high bit rate voice, limited data communications and different levels of encryption. 2G networks include GSM, D-AMPS (TDMA) and CDMA.

2.5G
A cellular system that extends 2G systems, adding features such as packet-switched connections and enhanced data rates. 2.5G networks include EDGE and GPRS. They support WAP, MMS, SMS mobile games, and search and directory.

3G
The third generation of mobile communications technology, it provides high-speed data transmissions of 144 Kbps and higher. 3G supports multimedia applications such as full-motion video, video conferencing and Internet access.

802.1q
An IEEE Standard that specifies the architecture for virtual LAN (VLAN) tagging, association, and VLAN-capable bridges. It's commonly used to segment multiple communities of users that share the same network, and restrict access to network resources without regard to physical topology of the network.

802.1x
As the IEEE standard for access control for wireless and wired LANs, 802.1x provides a means of authenticating and authorizing devices to attach to a LAN port. It defines the Extensible Authentication Protocol (EAP), which uses a central authentication server to authenticate each user on the network.

802.11
A group of wireless networking standards, also known as WiFi, set by the Institute of Electrical and Electronics Engineers (IEEE).

802.11a
An IEEE standard for a wireless network that operates at 5 GHz with rates up to 54 Mbps.

802.11b
An IEEE standard for a wireless network that operates at 2.4 GHz with rates up to 11 Mbps.

802.11d
An IEEE standard that allows for configuration changes at the Media Access Control layer (MAC layer) to comply with the rules of the country in which the network is to be used.

802.11e
An IEEE standard that adds Quality of Service (QoS) features and multimedia support to existing 802.11b, 802.11g and 802.11a wireless networks. This is necessary for delay-sensitive applications such as wireless Voice over IP (VoIP).

802.11g
An IEEE standard for a wireless network that operates at 2.4 GHz with rates up to 54 Mbps.

802.11h
An IEEE standard for protocol features to support regulatory requirements for frequency and transmission power management of 802.11 networks.

802.11i
An IEEE standard specifying security mechanisms for 802.11 networks. 802.11i makes use of the Advanced Encryption Standard (AES) block cipher. The standard also includes improvements in key management, user authentication through 802.1X and data integrity of headers. (See also WPA2™.)

802.11j
An IEEE standard that allows for regulatory requirements of wireless transmitter output power, operational modes, channel arrangements and spurious emission levels for 802.11 networks.

802.11k
A proposed standard for how a wireless LAN (WLAN) should perform channel selection and roaming and transmission power control (TPC) to optimize network performance. It's part of the 802.11 family of specifications.

802.11n
An upcoming specification for wireless LAN (i.e., WLAN) communications. An addition to the 802.11 family of standards, it's intended to increase network speed and reliability and extend the operating distance of wireless networks.

802.11r
A proposed standard that would specify fast Basic Service Set (BSS) transitions.

A

access point
A base station in a wireless LAN. Access points are either (a) stand-alone devices that plug into an Ethernet hub or switch, (b) networked to a central switch ("thin" implementation), or (c) connected to a central switch for fully centralized operation ("ultrathin" implement ation). In the case of (a) and (b), the wireless client associates to the access point; in (c) the client associates to the central switch. In a network implementation (as opposed to ad-hoc connections), traffic between clients passes through the access point, and not directly between clients.

AES
Advanced Encryption System. An extremely strong standard using a symmetric block data encryption technique, it is preferred for the encryption of commercial and government data. Used in implementing WPA™2 and required for 802.11i.

antenna
A transducer connected to a wireless network transceiver that concentrates transmitted and received radio waves to increase signal strength and network range.

authentication
A process in which the identity of a wireless device or end-user is verified, typically by checking a user name and password to allow network access.

authentication server
A device used in network access control. It stores the user names and passwords that identify the clients logging on.

authenticator
The device in an authentication system that physically blocks or allows access to the network. It is typically an access point in a wireless system or a network access server (NAS) in a dial-up system.

B

bridge
A wireless device that connects together multiple networks that use different media or that are physically separate, but which use similar standards.

BSS
Basic Service Set. See also BSSID.

BSSID
Basic Service Set Identifier. A unique address that identifies the access point/router that creates the wireless network.

C

captive portal
A default Web page downloaded automatically when someone logs onto certain public wireless networks or the Internet. Typically used for WiFi hotspots, and may be used for authorization purposes or as a community bulletin board.

call admission control
A concept for IP telephony systems which lets an administrator set a limit to the number of simultaneous calls allowed on a given link. This technique may contribute to controlling and maintaining the audio quality of calls over a shared wireless link.

CDMA
Code Division Multiple Access. A method for transmitting simultaneous signals over a shared portion of the spectrum. It's the digital cellular phone network type used throughout most of the U.S., but rarely used elsewhere in the world.

cell
The basic geographic unit of a cellular system, or the geographic area covered by an access point. In cellular-based WLAN topologies, an overlapping group of cells permits a client to roam among them while generally maintaining network connectivity.

certificate
The digital equivalent of an ID card that works in conjunction with strong encryption to sign digital signatures. A certificate (which may contain a user's name and other information) is issued by a certification authority.

certificate authority
A trusted third party that can verify the identity of others for you when you're communicating with them on security systems. The authority registers the digital identity of a site or individual, and lets you confirm the ID of the person you're interacting with.

channel
A portion of the entire available radio spectrum that all devices on a wireless network use to communicate. Changing the channel on the access point/router can help reduce interference.

channel blanket
A term related to a same-channel WLAN in which the same channel is allowed to operate from every access point in the system, thereby creating a "blanket" coverage effect for the given channel, across the network's service area. With this system, the clients associate to a central switch rather than the access points. The handoff transaction and related delay is eliminated as the client moves among the access points that form the "blanket," maintaining zero-latency mobile connectivity and increasing connection stability through uplink path diversity.

circuit-switched network
A network in which a virtual circuit is set up for each connection to simulate having a physical wire between two points. The telephone system is circuit-switched. It is less efficient than a packet-switched network (i.e., the Internet) since users have exclusive use of the circuit until the connection is released.

client association
The process by which a wireless client connects to an access point or a centralized switch (based on the system architecture).

client card
An add-on inserted into a computer, PDA or similar device to give it wireless capability.

closed network
A wireless network that doesn't broadcast its Extended Service Set Identifier (network name).

co-channel interference
Interference between access points on the same frequency. Co-channel interference causes retransmissions and lower overall performance within and across cells in a cellular-based WLAN system.

collision
The interference that results when two devices on a network start transmitting data at exactly the same time. The network detects the collision of the two transmitted packets and discards them both.

contention management
The ability in a wireless LAN to manage the condition where two or more data stations attempt to access the wireless medium at the same time over a shared channel, or when two data stations attempt to transmit at the same time in two-way alternate communication.

D

device-to-device network
A term that means two or more devices connecting using wireless network devices, without the use of an access point between them.

DHCP
Dynamic Host Configuration Protocol. Software that automatically assigns temporary IP addresses to client stations logging onto an IP network so users don't have to configure them manually.

DiffServ
Differentiated Services. A method for adding end-to-end quality of service (QoS) over large networks, including the Internet.

DNS
Domain Name Service. An Internet service that translates human-readable alphanumeric domain names to assigned IP addresses, and vice versa.

E

E911
An enhanced version of the 911 emergency service, E911 provides automatic number identification and automatic location information to the 911 operator.

EAP
Extensible Authentication Protocol. A standard form of generic messaging employed in 802.1X.

EAP-TLS
Extensible Authentication Protocol Translation Layer Security. This high-security version of EAP (see above) requires authentication from both client and server. If one fails to offer the appropriate authentication, the connection is terminated.

ESS
Extended Service Set. A collection of two or more basic service sets (BSS's) working together to form a single network.

ESSID
Extended Service Set Identifier.
(See network name.)

Ethernet
The most widely installed networking standard in the world, formally known as IEEE 802.3.

F

fast handoff
A way in which access points can allow authenticated users to roam between access points without losing authentication. Fast handoff reduces delays as the client de-associates and re-associates with the new access point.

frame
A fixed block of data transmitted on a physical medium as a single entity.

frame bursting
A technology created to increase the speed of 802.11g-based wireless networks. It works by unwrapping short 802.11g packets and re-bundling them into a larger packet, reducing the delay caused by the mandatory gaps between packets.

G

G.711
A 3 KHz audio compression codec used primarily for telephony. Compresses at 64 kbs.

G.729
An audio compression codec type used primarily for VoIP, due to its low bandwidth (typically 8 Kbit/s). An ITU standard, it permits stuffing more calls into limited bandwidth to utilize IP voice cost effectively.

Gigahertz (GHz)
One billion cycles per second (i.e., cycles of an electromagnetic wave). It is used to describe the frequency range used by wireless devices.

GPRS
General Packet Radio Service. A cellular data technology for GSM networks for both voice and data. It provides between 10 and 50 Kbps of bandwidth.

GSM
Global System for Mobile Communication. A digital cellular phone technology based on TDMA that is predominant in Europe, and used around the world – its use is growing in the U.S. Provides a slow (9600 bps) cellular data service.

H

H.323
An umbrella recommendation from the ITU-T that establishes the protocols for audio-visual communication, including real-time voice and video sessions, over any packet network. It has evolved to address the needs of VoIP networks.

handoff
Switching coverage responsibility from one access point to another. It typically refers to what happens when a wireless client moves between access points.

handoff latency
When a client moves between two access points, handoff latency is the length of time between the client de-associating from one access point and then re-associating to another access point (in order to re-establish communications). Excessive handoff latency can result in dropped communications in the case of real-time, latency-sensitive applications.

hot spot
A wireless LAN node where you can connect to a public wireless network.

I

IEEE
Institute of Electrical and Electronics Engineers – the initials are pronounced "I-triple-ee." IEEE is the organization that develops standards for the computer, communications, and electronics industries.

IEEE 802.11
The family of specifications developed by the IEEE 802.11 committee, which establishes standards for wireless Ethernet networks. 802.11 standards define the over-the-air interface between wireless clients and a base station or access point physically connected to the wired network.

IEEE 802.3 af
An IEEE standard that standardizes the delivery of DC power over the unshielded twisted-pair copper cabling used for the most popular versions of Ethernet.

Infrastructure BSS
An 802.11 network consisting of a group of stations connected to an access point. The access point forwards information to target stations or to a fixed network.

IP
Internet Protocol. This is the method by which data is sent from one computer to another on the Internet. IP specifies the format of packets and the addressing scheme.

IP address
Internet Protocol Address. The identifying numeric address of a computer or other device in a TCP/IP network like the Internet.

IP PBX
Internet Protocol Private Branch Exchange. Telephone switching equipment in a private business that supports voice over IP (VoIP). An IP PBX delivers to employees dial-tone, and the ability to conference, transfer and dial other employees by extension number, as well as other features.

IPsec
IP Security. A security protocol that provides authentication and encryption over the Internet.

ITU-T
The Telecommunication Standardization Sector of the International Telecommunications Union, the primary international body for fostering and coordinating cooperative standards for telecommunications equipment and systems. It is located in Geneva, Switzerland.

L

LAN
A Local Area Network comprises the computers at your site that are connected via Ethernet or WiFi.

Latency
In a network, the length of time between a data packet being sent and the reception of the response. The delay happens when a packet is briefly stored and analyzed before forwarding.

M

MAC address
Media Access Control address. A unique hardware number that identifies each wired and wireless device on a network.

mesh network
A communications network in which each device can communicate with any other device within range. Mesh networking is useful for bringing wireless network access to an entire neighborhood.

microcell
A cell in a network having a very small coverage area, e.g., an airport terminal lounge.

mobile IP
A communications protocol that gives mobile units the ability to retain their home IP address as they move from one network to another.

MOS
Mean Opinion Score. The quality of a digitized voice line at the destination end, expressed as a mathematical average. The subjective measurement is derived from the opinions of people listening to the calls, their results being scored from 1 to 5.

N

NAT
Network Address Translation. A network capability that makes it possible for many computers in a network to share a single IP address. It provides some measure of security.

network
A system of interconnected computers and associated devices. It includes the operating system in the client and server machines, the cables connecting them and all supporting hardware in between, like bridges, routers and switches. In wireless systems, antennas and towers are present. Networks are typically characterized by the protocols they use or the geographic area they cover.

network access server (NAS)
It's an access gateway between an external communications network and an internal network.

network adapter
The printed circuit board (card) or built-in hardware used in a computer or handheld device to connect to a wired or wireless Network.

network interface card (NIC)
See network adapter.

network name
The name used to identify a wireless network. The term is preferable to "SSID" or "ESSID" in documentation.

O

open network
A wireless network that is broadcasting its network name.

P

packet
A discrete block of data transmitted over a TCP/IP or other addressable packet-switched system.

packet-switched network
A network in which data is transferred in discrete packages, called packets. Packet-switched networks (like the Internet) are considered more efficient than circuit-switched networks (like the phone system).

pass phrase
Replaces the terms WPA™ Key and/or Pre-Shared Key (PSK). A series of characters used to create a key which is used by WiFi Protected Access (WPA™).

PBX
Private Branch Exchange. A telephone switching center owned by a private business, instead of a common carrier or telephone company.

PEAP
Protected Extensible Authentication Protocol. A method of securing an 802.1X session, using encryption to protect log-in credentials.

plenum-rated
A phrase describing a device that meets a UL standard as being slow-burning and fire-resistant and causing little smoke when burned. The rating is required for access points and Ethernet cable used in overhead ductwork that also carries a building's air supply.

port
Either a physical jack on a network device for connecting to another device or a way of identifying the type of data being sent via an Internet connection. In the latter sense, every Internet service has its own port number.

Power over Ethernet (PoE)
Transmitting DC power to a target device, access point or wireless bridge at the end of an Ethernet cable by carrying the power in the unused 4/5 and 7/8 wires. This technology is addressed by IEEE 802.3af.

PPTP
Point-to-Point Tunneling Protocol. One of two protocols (with IPsec) that creates virtual private networks (VPNs) on the Internet.

pre-shared key
A TKIP pass-phrase that protects your network traffic in WPA™ (see definition). The WiFi Alliance certifies use of this as WPA™-Personal. It's primarily recommended for home or small office use.

promiscuous mode
The condition in which a node in a network recognizes and accepts all packets regardless of protocol type or destination.

provisioning
The required resources that are provided to allow network access that could include security credentials such as user name/password, security tokens, software, payment data or certificates.

PSTN
The Public Switched Telephone Network. It's the international telephone system, comprising circuit-switched telephone networks. PSTN is now almost entirely digital, and includes mobile as well as fixed telephones.

Q

Quality of Service (QoS)
A measure of a network's performance that reveals its transmission quality and service availability. Its primary goal is to provide priority, via dedicated bandwidth, controlled jitter and latency, and improved loss characteristics.

R

R-Value
An ITU-T specification (in G.107) determining call quality. It's an objective measurement, computed from measurements of packet loss, jitter and delay. It correlates strongly with the subjective MOS method in ITU-T standard P.80.

RADIUS
Remote Authentication Dial In User Service. An authentication, authorization and accounting protocol used by many Internet Service Providers (ISPs) for applications such as network access or IP mobility.

receive sensitivity
The minimum signal strength that must be present before a radio transceiver can detect it. Higher bandwidth connections that have less receive sensitivity than lower bandwidth connections. Receive sensitivity is measured in units of dBm, an abbreviation for the power ratio in decibels (dB) of the measured power referenced to one milliwatt (mW).

RFID
Radio Frequency Identification. Technology used to uniquely identify an object by reading electromagnetic signals emitted by an IC-based radio-tag on the object.

RJ-11
Registered Jack-11. A telephone connector holding up to four wires. The RJ-11 is the common connector used to plug a handset into a telephone, and the telephone into the wall.

RJ-45
Registered Jack-45. A telephone connector holding up to eight wires. RJ-45 plugs and sockets are used in Ethernet networks and Token Ring Type 3 devices. It's sometimes confused with the smaller RJ-11 plugs.

roaming
Moving your wireless connection from one access point to another as you walk around. To make this possible, the points are typically connected to the same wired Ethernet network and given the same network name.

router
An intelligent network device that forwards data packets along networks. It's connected to at least two networks, typically two LANs or WANs or a LAN and its ISP's network. A router is positioned at a gateway, the place where two or more networks connect.

S

same-channel WLAN
(See channel blanket.)

security supplicant
Client software that coordinates authentication and session key creation.

SIP
Session Initiation Protocol. SIP is the real-time communication protocol for Voice over IP (VoIP), and has been expanded to support video and instant-messaging applications. It performs basic call-control tasks, such as session set-up and tear-down and signaling for features such as hold, caller ID and call transferring.

sniffer
Software or a device that searches for the presence of a wireless network. It can also be software used to analyze or intercept wired network traffic.

SNMP
Simple Network Management Protocol. A widely used network monitoring and control protocol. Data are passed from SNMP agents, which are hardware and/or software processes reporting activity in each network device (hub, router, bridge, etc.), to the workstation console used to oversee the network.

software access point
A wireless-enabled computer using special software that allows it to act like a wireless access point.

SSL
Secure Sockets Layer. An Internet protocol that uses public-key and secret-key encryption to secure data sent from one server to another. It is a component in EAP-TLS (Extensible Authentication Protocol-Transport Layer Security).

stumbler
A software program that looks for available wireless networks in range and determines whether they are open or closed. A well-known example is NetStumbler.

supplicant
A program in charge of making log-in requests to a wireless network.

switch
A type of hub (it's sometimes called a "switching hub") that isolates the communications between any two computers from the rest of the network, preventing data collisions, and optimizing network performance.

T

T-1, T-3
Transmission systems used in the Internet. T-1 provides a continuous, dedicated transmission rate of up to 1.5 Mbps, while the top rate for T-3 is 44.7 Mbps. Both lines are expensive and are generally for science or business use, not consumer application.

TDMA
Time Division Multiple Access. A means of delivering digital wireless service. It works by dividing a frequency into time slots and allocating them to multiple calls. It's the standard on which GSM is based, though GSM phones won't work on TDMA networks, and vice versa.

TKIP
Temporal Key Integrity Protocol, pronounced "tee-kip." It's part of the IEEE 802.11i encryption standard for wireless LANs. TKIP is the next generation of WEP, the Wired Equivalency Protocol, used to secure 802.11 wireless LANs. TKIP provides per-packet key mixing, a message integrity check and a re-keying mechanism, thus fixing the flaws of WEP.

TLS
Transport Layer Security. See SSL.

V

virtual access point
The ability of an access point radio to support multiple ESSIDs (see definition) simultaneously. Often, it can also support different security contexts on each ESSID.

virtual cell
Emulating a single access point from many access points by having each use the same Basic Service Set ID and the same channel(s). The goal is the elimination of handoff delays as the client moves among the access points. (See also channel blanket.)

voice-over-IP (VoIP)
A technology for transmitting ordinary telephone calls over the Internet using packet-based networks instead of standard circuit-switched telephone networks or Plain Old Telephone Service (POTS).

VoWLAN
Voice over WLAN. A method of sending voice information in digital form over a wireless broadband network. Essentially, VoWLAN is VoIP delivered through wireless technology.

VPN
Virtual Private Network. A network layer encryption scheme that allows remote clients to securely connect to their networks using the Internet, with no fear of outsiders snooping through transmitted and received data.

W

WAN
Wide Area Network. A data communications network spanning large local, regional, national or international areas. It's a collection of local area networks connected by a variety of physical means. The Internet is the largest WAN.

WEP
Wired Equivalent Privacy. The original security (encryption) standard for wireless networks to encrypt the wireless network traffic. It was devised to prevent eavesdropping on wireless network traffic, but since it's easily broken, it's in the process of being replaced by WPA™ and WPA™2.

WiFi
Wireless-Fidelity. Wireless local area networking based on IEEE 802.11 standards.

wireless gateway
A device that accepts connections from wireless devices to a network and includes a network firewall for security, as well as providing local network addresses. Also includes an integrated broadband modem.

wireless ISP (WISP)
An Internet service provider that allows subscribers to connect to a server at designated hot spots (access points), using a wireless connection such as WiFi.

wireless repeater
A device that extends the coverage of an existing access point by relaying its signal. A wireless repeater does not do the intelligent routing performed by wireless bridges and routers.

wireless router
A network device encompassing a wireless access point, wired LAN switch and a router with connections to a cable or DSL service. These devices make it convenient to connect a small number of wired (and any number of wireless) computers to the Internet.

wireless VoIP
A term that refers to WiFi-enabled handsets providing voice services over a wireless LAN network.

WLAN
Wireless Local Access Network. A LAN that can be connected to by means of a wireless connection, since data is sent and received via high-frequency radio waves rather than cables or wires.

WPA™
WiFi Protected Access™. An improved security standard for wireless networks that provides strong data protection and network access control.

WPA™ - Personal
WiFi Protected Access – Personal. A wireless security method that provides strong data protection and prevents unauthorized network access for small networks.

WPA™ - Enterprise
WiFi Protected Access – Enterprise. A wireless security method that provides strong data rotection for multiple users and large managed networks. Prevents unauthorized network access by verifying network users through an authentication server.

WPA2™
WiFi Protected Access version 2. The follow-up security method to WPA™ for wireless networks that provides stronger data protection and network access control.

WPA2™ – Personal
WiFi Protected Access version 2 – Personal. The follow-up wireless security method to WPA™ 2 – Personal that provides stronger data protection and prevents unauthorized network access for small networks.

WPA2™ – Enterprise
WiFi Protected Access version 2 – Enterprise. The follow-up wireless security method to WPA™ - Enterprise that provides stronger data protection for multiple users and large managed networks. Prevents unauthorized network access by verifying network users through an authentication server.

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