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NEWTON'S TELECOM DICTIONARY

**The Official Dictionary
of Telecommunications
Networking and
the Internet**

**16th
EXPANDED
& UPDATED
EDITION**

BY HARRY NEWTON

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email: Harry_Newton@TechnologyInvestor.com

personal web site: www.HarryNewton.com

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Improved Edition**

stream PSAP (Public Service Answering Position), it is important that the caller never be left in disconcerting silence. All it is an emergency call. "No hold" features allow the caller to transfer or to be done while the PSAP 911 agent is full uninterrupted communication with the caller.

Incoming Calls A cell phone carrier restriction that prevents incoming calls to the assigned cellular number. Only outgoing calls are permitted. This is an optional feature that cellular phone users subscribe to because it saves them money. In North America, calls coming into a cell phone typically cost the user a per minute charge that is equal to the cost of an outgoing call. This is not the case in most GSM cell phone systems in Europe, Japan and Australia, etc.

Line Preference Requires the user to manually select a line (push down) a line for each call.

Op Instruction that does nothing. It is used to hold the line for future insertion of a machine instruction.

NOAA National Oceanic and Atmospheric Administration. A government agency which runs satellites used, inter alia, to track wildlife movements. Two satellites, called NOAA-11 and NOAA-12, orbit the earth via the poles every 100 minutes. As the Earth revolves beneath them, they are able to scan the entire point on its surface. The satellites work by listening for "Doppler Shift" in the signal being transmitted by a collar around an animal's neck. The shift is a change in the perceived frequency of the radio signal — similar to what a pedestrian hears happen to the pitch of a police siren as the police cars pass by. Using this technique, you can track animals to within a accuracy of a little more than half a mile, or one kilometer.

NIS Network Operations Business Information System. A Network Operations Center, a group which is responsible for the day-to-day care and feeding of a network. Each service provider usually has a separate NOC, so you need to know which one to call when you have problems. Also called Network Control Center.

Network Outward Dialing. A service feature of an automatically switched telephone network that allows a calling party to dial directly all user numbers on the network without operator intervention. See also Direct Outward Dialing.

Nodal Architectures Also called Hub architectures. A network architecture means that network traffic from multiple locations are connected into a single network site for consolidation and aggregation to higher speed circuits. The traffic is then transmitted from this hub site to a central network site, or to other hub sites. Nodal architectures save money, but also increase the risk of a single network failure affecting multiple network locations.

Nodal Attribute A nodal state parameter that is considered individually to determine whether a given node is acceptable and/or desirable for carrying a given connection.

Nodal Clock The principal clock or alternate clock located at a particular node that provides the timing reference for all functions at that node.

Nodal Constraint A restriction on the use of nodes for a specific connection.

Nodal ID Another name for a MAC address. Every Network Interface Card (NIC) has a MAC address hardcoded into it. The address is unique in all the world to that NIC card. The address effectively identifies the LAN-attached device which it is associated. A NIC works with the network software and computer operating system to transmit and receive data on the network. I first saw the use of the term Nodal in instructions to install a PCMCIA network card into a laptop running Windows NT. Those instructions asked you for

the card's nodal ID, which happened (though I didn't know it) to be printed on the card itself. I had never run into this problem because Windows for Workgroups, Windows 95 and Windows 98 automatically recognize the MAC address whenever you install a PCMCIA network card in a laptop or PC.

See Network Interface Card.

Nodal Metric A nodal parameter that requires the values of the parameter for all nodes along a given path to be combined to determine whether the path is acceptable and/or desirable for carrying a given connection.

Nodal State Parameter Information that captures an aspect or property of a node.

Node 1. A point of connection into a network. In multipoint networks, it means it's a unit that's polled. In LANs, it's a device on the ring. In packet switched networks, it's one of the many packet switches which form the network's backbone.

2. An SCSA term. An independent SCSA unit in a distributed processing SCSA network, consisting of one or more resource and/or network boards, and one or more SCXbus adapter boards. Communication between nodes takes place via the SCXbus. From a device programming point of view, a node is simply an addressable system unit which contains boards connected by an SCbus. See S.100.

Node Address The unique identifier used to describe a specific node. See Node Number.

Node Number A node number identifies a network board on a local area network. Every station on a network must contain at least one network board. Each network board must have a unique node number to distinguish it from all the other network boards in that network. In a file server with more than one network board, the node number in LAN A is designated for all traffic addressed to that server. Node numbers can be set in a variety of ways, depending on which network board you use: (1) with jumpers or switches on boards such as Arcnet, (2) at the factory for Token-Ring and Ethernet boards, or (3) with software.

Node Type In IBM's SNA, the classification of a network device based on the protocols it supports and the network addressable units (NAUs) it can contain. Type 1 and Type 2 nodes are peripheral nodes. Type 4 and 5 nodes are subarea nodes.

NOI Notice Of Inquiry. The first public notification that the FCC is about to hold a public inquiry into a particular subject.

NOIS Microsoft has coined the term, NOIS, for the group of four Net-centric companies that tend to believe that what happens on the Internet might be so strong as to alleviate Microsoft's hegemony over the PC industry. The four members are Netscape, Oracle, IBM and Sun.

Noise Unwanted electrical signals introduced into telephone lines by circuit components or natural disturbances which tend to degrade the performance of the line. Also known as Line Noise.

Noise Cancelling Headset manufacturers have long sought to reduce the background noise transmitted via headsets. One approach is the use of noise cancelling microphones. These microphones consist of two separate microphones, one directed at the headset user's mouth, the other in the opposite direction. The room side element will pick up ambient room noise along with some ambient user sound. The microphone directed at the user will receive the same amount of ambient room noise as the other microphone, but a much greater amplitude of the user's voice. Both signals are then transmitted to the amplifier. At this point, signals common to both microphones

are cancelled out. What remains is the extra voice signals received by the user side microphone. This signal is then amplified and transmitted to the party on the receiving end of the call. This approach has one drawback. It demands perfect microphone positioning, because without it, the headset user's voice is cancelled. The technology works well with highly-trained people such as pilots, astronauts, and military personnel, but can be difficult to implement in the office environment where less skilled personnel struggle to properly position sensitive microphones. Headset manufacturers compromised by using noise cancelling microphones with more limited capabilities but that were easier to use.

A second approach to noise reduction is the use of voice switching technology. This technique only allows the microphone to transmit when volume reaches a predetermined level. When the headset user is not talking, or is pausing during the conversation, no sound is transmitted. When the headset user speaks at a normal level, the microphone is "live" and will transmit in a normal fashion. This approach also has its drawbacks. When the microphone is "live" it picks up not only the voice of the person using the headset, but any and all background noise. Voice switching helps the headset user hear what is being said more clearly, but does little to help the person to whom they are talking.

As a solution, some headset manufacturers have merged the two technologies. By using a noise cancelling microphone and voice switching, they achieve near perfect noise reduction. Each manufacturer offers noise cancelling technology on some of their headsets.

Noise cancelling is important in a telephone call center. In a large center, as room noise rises, agents speak louder. For those employees, noise is more than just an inconvenience, or a black spot on a professional image, it directly affects productivity. When conversations must be repeated, call durations increase. Multiply this by enough calls, and staffing and equipment must also be increased. The above information from headset distributor, CommuniTech.

Noise Equivalent Power At a given data-signaling rate or modulation frequency, operating wavelength, and effective noise bandwidth, the radiant power that produces a signal-to-noise ratio of unity at the output of a given optical detector. Information Gatekeepers defines NEP as a measurement in fiber optics that at a given modulation frequency, wavelength, and for a given effective noise bandwidth, the radiant power that produces a signal-to-noise ratio of 1 at the output of a given detector. Some manufacturers and authors, according to Information Gatekeepers, define NEP as the minimum detectable power per root unit bandwidth; when defined in this way, NEP has the units of watts/(hertz) ^{1/2}. Therefore, the term is a misnomer, because the units of power per watts. Some manufacturers define NEP as the radiant power that produces a signal-to-dark current noise ratio of unity. This is misleading when dark-current noise does not dominate, as is often true in fiber systems.

Noise Figure NF. The ratio (in dB) between the signal-to-noise ratio applied to the input of the microwave component and the signal-to-noise ratio measured at its output. It is an indication of the amount of noise added to a signal by the component during normal operation. Lower noise figures mean less degradation and better performance.

Noise Floor The lowest input signal power level which will produce a detectable output signal from a microwave component, determined by the thermal noise generated within the microwave component itself. The noise floor limits the ultimate