

NetLink Wireless Telephone

Wireless IP Telephony for the Enterprise

What is the NetLink Wireless Telephone?

The NetLink Wireless Telephone is a mobile handset which provides high quality voice communications throughout the workplace using voice over IP (VoIP) technology. The NetLink Wireless Telephone operates over an 802.11 wireless LAN, giving users the freedom to roam throughout the workplace while providing all the features and functionality of a traditional or IP PBX.

How do NetLink Wireless Telephones compare to the Link Wireless Telephone System?

From the end user's perspective, the NetLink Wireless Telephone provides the same functionality and quality as the Link Wireless Telephone System™ (Link WTS). The choice between the two SpectraLink systems is based on the customer's infrastructure and management preferences. NetLink Wireless Telephones allow telecom and IT managers to simplify their wireless infrastructure by combining voice and data applications on the same network. Customers are able to leverage their investment in 802.11 wireless LANs and preserve their investment in traditional or IP PBX technology. Because 802.11 is an international standard for wireless LANs, NetLink can be the choice for wireless telephony throughout the global enterprise. The Link WTS remains the economical choice for customers who need to implement a wireless voice-only solution.

What experience does SpectraLink have with this technology?

SpectraLink was the first to bring in-building wireless telephony to the United States, and continues to lead the industry with over 60% market share. SpectraLink achieved its leadership position by having a single product focus that provides a durable, high quality, and feature-rich product to the mobile workforce. SpectraLink introduced the NetLink Wireless Telephone, its first 802.11 product, to the market in 1999 and continues to build on this technology experience while embracing emerging IP telephony products.

What is the 802.11 standard?

The 802.11 specification is an international standard for wireless LANs approved by the Institute of Electrical and Electronics Engineers (IEEE) in 1997. The 802.11 standard, also known as wireless Ethernet, defines the physical (PHY) and media access (MAC) requirements for all devices on a wireless LAN. The 2.4 GHz PHY is defined as operating in the 2.400-2.483 GHz band using either frequency hopping or direct sequence spread spectrum radio technology. The MAC defines how packets access the wireless media. This method is known as Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA). NetLink Wireless Telephones are available for either frequency hopping or direct sequence networks.

What is the 802.11b or Wi-Fi standard?

The 802.11b standard was added in 1999 defining a new modulation technique using direct sequence transmission to achieve speeds up to 11 Mb/s. "Wi-Fi", short for "wireless fidelity", is the term originated by the Wireless Ethernet Compatibility Alliance (WECA) to refer to 802.11b networks. The direct sequence version of the NetLink Wireless Telephone meets the 802.11b standard and is fully compatible with Wi-Fi devices.

What is the throughput of a voice conversation? What is the packet size?

The bandwidth and packet size varies depending on the type of voice encoding used by the host telephone switch or server. Typically a voice conversation consumes approximately 150 kb/s of total bandwidth (full-duplex), with a total packet size including all overhead of about 128 bytes. Approximately 60% of the packet is IP, MAC and LLC overhead, and the remainder is the actual payload. Fifty packets per second are transmitted in each direction for a total of 100 packets per second.

Is the voice conversation secure? Does it use encryption?

NetLink Wireless Telephones support Wired Equivalent Privacy (WEP) encryption as defined by the 802.11 standard. The handsets can use either 40-bit or 128-bit key lengths. WEP is intended to provide the same level of security over a wireless LAN as on a wired Ethernet LAN.

What is the range of the NetLink Wireless Telephone?

The range of the radio in the wireless handset varies according to a number of factors, including internal wall construction, obstructions, AP output power, and RF transmission type (FH or DS). Also, range varies by AP vendor. Considering all of these variables, the range in a given customer environment can vary significantly. However, in laboratory tests the typical indoor range between the NetLink Wireless Telephone and AP is approximately 150 to 200 feet.

How are the NetLink Wireless Telephones managed on the network?

NetLink Wireless Telephones are as simple to administer and maintain as any other client on a wireless network. Each NetLink Wireless Telephone requires an IP address, which can be statically assigned or provided by a DHCP server. NetLink Wireless Telephones also include a TFTP client, allowing automatic software updates from a local TFTP server.

How many NetLink Wireless Telephone calls can an access point support?

Depending on the manufacturer, up to seven simultaneous telephone calls can be supported on an access point at the 2 Mb/s data rate. Even more calls can be supported at higher data rates, but SpectraLink uses the 2 Mb/s rate to provide a conservative estimate of call capacity that is independent of the actual customer environment. The network administrator can set the maximum number of simultaneous voice calls over a single access point, thus preserving bandwidth for data applications.

Will adding NetLink Wireless Telephones to my wireless LAN require more access points?

Like any client device, adding NetLink Wireless Telephones to a wireless LAN increases the bandwidth requirement because of the increase in traffic load. A lightly loaded wireless LAN may not require additional APs. However, on a moderately to heavily loaded wireless LAN or where additional coverage area is needed, additional APs may need to be installed.

Can voice and data packets be transmitted across the wireless network at the same time?

Yes. Because all of the devices are compatible with the 802.11 standard, they are able to communicate in the same wireless network. However, when data and voice are competing for bandwidth it is necessary to have a prioritization method, such as SVP, that provides a controlled preference to voice.

How is voice quality ensured on a shared network?

SpectraLink Voice Priority (SVP) is SpectraLink's open mechanism for quality of service (QoS) on 802.11 networks. Adopted by the leading wireless LAN vendors, SVP guarantees audio quality in a shared voice and data network. The NetLink SVP Server, Telephony Gateway, Wireless Telephones, and wireless LAN access points work together to provide the clearest voice quality and the flexibility to manage radio bandwidth. SpectraLink Voice Priority is an open specification that is fully compliant with 802.11 standards.

If voice has priority, what happens to data traffic?

SVP allows a network administrator to set the maximum number of simultaneous voice calls over a single access point. A call will not handoff to an access point that is carrying the maximum number of sessions, but will handoff to other nearby access points. By limiting the number of active voice calls per access point, voice quality is ensured and a guaranteed portion of bandwidth is reserved for data.

Which WLAN vendors have implemented SVP?

SpectraLink has established technology partnerships with leading enterprise wireless LAN vendors, including Agere, Alvarion, Avaya, Cisco, Enterasys, Intermec, and Symbol. The technology alliance consists of a cooperative engineering effort, ensuring product interoperability and high performance, along with implementation of SpectraLink Voice Priority (SVP) into the manufacturer's access points.

How does SVP fit within the IEEE 802.11 standard?

SpectraLink Voice Priority is an open specification that is compliant with the IEEE 802.11 standard. Currently the IEEE 802.11 standard provides no mechanism for QoS. SpectraLink is working with the IEEE 802.11 Task Group E to add MAC enhancements to support QoS and other improvements. The 802.11e standard, which will incorporate QoS, is expected to be ratified in early 2003.

What is 802.11e?

802.11e is a specification under development by the IEEE standards committee to address QoS on wireless LANs. SpectraLink and their 802.11 technology partners will adopt the new specification once it is ratified in early 2003. 802.11e will gradually replace SVP, providing the same functionality in an industry standard and ensuring high-quality voice in a mixed client environment. SpectraLink is actively working with the 802.11 Task Group E to ensure success of this enhancement.

What is the NetLink SVP Server?

The NetLink SVP Server is a network appliance that works with the wireless LAN access point to guarantee QoS. The NetLink SVP Server triggers proper SVP operation in the access point by encapsulating and de-encapsulating voice packets. All call setup and audio packets are routed through the NetLink SVP Server. Once the 802.11e specification replaces SVP, the NetLink Wireless Telephones can be upgraded and the NetLink SVP Server can be removed from the system.

Which telephone systems does the NetLink Wireless Telephone support?

NetLink Wireless Telephones are designed to integrate with both traditional PBX telephone systems and IP-based telephony servers, allowing a simple migration path for enterprises that change their telephone switching architecture.

How do NetLink Wireless Telephones work with a legacy PBX?

For applications using traditional enterprise PBX systems, the NetLink Telephony Gateway connects to the host telephone switch using digital or analog line interfaces. The NetLink Telephony Gateway provides the IP conversion and packetization of the voice and control signals from the PBX. SpectraLink's exclusive LinkPlus™ digital interface technology allows NetLink Wireless Telephones to emulate proprietary digital telephone sets, making advanced switch features such as multiple line appearances and display features available to mobile workers.

What is the NetLink Telephony Gateway?

The NetLink Telephony Gateway allows NetLink Wireless Telephones to operate with a traditional telephone switch. It converts individual voice circuits on the PBX to IP packets on the LAN. Each NetLink Telephony Gateway supports 16 analog or digital PBX ports. Up to 40 Telephony Gateways can be combined in a network to support a maximum of 640 NetLink Wireless Telephones.

How do NetLink Wireless Telephones work with an IP PBX platform?

The NetLink Wireless Telephones support standard and proprietary IP protocols for end-to-end IP telephony applications. The handsets serve as IP end-points, eliminating the need for a separate VoIP gateway.

What is H.323? Does NetLink support H.323?

H.323 is an International Telecommunications Union (ITU) standard developed for video/audio conferencing that has been adopted by several VoIP vendors for call setup and signaling. NetLink Wireless Telephones can use H.323 for basic call capabilities. For a more feature-rich implementation, the NetLink Wireless Telephones can use proprietary IP protocols or operate in conjunction with a NetLink Telephony Gateway to access features from a traditional PBX.

What is the maximum number of system users today?

When connecting to a legacy PBX, each NetLink Telephony Gateway can support 16 users and eight simultaneous calls. Up to 40 Telephony Gateways can be used in conjunction with a NetLink SVP Server on a network, maximizing the system at 640 users and 120 simultaneous calls. When connecting to an IP telephony server, the number of simultaneous calls supported by the SVP Server is 80, which is sufficient for 300 to 600 NetLink Wireless Telephones depending on usage requirements.

Does the NetLink Wireless Telephone support text messaging?

NetLink Wireless Telephones support SpectraLink's Open Application Interface (OAI). The OAI enables third-party messaging applications to write to the handset, giving users the ability to view and respond to alphanumeric messages. The NetLink OAI Gateway connects to the application server either through a serial port or through the Ethernet network.

What accessories are available?

Accessories such as carrying cases, Battery Packs, Chargers, and headsets are available for the NetLink Wireless Telephones.

For more information visit www.spectralink.com or call 800-676-5465

