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Dual-Mode Wireless Technology Improves Mobile Productivity

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Wireless technology increases worker responsiveness and productivity, but it can also be too much of a good thing. Mobile employees commonly carry cellular phones, wireless laptops and personal digital assistants so they can talk with customers and co-workers, check voice and e-mail messages, access enterprise network applications and use instant messaging (IM). Carrying several devices can be unwieldy, and the need to check multiple mailboxes reduces the productivity potential of all that wireless power.

Now an emerging technology known as dual mode combines cellular and Wi-Fi radio communication in a single device. Mobile workers can use a dual-mode device to access a public cellular network for voice and data services, or to roam onto an enterprise wireless LAN (WLAN) for IP telephony and high-speed data connectivity. Cellular network and WLAN access is controlled by dual-mode mobility applications, operated by the enterprise or the service provider, that manage subscription services and authorize user access.

Combining cellular and Wi-Fi com-

munications lets mobile workers carry fewer devices and work more productively using converged voice and data applications.

Dual-mode technology is based on a chip set that supports Wi-Fi for access to public cellular and enterprise voice and data applications. Combining these functions in a single chip set lets vendors produce dual-mode devices with practical weights, sizes and power needs. The potential benefits of such devices are significant: Sage Research found that as many as one-third of the enterprise customers surveyed recently who have deployed or are evaluating an IP communications network, IP Centrex system or WLAN are "extremely likely" to deploy a dual-mode system (see Figure 1).

Less Hardware, More Productivity

Users may initially be drawn to dual-mode devices because they appreciate the ability to carry one device for all their communication needs. However, dual-mode technology also increases productivity by letting mobile workers use that single device to retrieve voice and e-mail messages through an Internet connection. This flexibility lets mobile workers access messages more often, from

more locations and respond more quickly than ever before. Fast response to messages is becoming increasingly important as technologies such as IM become more popular and users become less tolerant of delays.

Whether dual-mode users select a laptop, a handheld device or a cell phone will depend on the corporate culture and individual preferences. Some companies promote a data-centric environment by providing wireless network access throughout the campus, equipping all employees with wireless laptops, and encouraging employees to communicate using IM, e-mail and softphones that let employees access the IP telephony network through PCs.

Other businesses find that a voice-centric communications culture works best, and dual-mode technology gives these businesses seamless roaming between the public cellular network and the private enterprise network. For employees with company-sponsored cellular plans, cellular calls can be automatically switched from the public network to the enterprise network when the phone reaches the range of an enterprise wireless access point.

While only a handful of dual-mode devices will reach the market in the

next year, the market is expanding. As businesses address the capital investment and cost containment issues associated with purchasing new devices and updating the existing infrastructure, dual-mode devices will be more broadly employed.

Plan Now for a Dual-Mode Future

A few simple steps can reduce implementation and total ownership costs for dual-mode technology.

Capacity planning: Careful capacity planning is important because the number of wireless devices and users may increase significantly with the advent of dual-mode technology. Some companies ensure adequate capacity by using dual-band access points (802.11a and 802.11g standards combined) to separate voice and data onto different spectrums. Another option is to use advanced management tools that provide real-time capacity planning and RF management. Such tools can provide visibility into network usage per access point or per facility, and determine when additional access points are required. Real-time RF management tools tune the WLAN's RF parameters to provide a better user experience.

Voice-ready WLAN features: The WLAN clients and access points should support the following features:

- Quality of service (QoS) for prioritization of delay/jitter-sensitive voice traffic through protocols such as IEEE 802.11e or the WiFi Alliance's Wireless Multimedia (WMM) specification, which offer seamless interoperability between business, home, and public environments with QoS features and multimedia support for the 802.11b/g and 802.11a wireless standards
- Power-saving mechanisms such as Unscheduled Automatic Power Save Delivery (U-APSD), which is a standards-based method of improving battery life

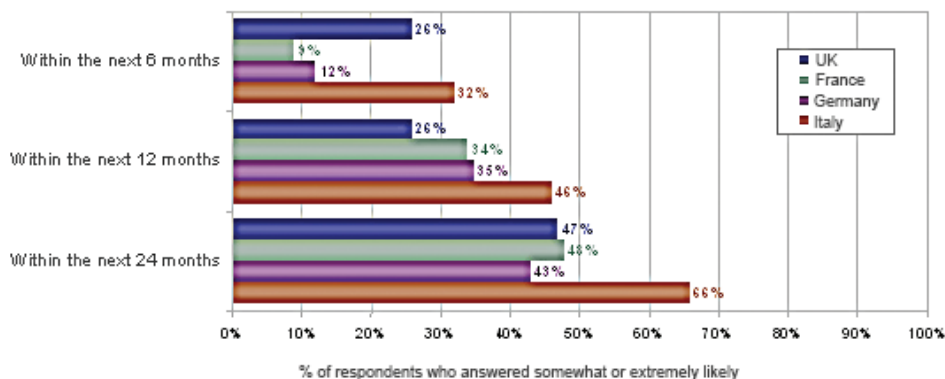


Figure 1: Enterprise adoption plans of dual-mode solutions.
Source: Sage Research Dual Mode Market Analysis Europe, December 2004

- Integrated wired and wireless network management tools
- 02.1x authentication and dynamic encryption protocols such as Wi-Fi Protected Access 2 (WPA2), which significantly strengthen wireless security

Client interoperability: A selection of voice-client devices that interoperate securely with the WLAN infrastructure helps ensure user acceptance. Technology partners should support interoperability standards in a diverse set of multivendor clients.

Voice-over-IP (VoIP) applications and infrastructure: An enterprise IP voice communications system must support mobile and wireless clients and applications, as well as call handoffs between cellular networks and the WLAN. The industry-standard Session Initiation Protocol (SIP) can be used to manage the call control and handoff process because it works equally well with all media types, including voice, IM, data and video. SIP supports advanced applications such as opening a video or IM session along with a phone call to provide a more productive communications experience.

Telecommunications strategy: Companies with traditional telephony networks will need to plan a migration strategy to IP voice. An IP communications system must deliver private branch exchange security and resiliency across the network, call

processing, intelligent endpoints and the applications and services needed to support dual-mode technology.

Many Benefits

Dual-mode devices can enhance the productivity of mobile workers by extending the benefits of converged voice and data applications to any location with telephone or Internet access. These benefits include:

- Faster, easier access to voice and e-mail that improves responsiveness and helps mobile workers resolve business problems quickly
- Lower cellular costs as mobile users gain better access to corporate or managed service provider IP communications networks
- Increased productivity through improved access to enterprise voice and data applications
- Better return on investment on a WLAN infrastructure as wireless applications are expanded to voice

As dual-mode devices become more widely available, businesses should prepare to take advantage of this emerging technology by including future wireless voice implementations in communications infrastructure plans. Organizations that prepare for this technology and take advantage of dual-mode implementations should enjoy a significant competitive advantage.