CommunicationsNews

Web Feature

September 2007

WIRELESS

Why wait for WiMAX?

Future proofing is important when considering wireless strategy.

by Jeff Kunst

While many enterprises see the value of implementing a long-term wireless strategy, others are adopting a wait-and-see attitude in the face of emerging and potentially conflicting standards and technologies. On one hand, Wi-Fi has proven itself as a platform for high-speed wireless data communication. On the other, 3G services and WiMAX are also viable options for supporting wireless voice and data applications. As consumer demand continues to drive applications over multiple service types, enterprises should develop a strategy that utilizes a common infrastructure to meet all of their current wireless requirements, while also seeking ways to incorporate new wireless technologies as they present themselves.

Initially used for basic data connectivity to the corporate intranet, 802.11 Wi-Fi systems have evolved to support more demanding enterprise applications such as voice over wireless LAN and real-time location services. According to ABI Research, by 2011 nearly a quarter of all telephone handsets shipped worldwide will be Wi-Fi enabled, up from 0.2 percent in 2006. With the advanced voice and data services possible with Wi-Fi, why would an enterprise look to roll out anything else?

Enter WiMAX (802.16e-2005). Despite being based on comparable underlying standards, the similarities between Wi-Fi and WiMAX are in name only. Their applications in the wireless marketplace are different. WiMAX uses licensed frequencies in the 2.5-GHz band to provide public access to high-speed data (peak data speeds of around 20 Mbps–with average user data rates between 1 Mbps and 4 Mbps) out to several kilometers from a single base station.

At these data rates, the 4G network will be capable of delivering diverse wireless real-time multimedia services such as VoIP and IPTV. Delivering WiMAX services indoors, however, is not a foregone conclusion, as its signals, which operate at relatively high frequencies, may have difficulty penetrating densely constructed facilities.

In contrast, with typical data rates ranging from 5 Mbps to 25 Mbps, Wi-Fi networks cover shorter distances–typically hundreds of meters–but can be deployed by any enterprise as the technology uses unlicensed spectrum. In addition, once deployed, a Wi-Fi network is under direct control of the enterprise, which has to invest in the infrastructure and staff needed to maintain the network.

One possible stumbling block to the adoption of WiMAX systems is the ability of the technology to be extended indoors. This is not an easy problem to solve, as the characteristics of a building's structure can affect the quality of wireless communications that occur within its walls. Wireless carriers have recognized this problem and are starting to look more closely at ways to enhance indoor coverage.

Enterprises are increasingly pursuing more specialized applications, such as wireless patient monitoring in healthcare facilities or building automation applications, such as keyless entry, temperature and fire sensors. Public safety radio communications, particularly within large facilities, have also become a requirement since Sept. 11, 2001.

Adaptable, flexible and extendable wireless infrastructure solutions do exist. One such solution is known as a distributed antenna system (DAS), which uses an integrated approach to combine the signals for multiple wireless services together and distribute them throughout a building over a single infrastructure. The three components of a DAS system are:

- broadband transport of current and future wireless voice and data services over a common system;
- intelligent signal handling of the various wireless services in the facility; and
- ease of expansion to enable future technologies.

A comprehensive multiservice wireless solution ensures reliable connectivity by extending the coverage of several wireless services throughout the enterprise. These wireless services span

frequency ranges from 400 MHz to 6 GHz, so the enterprise needs to deploy a broadband infrastructure.

An essential part of the overall recipe for success is to deploy a DAS system that has the flexibility to carry a broad range of frequencies, while using tight frequency band filtering to minimize in-band noise and interference. This will ensure consistent quality and availability for each wireless service deployed in the building.

The goal is to enhance indoor coverage without sacrificing signal quality and service. DAS systems that use active elements offer the greatest amount of connectivity, extensibility and reliability. With these systems, RF signals are converted to optical signals (the active component), combined and sent throughout the facility. With a fiber-optic infrastructure, enterprises can expand their wireless installation without sacrificing coverage or availability.

Some DAS solutions are modular, enabling the enterprise to add new wireless services at any time without disrupting the existing deployment. This modularity allows an enterprise to reap continuous returns on its initial infrastructure investment.

Jeff Kunst is vice president of marketing at MobileAccess, Vienna, Va.

For more information on MobileAccess: **(click here)**