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Tech & Trends

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General Information

February 27, 2009 • Vol.31 Issue 9

Page(s) 35 in print issue

Wireless Issues For Critical Applications

Minimize Potential Problems In The Enterprise

If your data center hasn't implemented some sort of wireless capability, you are in the minority. Most enterprises have jumped on the wireless bandwagon and are possibly considering staying on for good. According to Michael Tennefoss, head of strategic marketing at Aruba Networks (www.arubanetworks.com), many are considering the move because wireless LANs enhance productivity and creativity by making users mobile, allowing them to decide where and with whom they'll work while connecting them to business-critical network resources.

Tennefoss notes, however: "To realize this potential, the wireless LAN has to deliver a wire-like experience, offering robust communication with a level of security equal [to] or greater than a wired network. Adaptive 802.11n wireless LANs and identity-based security make this vision a reality."

John Spindler vice president of wireless product management at ADC (www.adc.com), says wireline displacement is fast becoming a fact of life, both for residential and commercial applications. Spindler says this displacement is happening for a few reasons. He comments, "Consider the prevalence of wireless devices used today. Wireless has now become the de facto No. 1 means of communicating. Wireless can also enhance productivity, thereby positively impacting the bottom line. And think about cost: Enterprises can, in many instances, reduce their telecommunications costs by migrating to an all-wireless telecom infrastructure."

■ Application Impact

But before such a move happens, enterprises will need to consider what impact an all or mostly wireless infrastructure will have on critical business applications. Spindler says in order to move to an all-wireless infrastructure, enterprises must be assured that there will be adequate wireless capacity to support all of their needs (both voice and data). He explains, "Without sufficient capacity, mission-critical applications may experience unacceptable throughput issues, thereby negatively impacting the business. In addition, the business must also ensure that they have wireless coverage everywhere it is required, from the sublevels of their buildings to the top floors, from the outer perimeter to the building core, including places such as elevators."

Aruba Networks' Tennefoss, on the other hand, is not too concerned with capability. He elaborates, "An all-wireless workplace that uses an adaptive 802.11n wireless LAN will reliably deliver data at speeds exceeding 100BaseT Ethernet, more than sufficient for the vast majority of applications. There are some very data-intensive applications like CAD/CAM that require greater than 100Mbps speed, and these exceptional cases will be best served by a Gigabit Ethernet connection." Tennefoss says voice, data, and video applications will all be well served by 802.11n.

In the opinion of Ksenia Coffman, marketing manager for Firetide (www.firetide.com), however, wireless mesh networking is the best choice for critical applications. Coffman says wireless mesh

networks provide redundancy and multiple paths to ensure reliability of critical information, be it enterprise application data, alarms, access control communications, or video transmission.

Coffman says high-performing wireless mesh infrastructure is not trivial to design or deploy, and professional-grade wireless equipment is a considerable investment. "Before making a wireless move," Coffman notes, "enterprises should carefully weigh the costs vs. the benefits. In an outdoor setting, for example, wireless makes a lot of sense, but it's not a decision to be taken lightly."

■ Security, Bandwidth, Performance

Tennefoss says wireless is an open medium, and for this reason, security considerations are of paramount importance. He elaborates, "Client-to-core WPA2 encryption is essential, and all encryption services should be centrally managed and then pushed out to controllers and access points. Also, no security keys should be stored in access points." Tennefoss says an item such as an ICSA-certified policy-enforcement firewall is indispensable because it can cordon off network traffic between groups of users and limit the bandwidth consumed by guest traffic. Tennefoss says that integrated wireless intrusion detection and rogue detection are also musts.

Joe Schraml, marketing director at BridgeWave Communications (www.bridgewave.com) says perceptions of wireless security have grown out of experiences with unlicensed low-frequency 2.4GHz and 5.8GHz wireless systems. He comments, "These systems are relatively easy to intercept and do not provide any interference mitigation techniques necessary to provide high-quality transmissions. While the link may work today, there is no guarantee that it would reliably perform tomorrow."

Schraml says organizations count on IT administration staff to take all prudent steps to safeguard against intrusions. "To address this requirement," he says, "gigabit links should offer built-in 256-bit AES, the strongest level of encryption available. So when we couple the narrow beams that higher-frequency links utilize with 256-bit AES, data center and IT managers can rest easily knowing their wireless transmissions are secure."

In terms of bandwidth, however, Spindler says IT managers must identify their current user population and factor in any growth plans for the next five to 10 years. "And they should not only count their own employees but any visitors who may also access the network," Spindler notes. "In addition, they must also understand what applications will be riding on the wireless network and what the bandwidth requirements are for those applications and ensure that enough channel capacity is deployed to meet those requirements."

■ Consider Bandwidth

As for performance issues, Schraml says when evaluating wireless links for inter-building connectivity, bandwidth of the link is usually the main consideration. He says two performance factors should be taken into account when specifying a wireless system: latency and availability. "As for latency," he explains, "simply put, users should feel they have a fiber connection. More technically, gigabit wireless systems should provide ultra-low latency, comparable to the latency of a high-performance Ethernet switch for flawless performance of real-time applications such as VoIP and video. Reliability is the second performance consideration—IT should expect Gigabit wireless systems to be engineered to provide highly available links, on the order of 99.999%, providing better than carrier-class performance."

Spindler says performance issues will largely be centered on coverage and capacity. He concludes, "If all identified areas of an enterprise do not have wireless coverage, users will either not be able to make calls (voice or data) or will experience poor performance such as slow transmission or dropped calls because they are on the edge of a cell (coverage boundary)." ■

by Chris A. MacKinnon

Wireless vs. Cable

Ksenia Coffman, marketing manager for Firetide (www.firetide.com), says she doesn't see cable going away and enterprises switching to 100% wireless, especially in an indoor environment (or the "carpeted space," as she calls it). "However," Coffman notes, "in outdoor areas or in a mobile environment, wireless makes a lot of sense. A typical example would be a large enterprise campus, university campus, or a large medical facility."

Consider The Application Impact

"In addition to the significant savings realized by replacing leased lines with high-capacity gigabit wireless links, or simply utilizing wireless links in new construction, businesses can future-proof their networks and provide abundant capacity as new applications must be transported over the link or as the workforce continues to expand," says Joe Schraml, marketing director at BridgeWave Communications (www.bridgewave.com). He says transmission rates provided by these Gigabit wireless links mean that the intra-LAN network backbone connection will remain free of bottlenecks as application needs grow.

"Regarding performance," he adds, "Gigabit wireless links provide transmission speeds at full-rate Gigabit with very little latency, yielding a fiber-equivalent backbone link ideal for transporting real-time network services such as video and VoIP. With Gigabit wireless links, there are no T1-to-IP protocol conversions to perform and no expensive edge devices to purchase, configure, and maintain."

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