

Deploying 802.11n in Demanding RF Environments

Overview

With the 802.11n draft 2.0 standard now available, businesses are examining the potential benefits this next-generation wireless technology can bring to their networks. While 802.11n delivers general performance improvements in the areas of throughput, link reliability, and predictability, the right wireless infrastructure is crucial to an organization's ability to take advantage of all that 802.11n has to offer.

While 802.11n can benefit a variety of businesses, some environments are particularly well-suited to take advantage of the standard's throughput and reliability advancements.

The Challenge of Demanding RF Environments

In demanding RF environments, such as those found in manufacturing facilities, factory floors, warehouses and large retail establishments, the topography of the environment creates a challenge for wireless networking. The existence of metal, machinery, elevator shafts, and long corridors can create interference and multipath issues. Existing wireless technology is not optimized to perform as effectively in these environments. As a result, the interference and multipath problems typically produce more packet loss and inconsistent wireless coverage.

In these difficult environments, businesses are faced with the following issues:

- **Ensuring availability and predictability of the network.** In an environment where interference is a given, businesses need to make sure that their wireless network is available when users need it. Users must be able to access the network and maintain their connection as they roam throughout the facility.
- **Providing high reliability for applications.** These environments are challenged to ensure that network performance approaches that of the wired network. With the logistical challenges presented in these scenarios, businesses grapple with ensuring that application performance is consistent and reliable.
- **Decreasing support costs.** The nature of a challenging RF environment often requires network administrators to continually fine-tune the wireless network. While tools like radio resource management decrease this burden, 802.11n uses multiple input, multiple output (MIMO) to overcome interference issues, thereby drastically reducing the time required to troubleshoot and optimize the wireless network.

Meeting the Needs of Demanding RF Environments with 802.11n and the Cisco Unified Wireless Network

802.11n is ideal for the kinds of difficult RF environments just described. Using MIMO technology, 802.11n can provide a more consistently available, predictable, and reliable wireless networking experience for all users on the network. In fact, the multiple antenna scenario employed in 802.11n allows access points to thrive in this kind of environment: if one antenna does not "hear" a packet, the other will. In essence, the more interference, the better 802.11n can perform, ensuring that clients are heard over the noise and as a result, dramatically decreasing packet retries. With a

reduction in packet retries, users can access the wireless network wherever they roam, and they can expect consistent, reliable connectivity.

The Cisco® Unified Wireless Network incorporates the 802.11n draft 2.0 standard today through a modular and flexible architecture. The Cisco Unified Wireless Network includes the Cisco Aironet® 1250 Series Access Point, the only commercially available access point that is part of the Wi-Fi Alliance's test bed to certify compliance with the 802.11n draft 2.0 standard. Cisco has also conducted interoperability testing between its wireless infrastructure and Intel clients to ensure optimal performance in an 802.11n wireless network, further protecting the infrastructure investments of organizations and "future-proofing" their wireless networks.

Summary

802.11n delivers numerous benefits to the next generation of wireless networks, particularly for environments with challenging RF conditions. These environments—which include manufacturing facilities, factory floors, warehouses and large retail establishments—can take advantage of the consistent, predictable, and reliable coverage of 802.11n while decreasing operational costs by deploying a wireless infrastructure that is designed with modularity in mind. The Cisco Unified Wireless Network delivers the infrastructure that these demanding environments need today, while protecting their investments for the future.



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