

Positioning Paper

WLAN 2300 Series: Top 10 reasons why it's your best choice for wireless voice and multimedia

IP Telephony, multimedia and collaborative applications are being widely deployed to improve employee productivity and lower communications costs. At the same time, many enterprises are also building out their WLAN infrastructure to complement these new converged services with mobile wireless access from a new generation of Wi-Fi capable handheld devices and IP clients. New industry standards such as 802.11e/WMM promise a universal approach for delivering Quality of Service (QoS) by prioritizing transmissions over the air, and 802.11i/WPA2 has provided a sound security framework to authenticate users and protect confidentiality and integrity for voice and collaborative applications.

But conformance to these standards is just one checklist item that needs to be considered when selecting a WLAN vendor for voice and multimedia. Nortel is moving beyond these standards by delivering unique features and capabilities that elevate the WLAN 2300 Series beyond competing solutions. Here are 10 unique capabilities that make the difference:

1. Symmetrical roaming architecture

An absolute requirement for voice and multimedia, this feature ensures that authenticated users remain on their assigned VLAN and subnet while roaming throughout the wireless network.

This approach means that your existing applications, network and security infrastructures are completely insulated from dealing with state and persistence issues created by roaming users.

Competing approaches might maintain a user's IP address, but route traffic to the network on different subnets while they roam. The consequences are debilitating. Stateful firewalls and IP source filtering can deny legitimate sessions, and Reverse Path Forwarding (RPF) checks or IGMP snooping can terminate active multicast sessions. Ultimately network administrators are forced into a major network re-engineering effort to support multimedia over their WLAN.



2. Dynamic QoS enforcement

The WLAN 2300 instantly recognizes voice and multimedia traffic and dynamically applies QoS policies to correctly prioritize traffic for the best user performance available.

This approach means that high-quality voice and data traffic can be delivered to a mobile worker over a single channel using a single service set identifier (SSID) and is especially important when using multimedia applications like Nortel's Multimedia Communication Server (MCS) that delivers both voice and data.

Competing approaches can't distinguish traffic types and can only enforce wholesale prioritization on designated SSIDs. This forces multimedia clients onto specific high-priority SSIDs where all of their traffic receives top priority — both voice and data! The inability to distinguish between traffic types ultimately means that all traffic is treated equal and there's actually no QoS at all.

3. 802.1X Acceleration

The WLAN 2300 offloads existing AAA servers of the EAP key generation and management duties that make up 90 percent of the incremental processing burden demanded by 802.1x for port-based authentication.

This approach delivers fast authentication and roaming by accelerating all cryptographic processing locally on optimized hardware in the WLAN Security Switch. This also means that 802.1x can be implemented with minimal fuss by mitigating the need to reconfigure existing back-end AAA servers.

Competing vendors might advertise standards compliance, but pass all EAP processing to backend AAA servers. This approach forces administrators to reconfigure and/or upgrade the existing AAA servers and introduces a performance bottleneck that can noticeably degrade user voice quality, especially when roaming.

4. IGMP Snooping

This standard is widely implemented on wired networks to efficiently handle multicast traffic by only forwarding streams to clients that are listening. Nortel's WLAN 2300 Security Switches extend this mechanism to the wireless domain where it's needed most.

The result is a multimedia-optimized WLAN that can efficiently handle high volumes of multicast traffic without being overwhelmed — allowing for high-quality services and preserving available capacity.

Competing approaches compound multicast's appetite for bandwidth by sending redundant streams to access points and then contaminating the airwaves with unwanted RF transmissions. This reduces available wireless bandwidth and is an inefficient use of wireless resources that ultimately degrades user performance.

5. Multicast packet forwarding in hardware

A high-performance, switch-based hardware architecture powers the core packet forwarding duties of the WLAN 2300 Security Switches.

Since all user traffic flows through the switch/controller in a centralized WLAN model, this approach ensures that the wireless switch does not become a performance bottleneck itself.

In search of cost-savings, competing approaches often employ general purpose appliances as the hardware platform for their controllers. These devices handle packet processing in software on standard CPUs that have a greatly diminished capacity for forwarding packets. This reduces system throughput, limits scalability and handicaps their ability to carry multimedia traffic and preserve voice quality in mixed traffic environments.



6. 2nd-generation RF management

Elevating RF management to a new level, the WLAN 2300 series features a more intelligent AutoRF algorithm based on user connection statistics in addition to the RSSI and SNR data from AP-to-AP transmissions.

This approach takes advantage of all the available system information to ensure that the RF channel and power level settings of individual access points are optimized for user performance.

Competing approaches operate blindly with the objective of optimizing coverage, not user performance. This can result in an “auto-tuned” environment that negatively impacts voice quality by delivering lower user performance than the previous state. By ignoring the client connection, these systems can also initiate an auto-tuning cycle during a voice call and unexpectedly degrade quality to unusable levels.

7. RF fine-tuning

Allowing for a high-degree of control, the WLAN 2300 series supports 1 dbm RF power level intervals, or up to 16 discrete power level settings per access point.

This feature provides up to 5X more power level settings than alternatives and enables precise tuning that complements the advanced AutoRF intelligence of the WLAN 2300 series to create truly optimized RF environments.

Competing approaches have coarse adjustment levels that can limit their ability to deliver an optimized state. Even worse, these systems can enter into a “power flapping” state where APs enter into a perpetual tuning cycle as they continuously react to significant changes in neighboring RF levels.

8. End-to-end service resiliency

Designed to provide a level of reliability equivalent to wired networks, the WLAN 2300 features a comprehensive set of resiliency features including dual redundant power supplies and fans, dual-homed access points, coverage hole protection, server-based management, RADIUS grouping, load balancing and backup to name a few.

By providing end-to-end resiliency, administrators can confidently initiate voice services over the wireless network without concerns of service availability.

Competitors expect you to live with vulnerable systems that will ultimately give you grief when they fail. Controller-based management systems, master service modules, single power supplies and non-redundant AAA architectures are the norm for competitors whose design goals never included support for voice services.

9. Up-link aggregation and load balancing

The WLAN Security Switches can be configured to aggregate bandwidth and load balance traffic across physical port groups.

This feature ensures that the switch will not become a bandwidth bottleneck as voice and multimedia services contend for increased system capacity. It also adds uplink redundancy to ensure service continuity should one interface fail.

Competing solutions that were not designed to meet the performance and reliability requirements for voice services are throughput constrained and vulnerable to multiple points of failure. These shortcomings lead to performance roadblocks, high scaling costs and unreliable voice and multimedia services.

10. Detailed monitoring and reporting

The WLAN Management Software system tracks and logs detailed user, device and RF statistics. This information is used to generate graphically-rich visual reports that can be viewed in real-time or at specified intervals.

Real-time user support is critical for real-time communications services such as voice and multimedia. This powerful utility allows administrators to quickly respond to support calls and troubleshoot issues for immediate problem resolution.

Competing solutions deliver only minimal visibility into the WLAN system which limits an administrator's ability to resolve user issues. This means that performance-impacting situations can hide in the network for long periods of time — resulting in more trouble tickets, poor user satisfaction, decreased usage and ultimately higher operating costs.

In the United States:

Nortel
35 Davis Drive
Research Triangle Park, NC 27709 USA

In Canada:

Nortel
195 The West Mall
Toronto, Ontario M9C 5K1 Canada

In Caribbean and Latin America:

Nortel
1500 Concorde Terrace
Sunrise, FL 33323 USA

In Europe:

Nortel
Maidenhead Office Park, Westacott Way
Maidenhead Berkshire SL6 3QH UK

In Asia:

Nortel
United Square
101 Thomson Road
Singapore 307591
Phone: (65) 6287 2877

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