



## **ENTERPRISE & MOBILITY**

# **Superior Video Handling Capabilities Help Enterprises Boost Multimedia Content over Wireless LAN**

Multimedia traffic is growing fast; however, most existing Wireless LANs (WLANs) are not designed to support the high bandwidth required for these applications and the density of users in most networks. Brocade's Adaptive Architecture and superior video handling capabilities enables enterprises to provide crisp, clear and reliable multimedia to all clients over Wi-Fi throughout the campus—indoors and out.

# **BROCADE**

## MULTIMEDIA BECOMING ESSENTIAL IN ENTERPRISES

Video-on-demand (VOD) and other multimedia applications are adding a new dimension to the enterprise. Enterprises are interested in using wireless networks because the technology provides mobility and flexibility. Instead of having to be tethered to a limited wired connection, everyone using laptops, smartphones, netbooks and other devices can access the content anywhere on campus. Plus, deployment costs for wireless network coverage are generally less than their wired equivalent. In a typical facility, a wired network would require installing new wired Ethernet switches and cabling for hundreds of Ethernet ports; for a wireless network, ports are only required for the WLAN access points (APs). This port count can be further reduced by leveraging true meshing capabilities in multi-radio enterprise-class offerings today—extending the reach of multimedia to outdoor and hard-to-reach areas.

## WIRELESS LAN MULTIMEDIA CONSIDERATIONS

Because of the high bandwidth required for delivering a high-quality multimedia experience, VOD providers recommended that content only be delivered via a wired network. However, the IEEE 802.11n standard and its support for higher throughput rates meets and exceeds many legacy wired connections which exist in many buildings today. It is now considered possible to use a wireless local area network to deliver multimedia content reliably and securely. Increased wireless throughput from 802.11n alone cannot deliver a high-quality multimedia experience – several other architectural and developmental challenges must be addressed for wireless networks to reliably deliver concurrent multimedia streams in the dense user environments.

First, most WLAN implementations with centralized WLAN switch/controllers are based on a “hub and spoke” architecture. This means all wireless packets are processed and routed by the controller. For a standard amount of traffic this model works well, but when it comes to the high bandwidth requirements of VOD, the WLAN switch/controller becomes a choke point; it just can’t handle all the traffic (see Figure 1). This often results in “jittery” or intermittent sound and poor quality or “choppy” video performance. Intelligent architectures that handle the data traffic locally without compromising security while maintaining the ease of centralized management and control provide higher scalability and are the right choice for delivering multimedia content.

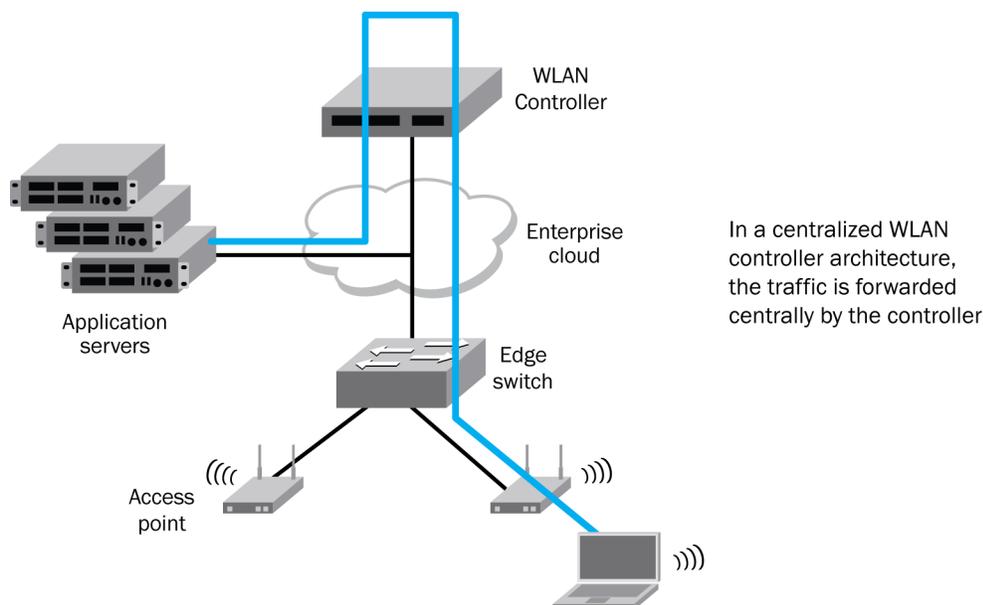


Figure 1. Hub and Spoke Architecture

Second, most wireless LANs do not gracefully manage streams of unicast and broadcast video, so network contention occurs when the number of streams increases which, in addition to the centralized processing, limits the number of quality video streams.

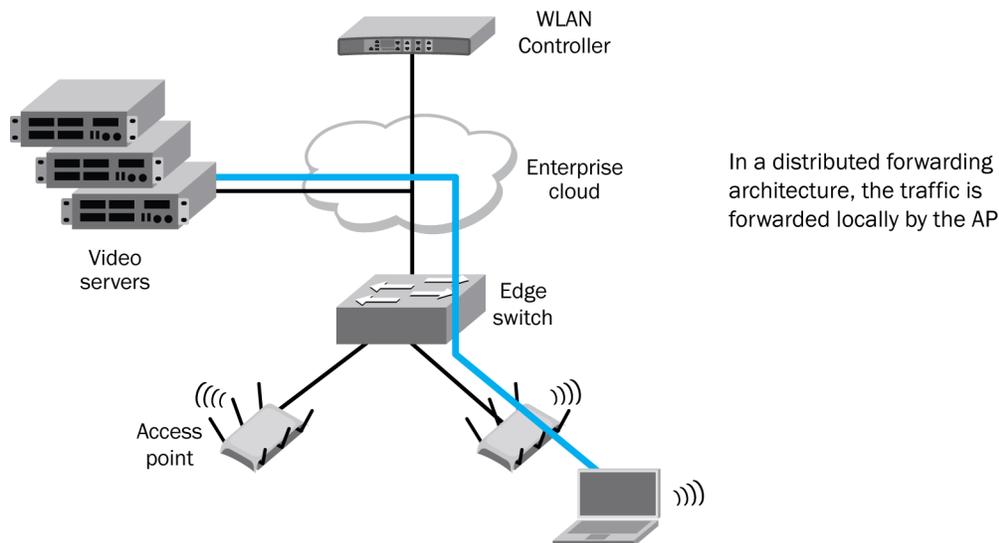
Third, a large volume of traffic is created in concentrated areas such as auditoriums, conference rooms, and athletic stadiums. Given tight budgets, IT often wants an AP to support large coverage areas, which can be difficult even with the increased throughput available in 802.11n. Unless, of course, the wireless network and the equipment within that network have been designed to overcome these challenges, allowing the full benefits of 802.11n's increased throughput to be realized.

## BROCADE MOBILITY WLAN SOLUTIONS FOR MULTIMEDIA

Brocade's WLAN solution is uniquely suited to meet the need to provide Wi-Fi service that offers secure, reliable and high-performance multimedia streaming. This is accomplished through four key capabilities: adaptive networking, superior video handling capabilities, high power access points and remote network troubleshooting.

### Adaptive Architecture: Distributed Processing Increases Performance and Scalability

Brocade® offers customers an adaptive WLAN architecture that distributes intelligence, security, and networking features, such as switching and routing, to build highly scalable networks with no single point of failure. The adaptive architecture enables each AP to independently apply security, route traffic and make decisions such as optimal channel, power and load sharing, in collaboration with the wireless LAN switch/controller and its AP neighbors to deliver improved quality of experience to the end user. For a video-on-demand implementation, this architecture allows the traffic to bypass the switch/controller and instead flow directly from a video server through the AP to client devices. The result is excellent video quality; plus, it keeps the traffic off the network allowing you to maintain peak performance. Additionally, for schools with portable classrooms or other difficult-to-cable areas, Brocade's mesh networking capabilities enable delivery of multimedia content without the need for expensive cabling. Brocade also has the unique ability to maintain Quality of Service (QoS) even over mesh links to ensure superior VOD performance (see Figure 2).



**Figure 2.** Adaptive Architecture

Brocade's advantages for delivering multimedia on a wireless network include:

- Inherently more scalable Adaptive Architecture and ability to maintain video feed prioritization even over mesh links.
- Superior video handling capabilities that enable delivery of a mix of video content types
- High power APs
- Remote network management troubleshooting

**Superior Video Handling Capabilities: Optimal Multimedia Handling**

Brocade's adaptive approach is the architectural first-step in supporting multimedia for education. The Brocade application-aware operating system provides video handling and processing right in the AP; it recognizes the traffic and type and ensures optimal paths and quality of service. By enabling this video processing in the AP, a simulcast of a multicast session can scale to over 100 clients per AP. This, in addition to the ability to create virtual LANs within the architecture significantly reduces the need to broadcast traffic to non-participants (those that don't need to receive the traffic) which allows fine tuning and optimization of the network.

**High Power Access Points: Increased Coverage and Performance**

Another Brocade advantage that helps to address the user density and high bandwidth requirements of these networks is that Brocade Adaptive APs have greater transmit and receive power. This enables up to 60% greater coverage that increases performance and can reduce the numbers of APs required for each facility.

**Centralized Troubleshooting: Remotely Troubleshoot Problems to Improve Problem Resolution and Reduce Costs**

With limited IT staffs the responsibility for maintaining the network infrastructure across multiple buildings throughout a region is a daunting task. Typically, when a user reports connectivity problems on a wireless network, a staff member armed with a wireless laptop based network analyzer is sent on site to capture wireless traffic and analyze the root cause of the issue. This method is costly and time consuming. Brocade, with its advanced troubleshooting solution, provides the ability to "look into" a wireless network remotely from a central facility to perform expert analysis of wireless connectivity issues and perform end-to-end network testing from the wireless perspective. It will significantly reduce network helpdesk costs and operational expenditures related to the wireless network by practically eliminating the need to travel onsite to troubleshoot wireless network issues. The net result is that IT staff can maximize the availability of their WLAN while simultaneously reducing operational expenses.

## **BROCADE MOBILITY WLAN SOLUTIONS: DELIVERING SUPERIOR PERFORMANCE AND LOWER COST**

Brocade's wireless technology delivers unmatched reliability and security and is second-to- none in features, quality, reach and manageability, yet is sensibly priced. Our standard feature set includes advanced functionality that is frequently an option in competitive products—such as mesh, clustering, locationing and RFID. For most installations, other suppliers recommend that a switch/controller be installed in each building while Brocade recommends that a cluster of controllers be installed in the network operations center. Translating that to purchase requirements, a single Brocade wireless switch/controller would be needed, two for clustering, versus a controller in every building for other suppliers adds a significant increase in investment.

### **Video-on-Demand on a Brocade Mobility Network: The Proof That it Works**

More recently school districts have been completing trials. A significant hurdle presented in these activities was the ability to support delivery of unicast and multicast traffic over a WLAN, both individually and simultaneously. Brocade was able to run four multicast streams and 20 unicast streams to 40 PCs on a single radio.

### **One Company: Everything You Need to Go Wireless**

Brocade is the only company that can offer everything you need to wirelessly extend the reach of your multimedia-enriched traffic throughout your entire campus. The Brocade Mobility WLAN solution contains over 100 key wireless LAN patents that enable unique features that work together in an open, standards-based network to provide “wired” video performance levels on the wireless LAN. Our mesh product portfolio provides connectivity to users in large outdoor spaces. With Motorola's Point-to-Point and Point-to-Multipoint solutions, enterprises can connect to multiple buildings on a single campus as well as connect remote buildings and facilities that are long distances away – even across water or in environments that are dense with buildings or foliage. Brocade's unmatched mobility portfolio and world-class partnerships enable us to offer true end-to-end wireless solutions. In addition to wireless infrastructure, our world-class partner eco-system offers best-in class applications; software solutions for centralized and remote management of every aspect of your mobility solution; and a complete range of pre- and post-deployment services.

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