

# BROCADE 802.11n WLAN SOLUTIONS



## CAMPUS NETWORK

## Achieving Pervasive Mobility through Integrated Campus Networking

### HIGHLIGHTS

- Provides the foundation for pervasive enterprise 802.11n wireless network deployments by unifying wired/wireless communications to improve productivity and reduce operational costs
- Maximizes 802.11n performance by forwarding traffic directly to its destination, eliminating controller bottlenecks
- Provides scalable edge network capacity for enterprise-class 802.11n Wireless LANs (WLANs), supporting future growth while maximizing investment protection
- Helps maximize network security with stateful Layer 2-7 wired/wireless firewall, IPSec VPN gateway, 802.1X (AAA), and intrusion detection capabilities across both wireless and wired networks
- Provides a cost-effective WLAN platform by integrating data, voice, and video
- Leverages built-in Smart RF intelligence to provide a self-healing, self-optimizing WLAN
- Reduces complexity through unified wired/wireless network management

To remain competitive, many of today's organizations need to provide employees with online access to data both at the office and in the field via mobile devices. Almost any organization can benefit from wireless networking, particularly those whose employees are always on the move, making sales and service calls. To realize these benefits, however, organizations must first tackle what is becoming an increasing challenge: applications causing network bottlenecks on the wired, wireless, and remote access networks.

For many, the solution is a new kind of architecture in which distributed, intelligent direct routing replaces the traditional hub-and-spoke architecture. Distributed intelligence allows optimized routing of data internally on the network or to the Internet without requiring Access Points (APs) to forward traffic to the controller—thereby avoiding one of the key bottlenecks while providing superior network capacity and higher Quality of Service (QoS). Brocade® Mobility Wireless LAN (WLAN) solutions are designed to deliver a high-performance distributed forwarding architecture for non-blocking 802.11n wireless networking.

### HACKER-PROOF SECURITY

Organizations are increasingly being targeted by criminal hackers attempting to steal confidential customer data, such as credit card numbers. They can protect their data with advanced WLAN security solutions that guard against and respond to network vulnerabilities and breaches. Brocade Mobility solutions provide 802.1X for authentication and advanced access control using four different factors: user ID, role, policy compliance via Network Access Control (NAC), and user location (geofencing). In addition, these solutions can be leveraged to provide guest access to the Internet through captive portal/secure guest access with granular day-of-week and time-of-day control.

Brocade Mobility solutions provide gap-free security for WLANs by using a tiered approach that protects data at every point in the network—wired or wireless. At the network edge, they provide a stateful Layer 2-7 wireless firewall that enforces policies in the AP. At the same time, a powerful, centrally managed security system can detect the presence of rogue devices and automatically terminate connections to

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## BROCADE MOBILITY PRODUCT PORTFOLIO

Brocade Mobility solutions include:

- **Brocade Mobility 650 Access Point:** Low-cost dual-band 802.11a/b/g/n single and dual radio, multimedia Quality of Service (QoS), firewalls, and Intrusion Detection System (IDS) sensing for small enterprises and branch offices with a local controller.
- **Brocade Mobility 6511 Wallplate Access Point:** Easy-to-deploy dual-band 802.11a/b/g/n single radio with switched Fast Ethernet connectivity that fits wall telecom boxes in dormitories.
- **Brocade Mobility 7131/7131N Access Point:** High-performance dual-band 802.11a/b/g/n single, dual, and tri-radio with superb multimedia experience, firewalls, and IDS sensing for large enterprises and branch offices.
- **Brocade Mobility RFS4000 Controller:** Central management of 6 to 36 Brocade Mobility Access Points (APs). Up to 500 users per controller, 5000 users per cluster.
- **Brocade Mobility RFS6000 Controller:** Central management of 8 to 256 Brocade Mobility APs. Up to 2000 users per controller, 20,000 users per cluster.
- **Brocade Mobility RFS7000 Controller:** Central management of 64 to 1024 Brocade Mobility APs. Up to 8000 users per controller, 96,000 users per cluster.

the network before any data is stolen, protecting both customer privacy and the organization's reputation. Motorola AirDefense® Enterprise Appliances for Brocade Mobility solutions add another layer of security by providing an advanced dynamic wireless Intrusion Prevention System (IPS) that can stop attacks in real time. These appliances also can produce specific compliance reports for HIPAA and Sarbanes-Oxley.

### CONVERGED COMMUNICATIONS

Most laptops and smartphones can deliver rich Web experiences and communicate using real-time collaboration applications, voice, and video. Since all of this traffic uses the same network, the network must be able to deliver end-to-end QoS and the required bandwidth to meet ongoing performance demands.

Organizations can implement voice and video QoS at the Brocade Mobility AP by applying quality and "airtime fairness" based on the user, their location, the application quality requirements, and the available mix of media (wired and wireless network). A multitude of traffic handling and intelligent learning and management features in the AP preclude sending all application traffic back to the controller, where it would hinder network performance. WMM Extensions (WMM-Power Save) with Admission Control enhance multimedia application support and improve battery life and capacity for mobile devices.

### RELIABLE ACCESS AND ROAMING

The world is going mobile, pushing mobility to the top of the IT agenda. Mobility is a mission-critical service for organizations seeking to enhance staff productivity, reduce operating expenses, and improve customer service. The Brocade WLAN solutions support wireless client mobility in Layer 2 and 3 deployments. By leveraging

these solutions, organizations can send traffic from a Virtual LAN (VLAN)—configured either statically or dynamically on the WLAN—through any VLAN, back to the controller, eliminating the need to configure VLANs everywhere. The deployment and resiliency of traffic flows are flexible, ensuring the reliability of multimedia applications relayed over the wireless network. Neighboring APs can share client loads upon initial association and as clients roam, based on either the count of clients per AP or the load on each AP.

### HIGH DENSITY

Another major concern for organizations is Wi-Fi overload in high-density environments, such as auditoriums, stadiums, lecture halls, conference rooms, and lobbies. Brocade Mobility solutions are designed to solve this problem. When large numbers of Wi-Fi-enabled devices simultaneously access the WLAN, the Brocade Mobility solution continually monitors the quality of each session over the wired and wireless networks, and "tunes" network power and channels while maintaining airtime fairness.

The Brocade Mobility solution also load-balances traffic to relieve congestion. If the QoS on a session meets the minimum threshold, the network will establish an alternate path if available. SMART Band control, another feature of these solutions, directs clients across channels in a band-upon-client association and as the client roams. If the 2.4 GHz band is congested, for example, then the AP directs the client (if capable) to the 5 GHz band. Clients are rate limited on a per-WLAN basis, with enforcement happening at the AP, to mitigate Radio Frequency (RF) congestion or instances in which one client monopolizes the bandwidth.

## ONE NETWORK FOR ALL SERVICES

Organizations can consist of sprawling campuses with buildings, parking structures, and other outdoor areas where employees, customers, and guests visit at any time. IT organizations can leverage Brocade Mobility solutions to connect video cameras for 24x7 real-time monitoring of these locations for enhanced safety.

Organizations also can use these solutions to provide real-time locationing services for tracking enterprise assets. Brocade Mobility solutions support 802.11, RFID, and third-party locationing solutions—including those from industry leaders AeroScout, Ekahau, and Newbury Networks.

## FAST, EASY DEPLOYMENT

Growing organizations need to maximize network uptime through centralized WLAN management and real-time monitoring. The Brocade Mobility solution startup wizard helps minimize downtime by simplifying WLAN configuration and enabling completion in 10 minutes. Brocade Mobility solutions further streamline deployment by enabling organizations to deploy controllers in one region and distribute APs across multiple geographic regions with multi-country support. The Web-based Graphical User Interface (GUI) helps ensure ease of use.

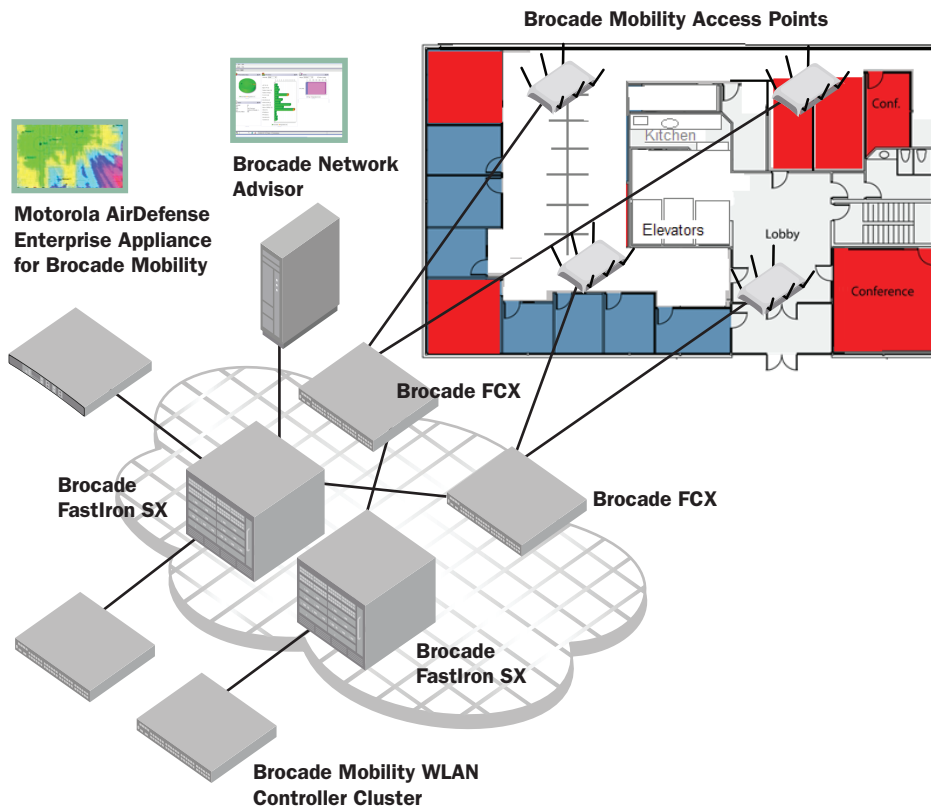


Figure 1. Brocade campus networking solutions.

## SUCCESS SPOTLIGHT: HEALTHMEDX

**Organization:** Missouri-based HealthMEDX is the leading provider of software to automate Customer Relationship Management (CRM), census, clinical electronic health record, and financial systems for long-term care, home health, and rehabilitation organizations seeking to meet new regulations and government mandates.

**Why Brocade:** Based on positive experiences with Brocade Storage Area Network (SAN) solutions, HealthMEDX was eager to explore Brocade IP networking products. "We were a Cisco shop and assumed we would be buying new Cisco gear," says Chris Bingham, Vice President of Infrastructure at HealthMEDX. "Brocade offered us a different, better option."

**Solution:** HealthMEDX installed Brocade FCX Series switches at the network core, Brocade FastIron WS Series switches with Power over Ethernet (PoE) at the network edge, and Brocade Mobility Access Points (APs) and controllers for Wireless LAN (WLAN) connectivity.

**Benefits:** "Both IT and the users love the VoIP service," says Bingham. In addition, developers can work more efficiently by delivering updates and new software to clients faster over the WLAN. With the Brocade Mobility WLAN solution, security and privacy also have greatly improved, allowing HealthMEDX to meet HIPAA and SAS 70 auditing standards. Bingham and his team are already planning to deliver high-speed video and high-speed Internet over one connection. "Purchasing Brocade is one of the best decisions we've ever made," concludes Bingham.

Read the complete story at [www.brocade.com/customers](http://www.brocade.com/customers).

## ADVANCED WIRELESS MANAGEMENT

Once the WLAN is set up, Smart RF technology, which is built into Brocade Mobility solutions, provides advanced real-time wireless RF monitoring and tuning for optimal network performance. The ability to dynamically adjust the power and channels on any AP automatically eliminates gaps in coverage from imperfect site surveys, AP failures, and interference from adjacent APs and non-802.11n devices—dramatically reducing the burden on IT and network monitoring costs. Adjustments are completely transparent—there is no impact on voice calls and data sessions in progress—which protects QoS and ensures an optimal user experience.

## HIGH AVAILABILITY, MESHING, AND 3G WIRELESS WAN BACKHAUL

As more organizations evolve their wireless networks from one of convenience to one of necessity, they can deploy redundant Brocade Mobility WLAN controllers—anywhere in the network—to protect against controller or WAN failures. The Brocade Mobility 7131N dual-radio AP and the Brocade Mobility RFS4000 and Brocade Mobility RFS6000 WLAN Controllers have a 3G ExpressCard slot. If the wired WAN link fails, traffic is automatically switched over to the 3G Wireless WAN (WWAN) link, providing improved uptime with minimal disruption to traffic. High-performance adaptive mesh RF intelligence is supported on all 802.11n APs to reach remote locations or backup wired connections. Mesh links are secured and dynamically created to ensure there is no disruption to traffic flows in the event of a mesh node failure, yet centrally managed in the Network Operations Center (NOC) through the Brocade Mobility WLAN controller.

## RETURN ON INVESTMENT

Brocade Mobility solutions are designed to provide high ROI, including savings on operating and capital expenses, compared to alternative enterprise WLAN offerings. When organizations compare the standard features of Brocade Mobility solutions—including devices, rack space, power, and annual maintenance (which is typically 20 percent of the overall cost)—they can clearly see the ROI advantage of Brocade Mobility solutions. Brocade Mobility solutions are easy to implement and operate—especially with automatic resilience, advanced troubleshooting, and system stability—helping organizations avoid the major hidden cost of wireless: IT operations. As a result, IT staff can spend more time creating useful solutions instead of maintaining the wireless network.

## LEARN MORE

Brocade partners with companies of all sizes to deliver innovative solutions that help organizations maximize the value of their most critical information. To learn more, visit [www.brocade.com/alliance](http://www.brocade.com/alliance).

## ABOUT BROCADE

Brocade networking solutions help organizations transition smoothly to a world where applications and information reside anywhere. Innovative Ethernet and storage networking solutions for data center, campus, and service provider networks help reduce complexity and cost while enabling virtualization and cloud computing to increase business agility.

## BROCADE MOBILITY SOLUTIONS: UNMATCHED SIMPLICITY AND MAXIMUM INVESTMENT PROTECTION

“Purchasing Brocade is one of the best decisions we’ve ever made. Brocade has delivered 100 percent of what it said it would do. And that’s pretty rare in the IT world. This isn’t about buying a brand; it’s about buying a solution that delivers.”

— Chris Bingham, Vice President of Infrastructure at HealthMedX

“Our deployment of the Brocade wireless network was seamless, we’re compliant with regulatory requirements, and we expect to achieve a full return on our investment within the first 12 months.”

— Eugenio Brusa, IT Manager at Neos Airlines

“Because we have one solution for the backbone of our network and our wireless, it’s rather intuitive to take a VLAN directly from the wireless to the wired side.”

— I.J. Rosenblum, Senior Manager of Technology at BOK Center

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