BROCADE MOBILITY RFS6000 WLAN CONTROLLER

CAMPUS NETWORK

Enabling a Secure and Reliable Wireless Enterprise in Medium-to-Large Deployments

HIGHLIGHTS

- Provides a reliable, high-performance Wireless LAN (WLAN) communications platform for unifying data, voice, and video services in enterprise environments
- Incorporates enterprise-class security, voice, performance, and resiliency into the modular operating system for the Brocade Mobility RFS6000 Controller at no additional cost
- Helps reduce costs through centralized management
- Delivers enterprise-class performance and network resiliency
- Eliminates security gaps in wireless enterprises
- Offers enhanced end-to-end Quality of Service (QoS) for toll-quality voice in wireless enterprises
- Utilizes Adaptive Mode for Access Points (APs) to increase network flexibility and site survivability
- Provides backup for Internet connections with a Wireless WAN (WWAN) ExpressCard slot
- Reduces complexity with unified wired/wireless network management

The Brocade One™ strategy helps simplify networking infrastructures through innovative technologies and solutions. The Brocade Mobility WLAN solution supports this strategy by providing a single high-performance, highly available network with a range of security and network management functions to deliver anytime, anywhere multimedia access.

The Brocade® Mobility RFS6000 Controller empowers wireless enterprises by providing an integrated communications platform that delivers secure and reliable voice, video, and data applications. Based on an innovative architecture, the Brocade Mobility RFS6000 provides a fully featured best-in-class WLAN solution with integrated Layer 2 switching with integrated Power over Ethernet (PoE) ports, Quality of Service (QoS) mechanisms for multimedia applications, and onboard DHCP and RADIUS server. Advanced functionality includes mesh, high-availability, clustering, and end-to-end security features.

The enterprise-class Brocade Mobility RFS6000 provides the tools to simplify and minimize the costs associated with day-to-day management of mobility solutions. Its underlying architecture helps unify management of network hardware, software configuration, and network policies—and includes comprehensive built-in process monitors and troubleshooting tools.

HIGH PERFORMANCE AND RESILIENCY

The Brocade Mobility RFS6000 features a multicore, multithreaded architecture capable of supporting from 2000 to 20,000 mobile devices and up to 256 Brocade Mobility 802.11 a/b/g Access Points (APs) per controller.

FASTER ROI

The Brocade Mobility RFS6000 provides built-in enterprise-class services such as security, voice, performance, and resiliency at no additional cost to make mobility work even better. Redundant wireless controllers share AP licenses, which increases capacity without adding incremental costs. Brocade dual-purpose APs provide wireless traffic and dedicated dual-band sensing, which eliminates the need to purchase and manage a dedicated sensing infrastructure—and provides a greener and more cost-effective approach to 24×7 security.

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NON-BLOCKING, HIGH-PERFORMANCE 802.11n ARCHITECTURE

An adaptive architecture enables two modes of operation without changing the firmware—as a standalone AP or as a wireless controller-adopted AP for centralized management. Standalone or controller-adopted APs forward traffic directly to the next AP via the best-quality path with full QoS and security, minimizing wired traffic to eliminate controller bottlenecks and single points of failure, while accelerating performance. Each element of the network is aware of other elements and their status, and they all work together to find the best routes through the network for maximum performance. While controllers are still used to manage, direct, and scale the network, individual transmissions can take place via the shortest path. By harnessing the power of the Brocade Mobility adaptive APs, the network performs better, needs fewer wireless controllers, and increases Return on Investment (ROI).

UNMATCHED RELIABILITY

The architecture includes Smart RF technology, which provides the dynamic Radio Frequency (RF) tuning required for optimal network performance. This feature takes self-healing to the next level, dramatically reducing network monitoring costs by enabling WLANs to intelligently adapt to the ever-changing RF environment.

The ability to dynamically adjust the power and channels on any AP automatically eliminates the gaps in coverage that occur when an AP fails or there is a change in the environment—such as outside RF interference—all without any physical intervention. This feature protects against under- or over-powering—scenarios that could reduce performance and network availability. And 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.

Controller clustering protects against wireless switch failure and offers Active/Active or Active/Standby controller redundancy options. In the event of a WAN outage, a redundant 3G ExpressCard helps ensure access to Internet services by providing WWAN backhaul options.

ENTERPRISE-GRADE SECURITY

Comprehensive network security features keep wireless transmissions secure and provide compliance with HIPAA and PCI regulations. The Brocade Mobility RFS6000 provides gap-free security for WLAN networks by using a tiered approach that protects data at every point in the network—wired or wireless.

This complete solution includes:

- Stateful Layer 2-7 wired/wireless firewall
- Comprehensive integrated IDS/IPS engine for rogue detection and containment
- Integrated IPSec VPN gateway to secure all traffic between the APs and the controller
- AAA Remote Authentication Dial-In User Service (RADIUS) server
- Secure guest access with a captive Web portal, reducing the need to purchase and manage additional infrastructure

Other security features include hyper-fast secure roaming, Network Access Control (NAC) support, MAC-based authentication, anomaly analysis, and more.

TOLL-QUALITY VOICE FOR THE WIRELESS ENTERPRISE

Support for Voice over WLAN (VoWLAN) provides cost-effective voice services throughout the wireless enterprise, enabling push-to-talk and other capabilities for employees inside the building as well as in outside areas. The rich feature set provides granular control over the many wireless networking functions required to deliver high-performance, persistent, and clear connections with toll-quality voice.

QoS provides superior performance, 802.11 traffic prioritization, and precedence for voice and video services. Wi-Fi Multimedia Extensions (WMM-Power Save) with Admission Control—including TSPEC, SIP Call Admission Control, and 802.11k radio resource management—ensure dedicated bandwidth for voice calls as well as better control over active voice calls for a variety of Voice over IP (VoIP) handsets. Layer 3 hyper-fast secure roaming enables voice services with true mobility across the enterprise.

NETWORK FLEXIBILITY AND SITE SURVIVABILITY

The Brocade Mobility RFS6000 simplifies and reduces the cost of extending mobility to remote and branch offices as well as telecommuters. Organizations can deploy Brocade Mobility APs in a mesh to reach remote locations or back up wired connections, yet centrally manage them in the Network Operations Center (NOC) through the Brocade Mobility RFS6000 (a single controller or a cluster for scalability).

In addition, a user-accessible ExpressCard slot is capable of hosting a broadband card (3G/4G) for a redundant WWAN backhaul connection, enabling a truly self-sustainable wireless enterprise.

SECURE GUEST ACCESS (HOTSPOT)

Secure guest access provides access for guests, contractors, and other temporary wired and wireless users. The built-in captive portal supports customizable login/welcome pages, URL redirection for user login, usage-based charging, dynamic VLAN assignment of clients, Domain Name Server (DNS) white list, Generic Routing Encapsulation (GRE) tunneling of traffic to a central site, Application Programming Interface (API) support for interoperability with custom Web portals, and external authentication and billing systems. Guest traffic can be sufficiently restricted and limited so that enterprise users are unaffected by guest usage.

REAL-TIME LOCATIONING SYSTEM (RTLS)

Rich locationing services provide real-time enterprise asset tracking through support for 802.11, RFID, and third-party locationing solutions—including industry leaders AeroScout, Ekahau, and Newbury Networks. Real-Time Locationing System (RTLS) supports a standards-based EPC Global ALE interface for processing and filtering data from all active and passive tags, and an EPC Global LLRP interface for passive RFID tag support.

SIMPLE TO DEPLOY AND MANAGE—NO ONSITE IT SUPPORT REQUIRED

The Brocade Mobility RFS6000 combines multiple features to eliminate the need for onsite IT support for deployment and day-to-day management. Plug-and-play setup features include built-in intelligence, which allows the network to identify and automatically address network issues, along with zero-touch installation. Plug-and-play mesh provisioning significantly reduces deployment time and ongoing management. The integration of all wired and wireless networking infrastructure into a single device is easily managed back in the Network Operations Center (NOC) via auto-discovery and auto-configuration.

WIRED/WIRELESS NETWORK MANAGEMENT REDUCES COMPLEXITY

To reduce complexity and time spent managing these environments, the easy-to-use Brocade Network Advisor discovers, manages, and deploys configurations to groups of devices. By using the Brocade Network Advisor Device Configuration Manager tool, organizations can configure VLANs within the network, manage wireless AP realms, group WLAN switches into domains for Layer 3 mobility support, or execute CLI commands on specific devices or groups of devices. Brocade Network Advisor centralizes management of the entire family of Brocade Mobility wireless products.

BROCADE GLOBAL SERVICES

Brocade Global Services offers comprehensive Essential Support for Brocade enterprise WLAN products—including hardware and 24×7 software support, software updates, and new releases—to optimize network performance.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a Brocade sales partner or visit www.brocade.com.

BROCADE MOBILITY RFS6000 SPECIFICATIONS

Deployment	
Performance and supported configurations	Provides central management of Brocade Mobility Access Points (APs) deployed locally or at remote locations; plug-and-play deployments over Layer 2 and Layer 3 networks
Wireless networking	
Wireless LAN (WLAN)	Supports 32 WLANs; multi-ESSID/BSSID traffic segmentation; VLAN-to-ESSID mapping; auto-assignment of VLANs (on RADIUS authentication); power-save protocol polling; pre-emptive roaming; fast roaming with opportunistic channel scan; congestion control with bandwidth management, VLAN pooling, and dynamic VLAN adjustment; IGMP snooping; Layer 3 mobility (inter-subnet roaming); radio frequency Automatic Channel Select (ACS); Transmit Power Control (TPC) management; country code-based RF configuration; 802.11b, 802.11g, 802.11a, and 802.11n
VLAN support	32 VLANs support per AP, 802.1Q VLAN trunking and tagging, dynamic user-based VLANs using EAP authentication
Bandwidth management	Congestion control per WLAN; per user based on user count or bandwidth utilization; bandwidth provisioning via AAA server
Access Points (APs)	Supports adoption of 256 Brocade Mobility 650 and Mobility 7131 802.11a/b/g/n APs per controller, and 3072 per cluster; supports radio frequency ACS; TPC management; country code-based RF configuration
BSSID support	Four BSSIDs per radio
Powered clients	CAM- and PSP-powered clients supported
IPv6 clients	Supported
Clients	Up to 2000 users per controller, 20,000 users per cluster
Traffic management and Quality of Service	
802.11e	Supported
QoS	Voice prioritization; WMM-power save with TSPEC Admission Control; WMM U-APSD; Layer 1-4 packet classification; 802.1p; DiffServ/TOS, SVP, SIP Call Admission Control (CAC)
IGMP snooping	Optimizes network performance by preventing flooding of the broadcast domain
802.11k	Provides radio resource management to improve client throughput (11k client required)
Rate limiting	Broadcast/multicast transmit rate control, client rate limiting, per-radio client limit
RF priority	802.11 traffic prioritization and precedence
Classification and marking	Layer 1-4 packet classification; 802.1p VLAN priority; DiffServ/TOS

Network security	
Stateful firewall	Role-based wired/wireless firewall (Layer 2–7) with stateful inspection for wired and wireless traffic; active firewall sessions—100,000 per controller and 1,200,000 per cluster; protects against IP spoofing and ARP cache poisoning; per-user firewall requires optional Advanced Security License
Access Control Lists (ACLs)	Layer 2/3/4 ACLs
Wireless IDS/IPS	Multimode rogue AP detection, rogue AP containment, 802.11n rogue detection, ad hoc network detection, Denial of Service (DoS) protection against wireless attacks, client blacklisting, excessive authentication/association; excessive probes; excessive disassociation/de-authentication; excessive decryption errors; excessive authentication failures; excessive 802.11 replay; excessive crypto IV failures (TKIP/CCMP replay); suspicious AP, authorized device in ad hoc mode, unauthorized AP using authorized SSID, EAP Flood, Fake AP Flood, ID theft, ad hoc advertising authorized SSID
Geofencing	Control or limit network or application access based on users and their location
Anomaly analysis	Source Media Access Control (MAC) = Dest MAC; illegal frame sizes; source MAC is multicast; TKIP countermeasures; all zero addresses
Authentication	ACL; Pre-Shared Keys (PSK); 802.1x/EAP—Transport Layer Security (TLS), Tunneled Transport Layer Security (TTLS), Protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TTLS, EAP-PEAP (includes a built-in user name/password database; supports LDAP), and EAP-SIM; local authentication database
Encryption	WEP 40/128 (RC4); WPA-TKIP; WPA2-CCMP (AES); 802.11i WPA2-TKIP; Multi-Cipher support
IPSec VPN gateway	Supports DES, 3DES, AES-128, and AES-256 encryption, with site-to-site and client-to-site VPN capabilities; supports 300 concurrent IPSec tunnels per controller without ADSec license, and 512 concurrent IPSec tunnels per controller with ADSec license
Secure guest access (hotspot provisioning)	Provides secure guest access for wired and wireless clients; built-in captive portal; customizable login/welcome pages; URL redirection for user login; usage-based charging; dynamic VLAN assignment of clients; DNS white list; GRE tunneling of traffic to a central site; API support for interoperability with custom Web portals (for example, Wandering Wi-Fi); Amigopod; support for external authentication and billing systems
Wireless RADIUS support	User-based VLANs (standard); MAC-based authentication (standard); user-based QoS; location-based authentication; allowed ESSIDs
NAC support	Integration with third-party systems from Microsoft and Symantec

BROCADE MOBILITY RFS6000 SPECIFICATIONS (CONTINUED)

Network services	
Layer 2 and Layer 3	802.1D-1999 Ethernet bridging; 802.11-802.3 bridging; Layer 3 RIP routing, 802.1Q VLAN trunking and tagging; BOOTP client, Dynamic DNS (DynDNS), PPPoE, NAT, LLDP, IP filtering, content filtering (files or URL extensions, HTTP, SMTP, and FTP requests) NAT, ARP/Proxy ARP; IP packet steering redirection
DHCP service/ client/relay	Supported
Real-Time Locationing System (RTLS)	
RSSI-based triangulation for Wi-Fi assets	
Tags supported	Ekahau, Aeroscout, Newbury, Gen 2 tags
RFID support: Compliant with LLRP protocol	Built-in support for the following Motorola RFID readers: fixed (XR440, XR450, XR480); mobile (RD5000) and handheld (MC9090-G RFID)
Management	
Features	CLI (serial, telnet, SSH); secure Web-based GUI (SSL) for the wireless controller and the cluster; Secure Network Management Protocol (SNMP) v1/v2/v3; SNMP traps—40+ user-configurable options; Syslog; TFTP Client; Secure Network Time Protocol (SNTP); text-based controller configuration files; controller auto-configuration and firmware updates with DHCP options; multiple user roles (for controller access); MIBs (MIB-II, Etherstats, wireless controller-specific monitoring, and configuration); e-mail notifications for critical alarms; MU naming capability; system messages/ trace messages logging
Start-up wizard	Web-based configuration wizard
Configuration	Flash-based Web user interface, human-readable config file import/export, CLI (RS-232 or Telnet), SSH, HTTP/S, MIB, programmable SNMP v1/v2c/ v3 trap support
Statistics	LAN, wireless, and associated stations (accessible via Web UI)
Software/firmware updates	FTP or TFTP, remote auto available, USB
System resiliency and redundancy	
High availability	Active:Standby; Active:Active and N+1 redundancy with AP and client load balancing for large deployments; critical resource monitoring; AP licenses are shared between redundant controllers
Virtual IP	Single virtual IP (per VLAN) for a switch/controller cluster to use as the default gateway by mobile devices or wired infrastructure; seamless failover of associated services (for example, DHCP server)
Smart RF	Network optimization to ensure user quality of experience at all times by dynamic adjustments to channel and power (on detection of RF interference or loss of RF coverage/neighbor recovery); available for both thin APs and adaptive APs
Dual-firmware bank	Dual-firmware bank supports image failover capability
Mesh	Standalone mesh; adaptive mesh; self-healing mesh failover; Layer 2 wired to mesh failover

System extensibility	
WWAN connectivity/ failover	Optional WWAN (card not included); WWAN feature license included
ExpressCard slot: 3G WWAN backhaul	Driver support for 3G wireless cards for WWAN backhaul: • AT&T (NALA): Option GT Ultra Express • Verizon (NALA): Verizon Wireless V740 or V770 Express Cards • Sprint (NALA) Novatel Merlin C777 • Vodaphone (EMEA): Novatel Merlin XU870 • Vodaphone (EMEA): Vodaphone E3730 3G Express Card • Telstra (Australia): Telstra Turbo 7 series Express Card (Aircard 880E) • General Use (NALA/APAC): Novatel Merlin XU870
Physical characteristics	
Form factor	1U rack mount
Dimensions	1.75 in. H × 17.32 in. W × 15.39 in. D (44.45 mm × 440.00 mm × 390.80 mm)
Weight	14.0 lb (6.35 kg)
Physical interfaces	One uplink port: 10/100/1000 copper/Gigabit SFP interface (LEDs: Port Speed, Port Activity) Eight auto-sensing 10/100/1000 Base-T Ethernet; 802.af/at (LEDs: Port Speed, Port Activity) One 10/100 management port (OOB) One USB 2.0 slot One ExpressCard slot One RJ-45 console serial port
MTBF	Greater than 65,000 hours
Environmental specifications	
Temperature	Operating: 32°F to 104°F (0°C to 40°C) Non-operating: -40°F to 158°F (-40°C to 70°C)
Humidity	Operating: 5% to 85% (without condensation) Non-operating: 5% to 85% (without condensation)
Heat dissipation	1023 BTU per hour
Maximum operating altitude	3 km (10,000 ft)
Power specifications	
AC input voltage	90 to 264 VAC 50/60 Hz
Maximum AC input current	6 A @ 115 VAC, 3 A @ 230 VAC
Input frequency	47 Hz to 63 Hz
Maximum power consumption	120 W
Power over Ethernet (PoE)	Integrated; up to 29.7 watts per Ethernet port, up to a maximum of 90 watts for simultaneous operation
Integrated PoE	802.3af, 802.3at
Regulatory information	
Safety specifications	UL/cUL 60950-1, IEC/EN60950-1, IEC/EN 60825-1 Compliance with RoHS Directive 2002/95/EC
EMC specifications	FCC (USA), Industry Canada, CE (Europe), VCCI (Japan), C-Tick (Australia/New Zealand)

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