

BROCADE MOBILITY RFS4000 WLAN CONTROLLER



CAMPUS NETWORK

Integrated Wireless Services for Remote Offices and Small-to- Medium Deployments

HIGHLIGHTS

- Integrated data, voice, and video provides a cost-effective Wireless LAN (WLAN) platform for remote offices and small enterprises
- Advanced networking services enable higher productivity and Return on Investment (ROI)
- Always-on secure networking helps ensure remote services reliability
- Built-in Smart RF intelligence eliminates the need for local IT support
- Integrated control optimizes advanced voice and video services
- Wireless WAN (WWAN) ExpressCard slot provides backup for Internet connections
- Virtual LANs (VLANs) accelerate device and network performance
- Unified wired/wireless network management reduces complexity

Supporting today's remote office requirements calls for tight integration of wired, wireless, and network security features. The Brocade® Mobility RFS4000 Controller integrates all three of these critical networking features into a compact and easy-to-use form factor, enabling organizations to create resilient remote office networks using a single platform.

The Brocade Mobility RFS4000 cost-effectively extends 802.11n capabilities to remote offices and smaller enterprises by supporting up to 36 Brocade Mobility Access Points (APs). The Brocade Mobility RFS4000 also provides multiple value-added and productivity applications. An integrated customizable secure guest access application with distributed or centralized authentication allows small enterprises and remote offices to provide

hotspot services for guests. A real-time locating system for Wi-Fi and RFID provides centralized asset tracking and monitoring. USB storage ensures seamless software image distribution.

FASTER ROI

This best-in-class Wireless LAN (WLAN) solution accelerates ROI by delivering numerous advanced features without requiring additional licenses. 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.

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.



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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 Quality of Service (QoS) and security, minimizing wired traffic to eliminate controller bottlenecks and single points of failure, while accelerating application 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 Brocade Mobility adaptive APs, the network performs better, needs fewer wireless controllers, and increases ROI.

UNMATCHED RELIABILITY— HITLESS FAILOVER

The Brocade Mobility RFS4000 comes with multiple features to help ensure the reliability and survivability of remote networking services in virtually any situation. The controller protects against AP and mesh node failure with Smart RF, a feature that keeps users connected to the network with automatic Radio Frequency (RF) optimization and self-healing. The ability to dynamically adjust the power and channels on any AP automatically eliminates gaps in coverage when a change in the environment occurs—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 the 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.

SECURE NETWORKING IS ALWAYS ON

In addition, the Brocade Mobility RFS4000 secures both wireless and wired networks with:

- Smart RF management of the network and location management
- Extensive authentication and encryption support
- Internet Protocol Security (IPSec) Virtual Private Network (VPN) gateway
- Secure guest access with captive Web portal
- Hyper-fast secure roaming
- Integrated stateful Layer 2-7 wired/wireless firewall
- Integrated Intrusion Detection System (IDS)/Intrusion Prevention System (IPS) engine for rogue detection and containment
- Multiple locating technologies such as Wi-Fi and RFID
- Resiliency via 3G/4G WWAN backhaul

The integrated IDS/IPS provides defense against over-the-air attacks by leveraging the dual-band Brocade Mobility APs. Each AP can be virtualized into four unique BSSIDs, which can be customized to support different combinations of authentication and encryption. Remote Authentication Dial-In User Service (RADIUS) and Dynamic Host Configuration Protocol (DHCP) server options are supported.

INTEGRATED CONTROL REDUCES VOICE COSTS

The Brocade Mobility RFS4000 provides granular control over multiple wireless networking functions to deliver high-performance, persistent, and clear connections for virtual desktop integration, toll-quality voice, and superior video service. QoS mechanisms for 802.11 traffic prioritization and precedence prioritize network traffic to minimize latency and provide optimal quality of experience. Wi-Fi Multimedia Extensions (WMM-Power Save) with Admission Control—including TSPEC, SIP Call Admission Control, and 802.11k radio resource management—enhance multimedia application support and improve battery life and capacity. The Brocade WLAN solution provides dedicated bandwidth for voice calls, as well as better control over active voice calls for a variety of Voice over IP (VoIP) handsets. And to improve device performance and battery life up to 25 percent, IT staff can configure separate voice and video VLANs to reduce the amount of overall network traffic.

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

The controller's Real-Time Locationing System (RTLS) enables real-time enterprise asset tracking through support for 802.11, RFID, and third-party locationing solutions—including industry leaders AeroScout, Ekahau, and Newbury Networks. 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 RFS4000 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

Managing enterprise campus networks continues to become more complex, thanks to the growth in services that rely on wired and wireless networks. Services such as Internet, e-mail, video conferencing, real-time collaboration, and distance learning all have specific configuration and management requirements. At the same time, organizations face increasing demand to provide uninterrupted services for high-quality voice and Unified Communications (UC), wireless mobility, and multimedia applications.

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, including the Brocade Mobility RFS4000.

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 RFS4000 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
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Wireless networking

Wireless LAN (WLAN)	Supports 24 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	24 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 36 Brocade Mobility 7131 and Mobility 650 802.11a/b/g/n APs per controller, and 72 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 500 users per controller, 5000 users per cluster
Power over Ethernet (PoE)	Integrated; up to a maximum of 90 watts for simultaneous operation

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—50,000 per controller and 600,000 per cluster; protects against IP spoofing and ARP cache poisoning; per-user firewall requires Advanced Security License (included)
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	Access Control Lists (ACLs); 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 256 concurrent IPSec tunnels per controller
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, Symantec, and Bradford

BROCADE MOBILITY RFS4000 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	Java-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 updates
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: <ul style="list-style-type: none"> • 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 (optional rack mount kit RFS-4010-MTKT1U-WR sold separately)
Dimensions	1.75 in. H × 12.00 in. W × 10.00 in. D (44.45 mm H × 304.80 mm W × 254.00 mm D)
Weight	4.75 lb (2.15 kg)
Physical interfaces	One uplink port: 10/100/1000 copper/Gigabit SFP interface (LEDs: Port Speed, Port Activity) Five auto-sensing 10/100/1000 Base-T Ethernet; 802.af/at (LEDs: Port Speed, Port Activity) 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	409 BTU per hour
Maximum operating altitude	3 km (10,000 ft)
Power specifications	
AC input voltage	100 to 240 VAC 50/60 Hz
Operating voltage	44 to 57 VDC
Maximum AC input current	2.5A @48 VDC or 2.2A @ 54 VDC
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, CSA C22.2 60950-1-03, 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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