RFS 6000

Wireless Services Controller

Enabling a secure and reliable Wireless Enterprise for medium to large deployments

FEATURES

Wi-NG Operating System — delivering a unified voice, data and RF management platform
Improve business process flow with one platform for wireless voice, video, data and multiple RF technologies — such as RFID, Wi-Fi (including 802.11n) and future technologies such as Wi-MAX; rich enterprise-class functionality includes seamless roaming across L2/L3 deployments, resilient failover capabilities, comprehensive security, toll-quality voice and other value-added services, such as multi-RF locationing

Role-based wired/ wireless firewall
Comprehensively secures and protects the wired and wireless network against attacks and unauthorized access at Layer 2 and Layer 3 with stateful inspection; ability to create identity and location-based policies provides granular control of network access

Wireless Services Controller and voice communications platform

The RFS 6000 Wireless Services Controller from Motorola enables the wireless enterprise by offering an integrated WLAN communication platform that delivers secure and reliable voice, video and data applications. Designed on the innovative and modular Wi-NG operating system, the RFS 6000 provides wired and wireless networking services, multiple locationing technologies such as Wi-Fi and RFID; resiliency via 3G/4G wireless broadband backhaul; and high performance with 802.11n networks. The enterprise class RFS 6000 delivers the best in class performance, security, scalability and manageability required to meet the needs of demanding mission critical business applications.

Cost-effective centralized management

Based on Motorola's landmark Wireless Next Generation (Wi-NG) operating system, the RFS 6000 provides the tools you need to simplify and minimize the costs associated with real-time management of mobility solutions. The Wi-NG architecture provides unified management of network hardware, software configuration, and network policies, complete with built-in process monitors and troubleshooting tools. In conjunction with the AirDefense Infrastructure Management Solution (sold separately), the RFS 6000 provides centralized control over the entire lifecycle of your Motorola mobility solution — allowing you to easily design, deploy, monitor and secure your wireless network.

Raising the bar on enterprise class performance and network resiliency

The RFS 6000 offers a multicore, multithreaded Wi-NG architecture capable of supporting 2,000 to 20,000 mobile devices and up to 48 dual radio 802.11 a/b/g thin access points or 256 adaptive access points (AP 5131 a/b/g or AP 7131 a/b/g/n) per switch/ controller. Motorola's patent pending clustering technology allows a 12X capacity increase, for build-as-you-grow networks. The result is an architecture that is purpose-built to deliver high availability — and scalability. In addition, a user accessible ExpressCard™ Slot supports 3G broadband cards for a redundant wireless WAN backhaul connection, providing a truly self-sustainable wireless enterprise.

Gap-free security for the Wireless Enterprise

Comprehensive network security features keep wireless transmissions secure and provide compliance for HIPAA and PCI. The RFS 6000 provides gap-free security for the WLAN network, following a tiered approach to protect and secure data at every point in the network, wired or wireless. This complete solution includes a wired/wireless firewall, a built-in wireless intrusion protection system (IPS), an integrated IPSec VPN gateway, AAA Radius Server and secure guest access with a captive web portal, reducing the need to purchase and manage additional infrastructure. Additional security features include MAC-based authentication, 802.11w to secure management frames, NAC support, anomaly analysis and more.

Adaptive AP: extending the enterprise
Enables centralized management of mesh access points at remote sites including automatic firmware upgrades; provides site survivability for remote locations with 802.11a/b/g/n networks for unparalleled resiliency

SMART RF Management
Next generation self-healing: enables the WLAN to automatically and intelligently adapt to changes in the RF environment to eliminate unforeseen gaps in coverage

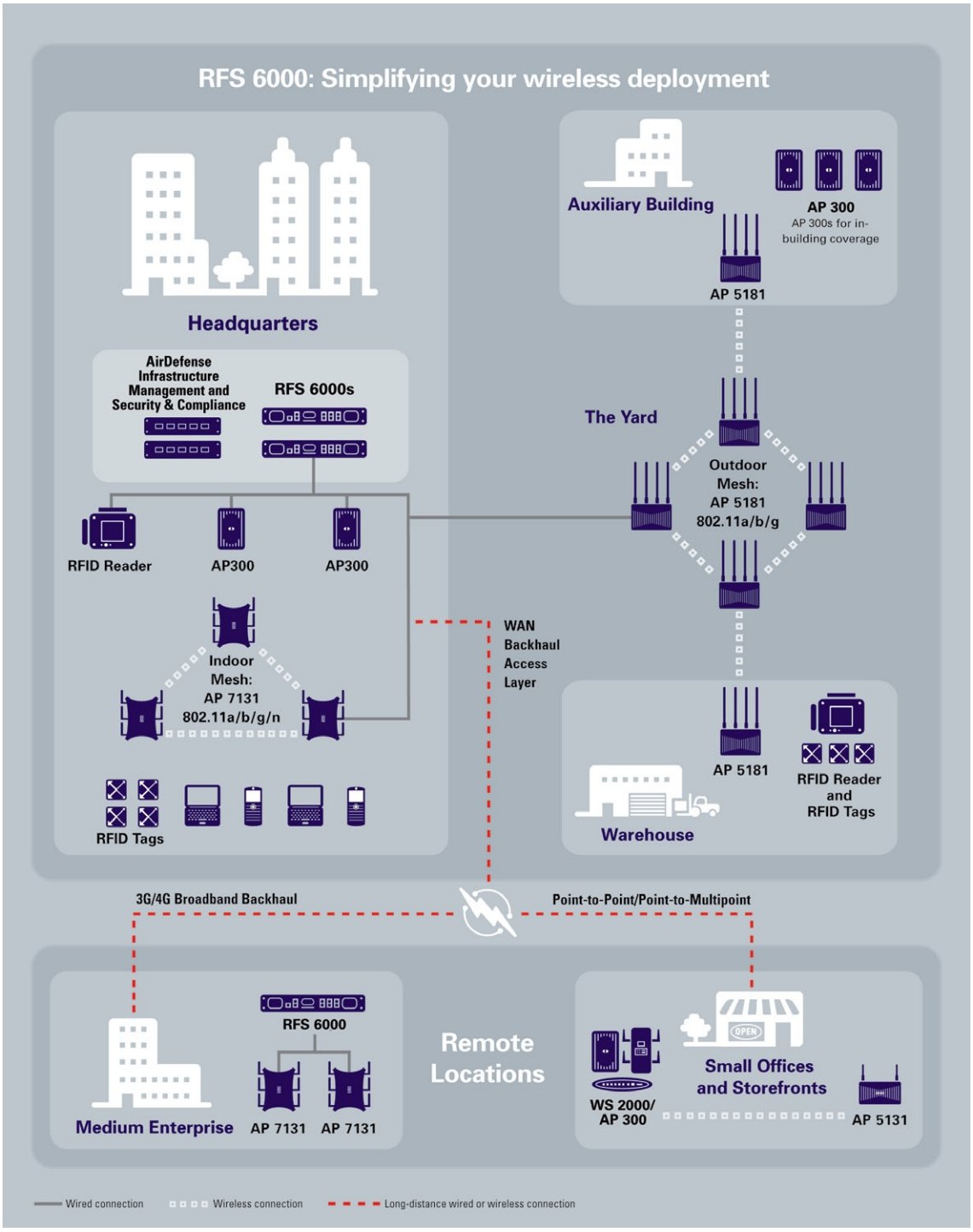
Wireless Intrusion Prevention System
The built-in WIPS system provides defense against over-the-air attacks by leveraging the sensing capabilities of AP 650/ AP 51X1/AP 7131

Secure Guest Access (Hotspot)
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 central site, API support for interoperabilty with custom web portals (e.g. Wandering WiFi), Amigopod, support for external authentication and billing systems

Real Time Locationing System (RTLS)
Provides rich locationing services to enable real-time enterprise asset-tracking through support for 802.11, RFID and third party locationing solutions — including industry leaders AeroScout, Ekahau, and Newbury Networks. Standards-based support for: EPC Global ALE interface for processing and filtering data from all active and passive tags; and EPC Global LLRP interface for passive RFID tag support

RFS 6000 network architecture

The RFS 6000 offers the comprehensive functionality necessary to extend wireless voice, video and data access inside medium to large enterprises — as well as to remote locations such as branch offices.



Enabling toll-quality voice for the Wireless Enterprise

Support for VoWLAN provides cost-effective voice services throughout the wireless enterprise, enabling push-to-talk and more for employees inside the four walls as well as outside. The rich feature set provides granular control over the many wireless networking functions required to deliver high performance persistent clear connections with toll-quality voice. Quality of Service (QoS) ensures superior performance for voice and video services. WMM Admission Control, including TSPEC, SIP Call Admission Control, and 802.11k radio resource management, ensures dedicated bandwidth for voice calls as well as better control over active voice calls for a variety of VoIP handsets. In addition, the fixed mobile convergence (FMC) ready RFS 6000 provides support for third-party solutions and future services, including the extension of the desk phone to mobile devices over the WLAN and WWAN.

Adaptive AP for increased network flexibility — and site survivability

The RFS 6000 simplifies and reduces the cost of extending mobility to remote and branch offices as well as telecommuters. Motorola's Independent Mesh Access Points (AP 51X1 a/b/g and AP 7131 a/b/g/n) can be deployed at remote locations yet centrally managed in the Network Operations Center (NOC) through the RFS 6000 (single switch or a cluster for scalability). An IPSec VPN tunnel secures all traffic between the access points and the wireless controller. Remote Site Survivability (RSS) mesh access points deliver secure uninterrupted wireless service — providing unparalleled resiliency that survives a WAN link outage.

Put your RF on autopilot

The Wi-NG architecture delivers SMART RF Management, which provides the dynamic RF tuning required for optimal network performance. This feature takes self-healing to the next level, dramatically reducing network monitoring IT costs by enabling the WLAN to intelligently adapt to the ever-changing RF environment. The ability to dynamically adjust the power and channels on any thin access point automatically eliminates the gaps in coverage that occur when an AP fails or there is a change in your environment — for example, the introduction of an increased volume of liquid or metal — all without any physical intervention. The elegant 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 — protecting the quality of service and the user experience to ensure user productivity.

Maximize benefits — and minimize costs

All the enterprise class services such as security, voice, performance and resiliency are built into the Wi-NG architecture — the innovative and modular operating system (OS) for the RFS 6000. These comprehensive services come at no additional cost and are packaged together to make mobility work — even better.

End-to-end support

As an industry leader in mobility, Motorola offers the experience gained from deploying mobility solutions all over the globe in many of the world's largest enterprises. Leverage this expertise through Motorola Enterprise Mobility Services, which provides the comprehensive support programs you need to deploy and maintain your RFS 6000 at peak performance. Motorola recommends protecting your investment with 'Service from the Start Advance Exchange Support', a multi-year program that provides the next-business-day device replacement , technical software support and software downloads you need to keep your business running smoothly and productively. This service also includes 'Comprehensive Coverage', which covers normal wear and tear, as well as internal and external components damaged through accidental breakage — significantly reducing your unforeseen repair expenses.

For more information, visit us on the web at www.motorola.com/rfs6000 or access our global contact directory at www.motorola.com/enterprisemobility/contactus

Clustering and failover features
Supports multiple levels of redundancy and failover capabilities to ensure high availability networks; provides a single virtual IP (per VLAN) for the cluster for use as default gateway by mobile devices/ wired infrastructure, on-board DHCP/AAA server synchronized failover; multi-platform license sharing enables deployment of cost-effective networks

3G Wireless for WAN Backhaul
Support for 3G wireless cards to backhaul WAN traffic when the primary WAN Link fails

Enhanced End-to-End Quality of Service (QoS)
Enhances voice and video capabilities; prioritizes network traffic to minimize latency and provide optimal quality of experience; SIP Call Admission Control and Wi-Fi Multimedia Extensions (WMM-Power Save) with Admission Control enhances multimedia application support and improves battery life and capacity; network optimization through granular bandwidth contracts based on bandwidth utilization network load and number of users for different applications being used, in different locations; TSPEC Admission Control ensures ample bandwidth and a superior user experience for VoIP calls

True mobility
Virtual AP provides better control of broadcast traffic and enables multiple mobile and wireless applications with quality of service when network is congested; Pre-emptive Roaming ensures Motorola mobile devices roam before signal quality degrades; Power Save Protocol optimizes battery life

RFS 6000 Specifications

Packet Forwarding	
802.1D-1999 Ethernet bridging; 802.11-.802.3 bridging; 802.1Q VLAN tagging and trunking; proxy ARP; IP packet steering-redirection	
Wireless Networking	
Wireless LAN:	Supports 32 WLANs; multi-ESS/BSSID traffic segmentation; VLAN to ESSID mapping; auto assignment of VLANs (on RADIUS authentication); power save protocol polling; pre-emptive roaming; VLAN Pooling and dynamic VLAN adjustment; IGMP Snooping
Bandwidth management:	Congestion control per WLAN; per user based on user count or bandwidth utilization; dynamic load balancing of AP 300s, AP 650s and adaptive APs in a cluster; bandwidth provisioning via AAA server
Layer 2 or Layer 3 deployment of thin access points and adaptive AP AP 51X1 802.11a/b/g and AP 7131 802.11a/b/g/n access points	
Layer 3 Mobility (Inter-Subnet Roaming)	
IPv6 client support	
Thin Access Ports:	Supports 1-48 802.11a/b/g AP 300 or 802.11a/b/g/n AP 650 thin access points for L2 or L3 deployment per RFS 6000 Wireless Services Controller and 576 AP 300 or AP 650 per cluster; Legacy support: AP 100 for L2 deployments only
Adaptive AP:	Supports adoption of 256 adaptive AP 51X1 802.11a/b/g and AP 7131 802.11a/b/g/n access points in adaptive mode per RFS 6000 Wireless Services Controller and 3,072 per cluster; multiple country configuration support; Legacy support: AP 4131 port conversion for L2 deployments only

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RFS 6000

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RFS 6000 Part Numbers:

RFS-6010-100R0-WR:
Zero Port Wireless Switch

RFS-6010-10010-WR:
8 Port Wireless Switch

RFS-6010-10030-WR:
24 Port Wireless Switch

RFS-6010-10060-WR:
48 Port Wireless Switch

RFS-6010-UC-08-WWR:
8 Port RFS 6000 Series Upgrade Certificate

RFS-6010-ADSEC-LIC:
RFS 6000 License for Advanced Security

RFS-6010-ADP-128:
RFS 6000 Licenses for 128 Adaptive Access Points

RFS-6010-ADP-16:
RFS 6000 Licenses for 16 Adaptive Access Points

RFS-6010-ADP-256:
RFS 6000 Licenses for 256 Adaptive Access Points

RFS-6010-APPL-LIC:
RFS 6000 License for the Location Application License

RFS-3G-BKHL-LIC:
RFS 6000 License for Wireless WAN support

Power-over-Ethernet:	Integrated; up to 29.7 watts per Ethernet port, up to a maximum of 180 watts for simultaneous operation

Radio frequency automatic channel select (ACS); Transmit power control management (TPC); Country code-based RF configuration; 802.11b, 802.11g 802.11a, and 802.11n

Network Security

Role-based wired/wireless firewall (L2-L7) with stateful inspection for wired and wireless traffic; Active firewall sessions — 100,000 per RFS 6000 Wireless Services Controller and 1,200,000 per cluster; protects against IP Spoofing and ARP Cache Poisoning

Access Control Lists (ACLs):	L2/L3/L4 ACLs
Wireless IDS/IPS:	Multi-mode rogue AP detection, Rogue AP Containment, 802.11n Rogue Detection, Ad-Hoc Network Detection, Denial of Service protection against wireless attacks, client blacklisting, excessive authentication/association; excessive probes; excessive disassociation/deauthentication; 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:	Add location of users as a parameter that defines access control to the network
WIPS sensor conversion:	Supported on the AP 300, AP 650 and the adaptive AP 5131 and AP 7131
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
Transport encryption:	WEP 40/128 (RC4), KeyGuard, WPA—TKIP, WPA2-CCMP (AES), WPA2-TKIP
802.11w:	Provides origin authentication, integrity, confidentiality and replay protection of management frames for Motorola's AP 300 access point
IPSec VPN gateway:	Supports DES, 3DES and AES-128 and AES-256 encryption, with site-to-site and client-to-site VPN capabilities; supports 1,024 concurrent IPSEC tunnels per switch — 12,288 per cluster
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 central site, API support for interoperability with custom web portals (e.g. Wandering WiFi), Amigopod, support for external authentication and billing systems
Wireless RADIUS Support (Standard and Motorola Vendor Specific Attributes):	User Based VLANs (Standard) MAC Based Authentication (Standard) User Based QoS (Motorola VSA) Location Based Authentication (Motorola VSA) Allowed ESSIDs (Motorola VSA)

NAC support with third party systems from Microsoft, Symantec & Bradford

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)

Optimized Wireless QoS

RF priority:	802.11 traffic prioritization and precedence
Wi-Fi Multimedia extensions:	WMM-power save with TSPEC Admission Control; WMM U-APSD
IGMP snooping:	Optimizes network performance by preventing flooding of the broadcast domain
SIP Call Admission Control:	Controls the number of active SIP sessions initiated by a wireless VoIP phone
802.11k:	Provides radio resource management to improve client throughput (11k client required)
Classification and marking:	Layer 1-4 packet classification; 802.1p VLAN priority; DiffServ/TOS

System Resiliency and Redundancy

Active:Standby; Active:Active and N+1 redundancy with access port and MU load balancing; Critical resource monitoring

Virtual IP: Single virtual IP (per VLAN) for a contoller cluster to use as the default gateway by mobile devices or wired infrastructure. Seamless fail-over of associated services e.g. 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 supports Image Failover capability

System Extensibility

ExpressCard™ Slot: Driver support for 3G wireless cards for WAN backhaul

- AT&T (NALA) – Option GT Ultra Express
- Verizon (NALA) – Verizon Wireless V740, V770 Express Cards
- Sprint (NALA) - Sprint Novatel Merlin C777 Express card
- Vodaphone (EMEA) – Novatel Merlin XU870
- Vodaphone (EMEA) – Vodaphone E3730 3G Expresscard
- Telstra (Australia) – Telstra Turbo 7 series Expresscard (Aircard 880E)
- General Use (NALA/APAC) – Novatel Merlin XU870

PCI-X interface

Management

Command line interface (serial, telnet, SSH); secure Web-based GUI (SSL) for the wireless switch and the cluster; SNMP v1/v2/v3; SNMP traps—40+ user configurable options; Syslog; Firmware, Config upgrade via TFTP, FTP & SFTP (clients); simple network time protocol (SNTP); text-based switch configuration files; DHCP (client/server/relay), switch auto-configuration and firmware updates with DHCP options; multiple user roles (for switch access); MIBs (MIB-II, Etherstats, wireless switch specific monitoring and configuration); Email notifications for critical alarms; MU naming capability

Physical Characteristics

Form factor:	1U Rack Mount
Dimensions:	1.75 in. H x 17.32 in. W x 15.39 in. D 44.45 mm H x 440 mm W x 390.8 mm D
Weight:	14 lbs./6.35 kg
Physical interfaces:	1x Uplink Port -10/100/1000 Cu/ Gigabit SFP interface 8x 10/100/1000 Cu Ethernet Ports with 29.7 Watts PoE, 802.3af and 802.3at Draft 1x 10/100 Management Interface (OOB port) 1x USB 2.0 Host 1x ExpressCard™ Slot (in USB mode) 1X PCI-X Interface 1x Serial Port (RJ45 style)
MTBF:	>65,000 Hours

Power Requirements

AC input voltage:	90 – 264 VAC 50/60 Hz
Max Power Consumption	300W

User Environment

Operating temperature:	32° F to 104° F /0° C to 40° C
Storage temperature:	-40° F to 158° F/-40° C to 70° C
Operating humidity:	5% to 85% (w/o condensation)
Storage humidity:	5% to 85% (w/o condensation)
Heat dissipation:	665 BTU per hour
Max Operating Altitude:	3000m

Regulatory

Product safety:	UL / cUL 60950-1, IEC / EN60950-1
EMC compliance:	FCC (USA), Industry Canada, CE (Europe), VCCI (Japan), C-Tick (Australia/New Zealand)

Recommended Enterprise Mobility Services

Customer Services:	Service from the Start Advance Exchange Support

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