RFS 4000 Series

802.11n Integrated Services Controller

FEATURES

A converged platform of features & functionality

The RFS 4000 is a fully integrated 802.11n wireless services controller, 802.11n access point, wired switch with 5 POE ports rolled into one, with IPSEC VPN/firewall/ WIPS security, RADIUS & DHCP server, location & RFID engines, 3G failover, and more

WiNG Architecture

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. Learn more at motorola.com/wing5.

True convergence of wired and wireless services for branch facilities

The Motorola RFS 4000 802.11n wireless services controller integrates wired, wireless and security networking features into a compact and easy-to-use form factor, enabling organizations to create survivable branch networks using a single platform. The RFS 4000 is also available with an integrated dual radio dual band 802.11n access point that features extensive coverage and performance — meeting all the needs of SME/ SMB. In addition, the RFS 4000 Series offers built in applications such as Locationing for Wi-Fi and RFID as well as Hotspot and VoWLAN/Video Services.

Always on secure networking

The RFS 4000 offers multiple features that ensure reliability and survivability of branch networking services in virtually any situation. The RFS 4000 protects against access point and mesh node failure with SMART RF, a feature that keeps users on-Net with automatic optimization and healing. Motorola's patent pending clustering mechanism 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 guarantees Internet services by providing WAN backhaul options. With the Integrated Dual Radio Dual band form factor, the RFS 4000 is the only Services Controller in the Industry that offers concurrent access

in the 2.4 and 5 GHz bands, with mesh capabilities in a multi-cell environment. Also, as a hallmark of Motorola Enterprise WLAN and Security Solutions, one the of radios in the RFS 4000 can be utilized to provide 24x7x365 IDS/IPS, Spectrum Analysis and Advanced Troubleshooting capabilities — while the other radio can provide concurrent access to wireless users.

Finally, the RFS 4000 Series displays true convergence by securing both the wireless and wired network with its Integrated Stateful L2-7 Wired/Wireless Firewall, Integrated IDS/IPS engine for Rogue Detection and Containment, Anomaly Analysis engine, DoS Attack protection and Ad-Hoc Network Detection.

Extremely simple to deploy and manage — no local IT support required

Multiple features combine to eliminate the need for onsite IT support for deployment and day-to-day management, including: built-in intelligence that allows the network to identify and automatically address network issues; zero touch installation; and the integration of all wired and wireless networking infrastructure into a single device that is easily managed back in the NOC via auto-discovery and auto-configuration.

Advanced services for the SMART Branch

The RFS 4000 not only offers wired and wireless networking and security services, but also value-added and productivity applications. An integrated customizable Secure Guest Access application with distributed or centralized authentication enables a branch network to offer hotspot services for guests. A real-time locationing system for Wi-Fi and RFID alike allows centralized asset tracking and monitoring. Storage via USB allows the RFS 4000 to be used for software image distribution for clients in a branch network. 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 FMC ready RFS 4000 provides support for third-party solutions and future services, including the extension of the desk phone to mobile devices over the WLAN and WWAN.

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 4000 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/rfs4000 or access our global contact directory at www.motorola.com/enterprisemobility/contactus

RFS 4000 Series: True wired/wireless convergence for a smart branch network

RFS 4000 network architecture — enabling branch mobility

The RFS 4000 enables distributed enterprises to provide any size branch office with high performance, comprehensive, cost-effective and secure wireless and wired networking services.
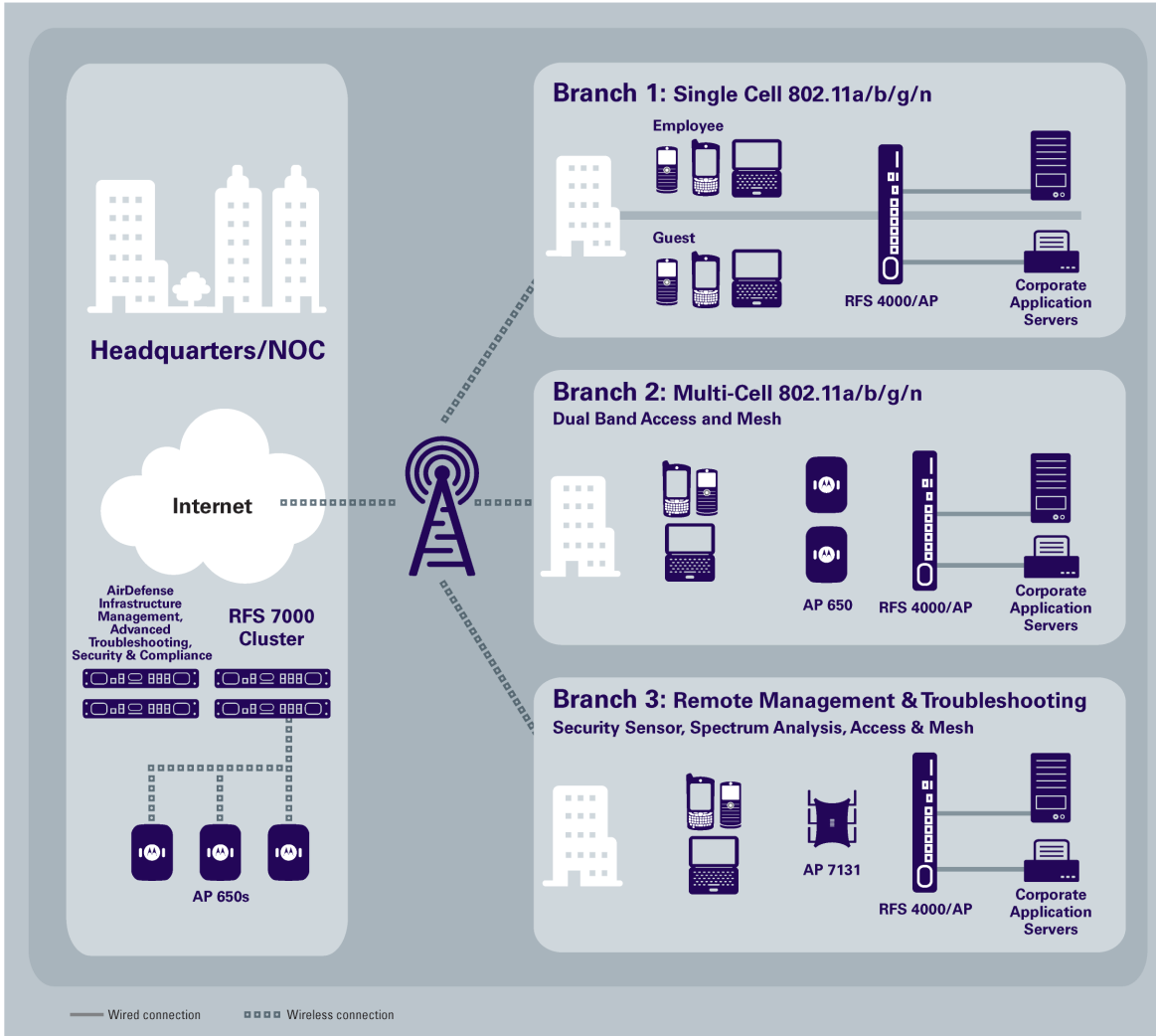
**Role-based wired/
wireless firewall**
Secures and protects the wired and wireless network against attacks and unauthorized access at Layer 2 and Layer 3 with stateful inspection; ability to create identity and location-based policies provides granular control of network access

**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

RFS 4000 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 24 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 6 802.11a/b/g AP 300 or 802.11a/b/g/n thin access points for L2 or L3 deployment per RFS 4000 controller and 72 AP 300s or AP 650s per cluster; Legacy support: AP100 for L2 deployments only
Adaptive AP:	Supports adoption of 6 adaptive AP 51X1 802.11a/b/g and AP-7131 802.11a/b/g/n access points in adaptive mode per RFS 4000 Integrated Services Controller and 72 per cluster; multiple country configuration support; Legacy support: AP 4131 Access Point conversion for L2 deployments only

RFS 4000
802.11n Wireless Services Controllers

RFS 4000 Part Numbers:

RFS4010-00010-WR:
6 Port RFS 4000 Integrated
Services Controller

RFS-4010-MTKT1U-WR:
I RU Mounting Kit

RFS-4011-MTKT2U-WR:
2 RU Mounting Kit

RFS-4011-11110-US:
RFS 4000 Services Controller with
Integrated Dual Radio Access
Point for US

RFS-4011-11110-WR:
RFS 4000 Services Controller with
Integrated Dual Radio Access
Point for Worldwide
(excluding US)

RFS 4011 available only with WiNG 5.

ML-2452-PTA4M3X3-1:
3X3 MIMO Facade Antenna for
the RFS 4011

Power-over-Ethernet:	Integrated; up to a maximum of 90 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 — 50,000 per RFS 4000 Integrated Services Controller and 600,000 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 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
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 interoperabilty 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 and Bradford	

Real Time Locationing System (RTLS)

RSSI based triangulation for Wi-Fi assets	
Tags supported:	Ekahau, Aeroscout, 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 switch/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

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 Tray available for the RFS4010 2U Rack Mount Tray available for the RFS4011
Dimensions:	RFS 4010: 1.75 in. H x 12 in. W x 10 in. D 44.45 mm H x 304.8 mm W x 254.0 mm D Antenna facade: 289.2mm x 340mm x 20.5mm
Weight:	RFS 4010: 4.75 lbs./2.15 kg RFS 4011: 4.9lbs Antenna facade: 1.45lb
Physical interfaces:	1x Uplink Port -10/100/1000 Cu/ Gigabit SFP interface 5x 10/100/1000 Cu Ethernet Ports, 802.3af and 802.3at Draft 1x USB 2.0 Host 1x ExpressCard™ Slot 1x Serial Port (RJ45 style)
Antenna Connections:	RFS 4011: RP-SMA
MTBF:	>65,000 Hours

Power Requirements

AC input voltage:	100-240 VAC 50/60Hz
Operating Voltage:	44 to 57 VDC
Operating Current:	2.5A(max) @48 VDC or 2.2A(max) @ 54 VDC
Max Power Consumption:	120W for RFS 4010, 150W for RFS 4011

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:	95 BTU/hr for RFS 4010, 190 BTU/hr for RFS 4011
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

Receiver Sensitivity: Operating Band 2.4GHz		Typical Receive Sensitivity (dBm)
Operating Modes	Data Rate	RFS 4011 Radios 1 and 2
802.11b	1 Mb/s	-96
	2 Mb/s	-94
	5.5 Mb/s	-93
	11 Mb/s	-90
802.11g	6 Mb/s	-94
	9 Mb/s	-94
	12 Mb/s	-95
	18 Mb/s	-94
	24 Mb/s	-90
	36 Mb/s	-87
	48 Mb/s	-83
	54 Mb/s	-82
802.11n (HT20)	MCS0	-95
	MCS1	-93
	MCS2	-91
	MCS3	-87
	MCS4	-85
	MCS5	-81
	MCS6	-79
	MCS7	-78
	MCS8	-94
	MCS9	-91
	MCS10	-88
	MCS11	-85
	MCS12	-82
	MCS13	-79
	MCS14	-77
	MCS15	-75
802.11n (HT40)	MCS0	-90
	MCS1	-89
	MCS2	-87
	MCS3	-84
	MCS4	-82
	MCS5	-78
	MCS6	-76
	MCS7	-75
	MCS8	-87
	MCS9	-87
	MCS10	-85
	MCS11	-83
	MCS12	-80
	MCS13	-75
	MCS14	-74
	MCS15	-72

Receiver Sensitivity: Operating Band 5GHz		Typical Receive Sensitivity (dBm)
Operating Modes	Data Rate	RFS 4011 Radios 1 and 2
802.11a	6 Mb/s	-93
	9 Mb/s	-93
	12 Mb/s	-93
	18 Mb/s	-92
	24 Mb/s	-89
	36 Mb/s	-86
	48 Mb/s	-82
	54 Mb/s	-80
802.11n (HT20)	MCS0	-93
	MCS1	-92
	MCS2	-90
	MCS3	-86
	MCS4	-83
	MCS5	-79
	MCS6	-78
	MCS7	-76
	MCS8	-92
	MCS9	-90
	MCS10	-87
	MCS11	-84
	MCS12	-81
	MCS13	-77
	MCS14	-75
	MCS15	-73
802.11n (HT40)	MCS0	-90
	MCS1	-89
	MCS2	-86
	MCS3	-83
	MCS4	-80
	MCS5	-76
	MCS6	-74
	MCS7	-73
	MCS8	-89
	MCS9	-86
	MCS10	-84
	MCS11	-81
	MCS12	-78
	MCS13	-74
	MCS14	-72
	MCS15	-71

a b g **WiFi** n
CERTIFIED®

MOTOROLA

motorola.com/wlan