ZEBRA

RFS 7000

WING 5 WIRELESS SERVICES CONTROLLER

ENABLING A SECURE AND RELIABLE WIRELESS ENTERPRISE FOR CAMPUS, DATA CENTER AND LARGE DEPLOYMENTS

HIGH PERFORMANCE WIRELESS LAN CONTROLLER FOR DEMANDING ENTERPRISE NETWORKS

Designed for large scale, high bandwidth deployments, the RFS 7000 Wireless Services Controller provides highly scalable enterprise mobility in large enterprises, campuses and data centers. Zebra's WiNG 5 operating system enables a comprehensive set of services, offering unmatched security, reliability and mobility for high performance 802.11n networks. Easy to deploy and manage, the RFS 7000 provides a converged platform to deliver multimedia applications (data, voice, video), wireless networking, and value-added mobility services such as secure guest access.

COST-EFFECTIVE CENTRALIZED MANAGEMENT & TROUBLESHOOTING

The RFS 7000 provides the tools you need to simplify and minimize the costs associated with day-to-day management of mobility solutions. The RFS 7000 delivers unified management of network hardware, software configuration, and network policies, complete with built-in process monitors and troubleshooting tools for remotely debugging, 1024 Access Points.

RAISING THE BAR ON ENTERPRISECLASS PERFORMANCE

The RFS 7000 is ideal for large scale, high bandwidth enterprise deployments. It easily handles from 8,000 mobile/wireless clients up to 1,024 802.11 a/b/g/n access points per switch/controller. The RFS 7000 delivers the investment protection with flexible licensing and zero port controller system that allows for a build-as-you-grow expansion of your network.

GAP-FREE SECURITY FOR THE WIRELESS ENTERPRISE

Comprehensive network security features keep wireless transmissions secure and provide compliance for HIPAA and PCI. The RFS 7000 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 L2-7 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.

Zebra also offers a Common Criteria Evaluation Assurance Level 4 (CC EAL4) and FIPS 140-2 certified version of the RFS 7000 (RFS7000-GR).

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 in outside areas such as the yard. 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

FEATURES
LESS IS MORE

Zebra's WiNG 5 WLAN solutions offer all the benefits of 11n—and then some. Our distributed architecture extends QoS, security and mobility services to the APs so you get better direct routing and network resilience. That means no bottleneck at the wireless controller, no latency issues for voice applications, and no jitter in your streaming video. And with our broad selection of access points and flexible network configurations, you get the network you need with less hardware to buy. Let us show you the less complicated, less expensive way to more capacity, more agility, and more satisfied users.

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

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

Centralized Management

services. WMM Admission Control and 802.11k* radio resource management, including TSPEC and SIP Call Admission Control, ensure dedicated bandwidth for voice calls as well as better control over active voice calls for a variety of VoIP handsets.

ENABLING VALUE-ADDED MOBILITY SERVICES

The RFS 7000 supports seamless mobile access to multi-RF networks, enabling locationing* and simplified real-time asset tracking throughout the network. In addition, the RFS 7000 offers unparalleled management flexibility, secure guest access, onboard RADIUS services, granular access bandwidth control at the client level and automatic load balancing enable highly optimized, flexible and secure hotspot deployments managed centrally through one console..

INCREASED NETWORK FLEXIBILITY — AND SITE SURVIVABILITY

The RFS 7000 simplifies and reduces the cost of extending mobility to remote and branch offices as well as telecommuters. Zebra's site survivable mesh Access Points can be deployed at remote locations yet centrally managed in the Network Operations Center (NOC) through the RFS 7000 (single controller or a cluster for scalability). Site survivable mesh access points deliver secure uninterrupted wireless service, and enhanced RF and networking service — providing unparalleled resiliency that survives a WAN link outage.

PUT YOUR RF ON AUTOPILOT

WiNG 5 delivers SMART RF, 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 eliminates the gaps in coverage that occur when an AP fails or there is a change in your RF environment — 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 the RFS 7000. 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, Zebra offers the experience gained from deploying mobility solutions all over the globe in many of the world's largest enterprises. Leverage this expertise through Zebra Enterprise Mobility Services, which provides the comprehensive support programs you need to deploy and maintain your RFS 7000 at peak performance. Zebra 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.zebra.com/rfs7000** or access our global contact directory at **www.zebra.com/contact**

RFS 7000 network architecture

The RFS 7000 offers the comprehensive functionality necessary to extend wireless voice and data access inside the largest of enterprises — as well as to remote locations inside and outside the enterprise campus walls.

RFS 7000 SPECIFICATIONS

PHYSICAL CHARACTERISTICS		NETWORK SECURITY
Form factor	1U Rack Mount	**Role-based wired/wireless firewall (L2-L7) with stateful inspection for wired**
Dimensions	1.75 in. H x 17.32 in. W x 15.39 in.	

Enables management of site survivable and dependent 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 and network services such as firewall, dynamic RF Management, Client Loadbalancing and more available even in Site Survivable mode.**

Wireless Intrusion Prevention System

The built-in wireless IPS defends against over-theair attacks by leveraging the sensing capabilities of Zebra's 802.11n Access Points.

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 support for external authentication and billing systems

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

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	44.45 mm H x 440 mm W x 390.8 mm D
Weight	13.5 lbs./6.12 kg
Physical interfaces	4 10/100/1000 Cu/SFP Ethernet interfaces, 1 10/100 OOB port, 1 CF card slot, 2 USB slots, 1 serial port (RJ45 style)
MTBF	>65,000 Hours

WIRELESS NETWORKING

Wireless LAN	Supports 256 WLANs; multi-ESS/BSSID traffic segmentation; VLAN to ESSID mapping; Dynamic assignment of VLANs (on RADIUS authentication); power save protocol polling; pre-emptive roaming; VLAN Loadbalancing and dynamic VLAN adjustment; IGMP Snooping
Bandwidth management	Congestion control per WLAN; per user based on user count or bandwidth utilization across a group of neighboring APs; dynamic load balancing of APs in a cluster. Bandwidth provisioning via AAA server
Layer 2 or Layer 3 deployment	
Layer 3 Mobility (Inter-Subnet Roaming)	
IPv6 client support	
Access Points supported	Dependent APs: AP 300, AP 621**, AP 622**, AP 650 Independent/Adaptive APs: AP 4131*, AP 5131*, AP 6511**, AP 6521**, AP 6532**, AP 6522** AP 7131, AP 7161** , AP 7181
Access points	Supports 256 802.11 a/b/g AP 300s or 802.11a/b/g/n 1,024** AP 650 thin access points for L2 or L3 deployment per switch; Legacy support*: AP100 for L2 deployments only
Adaptive AP	Supports adoption of 1,024 adaptive access points in Adaptive Mode per switch/controller; multiple country configuration support; Legacy support*: AP 4131 port conversion for L2 deployments only)
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	

	and wireless traffic; Active firewall sessions — 205,000 per controller; 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, 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, AP 621 and the adaptive AP 5131 and AP6511, AP 6521, AP 6532, AP 7131, AP7161
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—t ransport 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 Zebra'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

superior user experience for VoIP calls

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, onboard DHCP/AAA server synchronized failover; multiplatform license sharing enables deployment of cost-effective networks

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 Zebra mobile devices roam before signal quality degrades; Power Save Protocol optimizes battery life

FIPS 140-2 Level 1 Validated

Enables mobility in a highly secure environment. Requires the FIPS upgrade licenses for the RFS 7000 and AP 71XX access points

RFS 7000 Part Numbers:
RFS-7010-100R0-WR:
Zero Port Wireless Switch

RFS-7010-10030-WR:
64 Port Wireless Switch

RFS-7010-10010-WR:
128 Port Wireless Switch

RFS-7010-10020-WR:
256 Port Wireless Switch

RFS-7010-UC-16-WR:
16 Port Upgrade License Certificate

RFS-7010-ADSEC-LIC:

SYSTEM RESILIENCY AND REDUNDANCY

Active:Standby; Active:Active and N+1 redundancy with access port and Wireless Client 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).

Dual Firmware bank supports Image Failover capability

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

MANAGEMENT

Command line interface (serial, telnet, SSH); secure Web-based GUI (SSL) for the wireless controller 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/controller configuration files; DHCP (client/server/relay), 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);
Email notifications for critical alarms; Wireless Client naming capability

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capabilities; supports 2,048 concurrent IPSEC tunnels per switch/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, usagebased charging, dynamic VLAN assignment of clients, DNS white list, GRE tunneling* of traffic to central site, API support* for interoperability with custom web portals support for external authentication and billing systems
Wireless RADIUS Support (Standard and Zebra Vendor Specific Attributes)	User Based VLANs (Standard) MAC Based Authentication (Standard) User Based QoS (Zebra VSA) Location Based Authentication (Zebra VSA) Allowed ESSIDs (Zebra VSA)

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

PACKET FORWARDING

802.1D-1999 Ethernet bridging; 802.11-.802.3 bridging; 802.1Q VLAN tagging and trunking; proxy ARP; IP packet steering-redirection

POWER REQUIREMENTS

AC input voltage	90 – 264 VAC 50/60Hz
Max Power Consumption	100W

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)
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)

RFS 7000 License for Advanced Security

RFS-7010-ADP-64:
RFS 7000 Licenses for 64 Adaptive Access Points

RFS-7010-ADP-512:
RFS 7000 Licenses for 512 Adaptive Access Points

RFS-7010-ADP-1024:
RFS 7000 Licenses for 1,024 Adaptive Access Points

RFS-7010-APPL-LIC*:
RFS 7000 License for the Location Application License

RFS-7010-ADWIP-LIC*:
Advanced Wireless Intrusion Protection License for RFS7000

7010-FPS-7010:
FIPS upgrade licenses for RFS 7010

7010-FPS-7181-1:
FIPS upgrade license for one AP 7181

7010-FPS-7181-4:
FIPS upgrade license for 4 AP 7181

7010-FPS-7181-16:
FIPS upgrade license for 16 AP 7181

7010-FPS-7181-64:
FIPS upgrade license for 64 AP 7181

7010-FPS-7131-16:
FIPS upgrade license for 16 AP 7131

7010-FPS-7131-64:
FIPS upgrade license for 64 AP 7131

7010-FPS-7131-64:
FIPS upgrade license for 64 AP 7131

7010-FPS-7131-128:

FIPS upgrade license for 128 AP 7131

7010-FPS-7131-512:
FIPS upgrade license for 512 AP 7131

7010-FPS-7161-1:
FIPS upgrade license for one AP 7161

7010-FPS-7161-4:
FIPS upgrade license for 4 AP 7161

7010-FPS-7161-16:
FIPS upgrade license for 16 AP 7161

7010-FPS-7161-64:
FIPS upgrade license for 32 AP 7161

7010-FPS-7010:
FIPS upgrade license for RFS 7010

* Available in WING v4 only
** Available in WiNG v5 only

ZEBRA TECHNOLOGIES