



## Ruijie WS6000 Series Wireless Access Controllers

Ruijie WS6000 series wireless AC is the next-generation enterprise class wireless network controller that delivers a secure, robust, highly scalable wireless solution at unbeatable total cost of ownership (TCO).

Seamless integrated with Ruijie WIS in the cloud that provides one stop wireless solution for entire wireless deployment lifecycle. With WIS, you can now enjoy:

- Built-in pre-planning wireless site survey tool
- WiFi deployment validation by smartphone APP, MOHO
- Machine learning based WiFi optimization (One-click Optimization)

Ruijie VAC cutting edge technology helps to increase the services availability and ensure the business continuity. The Ruijie WS6000 series is also providing a cost-effective way of enabling highly secured Guest WiFi by using Virtual AP deployment approach.

Typical high-density WiFi environment tends to have degraded wireless network performance due to several reasons like RF interference, mixture of client, sharing of limited wireless spectrum and etc. With Ruijie industry leading feature, Pre-AX, CorrectLink and AirReorder technology, it helps you to solve most of the common problem in high density WiFi deployment automatically.

PPSK is also one of the new built-in security feature offered by Ruijie WS6000 series wireless AC for small and medium enterprise to provide a secure but simple staff authentication experience.

### Highlights

- **Wi-Fi 6 Ready**
- **Scalable up to 2,560 APs and 80K Clients**
- **High-availability Virtual AC Technology**
- **Secured Guest WiFi by Virtual AP**
- **PPSK Enterprise Authentication**
- **Pre-AX, CorrectLink & AirReorder Feature for High-density WiFi Optimization**
- **AI Wireless Optimization Cloud Services (Free Service)**



RG-WS6008



RG-WS6816



RG-WS6108



RG-M18000-WS-ED

## Product Features

### High-Density WiFi Experience

#### Pre-AX, Minimizes Co-channel & Other Interferences

Pre-AX is adopted from 802.11ax technology to dynamically fine tune RSSI threshold to maximize the utilizable spectrum and allow more data to be transmitted. Each AP optimize the RF channel and power according to each client.

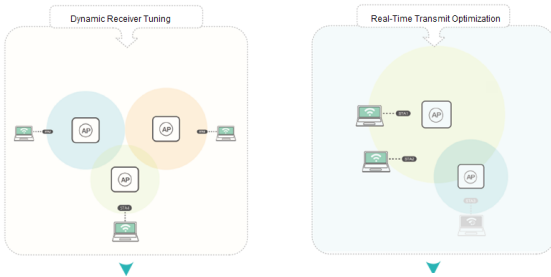


Figure 1: Pre-AX Technology Optimizing WiFi Experience

#### CorrectLink, Improves Traffic Load Balancing & Client Roaming

CorrectLink technology is designed to analyse the latency, jitter and the signal strength of each client. It also correlates with additional information like wireless channel utilization and throughput to optimize the best user experience for wireless client.

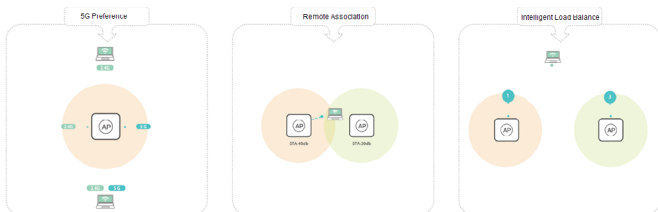


Figure 2: CorrectLink Technology Optimizing WiFi Experience

#### AirReorder, Smart Airtime Scheduling Technology

The fundamental of AirReorder is to allocate the equal time slot to ensure that each terminal can get the fairness of RF resources as possible. This can prevent lower data rate client to degrade entire network performance by occupying the limited shared medium.

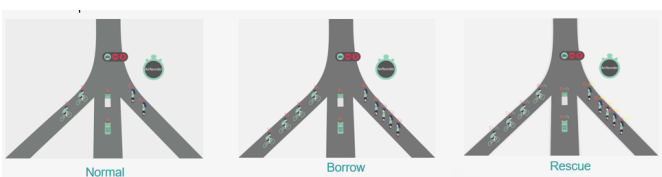


Figure 3: AirReorder Allocating Time Slots to Terminals

### Wi-Fi 6 Equipment For All Scenarios: Always One Option Fit For You

Ruijie is one of the leading enterprise networking suppliers worldwide and committed to providing the best Wi-Fi experience to our stakeholders. We are the first supplier to provide full-scenario Wi-Fi 6 access point solution in the market, ranging from indoor, wall plate to outdoor access points, guaranteeing perfect wireless experience in various situations.



For details, please visit <https://www.ruijienetworks.com/products/wireless-wifi6>

### AI Wireless Optimization

With advent of Ruijie Cloud AI Engine, this is an Lifetime Free service for all Ruijie Enterprise AP for WiFi optimization on the cloud. Not just the Cloud Managed AP, Ruijie Cloud also seamlessly integrated with Ruijie hardware Wireless Access Controller (AC) on premise, it helps to streamline Wi-Fi maintenance and operation support. With Ruijie Cloud AI Wireless Optimization you can achieve:

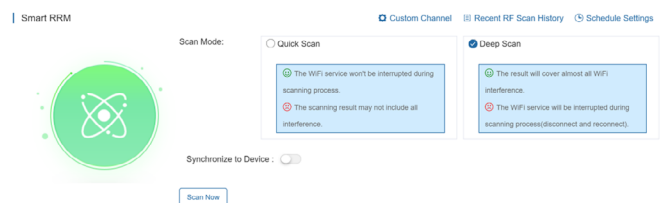


Figure 4: Ruijie Cloud AI Wireless Optimization

- 1-click Analysis and Wireless Optimization
- Scheduling Task for Optimization
- Smart mobile apps for optimization
- Report for optimization improvement
- and it is FREE!

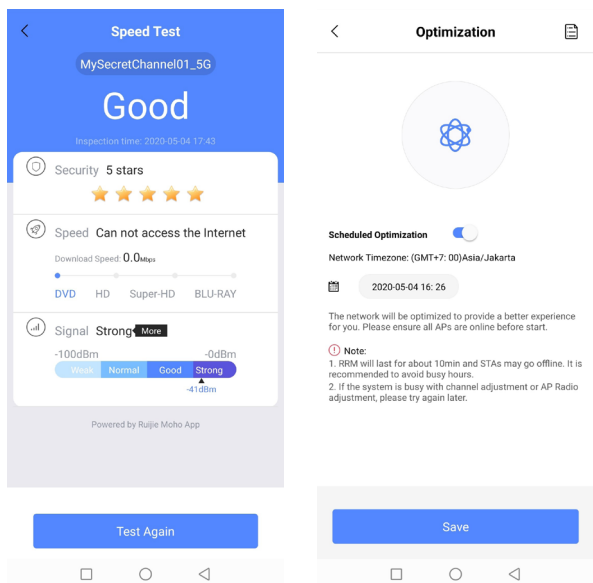


Figure 5: Ruijie Cloud App for Wi-Fi Inspection (Left) & Wireless Optimization (Right)

As part of the Ruijie Cloud solution, Ruijie Cloud App is a mobile App designed to carry out Ruijie managed device management at your fingertips. Comprehensive monitoring, configuration and troubleshooting tools including Network Inspection, 1-click Optimization, Device Topo, etc. are available in the Ruijie Cloud App, which can be freely downloaded from the iOS App Store and Google Play.

### Virtual AP Technology

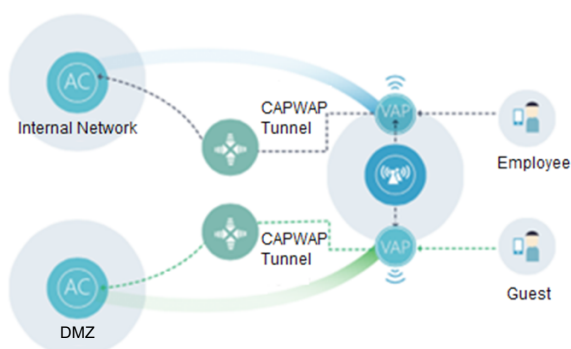


Figure 6: Virtual AP Enhancing Network Security

In most of the enterprise today, providing a Guest WiFi to visitor is an essential. However, Guest WiFi might become another entry point for network intrusion either it is intended or not.

Ruijie AP Virtualization technology allows to virtualize a physical AP into multiple virtual APs to handle different services. Different VAP can connect to the isolated AC to ensure the only authorized user access to right resource.

With VAP, you can now enjoy its benefits of:

- Resource isolation
- Flexible authentication
- Minimize RF interference
- Cost effective & secured

With the dual GE uplink design of AP740, two different CAPWAP tunnel separating employee WiFi and guest WiFi traffic into two different physical uplinks further enhanced the security.

### Virtual AC Technology

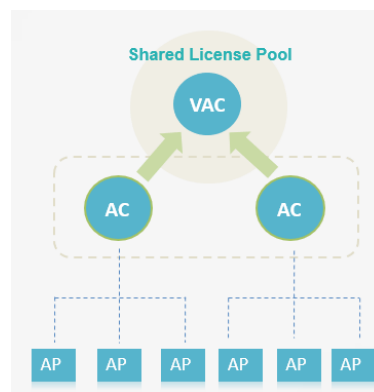


Figure 7: Virtual AC Enabling Centralized Management

Ruijie Network AC Virtualization technology help to virtualize multiple AC into single logical AC regardless of module or appliance-based AC. It supports up to 8 members of hardware AC in single high availability cluster. AP license is shared from the license pool regardless of the number of AC in the cluster.

Its high availability feature ensures no business downtime in the event of one of AC fails. The failover mechanism is fully automated and completed within milliseconds, WiFi services resumed immediately in backup AC.

With the centralized management and distributed processing capability, it increases the scalability and resilience of entire Wireless Network. Simplified management streamlines the IT operation as well.

### Exclusive PPSK Authentication

Traditional Pre-shared keys (PSK) are shared by all users on a WLAN, giving it potential risk of PSK leak-out.

Ruijie Per-user PSK (PPSK) is an easy setup wireless authentication method with enterprise-class security level. Credentials can be created and revoked individually. Each PPSK can also be tied to a unique user/machine.

With PPSK, you can enjoy its benefit of:

- High security by using different passwords for each user and device at individual SSID
- Simple deployment, allows for batch account creation
- Ease of use and offers the same experience as WPA/WPA2-PSK
- Out-of-box feature in AC controller
- No additional AAA required

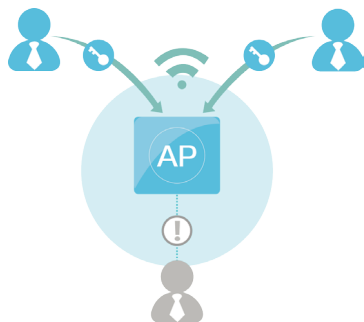


Figure 8: Per-user PSK Authentication

### Remote Intelligent Perception Technology (RIPT)

In the traditional network architecture where FIT APs are centrally managed by a wireless controller, packets received by the AP must be transmitted to the controller before being forwarded. When the wireless controller becomes faulty, the APs will fail to work properly causing whole network breakdown.

Ruijie's latest RIPT provides you a complete disaster recovery solution and enables the Wireless Controller Series to implement intelligent link perception. Once the faulty controller is detected, the APs will quickly switch to the intelligent mode to continue data forwarding, ensuring the high availability of the wireless network and keeping wireless users always online.

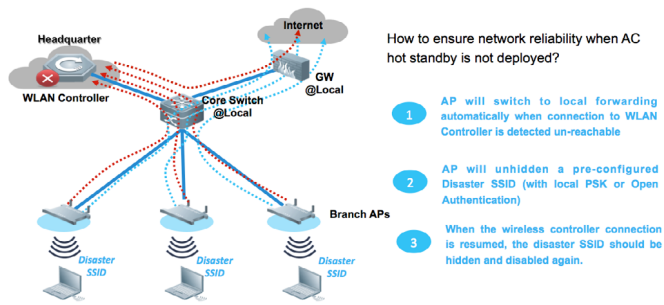


Figure 9: RIPT Disaster Recovery

### Centralized or Distributed Intelligent Switching

The Wireless Controller Series can be deployed at Layer 2 or Layer 3 level without modifying the original network architecture. Forming an integrated switching framework with the APs, the

controllers handle all the AP data exchange management with ease.

With the industry-leading local forwarding technology, the Wireless Controller Series eliminates traffic bottlenecks that alternatives in the market have been struggling with. The local forwarding technology allows flexible deployment of AP data forwarding. In other words, the AP can determine whether to forward all data via the controller based on Service Set ID (SSID) and user VLAN, or to send the data directly to a wired network for local data exchange.

The local forwarding technology enables large-scale, delay-sensitive, and real-time data transmission via the wired network. With the high throughput of 802.11ac and 802.11ax, it greatly alleviates the traffic pressure on the controller. The feature also makes the wireless controllers more adaptive to heavy traffic demand applications such as high definition Video on Demand (VoD) and Voice over Wireless LAN (VoWLAN) in the future.

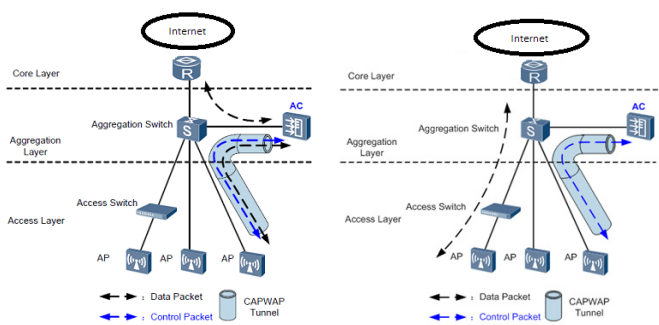


Figure 10: Centralized Switching and Distributed Switching

### Intuitive Web Management

The Wireless Controller Series supports a web management interface, which provides simplified wireless configuration and high visibility for the whole network operation. With the AC web interface, the controllers manage not only the APs, but also the associated AP users. The feature achieves control on user bandwidth control and network access. Network administrator can hence plan, operate and maintain the wireless network with ease.

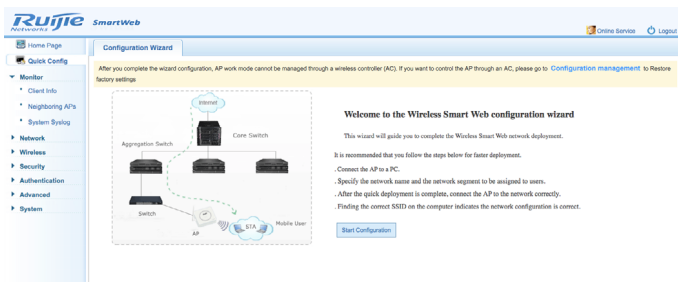
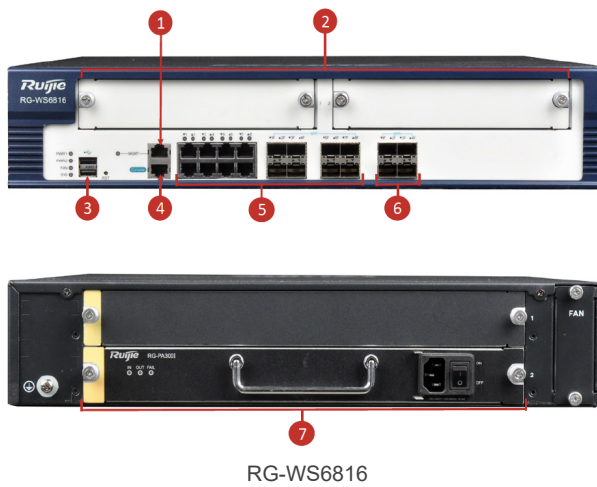


Figure 11: Web Management Interface for Simplified Management

## Outstanding Scalability and Power Redundancy

The RG-WS6816 model is another featured model. The controller supports up to 2 expansion modules, offering 4 1000BASE-T/1000BASE-X combo ports (WNM-4GE-S) and 2 10GBASE-X ports (WNM-2XS-S). The RG-WS6816 also supports up to 2 power modules for extra resiliency.

### Hardware Highlights



### Interfaces

1. 10/100M MGMT Port
2. 2 Expansion Slots
3. 2 USB Ports
4. Console Port
5. 8 1000BASE-T/1000BASE-X Ports (Combo)
6. 4 1G/10GBASE-X SFP+ Ports
7. 2 Modular Power Slots

## Ruijie Wireless LAN Controller Module

In the Wireless Controller Series, RG-M18000-WS-ED (for Ruijie RG-N18000 switch series respectively) take up a core role for centralized user management in Ruijie's ingenious Digital Campus 21 Solution.

Teaming up with the respective switch series and built-in/external 802.1X/Portal authentication systems, both wireless controller modules support unified wired and wireless authentication on the core device. The modules support an ultra-large ARP capacity, concurrent  $\geq 90K$  IPv4/IPv6 dual stack devices for centralized authentication at up to 1,000 devices per second.



## Technical Specifications

Model	RG-WS6816	RG-WS6108	RG-WS6008	RG-M18000-WS-ED <sup>1</sup>
<b>Service Ports</b>	8 1000BASE-T /1000BASE -X ports (combo) 4 1G/10G BASE-X SFP+ ports 2 expansion slots	6 1000BASE-T ports 2 1000BASE -T /1000BASE-X ports (combo)	6 1000BASE-T ports 2 1000BASE -T/ 1000BASE-X ports (combo)	2 1G/10G BASE-X SFP+ ports
<b>Management Ports</b>	1 console port 2 USB ports 1 10/100M MGMT port	1 console port 2 USB ports	1 console port 2 USB ports	1 console port 1 10/100/ 1000M MGMT port

<sup>1</sup> Exclusively designed for RG-N18000 Switch Series

Model		RG-WS6816	RG-WS6108	RG-WS6008	RG-M18000-WS-ED <sup>1</sup>
Performance	Switching Capacity	N/A			
	Packet Forwarding Rate	N/A			
	Default Number of Manageable APs	128	32	32	128
	Maximum Number of Manageable APs	3,200 APs or 6,400 wall APs (with license upgrade)	320 APs or 640 wall APs (with license upgrade)	224 APs or 448 wall APs (with license upgrade)	2,560 APs or 6,400 wall APs (with license upgrade)
	Maximum Number of Configurable APs	16K	2,048	2,048	16K
	Maximum Number of Clients	80K	10K	6,400	80K
	802.11 Performance	48Gbps	8Gbps	8Gbps	48Gbps
	Maximum Number of Clients Supported by the Built-in Portal	7,500	7,500	1,500	10K
	ACL	512K	64K	64K	512K
	Number of Wireless Users	80K	10K	6,400	80K
	MAC Address Table	128K	16K	16K	128K
	Local Authentication	300 wireless clients	300 wireless clients	300 wireless clients	10K wireless clients
	ARP Table	96K	12K	12K	96K
	IPv6 Neighbor Table	10K			
	Inter-AC Roaming Switch Time	≤50ms			
LAN	802.1Q VLAN	Support			
	QinQ	N/A			
	ACL	Standard IP ACL, Extended IP ACL, MAC-extended ACL, Expert ACL			
	QoS	N/A			
WLAN	LAN Protocols	ARP, VLAN, 802.1p, 802.1q, 802.1d, 802.1w, 802.1s			
	802.11 LAN Protocols	802.11, 802.11b, 802.11a, 802.11g, 802.11d, 802.11h, 802.11w, 802.11k, 802.11r, 802.11i, 802.11e, 802.11n, 802.11ac, 802.11ax			
	Pre-AX	Support			
	CorrectLink	Support			
	AirReorder	Support			
	CAPWAP	Layer 2/Layer 3 network topology between an AP and AC Enable an AP to automatically discover an accessible AC Enable an AP to automatically upgrade software version from an AC Enable an AP to automatically download configurations from an AC Network Address Translation (NAT) traversal			
	Roaming	Intra-AC roaming, Inter-AC roaming			
	Forwarding	Local forwarding, Centralized forwarding			

Model		RG-WS6816	RG-WS6108	RG-WS6008	RG-M18000-WS-ED <sup>1</sup>
WLAN	Wireless QoS	AP-based bandwidth control, WLAN-based bandwidth control, User-based static and smart speed control, Fair balancing			
	User Isolation	AC-based user isolation AP-based user isolation WLAN-based user isolation			
	Reliability	Fast switching between 2 ACs, Multiple ACs redundancy (1:1 A/A and A/S, N:1), Multiple ACs clustering (N:N), Remote Intelligent Perception Technology (RIPT), Service upgrade			
	STA Management	AP-based STA access control, SSID-based STA access control, AP-based load balancing, AP traffic-based load balancing, 5G priority access, RSSI threshold	AP-based STA access control, SSID-based STA access control, AP-based load balancing, AP traffic-based load balancing, 5G priority access, RSSI threshold	AP-based STA access control, SSID-based STA access control, AP-based load balancing, AP traffic-based load balancing, 5G priority access, RSSI threshold	User-based bandwidth limit, User-based access control, Port mirroring
	STA RSSI Threshold	0 to 100			
	STA Idle Timeout	60 to 86,400 seconds	60 to 86,400 seconds	60 to 86,400 seconds	90 to 86,400 seconds
	STA Average Data Rate Threshold	8 to 819,200 with the accuracy of 8Kbps			
	Adjusting Transmit Power of Beacon and Probe Response	Support			
	Offline Syslog	Support			
	Security	IPv4/v6 Security	Web authentication, 802.1x authentication (EAP-PEAP, EAP-SIM, EAP-MD5, EAP-TLS, EAP-TTLS, PEAP-MSCHAPv2, EAP-FAST, EAP-AKA), MAC address authentication		
PPSK		N/A	Support	Support	N/A
Virtual AP		Support			
Virtual AC		Support			
802.11 Security and Encryption		Multiple SSIDs, SSID hiding, 802.11i-compliant PSK authentication, WPA and WPA2, WEP (WEP/WEP128), WAPI, TKIP, CCMP, Protection against ARP spoofing			
AAA		IEEE 802.1X			
CPP		Support			
NFPP		Support			
WIDS/WIPS		Support			
Internet Protocols	IPv4 Protocols	Ping, Traceroute, DHCP Server, DHCP Client, DHCP Relay, DHCP Snooping, DNS Client, NTP, Telnet, TFTP Client			
	IPv6 Protocols	DNSv6 Client, DHCPv6 Relay, DHCPv6 Server, TFTPv6 Client, FTPv6 Server, FTPv6 Client, IPv6 CAPWAP, ICMPv6, IPv6 Ping, IPv6 Traceroute, Manual tunnel, automatic tunnel Manual configuration address, automatic local address	DNSv6 Client, DHCPv6 Relay, DHCPv6 Server, TFTPv6 Client, FTPv6 Server, FTPv6 Client, IPv6 CAPWAP, ICMPv6, IPv6 Ping, IPv6 Traceroute, Manual tunnel, automatic tunnel Manual configuration address, automatic local address	DNSv6 Client, DHCPv6 Relay, DHCPv6 Server, TFTPv6 Client, FTPv6 Server, FTPv6 Client, IPv6 CAPWAP, ICMPv6, IPv6 Ping, IPv6 Traceroute, Manual tunnel, automatic tunnel Manual configuration address, automatic local address	Dual stack IPv4/v6, Manual tunnel, ISATAP, 6to4 tunnel, IPv4 over IPv6 tunnel, DHCPv6, DNSv6, ICMPv6, ACLv6, TCP/UDP for IPv6, SOCKET for IPv6, SNMP v6, Ping/Traceroute v6, RADIUS, Telnet/SSH v6, FTP/TFTP v6, NTP v6, IPv6 MIB support for SNMP, VRRP for IPv6, IPv6 QoS, Static routing, OSPFv3
	IPv4 Routing	Static routing, OSPF			
	IPv4 Routing Table Capacity	8K			

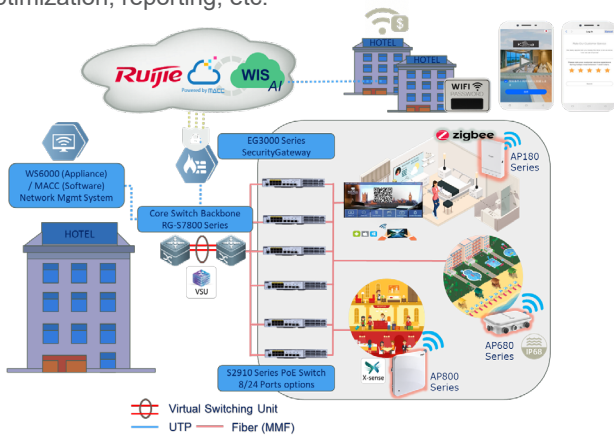
Model		RG-WS6816	RG-WS6108	RG-WS6008	RG-M18000-WS-ED <sup>1</sup>
Internet Protocols	IPv4 Static Routing Table Capacity	1K			
	IPv6 Routing Table Capacity	1K			
	IPv6 Static Routing Table Capacity	1K			
Management	Network Management	SNMP v1/v2c/v3, Web management, Syslog			
	Network Management Platform	Web management (Smart-web), RG-SNC management, Heat Map diagram			
	WIS Integration	Support			
	User Access Management	Login via console port Login via Telnet Login via SSH Upload to FTP			
Dimensions (W × D × H) (mm)		440 × 560 × 88.1	440 × 200 × 43.6	440 × 200 × 43.6	440 × 399 × 40.18
Rack Height		2RU	1RU	1RU	1RU
Weight		19kg	2kg	2kg	4.58kg
Installation Mode		19-inch rack	19-inch rack	19-inch rack	Insert to RG-N18000 module slot
Power Supply		Support up to 2 power supply modules (sold separately) 100VAC to 240VAC, 50Hz to 60Hz	Fixed power supply 100VAC to 240VAC, 50Hz to 60Hz	Fixed power supply 100VAC to 240VAC, 50Hz to 60Hz	Power supply from RG-N18000 chassis
Power Consumption		<100W	<40W	<40W	<190W
EMC Standard		GB9254-2008, CLASS A	GB9254, EN301 489	GB9254, EN301 489	GB9254-2008, CLASS A
Security Standard		GB4943-2011	GB4943, EN/IEC 60950-1	GB4943, EN/IEC 60950-1	GB4943-2011
Temperature		Operating Temperature: 0°C to 45°C			
		Storage Temperature: -40°C to 70°C			
Humidity		Operating Humidity: 10% to 90%RH (non-condensing)			
		Storage Humidity: 5% to 95%RH (non-condensing)			
Operating Altitude		0 to 3,000m	0 to 3,000m	0 to 3,000m	-500 to 5,000m



# Application Scenario

## Hybrid Cloud for Enterprise & Campus

For enterprise office and campus with single or multiple sites and high-density AP deployment, Ruijie RG-WS6000 Series Wireless Controllers (on-premises) plus cloud management (optional) is recommended. The wireless controller appliances are installed at the customer's site with fully integrated wireless management and authentication feature, supporting up to 5000 APs per cluster. Optionally, the cloud management platform allows for value-added features like centralized device configuration and monitoring, AI radio (RF) optimization, reporting, etc.



### Solution Benefits:

- Support centralized device management and reporting service by Ruijie Cloud (optional)
- Support ultra-seamless roaming management
- Support one-click AI radio (RF) optimization powered by WIS engine
- High performance and security with all user authentication and traffic forwarding handled locally
- Support flexible authentication options, such as 802.1x, PPSK employee authentication, guest hotspot and voucher access code, etc.
- Support all series of Ruijie wireless access points

## Ordering Information

Model	Description
RG-M18000-WS-ED	WS Series Wireless Controller Module for RG-N18000 Switch Series, 2 1G/10GBASE-X SFP+ ports, 128 APs License by default, maximum 2560 APs or 4000 Wall APs License
RG-WS6816	WS Series Wireless Controller, 8 1000BASE-T/1000BASE-X ports (combo), 4 1G/10GBASE-X SFP+ ports, 2 Expansion Slots, support dual redundant power supply, 128 APs License by default, maximum 3,200 APs or 6,400 Wall APs License (Redundant power module sold separately)
RG-WS6108	WS Series Wireless Controller, 6 1000BASE-T ports, 2 1000BASE-T/1000BASE-X ports (combo), 32 APs License by default, maximum 320 APs or 640 Wall APs License
RG-WS6008	WS Series Wireless Controller, 6 1000BASE-T ports, 2 1000BASE-T/1000BASE-X ports (combo), 32 APs License by default, maximum 224 APs or 448 Wall APs License
License	
LIC-WS-16	WS Series Wireless Controller Upgrade License for 16 APs or 32 Wall APs (For RGOS 11.x or above)
LIC-WS-32	WS Series Wireless Controller Upgrade License for 32 APs or 64 Wall APs (For RGOS 11.x or above)
LIC-WS-128	WS Series Wireless Controller Upgrade License for 128 APs or 256 Wall APs (For RGOS 11.x or above)
RG-LIC-WS-512	WS Series Wireless Controller Upgrade License for 512 APs or 1024 Wall APs (For RGOS 11.x(11.1(2) B1) or above)

**Optional Accessories**

RG-PA300I	AC Power Module for RG-WS6816, 300W
WNM-2XS-S	Expansion Module for RG-WS6816, support 2 10GBASE-X ports
WNM-4GE-S	Expansion Module for RG-WS6816, support 4 1000BASE-T/1000BASE-X combo ports
M2910-01XS	1-Port 10G SFP+ Interface Module for RG-WS6024 PoE support
M2910-01XT	1-Port 10G copper Interface Module for RG-WS6024 PoE support
XG-SFP-SR-MM850	10GBASE-SR, SFP+ Transceiver, MM (850nm, 300m, LC)
XG-SFP-LR-SM1310	10GBASE-LR, SFP+ Transceiver, SM (1310nm, 10km, LC)

