ProSAFE® WC9500 High Capacity Wireless Controller

Data Sheet

WC9500



Industry First Affordable High Capacity Wireless Controller

The NETGEAR® WC9500 Wireless Controller is the industry's first affordable, high capacity, secured wireless controller capable of managing up to 600 Access Points and 36,000 concurrent clients per cluster. The WC9500 delivers ultra-fast Access Point discovery, Layer 2 and Layer 3 fast roaming, multiple 10 Gigabit connectivity, a captive portal for guest access, fully distributed architecture, and ease of configuration and management.

Unlike other WLAN systems that are costly, complex and cumbersome to deploy, the WC9500 High Capacity Wireless Controller is ideal for medium to large enterprise, higher education (university and colleges), large hospitals and medium to large size hotels. The NETGEAR WC9500 is designed with simplicity in management and ease of use to enable users to set up the systems in minutes. The product is enterprise-grade and feature-rich, and is secured and high performance.

Features

Highly scalable

- Supports up to 200 Access Points and 12,000 concurrent clients per controller
- Stack up to 3 WC9500 per wireless cluster
- Supports up to 600 Access Points and 36,000 concurrent clients per controller cluster

Multiple 10 Gigabit connectivity

- Consists of 2x10G connectivity with SFP+ form factor
- Backward compatible with 1G connectivity with SFP form factor
- Additional 1x1G port with RJ-45 Copper connectivity

Ultra-fast Access Point discovery with $\mathsf{U}\mathsf{f}\mathsf{ast}^{\mathsf{tm}}$

- Ufasttm AP discovery provides super-fast AP discovery
- Improves reliability and shortens setup time
- Secured communication between AP and WC9500

Distributed and local forwarding

- Data traffic can be forwarded to the best path without traversing the controller
- Eliminates controller bottleneck for high throughput 802.11ac and 802.11n APs
- Intelligent tunneling with Layer 2 and Layer 3 roaming
- Hardware redundancy for enterprisegrade solution
- Two redundant, hot-swap power supplies (PSU) (one PSU comes with the controller; second optional PSU is ordered separately)
- Two removable fan trays provide front-toback cooling airflow for best compatibility with data center hot aisle/cold aisle airflow patterns

Enterprise-grade and feature-rich

- Layer 2 and Layer 3 seamless roaming
- Dynamic RF adjustments
- WLAN healing for automatic RF coverage in the case of AP failure
- Rogue AP detection

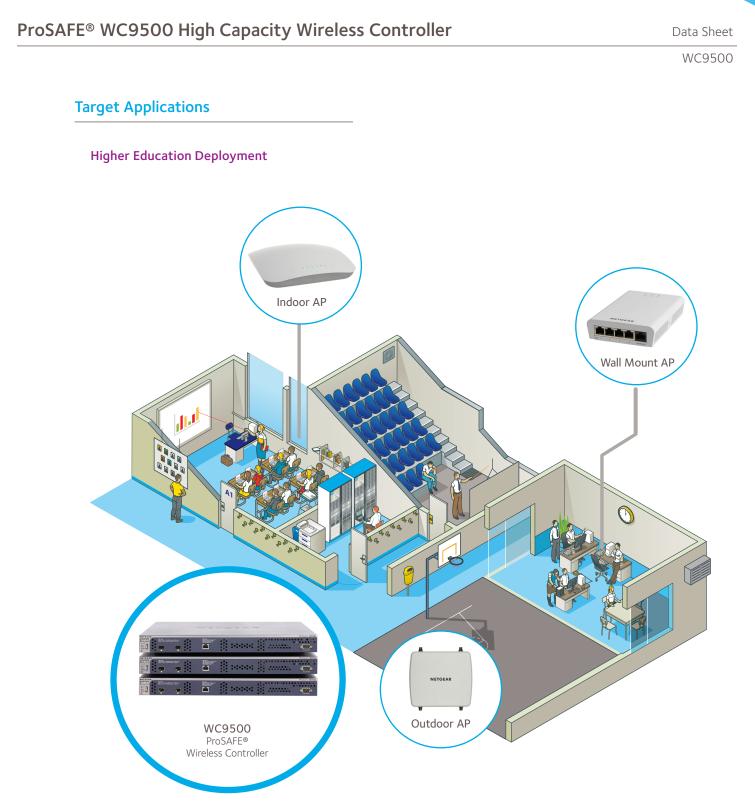
Investment protection

- Supports 802.11n and 802.11ac ProSAFE Access Points
- Hassle-free, plug-and-replace upgrade with WC7520 and WC7600

Industry-leading warranty

- NETGEAR WC9500 is backed by NETGEAR ProSAFE Lifetime Hardware Warranty*
- ProSUPPORT™ Lifetime 24x7 Basic HW Support
- 90 days software configuration support and Lifetime Chat Support, remote diagnostic, and escalation management
- Includes Lifetime Next Business Day Onsite Hardware Replacement





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Supported Access Points

Access Points	Description	Part Numbers	Typical Deployment	Product Image (Front)	Product Image (Back)
WAC730	ProSAFE Wireless-AC 3x3:1.7 Gbps High Performance Access Point	WAC730-100NAS WAC730-10000S	Medium to large enterprise, higher education, mid to large hotels and hospitals requiring ultra high density throughput	(1939-1951) 	
WAC720	ProSAFE Wireless-AC 2x2:1.2 Gbps Premium Access Point	WAC720-100NAS WAC720-10000S	Medium enterprise, higher education, hospitality requiring high density and throughput		
WNDAP660	ProSAFE Wireless-N Dual Band Concurrent Premium Access Point	WNDAP660-100AUS WNDAP660-100NAS WNDAP660-100PES WNDAP660-100PRS WNDAP660-100UKS	Large and medium enterprise, higher education, large and mid-sized hotels and hospitals	mm	
WNDAP620	ProSAFE Wireless-N Dual Band Selectable Premium Access Point	WNDAP620-100AUS WNDAP620-100NAS WNDAP620-100PES WNDAP620-100PRS WNDAP620-100UKS	Large and medium enterprise, higher education, large and mid-sized hotels and hospitals	e minie	0°
WNDAP360	ProSAFE Wireless-N Dual Band Concurrent Access Point	WNDAP360-100AJS WNDAP360-100NAS WNDAP360-100PES WNDAP360-100PRS WNDAP360-100UKS	Small to medium enterprise, K-12 schools with advanced WiFi, hotels, mid-sized hospitals	e e deserve	
WNDAP350	ProSAFE Wireless-N Dual Band Concurrent Access Point (Metal)	WNDAP350-100AUS WNDAP350-100NAS WNDAP350-100PES WNDAP350-100UKS	Warehouse, transportation, hardened locations	12 Hard	u ≣ ∎ ≣ 0 <u>,</u>
WNAP320	ProSAFE Wireless–N Single Band Access Point	WNAP320-100AUS WNAP320-100NAS WNAP320-100PES WNAP320-100PRS WNAP320-100UKS	Small to medium enterprise, K-12 with basic WiFi		
WNAP210	ProSAFE Wireless-N Single Band Access Point	WNAP210-200AUS WNAP210-200NAS WNAP210-200PES WNAP210-200PRS WNAP210-200UKS	Entry level small to medium enterprise		
WN370	ProSAFE Wireless-N Wall Mount Single Band Access Point	WN370-10000S	Small to medium hospitality		
WND930	NETGEAR Wireless-N Outdoor Dual Band Concurrent Access Point	WND930-10000S WND930-100NAS	Outdoor deployment for ac- cess and point to point mesh	NETOFAR	

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Features

Scalable Architecture

The NETGEAR WC9500 High Capacity Controller supports up to 200 APs and is upgradable in 10, 50, 100, or 200 APs via software licenses. Stackable up to three controllers, a WC9500 High Capacity Controller stack can support up to 600 access points with a single interface. The WC9500 offers redundancy for always-on reliability.

Centralized Management

Deployed as an overlay on the existing wired network infrastructure, the NETGEAR ProSAFE High Capacity Wireless Controller simplifies the network management by providing a single point of management for the entire wireless network. Easy to set up, the WC9500 Controller discovers all supported access points in the network, even across VLANs and subnets. Once identified, the access points are provisioned in minutes. The discovery process follows an efficient and fast protocol in Ufast[™].

Robust Security

With identity-based security features such as support for RADIUS, Active Directory and internal or external AAA server, the NETGEAR ProSAFE High Capacity Wireless Controller truly unifies wired and wireless access without compromising on security. Management VLAN is configurable and up to 8 security configuration profiles (SSID, 802.11i security, VLAN, ACLs, radio parameters) can be active. Rogue AP detection permits rogue APs classification (friendly or hostile). Standard RADIUS compliance enables support for thirdparty authentication and billing system implementation. Scheduled wireless on/off times permits the wireless network to be completely unavailable during specified nonbusiness hours.

Guest Access, Captive Portal and Logging

Guest access allows restricted access to the network, using an integrated captive portal. Two methods of entry are provided, either assisted or self-certified. In the assisted model, the receptionist can create a user name and password for guests in the GUI and the WC9500 High Capacity Controller hosts a captive portal where quests can enter their pre-configured credentials to gain access to the network. Alternatively, the WC9500 High Capacity Controller hosts a quest portal where quests can register themselves before entering the network. Backend VLAN policies ensure restricted access to quests, prohibiting them any access to the sensitive data on the corporate network. Guest activity logs are available.

RF Management and Hole Detection

Automatic control of AP transmit power and channel allocation ensures coverage by minimizing interferences. Automatic WLAN healing after loss of AP or due to RF interferences adapts the power and channel of the other APs around the area. Scheduled automatic channel allocation authorizes an enterprise-class reliable wireless experience.

Load Balancing and Rate Limiting

Automatic load balancing of clients across APs is provided based on number of clients per AP and signal strength threshold/data rate threshold of clients on the BSS. Rate limiting is provided by SSID. Load balancing and rate limiting ensure fair bandwidth allocation among all clients for robust wireless connectivity.

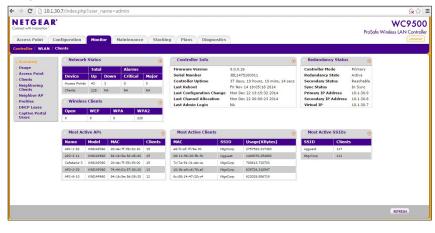
Fast Roaming and Voice over WiFi

The NETGEAR WC9500 High Capacity Wireless Controller supports rapid mobility across VLANs and subnets including 802.11i preauthentication and fast roaming support (FRS). Seamless L2 and L3 roaming provides support for latency-sensitive applications such as video, audio and voice over wireless. WiFi Multimedia (WMM) advanced prioritization extends WiFi's high-quality end-user experience to voice applications (VoWiFi).

Monitoring and Reporting

The WC9500 uses a heartbeat mechanism between the controller and the AP. It is monitored based on several factors, such as RF interference, clients, error levels, etc. Each AP is constantly monitored (number of clients, traffic load, RF interference, packet error levels and retransmission statistics). Statistics provide reliable metrics per AP, per client, per floor and for the entire wireless network.

Comprehensive Dashboard



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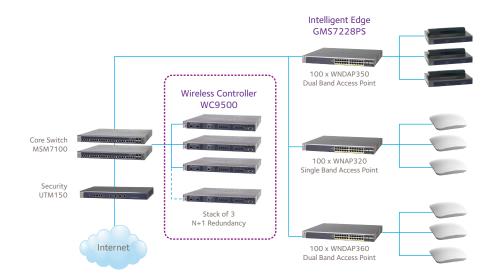
Features

Performance

The best of centralized and distributed architectures are implemented by the NETGEAR ProSAFE High Capacity Wireless Controller for outstanding Wireless-N performance. Local traffic is automatically switched at the access points level for fastest processing, when roamed L3 traffic is processed at the controller level with advanced data control. Real-time applications such as VoWiFi require perfect inter-subnet/ inter-VLAN mobility: WC9500 encryption tunneling delivers enterprise-class fast roaming without any impact on Layer 2/Layer 3 performance.

Supported Access Points

Supporting standard NETGEAR access points, the WC9500 High Capacity Wireless Controller enables customers to select the right access points for their needs, including mixing models to provide the right coverage. The standard access points are converted to dependent access points. Supported models include professional-class ProSAFE access points WAC730 and WAC720 (802.11ac ultra high performance), WNDAP660 (high performance dual band concurrent), WNDAP620 (high performance dual band selectable) WNDAP360 (dual band), WNDAP350 (dual band), WNAP320 (single band), WNAP210 (single band), WN370 (wall mount single band), WND930 (outdoor) and WNDAP380Rv2 (integrated WiFi and RFID) all with Power over Ethernet capabilities and lifetime warranties.



Example Deployment

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Technical Features

RF MANAGEMENT			
Automatic Channel Allocation	 Automatic channel distribution to minimize interferences Auto-channel allocation taking into consideration of the environment, interferences, traffic load and neighboring AP Modifiable list of corporate channels to be used Scheduled mode for Auto-channel allocation Automatic mode in case of high level of interferences available 		
Automatic Power Control	 Optimum transmit power determination based on coverage requirements Automatic power control mode available Neighborhood scan of RF environment to minimize neighboring AP interference and leakage accross floors 		
Coverage Hole Detection	 Automatic mode or Manual mode Down APs or compromized RF environment detection with alerts Self healing: automatic neighboring AP power increase to cover coverage losses 		
Load Balancing	 APs load monitoring and overloading prevention Clients redirection to lightly loaded neighboring APs 		
Fast Roaming	 Seamless rapid mobility across VLAN and subnets Including 802.11i pre-auth and fast roaming Fast Roaming support accross L2, and L3 for video, audio and voice over wireless client 		
QUALITY OF SERVICE			
WMM Quality of Service	WMM (802.11e) prioritizes traffic for both upstream traffic from the stations to the Access Points (station EDCA parameters) and downstream traffic from the Access Points to the client stations (AP EDCA parameters)		
WMM Queues in decreasing order of priority	 Voice: The highest priority queue with minimum delay, which makes it ideal for applications like VoIP and streaming media Video: The second highest priority queue with low delay is given to this queue. Video applications are routed to this queue Best Effort: The medium priority queue with medium delay is given to this queue. Most standard IP application will use this queue Background: Low priority queue with high throughput. Applications, such as FTP, which are not time-sensitive but require high throughput can use this queue 		
WMM Power Save option	WMM Power Save helps conserve battery power in small devices such as phones, laptops, PDAs, and audio players using IEEE 802.11e mechanisms		
WIRELESS SECURITY			
Client Authentication Protocols	 Open, WEP, WPA/WPA2-PSK 802.11i/WPA/WPA2 Enterprise with standard interface to external AAA / RADIUS Server 		
Distinct AAA Server per SSID	Yes		
RADIUS Accounting Protocol	Per Client tracking for: • Bytes Tx/Rx • Login/Logout Time		
LDAP Based Authentication	Standard interface to external LDAP Server / Microsoft® Active Directory Server		
Integrated AAA Server	Local Database Authentification based on WC7520 internal RADIUS Server		
Guest Access	 Integrated Captive Portal available for client authentication in a Security Profile Password based authentification mode: local user store available, receptionist assigned user name / password Open authentification mode: guests auto registration with email address (up to 64 email stored) Extraction of logs of guest activity 		
Captive Portal	Configurable Portal page, including image files		
Rogue Access Points*	 Rogue AP definition: AP with radio SSID oberved by any of the Managed AP and seen transmitting on same L2 wired network Detection and Mapping of up to 512 Rogue APs 		

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Technical Features

WIRELESS NETWORK MONIT	ORING		
Monitoring Summary	Summary of the Managed Access Points status, rogue Access Points detected, Wireless stations connected, Wireless Controller Information and Wireless Network usage		
Managed Access Points	APs status for the Managed Access Points and details that includes configuration settings, current Wireless settings, cur- rent Clients and detailed Traffic statistics		
Rogue Access Points	 Rogue Access Points Reported Rogue Access Points in same channel Rogue Access Points in interfering channels 		
Wireless Clients	 Clients statistics and details per AP, per SSID, per floor, per location Black listed Clients, Roaming Clients 		
Wireless Network Usage	Network Usage Statistics display plots of average received/transmitted network traffic per Managed Access Point. Three different plots show Ethernet, Wireless 802.11 b/bg/ng/ac and 802.11 a/na/ac mode traffic separately		
DHCP Leases	DHCP details for Wireless Clients		
MANAGEMENT			
Management Interface	HTTP, SNMP v1/v2c, Telnet, Secure Shell (SSH)		
Logging and Reporting	If available Syslog server on the network, the Wireless Controller and Managed Access Points can send all Logs. Logs are also available on the GUI and ready to download (Log export file)		
Diagnostics	Managed Access Points Ping		
Maintenance	Save/Restore Configuration, Restore to Factory Defaults, Admin password change, Add user (read-only), Firmware Up- grade via Web browser for the Wireless Controller and the Managed Access Points		
Dual Boot Image	Supported		
SNMP	SNMP v1/v2c		
IEEE AND IETF RFC STANDAF	RDS		
Wired IEEE Standards	EEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, IEEE 802.3ab 1000BASE-T EEE 802.1Q VLAN tagging		
RFC - System Facilities	 RFC 2131 DHCP RFC 768 UDP RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 1519 CIDR RFC 1542 BOOTP 		
RFC - Security	 WPA-PSK, WPA2-PSK IEEE 802.11i WEP and TKIP-MIC: RC4 40, 104 and 128 bits (both static and shared keys) AES: CBC, CCM, CCMP DES: DES-CBC, 3DES SSL and TLS: RC4 128-bit and RSA 1024- and 2048-bit DTLS: AES-CBC IPSec: DES-CBC, 3DES, AES-CBC RFC 2406 IPsec RFC 2409 IKE RFC 3280 Internet X.509 PKI Certificate and CRL Profile RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec RFC 3686 Using AES Counter Mode with IPsec ESP RFC 4346 TLS Protocol Version 1.1 		

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IEEE AND IETF RFC STANDARDS (continued)				
RFC - AAA (Authentication, Authorization, Accounting)	 IEEE 802.1X RFC 2548 Microsoft Vendor-Specific RADIUS Attributes RFC 2716 PPP EAP-TLS RFC 2865 RADIUS Authentication RFC 2866 RADIUS Accounting RFC 2869 RADIUS Tunnel Accounting RFC 2869 RADIUS Extensions RFC 3576 Dynamic Authorization Extensions to RADIUS RFC 3579 RADIUS Support for EAP RFC 3580 IEEE 802.1X RADIUS Guidelines RFC 3748 Extensible Authentication Protocol Web-based authentication TACACS support for management users 			
RFC - Management	 SNMP v1, v2c RFC 854 Telnet RFC 1155 Management Information for TCP/IP-Based Internets RFC 1156 MIB RFC 1157 SNMP RFC 1213 SNMP MIB II RFC 1350 TFTP RFC 1643 Ethernet MIB RFC 2030 SNTP RFC 2616 HTTP RFC 2665 Ethernet-Like Interface types MIB RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions RFC 2819 RMON MIB RFC 3164 Syslog RFC 3418 MIB for SNMP RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs Enterprise private MIBs 			
Ordering Information - Controller				
Worldwide, except China	WC9500-10000S			
China	WC9500-100PRS			
Ordering Information - Licenses				
Incremental 10-AP Upgrade Incremental 50-AP Upgrade Incremental 100-AP Upgrade Incremental 200-AP Upgrade	WC10APL-10000S WC50APL-10000S WC100APL-10000S WC200APL-10000S			

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Technical Specifications

Physical Characteristics

Power

- 165 watts with internal dual power supply
- 100-240V AC Universal
- IEC 320 connector

Physical Dimensions (1 RU)

 Dimensions (L x W x H): 440 x 430 x 43 mm (17.34 x 16.92 x1.7 in)

Weight

- 1 PSU: 6.32 kg (13.94 lb)
- 2 PSU: 7.57 kg (16.68 lb)

Environmental Conditions

Operating Temperature

- Minimum (C/F) 0°/32°
- Maximum (C/F) 45°/113°

Storage Temperature

- Minimum (C/F) -20°/-4°
- Maximum (C/F) 70°/158°

Operating Relative Humidity

- Minimum 10%
- Maximum 90%

Storage Humidity

- Minimum 5%
- Maximum 95%

MTBF

- WC9500 (@25C): 664,072 hours
- Fan Tray (@25C): 676,058 hours
- Power Supply (@25C): 938,490 hours

Power Consumption

• Maximum: 82.3W or 281 BTU/hr

Compliance

- ENGR 10049 EST Environmental Stress Test Guideline
- ENGR 10045 EVT Engineering Validation Test Guideline
- ENGR 10048 CVT Compliance Validation Test Guideline
- ENGR 10046 SVT System Validation Test Guideline
- ENGR 10023 HALT Highly Accelerated Life Test Guideline
- ENGR 10036 CDG Component Derating Guideline

Capacity

Managed APs

- 200 per controller
- Controllers per Cluster
 - 600 per cluster
- WLANs (BSSIDs)
 - 144

Concurrent Stations

- 36,000 per cluster
- 12,000 per controller

Guest Portal

Profile Groups per Controller

• 9 (1 Basic + 8 Advanced)

Profile per Controller

• 128

Security Profile Groups per Profile Group

• 9 (1 Basic + 8 Advanced)

Detectable rogue AP

• Maximum: 512

Features

- Layer 2 Discovery
- Layer 3 Discovery
- L2 Roaming
- L3 Roaming
- · Layer 2 isolation
- Access List
- Auto Channel Allocation
- Radius, AD, and LDAP proxy
- Remote AP
- Client load balancing
- Auto Power Control
- $\boldsymbol{\cdot}$ Coverage Hole Detection
- Rate Limiting on per SSID
- 802.11e WMM
- Schedule AP on/off
- Captive Portal
- Stacking Redundancy (N+1)

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Technical Specifications

Interfaces and Indicators Management Supported APs 10G SFP+ Ports for Data and Control • WAC730 Configuration • WAC720 Two 1/10Gbps auto-sensing and • Web user interface auto-negotiation SNMPv1 · WNDAP660 1G Copper RJ-45 Ports for Management • SNMPv2 • WNDAP620 One 10/100/1000 Mbps auto-sensing AAA • WNDAP360 and auto-negotiation • Radius (primary and backup) • WNDAP350 **USB** Ports **AP** Provisioning • WNAP320 One USB 2.0 Type A connector • L2 • WNAP210 Console .13 • WNAP210v2 One 1 D-Sub-9 MALE connector Wireless Security Standards • WN370 LED • WPA • WND930 · Power, status, fan, stacking master • WPA2 WNDAP380R – (selected region only) **Default Reset** • 802.11i Encryption Warranty and Support Networking • WFP Lifetime Warranty* IP • TKIP • IPv4 • AES **Product Ordering Information** VLANs Authentication • WC9500-1000PRS • 802.1x • 144+1 Mgmt • WC9500-10000S • # of VLANs MAC address Access Control Redundancy • L2 Active-standby Stacking Maximum: Three controllers per stack

DHCP Server

* This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller, and modifications to product may void the warranty; covers hardware, fans, and internal power supplies—not software or external power supplies; see http://www.netgear.com/about/warranty/ for details. Lifetime technical support includes basic phone support for 90 days from purchase date and lifetime online chat support when purchased from a NETGEAR authorized reseller.

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