

Model: AWM-8000
Series: APOLLO



Wireless Access Controller



Product Overview

The AWM-8000 is a high-performance smart wireless access controller (AC) for medium wireless networks, which can manage up to 2048 access points (APs). It provides complete RF management and security mechanism, powerful QoS, seamless roaming and complete control of APs, can be used to construct medium-sized network for campus, hotel, enterprise office, hospital, etc. With hardware ASIC, AWM-8000 could support line-rate forwarding of IPv4/IPv6 data packets and support dynamic routing protocols such as RIP, OSPF, BGP and PIM, as well as IPv6 RIPng, OSPFv3 and PIM6. It also integrates Ethernet switch function, and provides unified access control for wired and wireless users. It offers 16 GE combo ports, 8 fixed SFP ports, and 4* 10G SFP+ ports.

Key Features and Highlights

Wired-and-wireless Unified and High-Reliability Network

Combination of routing switch and wireless AC

The AWM-8000 can be used as a routing switch and a wireless access controller simultaneously in a trunk deployment mode, with an ASIC-based forwarding architecture and high-density access-ports, it can provide line-speed forwarding for both wired and wireless traffic.

High-reliability backup mechanism

The AWM-8000 supports the following high-reliability backup mechanisms to ensure that a wireless network runs reliably:

- N+1 backup
- N+M backup

1+1 modular redundant input power

The AWM-8000 supports two modular AC input power, which provides 1+1 input power redundancy.

Automatic emergency mechanism of APs

This mechanism enables an AP to intelligently detect a link between AC and AP. When detecting the breakdown of the link the AP quickly switches its operating mode so that it can continue to forward data and allow new users to access the network. This mechanism makes sure that the access is available for all users when the AC is down.

Intelligent Control of Wireless Network

Intelligent RF management

The AWM-8000 provides an automatic power and channel adjustment function. It employs particular RF detection and management algorithms to attain a better RF coverage effect. When the signals of an AP are interfered with by strong external signals, the AP may automatically switch to an appropriate operating channel under the control of the AC to avoid such interference. It also supports the blackhole compensation mechanism, which adjusts the AP power to cover the blind area resulted by the crashing of some APs

Intelligent control of terminals based on airtime fairness

This function makes sure that both the low-rate and the high-rate clients get relatively the same accessing time, which can avoid the low-rate clients to affect the AP overall performance by taking up too much accessing time.

Intelligent load balancing mechanism

In general, a wireless client will select an AP according to the signal strength of APs. So, it may happen that one AP connected a large number of APs while the others connected very little, causing the small bandwidth for each client. The AADONA load balancing mechanism can overcome this problem by:

- Load balancing between APs based on traffic
- Load balancing between APs based on the number of users
- Load balancing between radios within the AP based on the number of users

Intelligent identification of terminals

The AWM-8000 can identify a terminal in different ways by combining with AADONA smart APs and a unified authentication platform. It can identify the OS of a terminal, such as Apple iOS, Android, and windows, the size of a terminal, and the type of a terminal, such as mobile phone, laptop, and PC. Basing on these identifications, AWM-8000 can implement dynamic policies for different types of terminal and present a corresponding-sized authentication page.

PEAP user authentication

Protected Extensible Authentication Protocol (PEAP) authentication can provide a better user experience. The user needs to manually enter the username and passwords only during the first-time certification, the second time, and the subsequent certifications are performed automatically.

Secure and Controllable Wireless Network

User isolation policy

The AWM-8000 supports the isolation of wireless users. If this user isolation function is enabled, only the communication between the clients and gateway is allowed, the direct communication between clients is forbidden, which can increase the security of the wireless network.

Wireless intrusion detection and intrusion defense

The AWM-8000 supports wireless intrusion detection and intrusion defense features, such as detection of unauthorized wireless devices, intrusion detection, blacklist, and white list, as well as anti-DoS for various wireless management packets, thereby greatly improving security management of an entire wireless network.

Secure user admission

The AWM-8000 provides multiple secure access, authentication, and accounting mechanisms for various application environments. These mechanisms include:

- 802.1x authentication
- Captive portal authentication, including built-in portal, and custom portal authentication modes
- MAC address authentication
- LDAP authentication
- WAPI encryption and authentication
- Wired/wireless integrated authentication and accounting

Easy-to-Manage Wireless Network

AP plug-and-play

When used with the AWM-8000, AADONA smart APs support plug-and-play and zero configuration. AWM-8000 undertakes all the management, control, and configuration of the APS. Network administrators do not need to separately manage or maintain a huge number of wireless APs.

Remote probe analysis

The AWM-8000 supports remote probe analysis of APs. It enables the APs to captures Wi-Fi packets and mirrors them to a local analysis device in real-time to help network administrators troubleshooting or optimizing the network. The remote probe analysis function can perform analysis of a single working channel continuously or all channels in a polling mode to flexibly meet various wireless network monitoring requirements.

Product Specifications

Hardware Specifications

Item	AWM-8000
Dimensions(L*W*H)	440mmx350mmx44mm; 19 inches, 1 U high, supporting rack installation
Switching capacity	208 Gbps
Service port	16 GE combo ports (GE/SFP)
	8 GE SFP ports
	4 10G SFP+ ports
Management port	1 console port (RJ-45), 1 out-of-band management port, 1 USB port
Power supply	2 power slots, 1+1 Modular Redundancy
Power consumption	90 W
Working/Storage temperature	0°C to +50°C -40°C to +75°C
Working/Storage RH	10% to 90% (non-condensing)

Software Specifications

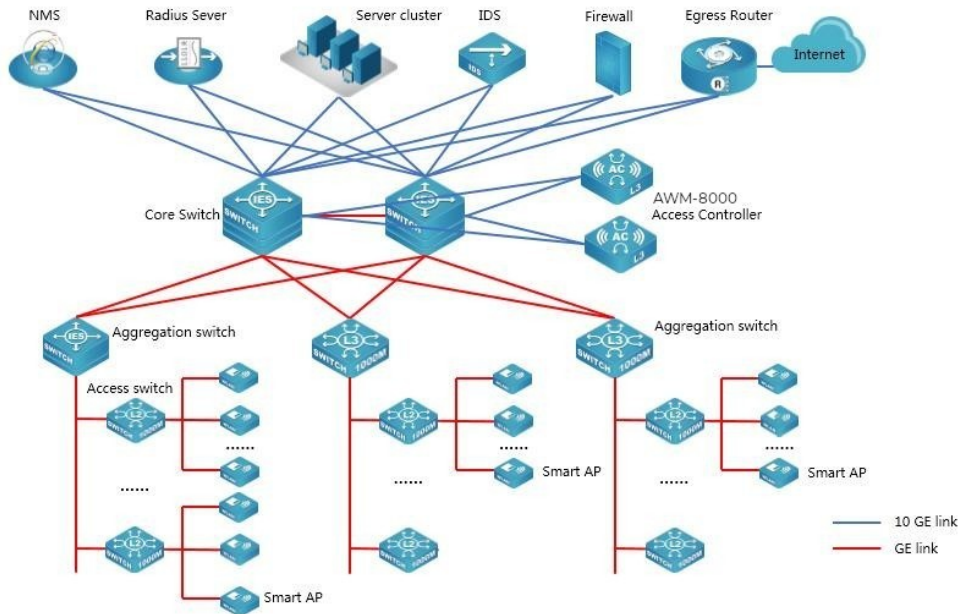
Item	AWM-8000
Base number of manageable APs	32
Maximum number of manageable APs	2048 (bypass mode , no user authentication), 1024(bypass mode, with user authentication), 256 (trunk mode)
Number of manageable ACs in a cluster	64
AP upgrade step	16,32,128
Maximum number of concurrent wireless users	20k
VLANs	4K
ACL	4K
MAC address list	32K
ARP table	16K
Switching time during roaming	< 30 ms
L2 protocols and standards	IEEE802.3 (10Base-T), IEEE802.3u (100Base-TX), IEEE802.3z (1000BASE-X), IEEE802.3ab (1000Base-T), IEEE802.3ae (10GBase-T) IEEE802.3ak (10GBASE-CX4), IEEE802.1Q (VLAN) IEEE802.1d (STP), IEEE802.1W (RSTP), IEEE802.1S (MSTP) IEEE802.1p (COS) IEEE802.1x (Port Control), IEEE802.3x (Flow Control) IEEE802.3ad (LACP), Port Mirror IGMP Snooping, MLD Snooping QinQ, GVRP, PVLAN Broadcast storm control
L3 protocols and standards	Static Routing RIPv1/v2, OSPF, BGP, VRRP, IGMP v1/v2/v3 ARP, ARP Proxy PIM-SM, PIM-DM, PIM-SSM
Wireless protocols and standards	802.11, 802.11a, 802.11b, 802.11g, 802.11n, 802.11d, 802.11h, 802.11i, 802.11e, 802.11k
CAPWAP protocol	Supports L2/L3 network topology between an AP and an AC.
	Enables an AP to automatically discover an accessible AC.
	Enables an AP to automatically upgrade its software version from an AC.
	Enables an AP to automatically download configurations from an AC.

IPv6 protocols and standards	IPv4/v6 dual-stack, 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, IPv6 SAVI
High reliability	N+1 backup N+N backup
RF management	Setting country codes Manually/automatically setting the transmit power Manually/automatically setting the working channel Automatically adjusting the transmission rate Blind area detection and repair RF environment scanning, which enables a working AP to scan the surrounding RF environment RF interference detection and avoidance 11n-preferred RF policy SSID hiding 20 MHz and 40 MHz channel bandwidth configuration Airtime protection in hybrid access of 11bg and 11n terminals Terminal-based airtime fairness scheduling Terminal locating (A terminal locating algorithm can be embedded in the AC) Spectral navigation (5 GHz preferred) 11n only SSID-based or Radio-based limit on the number of users User online detection Automatic aging of traffic-free users Prohibiting the access of clients with weak signals Remote probe analysis
Security	64/128 WEP, dynamic WEP, TKIP, CCMP, and SMS encryption 802.11i security authentication and two modes (Enterprise and Personal) of 802.1x and PSK WAPI encryption and authentication LDAP authentication MAC address authentication Portal authentication, including built-in portal, external portal, and custom portal authentication modes PEAP user authentication Forwarding security control, such as frame filtering, white list, static blacklist, and dynamic blacklist User isolation Periodic Radio/SSID enabling and disabling Access control of free resources Secure admission control of wireless terminals Access control of various data packets such as MAC, IPv4, and IPv6 packets Secure access control of APs, such as MAC authentication, password authentication, or digital certificate authentication between an AP and an AC Radius Client Backup authentication server Wireless SAVI User access control based on AP locations Wireless intrusion detection system (WIDS) and wireless intrusion prevention system (WIPS) Protection against flooding attacks Protection against spoofing attacks

Forwarding	IPv6 access and forwarding; constructing IPv6 WLAN access service on an IPv4 network; providing IPv4 WLAN access service on an IPv6 network; and constructing private IPv6 WLAN network service on an IPv6 network	
	IPv4 and IPv6 multicast forwarding	
	WDS AP	
QoS	802.11e (WMM); and 4-level priority queues, ensuring that applications sensitive to the real-time effect, such as voice and video services, are transmitted first	
	Ethernet port 802.1P identification and marking Mapping from wireless priorities to wired priorities	
	Mapping of different SSIDs/VLANs to different QoS policies Mapping of data streams that match with different packet fields to different QoS policies	
	Access control of MAC, IPv4, and IPv6 data packets	
	Load balancing based on the number of users Load balancing based on user traffic Load balancing based on frequency bands	
	Bandwidth limit based on APs Bandwidth limit based on SSIDs Bandwidth limit based on terminals Bandwidth limit based on specific data streams	
	Power saving mode	
	Multicast-to-unicast mechanism	
	Automatic emergency mechanism of APs	
	Intelligent identification of terminals	
	Management	Web management
		Configuration through a console port
SNMP v1/v2c/v3		
Both local and remote maintenance		
Local logs, Syslog, and log file export		
Alarm		
Fault detection		
Statistics		
Login through Telnet		
Login through SSH		
Dual-image (dual-OS) backup		
Hardware watchdog		
AC cluster management; automatic information synchronization between ACs in a cluster, and automatic or manual push of configuration information		
SSID-based user permission management mechanism		

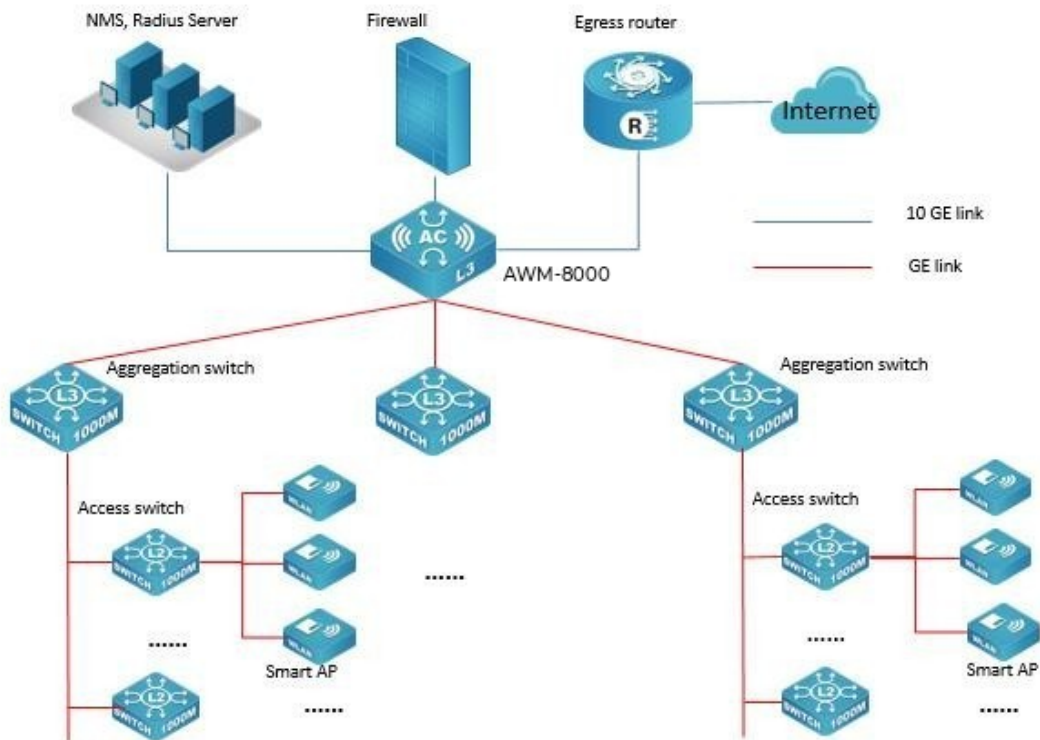
Typical Applications

Bypass Deployment Scenario



Trunk Deployment Scenario

Here the AWM-8000 is deployed as both a core switch and access controller.





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