



H3C WX3800X New Generation Access Controller

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New H3C Technologies Co., Limited

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Overview

The H3C WX3800X series wireless access controller is the latest generation of unified wired and wireless access controller featuring high performance, large capacity, high reliability and versatile business services and is targeted at enterprise networks. The WX3800X series AC equips with a high performance multi-core CPU and it adopts the innovative Comware V9 platform (referred to as V9 hereafter). V9 comes with the standard granular user control management, comprehensive RF resource management, 7x24 wireless security control, fast layer-2 and layer-3 roaming, strong QoS and IPv4/IPv6 dual stack. V9 adds in various novel wireless technologies such as multi-core control plane, next generation CUPID wireless positioning technology, Bonjour and Hotspot 2.0. It also supports multiple network configurations such as cloud computing management, IMC WSM management.

H3C WX3800X series AC consists of two models: WX3820X and WX3840X. When paired with H3C Fit Access Point (AP), it serves as an ideal access control solution for WLAN access of medium to large enterprise campus networks and wireless MAN coverage.



Diagram of WX3800X series enterprise core multi service wireless controller

Features

802.11ax AP Management

In addition to 802.11a/b/g/n/ac AP management, the WX3800X series AC can work together with H3C 802.11ax based APs to provide wireless access speed several times faster than a traditional 802.11a/b/g/n/ac network. With 802.11ax large proximity which makes WLAN multimedia applications deployment a reality.

Brand New Operating System

WX3800X series AC is developed based on the latest H3C V9 platform. The new system sports significantly improvements in performance and reliability over the previous version, and is able to run the increasingly complicated network applications in the enterprise market. V9 features the following advantages:

- Multi-core control: V9 can adjust the ratio of control cores to the forwarding cores in the CPU to make the most out of CPU computing power and strike the balance between control tasks and forwarding tasks, while providing strong concurrent computing power
- User mode multi-tasking: V9 adopts a completely new software privilege level system, where most network applications are executed in user mode, and allow each application runs a different task. Each task has its own dedicated resource and when a task fault occurs which will be isolated at its own space avoiding interruption of other tasks. This makes system run more securely and reliably
- User task monitoring: V9 comes with task monitoring feature, in which all tasks are monitored. When a user task goes wrong, system will reload and application will quickly recover

New independent application upgrade: V9 supports independent application upgrade, where a single application module is upgraded instead of the whole operating system. This greatly reduces the number of system reboots compared with the previous version, keeping the upgrade secure and sustaining the network stability

Wired and Wireless Processing Capability

WX3800X series AC adopts the latest high performance multi-core CPU. WX3840X AC CPU possesses 8 independent cores that can be virtualized to 32 logical cores, WX3820X series ACs have 4 independent cores that can be virtualized to 16 logical cores. The strong computing power allows the devices to handle more users, more concurrent transactions, decrease latency in order to improve user experience.

Flexible Forwarding Modes

In a wireless network of centralized forwarding mode, all wireless traffic is sent to an AC for processing which the forwarding capability of the AC may become a bottleneck. Especially on wireless networks where

APs are deployed at branches, ACs are deployed at the headquarters, and APs and ACs are connected over a WAN. In this scenario, Distributed forwarding is more suitable. The WX3800X series AC supports both distributed forwarding modes and centralized forwarding mode and it can set SSID based forwarding as needed.

Carrier-Class Wireless User Access Control and Management

- User-based access control is a key feature of WX3800X series AC. The WX3800X series AC comes with a user profile that serves as a configuration template to save predefined configurations. For different application scenarios, you can configure different items in a user profile, such as Committed Access Rate (CAR) and QoS policies
- During authentication, an authentication server assigns a user profile to the device. If the user passes authentication, the device uses the configuration contents in the user profile to restrict the accessibility of resources of the user. When the user goes offline, the device disables the user profile. Thus, user profiles are applicable to online users rather than offline users and users that fail to pass authentication
- The WX3800X series AC also supports MAC-based access control, which allows you to configure and modify the access rights of a user group or a particular user on an AAA server. The refined user rights control method enhances the availability of WLANs and facilitates access right assignment
- MAC-based VLAN is another strong feature of the WX3800X series AC. The administrator can assign users (or MAC addresses) with the same attributes into the same VLAN and configure a VLAN-based security policy on the AC. This simplifies system configuration and refines user management to the per-user granularity
- For security or accounting, the administrator may need to control the physical positions of wireless clients. The WX3800X series can satisfy this requirement. During authentication, the AC gets a list of permitted APs from the authentication server and then selects an AP for the requesting wireless client. In this way, the wireless client can only associate with that AP and thus its position is controlled

Smart Roaming Features

- Supports intra-AC roaming, cross-AC roaming, and cross-VLAN Layer 3 roaming
- Portal roaming information synchronization function: AC and AP support Portal users' non-perceived roaming between ACs on a large-scale network, without the Portal mac-trigger server. The wireless controller can independently assume the mac-trigger server function. This reduces the pressure on the portal server and prevents the portal server from becoming a performance bottleneck. When the Portal server is done, the online terminal can still roam without authentication between no less than 10 wireless controllers.
- 802.1X roaming information synchronization function: AC and AP support 802.1X users for fast roaming between ACs on a large-scale network. Support dot1x authentication for fast roaming between ACs. Terminals do not need to do authentication again after roaming to a new AC. Alleviate

server pressure and ensure fast access of terminals, and support fast roaming between more than 10 ACs.

- Support 802.11k/v/r fast roaming protocols

Intelligent Channel Switching

- In a WLAN, adjacent wireless APs should work in different channels to avoid channel interference. However, channels are very rare resources for a WLAN. There are a small number of non-overlapping channels for APs. For example, there are only three non-overlapping channels for the 2.4GHz network. Therefore, the key to wireless applications is how to allocate channels for APs intelligently
- Meanwhile, there are many possible interference sources that can affect the normal operation of APs in a WLAN, such as rogue APs, radars and microwave ovens. The intelligent channel switching technique can ensure the allocation of an optimal channel to each AP, thereby minimizing adjacent channel interference. Besides, the real-time interference detection function can help keep APs away from interference sources such as radars and microwave ovens

Intelligent AP Load Sharing

- According to IEEE 802.11, wireless clients control wireless roaming in WLANs. Usually, a wireless client chooses an AP based on the Received Signal Strength Indication (RSSI). Therefore, many clients may choose the same AP with a high RSSI. As these clients share the same wireless medium, the throughput of each client is reduced greatly.
- The intelligent AP load sharing function can analyze the locations of wireless clients in real time, dynamically determine which APs at the current location can share load with one another, and implement load sharing among these APs. In addition to load sharing based on the number of online sessions, the system also supports load sharing based on the traffic of online wireless users
- Support SSID automatic hiding function based on radio resource utilization. When the radio resource reaches or exceeds the configured threshold, the SSID automatically hides to provide users with stable and reliable wireless services.

Layer 4-7 Deep packet inspection

The WX3800X series AC can identify variety of applications and policy control can be implemented including priority adjustment, scheduling, blocking, and rate limiting to ensure efficient bandwidth resource and improve the network quality.

Layer 7 Wireless Intrusion Detection and Prevention Systems (WIDS / WIPS)

- The WX3800X series AC supports the blacklist, whitelist, rogue device defense, bad packet detection, illegal user removal, upgradeable Signature MAC layer attack detection (DoS attack, Flood attack or man-in-the-middle attack) and counter measures
- With the built-in knowledge base in WX3800X, you can perform timely and accurate wireless security decisions. For determined attack sources such as rogue AP or terminals, you can perform visible physical location monitoring and switch physical port removing
- With H3C firewall/IPS device, network infrastructure can also implement layer 7 security defense in wireless campus, covering wired (802.11) and wireless (802.3) secure connections on an end-to-end basis

New Wireless Intelligent Application Aware (WIAA)

Wireless Intelligent Application Aware Feature (WIAA) provides a user role based application layer security, QoS and forwarding policy for wired and wireless users. With WIAA, administrator can specify websites users' browsing, application protocols (i.e. HTTP, FTP) they use and bandwidth they are allocated. H3C V9 AC comes with Deep Packet Inspection (DPI) capability, expanding application detection and detailed statistics. The detection of previous generation AC is based on layer 4 Ethernet protocol (e.g. 80 maps to HTTP, 20/21 maps to FTP, etc.), which can be easily circumvented by agents, while the new V9 AC is based on layer 7 characteristics of Ethernet protocols, as well as the typical packet signature to implement a more precise recognition and complete restriction. With DPI, administrator can instead of prohibiting user visit all e-commerce websites but to set restriction on a per-website basis. This simplifies configuration and improves productivity.

Hardware specifications

Item	WX3820X	WX3840X
Dimensions (WxDxH)	44 × 440 × 435 mm (1.73 × 17.32 × 17.13 in)	
Weight	9kg (installed with dual power supplies)	
Throughput	20Gbps	40Gbps
Port	Fixed: 8 × GE ports 8 × SFP ports 1 × OOBM port 2 × USB ports Expandable to:	Fixed: 8 × GE ports 8 × SFP ports 1 × OOBM port 2 × USB ports Expandable to:



Item	WX3820X	WX3840X
	8 × GE ports 2 × SFP+ ports	8 × GE ports 4 × SFP+ ports
Power supplies	Pluggable power supply, 1 + 1 redundant backup, supporting AC or DC (power supply needs to be configured separately)	
Max power consumption	36 to 107 W	
Operating and storage temperature	0°C~45°C/-40°C~70°C	
Operating and storage relative humidity	5%~95%	
Safety Compliance	UL 60950-1 CAN/CSA C22.2 No 60950-1 IEC 60950-1 EN 60950-1/A11 AS/NZS 60950 EN 60825-1 EN 60825-2 EN60601-1-2 FDA 21 CFR Subchapter J	
EMC	ETSI EN 300 386 V1.3.3:2005 EN 55024: 1998+ A1: 2001 + A2: 2003 EN 55022 :2006 VCCI V-3:2007 ICES-003:2004 EN 61000-3-2:2000+A1:2001+A2:2005 EN 61000-3-3:1995+A1:2001+A2:2005 AS/NZS CISPR 22:2004 FCC PART 15:2005 GB 9254:1998 GB/T 17618:1998	
MTBF	≥83 years	

Software specifications

Item	Feature	WX3820X	WX3840X
Basic functions	Number of managed APs by default	0	0
	Size of license	1/4/8/16/32/64/128/512	1/4/8/16/32/64/128/512/1024
	Maximum number of managed APs	768	1536 Expandable to 2048
	Maximum number of STA	15360	30720



Item	Feature	WX3820X	WX3840X
802.11MAC	802.11 Protocols	√	
	Multi-SSID (Per RF)	16	
	SSID hiding	√	
	11G protection	√	
	11n only	√	
	Use number limit	Supported: SSID based, per RF based	
	Keep-alive	√	
	Idle	√	
	Multi-country code assignment	√	
	Wireless user isolation	Supported: VLAN based wireless users 2-layer isolation SSID based wireless user 2-layer isolation	
	20MHz/40MHz auto-switch in 40MHz mode	√	
Local forwarding	Local forwarding based on SSID+VLAN		
CAPWAP	Auto AP serial number entry	√	
	AC discovery (DHCP option43, DNS)	√	
	IPv6 tunnel	√	
	Clock synchronization	√	
	Jumbo frame forwarding	√	
	Assign basic AP network parameter through AC	Supported: Static IP, VLAN, connected AC address	
	L2/L3 connection between AP and AC	√	
Roaming	Intra-AC, Inter-AP L2 and L3 roaming	√	
	Inter-AC, Inter-AP L2 and L3 roaming	√	
GW features	NAT	√	
	PPPoE	√	
	DDNS	√	
	IPSEC VPN	√	
	SSL VPN	√	
	GRE	√	
Access control	Open system, Shared-Key	√	
	WEP-64/128, dynamic WEP	√	



Item	Feature	WX3820X	WX3840X
	WPA,WPA2,WPA3	√	
	TKIP	√	
	CCMP	√ (11n recommended)	
	SSH v1.5/v2.0	√	
	Wireless EAD (End-point Access Domination)	√	
	Portal authentication	Supported: Remote Authentication, external server	
	Portal page redirection	Supported: SSID based, AP Portal page push	
	Portal by-pass Proxy	√	
	802.1x authentication	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-MD5, EAP-SIM, LEAP, EAP-FAST, EAP offload (TLS, PEAP only)	
	Local authentication	802.1X, Portal, MAC authentication	
	LDAP authentication	802.1X and Portal EAP-GTC and EAP-TLS supported by 802.1X login	
	AP location-based user access control	√	
	Guest Access control	√	
	VIP channel	√	
	ARP attack detection	Supported: Wireless SAVI	
	SSID anti-spoofing	SSID + user name binding	
	AAA server selection based on SSID and domain	√	
	AAA server back up	√	
	Local AAA server for wireless user	√	
	TACACS+	√	
QoS	Priority mapping	√	
	L2-L4 packet filtering and traffic classification	√	
	Rate limit	Supported with granularity of 8Kbps	
	802.11e/WMM	√	
	Access control based on user profile	√	
	Intelligent bandwidth limit (equal bandwidth share algorithm)	√	
	Intelligent bandwidth limit (user specific)	√	
	Intelligent bandwidth guarantee	Supported: Free flow for packets coming from every SSID When traffic is not congested, and guarantee a minimum bandwidth for each SSID when traffic is congested	



Item	Feature	WX3820X	WX3840X
	QoS Optimization for SVP phone	√	
	CAC(Call Admission Control)	Supported: based on user number/bandwidth	
	End-to-end QoS	√	
	AP upload speed limit	√	
RF management	Country code lock	√	
	Static channel and power configuration	√	
	Auto channel and power configuration	√	
	Auto transmission rate adjustment	√	
	Coverage hole detection and correction	√	
	Load balancing	Supported: based on traffic, user & frequency (dual-frequency supported)	
	Intelligent load balancing	√	
	AP load balancing group	Supported: auto-discovery and flexible setting	
Security	Static blacklist	√	
	Dynamic blacklist	√	
	White list	√	
	Rogue AP detection	Supported: SSID based, BSSID, device OUI and more	
	Rouge AP countermeasure	√	
	Flooding attack detection	√	
	Spoof attack detection	√	
	Weak IV attack detection	√	
	WIPS	Supported: 7-layer mobile security	
Layer 2 protocol	ARP (gratuitous ARP)	√	
	802.1p	√	
	802.1q	√	
	802.1x	√	
IP protocol	IPv4 protocol	√	
	Native IPv6	√	
	IPv6 SAVI	√	
	IPv6 Portal	√	
	DHCP Server (IPv4, IPv6)	√	
Multicast	MLD Snooping	√	
	IGMP Snooping	√	
	Multicast group	256	



Item	Feature	WX3820X	WX3840X
	Multicast to Unicast (IPv4, IPv6)	Supported: Set unicast limit based on operating environment	
Redundancy	1+1 failover between ACs	√	
	Intelligent AP sharing among ACs	√	
	Remote AP	√	
Management and deployment	Network management	WEB, SNMP v1/v2/v3, RMON and more	
	Network deployment	WEB, CLI, Telnet, FTP and more	
WiFi location	CUPID location	√	
Green features	Scheduled shutdown of AP RF interface	√	
	Scheduled shutdown of wireless service	√	
	Per-packet power adjustment (PPC)	√	
WLAN application	RF Ping	√	
	Remote probe analysis	√	
	RealTime Spectrum Guard (RTSG)	√	
	Wireless Intelligent Application Aware (WIAA)	Supported/ Stateful Inspection Firewall	
	Packet forwarding fairness adjustment	√	
	802.11n packet forwarding suppression	√	
	Access based traffic shaping	√	
	Co-AP channel sharing	√	
	Co-AP channel reuse	√	
	RF interface transmission rate adjustment algorithm	√	
	Drop wireless packet with weak signal	√	
	Disable user access with weak signal	√	
	Disable multicast packet caching	√	
Status blink(limited to some AP)	√		
New added features	Policy forwarding	√	
	VLAN pool	√	
	Bonjour gateway	√	
	802.11w	√	
	802.11k	√	
	Hotspot2.0 (802.11u)	√	

Item	Feature	WX3820X	WX3840X
	NAT	√	
	VPN	√	

Ordering Information:

Product ID	Product Description
EWP-WX3820X-GL	H3C WX3820X Access Controller
EWP-WX3840X-GL	H3C WX3840X Access Controller
EWPXM1XG03	H3C WX3500X Ethernet Interface Expansion Module (8GE+2*SFP+) optional
EWPXM1XG20	AP management capability extension module(512 AP management expansion+2*SFP+) only apply to WX3840X, optional
PSR250-12A1-D	250W AC Power Module
LIS-WX-1-BE	Enhanced Access Controller License, 1 AP, for V9
LIS-WX-4-BE	Enhanced Access Controller License,4 APs, for V9
LIS-WX-8-BE	Enhanced Access Controller License,8 APs, for V9
LIS-WX-16-BE	Enhanced Access Controller License,16 APs, for V9
LIS-WX-32-BE	Enhanced Access Controller License,32 APs, for V9
LIS-WX-64-BE	Enhanced Access Controller License,64 APs, for V9
LIS-WX-128-BE	Enhanced Access Controller License,128 APs, for V9
LIS-WX-512-BE	Enhanced Access Controller License,512 APs, for V9
LIS-WX-1024-BE	Enhanced Access Controller License,1024 APs, for V9
SFP-XG-LX-SM1310-E	SFP+ Module(1310nm,10km,LC)

SFP-XG-SX-MM850-E	SFP+ Module(850nm,300m,LC)
SFP-GE-SX-MM850-A	1000BASE-SX SFP Transceiver, Multi-Mode (850nm, 550m, LC)
SFP-GE-LX-SM1310-A	1000BASE-LX SFP Transceiver, Single Mode (1310nm, 10km, LC)
SFP-FE-SX-MM1310-A	100BASE-FX SFP Transceiver, Multi-Mode (1310nm, 2km, LC)
SFP-FE-LX-SM1310-A	100BASE-LX SFP Transceiver, Single Mode (1310nm, 15km, LC)



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