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
- Client reassociation, this feature enables an AP to send unsolicited deauthentication frames to a client when the signal strength of the client is lower than the specified RSSI threshold. Then, the client can reassociate with the AP or roam to another AP.

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

RRM

Radio Resource Management (RRM), the AP monitors air interface channel utilization, channel interference, and signal conflict in real time, and works with H3C Cloudnet to adjust RF parameters such as working channel, bandwidth, and power in a timely manner to maintain the optimal RF resource status.

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)	440 mm × 435 mm × 44 mm	
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: 8 × GE ports 2 × SFP+ ports	Fixed: 8 × GE ports 8 × SFP ports 1 × OOBM port 2 × USB ports Expandable to: 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)	
Storage	H3C WCG300 1.92TB 6G SATA 2.5in SSD	
Max power consumption	36 to 107 W	
Backup	Cloud cluster	
Operating and storage temperature	0℃~45℃/-40℃~70℃	
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	

Item	WX3820X	WX3840X
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
802.11MAC	802.11 Protocols	support	
	Max number of SSIDs	2048	
	SSID hiding	support	
	11G protection	support	
	11n only	support	
	Use number limit	Supported: SSID based, per RF based	
	Keep-alive	support	
	Idle	support	
	Multi-country code assignment	support	
	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	support	
	LACP	support	
	Local forwarding	Local forwarding based on SSID+VLAN	
CAPWAP	Auto AP serial number entry	support	
	AC discovery (DHCP option43, DNS)	support	
	IPv6 tunnel	support	
	DTLS encryption	support	
	Clock synchronization	support	
	Jumbo frame forwarding	support	
	Assign basic AP network parameter through AC	Supported: Static IP, VLAN, connected AC address	
	L2/L3 connection between AP and AC	support	
	NAT traversal between AP and AC	support	

Item	Feature	WX3820X	WX3840X
Roaming	Intra-AC, Inter-AP L2 and L3 roaming	support	
	Inter-AC, Inter-AP L2 and L3 roaming	support	
GW features	NAT	support	
	PPPoE	support	
	DDNS	support	
	IPSEC VPN	support	
	SSL VPN	support	
	GRE	support	
Access control	Open system, Shared-Key	support	
	WEP-64/128, dynamic WEP	support	
	WPA/WPA2 authentication and encryption	WPA/WPA2-PSK+TKIP WPA/WPA2-PSK+CCMP WPA/WPA2-802.1X+TKIP WPA/WPA2-802.1X+CCMP WPA/WPA2-PSK+TKIP-CCMP WPA/WPA2-802.1X+TKIP-CCMP	
	Encryption	TKIP, CCMP WPA2-Personal (802.11i) WPA2-Enterprise with 802.1X WPA3-Personal, WPA3-Enterprise WPA3-Enhanced Open (OWE) Advanced Encryption Standard (AES)	
	AES	support	
	TKIP	support	
	CCMP	support (11n recommended)	
	SSH v1.5/v2.0	support	
	Wireless EAD (End-point Access Domination)	support	
	PSK	Support PSK and Private-PSK Support Multiple SSIDs and multiple PSKs Each SSID use a unique PSK password	
	PPSK	Private Pre-Shared Key, obtain passwords to access wireless networks through the Cloudnet platform	
	Portal authentication	Supported: Remote Authentication, external server	
	Portal page redirection	Supported: SSID based, AP Portal page push	
	Portal by-pass Proxy	support	
	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	

Item	Feature	WX3820X	WX3840X
	LDAP authentication	802.1X and Portal EAP-GTC and EAP-TLS supported by 802.1X login	
	AP location-based user access control	support	
	Guest/Captive portal control	support	
	VIP channel	support	
	ARP attack detection	Supported: Wireless SAVI	
	SSID anti-spoofing	SSID + user name binding	
	AAA server selection based on SSID and domain	support	
	Radius	support radius authentication and accounting packets	
	AAA server back up	support	
	Local AAA server for wireless user	support	
	Third-party server	ISE/ClearPass/FreeRADIUS/Active Directory	
	TACACS+	support	
QoS	Priority mapping	support	
	L2-L4 packet filtering and traffic classification	support	
	Rate limit	Supported with granularity of 8Kbps	
	802.11e/WMM	support	
	Access control based on user profile	support	
	Intelligent bandwidth limit (equal bandwidth share algorithm)	support	
	Intelligent bandwidth limit (user specific)	support	
	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	
	QoS Optimization for SVP phone	support	
	CAC(Call Admission Control)	Supported: based on user number/bandwidth	
	End-to-end QoS	support	
	AP upload speed limit	support	
RF management	Country code lock	support	
	Static channel and power configuration	support	
	Auto channel and power configuration	support	
	Auto transmission rate adjustment	support	

Item	Feature	WX3820X	WX3840X
	Coverage hole detection and correction	support	
	Load balancing	Supported: based on traffic, user & frequency (dual-frequency supported)	
	Intelligent load balancing	support	
	Band steering	Improve service quality by prioritizing access to 5G frequency bands for wireless clients	
	AP load balancing group	Supported: auto-discovery and flexible setting	
Security	Static blacklist	support	
	Dynamic blacklist	support	
	White list	support	
	Rogue AP detection	Supported: SSID based, BSSID, device OUI	
	Rouge AP countermeasure	support	
	Flooding attack detection	support	
	Spoof attack detection	support	
	Weak IV attack detection	support	
	WIPS	Supported: 7-layer mobile security	
Layer 2 protocol	ARP (gratuitous ARP)	support	
	802.1p	support	
	802.1q	support	
	802.1x	support	
IP protocol	IPv4 protocol	support	
	Native IPv6	support	
	IPv6 SAVI	support	
	IPv6 Portal	support	
	NTP	support	
	DHCP Server (IPv4, IPv6)	support	
Multicast	MLD Snooping	support	
	IGMP Snooping	support	
	Multicast group	256	
	Multicast enhancement	Convert multicast data into unicast data for transmission, reducing network congestion	
	Multicast to Unicast (IPv4, IPv6)	Supported: Set unicast limit based on operating environment	
Redundancy	1+1 hot backup	support	
	N+1 backup	support	
	dual-link backup	support	
	Intelligent AP sharing among ACs	support	
	Remote AP	support	
	Network management	WEB, SNMP v1/v2c/v3, RMON	

Item	Feature	WX3820X	WX3840X
Management and deployment	Network deployment	WEB, CLI, Telnet, FTP	
WiFi location	BLE location	support	
	RSSI location	support	
Green features	Scheduled shutdown of AP RF interface	support	
	Scheduled shutdown of wireless service	support	
	Per-packet power adjustment (PPC)	support	
WLAN application	RF Ping	support	
	Remote probe analysis	support	
	RealTime Spectrum Guard (RTSG)	support	
	Wireless Intelligent Application Aware (WIAA)	Supported/ Stateful Inspection Firewall	
	Packet forwarding fairness adjustment	support	
	802.11n packet forwarding suppression	support	
	Access based traffic shaping	support	
	Co-AP channel sharing	support	
	Co-AP channel reuse	support	
	RF interface transmission rate adjustment algorithm	support	
	Drop wireless packet with weak signal	support	
	Disable user access with weak signal	support	
	Disable multicast packet caching	support	
	Status blink(limited to some AP)	support	
Smart O&M feature	Smart O&M Card（Expansion Module）	Network Information Visualization	
		Hierarchical Account Management	
		Realtime Monitoring of Running Status of Devices on Whole Network	
		Built-in Authentication Server and Multiple Local Authentication Mode	
		Operation and Maintenance Data Localization, Effectively Protect User Data Security	
		Long Term Storage of O&M Information and Logging	

Item	Feature	WX3820X	WX3840X
		One-Click Diagnosis to Automatically Discover Configuration and Network Faults and Provide Troubleshooting Suggestions	
		Self-healing, for Common Wireless Problems, and Auto Optimization	
New added features	Policy forwarding	support	
	VLAN pool	support	
	Bonjour gateway	support	
	BYOD	Identifies device types according to the OUI in the MAC address.	
		Identifies device types according to the user agent (UA) field in an HTTP packet.	
		Identifies device types according to DHCP Option information.	
	802.11w	support	
	802.11k	support	
	Hotspot2.0 (802.11u)	support	
	NAT	support	
	VPN	support	

Ordering Information:

Product ID	Product Description
EWP-WX3820X	H3C WX3820X Access Controller
EWP-WX3840X	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

LIS-WX-4-BE	Enhanced Access Controller License,4 APs
LIS-WX-8-BE	Enhanced Access Controller License,8 APs
LIS-WX-16-BE	Enhanced Access Controller License,16 APs
LIS-WX-32-BE	Enhanced Access Controller License,32 APs
LIS-WX-64-BE	Enhanced Access Controller License,64 APs
LIS-WX-128-BE	Enhanced Access Controller License,128 APs
LIS-WX-512-BE	Enhanced Access Controller License,512 APs
LIS-WX-1024-BE	Enhanced Access Controller License,1024 APs
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)

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