H3C WX3800H New Generation Access Controller

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New H3C Technologies Co., Limited

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Overview

The H3C WX3800H 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 WX3800H series AC equips with a high performance multi-core CPU and it adopts the innovative Comware V7 platform (referred to as V7 hereafter). V7 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. V7 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, hierarchical AC and IRF.

H3C WX3800H series AC consists of two models: WX3820H and WX3840H. 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.

WX3820H

WX3840H

Features

802.11ax AP Management

In addition to 802.11a/b/g/n/ac AP management, the WX3800H 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

WX3800H series AC is developed based on the latest H3C V7 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. V7 features the following advantages:

- Multi-core control: V7 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: V7 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: V7 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: V7 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

WX3800H series AC adopts the latest high performance multi-core CPU. WX3840H AC CPU possesses 8 independent cores that can be virtualized to 32 logical cores, WX3820H 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.

High Port Density for Access

WX3800H series AC provides high port density for external access. This results in better unified wired and wireless access (integrated wired and wireless user management including user access, user authentication and billing management) and satisfy network construction and access requirements.

- WX3820H provides 8 GE Combo and 2 10G SFP+ ports;

- WX3840H provides 8 GE Combo, 2 10G SFP+ ports and 1 management port. The management provides out-of-band management capability

IRF Hot-standby

WX3800H series AC supports IRF (Intelligent Resilient Framework) developed by H3C. The rationale behind the IRF model is virtualized as a single distributed device, which possesses the following advantages:

- Simple network configuration: IRF does not require dedicated stack cables and ports, the stack is created once they are connected in layer 2

- Capability stacks: IRF group appears to be a single virtualized AC, with the number of users and APs managed equal to individual AC’ s capacity

- Simple configuration: configuration changes made to the virtual AC will automatically synchronized to

other physical AC

- Highly reliable backup: supports 1+1 hot backup, meaning all applications have backups, and a single AC failure will not affect the functioning of virtual AC. WX3800H series AC supports a maximum of two-device stack

- Flexible license control: A license installed in one device of IRF can be shared by other devices, number of APs that can be connected to the virtual AC is the sum of licenses possessed by all physical ACs; although licenses are installed and tied to individual device, unload and migration becomes more convenient

Hierarchical AC Architecture

Hierarchical AC architecture is the brand new network configuration engineered by H3C to cater for the need of multi-layer network construction in the market. Hierarchical AC employs the centralized management hierarchy similar to the large enterprise, where one core layer management AC associates with multiple local access layer ACs, and access layer ACs directly connects with underlying APs. Access layer ACs' mainly serve real-time applications such as AP access and data forwarding, while core layer ACs' mainly focus on non-realtime tasks such as management control and centralized authentication, and still retain the functions of connecting APs and forwarding data that typical ACs have. Core layer ACs are high performance ACs and are deployed in the convergence layer; access layer ACs can be comprised of standard ACs, all-in-one ACs (with router and DPI features), or wired and wireless ACs, and are deployed in parallel with existing network. Hierarchical AC network construction model puts wired and wireless integration to the next level, and is applicable to large-scale wireless network construction. Hierarchical AC model maps naturally to the head quarter and branch deployment scenario, where core link bandwidth and core AC forwarding power no longer become a bottleneck. Core layer AC centralized control, access layer AC and lower level APs can be conveniently upgraded and synchronized automatically, and greatly simplifies version upgrade tasks. Access layer AC will be responsible for AP switching and significantly improves roaming performance

CUPID Wireless Positioning

H3C CUPID is a highly precise wireless positioning technology based on WLAN environment. It has the following advantages and features:

Highly precise

Traditional triangular and fingerprint positioning is based on Received Signal Strength Indicator (RSSI) power, and its precision is inevitably affected by RSSI power level fluctuation. Indoor decorations and the random nature of customer traffic will cause perturbation in RSSI data. H3C CUPID based positioning technology integrates information from Atheros chips and WLAN to make indoor positioning more precise, and overcome the limitation of RSSI based positioning systems. The positioning error could be as little as 3-5 meters under good conditions

Low latency

CUPID has lower latency compared with traditional signal based positioning technology. As it is based on active information compiled from the Access Point, its delay can be limited to within 2 seconds, and significantly improve the efficiency in signal and data collection

No pre-sampling

Traditional fingerprint based positioning requires substantial time and resource in sampling, and re-sampling is needed whenever changes are made to the deployment configuration, such as AP antenna or position. This creates considerable impact to the positioning system performance. CUPID positioning can skip the sampling process and the AP can start positioning right away with existing deployment configurations. CUPID also supports cross-channel deployment. Each channel could be deployed in up to six spectra, this would suppress interfaces in the same spectrum and improve positioning precision

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 WX3800H 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 WX3800H series AC. The WX3800H 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 WX3800H 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 WX3800H 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 WX3800H 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

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

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

- The WX3800H 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 WX3800H, 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 V7

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 V7 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	WX3820H	WX3840H
Dimensions (WxDxH)	440mm×420mm×43.6mm	
Weight	7.3kg (installed with dual power supplies)	
Port	8 GE+SFP combo 2 SFP+ 1 console	8 GE+SFP combo 2 SFP+ 1 console 1 OBM
Power supplies	1 AC power supply included, swappable power supply, 1+1 redundant backup (separately ordered)	
Max power consumption	<300W	
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	WX3820H	WX3840H
MTBF	⩾38 years	

Software specifications

Item	Feature	WX3820H	WX3840H
Basic functions	Number of managed APs by default	0	0
	Size of license	1/4/8/16/32/64/128/512/1024	
	Maximum number of managed APs	512	1024
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	√	
	NAT traversal 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	√	

Item	Feature	WX3820H	WX3840H
	DDNS	√	
	IPSEC VPN	√	
	SSL VPN	√	
	GRE	√	
Access control	Open system, Shared-Key	√	
	WEP-64/128, dynamic WEP	√	
	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)	√	

Item	Feature	WX3820H	WX3840H
	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	√	
	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	
	Multicast to Unicast (IPv4, IPv6)	Supported: Set unicast limit based on operating environment	
Redundancy	1+1 failover between ACs	√	

Item	Feature	WX3820H	WX3840H
	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)	√	
	NAT	√	
	VPN	√	

Ordering Information:

Product ID	Product Description
EWP-WX3820H-GL	H3C WX3820H Access Controller
EWP-WX3840H-GL	H3C WX3840H Access Controller
PSR150-A1-GL	150W AC Power Module
LIS-WX-1-BE	Enhanced Access Controller License, 1 AP, for V7
LIS-WX-4-BE	Enhanced Access Controller License,4 APs, for V7
LIS-WX-8-BE	Enhanced Access Controller License,8 APs, for V7
LIS-WX-16-BE	Enhanced Access Controller License,16 APs, for V7
LIS-WX-32-BE	Enhanced Access Controller License,32 APs, for V7
LIS-WX-64-BE	Enhanced Access Controller License,64 APs, for V7
LIS-WX-128-BE	Enhanced Access Controller License,128 APs, for V7
LIS-WX-512-BE	Enhanced Access Controller License,512 APs, for V7
LIS-WX-1024-BE	Enhanced Access Controller License,1024 APs, for V7
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)

The Leader in Digital Solutions

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