H3C WX2812X-PWR New Generation Access Controller

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New H3C Technologies Co., Limited

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Overview

The H3C WX2812X-PWR wireless Access Controller (AC) is well designed and positioned for SME network. It features gateway and AC function integration, reducing the number of devices and TCO in network. 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, Bonjour and Hotspot 2.0. It also supports multiple network configurations such as cloud management and hierarchical AC. When paired with H3C Fit Access Point (AP), it serves as an ideal access control solution for WLAN access of SMB network.

WX2812X-PWR

Features

All Inclusive AP License

The WX2812X-PWR series AC includes AP license as following by default, which protects customer's investment to maximum, which also give SMB/SME a great opportunity to add new AP with the wireless network expansion without additional cost.

model	AP license by default
WX2812X-PWR	18

All-in-one Gateway

The WX2812X-PWR series AC integrates PoE, gateway and AC function in one box, which is perfect for SOHO, SMB and SME environment. WX2812X-PWR series AC supports full enterprise controller feature

sets, in addition, WX2812X-PWR series AC supports gateway function, such as PPPOE, NAT, dynamic IP address, and static IP address setting function. It also supports Bonjour Gateway, which helps enterprise to easily manage and control Apple devices, such as AirPrint printers, Apple TVs, iPad and more.

Embedded PoE+ Capability

The WX2812X-PWR series AC all LAN ports support 802.3af/802.3at PoE function, which saves TCO to customer's existing environment and reduce the single points of failure at the same time. Single port can provide maximum 30W, providing power to connected devices, such as IP phones, wireless APs, and high-power cameras.

802.11ax AP Management

In addition to 802.11a/b/g/ac/ac wave2 AP management, the WX2812X-PWR 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/ac/ac wave2 network. With 802.11ax large proximity which makes WLAN multimedia applications deployment a reality.

Brand New Operating System

WX2812X-PWR 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

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 WX2812X-PWR 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 WX2812X-PWR series AC. The WX2812X-PWR 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 WX2812X-PWR 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 WX2812X-PWR 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 WX2812X-PWR 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

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.

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 WX2812X-PWR 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 WX2812X-PWR 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 WX2812X-PWR, 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

RealTime Spectrum Guard

- Real Time Spectrum Guard (RTSG) is the innovative H3C professional state-monitoring program for the wireless spectrum. All AC models support the internal RF data acquisition module of Sensor AP to achieve deeply integrated monitoring and real time spectrum protection.

- It can achieve 24x7 wireless signal quality monitoring, trend assessment and unauthorized interference alert. Through active probe and 2.4GHz/5GHz RF interference source (WiFi or non-WiFi) in every band, it provides a graphic representation of real-time FFT plot of the spectral density plot, spectrum diagram, the duty cycle map, event spectrum diagram, channel gain and interference gain. It can also automatically identify the source of interference, determine the location of rogue wireless equipment and ensure that the wireless network is always in great shape.

Hardware Specifications

Item	WX2812X-PWR
Dimensions (WxDxH)	440*220*43.6mm
Weight	2.9kg
Wireless throughput	4Gbps
Port	LAN：2*SFP Plus + 12*PoE+ WAN：2 GE + 1*USB
Power supplies	100V AC~240V AC:50/60Hz
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

Item	WX2812X-PWR
	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

Software specifications

Item	Feature	WX2812X-PWR
Basic functions	Number of managed APs by default	18
	Size of license	NA
	Maximum number of managed APs	18
	Maximum users of authentication	1024
802.11MAC	802.11 Protocols	Support
	Multi-SSID (Per RF)	18
	SSID hiding	Support
	11G protection	Support
	11n only	Support
	Use number limit	Supported: SSID based, per RF based
	Keepalive	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
	Local forwarding	Local forwarding based on SSID+VLAN
CAPWAP	Auto AP serial number entry	Support
	AC discovery (DHCP option43, DNS)	Support
	Compatible with LWAPP AP	Support
	IPv6 tunnel	Support
	Clock synchronization	Support

Item	Feature	WX2812X-PWR
	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
	Remote AP	Support
Roaming	Intra-AC, Inter-AP L2 and L3 roaming	Support
	Inter-AC, Inter-AP L2 and L3 roaming	Support
	WIFI5 zero roaming	Support
	WIFI6 zero roaming	Support
	AGV zero roaming	Support
GW Features	NAT	Support
	PPPoE	Support
	DDNS	Support
	SSL VPN	Support
	IPSEC VPN	Support
	RIP	Support
	GRE	Support
Access control	Open system, Shared-Key	Support
	WEP-64/128, dynamic WEP	Support
	WPA,WPA2,WPA3	Support
	TKIP	Support
	CCMP	Support(11n recommended)
	SSH v1.5/v2.0	Support
	Wireless EAD (End-point Access Domination)	Support
	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
	LDAP authentication	802.1X and Portal EAP-GTC and EAP-TLS supported by 802.1X login
	AP location-based user access control	Support
	Guest Access control	Support

Item	Feature	WX2812X-PWR
	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
	AAA server back up	Support
	Local AAA server for wireless user	Support
	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
	Coverage hole detection and correction	Support
	Load balancing	Supported: based on traffic, user & frequency (dual-frequency supported)
	Intelligent load balancing	Support
	AP load balancing group	Supported: auto-discovery and flexible setting
Security	Static blacklist	Support

Item	Feature	WX2812X-PWR
	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/WIDS	Supported: 7-layer mobile security
Layer 2 protocol	ARP (gratuitous ARP)	Support
	802.1p	Support
	802.1q	Support (Maximum VLANs: 4094)
	802.1x	Support
IP protocol	IPv4 protocol	Support
	Native IPv6	Support
	IPv6 SAVI	Support
	IPv6 Portal	Support
Multicast	MLD Snooping	Support
	IGMP Snooping	Support
	Multicast group	256
	Multicast to Unicast (IPv4, IPv6)	Supported: Set unicast limit based on operating environment
Redundancy	1+1 failover between ACs	Support
	Dual-link backup	Support
Management and deployment	Network management	WEB, SNMP v1/v2/v3, RMON
	Network deployment	WEB, CLI, Telnet, FTP
WiFi location	CUPID 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	Support

Item	Feature	WX2812X-PWR
	adjustment	
	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
New added features	Policy forwarding	Support
	VLAN pool	Support
	Bonjour gateway	Support
	802.11w	Support
	802.11k, v, r	Support
	Hotspot2.0 (802.11u)	Support
	NAT	Support
	VPN	Support

Ordering Information:

Product ID	Product Description
EWP-WX2812X-PWR	H3C WX2812X-PWR 16-Port (14*1000BASE-T and 2*SFP Plus) Access Controller
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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