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# H3C WX2800X New Generation Access Controller

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New H3C Technologies Co., Limited

# H3C WX2800X New Generation Access Controller

## Overview

The H3C WX2800X wireless Access Controller (AC) 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.

H3C WX2800X series AC consists of 2 models: WX2860X, WX2880X. When paired with H3C Fit Access Point (AP), it serves as an ideal access control solution for WLAN access of small or medium network such as Branch, retail, small campus.

WX2860X/2880X

# Features

## All-in-one Gateway

The WX2800X series AC (WX2860X & WX2880X) integrates gateway and AC function in one box, which is perfect for SOHO, SMB and SME environment. WX2800X series AC supports full enterprise controller feature sets, in addition, WX2800X series AC supports gateway function, such as PPPOE, NAT, dynamic IP address, and static IP address setting function. It also support Bonjour Gateway, which helps enterprise to easily manage and control Apple devices, such as AirPrint printers, Apple TVs, iPad and more.

## 802.11ax AP Management

In addition to 802.11a/b/g/ac/ac wave2 AP management, the WX2800X 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

WX2800X 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 WX2800X 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 WX2800X series AC. The WX2800X 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 WX2800X 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 WX2800X 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 WX2800X 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 WX2800X 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 WX2800X 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 WX2800X, 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

## Real Time 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 | WX2860X | WX2880X |
|---|---|---|
| Dimensions (WxDxH) | 440 mm *250 mm *43.6 mm | |
| Weight | 3.1kg (single power supply) | 3.3kg (dual power supply) |
| Wireless throughput | 10Gbps | |
| Port | WAN 2*2.5GE & LAN 8*GE & LAN 2*SFP+ & 1*USB + 1*Console | |
| Power supplies | Built in single power supply | Built in dual power supply |
| Operating and storage temperature | 0℃~45℃/-40℃~70℃ | |
| Operating and storage relative humidity | 5%~95% | |
| Safety Compliance | UL 60950-1<br>CAN/CSA C22.2 No 60950-1<br>IEC 60950-1<br>AS/NZS 60950-1<br>FDA 21 CFR Subchapter J<br>GB 4943.1<br>UL 62368-1<br>CAN/CSA C22.2 No 62368-1<br>IEC 62368-1<br>EN 62368-1<br>AS/NZS 62368-1 | |
| EMC | EN 55032:2012 Class A<br>EN 55032:2012/AC:2013 Class A<br>EN 55032:2015 Class A<br>AS/NZS CISPR 32:2015 Class A<br>EN 55024:2010<br>EN 55024:2010+A1:2015<br>EN 55035:2017<br>EN 300 386 V2.1.1(2016-07)<br>EN 61000-3-2:2014<br>EN 61000-3-3:2013<br>VCCI-CISPR 32:2016 Class A<br>FCC Part 15 Subpart B Class A<br>ICES-003 Issue 7 Class A<br>ANSI C63.4-2014<br>ANSI C63.4a-2017<br>GB/T9254-2008 | |
| MTBF | ≥145 yrs | |

# Software specifications

| Item | Feature | WX2860X | WX2880X |
|---|---|---|---|
| Basic functions | Number of managed APs by default | 0 | |
| | Size of license | 1/4/8/16/32/64/128 | |
| | Maximum number of managed APs | 144 | 288 |
| | Maximum number of configured APs | 288 | 576 |
| | Maximum users of authentication | 4096 | 8192 |
| | ARP table | 8192 | 16384 |
| | ND table | 8192 | 16384 |
| 802.11MAC | 802.11 Protocols | √ | |
| | Maximum SSID number of the whole machine | 128 | |
| | SSID hiding | √ | |
| | 11G protection | √ | |
| | 11n only | √ | |
| | Use number limit | Supported: SSID based, per RF based | |
| | Keepalive | √ | |
| | Idle | √ | |
| | Multi-country code assignment | √ | |
| | Wireless user isolation | Supported:<br>VLAN based wireless users 2-layer isolation<br>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 | |

| Item | Feature | WX2860X | WX2880X |
|---|---|---|---|
| | 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 | √ | |
| | DDNS | √ | |
| | SSL VPN | √ | |
| | IPSEC VPN | √ | |
| | RIP | √ | |
| | GRE | √ | |
| Access control | Open system, Shared-Key | √ | |
| | WEP-64/128, dynamic WEP | √ | |
| | WPA,WPA2,WPA3 | √ | |
| | TKIP | √ | |
| | CCMP | √ | |
| | 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<br>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 | √ | |

| Item | Feature | WX2860X | WX2880X |
|---|---|---|---|
| | 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 | |
| | 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 | |
| | Rouge AP countermeasure | √ | |
| | Flooding attack detection | √ | |

| Item | Feature | WX2860X | WX2880X |
|---|---|---|---|
| | Spoof attack detection | √ | |
| | Weak IV attack detection | √ | |
| | WIPS/WIDS | Supported: 7-layer mobile security | |
| Layer 2 protocol | ARP (gratuitous ARP) | √ | |
| | 802.1p | √ | |
| | 802.1q | √ (Maximum VLANs: 4094) | |
| | 802.1x | √ | |
| IP protocol | IPv4 protocol | √ | |
| | Native IPv6 | √ | |
| | IPv6 SAVI | √ | |
| | IPv6 Portal | √ | |
| 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 | √ | |
| | Intelligent AP sharing among ACs | √ | |
| | Remote AP | √ | |
| Management and deployment | Network management | WEB, SNMP v1/v2/v3, RMON | |
| | Network deployment | WEB, CLI, Telnet, FTP | |
| 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 | √ | |

| Item | Feature | WX2860X | WX2880X |
|---|---|---|---|
| | 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,v,r | √ | |
| | Hotspot2.0 (802.11u) | √ | |
| | NAT | √ | |
| | VPN | √ | |

## Ordering Information:

| Product ID | Product Description |
|---|---|
| EWP-WX2860X | H3C WX2860X Access Controller with 10*1000BASE-T Ports and 2*SFP Plus Ports |
| EWP-WX2880X | H3C WX2880X Access Controller with 10*1000BASE-T Ports and 2*SFP Plus Ports |
| 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 |
| 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-XG-LX-SM1310-E | SFP+ Module(1310nm,10km,LC) |
| SFP-XG-SX-MM850-E | SFP+ 10Gb Module(850nm,300m,LC) |

The Leader in Digital Solutions

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