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Intelbras Wireless Controller WC 3000 Series

Intelbras WC 3000 New Generation Wireless Controller

Overview

The Intelbras WC 3000 wireless Access Controller (AC) features gateway and AC function integration, reducing the number of devices and TCO in network. It 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. It 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.

Intelbras WC 3000 series AC consists of 2 models: WC 3010, WC 3020. When paired with Intelbras 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

WC 3010/3020

Features

All-in-one Gateway

The WC 3000 series AC (WC 3010 & WC 3020) integrates gateway and AC function in one box, which is perfect for SOHO, SMB and SME environment. WC 3000 series AC supports full enterprise controller feature sets, in addition, WC 3000 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 WC 3000 series AC can work together with Intelbras 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

WC 3000 series AC is developed based on the latest Intelbras OS 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. Intelbras OS platform features the following advantages:

- Multi-core control: Intelbras OS platform 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: Intelbras OS platform 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: Intelbras OS platform 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: Intelbras OS platform 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 WC 3000 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 WC 3000 series AC. The WC 3000 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 WC 3000 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 WC 3000 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 WC 3000 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 Intelbras 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 WC 3000 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 WC 3000 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 WC 3000, 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 Intelbras 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 Intelbras 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.

Specifications

Hardware Specifications

Item	WC 3010	WC 3020
Dimensions (WxDxH)	440 mm *250 mm *43.6 mm	
Weight	3.3kg	
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%	
MTBF	≥145 years	

Software specifications

Item	Feature	WC 3010	WC 3020
Basic functions	Maximum number of managedAPs	144	288
	Maximum number of configuredAPs	288	576
	Maximum users of authentication	4096	8192
	ARP table	8192	16384
	ND table	8192	16384
802.11 MAC	802.11 Protocols	√	
	Maximum SSID number of thewhole machine	128	
	SSID hiding	√	
	11G protection	√	
	11n only	√	

Item	Feature	WC 3010	WC 3020
	Use number limit	Supported: SSID based, per RF based	
	Keepalive	√	
	Idle	√	
	Multi-country code assignment	√	
	Wireless user isolation	Supported: VLAN based wireless users 2-layer isolationSSID based wireless user 2-layer isolation	
	20MHz/40MHz auto-switch in40MHz 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 andAC	√	
	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	√	
	Open system, Shared-Key	√	

Item	Feature	WC 3010	WC 3020
Access control	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 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)	√	

Item	Feature	WC 3010	WC 3020
	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	√	
	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	√	
	IPv4 protocol	√	

Item	Feature	WC 3010	WC 3020
IP 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 featurs	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	√	

Item	Feature	WC 3010	WC 3020
	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	√	

Product ID	Product Description
WC 3010	Intelbras WC 3010 Access Controller with 10*1000BASE-T Ports and 2*SFP Plus Ports
WC 3020	Intelbras WC 3020 Access Controller with 10*1000BASE-T Ports and 2*SFP Plus Ports