

WL-8200-I2 Indoor Wireless APs with Built-in Antennas



Product Overview

The WL-8200-I2 is a series of new-generation 802.11n+802.11ac-based high-performance gigabit wireless access points (APs) launched by Yunke China Information Technology Limited (hereinafter referred to as DCN) for industrial users. The WL-8200-I2 operates in a 2.4 GHz or 5 GHz band and employs technologies such as 2x2:2 MIMO and OFDM, 802.11ac can providing a data transmission rate of more than 1166 Mbps(2.4GHz 300Mbps, 5GHz 866 Mbps) .Are ideal for Electronic Education ,HD video conferencing.

While completely taking into consideration important factors, such as wireless network security, radio frequency (RF) control, mobile access, quality of service (QoS) guarantee, and seamless roaming, the WL-8200-I2 may be used with DCN wireless ACs to perform data forwarding, security, and access control of wireless users.

The WL-8200-I2 operates in a 2.4 GHz or 5 GHz band and employs technologies such as multiple-input multiple-output (MIMO) and orthogonal frequency division multiplexing (OFDM), providing a data transmission rate of at most 300 Mbps per channel and 600 Mbps per dual channels.

The WL-8200-I2 support one GE port for access, one FE extended port , one USB 2.0 port is available and can connect to a USB hard disk drive or a USB printer, offering a higher USB access rate for wireless sharing and printing. The WL-8200-I2 may be installed on the wall, desk top, or ceiling. The WL-8200-I2 supports both local power supply and power over Ethernet (PoE), which may be selected by customers to adapt to their onsite power environments. The WL-8200-I2 is a series of high-rate wireless APs preferred in various application environments for purposes such as campus WLAN access, campus coverage, and operators' hot spot coverage.

Highlights

High-Performance and High-Reliability Wireless Network

- **High-speed wireless broadband access**

The WL-8200-I2 supports the 802.11a/b/g/n/ac standard, operates in a 2.4 GHz or 5 GHz band, and provides an access bandwidth up to 1166 Mbps.

- **One GE ports for access + One FE port for wired connections**

GE ports are used as uplink ports for access, which break through the limitations of conventional FE ports, one FE port facilitate the expansion of access.

- **High-performance RF characteristics**

Professional optimized design is employed for the RF module of the WL-8200-I2, so that a single antenna port supports 20 dB transit power at all rate levels, thereby improving wireless coverage in high-rate access scenarios.

- **Automatic emergency mechanism of APs**

In a centralized network architecture where fit APs and a wireless AC are deployed, the APs will be unable to operate normally when the wireless AC is down and then the entire wireless network will crash. DCN wireless APs support an automatic emergency mechanism. This mechanism enables an AP to intelligently detect links. When detecting that the wireless AC is down, the AP quickly switches its operating mode so that it may continue to forward data while enabling new users to access the network. This mechanism attains high availability in the entire wireless network and really helps wireless users to be always online.

- **Broad operating temperature range**

Thanks to deliberate hardware design and the selection of dedicated components operating in a broad temperature range, DCN smart APs may operate in an environment with its temperature ranging from -10°C to $+55^{\circ}\text{C}$.

- **Dual-OS backup mechanism**

DCN smart APs support a dual-OS backup mechanism. When an AP fails to start from the active OS, it can immediately start from a standby OS, thereby improving the long-term running reliability of equipment in an adverse environment.

Wireless Network of Intelligent Control and Automatic Perception

- **Support 802.11ac standard**

Downward compatible with the 802.11a/b/g/n protocol, Perfect to existing and future Wi-Fi devices. Can support data transmission rate up to 1.3Gbps* and simultaneous dual-band technology.

- **Intelligent RF management**

DCN smart APs may be used with a wireless AC to perform automatic power and channel adjustment. They employ particular RF detection and management algorithms to attain a better RF coverage effect. When the signals of an AP are interfered by strong external signals, the AP may automatically switch to an appropriate operating channel under the control of the AC to avoid such interference, thereby guaranteeing wireless network communications. The system also supports wireless network blackhole compensation. When an AP on the network accidentally stops operating, the RF management function of the AC compensates the resulting blind area of signals so that the wireless network can still operate normally.

- **Intelligent control of terminals based on airtime fair**

When some outdated 802.11b and 802.11g terminals are used on a wireless network or some terminals are far way from APs, negotiation rates will be low, causing a large number of users to experience a long WLAN access delay, low rates, or poor overall AP performance. The AP performance problem in a low-rate terminal access environment, however, cannot be resolved by simply employing rate control and traffic shaping. DCN smart APs have essentially resolved this problem by using intelligent control of terminals based on airtime fairness, ensuring that a user can always enjoy the same joyful WLAN experience in the same location, no matter what type of the terminal the user is holding.

The intelligent control of terminals based on airtime fairness greatly improves the performance of both the client and the entire network. It enables all clients with high data transmission rates to attain strikingly higher performance while low-rate clients are almost not affected at all. The performance will be even more obviously higher on an open wireless network. Once high-rate clients finish data transmission, fewer clients will be transmitting data on the wireless network. In this case, there will be less contention and retry on the network, thereby greatly improving overall AP performance.

- **Intelligent load balancing mechanism**

In general, a wireless client will select an AP according to the signal strength of APs. When this uncontrolled access mode is applied, however, a large number of clients could be connected to the same AP simply because the AP provides strong signals. As more clients are connected to an AP, the bandwidth available to each client will be smaller, thereby greatly affecting user experience of the clients. DCN wireless products support diversified intelligent load balancing means:

- AP load balancing based on traffic
- AP load balancing based on the number of users
- AP load balancing based on frequency bands

- Access control based on signal strength of terminals
- Mandatory roaming control of terminals to direct terminals to APs with stronger signals

- **Intelligent identification of terminals**

DCN smart APs may be used with DCN wireless ACs and a unified authentication platform to intelligently identify the size, system type, and type of each terminal; and comprehensively support mainstream smart terminal operating systems, such as Apple iOS, Android, and Windows. They intelligently identify the size of a terminal and adaptively present a portal authentication page of the corresponding size and page pattern, freeing users from multiple times of dragging to adjust the screen and enabling users to enjoy more intelligent wireless experience. They can also intelligently identify the system type of each terminal and present the system type of each terminal such as Windows, MAC OS, or Android on the unified authentication platform, exhibiting every detail of intelligence to users. In addition, they can intelligently identify the type of each terminal such as the mobile phone, tablet, or PC, and implement dynamic policy control of terminals according to different types of the terminals, making possible more intelligent user control at a finer granularity.

- **Comprehensive support for IPv4/v6 dual-stack networks**

Powered by DCN cutting-edge IPv6 technology, DCN smart APs may be deployed on an IPv6 network, with IPv6 tunnels established through auto negotiation between a wireless AC and an AP. When the wireless AC and the AP completely operate in IPv6 mode, the wireless AC can still correctly identify IPv4 terminals and process IPv4 packets from wireless clients. Featuring flexible adaptability to IPv4/6, DCN smart APs cater to complex applications involved in migration from an IPv4 network to an IPv6 network. They not only provide IPv4 service to customers on an IPv6 network, but also enable users on an IPv4 network to log in to the network through the IPv6 protocol at ease.

- **Network-wide seamless roaming**

DCN wireless ACs support an advanced wireless AC cluster technology, which enables multiple ACs to synchronize online connection information and roaming records of all users to each other in real time. This technology implements not only L2/L3 seamless roaming inside a wireless AC but also fast roaming across wireless ACs. As client IP address information does not change and re-authentication is not required in the roaming process, the continuity of real-time mobile services is well guaranteed.

- **Support WDS mode**

Support WDS mode under both fit/fat AP mode. Use 2.4GHz and 5GHz achieve wireless bridging function.

Secure and Controllable Wireless Network

- **User isolation policy**

DCN wireless APs support the isolation of wireless users from one another. If this user isolation function is enabled, two wireless clients cannot directly communicate with each other but can only access an upstream wired network. This further guarantees the security of wireless network applications.

- **Wireless intrusion detection and intrusion defense**

DCN wireless APs support wireless intrusion detection and intrusion defense features, such as detection of unauthorized wireless devices, intrusion detection, blacklist, and white list, thereby greatly improving security management of an entire wireless network.

- **Wireless user management at a fine granularity**

Each AP supports a maximum of 32 WLANs to implement multi-layer multi-service management of wireless users at a fine granularity. Each WLAN supports access control and uplink/downlink rate limit based on MAC or IP addresses. These WLANs may be bound to virtual local area networks (VLANs). In addition, different authentication and accounting policies can be implemented. This feature is practically significant in a multi-WLAN environment.

- **Secure user admission**

DCN smart APs may be used with wireless ACs to provide multiple secure access, authentication, and accounting mechanisms for various application environments. These mechanisms include:

- 802.1x authentication
- Captive portal authentication, including built-in portal, external portal, and custom portal authentication modes
- MAC address authentication
- LDAP authentication
- WAPI encryption and authentication
- Wired/wireless integrated authentication and accounting

- **Wireless SAVI**

DCN wireless network products support a source address validation (SAVI) technology to deal with spoofed packet attacks that keep emerging on today's campus networks. As users' IP addresses are obtained through an address allocation protocol, users access the Internet using correct addresses in subsequent applications and cannot spoof others' IP addresses, thereby guaranteeing the reliability of source addresses. In addition, the SAVI technology is combined with a portal technology to further guarantee the authenticity and security of packets of all users accessing the Internet.

- **PEAP user authentication**

With the popularization and application of smart terminals, wireless terminal users require authentication mechanisms of higher usability and convenience. Using a mechanism that combines portal authentication and MAC address authentication, DCN wireless network products support Protected Extensible Authentication Protocol (PEAP) authentication to attain better user experience. Initially a user needs to manually perform portal authentication and later the user gets authenticated through PEAP in automatic mode. DCN wireless network products feature high terminal adaptation and provide good authentication compatibility. They adapt to the majority of WLAN terminals and do not need to adapt to clients. DCN wireless network products are compatible with existing portal authentication modes.

- **Secure access mechanism**

An AP is usually deployed in a public area and therefore requires a strict security mechanism to guarantee the legality of access devices. The following secure access mechanisms may be applied between a DCN smart AP and a wireless AC:

- AP MAC address authentication
- AP password authentication
- Bidirectional digital certificate authentication

- **Real-time spectrum protection**

DCN smart APs support a built-in RF collection module that integrates RF monitoring and real-time spectrum protection. By implementing communications and data collection through the respective AP, the RF collection module performs wireless environment quality monitoring, wireless network capability tendency evaluation, and unexpected-interference alarms. It resorts to a graphical means to actively detect and identify RF interference sources (Wi-Fi or non-Wi-Fi) and provides a real-time spectrum analysis diagram. In addition, it can automatically identify interference sources and determine the locations of problematic wireless devices, ensuring that a wireless network attains optimal performance.

Easy-to-Manage Wireless Network

- **Plug-and-play**

DCN smart APs are able to automatically discover DCN wireless ACs. A wireless network function can be enabled on an AP without performing any configuration on the AP at all. The AP can be seamlessly integrated with existing switches, firewalls, authentication servers, and other network devices without changing existing network architecture.

When used with a DCN wireless AC, DCN smart APs support plug-and-play and zero configuration. The wireless AC undertakes all the management, control, and configuration of the APs. Network administrators do not need to separately manage or maintain a huge number of wireless APs. All actions, such as configuration, firmware upgrade, and security policy updating, are performed uniformly under the control of the wireless AC.

- **Fit and Fat modes**

DCN smart APs may work in fit or fat mode and can flexibly switch between the fit mode and the fat mode according to network planning requirements. Users may also flexibly choose an ex-factory device version according to specific application requirements. APs working in fit mode are managed by a wireless AC in a centralized manner. System administrators may easily manage the entire network as the states of all the APs are clear at a glance.

- **Automatic AP version upgrade**

DCN smart APs may be automatically associated with a wireless AC on the live network to automatically download a latest software version and get automatically upgraded, thereby reducing the workload during network maintenance.

- **Remote probe analysis**

DCN smart APs support a remote probe analysis function, which listens to and captures Wi-Fi packets in the coverage and mirrors them to a local analysis device in real time to help network administrators better perform troubleshooting or optimization analysis. The remote probe analysis function can perform non-convergence mirroring of a working channel and sampling of all channels in polling mode as well to flexibly meet various wireless network monitoring, operation, and maintenance requirements.

- **Energy efficiency mode**

Support U-APSD power saving mode, can flexibly control USB and Ethernet port and a second spatial MIMO stream.
WL-8200-I2 80% of the material can be recycled to achieve real environmental protection.

Product Specifications

Hardware Specifications

Item	WL-8200-I2(R5)
Dimensions (mm)	200 x 170 x 40
10/100 /1000Base-T port	1
10/100Base-T port	1
Console port (RJ-45)	1
USB 2.0	1
PoE	802.3af
Local	External power adapter Input: 100 ~ 240V AC , Output: 12 V DC

Maximum power consumption	<13W(no USB)
System memory	128MB DDR3 32 MB Flash
RF port	Built-in 2.4 GHz 4 dBi antenna and 5 GHz 5 dBi antenna
Working frequency band	802.11a/n : 5.150 GHz to 5.850 GHz 802.11b/g/n : 2.4 GHz to 2.483 GHz 802.11ac: 5.150GHz to 5.250GHz 5.250GHz to 5.350GHz 5.725GHz to 5.850GHz
Modulation technology	802.11b : BPSK , QPSK , CCK 802.11a/g/n:BPSK , QPSK , 16-QAM , 64-QAM 802.11ac : BPSK , QPSK , 16-QAM , 64-QAM , 256-QAM
Transmit power	The maximum transmit power output on each antenna port is 20 dBm for all rate levels and modulation modes.
Power adjustment granularity	1 dBm
Working/Storage temperature	-0 ℃ to +50 ℃ -40 ℃ to +70 ℃
Working/Storage RH	5% to 95% (non-condensing)
Protection level	IP31

Software Specifications

Item	Feature	WL8200-I2
WLAN	Product positioning	Indoor dual-frequency
	Working frequency band	2.4 GHz and 5 GHz

Item	Feature	WL8200-I2
	Virtual AP (BSSID)	32
	Number of spatial streams	2
	Dynamic channel adjustment (DCA)	Yes
	Transmit power control (TPC)	Yes
	Blind area detection and repair	Yes
	SSID hiding	Yes
	RTS/CTS	Yes
	RF environment scanning	Yes
	Hybrid access	Yes
	Restriction on the number of access users	Yes
	Link integrity check	Yes
	Prohibiting the access of terminals with weak signals	Yes
	Forced roaming of terminals with weak signals	Yes
	Intelligent control of terminals based on airtime fairness	Yes
	High-density application optimization	Yes
11n enhancements	40 MHz bundling	Yes
	300 Mbps (PHY)	Yes
	Frame aggregation (A-MPDU)	Yes
	Maximum likelihood demodulation (MLD)	Yes
	Transmit beam forming (TxBF)	Yes
	Maximum ratio combining (MRC)	Yes
	Space-time block coding (STBC)	Yes
	Low-density parity-check code (LDPC)	Yes
Security	Encryption	64/128 WEP, TKIP, and CCMP encryption

Item	Feature	WL8200-I2
	802.11i	Yes
	WAPI	Yes
	MAC address authentication	Yes
	LDAP authentication	Yes
	PEAP authentication	Yes
	WIDS/WIPS	Yes
	Real-time spectrum protection	Yes
	Protection against DoS attacks	Anti-DoS for wireless management packets
	Forwarding security	Frame filtering, white list, static blacklist, and dynamic blacklist
	User isolation	AP L2 forwarding suppression Isolation between virtual APs (multiple SSIDs)
	Periodic SSID enabling and disabling	Yes
	Access control of free resources	Yes
	Secure admission control of wireless terminals	Secure admission control of wireless terminals based on DCSSM
	Wireless SAVI	Yes
	ACL	Access control of various data packets such as MAC, IPv4, and IPv6 packets
	Secure access control of APs	Secure access control of APs, such as MAC authentication, password authentication, or digital certificate authentication between an AP and an AC
Forwarding	IP address setting	Static IP address configuration or dynamic DHCP address allocation
	IPv6 forwarding	Yes
	IPv6 portal	Yes
	Local forwarding	Yes
	Multicast	IGMP Snooping

Item	Feature	WL8200-I2
	Roaming	Fast roaming across APs Fast roaming across ACs
	AP switching reference	Signal strength, bit error rate, RSSI, S/N, whether neighboring APs are normally operating, etc.
	WDS	Yes
QoS	WMM	Yes
	Priority mapping	Ethernet port 802.1P identification and marking Mapping from wireless priorities to wired priorities
	QoS policy mapping	Mapping of different SSIDs/VLANs to different QoS policies Mapping of data streams that match with different packet fields to different QoS policies
	L2-L4 packet filtering and flow classification	Yes: MAC, IPv4, and IPv6 packets
	Load balancing	Load balancing based on the number of users Load balancing based on user traffic Load balancing based on frequency bands
	Bandwidth limit	Bandwidth limit based on APs Bandwidth limit based on SSIDs Bandwidth limit based on terminals Bandwidth limit based on specific data streams
	Call admission control (CAC)	CAC based on the number of users
	Power saving mode	Yes
	Automatic emergency mechanism of APs	Yes
	Intelligent identification of terminals	Yes
	Wireless network VAS	Abundant wireless network VASs; applications based on smart terminals; advertisement push based on site locations; personalized push of the portal
	Multicast enhancement	Multicast to unicast
Management	Network management	Centralized management through an AC; both fit and fat modes
	Maintenance mode	Both local and remote maintenance
	Log function	Local logs, Syslog, and log file export
	Alarm	Yes

Item	Feature	WL8200-I2
	Fault detection	Yes
	Statistics	Yes
	Switching between the fat and fit modes	An AP working in fit mode can switch to the fat mode through a wireless AC; An AP working in fat mode can switch to the fit mode through a local control port or Telnet.
	Remote probe analysis	Yes
	Dual-image (dual-OS) backup mechanism	Yes
	Watchdog	Yes