



IToIP Solutions Expert

Wireless Office Network Solution

I. Overview

An enterprise needs to take into account economy and efficiency as well as its employees' requirement for work at ease during the construction of its office network. The wireless office network solution is an economical enterprise network solution featuring high efficiency and meeting employees' work requirements.

II. Why Wireless

In the third quarter of 2008, the shipments of notebook PCs in the world surpassed the shipments of desktop PCs for the first time in the history and WIFI entered ordinary people's home. As WIFI terminals are closer to the public, WIFI will enter ordinary people's life.

WIFI terminals keep emerging. The popularization of WIFI terminals and other fixed or mobile WIFI electronics will greatly promote the construction and application of WLANs. The history shows that personal terminals are the motive power driving network development.

Convenience equals productivity. The convenience of WLANs for Internet access, along with the 100M bandwidth of the 11N technology, will thoroughly change people's network usage habits, just like DSL. The new network usage habits will further promote content changes and will thus promote the development of WLAN applications.

The WIFI application environment is growing into maturity. In 2008, carriers started to construct WIFI networks on a large scale, which helped to promote the polarization of WIFI, cultivate user's network usage habits, and create a good environment for WIFI applications.

III. FIT AP

Simple configuration: Zero configuration for APs. All the configuration tasks are completed on the wireless switch. Therefore, the configuration work is simple and convenient.

Easy maintenance: Management and maintenance is performed for the wireless switch. There is no need to operate each AP.

Easy upgrade: It is only necessary to operate the wireless switch but unnecessary to separately upgrade each AP so as to meet the software version upgrade requirements that arise with the adding of new features.

High security and easy control: The system provides RF/power/channel adjustment, whitelist and blacklist, wireless intrusion detection, and secure access control.

Easier extension: APs can be flexibly added according to actual requirements and support L3 roaming to facilitate the support for services such as wireless monitoring and voice applications.

IV. Enterprise AP

Enterprise APs instead of SOHO APs should be chosen to construct a wireless office network for an enterprise.

More stable: Enterprise APs are oriented to concurrent applications of multiple customers. Features such as the concurrent applications of multiple users, large-throughput design, QoS design, and hardware encryption design, are considered during hardware selection and software design of the Enterprise APs. Due to the complex application environment, Enterprise wireless equipment can support external antennas. The wireless signal coverage can be optimized by changing the antenna type. In addition, the RF part of Enterprise APs provides a better receiving sensitivity and a larger coverage range, thus completely guaranteeing the stable running of the network in multi-user and high-traffic scenarios.

Green: Enterprise APs employ lightning protection design with professional ESD and lightning surge prevention functions for Ethernet interfaces. They use a high-performance hardware encryption technology to guarantee performance without affecting the security guarantee to wireless applications.

Healthier: Enterprise APs use high-performance RF circuits that

have little radiation and conform to the RoHS standard.

Low cost: Enterprise APs provide abundant manageability features. While guaranteeing performance and security, they can lower the maintenance cost and operating cost of the customer network and provide a solution with really high cost performance.

V. Selecting Wireless Switch

It is very important to select proper equipment from various models of wireless switches of various vendors to meet the network requirements. Then how to select a proper wireless switch?

u Proper AP Management Capability

In general, an AP supports 20 users,(1 Mbps per user). Then 20 to 30 APs can meet the application requirements of an enterprise with 400 to 600 employees. Therefore, the wireless AC capable of managing 48 APs can meet the requirements of most small- and medium-scale networks.

Considering the lifecycle of an enterprise network, a wireless AC needs to maintain several years' application. Today the IEEE802.11a/b/g standard has become a mainstream wireless access standard. Along with the maturity of the IEEE802.11n standard, the existing networks need to seamlessly integrate IEEE802.11n APs. Therefore, the wireless AC needs to meet both the data processing requirements as given in the IEEE802.11a/b/g standard and the data processing requirements as given in the IEEE802.11n standard.

u Necessary Performance Guarantee

The gigabit core has already been popularized in today's enterprise networks, and most often the uplink ports of IEEE802.11n APs are GE ports. Therefore, the wireless AC needs to provide GE processing performance. In addition to providing GE ports, it should preferably provide 10GE extension capability so as to provide higher network link adaptability.

Second, along with the popularization of delay-sensitive services such as voice services and the large traffic processing requirements of IEEE802.11n APs, the wireless AC with centralized forwarding may easily form a performance bottleneck. Therefore, the wireless AC needs to support distributed forwarding and uniformly process control packets and management packets. Data packets are directly converted on wireless APs into Ethernet packets and need not undergo tunnel

encapsulation and need not be processed by the wireless switch, so as to emancipate the wireless AC from the data forwarding performance bottleneck.

u Supporting Wireless AP Power Supply

Since wireless APs can be flexibly deployed in the network, they need to support remote power supply via POE. Currently, POE switches conform to the IEEE802.3af standard and the maximum output power is about 15 W. The mainstream IEEE802.11n APs in the industry, however, require working power higher than 15 W. To solve the power supply requirements, the wireless switch needs to support POE+ power supply as defined in the IEEE802.3at draft so as to really exhibit the performance advantages of IEEE802.11n.

The wireless switch with POE power supply can lower investment in the wireless office network.

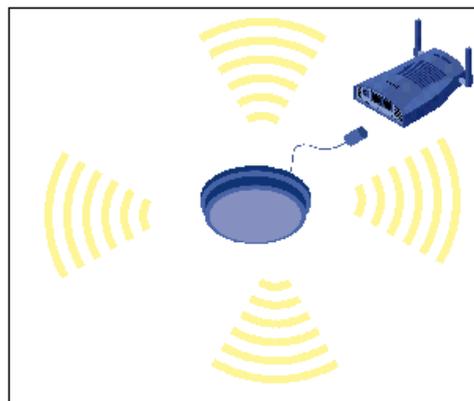
u Lowering Cost

To lower the management cost, the wireless switch should preferably integrate numerous applications, including a DHCP server for allocating IP addresses to wireless users and an integrated server for MAC address authentication, IEEE802.1x authentication, portal authentication and RADIUS authentication to guarantee user security.

VI. Wireless Deployment

Wireless APs can be wall-mounted or ceiling-mounted in an office. If they are mounted on the ceiling, generally it is recommended that ceiling antennas be installed on the ceiling, especially when the ceiling suspension is made of aluminum alloy plates, so as to attain a better coverage effect.

If a ceiling antenna is used, you can place the wireless AP at a corner of the room to facilitate installation, maintenance, and power supply, and then extend the ceiling antenna via an RF cable to the middle of the room.



If the office is made of steel concrete and the wall is thick with steel concrete, you can deploy an AP in each room. If the wall is made of light-gauge steel joist and gypsum planks, it is recommended that an AP be deployed at the corridor to cover two or three office rooms.

Wireless Security

WLANs propagate radio signals via invisible public media. Therefore, security is a huge challenge during wireless deployment. The wireless switch needs to provide the following security technologies:

- u Preventing unauthorized APs;
- u Preventing illegal users;
- u Preventing ARP attacks;
- u Preventing network bandwidth misuse;
- u Supporting black/white list setting.

VII. H3C WX3024/WX3010

H3C WX3000 series unified switch is a product independently developed by Hangzhou H3C Technologies Co., Ltd. (hereinafter referred to as "H3C") that integrates the wireless AC function and the GE Ethernet switch function. It provides GE wired access ports and supports POE+ power supply. Each port provides a maximum of 25 W power and is compatible with the 802.11a/b/g/n protocol.

H3C WX3000 series consists of two switch models: H3C WX3010 and H3C WX3024. The WX3024 provides 24 GE electrical interfaces and 4 Combo SFP GE optical interfaces. The WX3010 provides 8 GE electrical interfaces and 2 SFP GE optical interfaces. The rear panel of the WX3024 provides two 10GE interface slots, which solve the transmission bottleneck of the WLAN core. The WX3000 is positioned as an unified switch in small-/medium-scale networks and at the branches of large-scale enterprises. It is the most ideal switch for wired and wireless access for use at the branches of large-scale enterprises.

The WX3024/WX3010 integrates wireless AP management, control, and data forwarding functions. The GE ports also provide the POE power supply function and support PoE+ power supply. Each port provides a maximum of 25 W power to facilitate IEEE802.11n AP deployment. The WX3024/WX3010 provides ARP attack defense, wireless intrusion detection system (WIDS), and multiple encryption and authentication technologies to effectively address the security challenges to enterprise networks. In addition, the WX3024/WX3010 integrates multiple application services, including the DHCP server, the portal authentication server, and the RADIUS server as well as WEB management to effectively lower the network deployment cost.

VIII. Configurations

Network Scale	Less than 200 users	200 to 600 users
Recommended AP	WA2210/WA2110	WA2210/WA2110
Recommended AC	WX3010	WX3024