

Case Study

Enterprise WLAN Solution

FS Helps Build a Typical Home Wireless LAN Network

Through home WiFi network solutions, FS helps provide convenient wireless network connections, allowing family members to easily access the Internet and enjoy the convenience of streaming media, online entertainment and smart home devices.

FS Helps Build a Typical Home Wireless LAN Network

Country

United States

Industry

Home Improvement

Network Type

Wireless LAN

Solutions

Enterprise WLAN

Highlights

- The PoE switches provide power and network connectivity to a variety of devices such as IP cameras, WiFi access points, VoIP phones, etc., simplifying wiring and increasing flexibility.
- The access switches feature a fanless design, ensuring silent operation and reducing noise levels in the home environment.
- The wireless APs provide comprehensive network coverage with aesthetic appearance. AP-N515 achieves a rate of up to 5375Mbps with improved network speed. AP-N515H has a compact design with more space-saving installation.
- The security gateway monitors and manages traffic to protect the network from attacks. 24-hour privacy and information security protection, guaranteed absolute confidentiality.
- Our professional team provides online customized solution design and full guidance for network deployment.

Key Stats

- 1 type of aggregation switch and 2 types of access switches help layout high-bandwidth networks on different floors. Multiple ports allow multiple devices to connect to the network simultaneously.
- Two Wi-Fi 6 indoor access points with different installation methods ensure high-quality wireless connections while complying with aesthetic design.
- All-in-one dual WAN security gateway provides visual control of traffic, reduces 95% of network threats and provides strong security protection.
- 24-hour remote support, providing free online installation and configuration guidance.



Overview

Wireless network has gained immense popularity in house as it provides all the facilities of local area network without the limitations of wiring and cables. The growing popularity of mobile devices with wireless LAN (WLAN) functions has led to more families installing WLAN access points (APs). Our client planned to build a home network using FS routers, PoE+ switches, APs, and patch cables, but faced installation challenges. The following section outlines the customized program we designed and how our solution team assisted in implementing it effectively.

Challenges

In an advanced smart home, many devices require an uninterrupted, stable connection to function properly. Clients expect to enjoy a high-quality network experience while ensuring high performance and security of the network. FS needs to build a wireless LAN network based on the following specific needs of clients.

1. The client expects to divide the home WiFi into four parts according to function: management network, security network, IoT device network, and guest network. Only the VLAN responsible for the management network allows access from all other VLAN networks, and the remaining VLANs are isolated from each other.
2. The number of ports on a router is usually limited. To simplify network management and save costs, clients need to use one port of the router as the gateway for four VLANs. Clients can centrally manage and configure the network settings of the four VLANs without having to set up a separate gateway device for each VLAN.
3. Differentiate between home network and guest

network. The wireless AP has dual SSIDs, which customers want to use for home management and guest WiFi respectively. The home management SSID is connected to VLAN 16, which allows access to all other VLANs and the Internet. The guest SSID is connected to an independent VLAN 56, which is isolated from other VLANs and provides independent DHCP address allocation for guests.

FS has initially developed a VLAN allocation plan based on the scenario described by the customer, which is attached at the end of the article.

Solutions

The client's home environment is very large, including many smart home and network devices. In order to meet the full area coverage, the first and second floors need to reasonably deploy switches and AP positions. FS needs to adjust the previously planned VLAN allocation plan based on the actual scale, and deploy plans for different floors to ensure high-quality network connections.

The S5500-48T6SP-R POE+ switch is used as an aggregation management device. Configure an access control list on the S5500 device to prohibit VLAN 56, VLAN 26, and VLAN 36 from accessing each other. That is to say, all VLANs can access VLAN 16. The client's requirement that the management VLAN can access all VLAN networks but other networks are isolated from each other is realized.

The S5500-48T6SP-R supports APs, IP cameras, and TVs, and needs to be configured with four sub-interfaces. It is also connected to the S3900-24T4S-R switch via the patch cables through which the tagged frame can be transmitted. The LACP is configured on the patch cables links between S5500-48T6SP-R and S3900-24T4S-R, increasing the bandwidth and redundancy.

Allocate the two SSIDs into different VLANs under the

bridge mode of the AP. The bedroom uses AP-N515H, which has a simple and compact appearance, does not take up space, and is very consistent with the decoration style. The living room can use AP-N515, which has a wide coverage range and a max throughput of 5375 Mbps, allowing you to easily connect to WiFi anytime and anywhere, providing an ultimate seamless roaming experience. MU-MIMO technology can provide data transmission services to multiple users at the same time, thereby improving the overall wireless network efficiency and capacity utilization.

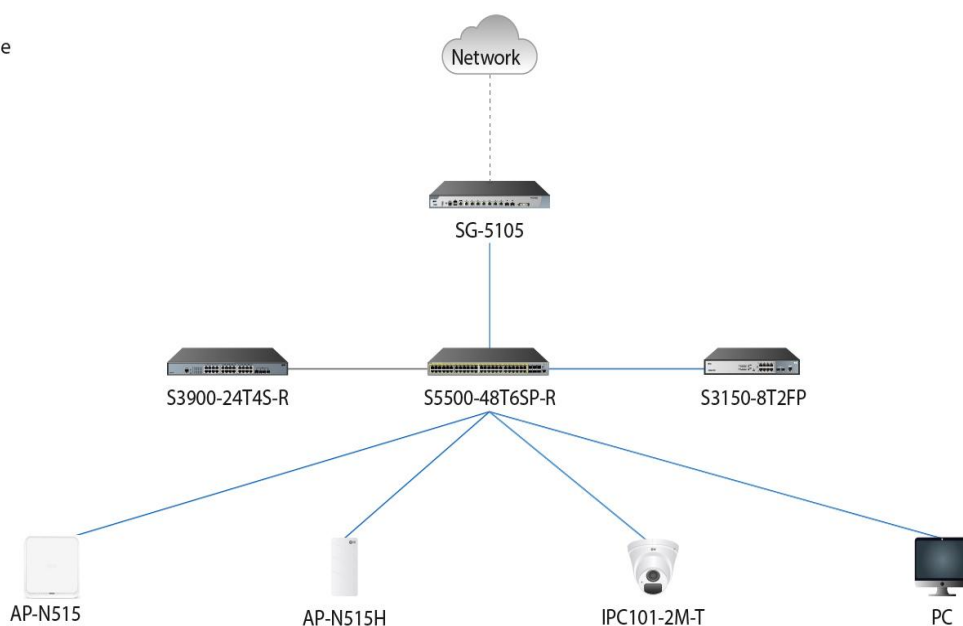
The S3150-8T2FP switch adopts a fanless design, eliminating fan noise and making the home network quieter. It supports advanced features such as VLAN and QoS, which can optimize and manage network traffic, ensure efficient data transmission between different devices, and meet high-definition video streaming, online games and other high-bandwidth requirements.

Results

This wireless LAN network solution is suitable for home networks and involves functions such as VLAN, ACL, DHCP, NAT, sub-interfaces, and Wi-Fi. By configuring ACL to control access rights between different VLANs, only the management network can access other networks, thereby improving security. Implement network isolation to ensure independence between different devices and traffic to prevent potential security threats. In addition, WiFi 6 AP provides seamless roaming to ensure network stability and reduce the risk of network interruption.

During the design process, we fully considered cost-effectiveness and used affordable equipment and technologies to achieve high performance and security while controlling the budget. "The engineer is a great help, patient with me, I am learning as well", said our client who is satisfied with the whole solution. By analyzing customer network scenarios, we help customers select solutions that are both suitable for their current network needs and cost-effective.

— 10G Passive DAC
— Cat6A Patch Cable



VLAN

| VLAN ID | Name | Device Included |
|---------|-------------|---|
| VLAN 16 | Management | FS Router, S5500-48T6SP-R Switch, S3150-8T2FP Switches, Printers, NAS, (AP) Home WiFi |
| VLAN 26 | Security | NVR, IP Cameras |
| VLAN 36 | IoT Devices | TVs, Smart Home System |
| VLAN 56 | Guest WiFi | (AP) Guest WiFi |



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