S5900-24S4T2Q Switch Typical Network Solution

Model: S5900-24S4T2Q

Network Solution

Overview

S5900-24S4T2Q is an electric and optical switch which is different from S5850 series switches. It provides safe and reliable L2/L3 switching capacity to achieve flow analysis, QoS, controllable multicast, resource load balance for flexibility and scalability requirements.

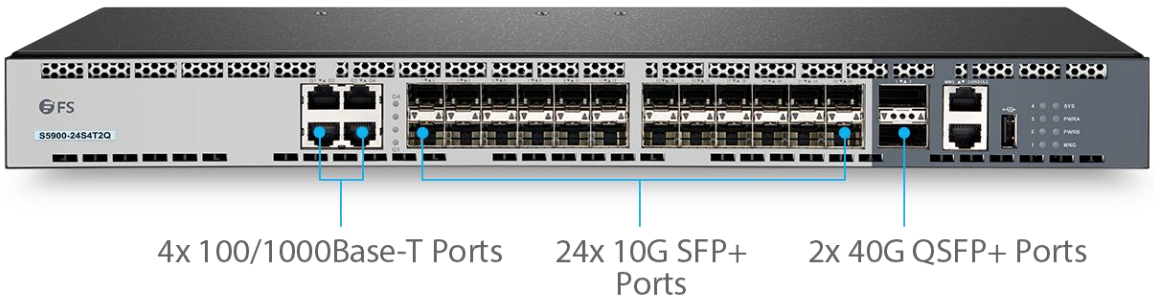
It is usually applied in the access layer and the aggregation layer for enterprise network and data center applications, high-end campuses, industrial private cloud networks, etc. By intergrating services such as IPv6, network security, data flow analysis and virtualization, the network design will be effective and simple, so as to reduce network capital and operating expenses.

S5900-24S4T2Q switch with the feature of multiple ports, high rates and five low-noise fans can not only support 100/1000Base and 10/40G bandwidth transmission with a good heat-dissipation performance, but also support dual power supplies for high-performance network solution and a good network environment.

640 Gbps
Switching Capacity

480Mpps
Forwarding Rate

L2/L3
Layer Type



Datacenter Infrastructure Buliding Solution Case Study

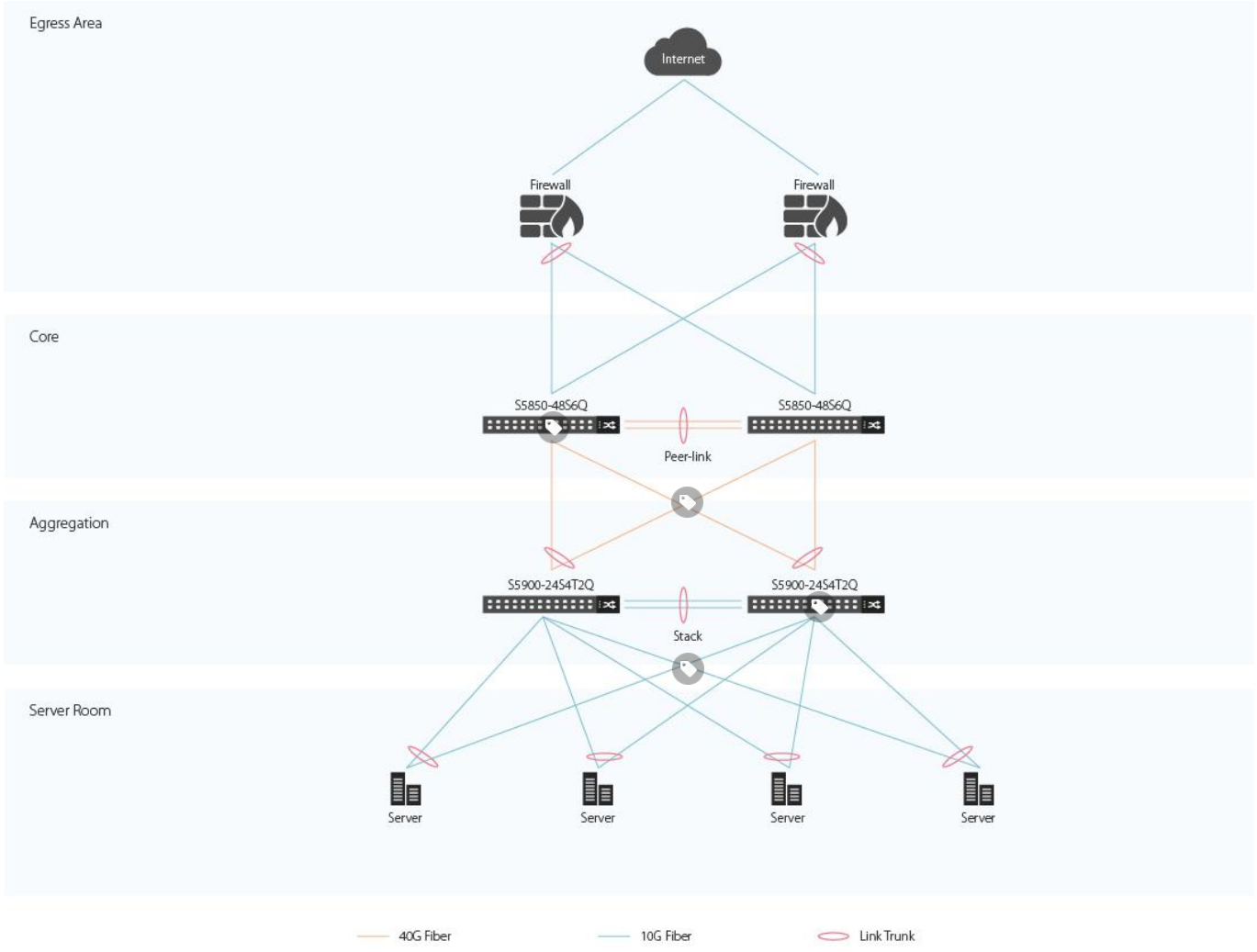
Background

The customer wanted to build data center infrastructure. By utilizing the characteristics of edge switches, it provides access to the core network and combines with the backbone switches to form a multi-layer network architecture. The backbone switches are at the aggregation layer, providing network bandwidth to the access layer switches and servers to form a non-blocking architecture.

Challenge

- Flexible network deployment with switches and devices possessing the same hardware and software to maintain consistency.
- The data center is required with the feature of high performance, high availability and future-proof network expansion.
- Edge switches require upward linking to the firewalls and downward to other switches.

Solution Topology



Solution Description

This solution adopts multi-rate converged switches at every layer with the same FSOS system and SFP+/ QSFP+ ports. The switches are interconnected to form a non-blocking network mechanism for high availability and increasing flexibility to continuously meet higher bandwidth requirements.

Connection
S5900-24S4T2Q: As a Layer 3 switch, it can be used for access and aggregation layer. In this solution, it is located in aggregation layer to connect to devices like core switches and servers and supports LACP and BVSS/ Stacking.

S5850-48S6Q: It also belongs to the L3 switch. As a core switch, it utilizes 10G ports to connect upwards to the firewall and downwards to the aggregation switch through 40G ports to provide safe and quick network access.

BVSS/ Stack: S5900-24S4T2Q can support stack with 4 pieces in enhanced mode and with 2 pieces in standard mode. In this solution, stacking between two switches is implemented. Due to the limited 40G ports, the spare 10G optical ports are used to do the stacking by configuring STP or routing protocols. The two switches are configured as one logical device to provide as many available ports as possible in a limited space.

LACP: Two S5900 switches are connected to servers and switches across devices to form a LACP mode, which can utilizes multiple ports to increase the bandwidth between switches for link redundancy.

Product List

ID	Description
73467	S5900-24S4T2Q 24-Port 10Gb SFP+ and 4 Gigabit RJ45 L3 Stackable Managed Ethernet Switch with 2 40Gb QSFP+ Uplinks
29123	S5850-48S6Q 48-Port 10Gb SFP+ L3 Managed Ethernet Switch with 6 40Gb QSFP+ Uplinks
17931	40GBASE-SR4 QSFP+ 850nm 150m MTP/MPO Optical Transceiver Module for FS Switches
11552	FS for Cisco SFP-10G-SR Compatible, 10GBASE-SR SFP+ 850nm 300m DOM Transceiver Module (Standard)
68017	1m (3ft) MTP Female 12 Fibers Type B Plenum (OFNP) OM4 50/125 Multimode Elite Trunk Cable, Magenta
40233	3m (10ft) LC UPC to LC UPC Duplex OM4 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable

Campus Network Upgrade Solution Case Study

Background

A cutting-edge research education institution plans to upgrade the campus internal network system, mainly covering these areas such as laboratory equipment, a group of grad student offices, computer cluster and routine servers. The network coverage is wide and higher bandwidth requirements are required.

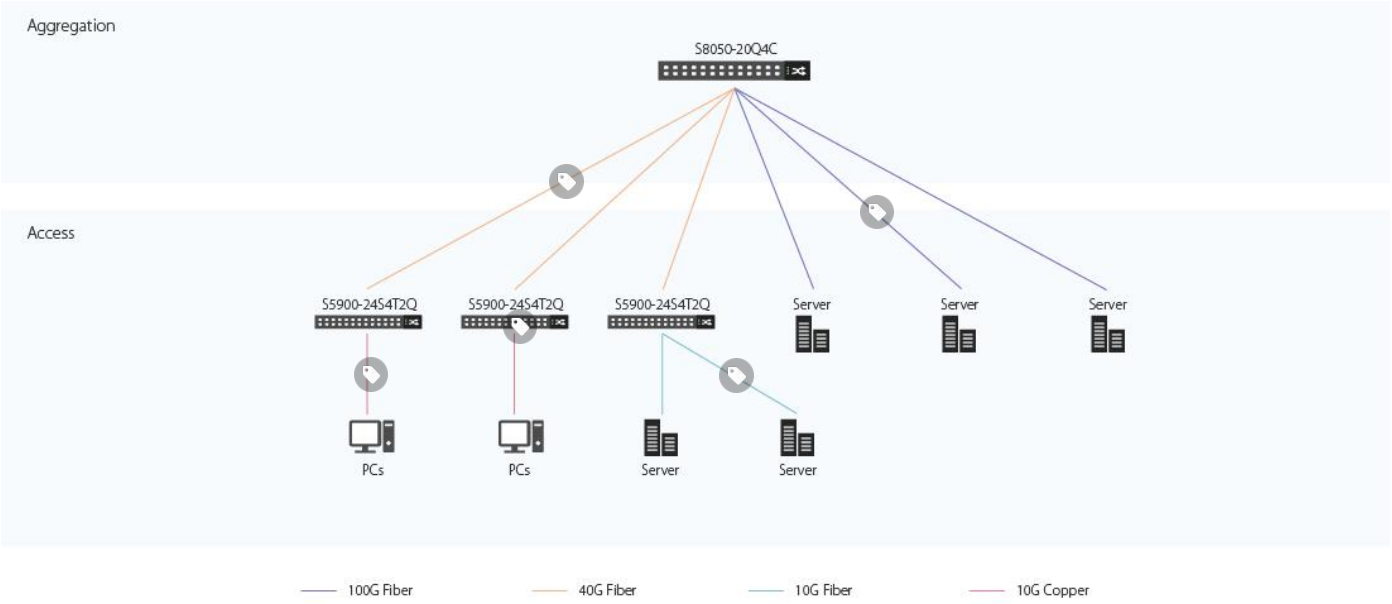
Challenge

• Simplify the network structure as much as possible to complete the upgrade process efficiently.

• 10/40/100G connection is realized in different areas and all available ports need to be used, but in the current situation, there is no need for redundancy.

• It is required that the interconnection links between switches at the backbone network should be configured as trunks and allow all VLANs to pass through, using a 40G VLAN trunk to uplink all subnets.

Solution Topology



Solution Description

This solution adopts a two-layer network structure based on the customer's application. At the same time, according to the customer's bandwidth requirements, 10/40/100G service transmission is synchronously realized. Comprehensively considering, S5900-24S4T2Q is an ideal choice for the access layer to connect upward and downward to switches and devices with different rates.

Connection
S5900-24S4T2Q: As a leaf switch, SFP+ ports are used to connect to these areas such as offices, laboratories, computer clusters and server clusters, and QSFP+ ports are used to connect upward to S8050-20Q4C spine switches.

S8050-20Q4C: It has 20x QSFP+ and 4x QSFP28 ports. The 40G QSFP+ ports are used to connect leaf switches. According to the 100G bandwidth requirements of some computing clusters, 100G QSFP28 ports are used.

VLAN: The switch is configured with VLAN to logically divide the physical LAN into different small logical subnets. Each logical subnet is a separate broadcast domain to avoid broadcast storms. A VLAN can be divided into a logical network segment based on demands, and the terminal device can be moved between subnets arbitrarily without changing the physical connection of the network. VLAN provides a flexible combination mechanism of network segment to simplify network management.

Trunk: When two switches are interconnected through different VLANs, communication obstruction will happen at each node. After combining, it will be completely unable to communicate between every element of the network. The trunk is an end-to-end connection that carries more than one VLAN between two switches, delivering VLAN information through networks.

Product List

ID	Description
29126	S8050-20Q4C 20-Port 40Gb QSFP+ and 4 10Gb Combo L3 Managed Ethernet Switch with 4 100Gb QSFP28 Uplinks
73467	S5900-24S4T2Q 24-Port 10Gb SFP+ and 4 Gigabit RJ45 L3 Stackable Managed Ethernet Switch with 2 40Gb QSFP+ Uplinks
36157	Cisco QSFP-40G-SR4 Compatible 40GBASE-SR4 QSFP+ 850nm 150m MTP/MPO DOM Optical Transceiver Module
48354	Cisco QSFP-100G-SR4-S Compatible 100GBASE-SR4 QSFP28 850nm 100m DOM Optical Transceiver Module
68116	10m (33ft) MTP Female 12 Fibers Type B Plenum (OFNP) OM4 50/125 Multimode Elite Trunk Cable, Magenta
11552	FS for Cisco SFP-10G-SR Compatible, 10GBASE-SR SFP+ 850nm 300m DOM Transceiver Module (Standard)
41728	3m (10ft) LC UPC to LC UPC Duplex OM3 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable
69077	10ft (3m) Cat6a Snagless Shielded (SFTP) PVC CMX Ethernet Network Patch Cable, Blue

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