

S5850 Series Switches Typical Network Solution

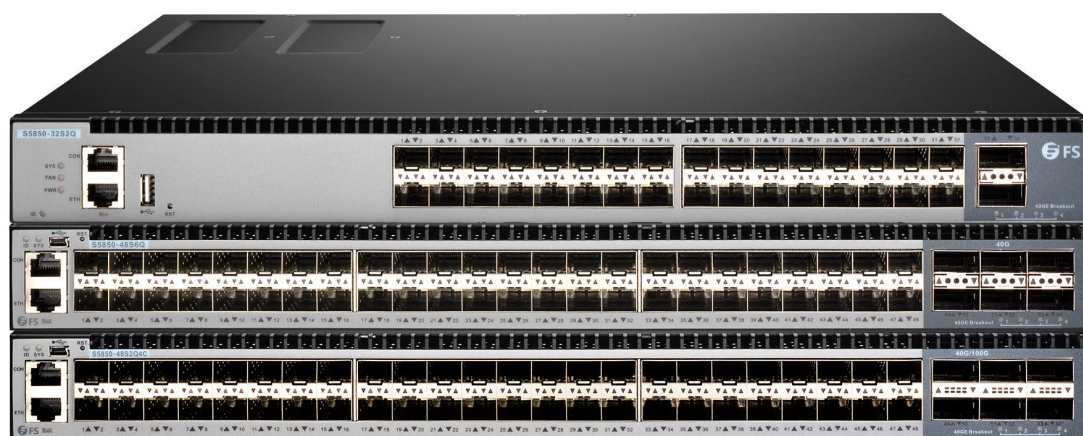
Models: S5850-32S2Q
S5850-48S6Q
S5850-48S2Q4C

Overview

With the continuous change of data center bearer services and the technology applications such as computing virtualization and storage virtualization, S5850-32S2Q/S5850-48S6Q/S5850-48S2Q4C switches are mostly used in the aggregation and core layer of the enterprise network and data center network architecture to connect access switches or servers, which can meet higher requirements for internal network management and performance in data centers, so as to sustainably reconstruct and upgrade data centers.

S5850-32S2Q/S5850-48S6Q switches support 40G rate, which can be applied in the uplink or horizontal connectivity to provide higher port speed and bandwidth to avoid network traffic bottlenecks. At the same time, 10G ports can also support 1G rate with the feature of backward compatibility, significantly reducing power consumption and costs, helping data centers operators save capital expenditures and operating expenses.

S5850-48S2Q4C switch can be applied in the network requiring the mix of 10/40/100G rate, among which 100G ports are for the uplinks and interconnections between switches, while 10/40G ports are for the downlinks.



Part Number	S5850-32S2Q	S5850-48S6Q	S5850-48S2Q4C
Layer Type	Layer 3	Layer 3	Layer 3
Port	32x 10G SFP+	48x 10G SFP+	48x 10G SFP+
	2x 40G QSFP+	6x 40G QSFP+	2x 40G QSFP+
			4x 100G QSFP28
Switching Capacity	800 Gbps	1.44 Tbps	1.92 Tbps
Forwarding Rate	595.2 Mpps	1071.4 Mpps	1071.4 Mpps
Latency	612ns	612ns	612ns
Packet Buffer	9MB	9MB	9MB
Flash Memory	2GB	2GB	2GB

Small Data Center Reconstruction Network Solution Case Study

Background

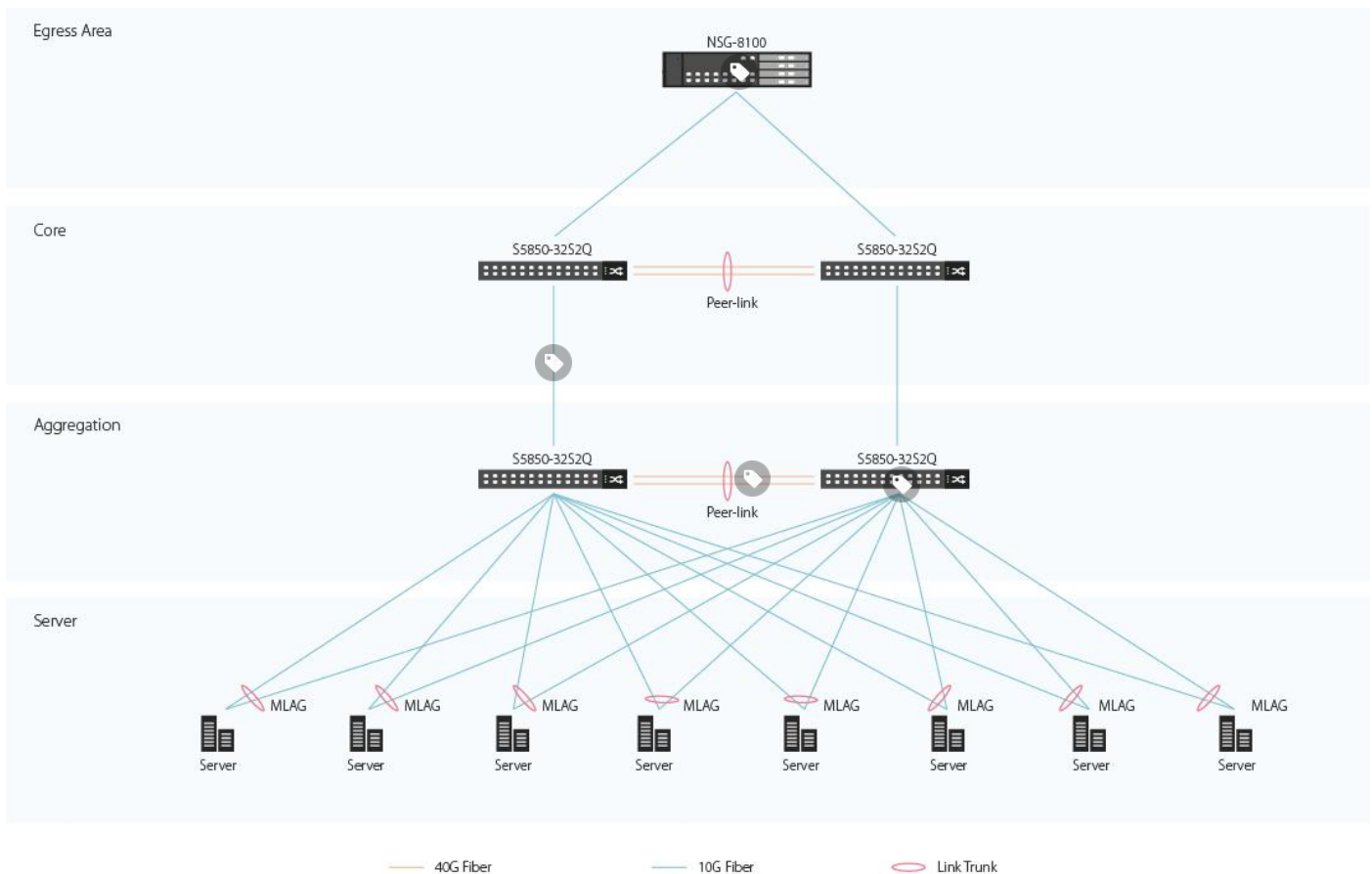
The customer wants to rebuild the original network. The original network architecture adopts a firewall as the entry of the entire network, connecting to the core switch and then to TOR switch (business TOR and storage TOR), finally forming a central computing management system.

The current need is to establish a virtual computing and distributed storage network structure with dual-node business backup. It also needs to build server clusters with different data rates, acting as computing clusters and storage clusters, and complete construction of this whole system through access switches.

Challenge

- Distributed storage cluster, virtualized cluster and external business cluster require core bandwidth equal to or greater than 10G.
- 1G bandwidth access to the central computing management system and must guarantee the network access's stability.
- Storage, virtualized and external business network is with the feature of high availability.

Solution Topology



Solution Description

This solution adopts the ToR network structure which simplifies the connection between the servers and the switches. When the server or switch needs to be upgraded in one cabinet, it will not affect the traffic forwarding of other cabinets during the upgrading process, and the impact on the business will be controlled to the minimum.

Connection

S5850-32S2Q: It is applied in the aggregation and core layer. Considering the overall business volume the customer required, having 32x 10G optical ports and the feature of 10G port supporting backward compatibility to 1G is enough to meet all business requirements. Also, it supports MLAG, which can be realized by 40G ports and available for future-proof network upgrades and expansion.

MLAG: It is deployed between the core switches and cascaded with the underlying aggregation switch to form redundancy with each other to back up data and increase the security and stability of the entire network. And when adding backup, the traffic forwarding is increased to ensure the future network upgrade.

Product List

ID	Description
97356	NSG-8100 Next-Generation Firewall for Large-sized Enterprises and Data Centers
29122	S5850-32S2Q 32-Port 10Gb SFP+ L3 Managed Ethernet Switch with 2 40Gb QSFP+ Uplinks
11589	10GBASE-SR SFP+ 850nm 300m DOM Transceiver Module for FS Switches
17931	40GBASE-SR4 QSFP+ 850nm 150m MTP/MPO Optical Transceiver Module for FS Switches
68017	1m (3ft) MTP Female 12 Fibers Type B Plenum (OFNP) OM4 50/125 Multimode Elite Trunk Cable, Magenta
41730	1m (3ft) LC UPC to LC UPC Duplex OM3 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable

Factory Redesign Network Solution Case Study

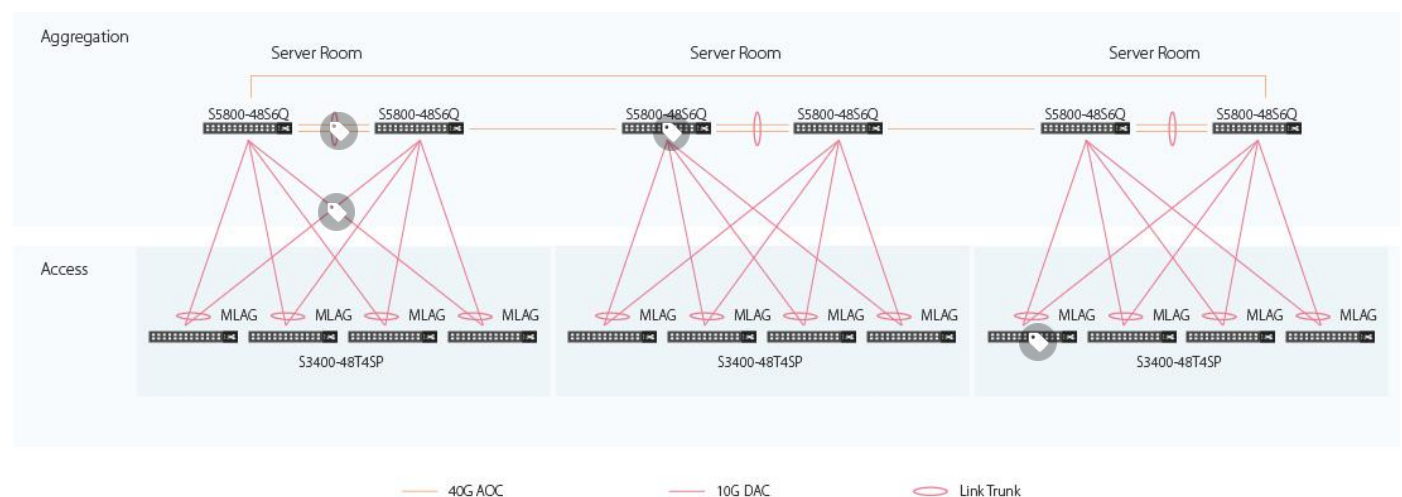
Background

There are three server rooms. The customer requires redesigning the network across the rooms. It not only meets the current bandwidth requirements, but also must consider future expansion, with the feature of installation flexibility and network stability. Under feasible conditions, using 10/40G cables offers the connection to build the network efficiently.

Challenge

- Breaking the original network architecture and looking for a new one, meanwhile, it must guarantee its stability and redundancy increasing.
- Doing network redesign in steps and phasing out current network gradually, to pursue high-effectively completion and the continuous usage of the network.
- No need to stay backward compatible with anything and installed equipment is future proof, not just covering today's needs.

Solution Topology



Solution Description

This solution adopts Tier2 network architecture. MLAG is configured between the aggregation switches to establish the peer link. The peer link is a direct connection, composed of LAG between two switches. In order to increase the reliability of peer link, multiple links are created for link aggregation.

Connection

S5850-48S6Q: It has 48x 10G optical ports which are connected to the access switch and has 6x 40G ports which are used to interconnect between switches at the aggregation layer and can be uplink ports for future expansion.

S5500-48T8SP: It is a PoE+ switch, which can provide power supply for terminal equipment. 8x 10G optical ports can be interconnected with the aggregation switch.

MLAG: Each two switches with the same version and model are logically virtualized into a switch and link aggregation is formed through the MLAG mechanism to create a hyperactive system. It can ensure the decoupling of the control plane between multiple devices to get control plane isolation and device malfunction isolation. Meanwhile, under the premise that it doesn't affect each other when upgrading the version, it can process traffic forwarding in an active state.

LACP: When doing cross-device link aggregation, LACP mode is formed, which supports the MLAG mechanism between different devices and can make full use of all devices' ports to increase their bandwidth. Even though one link fails failure, it will quickly transfer traffic onto other links, increasing bandwidth and improving reliability.

Product List

ID	Description
29123	S5850-48S6Q 48-Port 10Gb SFP+ L3 Managed Ethernet Switch with 6 40Gb QSFP+ Uplinks
90132	S3400-48T4SP 48-Port Gigabit Managed PoE+ Switch with 4 10Gb SFP+ Uplinks, 400W
30915	15m (49ft) Cisco QSFP-H40G-AOC15M Compatible 40G QSFP+ Active Optical Cable
30763	7m (23ft) 10G SFP+ Passive Direct Attach Copper Twinax Cable 24AWG for FS Switches

Enterprise Network Upgrade Solution Case Study

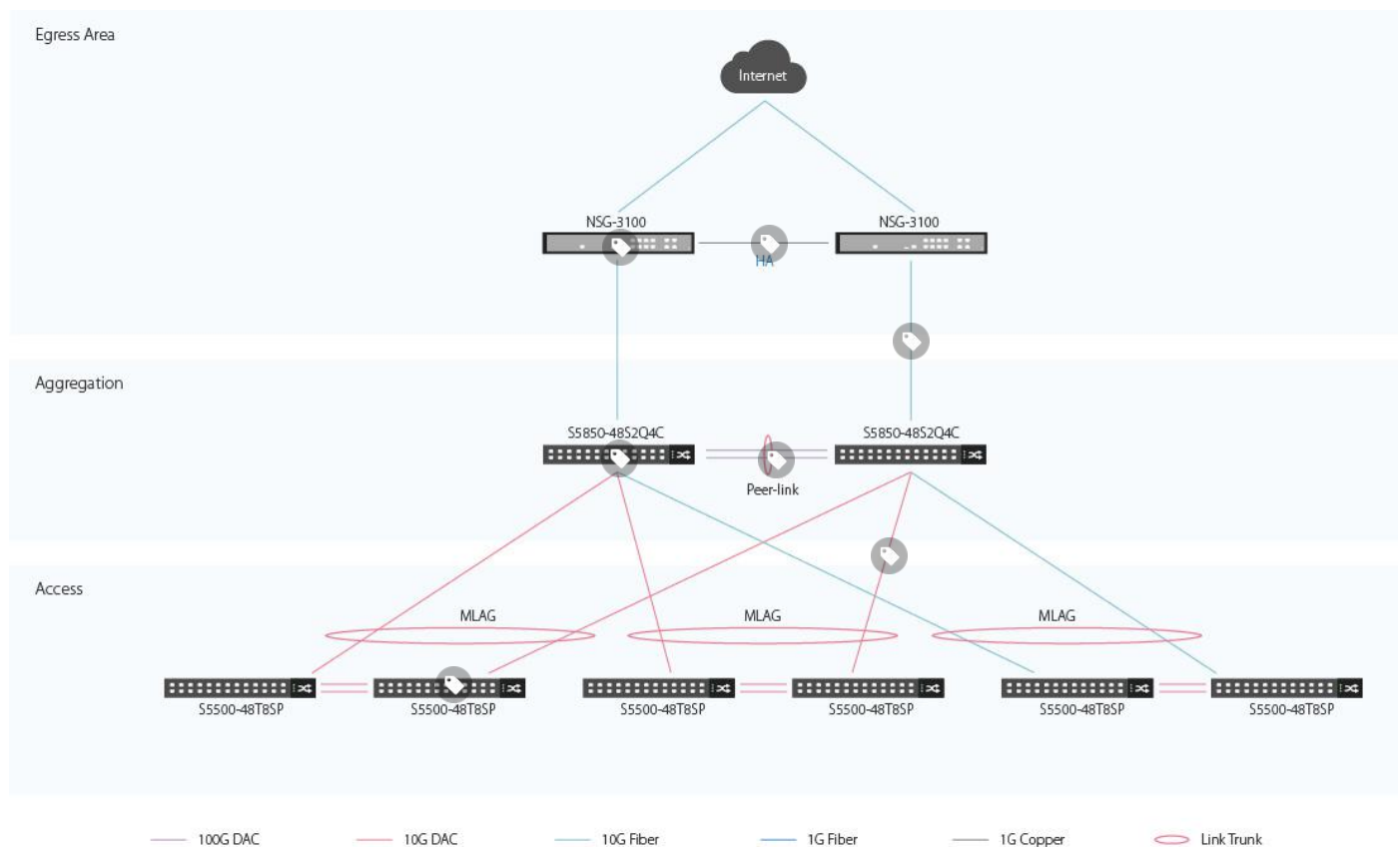
Background

ISP provides Internet access to all users. The router bridging makes the network access and provides traffic forwarding and communication. According to the actual needs, it is required to complete the network upgrade of each end-user area, totally at least 8 VLANs.

Challenge

- It is necessary to increase the network stability on the basis of MLAG and do the stack setting on the access switch.
- Possible to implement MLAG across no less than two ports on a stacking switch.
- There is 1G bandwidth from the ISP, requiring the router to support HA configuration.
- The access layer needs to realize 10G and 100G connection by making use of copper cables, simplifying cable management.
- The network must be with full redundancy.

Solution Topology



Solution Description

This solution is composed of Tier 2 network architecture. S5850-48S2Q4C is a multi-rate converged switch that combines the feature of downward compatibility of 10G ports to complete 1/10/40/100G traffic transmission so as to achieve a high-effective network environment.

Connection

S5500-48T8SP: It is used in the access layer and supports stacking. Max. two switches can be stacked by using two ports to complete stacking.

S5850-48S2Q4C: The upstream connection makes the network access from ISP and it links downward to access switches.

As an aggregation switch, it connects to a group of stacked switches by two DAC cables if short-distance, to achieve dual redundancy of links. If far away, fiber optical transceivers and fiber patch cables are recommended. Of course, if there is a need to connect multiple cables to a group of stacked switches, it is the same connection method.

High Availability: For this configuration requirement, the reliability, redundancy and protocol attributes of the network devices' software and hardware, network environment and power supply need to be considered. NSG-3100 firewall can meet its requirements and simplifies the network structure. And the firewall can be directly connected to the Internet without a router, saving the total costs.

LACP: S5850-48S2Q4C switch is an aggregation one and LACP is formed by interconnection between each other. It supports multiple physical links by using multiple ports, and when one link is failed, it will automatically select an available backup link with the highest priority to become the active link to ensure normal data forwarding.

VLAN: It is the current mainstream network isolation technology. Since the VLAN ID defined in IEEE 802.1Q is 12 bits, which means 4096 VLANs, it can meet the current needs.

Stacking: By stacking access switches, more ports can be used and other switches can be managed on one switch. Stacking and MLAG are realized simultaneously to simplify the entire network structure.

Product List

ID	Description
90593	NSG-3100 Next-Generation Firewall for Medium-sized Enterprises and Data Centers
29124	S5850-48S2Q4C 48-Port 10Gb SFP+ L3 Managed Ethernet Switch with 2 40Gb QSFP+ and 4 100Gb QSFP28 Uplinks
83325	S5500-48T8SP 48-Port Gigabit L3 Stackable Managed PoE+ Switch with 8 10Gb SFP+ Uplinks, 500W
47096	1m (3ft) 100G QSFP28 Passive Direct Attach Copper Twinax Cable for FS Switches
21254	1m (3ft) 10G SFP+ Passive Direct Attach Copper Twinax Cable for FS Switches
11552	FS for Cisco SFP-10G-SR Compatible, 10GBASE-SR SFP+ 850nm 300m DOM Transceiver Module (Standard)
41733	30m (98ft) LC UPC to LC UPC Duplex OM3 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable
29838	1000BASE-SX SFP 850nm 550m DOM Transceiver Module for FS Switches
70555	3ft (0.9m) Cat5e Snagless Unshielded (UTP) PVC CM Ethernet Patch Cable, Blue

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 <https://www.fs.com>



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