FS

Hyperconverged Infrastructure (HCI) Typical Network Solution

Models: S5850-24T16B
S5850-24T16S
S5800-8TF12S

Network Solution

Overview

Hyperconverged infrastructure (HCI) is software-centric architecture that combines computing, storage, networking and software into a single system. Multiple sets of unit devices can be aggregated through the network to achieve modular seamless scale-out. In many hyperconverged scenarios, due to the influence of the interface type and the number of server network adapters, it often causes issues such as port waste, large spaces occupied and complex configuration, etc.

Three low-cost, low-latency and low-power S58 series switches have been launched, which integrate Gigabit,10 Gigabit and 25 Gigabit for hyperconverged scenarios. They support flexible QinQ, LACP, MLAG; scalable OSPF and BGP; intelligent Ethernet OAM; data center wide TCP, NVGRE, VxLAN and advanced metropolitan area network ERPS, G.8031, G.8032, 802.1ag, EFM, etc. that are designed for many environments, including next-generation enterprise, Metro-E, Data Center and Carrier Ethernet. They are equipped with complete operating systems which include comprehensive protocols and applications in order to deploy and manage traditional L2/L3, data center and hyperconverged networks rapidly.
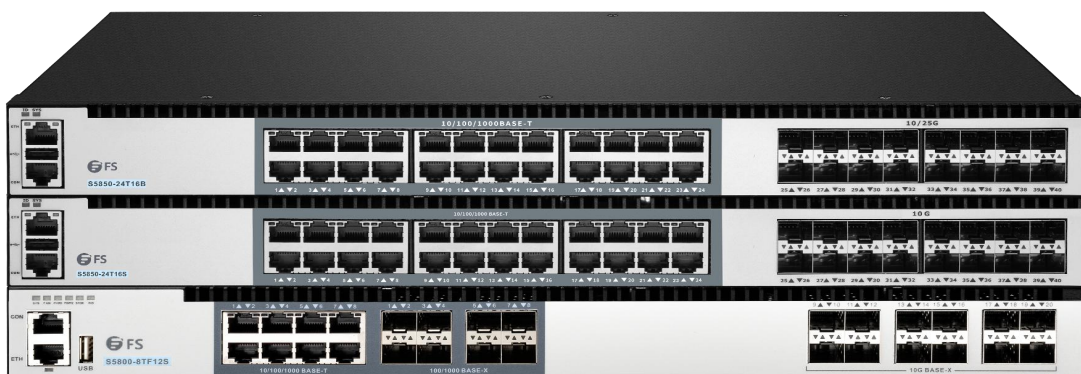
| Part Number	S5850-24T16B	S5850-24T16S	S5800-8TF12S
Layer Type	Layer 3	Layer 3	Layer 3
Port	24x 10/100/1000BASE-T Ports	24x 10/100/1000BASE-T Ports	8x 1G RJ45/SFP Combo Ports
	16x 25G SFP28 Ports	16x 25G SFP28 Ports	12x 10G SFP+ Ports
Switching Capacity	848 Gbps	368 Gbps	240 Gbps
Forwarding Rate	630.9 Mpps	273.3 Mpps	178.6 Mpps
Latency	Max. 645ns, Min. 570ns	Max. 725ns, Min. 640ns	Max. 2.27us, Min. 6.97us
Packet Buffer	4MB	4MB	3MB
Flash Memory	4GB	4GB	2GB

Campus Data Center HCI Network Case Study

Background

The customer planned to build a hyperconverged network for campus data center according to the needs of smart campus construction, which is to realize resource sharing and improve utilization. He intended to run four smart campus systems that involve subject research, talent training, public services, recruitment and employment. Its purpose is to achieve high availability and disaster prevention for key business systems of smart campus.

Challenge

• The core-layer switch must have high traffic forwarding capacity to ensure uninterrupted data forwarding and need to be configured redundantly to avoid single point of failure problem.

• The hyperconverged campus data center needs to realize logical isolation of data and business and also configure a back-up all-in-one device for the backup of important business system data to improve its availability and reliability.

Solution Topology
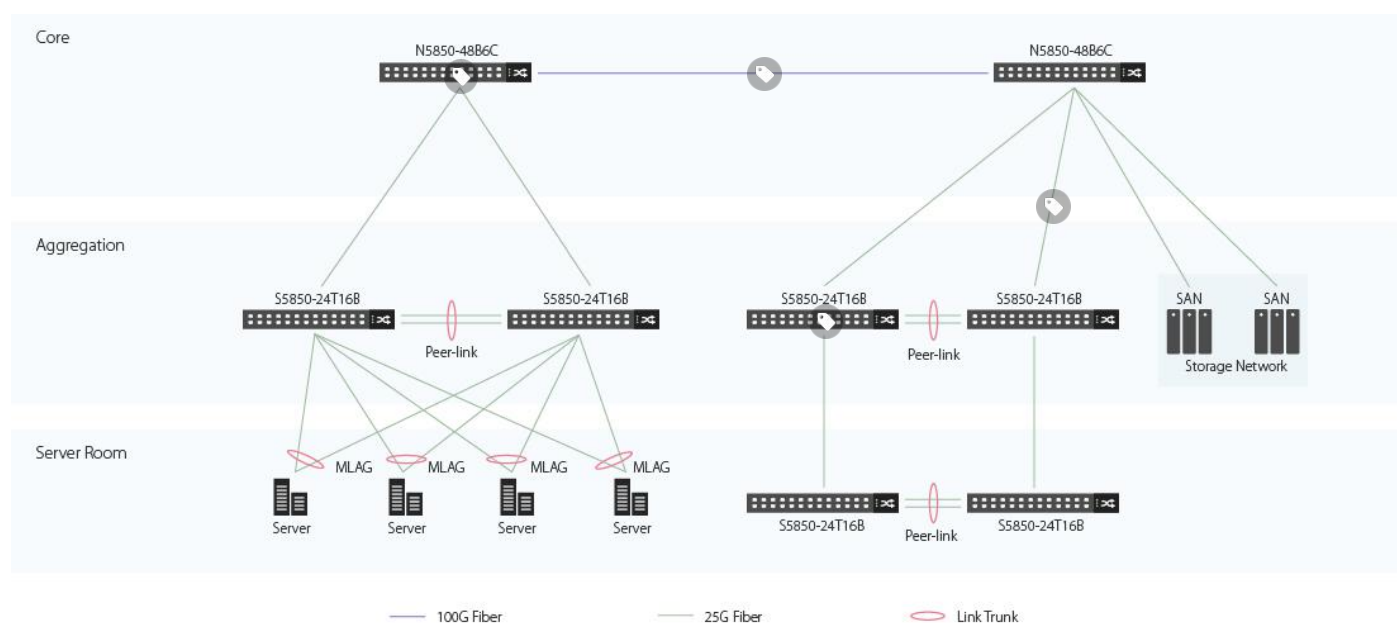
Solution Description

By deploying multiple core and aggregation switches to converge 1/10/25/100G rate, the storage private network, business and management network are completely separated to realize high-speed forwarding and business redundancy configuration for more flexible and reliable data centers.

Hyperconvergence: As a hyperconveged access switch connecting storage and core switch, S5850-24T16B switch ensures that the uplink to the core switch is 25G and also makes sure there is adequate bandwidth to other environments. The hyperconverged infrastructure of this solution is based on server hardware to maximize the scalability of data centers and the availability of data.

MLAG: Each of six S5850-24T16B switches is interconnected through a 25G port to another to form a peer-link, which can negotiate packets and carry part of the forwarded data traffic. Terminal servers/switches also guarantee reliability, redundancy and security of the network through it.

Product List

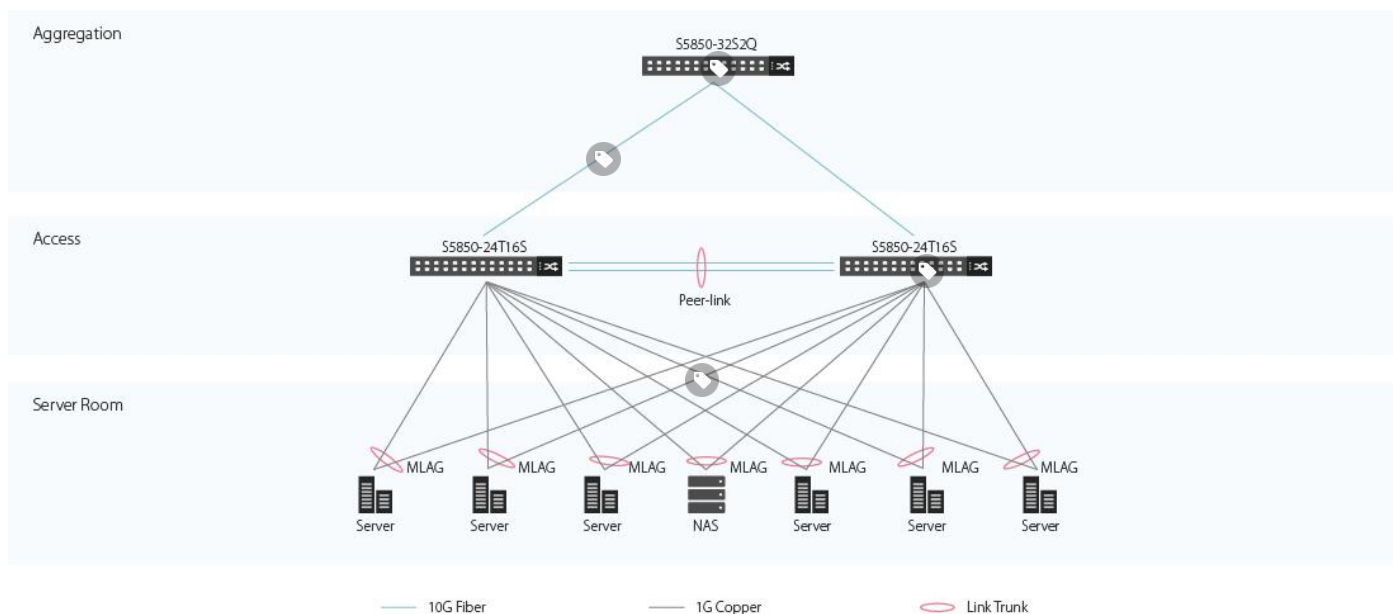| ID	Description
75876	N8500-48B6C 48-Port 25Gb SFP28 L3 Data Center Managed Ethernet Switch with 6 100Gb QSFP28 Uplinks, Cumulus® Linux® OS Support for 1 Year
97291	S5850-24T16B 24-Port 10/100/1000BASE-T Gigabit L3 Managed Ethernet Switch with 16 25Gb SFP28 Uplinks for Hyper-Converged Infrastructure
41730	1m (3ft) LC UPC to LC UPC Duplex OM3 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable
48354	Cisco QSFP-100G-SR4-S Compatible 100GBASE-SR4 QSFP28 850nm 100m DOM Optical Transceiver Module
67991	Cisco SFP-25G-SR-S Compatible 25GBASE-SR SFP28 850nm 100m DOM Transceiver Module
68017	1m (3ft) MTP Female 12 Fibers Type B Plenum (OFNP) OM4 50/125 Multimode Elite Trunk Cable, Magenta

Commercial Bank HCI Network Case Study

Background

The bank has multiple business systems, comprising credit card, E-bank, investment and finance, etc. In order to meet the needs of future business development, the customer has been paying attention to internet-related technologies such as virtualization, distribution and hyperconvergence to solve various challenges in existing businesses. After a period of understanding, the customer planned to run a new business system on the evolving IT infrastructure based on hyperconvergence to support smooth evolution to the cloud data center in the future without adjusting and changing the existing IT resources and infrastructure.

Challenge

• There are more of servers and spaces are limited, so complex management problems need to be solved.

• The period of new business system construction is usually long and it takes time to deploy, also the traditional architecture cannot achieve linear scalability.

• The existing SAN storage have poor scalability, cannot meet the performance requirements of new business and lack of high availability.

Solution Topology

Solution Description

S5850-24T16S switches connect all virtualized servers equipped with SSD and 10G network adapters through 10G network, install and deploy hyperconverged system components on each server to form a unified computing and storage resource pool. Through dynamic self-repairable cluster architecture, it improves the bank's operational capabilities in data security, centralized management and control, rapid deployment, energy saving and environmental protection and reduces operation and maintenance costs.

Hyperconvergence: The scheme integrates virtual computing resources and storage devices. In such an architectural environment, not only the complete set of unit devices has resources and technologies such as computing, network, storage, and server virtualization, but also multiple sets of unit devices can be aggregated together through the network to achieve seamless scale-out of modularization to form a unified resource pool.

MLAG: Two S5850-24T16S switches complete the construction of hyperconverged infrastructure, meanwhile, they also improve the link reliability from single board grade to device grade via MLAG, forming a dual-active system, which can make use of all links. When the link is interrupted and the topology changes, it will not cause network vibration. The terminal server and storage connected to S5850-24T16S switch only need to be configured with LAG, so as to make the link fully utilized and achieve uninterrupted forwarding.

Product List

ID	Description
29122	S5850-32S2Q 32-Port 10Gb SFP+ L3 Managed Ethernet Switch with 2 40Gb QSFP+ Uplinks
85069	S5850-24T16S 24-Port 10/100/1000BASE-T Gigabit L3 Managed Ethernet Switch with 16 10Gb SFP+ Uplinks for Hyper-Converged Infrastructure
41730	1m (3ft) LC UPC to LC UPC Duplex OM3 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable
70596	3ft (0.9m) Cat6 Snagless Unshielded (UTP) PVC CM Ethernet Network Patch Cable, Black
11552	FS for Cisco SFP-10G-SR Compatible, 10GBASE-SR SFP+ 850nm 300m DOM Transceiver Module (Standard)

## Construction Company HCI Network Case Study

Background

The client company's business covers infrastructure construction containing high-grade highways, extra-large bridges, rail transport and others. The onsite has nearly 50 business systems, among which the production system has high demanding requirements in network security, so he wanted to build a hyper-converged network to improve security and reliability.

Challenge

• There are many business systems at the onsite, the customer spent a lot of energy and time on the operation and maintenance. And the efficiency of troubleshooting is low.

• The business system has extremely high requirements for the stability of the cloud network. Once the business is interrupted, it will affect the customer's production and cause direct economic losses.

Solution Topology

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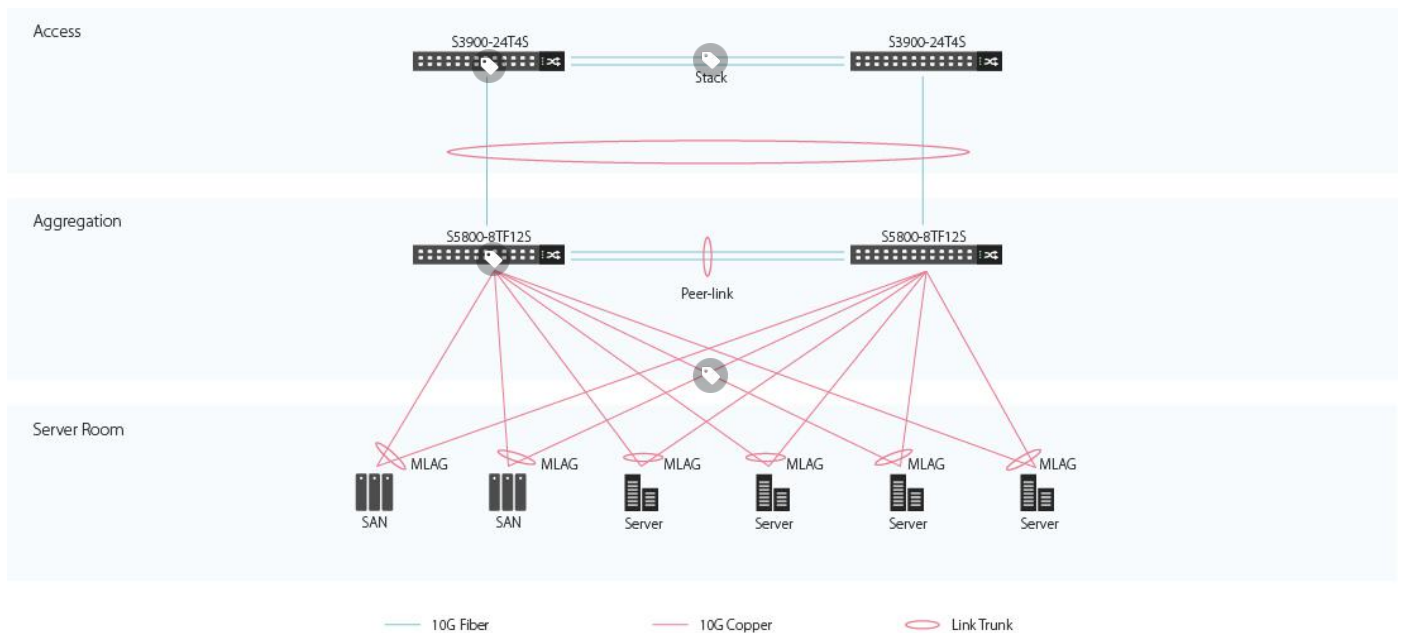
Solution Description

With the HCI solution, administrators only need to log into the Web interface to manage all business systems that greatly reducing the company's IT maintenance workload and human cost and improving IT management efficiency. Making use of virtual storage not only can realize the underlying redundancy and duplexed backup sets to avoid data loss, but also achieve linear expansion of storage capacity and performance, consequently, improving safety and stability.

Hyperconvergence: Two S5800-8TF12S switches and four RS-7188 servers are together deployed with hyperconvergence via integrating, abstracting and virtualizing physical resources such as CPU, memory, and disk, etc. to a unified resource pool, which integrates with computing, storage, network and security to provide IT basic resources for business systems.

Stacking: Two S3900-24T4S switches are formed to a stacking unit to work together via stacking and provide more ports in limited space. It increases data forwarding speed between stacked switches significantly. The two switches can be regarded as one, and it only needs to be assigned one IP address and then can manage them though this IP, which greatly reduces the difficulty of management.

MLAG: Two S5800-8TF12S switches configured with MLAG can be upgraded separately, just need to ensure that one of them works normally and it will nearly have no impact on the running business. The configured links are the sum of the bandwidth of all member group ports, and it can also provide disaster recovery capability and reliability for network links.

Product List

ID	Description
69404	S5800-8TF12S 8-Port Gigabit Combo L3 Managed Ethernet Switch with 12 10Gb SFP+ Uplinks for Hyper-Converged Infrastructure
72944	S3900-24T4S 24-Port 10/100/1000BASE-T Gigabit L2+ Stackable Managed Ethernet Switch with 4 10Gb SFP+ Uplinks, Fanless
70667	6ft (1.8m) Cat6a Snagless Shielded (SFTP) PVC CMX Ethernet Network Patch Cable, Blue
11552	FS for Cisco SFP-10G-SR Compatible, 10GBASE-SR SFP+ 850nm 300m DOM Transceiver Module (Standard)
87588	FS for Cisco SFP-10G-T-80 Compatible, 10GBASE-T SFP+ Copper RJ-45 80m Transceiver Module (Standard)
41730	1m (3ft) LC UPC to LC UPC Duplex OM3 Multimode PVC (OFNR) 2.0mm Fiber Optic Patch Cable

Note: If you have any questions or requirements, please contact FS technician team or your Account manager for personalized services:

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