# ST-S6500-48V6C: 48*25G+6*100G Data Center Switch

The ST-S6500-48V6C switch is a new generation high-performance and high-density data center class Ethernet switch designed by Sintai for cloud data center and cloud computing network. It supports 48*25G slots and 6*100G slots, 1+1 hot-swappable redundant power, 4+1 hot-swappable redundant fans with flexible adjustment of fan speed, spine-leaf network architecture design requirements.

## Features

➢ **Building high-performance data center network**

- Supports 25G slots to meet the demand for high-density access to 25G servers in high-performance data centers. The 25G slots can support 1G, 10G and 25G optical module, the 100G slots are backward compatible with 40G modules.

➢ **Data center Overlay network**

- Supports VxLAN, which can meet the requirements of data center Overlay network construction, solving the problem of insufficient number of VLANs and difficult to scale of traditional data center network.

- Supports EVPN* protocol and provides VTEP (tunnel terminal) auto-discovery and authentication, which can reduce the flooding of VxLAN data plane and avoid the dependence of VxLAN on the underlying deployment of multicast, simplify the deployment of VxLAN, improve the efficiency of the construction of the large Layer 2 network, and better satisfy the requirements of the deployment of the large Layer 2 network inside the data center.

➢ **M-LAG architecture**

- Supports M-LAG (Multichassis Link Aggregation Group) cross-device link aggregation technology, which achieves cross-device link aggregation by virtualising two physical devices into a single device at the forwarding level, keeping the control level independent of each other, thus improving single-board level reliability to device level reliability.

➢ **Hardware-based traffic visualization**

- Combined with the hardware capabilities provided by the chip itself, can achieve end-to-end traffic visualization in intricate multi-path, multi-node networks. Through protocols such as RSPAN and sFlow, real-time network resource information from the switch can be uploaded to the data center operation and maintenance platform, which analyses

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the real-time data to achieve network quality traceability, fault troubleshooting, risk warning, architecture optimization and other functions.

➢ **Carrier-grade reliability protection**

• Multiple reliability protection at device level and link level. Adopts over-current protection, over-voltage protection and over-heat protection technologies. Built-in redundant power supply modules and fan modules, all power supply and fan modules can be hot-swapped without affecting the normal operation of the equipment. AC or DC power supply modules can also be flexibly configured according to the needs of the actual environment.

• Supports power supply and fan failure detection and alarm. The fan speed can be automatically adjusted according to the temperature change, better adapting to the data center environment and achieving energy saving and emission reduction.

• Rich link reliability technology, such as ERPS fast ring protection mechanism, MRPP link fast switching mechanism. Support BFD fast forwarding detection and other mechanisms. When the network carries multiple services and heavy traffic, it does not affect the convergence time of the network and ensures the normal development of services.

➢ **IPv4/IPv6 dual stack**

• The hardware supports IPv4/IPv6 dual stack multi-layer wire-speed switching, the hardware distinguishes and processes IPv4 and IPv6 protocol messages, and supports a variety of Tunnel tunneling technologies (such as manually-configured tunnels, automatic tunnels, and ISATAP tunnels, etc.), which provides a flexible IPv6 inter-network communication solution according to the demand planning of the IPv6 network and the current situation of the network.

• Rich IPv4 routing protocols, including static routes, RIP, OSPF, IS-IS, BGP4, etc. Rich IPv6 routing protocols, including static routing, RIPng, OSPFv3, BGP4+, etc. Whether upgrading an existing network to an IPv6 network or building a new IPv6 network, you can flexibly choose the appropriate routing protocols to form a network.

➢ **Comprehensive security control strategy**

• A variety of intrinsic mechanisms can effectively prevent and control the spread of viruses and hacker attacks, such as preventing DoS attacks and checking the legitimacy of port ARP messages.

• Multiple hardware ACL policies for security and reliability. Supports incoming and outgoing port ACLs, and supports VLAN-based ACL issuance. Control the use of network by illegal users and ensure the rational use of network by legal users, such as multiple group binding, port security, time ACL, bandwidth limitation based on data flow, etc., to meet the needs of enterprise and campus networks to strengthen the control of visitors and restrict the communication of unauthorized users.

➢ **Excellent management ability**

• Supports rich management interfaces, such as Console, MGMT port, USB port, SNMPv1/v2/v3, and universal network management platform. Supports CLI command line, Web network management, TELNET, which makes

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device management more convenient, and supports SSH2.0, SSL and other encryption methods, which makes management more secure. Support TFTP file upload and download management.

➢ **Flexible duct orientation options**

• In order to better match the air duct design of the data center, the switch provides users with more flexible air duct solutions. While achieving front and rear air ducts, users can also choose different fan modules to achieve different air directions (power-side air out or port-side air out).

## Hardware specification

| Model | ST-S6500-48V6C |
|---|---|
| Interface | 48*25G SFP28 Slots<br>6*100G QSFP28 Slots |
| Management port | 1 MGMT Port, 1 Console Port, 1 USB Port, USB 2.0 compliant |
| Transmission mode | Support store-forward mode and cut-through mode |
| Packet forward speed | 1050Mpps |
| Switching capacity | 3.6T |
| Dimension(L*W*H) | 440mm(W) * 470mm(D) * 43mm(H) |
| Full weight | Approx. 10kg |
| Fan | 5 hot-swappable fan modules, front and rear or rear front ventilation |
| Power supply | Dual module power supply |
| AC input | Rated voltage range: 100~240V<br>Maximum voltage range: 90~264V<br>Frequency: 50~60Hz<br>Rated input current: 3.5~7.2A |
| DC input | Input voltage range: 180~310V<br>Input current range: 3.5A |
| Power consumption | Static (Dual AC): 76W; Maximum (Dual AC): 373W |
| Operating temperature | 0°C ~ 40 °C |
| Storage temperature | -40 °C ~ +70 °C |
| Operating humidity | 10% ~ 90% non-condensing |
| Storage humidity | 5% ~ 90% non-condensing |

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**Software specification**

| | | |
|---|---|---|
| **VLAN** | GVRP | |
| | PVLAN | |
| | Voice VLAN | |
| | VLAN Translation | |
| | Q-in-Q | |
| | Subnet-based VLANs | |
| | Protocol-based VLANs | |
| | MAC-based VLAN | |
| **MAC address** | Dynamic, static and black hole MAC address table entries | |
| | MAC address auto learning and aging | |
| | MAC address learning restrictions | |
| | Source MAC address filtering | |
| **Multicast** | IGMP Snooping v1/v2/v3 | |
| | MLD Snooping v1/v2 | |
| | PIM-DM, PIM-SM, PIM-SSM | |
| | Multicast VLAN | |
| | Multicast Traffic Suppression | |
| **Qos function** | Port-based rate limiting for incoming and outgoing messages | |
| | Stream-based rate limiting | |
| | Class Of Service | Based on port, source-destination MAC, source-destination IP |
| | | 802.1p |
| | | CoS |
| | | DSCP |
| | | IP priority |
| | | Source destination L4 Port |
| | Prioritisation Algorithm | WRR |
| | | SP |
| | | DSCP & CoS mapping |
| | | Congestion avoidance mechanisms such as WRED, tail drop, etc. |
| **Safety** | Port Security | |
| | Port Isolation | |
| | IEEE802.1x AAA | |
| | ACLs | L2/L3/L4 |
| | | IPv4/v6 ACL |
| | User hierarchy | |
| | IP source protection (IP MAC port binding, IP -MAC-port-VALN binding) | |
| | Dynamic ARP protection | |

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|---|---|---|
| | Illegal packet detection | |
| | Broadcast storm suppression | |
| | RADIUS/TACACS+ | |
| | RADIUS authentication (RFC2138) | |
| | DDoS Attack Prevention | |
| | HTTPs and SSL | |
| | SSH v1.5/v2.0 | |
| | DHCP Listening | |
| | DHCP Relay | |
| **L3 protocol (IPv4)** | Default Routing | |
| | Static routes | |
| | RIP V1/V2 | |
| | OSPF V2 | |
| | ISIS | |
| | BGP4 | |
| | ECMP | |
| | VRRP | |
| **IPv6 foundation** | IPv6 ND | |
| | IPv6 Web/SSL | |
| | IPv6 NTP/SNTP | |
| | IPv6 Telnet/SSH | |
| | IPv6 Ping/Traceroute | |
| | IPv6 FTP/TFTP | |
| | IPv6 RADIUS/TACACS+ | |
| | IPv6 SNMP | |
| **IPv6 features** | Static Routing | |
| | Equivalent Routing | |
| | OSPFv3 | |
| | RIPng | |
| | BGP4+ | |
| | Manual tunnelling | |
| | Automatic Tunneling | |
| | IPv4 over IPv6 tunnelling | |
| | ISATAP tunnelling | |
| **Data center features** | VxLAN Bridging | |
| | VxLAN Routing | |
| | EVPN VxLAN | |

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| | M-LAG | | |
|---|---|---|---|
| | RoCE v2, PFC、ECN | | |
| **MPLS** | MPLS | | |
| | VPLS | | |
| | VPWS | | |
| | LDP | | |
| **Visualisation** | sFlow Sampling | | |
| **Reliability** | STP, RSTP, MSTP | | |
| | BPDU Guard | | |
| | STP Root Guard | | |
| | Loop Protection, Loop Detection | | |
| | BFD Detection | | |
| | Ethernet OAM | | |
| | ULDP | | |
| | Power supply 1+1 redundancy | | |
| | Fan redundancy design | | |
| | Hot-swappable power supply and fan modules | | |
| **Management and maintenance** | SNMP (v1, v2c, v3) | | |
| | RMON (1,2,3 & 9) | | |
| | Firmware Upgrade | | |
| | Configuration Export/Import | | |
| | DHCP | Client | |
| | | Option 82 | |
| | | Option 66 | |
| | | Option 67 | |
| | Event/Error Logs | System Log | |
| | Management Access Control | Serial Port | |
| | | Out-of-Band Management Port | |
| | | SNMP | |
| | | HTTP/HTTPS | |
| | | Telnet | |
| | Port Mirror | | |
| | LLDP (IEEE802.1AB), LLDP-MED | | |
| | UDLD | | |
| | DNS Client | | |
| | Traceroute | | |
| | Ping | | |

| | DDMI |
| --- | --- |
| | NTP/ SNTP (RFC2030) |
| | Power, fan, and temperature alarms |

**Typical networking**

In the typical networking of data centers, the ST-S6500-48V6C switch is used as TOR switches to provide high-density 25G/10G server access. the ST-S6500-32C switch is used as spine node. In the spine-leaf network architecture, the spine nodes are interconnected with leaf nodes through 100G.
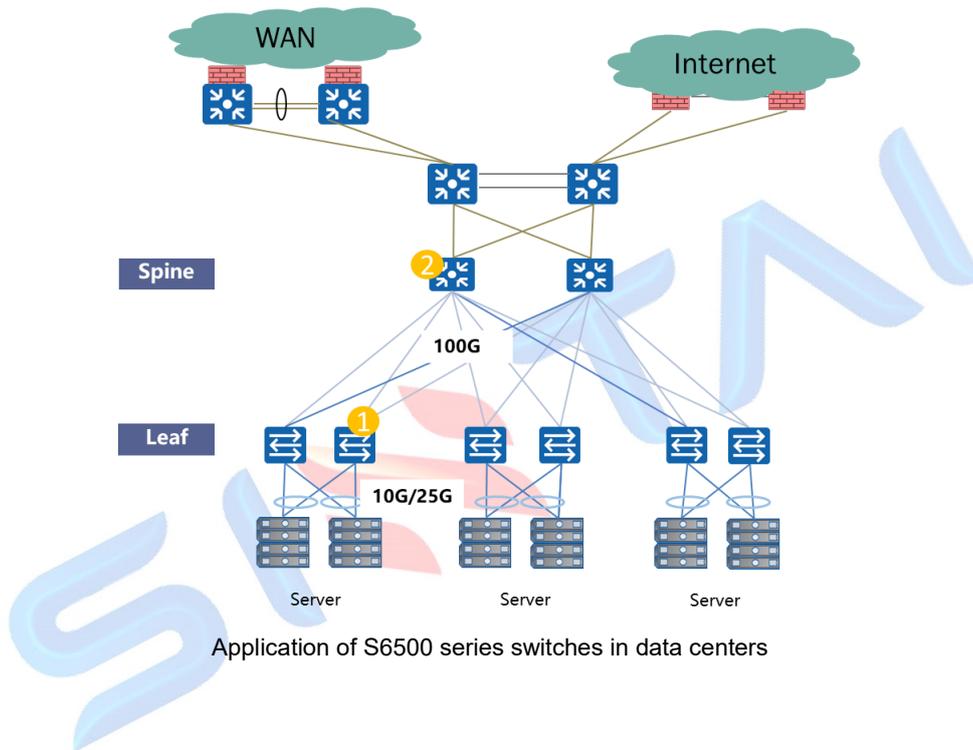
Application of S6500 series switches in data centers

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