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ZTE ZXR10 5960 Series Switch Data Sheet

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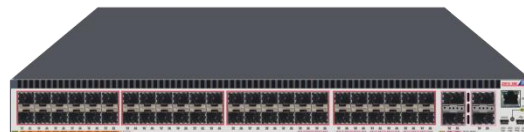
Product Overview

The ZXR10 5960 Series switch is next-generation switch with high switching capacity and high port density for data center TOR and carrier access and aggregation scenario. It provides high density 10GE/40GE interfaces, carrier-class reliability and superior scalability. The ZXR10 5960 Series switch supports extensive data center service features such as VSC2.0 (Virtual Switch Cluster)/ TRILL (Transparent Interconnection of Lots of Links)/ Front-to-back Airflow and Ethernet ring protection for L2 Ethernet service. The ZXR10 5960 Series switch can work with the ZXR10 9900 Series switch to build an elastic, virtualized, high-quality switching network that meets the requirements of cloud-computing data centers.

The ZXR10 5960 Series switch offers the following switch products:



ZXR10 5960-32DL



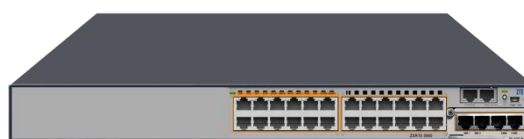
ZXR10 5960-64DL

5960-32DL: 24 10GE SFP+ optical ports and 2 40GE QSFP+ optical ports, 2 fan module, 2 AC/DC/HVDC power supply modules, front-to-back airflow.

5960-64DL: 48 10GE SFP+ optical ports and 4 40GE QSFP+ optical ports, 2 fan module, 2 AC/DC/HVDC power supply modules, front-to-back airflow.



ZXR10 5960-64NL



ZXR10 5960-28TM

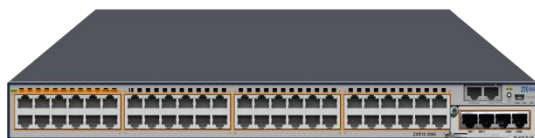
5960-64NL: 48 10GE RJ45 electrical ports and 4 40GE QSFP+ optical ports, 2 fan modules, 2 AC/DC/HVDC power supply modules, front-to-back airflow.

5960-28TM: 24 Ethernet 10/100/1000M RJ45 electrical ports and one expansion slot, 2 fan modules, 2 AC/DC/HVDC power supply modules, front-to-back airflow.

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ZXR10 5960-52TM

5960-52TM: 48 Ethernet 10/100/1000M RJ45 electrical ports and one expansion slot, 2 fan modules, 2 AC/DC/HVDC power supply modules, front-to-back airflow.

The expansion card slot can be equipped with the following expansion cards:

- 4 * 10GE SFP+ optical ports card
- 4 * GE SFP optical ports card
- 4 * GE RJ45 electrical ports card

Product Features

- **Up to 64x10GE Ports, 1RU Switch with 40GE Interface**
 - The ZXR10 5960 Series switch supports up to 1.28Tbps wire-speed switching capacity with high density 10GE/40GE interfaces. It delivers huge bandwidth capability to fulfill the growing service requirement in data center.
 - 1RU switch supports up to 64x10GE ports when expand 40GE port into 4 10GE ports, in order to access large scale 10GE servers.
 - The 10 GE ports support working as GE ports, 40GE port can be expanded into 4 10 GE ports, flexible interface combination delivers easy deployment for TOR switch and save cost for customer.
- **Deliver Better Data Center Service Experience.**
 - Support TRILL (Transparent Interconnection of Lots of Links) L2 multi-path technology and meet large L2 networking needs without STP. The load is shared between links and bandwidth resources usage is nearly 100%. The ZXR10 5960 Series switch can be used to build large L2 network with over 500 nodes, which can meet the requirement of VM (Virtual Machine) migration.

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- Support DCB (Data Center Bridging) protocol family and fully guarantee network reliability and no loss in full range. The ZXR10 5960 Series switch supports PFC (Priority-based Flow Control), QCN (Quantized Congestion Notification), ETS (Enhanced Transmission Selection), DCBX (Data Center Bridging Exchange), which ensure low latency and zero packet loss for high-speed computing services.
- Support multiple EVB (Ethernet Virtual Bridging) patterns including VM, VEB and VEPA (Virtual Ethernet Port aggregator), and these different patterns can coexist, so it can fulfill different networking requirements. With full support for related protocols like VDP (VSI Discovery Protocol), EDCP (Edge Devices Communication Protocol) and CDCP (S-Channel Discovery and Configuration Protocol), EVB can run smoothly.
- Provide strict front and rear air ducts in line with the requirements of data center construction.

- **Innovative VSC2.0 (Virtual Switch Cluster) Technology**

- Support VSC2.0 (Virtual Switch Cluster), which enhances cluster system capacity and port density, simplifies network topology and management.
- Real time hot-standby information synchronization between master and standby master to ensure seamless switch over against network failures, enhancing network reliability.
- Stacking bandwidth between the VSC switches can be up to 320Gbps, which can solve the bandwidth bottleneck of VSC and deliver customers a real-time non-blocking VSC system.
- The stacking distance can be up to 80km, it helps customers get rid of distance restriction while designing a reliable VSC system.
- Master and slave in VSC works in 1+N redundancy mode, MAD (Multi-active Detect) technology is used to detect and avoid dual master in VSC system when failure happens. Together with real-time hot-standby and seamless switchover it brings customer a more flexible VSC network.
- No need special stacking sub-card, the normal ports can be used for VSC2.0 connecting, which helps customers save investments.

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- **Powerful Service Bearing Capability**
 - By supporting rich L2 switching and L3 routing functions and low latency forwarding, The ZXR10 5960 Series switch can bear lots of service including WLAN, Internet, Voice, Video, Enterprise private network and other data services.
 - Support Voice VLAN (which means the automatic assignment of dedicated VLAN and QoS strategy to voice equipment), thus enabling the voice traffic to enjoy high priority.
 - Support L2/L3 multicast, including IGMP snooping, Filtering, Proxy and Fast leave, MVR (Multicast VLAN Registration) and PIM to facilitate the services deployments such as Multi-terminal HD video surveillance and video conferencing.
- **Comprehensive IPv6 Solution**
 - The ZXR10 5960 Series switch has passed the IPv6 Ready Phase 2 Gold Medal Certification issued by IPv6 Forum.
 - Support IPv6 unicast routing protocols: IPv6 static routing, RIPng, OSPFv3, IS-ISv6, and BGP4+ and multicast features: MLD v1/v2, MLD snooping, PIMv6.
 - Support IPv4-to-IPv6 tunnel technologies: IPv6 manual tunnels, 6-to-4 tunnel, ISATAP tunnel and IPv4-compatible automatic tunnel, etc.
- **Carrier-Grade Reliability and Multi-Dimensional Security**
 - Support dual redundant modular fan and dual modular power supply.
 - Support Ethernet OAM, including IEEE 802.3ah, 802.1ag, help monitor network real-time operating status and fulfill fast fault detection, fault location.
 - Support various authentication methods such as 802.1x, Radius, TACACS+. Support CPU overload protection, anti-DDOS, deliver customer a security network.
- **Easy Maintenance, Saving OPEX**
 - The innovative M-Button delivers instant trouble-shooting by reading indicators on front panel without login via terminal. It helps to solve some common problems immediately.
 - Zero-touch provisioning, download software and configuration to the switch automatically from the server, Reduce provision process and man power requirement.

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- Support the SQA (Service Quality Analyzer), detecting the network quality periodically or in real time. In order to provide better quality of service for more valuable services.
- Support ALS (automatic laser shutdown), protect people against laser injury when plug out the optical module.

- **Green for More**

- Front-to-back shoot-through airflow and more air hole design in the front panel improve heat dissipation to reduce power consumption.
- Fan speed can automatically adjust by 5 levels in accordance with the temperature inside the switch. It not only saves the power consumption, but also reduces noise and extends life cycle of the fans.
- Complying with ROHS, WEEE and ISO14001 certification, No plumbum (Pb) in not only product materials but also the whole processing technic. Meanwhile, use re-cycles degradable packing materials, practice green for more.

System Specification

Parameters	5960-64DL	5960-32DL	5960-64NL	5960-52TM	5960-28TM
Height	1RU	1RU	1RU	1RU	1RU
Dimensions (H*W*D)	43.6mm*442mm*440mm				
Fixed Ports	48*10GE SFP+ ports and 4*40GE QSFP+ ports	24*10GE SFP+ ports and 2*40GE QSFP+ ports	48*10GE RJ45 ports and 4*40GE QSFP+ ports	48 GE RJ45 ports	24 GE RJ45 ports
Expansion Card Slot	-			1	
Expansion Card Type	-			4*1GE SFP card 4*1GE RJ45 card 4*10GE SFP+ card	
Weight	<9.0kg	<9.0kg	<9.0kg	<9.0kg	<9.0kg
Management Port	1 RJ45 Console, 1 Mini USB Console, 1 GE Combo MNG, 1 USB				

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Parameters	5960-64DL	5960-32DL	5960-64NL	5960-52TM	5960-28TM
DC Power Supply	-38V ~ -72V				
HVDC Power Supply	240V/336V				
AC Power Supply	Rated voltages: 100V~240V,50Hz~60Hz; Maximum voltages: 90V~286V,45Hz~66Hz				
Max Power Consumption	<310W	<220W	<320W	<87W	<80W
Typical Power Consumption	191W	150W	195W	67W	67W
Power Redundancy Pattern	Two independent and swappable power supply module, support AC 1+1, DC 1+1, mixed AC DC 1+1				
Heat Dissipation Pattern	Forced air cooling (Front-to-Rear flow)				
Heat Dissipation	<534 BTU/h	<420 BTU/h	<546 BTU/h	<187 BTU/h	<168 BTU/h
Working Temperature	Long term working temperature: -5 °C ~ +50 °C Short term working temperature: -10 °C ~ +50 °C				
Humidity	10%~90%				
Working Altitude	<5000 meters				
MTBF/MTTR	>300000 hours/ < 30 minutes				
Switching Capacity	1.28Tbps	640Gbps	1.28Tbps	176Gbps	128Gbps
Packet Forwarding Rate	960Mpps	480Mpps	960Mpps	132Mpps	96Mpps

Function Specification

Function	The ZXR10 5960 Series Switch
Data Center Features	Support VSC2.0 (Virtual Switching Clustering) Support TRILL (Transparent Interconnection of Lots of Links) Support DCB (Data Center Bridging) Support PFC (Priority-based Flow Control) Support ETS (Enhanced Transmission Selection) Support VEPA (IEEE 802.3Qbg) Support Multi Channel

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Function	The ZXR10 5960 Series Switch
L2 Features	Support IEEE 802.1p (COS), IEEE 802.1q (VLAN), IEEE 802.3x Support IEEE 802.1d (STP)/ 802.1w (RSTP)/ 802.1s (MSTP) Support IEEE 802.3ad (LACP) Support IEEE 802.3z (1000Base-X) / 802.3ab (1000BaseT) Support IEEE 802.3an (10GBase-T), IEEE 802.3ae (10Gbase) Support IEEE 802.3ba (40Gbase), IEEE 802.3ba (100Gbase) Support Port mirroring, Traffic mirroring Support VLAN switching, VLAN translation Support PVLAN, SuperVLAN Support GVRP Support LLDP
IPv4 Features	Support IPv4 routing protocols, such as static routing, policy based routing , RIP, OSPF, BGP, and IS-IS Support DHCP server/ relay/proxy, DHCP snooping
IPv6 Features	Support IPv6 dynamic routing protocols, such as Static routing, Policy based routing , RIPng, OSPFv3, ISISv6, and BGP4+ Support ND, DHCPv6, PMTU Support manual IPv6 tunnel, 6to4 tunnel, 6PE, ISATAP tunnel
Multicast	Support IGMP v1/v2/v3, IGMPv1/v2/v3 snooping Support PIM-SM, PIM-DM, PIM-SSM, Bi-direction PIM, MSDP, MBGP, Any-RP Support MLD V1/V2, MLD V1/V2 Snooping Support PIMv6
QOS	Support traffic classification based on Layer 2 headers, Layer 3 protocols, Layer 4 protocols, and 802.1p priority Support 8 hardware-based queues per port Support queue scheduling algorithms, such as SP, WRR, DWRR, SP+WRR Support congestion avoidance mechanisms, such as WRED and tail drop Support policing/shaping based on port/flow
Security	Support L2-L4 ACL Support standard ACL,MAC ACL, L2 ACL, extended ACL, mixed ACL, VLAN ACL Support time-range ACL configuration, bidirectional ACL Support 802.1x authentication and 802.1x server, support portal Support MAC authentication

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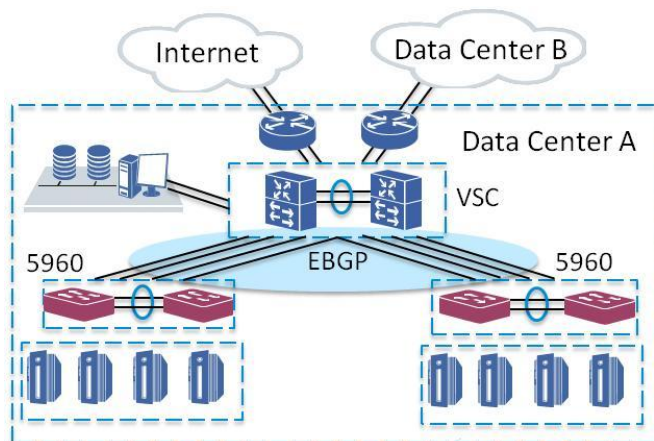
Function	The ZXR10 5960 Series Switch
	<ul style="list-style-type: none">Support AAA/ RADIUS and TACACS+ authentication for login usersSupport SSH v1.0/v2.0 serverSupport CPU anti-attack, CPU overload protectionSupport STP Root Guard, BPDU guardSupport URPFSupport RIP/OSPF/BGP MD5 encryption checking
Equipment Management	<ul style="list-style-type: none">Support CLI, Telnet, SSH, Local and remote (Radius/Tacacs+) authentication of userSupport SNMP v1/v2/v3Support NetNumen U31Support Mirroring, RSPAN, ERSPANSupport EasyManager zero deployment and batch inspection toolSupport RMONSupport NTPSupport Syslog, SflowSupport Hot patches
Reliability	<ul style="list-style-type: none">Support 1+1 redundancy power supply/ fan moduleSupport Hot pluggingSupport LACPSupport ZESR/ZESR+(ZTE Ethernet Switch Ring)Support VRRP,VRRPv3,VRRPESupport NSF/GR for OSFP/BGP/IS-ISSupport BFD for VRRP/ BGP/ IS-IS/ OSPFSupport Ethernet OAM (802.1ag and 802.3ah)
Enhanced Features	<ul style="list-style-type: none">Support M-BUTTONSupport Zero-touch deployment

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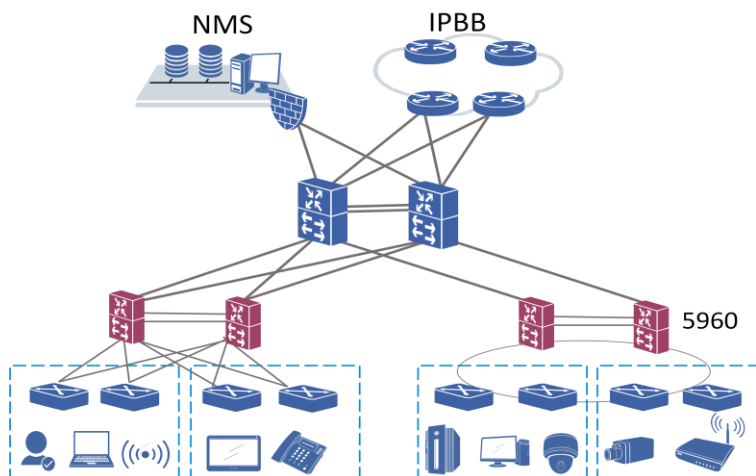
Application Scenarios

- **TOR in Typical Data Center Network**



The ZXR10 5960 Series switch works as TOR switch on a typical data center network. The ZXR10 5960 Series switch has high-density 10GE/40GE interfaces to interconnect the 10GE servers and aggregates to the ZXR10 9900 Series switch through 40GE/100GE interfaces. Deploy EBGP and VSC technology to build a non-blocking Layer 3 network, which allows large-scale VM migrations and flexible service deployments.

- **Aggregation in Carrier Network**



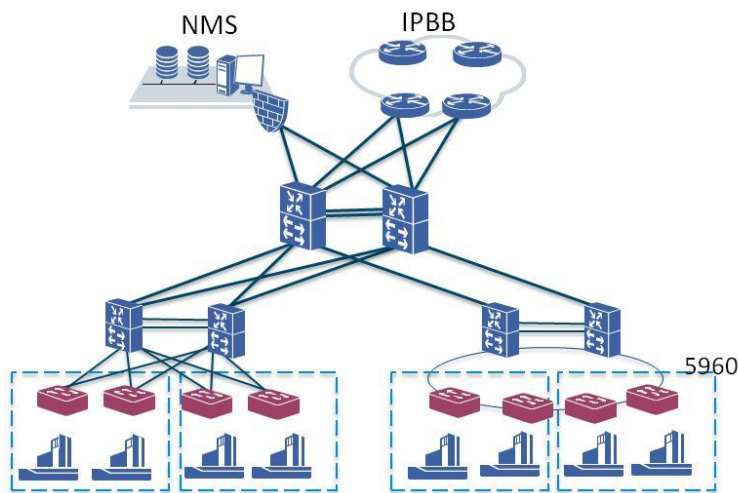


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The ZXR10 5960 Series switch works as high density 10GE aggregation switch which provide 40GE as uplink. Through L2/L3 features and ZESR ring protection, the ZXR10 5960 Series switch aggregates the traffic from the access and forward it to the core switch. VSC2.0 technology can realize fast switchover when failure happens.

- **10GE Access for Business Customer**



As the bandwidth increasing fast, more and more business customers need 10GE interface access. The ZXR10 5960 Series switch works as high density 10GE interface switch which provide 40GE as uplink. Through L2/L3 features and ZESR ring protection, the ZXR10 5960 Series switch access the traffic from the business customer and forward it to the aggregation switch.



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Order Information

Mainframe

5960-64DL (OUT)	5960-64DL Switch(2*Power Module, 2*FAN Module, Front-to-Back Airflow)
5960-64DL (IN)	5960-64DL Switch(2*Power Module, 2*FAN Module, Back -to-Front Airflow)
5960-32DL (OUT)	5960-32DL Switch(2*Power Module, 2*FAN Module, Front-to-Back Airflow)
5960-32DL (IN)	5960-32DL Switch(2*Power Module, 2*FAN Module, Back -to-Front Airflow)
5960-64NL (OUT)	5960-64NL Switch(2*Power Module, 2*FAN Module, Front-to-Back Airflow)
5960-64NL (IN)	5960-64NL Switch(2*Power Module, 2*FAN Module, Back -to-Front Airflow)
5960-52TM (OUT)	5960-52TM Switch(2*Power Module, 2*FAN Module, Front-to-Back Airflow)
5960-28TM (OUT)	5960-28TM Switch(2*Power Module, 2*FAN Module, Front-to-Back Airflow)

Power Module

RS-5960-PWR-AC50-OUT	5960 AC/HVDC Power Module
RS-5960-PWR-AC50-IN	5960 AC/HVDC Power Module
RS-5960-PWR-DC100-OUT	5960 DC Power Module
RS-5960-PWR-DC100-IN	5960 DC Power Module
5960-PWR-AC20-OUT	5960 AC/HVDC Power Module
5960-PWR-AC20-IN	5960 DC Power Module

Fan Module

5960H-FAN (OUT)	5960 Fan Module (Front-to-Back Airflow)
5960H-FAN (IN)	5960 Fan Module (Back-to-Front Airflow)

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