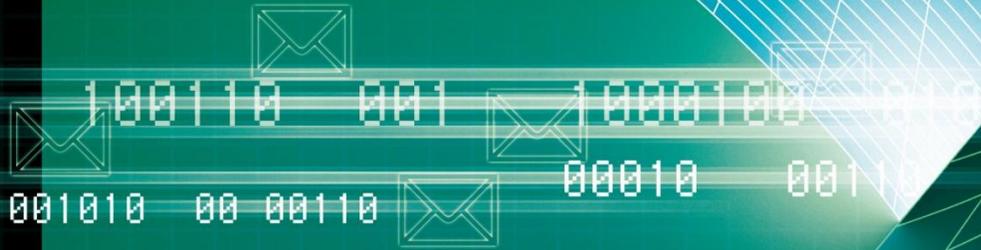


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## ZXR10 5960 Series All 10Gigabit Switch

## Overview

ZXR10 5960 series all 10Gigabit switches are box-like layer 3 10Gig MPLS routing switches that deliver ultra-big switching capacity, carrier-grade reliability and superior scalability.

With support to abundant Datacenter related features including virtual switching and lossless Ethernet, 1RU height, optional back-to-front/front-to-back airflow, ZXR10 5960 is suitable to act as a Datacenter TOR.

Featuring full L2/L3/MPLS capability, ZXR10 5960 is also a good choice for 10Gig aggregation purpose in campus network, especially in space constrained environments.

Currently ZXR10 5960 includes two switch types: 5960-32DL and 5960-64DL. The interface offerings of these two switches are listed below:

5960-32DL: 2\*40GE QSFP +24\*10GE SFP+

5960-64DL: 4\*40GE QSFP +48\*10GE SFP+

ZXR10 5960 Series all 10Gigabit Switches



ZXR10 5960-32DL



ZXR10 5960-64DL

## Innovative Features

### High Density 10Gig Interface Box

ZXR10 5960-32DL can provide maximally 32 10Gig interfaces and 640Gbps throughput, while ZXR10 5960-64DL can provide maximally 64 10Gig interfaces and 1.28Tbps throughput.

With such strong switching capacity and high density 10G interfaces, it enables the deployment of large amount of servers with 10 interfaces. With ZXR10 5960, high density 10Gig aggregation can also be achieved in campus network/enterprise network.

### Scalable uplink interface card

ZXR10 5960 supports 40Gig uplink interfaces; 5960-32DL can provide maximally 2 40Gig QSFP interfaces, while 5960-64DL can provide maximally 4 40Gig QSFP interfaces. Each 40Gig interface can be optionally configured as 4 10Gig interfaces.

### Full Service support

ZXR10 5960 supports diversified VLAN features, including Port-based VLAN, Subnet VLAN, Protocol-based VLAN, Selective QinQ, VLAN translation in order to separate/distinguish different user's different services in different scenarios.

ZXR10 5960 supports Voice VLAN, which means the automatic assignment of dedicated VLAN and QoS strategy to voice equipments, thus enabling the voice traffic to enjoy high priority.

Multicast based technologies like video surveillance/tele-presence are important services for Enterprise users nowadays. ZXR10 5960 fully supports L2/L3 multicast, including IGMP snooping, Filtering, Proxy and Fast-leave, MVR (Multicast VLAN Registration) and PIM-SM to facilitate the deployments of these services.

ZXR10 5960 fully support MPLS L2/L3 VPN, providing an economical reliable VPN solution for commercial uses.

ZXR10 5960 also supports MCE, enabling it to run multiple VPN instances without running MPLS, relieving pressure on the PE (provider edge) equipment.

### Full Data Center Features

ZXR10 5960 supports IEEE 802.1Qbg EVB (Ethernet Virtual Bridging); With full support to related protocols like VDP, EDCP and CDP, EVB can run smoothly.

ZXR10 5960 supports multiple EVB patterns including VM, VEB, VEPA (Virtual Ethernet Port aggregator), while different patterns can coexist, fulfilling different networking requirements.

ZXR10 5960 supports abundant lossless Ethernet features:

ZXR10 5960 supports DCTCP (Data Center TCP), which helps relieve the congestion problem caused by TCP transmission mechanism, promoting end-to-end performance;

ZXR10 5960 supports PFC (Priority-based Flow Control), enabling the switch to implement queue-based flow control, avoiding packet loss caused by port-based flow control;

ZXR10 5960 supports QCN (Quantized Congestion Notification), enabling the switch to send/relay the congestion message all the way to the source node in the network, relieving the congestion from the root.

ZXR10 5960 support ETS (Enhanced Transmission Selection), which is the optimal model for bandwidth allocation and priority manipulation in Datacenter Scenario.

ZXR10 5960 support DCBX (Data Center Bridging Exchange), which allows the switch to negotiate with the peer about their DCB capability.

### Industrial-Grade Reliability and Security

ZXR10 5960 adopts dual redundant modular fan and dual modular power supply design.

ZXR10 5960 supports the software image backup, promoting the capability to recover from disaster and failures.

ZXR10 5960 supports diversified mechanisms to guarantee the security of the network:

CPU DDOS protection capability helps the equipment to mitigate the influence caused by attacks. Equipment itself won't be brought down to maintain the network stability.

DAI (Dynamic ARP inspection) function and IP/MAC binding help prevent against DOS (Denial of Service) attacks.

With ZESR (ZTE Ethernet Smart Ring) and ZESS (ZTE Ethernet Smart Switch) capabilities, ZXR10 5960 can provide resilience solution in ring topology and dual-homing topology networks, while the time for switchover can be less than 50ms. With multi-instance capability, the network bandwidth can also be used with highest efficiency.

ZXR10 5960 supports MC-LAG (multi-chassis link aggregation), providing another dual-homing method while posing no extra requirements to peering devices.

### Easy-Maintenance

The direction of 5960's airflow can be adjusted by using different fan modules. Users can select back-to-front airflow or front-to-back airflow at will, which is especially useful in Data Center networking scenario. Holes for ventilation purpose locate on side panels/ and front/rear panels helps the air flows more smoothly.

The innovative M-Button function enables the manager to fetch important equipment information including port/memory/CPU status in case of network problems by reading the interface indicators, enabling instant trouble-shooting, and thus reduce OPEX to the utmost extent by shrinking network down time. M-button adds no more investments; only extra meanings are bestowed to the status of the interface indicators.

ZXR10 5960 supports Zero Configuration, which means the switch can automatically download software images and start-up configurations. Zero configuration truly enables plug and play and reduces the requirement for experienced engineers.

ZXR10 5960 supports ALS (Automatic Laser Shutdown), protecting equipment administrator against laser injury and saving energy at the same time.

### Green and Energy Efficient

ZXR10 5960 adopts the advanced chip technology, so the power consumption of the main chip can be dramatically reduced.

More holes in front panel for airflow, enhance heat dissipate.

Low-noise fan is adopted for ZXR10 5960, making it user-friendly and energy efficient at the same time, multi-level fan speed adjustment.

The materials used during the life span of 5960 completely meet RoHS standards.

## Technical Specification

Functions and Parameters		5960-32DL	5960-64DL
Interface Combination	Fixed interfaces	24 10GE SFP+ ports +2 40GE QSFP ports(extend 8 10GE SFP+ ports)	48 10GE SFP+ ports +2 40GE QSFP ports(extend 16 10GE SFP+ ports)
	Backplane Capacity	2Tbps	2Tbps
Basic Parameters	Switching Capacity	640Gbps	1.28Tbps
	Packet Forwarding Rate	480Mpps	960Mpps
	Route table Depth(host route number +subnet route number)	16K+16K	
	MAC table Depth	128K	
Features	L2 Features	IEEE 802.1q VLAN,IEEE 802.1p,IEEE 802.3ad, IEEE 802.3,IEEE 802.3z, STP,RSTP,MSTP, Selective QinQ, VLAN translation, PVLAN,DHCP Snooping, 802.1x	
	L3 Features	Static routing, RIP, OSPF, ISIS, BGP,MCE	
	MPLS	LDP,MPLS TE,VPLS,VPWS,H-VPLS,MPLS L3 VPN,CE Dual-homing Protection	
	Multicast	Administratively scoped multicast/IPTV, MVR, IGMP,IGMP Snooping, Filtering, Proxy and Fast Leave, PIM-DM,PIM-SM,MSDP	

	<b>QoS</b>	Marking, modification of QoS priority and mapping between 802.1p, IP DSCP. 8 hardware-based unicast queues and 4 multicast queues per port, SP,WRR/DWRR,SP+WRR,CBWFQ queue scheduling mechanisms,3-tier queue scheduling , Policing/shaping based on port/flow, congestion avoidance mechanisms including WRED and Tail-Drop	
	<b>Security</b>	CPU anti-attack, CPU overload protection, Broadcast/Multicast/unknown Unicast suppression, STP Root Guard, BPDU guard, uRPF, RIP/OSPF/BGP MD5 encryption checking, IP source Guard, DAI, Bidirectional ACL	
	<b>Reliability</b>	LACP,MC-LAG, ZESS,ZESR/ZESR+,VRRP,BFD	
	<b>Enhanced Features</b>	MFF,M-BUTTON,Zero-Configuration,802.1ag,802.3ah,Y.1731,802.1qbg,DCTCP,QCN,PFC,ETS,DC BX	
<b>Equipment Management</b>	<b>Equipment Management</b>	RS232 Console (RJ45),USB console, Ethernet management port, CLI, Telnet, SSH, Local and remote(Radius/Tacacs+)authentication of user, Web management, SNMP, NetNumen U31, Cluster Management(ZGMP)	
<b>Physical Parameters</b>	<b>Dimensions (H*W*D)</b>	43.6mm*442mm*440mm	43.6mm*442mm*440mm
	<b>Maximum Weight</b>	7.6kg	8kg
	<b>DC power supply</b>	-48V	-48V
	<b>AC power supply</b>	100V~240V, 50Hz~60Hz	100V~240V, 50Hz~60Hz
	<b>Maximum power consumption</b>	220W	280W
	<b>Typical power consumption</b>	160W	200W
	<b>Power redundancy pattern</b>	Dual independent and swappable power supply modules	
	<b>Heat dissipation pattern</b>	Fan cooling(Front-to-Rear/Rear-to-Front flow )	Fan cooling(Front-to-Rear/Rear-to-Front flow )

	Heat dissipation	616 BTU/h	783 BTU/h
	Temperature , humidity	Working temperature:-5°C ~+45°C,humidity:20%~90%	
	Working altitude	<4000 meters	
	MTBF/MTTR	> 300000 hours/ < 30 minutes	