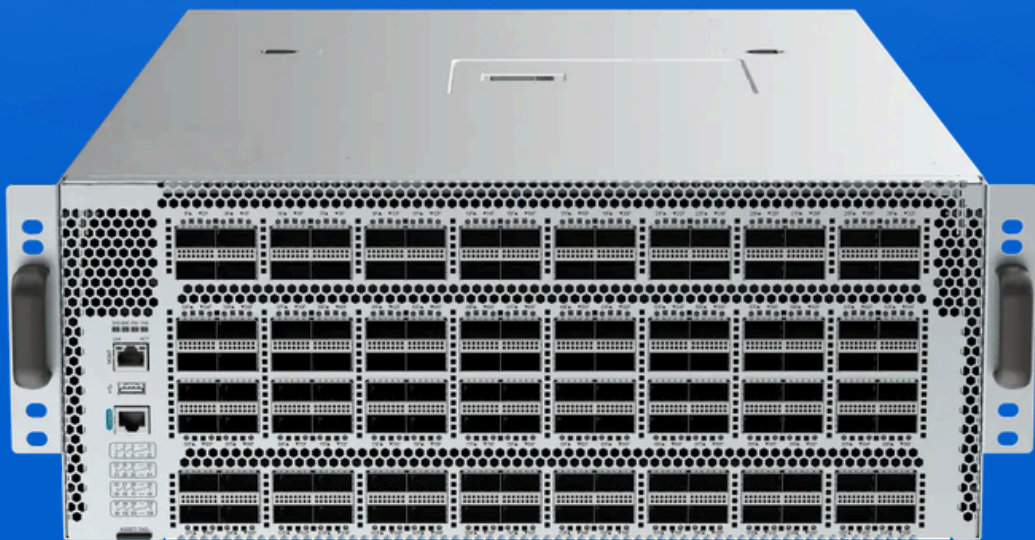


RS-DC6990-128DC

**128 x 200G TH4 RoCE Switch for
AIGC & Cloud Data Centers**

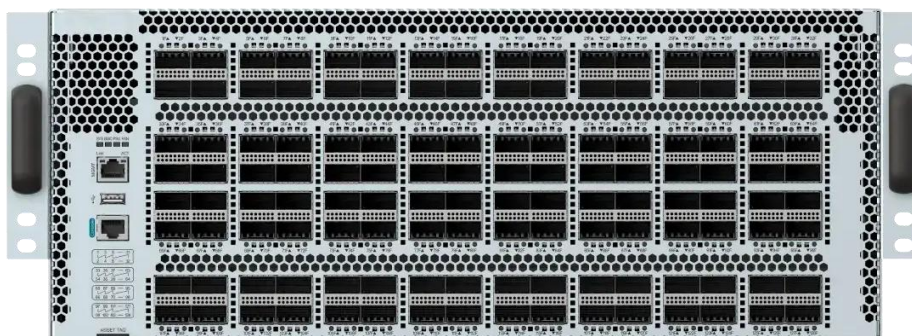


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1. Product Overview

The RS-DC6990-128DC is a next-generation, high-performance, and high-density fixed switch developed for high-end data centers and AIGC intelligent computing networks. The switch adopts an advanced hardware architecture design, uses a single forwarding chip, and provides 128 x 200GE ports, all of which support line-rate forwarding. The power modules and fan modules are redundant and pluggable. Remote Dynamic Load Balancing (RDLB) and Global Dynamic Load Balancing (GDLB) of AI-Fabric solution increase the bandwidth and shorten the AI training time in AIGC intelligent computing scenarios. A typical two-tier network supports up to 8,000 x 200GE ports, while a typical three-tier network supports up to 32,000 x 200GE ports. One-click RoCE configuration can be employed to import Explicit Congestion Notification (ECN), Priority-based Flow Control (PFC) and other complicated RDMA-related configuration for quick deployment.

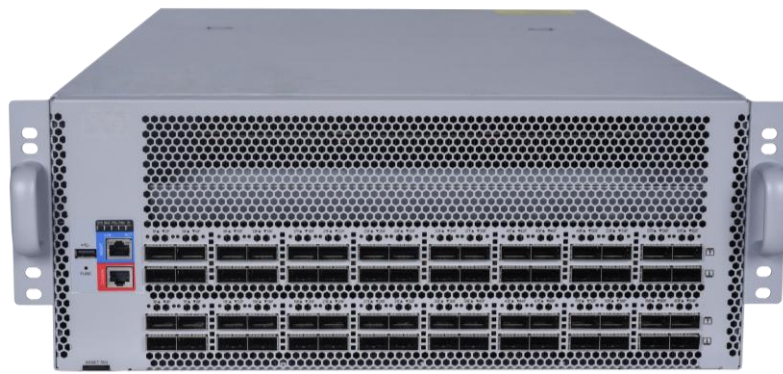
2. Product Appearance



Front View



Rear View



Front Top View

3. Product Features

Building Next-Generation Data Center Networks

With the rapid development of AI machine learning, big data, high-performance computing, distributed storage, and other applications, the next-generation data center network is evolving towards 100G/200G networks. To meet the demand for higher performance and bandwidth in a unit space, the RS-DC6990-128DC switch provides up to 128 x 200GE ports in a 4 RU rack space. The 200GE QSFP56 ports are compatible with 100GE QSFP28 optical transceivers. The switch can meet evolution requirements of next-generation data center networks with excellent performance.

Building High-Performance and Low-Latency Data Center Networks

The RS-DC6990-128DC switch works with the RG-S6580 series switches to build end-to-end, lossless, low-latency remote direct memory access (RDMA) networks by using advanced network flow control technologies such as PFC and ECN, as well as the memory management unit (MMU) technology. In addition, the switch supports RDLB and GDLB of AI-Fabric solution to resolve the equal-cost multi-path routing (ECMP) conflict caused by per-flow load balancing and increase the bandwidth in the AIGC intelligent computing scenario, thereby shortening the AI training time. This meets network deployment requirements across various scenarios including AI, machine learning, high-performance computing, distributed storage, big data, and other applications.

Carrier-Class High Reliability

The RS-DC6990-128DC switch supports 2+2 power redundancy and 7+1 fan redundancy. All power modules and fan modules can be hot-swapped without affecting service continuity on the switch. It also supports fault detection and alarm functions for power modules and fan modules, and can automatically adjust fan speed based on ambient temperature to adapt to environment changes in data centers. The switch also supports device-level and link-level reliability protection as well as overcurrent protection, overvoltage protection, and over temperature protection.

In addition, the switch integrates various link availability mechanisms such as networking through dual redundant ports, graceful restart (GR), and bidirectional forwarding detection (BFD). When multiple

services and heavy traffic are carried over the network, these mechanisms can reduce the impact of exceptions on network services and enhance the overall availability.

Quick Deployment

The switch features automatic configuration of network parameters and profile-based automatic provisioning, allowing for quick deployment and significantly shortening the project deployment time. It also supports automated acceptance testing, including cable testing, optical transceiver testing, and device testing, to ensure high-quality delivery.

Intelligent O&M

The switch offers AI-powered automatic ECN tuning, real-time telemetry of key RoCE network metrics, visualization of server status and RoCE services, along with congestion and packet loss analytics.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The hardware of the RS-DC6990-128DC switch supports IPv4/IPv6 dual stack, realizing multilayer line-rate switching. It is capable of distinguishing IPv4 and IPv6 packets and supports multiple tunneling technologies (such as manually configured tunnels), providing flexible communication solutions based on IPv6 network planning and the current network environment. The switch also supports various IPv4 routing protocols such as static routing, Routing Information Protocol (RIP), RIPv2, Open Shortest Path First (OSPF), and BGP4+, as well as IPv6 routing protocols such as static routing, RIPng, OSPFv3, and BGP4+. Users can select appropriate routing protocols for upgrading the live network or building a new network.

All-Round Management Performance

The RS-DC6990-128DC switch provides various management ports, including the console port, management port, and USB port, and complies with Simple Network Management Protocol (SNMP) v1/v2c/ v3 and other standards. It is applicable to the universal network management platform. It provides various management modes such as CLI, Telnet, and cluster management, simplifying device management. The switch also supports encryption protocols such as SSH2.0 and SSL to ensure the security of management operations. In addition, the switch supports the switched port analyzer (SPAN), remote switched port analyzer (RSPAN), and multiple SPAN monitoring ports, making network traffic monitoring intuitive and helping users optimize the network structure and resource configuration promptly based on traffic analysis reports.

4. Specifications

Hardware Specifications

Item	RS-DC6990-128DC
Dimensions (W × D × H)	442 mm x 760 mm x 175 mm (17.40 in. x 29.92 in. x 6.89 in.)
Rack height	4 RU
Unit weight	39.65 kg (87.41 lbs.) (A chassis installed with four power modules and eight fan modules)
Switching capacity	25.6 Tbps
Packet forwarding rate	10300 Mpps

Service port	128 x 100GE/200GE QSFP56 ports
Management port	1 x RJ45 console port 1 x RJ45 MGMT port
USB port	1 x USB 2.0 port (Type A connector)
Power consumption	4 x power module slots 8 x fan module slots
Power consumption	Maximum power consumption: 2550 W Typical power consumption: 1800 W Static power consumption: 250 W
Power input	PSA1300CRPS-F (AC input) Rated input voltage: 100 V AC to 127 V AC, 200 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage: 90 V AC to 140 V AC, 180 V AC to 264 V AC, 47 Hz to 63 Hz Rated input current: 12 A (100 V AC to 127 V AC) 8 A (200 V AC to 240 V AC) Power connector: C14 PSA1300CRPS-F (HVDC input): Rated input voltage: 240 V DC (For Chinese mainland only) Maximum input voltage: 180 V DC to 310 V DC Rated input current: 6.5 A Power connector: C14
Temperature	Operating temperature: 0°C to 40°C (32°F to 104°F) Storage temperature: -40°C to +70°C (-40°F to +158°F) Note: At altitudes ranging from 2000 m (6561.68 ft.) to 5000 m (16,404.20 ft.), the maximum temperature decreases by 1°C (1.8°F) for every 200 m (656.17 ft.) increase in elevation.
Humidity	Operating humidity: 10% RH to 90% RH (non-condensing) Storage humidity: 5% RH to 95% RH (non-condensing)
Altitude	Operating altitude: ≤ 5,000 m (16,404.20 ft.) Storage altitude: ≤ 5000 m (16,404.20 ft.)
Cooling	Air cooling, front-to-rear airflow (port-side intake)

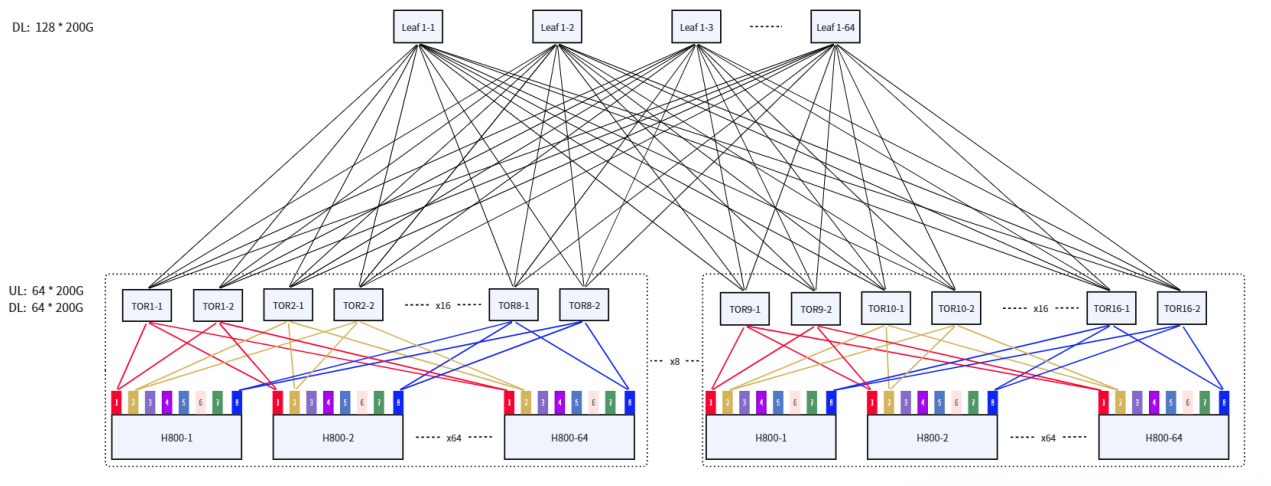
Software Specifications

Item	RS-DC6990-128DC
Layer 2 Protocols	IEEE 802.3ae (10GBase), IEEE 802.3ak, IEEE 802.3an, IEEE 802.3x, IEEE 802.3ad (Link Aggregation Control Protocol), IEEE 802.1p, IEEE 802.1Q, IEEE 802.1D (STP), IEEE 802.1w (RSTP), IEEE 802.1s (MSTP), Jumbo Frame (9 KB)
Layer 3 Protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, LPM routing, Policy-based Routing (PBR), route-policy, Equal-Cost Multi-Path Routing (ECMP), WCMP, VRRP

Item	RS-DC6990-128DC
IPv6 Basic Protocols	Neighbor Discovery, ICMPv6, Path MTU Discovery, DNSv6, DHCPv6, ICMPv6, ICMPv6 redirection, ACLv6, TCP/UDP for IPv6, SNMP v6, Ping/Traceroute v6, IPv6 RADIUS, Telnet/SSH v6, FTP/TFTP v6, NTP v6, IPv6 MIB support for SNMP, VRRP for IPv6, IPv6 QoS
IPv6 Features	Static routing, ECMP, PBR, OSPFv3, RIPng, BGP4+
Data Center Features	PFC, ECN, and other data center features RDMA VXLAN, BGP-EVPN PFC deadlock prevention RDLB, GDLB
Visualization	gRPC sFLOW sampling
QoS	Mapping of IEEE 802.1p, DSCP, and ToS priorities ACL-based traffic classification Priority marking/remarking Multiple queue scheduling mechanisms, including SP, WRR, WFQ, DRR, SP+WRR, SP+WFQ, and SP+DRR Congestion avoidance mechanisms such as WRED and tail discarding
HA Design	GR for RIP/OSPF/BGP, BFD, DLDP, REUP dual-link fast switching, RLDP unidirectional link detection, 1+1 power redundancy and fan redundancy, and hot swapping for all cards and power supply modules
Security Features	Network foundation protection policy (NFPP), CPP, RADIUS/TACACS, IPv4/v6 packet filtering by basic ACL, extended ACL or VLAN-based ACL, plaintext-based and MD5 ciphertext-based authentication for OSPF, RIPv2, and BGPv4 packets, telnet login and password mechanisms for restricted IP addresses, broadcast packet suppression, hierarchical user management
Management Mode	SNMP v1/v2c/v3, telnet, console, MGMT, RMON, SSHv1/v2, FTP/TFTP, NTP, Syslog, SPAN/RSPAN/ERSPAN, ZTP, NETCONF, Python, fan and power alarm, and temperature alarm
Other Protocols	DHCP client, DHCP relay, DHCP server, DNS client, ARP proxy, and Syslog

5. Typical Applications

AIGC Network Scenario



6. Ordering Information

Chassis, Fan Modules, and Power Modules

Model	Description
RS-DC6990-128DC	Providing fixed 128 x 200G ports, four power module slots, and eight fan module slots
PSA1300CRPS-F	Power module, hot swappable 2+2 redundancy, front-to-rear airflow
FAN12K8080-F	Fan module, hot swappable 7+1 redundancy, front-to-rear airflow

200GE Optical Transceivers

Model	Description
200G-Q56-SR4-MM850(D)	200GE SR4 optical transceiver, QSFP56 form factor, MPO12/APC, 850 nm, 100 m (328.08 ft.) over OM4 MPO MMF, CMIS-compliance, applicable to the switch side
200G-Q56-SR4-MM850	200GE SR4 optical transceiver, QSFP56 form factor, MPO12/APC, 850 nm, 100 m (328.08 ft.) over OM4 MPO MMF, SFF-8636-compliance, applicable to the server side



For more information

Quote requirements: sales@aoxmlink.com

Customer service: support@aoxmlink.com

Other information: info@aoxmlink.com

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