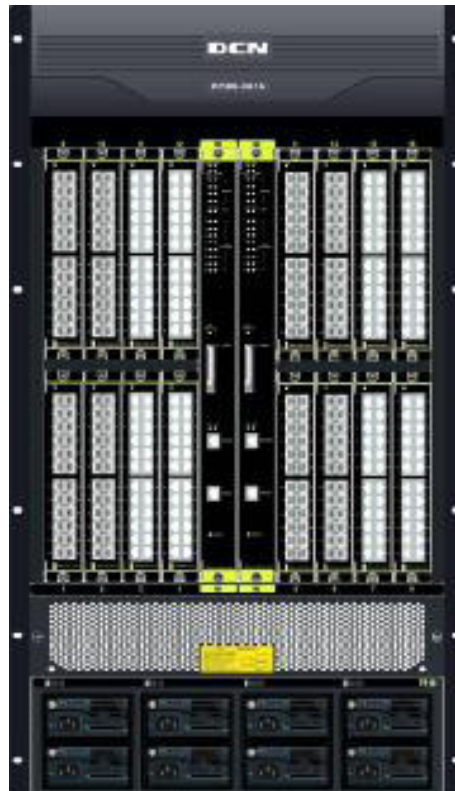# DCRS-9800 Series Cloud Stone Core Layer Routing Switch

## ■ Product Overview

Digital China Networks DCRS-9800 Series are high performance wire speed chassis switch. DCRS-9816 is 18 slots chassis switch. It has 2 management slots and 16 business slots. With redundant power supply, fans and management modules, the Digital China DCRS-9800 Series ensures continuous operation and fully redundant system.

The DCRS-9800 series is ideal for the backbone layer of campuses, enterprise networks and the aggregation layer of IP metropolitan networks.

## ■ Key Features and Benefits

### ➢ Performance and Scalability

- DCRS-9816 supports up to max 320*10G ports or 384 Gigabit ports, providing flexibility and high port density.

- 10G modules support max 20 ports for downlink to distribution layer switches or access switches directly, aggregating them to the core layer, and preventing port bottlenecks in Gigabit switches. Furthermore, the optional 10Gigabit Ethernet SFP+ transceivers can be chosen for different distance fiber uplinks.

- Backup Master ensures the availability of a master controller for network control at any time.

- Firmware & configuration are automatically upgraded from master to slave units for management simplicity.

- Intensive protocol support is included for MPLS, L2/L3 MPLS-VPN supported by software upgrade to ensuring future investment protection.

### ➢ OpenFlow

- Supports OpenFlow1.2 standard protocol. OpenFlow network is increasingly becoming a trend as the core protocol of SDN network. It makes the network easier programming OpenFlow brings the high performance to datacenter users via self-defined network. With OpenFlow, this product is ideal to build SDN test-bed for research institutes and SDN Experimental Bureau for large ISP and operator.

- support open controller Opendaylight, Floodlight, Ryu, Pox, etc.

### ➢ Continuous Availability

- IEEE 802.1w Rapid Spanning Tree Protocol provides a loop free network and redundant

links to the core network with rapid convergence.

- IEEE 802.1s Multiple Spanning Tree Protocol runs STP per VLAN base, providing Layer 2 load sharing on redundant links.

- IEEE 802.3ad Link Aggregation Control Protocol (LACP) increases bandwidth by automatically aggregating several physical links together as a logical trunk and providing load balance and fault tolerance for uplink connections.

- IGMP snooping prevents flooding of IP multicast traffic, and limits bandwidth intensive video traffic only to the subscribers.

## L3 Features

- The DCRS-9800 series delivers high-performance hardware based IP routing.

- RIP, OSPF and BGP provide dynamic routing by exchanging routing information with other Layer 3 switches or routers within same domain and different domain.

- DVMRP, PIM-SM/DM Multicast Routing Protocols send IP multicast traffic from one subnet to another.

- VRRP prevents your system from failing by dynamically backing up multiple L3 switches for routing.
- Support OSPF and BGP graceful restart to protect network stability.

## Strong Multicast

- The DCRS-9800 support abundant multicast features. The product support rich L2 multicast features such as IGMPv1/v2/v3 and snooping and L3 multicast protocols such as DVMRP, PIM-DM, PIM-SM and PIM-SSM. As the rich application experience, the product support Multicast VLAN Register and Multicast Receive Control and Illegal Multicast Source Detection functions.

## Easy High Reliability Network

- MRPP (Multi-layer Ring Protection Protocol), is a link layer protocol applied on Ethernet loop protection which reduces network convergence time to 50ms.

## Comprehensive QoS

- 8 egress queues per port enable differentiated management of up to 8 traffic types.

- Traffic is prioritized according to 802.1p, DSCP, IP precedence and TCP/UDP port number, giving optimal performance to real-time applications such as voice and video.

- Bidirectional rate limiting, per port or traffic class, preserves network bandwidth and allows full control of network resources.

## Enhanced Security

- IEEE 802.1X port-based access control ensures all users are authorized before being granted access to the network.

- MAC based authentication can provide client-free security access and help customer deployed security rapidly.

- Access Control Lists (ACL) can be used to restrict access to sensitive network resources by denying packets based on L2/L3/L4 headers.

- SSL, Web Management Encryption, RADIUS and TACACS+ authentication, authorization and accounting protect data communication and ensure data privacy.

## Simple Management

- Industry standard Command Line Interface (CLI) via console port or Telnet can be used for switch management.
- Embedded user friendly web interface helps users quickly and simply configure switches.
- Backup and restore Firmware and configuration files via TFTP.

## Abundant IPv6 Support

- The DCRS-9800 series switch supports IPv6 routing in hardware for maximum performance. As more network devices growing and the need for larger addressing and higher security become critical, the DCRS-9800 series switch will be a right product to meet the requirement. The DCRS-9800 passed IPv6 form Phase II certificate is the best proof of the application.

## Environment protect

- The currently network construct must consider energy sources and help end-customer save power. With many years hardware design experience, The DCRS-9800 series control power source in every detail such as power module, fan module and system power control.

## ■ Specifications

| Items | DCRS-9816 |
|---|---|
| Slot | 2 management slots |
| | 16 business slots |
| Business Ports | 10/100/1000BASE-T:  MAX 384 |
| | 1000Base-SX: MAX 384 |
| | 1000Base-LX: MAX 384 |
| | 10G: MAX 320 |
| Performance | |
| Switching Capacity | 1536Gbps |
| Forwarding Rate | 1143Mpps |
| Routing Table | MAX 16K |
| VLAN Table | 4K |

| Features | |
|---|---|
| Forwarding | Storage and Forwarding |
| L2 Features | IEEE802.3(10Base-T) |
| | IEEE802.3u(100Base-TX) |
| | IEEE802.3z(1000BASE-X) |
| | IEEE802.3ab(1000Base-T) |
| | IEEE802.3ae(10GBase) |
| | Loopback Interface |
| | 9k Jumbo Frame |
| | Port Loopback Detection |
| | LLDP and LLDP-MED |
| | UDLD |
| | LACP 802.3ad, max 128 group trunk with max 8 ports for each trunk |
| | Link Aggregation by manual |
| | IEEEE802.1d(STP) |
| | IEEEE802.1w(RSTP) |
| | IEEEE802.1s(MSTP) Max 48 instance |
| | Root Guard |
| | BPDU Guard |
| | BPDU Forwarding |
| | One to one or any to one mirror |
| | Mirror cross business cards |
| | RSPAN |
| | IGMP v1/v2/v3, IGMP v1/v2/v3 Snooping, IGMP Proxy |
| | ICMPv6, ND, ND Snooping, MLDv1/v2, MLDv1/v2 Snooping |
| | GVRP |
| | Port/ MAC/ IP Segment/ Portocol/ Voice/ Private/ VLAN support |
| | Multicast VLAN Register/MVR for IPv4 and IPv6 |
| | Port-based 802.1Q, 4K VLAN |
| | QinQ and Selective QinQ |
| | DFI/Broadcast/Multicast Stormcontrol |
| | Binding(IPv4/IPv6), IP Source Guard MAC Filter, MAC Limit, |
| | IP Source Guard |
| | Port Binding(IPv4 /IPv6) |
| | Support Smart Link (or named Flexible Link) |
| L3 Features | IP Protocol(IP support both of IPv4 and IPv6) |
| | Default Routing, Static Routing, Blackhole Route, VLSM and CIDR, |
| | RIPv1/V2, OSPFv2, BGP4, support MD5 Authentication LPM Routing |
| | OSPFv3, BGP4+ support |

| | |
|---|---|
| | Policy based Routing(PBR) for IPv4 and IPv6 |
| | Support 4 byte BGP AS number |
| | Support GR for OSPF and BGP |
| | VRRP, VRRP v3 |
| | DVMRP, PIM-DM, PIM-SM, PIM-SSM<br>MSDP(Multicast Source Discovery Protocol)<br>Static Multicast Route<br>Multicast Edge Configure<br>Any cast RP for IPv4 and IPv6<br>PIM-SM/DM/SSM for IPv6,  6 to 4 Tunnels, configured Tunnels, ISATAP<br>Multicast Receive Control<br>Illegal Multicast Source Detection |
| | URPF for IPv4 and IPv6 |
| | BFD |
| | ECMP(Equal Cost Multi-Path)with maxim 8 groups |
| | ARP Guard, Local ARP Proxy, Proxy ARP, ARP Binding, Gratuitous ARP,<br>ARP Limit |
| Tunnel Technical | Manual Configure IPv4/IPv6 tunnel<br>6to4 Tunnel<br>ISATAP Tunnel<br>GRE Tunnel |
| MPLS | 255 VRF/VFI<br>LDP<br>L3 MPLS VPN<br>VPLS<br>MPLS QOS |
| QoS | 8 Hardware Queues per port |
| | Traffic Classification based on IEEE 802.1p, ToS, port and DiffServ |
| | SP, WRR, SWRR |
| | Traffic Shaping |
| | Rate Limit for Import and Export |
| | PRI Mark/Remark |
| | WRED |
| | 2 buckets with dual rate and triply color mark |
| ACL | Standard and Expanded ACL |
| | IP ACL and MAC ACL, |
| | ACL based on source/definition IP, MAC, L3 protocol, TCP/UDP port |
| | number, IP PRI(DSCP, ToS, Precedence), Time |

| | |
|---|---|
| | Ingress and Egress ACL |
| ACL-X | Time-Based Security Auto-negotiation |
| | ACL rules can be configured to port, VLAN, VLAN routing interfaces |
| | Can be used for QoS Classification |
| Anti-attack and Security | S-ARP: ARP Inspection, defense ARP-DOS Attack and Address Clone |
| | Anti-Sweep: prevent Ping Sweep |
| | S-ICMP: resist PING-DOS attack, ICMP unreachable attack |
| | S-Buffer: prevent DDOS attack |
| | Switch engine CPU protection |
| | Key message priority: secure processing of key legal messages |
| | Port credit: inspect illegal DHCP Server, Radius Server. Connection via credit port only |
| | Support URPF, avoid IP address clone |
| | All the above technologies efficiently prevent various DOS attack (e.g. ARP, Synflood, Smurf, ICMP attack), support ARP monitoring, defense Worm, Bluster, check sweep and raise alarm |
| DHCP | Support DCHP Client, Relay, Snooping, Option 82 |
| | DHCP Server for IPv4 and IPv6 |
| | DHCP v6 and DHCP Snooping v6 |
| DNS | DNS Client |
| | DNS Proxy |
| Ring Protocol | MRPP (Multi-Ring Protect Protocol) |
| Access security | 802.1X<br>✓ Port, MAC, username based<br>✓ Account based on time length and traffic<br>✓ Guest VLAN and Auto VLAN<br>✓ Work with private client can manage P2P traffic<br>MAC Based AAA(Client free access)<br>PPPOE/PPPOE+ forwarding |
| AAA | RADIUS AAA for IPV4 and IPv6 |
| | TACACS+ AAA |
| Configuration and Management | CLI, Telnet, WEB, SSH and SSL |
| | SNMPv1/v2c/v3 |
| | MIB |
| | RMON 1, 2, 3, 9 |
| Power Saving Technology | Reduce power consumption, improve cooling and reliability |
| | Flexible fan and port management to save power consumption |

| SysLog | Save Syslog and Trap to local device or server |
|---|---|
| | Max. 8 servers for Syslog or Trap receive |
| NMS | Strict Access Control by ACL and QOS |
| | Access the switch through AAA or Local Authentication |
| | SNTP and NTP |
| | Setup Time Zone and Summer Time |
| Supervision and Trouble Shooting | Supervise abnormity of task, memory, CPU, stack, switch chip, temperature and raise alarm |
| | Sflow |
| | IPFIX (IP Flow Information Export) |
| | Ping and Trace route command |
| Configuration Management | Configuration file storage |
| | Command operation log |
| | Dual Images and files startup |
| | FTP/TFTP server or client upgrade |
| | X-modem protocol transfer the file |
| OAM | 802.3ah |
| | 802.1ag |
| **Physical** | |
| Dimension(W x D x H) | 440mm×450mm ×842mm (19U) |
| Relative Humidity | 10%~90%, non-condensing |
| Storage Temperature | -40℃~70℃ |
| Operating Temperature | 0°C~40°C |
| Power | AC: Input 90~260V, 50~60 Hz: |
| Power Consumption | ≤1600W |
| MTBF | >250,000 hours |

■ **Order Information**

| Product | Description |
|---|---|
| DCRS-9816 | DCRS-9816 routing switch chassis(2 slots for management cards and 16 slot for line cards. AC power supply 3+1 redundancy), standard with 1 MRS-9800-AC power supply, no management cards. |
| MRS-9800-AC | 220V AC Power Supply (600W) for DCRS-9800 |
| MRS-9800-SUP | DCRS-9800 Series super management module |
| MRS-9800-F | DCRS-9800 Series fabric module |

| AB | |
|---|---|
| MRS-9800-24GT-V | DCRS-9800 business card, 24 10/100/1000BaseT GE ports. Support dual stack and MPLS by hardware |
| MRS-9800-24GB-V | DCRS-9800 business card, 24 1000Base-X(SFP)GE ports. Support dual stack and MPLS by hardware |
| MRS-9800-20XS2Q | DCRS-9800 business card, 20 10GE (SFP+)ports and 2 40GE(QSFP) ports. Support dual stack and MPLS by hardware |
| MRS-9800-8QSFP | DCRS-9800 business card, 8 40GE(QSFP) ports. Support dual stack and MPLS by hardware |
| MRS-9800-OF | DCRS-9800 Series OpenFlow card. Support OpenFlow 1.3 support open controller Opendaylight, Floodlight, Ryu, Pox, etc. |
| AOC-SFPX-10M | AOC cable with 2 10G(SFP+) modules, 10m, suitable for SFP+ ports on same model of switch, can be used for VSF |
| DAC-SFPX-3M | DAC cable with 2 10G(SFP+) modules, 3m, suitable for SFP+ ports on same model of switch, can be used for VSF |
| DAC-QSFP-5M | DAC cable with 2 40G(QSFP) modules, 5m, suitable for QSFP ports on same model of switch, can be used for VSF |

## ■ Contact us

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