Data General

High performance

24 PoE+ ports

10 Gbps

Access Switch
PoE+ 10G
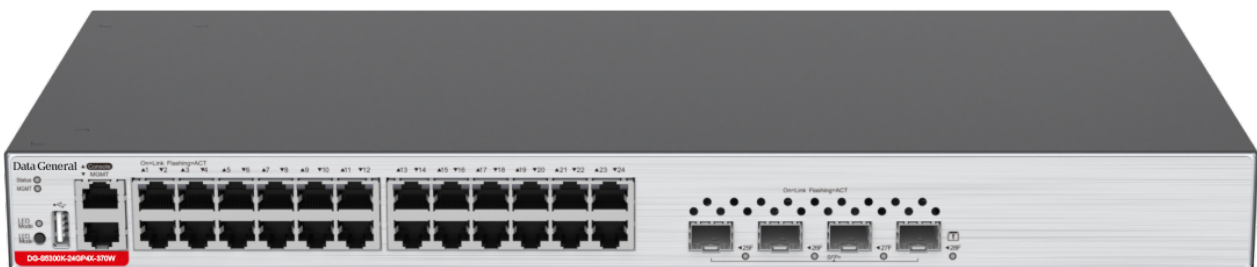
DG-S5300K-24GP4X-370W

1. Product Overview

DG-S5300K-24GP4X-370W switch is a next-generation gigabit Ethernet switch launched by Data General according to its design of security, high efficiency, energy saving, and independent innovation. This switch can provide full gigabit access and flexibly extensible 10G uplink data exchange. With a new hardware architecture and Data General's latest RGOS12.X modular OS, the DG-S5300K-24GP4X-370W provides more resource entries, faster hardware processing, and better user experience. They lay a foundation for high-performance networks that support IoT service lifecycle management, mobility applications, and cloud applications.

2. Product Appearance

DG-S5300K-24GP4X-370W

Front View of the DG-S5300K-24GP4X-370W

3. Product Highlights

- Provides various interface types and 10GE uplink, satisfying high-bandwidth requirements.
- Supports VSU, delivering flexible networking.
- Is a Layer 3 access switch that supports Layer 3 protocols, VXLAN, and SDN.
- Provides multiple network management methods, achieving simple and easy network maintenance.
- Uses RGOS modular operating system to provide more entries, faster hardware processing, and better operation experience.
- Provides open and programmable RGOS modular operating system. Basic functions are incorporated into the main version, and custom functions are released in app mode, ensuring stability of the basic functions.
- Supports the x86 platform, which supports containers, allows third-party management applications to be installed, and makes it easy for customizing functions.
- Rectifies faults related to processes online in seconds, without interrupting network operation.
- Supports Python that allows applications across platforms.

- Supports high-speed access to northbound interfaces, with the performance of up to thousands of operations. It can associate with the controller to upgrade the man-machine interface to machine-machine interface.
- Upgrades and extends functions online to ensure nonstop services.

4. Product Features

Sound Security Protection Policies

The DG-S5300K-24GP4X-370W supports Address Resolution Protocol (ARP) spoofing prevention in multiple modes. The DG-S5300K-24GP4X-370W offers protection against ARP attacks by recording clients' authenticated IP and MAC addresses, regardless of whether they obtain addresses automatically from the DHCP server or use static IP addresses. When it receives ARP packets from hosts, it compares the addresses in the packet with the recorded IP and MAC addresses and forwards only those packets whose addresses match, while discarding any forged ones. This ensures that ARP spoofing is prevented outside the network and that network users are protected.

Additionally, the DG-S5300K-24GP4X-370W proactively defends against various Distributed Denial of Service (DDoS) attacks that can affect a network's availability. Virus attacks on computers due to network openness can occur, and attackers may also launch attacks on network devices and servers for different purposes. In common ARP flooding attacks, the gateway can fail to respond to request packets, while ICMP flooding attacks can cause network devices to crash due to high CPU load. DHCP request flooding attacks can exhaust the addresses of the DHCP server and result in failures to allocate IP addresses to authenticated users.

The DG-S5300K-24GP4X-370W provides an advanced hardware CPU protection mechanism: CPU Protection Policy (CPP). CPP enables the DG-S5300K-24GP4X-370W to classify data traffic sent to the CPU, process the traffic by queue priority, and apply the rate limit to traffic as required. CPP fully protects the CPU from being occupied by unauthorized traffic, malicious attacks, and resource consumption, which ensures the security of the CPU and the switch.

The DG-S5300K-24GP4X-370W adopts the Network Foundation Protection Policy (NFPP) technology to rate-limit ARP packets, ICMP request packets, DHCP Request messages, and other packets sent from users to networks. It discards packets of which the rate exceeds the threshold, identifies attack behaviors, and isolates users who launch attacks. This ensures network stability.

DHCP snooping enables the DG-S5300K-24GP4X-370W to receive DHCP Response messages only from trusted ports and prevent spoofing from unauthorized DHCP servers. With DHCP snooping, it dynamically monitors ARP packets, checks users' IP addresses, and discards invalid packets that do not match binding entries, thereby effectively preventing ARP spoofing and source IP address spoofing.

VSU

The DG-S5300K-24GP4X-370W supports Virtual Switching Unit (VSU). VSU enables multiple physical devices to be connected through aggregate links and virtualized into one logical device. By using the same IP address, Telnet process, and CLI for management, along with automatic version check and configuration, network administrators can manage just one logical device, thereby enhancing work efficiency.

Simplified management: The network administrator can manage multiple switches uniformly because there is no need to connect separately to each switch for configuring and managing them.

Simplified network topology: A VSU serves as a switch within a network and eliminates Layer 2 loops and MSTP configurations by connecting peripheral devices through aggregate links. Various control protocols can run on the VSU.

Fault rectification within milliseconds: A VSU connects to peripheral devices through aggregate links. If a fault occurs on one device or member link in the VSU, data and services can be switched to another member link within 50 ms to 200 ms.

High scalability: User devices can be added to or removed from a virtualized network, without affecting normal operation of other devices.

Increase in return on investment (ROI): Aggregate links used for connecting the VSU to peripheral devices realize link redundancy and load balancing, fully leveraging all network devices and bandwidth resources. Any 10G port can be used to build a VSU through data transmission cables, without additional cabling and expansion cards. Moreover, the types of ports and cables are not limited. All this protects the ROI.

High Reliability

The DG-S5300K-24GP4X-370W supports STP (IEEE 802.1D), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s) to achieve fast convergence, improve the fault tolerance capability, and ensure stable network operation and link load balancing. It effectively utilizes network channels to improve utilization of redundant links.

The Virtual Router Redundancy Protocol (VRRP) ensures network stability for the switch.

The Rapid Link Detection Protocol (RLDP) enables the DG-S5300K-24GP4X-370W to quickly detect link connectivity and unidirectional optical links. The port loop detection function helps the DG-S5300K-24GP4X-370W to prevent network failures caused by loops due to unauthorized port connections with hubs.

The DG-S5300K-24GP4X-370W supports the Ethernet Ring Protection Switching (ERPS) technology, which is a Layer 2 link redundancy protocol designed for the core Ethernet. The control device blocks loops and restores links, and non-control devices directly report their link status to the control device, without processing from other non-control devices. Therefore, loop elimination and service recovery time of ERPS is faster than that of STP. ERPS implements link restoration within milliseconds.

When STP is disabled, the Rapid Link Protection Protocol (RLDP) can still provide basic link redundancy and millisecond-level fault rectification faster than STP.

With the Bidirectional Forwarding Detection (BFD), the switches are able to detect links within milliseconds, and quickly converge routing and other services through the correlation with upper-layer routing protocols, ensuring the continuity of services.

SDN

The DG-S5300K-24GP4X-370W supports OpenFlow 1.3 and can collaborate with Data General's Software-Defined Networking (SDN) controller to easily build a large-scale Layer 2 or Layer 3 network.

It allows the network to be smoothly upgraded to an SDN network and provides access control, visualized O&M, and other SDN features. It greatly reduces network O&M costs while significantly simplifying network management.

Energy Efficiency

Data General integrates multiple energy-saving designs into the DG-S5300K-24GP4X-370W. The DG-S5300K-24GP4X-370W reduces loud noise produced by deployment in offices and solves excessive energy consumption resulted from the large-scale deployment of access devices.

In addition, the DG-S5300K-24GP4X-370W adopts the next-generation hardware architecture as well as advanced energy-efficient circuit design and components, to significantly save energy and lower noise. It is equipped with variable-speed axial fans to intelligently control the fan speed based on the ambient temperature, which reduces the power consumption and noise while ensuring stable device operation.

The DG-S5300K-24GP4X-370W provides automatic and energy-saving PoE modes.

Easy Network Maintenance

The DG-S5300K-24GP4X-370W supports routine network diagnosis and maintenance based on SNMP, RMON, Syslog, and USB-based backup log and configuration. A network administrator can use various management and maintenance modes such as command line interface (CLI), web network management, Telnet, and CWMP-based zero-touch configuration to facilitate device management.

An LED mode button is available on the panel of the switch. You can press this button to check the current communication status and PoE status of all ports on the switch.

IPv4/IPv6 Dual-Stack Multi-Layer Switching

The DG-S5300K-24GP4X-370W hardware supports both IPv4 and IPv6 dual stacks, as well as multi-layer line-rate switching in order to differentiate and process packets of each protocol effectively. With flexible IPv6 network communication solutions, the DG-S5300K-24GP4X-370W can meet various IPv6 network demands such as planning or maintenance. The DG-S5300K-24GP4X-370W supports a wide range of IPv4 routing protocols, covering IPv4 static routing, RIP, OSPFv2, IS-ISv4, and BGP4. Fitting for different network environments, one can select appropriate routing protocols for flexible network building. Additionally, the DG-S5300K-24GP4X-370W also supports abundant IPv6 routing protocols such as IPv6 static routing, RIPng, OSPFv3, IS-ISv6, and BGP4+. These protocols can be flexibly selected to either upgrade an existing network to IPv6 or establish a new one.

5. Product Specifications

Hardware Specifications

Hardware Specifications	DG-S5300K-24GP4X-370W
Interface Specifications	

Hardware Specifications	DG-S5300K-24GP4X-370W
Fixed port	24 x 10/100/1000M auto-negotiation electrical ports, 4 x 1G/10G SFP+ ports
Power module	Built-in power module
Fixed management port	1 x MGMT port, 1 x console port, and 1 x USB port
System Specifications	
Packet forwarding rate	96 Mpps/126 Mpps
System switching capacity	336 Gbps/3.36 Tbps
Number of MAC addresses	32,000
ARP table size	2,000
ND table size	1,000
Number of IPv4 unicast routes	4,000
Number of IPv4 multicast routes	2,500
Number of IPv6 unicast routes	2,000
Number of IPv6 multicast routes	1,200
Number of ACEs	Ingress: 3,500 Egress: 1,500
Number of VSU members	4
Number of IGMP groups	2,500
Number of MLD groups	1,000

Hardware Specifications	DG-S5300K-24GP4X-370W
Number of VRFs	512
Dimensions and Weight	
Dimensions (W x D x H)	442 mm x 220 mm x 43.6 mm (17.40 in. x 8.66 in. x 1.72 in.), 1 RU
Weight (full load)	3 kg (6.61 lbs)
CPU and Storage	
CPU	1.2 GHz dual-core processor
Storage	Flash memory: 2 GB SDRAM: 1 GB
Power and Consumption	
Maximum power consumption	System power consumption (without PoE load) < 65 W System power consumption (with PoE load) < 410 W
Rated input voltage	AC input: 100 V to 240 V Frequency: 50/60 Hz
Maximum input voltage	AC input: 90 V to 264 V
Environment and Reliability	
MTBF	> 200,000 hours
Primary airflow	Front-to-rear airflow
Operating temperature	0°C to 45°C (32°F to 113°F) at an altitude in the range of 0 m to 1,800 m (5905.51 ft.) Altitude 1,800 m (5905.51 ft.) to 5,000 m (16404.20 ft.): The maximum temperature decreases by 1°C (1.8°F) each time the altitude increases by 220 m (721.78 ft.).
Storage temperature	−40°C to +70°C (−40°F to +158°F)
Operating humidity	10% to 90% RH (non-condensing)
Storage humidity	5% to 90% RH (non-condensing)

Hardware Specifications	DG-S5300K-24GP4X-370W
Operating altitude	0 m to 5,000 m (16404.20 ft.)
Operating noise	33.5 dB at the temperature of 27°C (80.6°F) 53.9 dB at the temperature of 45°C (113°F)
Interface surge protection	Communication port: 10 kV (common mode) (MGMT port: 4 kV) Power port: 6 kV (common/differential mode)

Software Specifications

DG-S5300K-24GP4X-370W	
Feature	**Description**
Ethernet switching	IEEE 802.1Q (supporting 4K VLANs)
	Jumbo frame (maximum length: 9,216 bytes)
	Maximum number of VLANs that can be created: 4,094
	Voice VLAN
	Super VLAN and private VLAN
	MAC address-based, port-based, protocol-based, and IP subnet-based VLAN assignment
	GVRP
	Basic QinQ and selective QinQ
	STP (IEEE 802.1.d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)
	Auto errdisable recovery BPDU filter BPDU guard Port fast Root guard
	ERPS (G.8032 v1/v2), sing ring, tangent ring, intersecting ring, and load balancing
	LLDP/LLDP-MED, LLDP IPv6, and LLDP-POE
	MAC address filtering Setting the MAC address aging time
IP service	Static and dynamic ARP, ARP proxy, and ARP entry timeout

DG-S5300K-24GP4X-370W	
Feature	**Description**
	DHCP client, DHCP relay, DHCP server, and DHCP snooping
	DHCPv6 client, DHCPv6 relay, and DHCPv6 snooping
	DNS client, DNS proxy, and DNSv6 client
	Neighbor Discovery (ND), ND proxy, and ND snooping
	IPv6 addressing, IPv6 ping, and IPv6 tracert
	GRE tunnel
IP routing	IPv4 and IPv6 static routing
	RIP and RIPng
	OSPFv2 and OSPFv3
	IS-ISv4 and IS-ISv6
	BGP4 and BGP4+
	Routing policy
	IPv4/VRF
	IPv4/IPv6 PBR
Multicast	IGMPv1/v2/v3
	IGMPv1/v2 snooping
	IGMP fast leave
	PIM-DM, PIM-SM, PIM-SSM, PIM SMv6, and PIM-SSMv6
	MSDP for inter-domain multicast
	MLDv1/v2 and MLD proxy
	MLDv1/v2 snooping
	PIM-SMv6
	Multicast source IP address check Multicast source port check
ACL and QoS	Standard IP ACLs (hardware ACLs based on IP addresses)
	Extended IP ACLs (hardware ACLs based on IP addresses or TCP/UDP port numbers)

DG-S5300K-24GP4X-370W	
Feature	**Description**
	Extended MAC ACLs (hardware ACLs based on source MAC addresses, destination MAC addresses, and optional Ethernet type)
	Expert-level ACLs (hardware ACLs based on flexible combinations of the VLAN ID, Ethernet type, MAC address, IP address, TCP/UDP port number, protocol type, and time range)
	Time based ACLs, ACL 80, and IPv6 ACL
	Global ACLs
	ACL redirection
	Port traffic identification
	Port traffic rate limiting
	802.1p/DSCP/ToS traffic classification
	Congestion management: SP, WRR, DRR, WFQ, SP+WFQ, SP+WRR, SP+DRR, and SP+WFQ
	Congestion avoidance: tail drop, RED, and WRED
	Eight priority queues per port
Security	Multiple AAA modes
	RADIUS
	RADIUS and TACACS+
	IEEE802.1X authentication, MAC address bypass (MAB) authentication, and interface-based and MAC address-based 802.1X authentication
	Web authentication
	Hypertext Transfer Protocol Secure (HTTPS)
	SSHv1 and SSHv2
	Global IP-MAC binding
	ICMP
	Port security
	IP source guard
	SAVI
	ARP spoofing prevention

DG-S5300K-24GP4X-370W	
Feature	**Description**
	CPP and NFPP
	Multiple attack defense functions
	3-tuple binding (IP address, MAC address, and port) 3-tuple binding (IPv6 address, MAC address, and port) Filtering of invalid MAC addresses Port- and MAC address-based 802.1X authentication MAB authentication Portal authentication and Portal 2.0 authentication ARP check DAI ARP packet rate limiting Gateway ARP spoofing prevention Broadcast storm suppression Hierarchical management of administrators and password protection BPDU guard Port protection
Reliability	REUP
	RLDP, Layer 2 link connectivity detection, unidirectional link detection, and VLAN-based loop control
	Data Link Detection Protocol (DLDP)
	IPv4 VRRP v2/v3, IPv6 VRRP, and super-VLAN for VRRP
	BFD, RAS, NSR, VRRR, VRRP+, and SDN loop detection
	Link monitoring, fault notification, and remote loopback based on 802.3ah (EFM)
Device virtualization	VSU Local and remote stacking Inter-chassis link binding in a stack Virtualization through standard service interfaces
NMS and maintenance	SPAN, RSPAN, and ERSPAN
	sFlow
	NTP client, NTP server, NTPv6 client, and NTPv6 server
	SNTP

DG-S5300K-24GP4X-370W	
Feature	**Description**
	CLI (Telnet/Console)
	FTP client, FTP server, FTPv6 client, and FTPv6 server
	TFTP client, TFTP server, TFTPv6 client, and TFTPv6 server
	FTP and TFTP
	SNMP v1/v2c/c3
	Web
	Syslog/Debugging
	RMON (1, 2, 3, 9) Various types of RMON groups, including event groups, alarm groups, history groups, and statistics groups, as well as private alarm extension groups RMON used to implement Ethernet statistics, historical statistics, and alarm functions
	NETCONF
	MACC
	CWMP
	gRPC
	OpenFlow Special 1.3 Flow table analysis defined by all protocols Transmission of specified packets to the controller Configuring the controller's IP address and port Notifying port status changes to the controller
	RNS, configuration rollback, and 802.3ah
PoE	DG-S5300K-24GP4X-370W: IEEE 802.3af and 802.3at power supply standards Automatic and energy-saving power supply management modes Uninterrupted power supply in hot start mode Scheduled power-on or power-off of PoE ports based on the time policy Port priority

6. Protocol Compliance

DG-S5300K-24GP4X-370W	
Organization	**Standards and Protocol**
IETF	RFC 1058 Routing Information Protocol (RIP)
	RFC 1157 A Simple Network Management Protocol (SNMP)
	RFC 1305 Network Time Protocol Version 3 (NTP)
	RFC 1349 Internet Protocol (IP)
	RFC 1350 TFTP Protocol (revision 2)
	RFC 1519 CIDR
	RFC 1583 OSPF Version 2
	RFC 1591 Domain Name System Structure and Delegation
	RFC 1643 Ethernet Interface MIB
	RFC 1757 Remote Network Monitoring (RMON)
	RFC 1812 Requirements for IP Version 4 Router
	RFC 1901 Introduction to Community-based SNMPv2
	RFC 1902-1907 SNMP v2
	RFC 1918 Address Allocation for Private Internet
	RFC 1981 Path MTU Discovery for IP version 6
	RFC 1997 BGP Communities Attribute
	RFC 2131 Dynamic Host Configuration Protocol (DHCP)
	RFC 2132 DHCP Options and BOOTP Vendor Extensions
	RFC 2236 IGMP
	RFC 2328 OSPF Version 2
	RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
	RFC 2439 BGP Route Flap Damping
	RFC 2460 Internet Protocol, Version 6 (IPv6)
	RFC 2461 Neighbor Discovery for IP Version 6 (IPv6)

RFC 2462 IPv6 Stateless Address Auto configuration

RFC 2463 Internet Control Message Protocol for IPv6 (ICMPv6)

RFC 2545 Use of BGP 4 Multiprotocol Extensions for IPv6 Inter Domain Routing

RFC 2571 SNMP Management Frameworks

RFC 2711 IPv6 Router Alert Option

RFC 2787 Definitions of Managed Objects for the Virtual Router Redundancy Protocol

RFC 2863 The Interfaces Group MIB

RFC 2865 Remote Authentication Dial In User Service (RADIUS)

RFC 2918 Route Refresh Capability for BGP 4

RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)

RFC 2934 Protocol Independent Multicast MIB for IPv4

RFC 3046 DHCP Option82

RFC 3065 Autonomous System Confederation for BGP

RFC 3101 OSPF Not so stubby area option

RFC 3137 OSPF Stub Router Advertisement sFlow

RFC 3417 (SNMP Transport Mappings)

RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)

RFC 3509 Alternative Implementations of OSPF Area Border Routers

RFC 3513 IP Version 6 Addressing Architecture

RFC 3575 IANA Considerations for RADIUS

RFC 3579 RADIUS Support For EAP

RFC 3623 Graceful OSPF Restart

RFC 3768 VRRP

RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6

RFC 3973 PIM Dense Mode

RFC 4022 MIB for TCP

RFC 4271 A Border Gateway Protocol 4 (BGP 4)

RFC 4273 Definitions of Managed Objects for BGP 4

	RFC 4360 BGP Extended Communities Attribute
	RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
	RFC 4486 Subcodes for BGP Cease Notification Message
	RFC 4552 Authentication/Confidentiality for OSPFv3
	RFC 4724 Graceful Restart Mechanism for BGP
	RFC 4750 OSPFv2 MIB partial support no SetMIB
	RFC 4760 Multiprotocol Extensions for BGP 4
	RFC 4940 IANA Considerations for OSPF
	RFC 5065 Autonomous System Confederation for BGP
	RFC 5187 OSPFv3 Graceful Restart
	RFC 5340 OSPFv3 for IPv6
	RFC 5492 Capabilities Advertisement with BGP 4
	RFC 6620 FCFS SAVI
	RFC 768 User Datagram Protocol (UDP)
	RFC 783 TFTP Protocol (revision 2)
	RFC 792 Internet Control Message Protocol (ICMP)
	RFC 793 Transmission Control Protocol (TCP)
	RFC 813 Window and Acknowledgement Strategy in TCP
	RFC 815 IP datagram reassembly algorithms
	RFC 826 Ethernet Address Resolution Protocol (ARP)
	RFC 854 Telnet Protocol
	RFC 959 File Transfer Protocol (FTP)
IEEE	IEEE 802.2 Logical Link Control
	IEEE 802.1ab Link Layer Discovery Protocol
	IEEE 802.1ad Provider Bridges
	IEEE 802.1ax/IEEE802.3ad Link Aggregation
	IEEE 802.1D Media Access Control (MAC) Bridges
	IEEE 802.1D Spanning Tree Protocol

|	IEEE 802.1Q Virtual Bridged Local Area Networks (VLAN)
	IEEE 802.1s Multiple Spanning Tree Protocol
	IEEE 802.1w Rapid Spanning Tree Protocol
	IEEE 802.3ad Link Aggregation Control Protocol (LACP)
	IEEE 802.3bt Power over Ethernet
	IEEE Std 802.3x Full Duplex and flow control

7. Typical Applications

With high security, high efficiency, intelligence, and energy saving, the DG-S5300K-24GP4X-370W can fully meet networking requirements in the following scenarios:

- Full gigabit access to LANs of large enterprises, institutions, and campuses, such as the LANs in government buildings, universities, and large manufacturing/energy/metallurgy/other organizations.
- Gigabit access to business systems related to medical care, libraries, exhibition centers, and websites.
- Access to IP phones, WLAN access points (APs), and HD cameras.
- Gigabit access to server clusters and uplink access over 10 Gbps bandwidth.
- Requirements for flexible and diversified security control policies to prevent and defend against network viruses and network attacks, and to provide secure access for users.

Scenario 1

The DG-S5300K-24GP4X-370W series serve as access switches. They connect to aggregation switches (DG-S6120 series) deployed for buildings and core switches (RG-S7900E series) deployed for campus networks to provide high-performance 1000M links to the desktop and 10G links from the aggregation layer to the core layer, so as to cope with the increasing information of access users. In SDN solutions, the DG-S5300K-24GP4X-370W series provide access control, visualized O&M, and other intelligent functions.
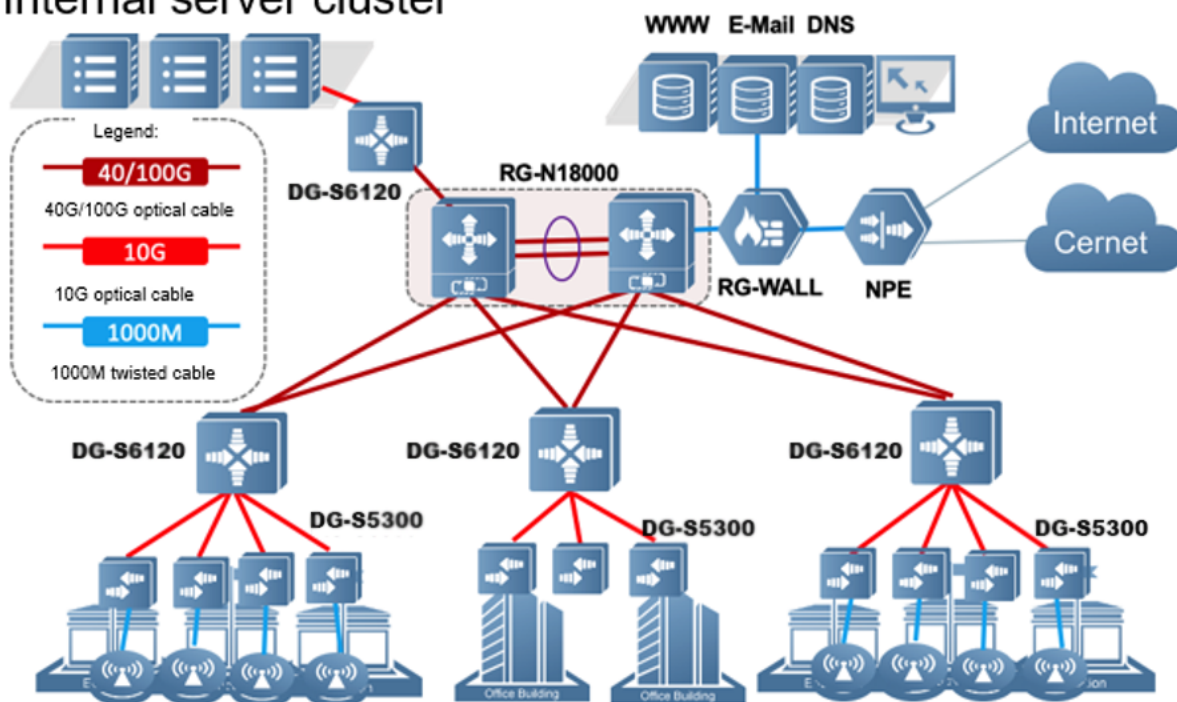
8. Ordering Information

Model	Description
DG-S5300K-24GP4X-370W	24 x 10/100/1000M auto-negotiation electrical ports, 4 x 1G/10G SFP+ ports, supporting PoE remote power supply and a maximum PoE output power of 370 W
DG-1G-SX-MM850	1000BASE-SX, SFP Transceiver, SM (850 nm, 500 m, LC)
DG-1G-LX-SM1310	1000BASE-LX, SFP Transceiver, SM (1310 nm, 10 km, LC)
DG-10G-SR-MM850	10GBASE-SR, SFP+ Transceiver, MM (850 nm, 300 m, LC)
DG-10G-LR-SM1310	10GBASE-SR, SFP+ Transceiver (1310nm, 10 km, LC)

Note: The item marked with the asterisk (*) will be available in the future.

9. Warranty

For more information about warranty terms and period, contact your local sales agency:
Warranty terms: https://datageneral.co/warranty-policy

Note: The warranty terms are subject to the terms of different countries and distributors.

10. More Information

For more information about Data General, visit the official Data General website or contact your local sales agency:

- Data General official website: https://www.datageneral.co
- Support: https://www.datageneral.co/support
- Email support: support@datageneral.co

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