

## Product Highlights

### Designed for Enterprise and Campus Networks

Built to simplify network design, improve network scalability and flexibility, and lay a foundation for building the next generation networks

### High Availability through Virtualization

Virtual Switching Unit and Virtual Ethernet Port Aggregation technology provide agile expansion and redundancy to ensure rock-solid connectivity

### Comprehensive Security Solution

Support for Access Control List(ACL) and multiple user authentication methods as well as IP-MAC-Port Binding to help secure the network environment



## DGS-3615-54PC

# Managed L3 Gigabit Switch

## Features

### High Performance

- Deployable as an enterprise level switch
- Supports IPv6 and 1:1 multilayer switching at full line rates
- Switch Fabrics up to 256 Gbps

### IPv4/IPv6 Multilayer Switching

- Scalable high-density 10 Gigabit Ethernet ports
- Hardware support for IPv4/IPv6 multilayer switching

### Superior Multiservice Support Capabilities

- Rich multicast protocols such as IGMP Snooping, IGMP, MLD, PIM, PIM for IPv6, and MSDP
- Supports IPFIX (RFC 3917) traffic analysis
- Features Equal-cost Multipath routing (ECMP) and Weighted-cost Multipath routing (WCMP)

### Ease of Use and Ease of Management

- Supports Network Timing Protocol (NTP)
- Port mirroring to ease maintenance workload
- Syslog support for network maintenance and management

### Robust Security

- Advanced L2/L3 ACL
- IP-MAC-Port Binding
- CPU Protection

The DGS-3615 Series Managed L3 Gigabit Switches is a new generation of layer 3 networking devices that are designed for building the next-generation of networking infrastructure. The DGS-3615 Series provides flexible media interfaces to meet a variety of connection needs required by all of the different media used in network construction. With a full Gigabit interface form factor, scalable high-density 10 Gigabit Ethernet ports, and 1:1 multilayer switching at full line rates, the DGS-3615 Series is ideally suitable for the aggregation layer of a large network.

## Superior IPv4/IPv6 Multilayer Switching Performance

The DGS-3615 Series Managed L3 Gigabit Switches provides hardware support for IPv4/IPv6 switching at line rates to facilitate the rich tunneling technologies used for communication between IPv6 networks. The DGS-3615 Series can be used in pure IPv4 networks, IPv6 networks, and IPv4/IPv6 dual-stack networks and meets the requirements of current and future networks for a smooth transition from IPv4 to IPv6. The series supports a rich set of IPv4 routing protocols, including static routing protocols, RIP, OSPF, and BGP4, enabling users to select the appropriate protocols needed to build networks for different network environments. The DGS-3615 Series also supports a full suite of IPv6 routing protocols, including static routing protocols, RIPng, OSPFv3, and BGP4+, which are necessary when upgrading an existing network to an IPv6 network or building an IPv6 network.

## Virtual Switch Unit (VSU)

Adopting innovative virtualization technology, the DGS-3615 Series utilizes VSU (Virtual Switch Unit) to virtualize up to 8 switches into one logical unit. The DGS-3615 Series VSU technology can also aggregate up to 8 Gigabit Ethernet ports or four 10 Gigabit Ethernet ports as the VSU Link. Managing virtual devices or interfaces is a breeze as the operation management can be unified and simplified through the use of a single IP address, Telnet or CLI session. The VSU technology found in the DGS-3615 Series helps to deliver the highest reliability and availability as there will be zero network interruption when any VSU

member leaves or joins into the VSU group. The DGS-3615 Series can implement VSU technology with either Gigabit Ethernet or 10 Gigabit Ethernet ports without limitation on copper or fiber media types

### Flexible and Comprehensive Security Policies

A number of security features are integrated into the DGS-3615 Series to help protect other core devices and networks. Built into the DGS-3615 Series switches is CPU Protection technology which automatically differentiates the traffic of multi-layer protocol IPv4/IPv6 packets destined for the CPU and limits the traffic speed to prevent abnormal packets from attacking the CPU and consuming unnecessary resources. This helps to ensure the stability of CPUs for other core devices and the DGS-3615 Series in the IPv4/IPv6 L3 network and L2 network environments and keeps the network running in an optimal state.

Other security measures include hardware-based IPv6 ACL allows IPv4/IPv6 users to coexist and control the resources access by users. The DGS-3615 Series also implements flexible binding of a port or the system to the IP address and MAC address of a user, strictly limiting user access on a port or in the entire system. There is also support for DHCP snooping, which allows DHCP responses from trusted ports only. By using DHCP listening and by monitoring ARP dynamically and checking the user IP address, the DGS-3615 Series switches discard illegal packets inconsistent with binding entries to effectively prevents ARP and source IP address spoofing.

### Superior Multiservice Support Capabilities

The DGS-3615 Series has led the industry in supporting the latest generation international traffic monitoring standard, the IP Flow Information Export (IPFIX). IPFIX technology can take statistics and detect abnormalities of all traffic on the network and export various network traffic analysis reports, including the traffic usage report, history report, interface report, resolvable host addresses, traffic analysis, and variable display. These reports can help an administrator to rapidly analyze problems with the network when abnormalities and provide objective and accurate policy-making references for network capacity planning, network application monitoring, and failure diagnosis to actually implement visibility of network traffic.

The DGS-3615 Series also supports IPv4 and IPv6 multicast functions, including a rich set of multicast protocols such as IGMP Snooping, IGMP, MLD, PIM, PIM for IPv6, and MSDP; all of which provide multicast service support for IPv4 networks, IPv6 networks, and IPv4/IPv6 dual-stack networks. There is also support for Internet Group Management Protocol (IGMP) source port checking and source IP address checking to guard against illegal multicast sources which help improve network security. In addition, the DGS-3615 Series

includes layer 3 service features such as Equal-cost Multipath routing (ECMP) and Weighted-cost Multipath routing (WCMP) to meet the communication needs of different link planning.

### Rock Solid Reliability

The DGS-3615 Series supports spanning tree protocols (STP) 802.1D, 802.1w, as well as 802.1s to ensure rapid convergence, improve fault tolerance capabilities, ensure stable operation of networks, and provide redundant networking pathways. Virtual Router Redundant Protocol (VRRP) effectively ensure network stability.

Supports Bidirectional Forwarding Detection (BFD) to provide a method for upper-layer protocols such as routing protocols and MPLS to rapidly detect the connectivity of forwarding paths between routing devices, reducing the convergence time of upper-layer protocols greatly in the case of changes in link status.

### Advanced QoS Policies

The DGS-3615 Series supports multilayer traffic classification and flow control capabilities such as MAC traffic, IP traffic, and application traffic that implements multiple traffic policies such as refined bandwidth control and forwarding priorities. The DGS-3615 Series switches support the provision of services according to the corresponding QoS level. Layer 2 through 7 traffic classification and perfect Quality of Service (QoS) policies are provided. It also processes different service flows based on different applications to ensure that critical data are transmitted without delay. The QoS guarantee system with DiffServ at its core supports complete QoS policies such as 802.1p, IP ToS, Layer 2 through 7 filter, SP, and WRR.

### Ease of Use and Ease of Management

All of the DGS-3615 Series switches allow Telnet access control based on the source IP address to prevent illegal personnel or hackers attacks and strengthen the security of devices. Secure Shell (SSH) and Simple Network Management Protocol v3 (SNMPv3) cryptographic network protocol ensures the security of management information. Other notable features include support for the Network Timing Protocol (NTP) which provides an accurate and consistent timestamp for traffic information analysis and fault diagnosis, support for Syslog to conduct network maintenance and management effectively and port mirroring to help ease the maintenance workload.

Technical Specifications	
Interface	DGS-3615-54PC
Ports	<ul style="list-style-type: none"> <li>• 48 10/100/1000BASE-T PoE ports</li> <li>• 4 100/1000BASE-X SFP combo ports</li> <li>• 2 Extension Slots (Stack or Uplink)</li> <li>• Dual Power Slots</li> </ul>
I/O Module Slots	<ul style="list-style-type: none"> <li>•1-port SFP+ 10G Module</li> <li>•2-port SFP+ 10G Module</li> <li>•4-port SFP+ 10G Module (Planned for future support)</li> <li>•2-port Combo 10/100/1000BASE-T/SFP Module</li> </ul>
Management Ports	<ul style="list-style-type: none"> <li>•1 Console Port</li> <li>•1 USB 2.0 Port</li> </ul>
Max. Switching Capacity	•256Gbps
Max. Packet Forwarding Rate	•192 Mpps
Physical	
Dimensions (D x W x H)	•440 x 420 x 44 mm
Power Supply	<ul style="list-style-type: none"> <li>•Nominal voltage: 100-240 V</li> <li>•Maximum voltage: 90-264 VAC</li> <li>•Frequency: 50-60 Hz</li> </ul>
Power Consumption	<ul style="list-style-type: none"> <li>• &lt; 80W w/o expansion modules and PD</li> <li>• &lt; 95W w/ expansion modules but w/o PD</li> <li>• &lt; 930W w/o expansion modules but w/ PD</li> <li>• &lt; 945W w/ expansion modules and PD</li> </ul>
Temperature	<ul style="list-style-type: none"> <li>•Operating Temperature: 0 to 50 °C (32 to 122 °F)</li> <li>•Storage Temperature: -40 to 70 °C (-40 to 158 °F)</li> </ul>
Humidity	<ul style="list-style-type: none"> <li>•Operating Relative Humidity: 10% to 90%</li> <li>•Storage Relative Humidity: 5% to 95%</li> </ul>
Emission (EMI)	•FCC Class A, CE Class A, VCCI Class A, IC, RCM, BSMI, CCC
Safety	•CB, cUL, BSMI, CCC

Software Features			
VLAN	Up to 4K 802.1q VLANs Super VLAN	•Protocol VLAN •Private VLAN	•Voice VLAN •MAC-based VLAN
QinQ	Supports transparent transmission of double-tagged packets Selects outer VLAN ID based on the port Selects outer VLAN ID based on the inner VLAN ID	•Selects outer VLAN ID based on traffic characteristics •Determines an outer tag according to the priority of an inner tag	•For double-tagged packets, supports the change to outer VLAN ID information based on an outer VLAN ID •For double-tagged packets, supports the change to outer VLAN ID information based on an inner VLAN ID
Link Aggregation	LACP (802.3ad)		
Port Mirroring	Many-to-one mirroring	•RSPAN	•Flow-based mirroring
Spanning Tree Protocol	STP	•RSTP	•MSTP
DHCP	DHCP Client DHCP Server	•DHCP Relay •DHCP Snooping	•DHCP Snooping Trust •DHCPv6 Snooping
IPv6 Basic Protocols	IPv6 addressing	•Neighbor Discovery Protocol (NDP)	•ICMPv6
IP Routing	Static routes RIP and RIPng OSPF and OSPFv3	•BGP and BGP4 •Equal-cost multipath routing (ECMP)	•Policy-based Routing supports load balancing
Multicast	IGMPv1, IGMP v2, IGMPv3, and IGMP proxy IGMPv1 Snooping, IGMP v2 Snooping, and IGMPv3 Snooping	•IGMP filter and IGMP fast leave •PIM for IPv6, •PIM-DM, PIM-SM, and PIM-SSM	•MLD Snooping and MLD, MLD Proxy •MSDP
IPv6 Tunnel	Supports manual tunnel ISATAP tunnel	•IPv6 over IPv4 tunnel	•IPv4 over IPv6 tunnel
ACL	Standard IP ACL (hardware ACL based on IP addresses) Extended IP ACL (hardware ACL based on the IP address and TCP/UDP port number)	•Expert-level ACL (hardware ACL based on random combination of the VLAN number, Ethernet type, MAC address, IP address, TCP/UDP port number and protocol type)	•VLAN-based ACL
QoS	Supports traffic identification of ports Supports 802.1p/DSCP/ToS traffic classification	•Supports eight queues with different priorities for each port •Supports SP, WRR	•Supports traffic shaping •Supports rate limiting
Security	Binding of the IP address, MAC address, and port address Binding of the IPv6, MAC address, and port address Filter illegal MAC addresses Port-based and MAC-based 802.1x MAB; Portal and Portal 2.0 authentication	•ARP-check; Restriction on the rate of ARP packets; Gateway anti-ARP spoofing •Broadcast suppression; Hierarchical management by administrators and password protection RADIUS and TACACS+; AAA security authentication (IPv4/IPv6) in device login management; SSH and SSH V2.0	•BPDU guard •IP source guard •Binding of the IP address, MAC address, and port address
Management Features	SNMPv1/v2c/v3 CLI (Telnet/Console) RMONv1 (1, 2, 4, 9) SSH	•Syslog/Debug •WEB-based management •FTP/TFTP •DNS	•NTP •Traceroute •HTTPS
High Reliability	BFD cooperates with RIP/OSPF/BGP BFD cooperates with LDP	•BFD cooperates with PBR	•G.8032
MPLS	L3 VPN (MCE)		

## DGS-3615-54PC Managed L3 Gigabit Switch

Ordering Information	
DGS-3615-54PC	48 10/100/1000BASE-T PoE Ports, 4 100/1000BASE-X SFP Combo Ports, 2 Extension Slots (Stack or Uplink), 2 Modular Power Slots, 1 USB 2.0
Optional I/O Modules	
DGS-PWR500AC	500W Power Supply Module for DGS-3615-54PC
DGS-3615-EM-1XS	1-port 10G SFP+ Module
DGS-3615-EM-2XS	2-port 10G SFP+ Module
DGS-3615-EM-4XS	4-port 10G SFP+ Module
DGS-3615-EM-2XT	4-port 10GBASE-T Module
Optional Direct Attach Cables	
DEM-CB100S	1 m 10G SFP+ Direct Attach Cable
DEM-CB300S	3 m 10G SFP+ Direct Attach Cable
DEM-CB700S	7 m 10G SFP+ Direct Attach Cable
Optional Redundant Power Supplies	
DPS-500A	AC Redundant Power Supply
DPS-500DC	DC Redundant Power Supply
DPS-700	AC Redundant Power Supply for PoE Models
Optional SFP Transceivers	
DEM-712	1000BASE-T Copper SFP Transceiver
DEM-310GT	1000BASE-LX, Single-mode, 10 km
DEM-311GT	1000BASE-SX, Multi-mode, 500 m
DEM-312GT2	1000BASE-SX, Multi-mode, 2 km
DEM-314GT	1000BASE-LHX, Single-mode, 50 km
DEM-315GT	1000BASE-ZX, Single-mode, 80 km
Optional 10G SFP+ Transceivers	
DEM-431XT	10GBASE-SR Multi-mode, OM1:33M/OM2:82M/OM3:300M (w/o DDM)
DEM-432XT	10GBASE-LR Single-mode, 10 km (w/o DDM)
DEM-433XT	10GBASE-ER Single-mode, 40 km (w/o DDM)
DEM-434XT	10GBASE-ZR Single-mode, 80 km (w/o DDM)
DEM-436XT-BXD	10GBASE-LR Single-mode, 20 km (TX-1330/RX-1270 nm) (w/o DDM)
DEM-436XT-BXU	10GBASE-LR Single-mode, 20 km (TX-1270/RX-1310 nm) (w/o DDM)
Optional WDM SFP Transceivers	
DEM-330T	1000BASE-LX, Wavelength Tx:1550 nm Rx:1310 nm, Single-mode, 10 km
DEM-330R	1000BASE-LX, Wavelength Tx:1310 nm Rx:1550 nm, Single-mode, 10 km
DEM-331T	1000BASE-LX, Wavelength Tx:1550 nm Rx:1310 nm, Single-mode, 40 km
DEM-331R	1000BASE-LX, Wavelength Tx:1310nm Rx:1550 nm, Single-mode, 40 km

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