



Product overview

Galgus M24+ and M48+ Switch Series —Industry-leading high performance and scalable Layer 3+ 10GE access switching solution with modular dual power, fixed or modular uplinks (10GbE/40GbE/100GbE) and IRF for resiliency. The series offers OSPF/BGP and multicast, SDN enabled and flexible management.

The switch series contains the following models:

G-SW-M48+2Q+ provides 48 × 1/10G SFP+ ports, 2 × QSFP28 ports(100G, can be split into four 25GE ports), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots

G-SW-M24+2Q+ provides 24 × 1/10G SFP+ ports, 2 × QSFP28 ports(100G, can be split into four 25GE ports), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots

G-SW-M48+2Q provides 48 × 1/10G SFP+ ports, 2 × QSFP+ ports (40GE, can be split into four 10GE ports.), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots

G-SW-M24+2Q provides 24 × 1/10G SFP+ ports, 2 × QSFP+ ports (40GE, can be split into four 10GE ports.), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots



G-SW-M24+2Q+ / G-SW-M24+2Q



G-SW-M48+2Q+ / G-SW-M48+2Q

Features and benefits

Open application architecture

In open application architecture (OAA), the switch can accommodate high-performance OAP modules to offer dedicated services such as firewall, IPS, or load balancing in addition to conventional forwarding services. By installing OAP modules, the customers can use the switch as a multiservice device without having to buy separate service appliances, such as a firewall device.

High-density 10GE forwarding

The switch offers high-density 10GE forwarding and can expand 10GE ports flexibly. It provides 48/24*10/1GE autosensing SFP+ ports, two QSFP28 or QSFP+ ports onboard, and two expansion slots that support up to 11 kinds of modules range from GE to 10GE, 25GE, 40GE, 100GE and Multi-giga ports. Using a QSFP+ to SFP+ splitter cable, you can split a QSFP+ port into four line-rate 10GE SFP+ ports. Max 72*10GE supported on one single switch.

Embedded Access Controller

The switches implement the WLAN function by installing an AC feature pack on the main control unit, thereby implementing both the wired function and the WLAN function on a single device. Embedded AC is a low-cost WLAN solution, save overall investment, improve forwarding capacity, realized a true unified wired and wireless solution in Campus. Max 256 AP supported on one single switches.



Intelligent Resilient Framework 2 (IRF2)

Intelligent Resilient Framework 2 (IRF 2) virtualizes multiple switches into one virtual switch and provides the following benefits:

- **Scalability**—IRF 2 allows you to add devices to the IRF 2 system easily. It provides a single point of management, enables switch plug-and-play, and supports software auto-update for software synchronization from the master to the new member devices. It brings business agility with lower total cost of ownership by allowing new switches to be added to the fabric without network topology change as business grows.
- **High availability**—The proprietary routing hot backup technology ensures redundancy and backup of all information on the control and data planes and non-stop Layer 3 data forwarding in an IRF 2 fabric. It also eliminates single point of failure and ensures service continuity.
- **Redundancy and load balancing**—The distributed link aggregation technology supports load sharing and mutual backup among multiple uplinks, which enhances the network redundancy and improves link resources usage.
- **Flexibility and resiliency**—The switch uses standard GE ports instead of specialized ports for IRF links between IRF member devices. This allows customers to assign bandwidth as needed between uplink, downlink, and IRF system connections. In addition, an IRF fabric can span a rack, multiple racks, or multiple campuses.

Wide range of advanced features

The switch offers a wide range of features, including:

- **Modular hardware and software design**—The switch uses modular, hot swapping, and redundancy design for hardware, including power modules and fan trays. The switch also uses modular design for software, which enables feature installation and removal on an as-needed basis. Refined physical architecture and optimized software workflows greatly reduce the end-to-end packet processing delay.
- **Software-defined networking (SDN)**—An innovative network architecture that separates the control plane from the forwarding plane, typically by using OpenFlow. SDN significantly simplifies network management, reduces maintenance complexities and costs, enables flexible traffic management, and offers a good platform for network and application innovations.
- **Virtual eXtensible LAN (VXLAN)**—A MAC-in-UDP technology that provides Layer 2 connectivity between distant network sites across an IP network. VXLAN enables long-distance virtual machine and data mobility and is typically used in data centers and the access layer of campus networks for multitenant services. The implementation of VXLAN supports automatic VXLAN tunnel establishment with EVPN.
- **Ethernet Virtual Private Network (EVPN)** is a Layer 2 VPN technology that provides both Layer 2 and Layer 3 connectivity between distant network sites across an IP network. EVPN uses MP-BGP in the control plane and VXLAN in the data plane. EVPN provides the following benefits: Configuration automation; Separation of the control plane and the data plane; Integrated routing and bridging (IRB).
- **In-Service Software Upgrade (ISSU)** and Operation, Administration, and Maintenance (OAM)— Ensure business continuity and improve Ethernet management and maintainability.

Comprehensive security control policies

The switch supports AAA authentications (including RADIUS authentication) and dynamic or static binding of user identifiers such as user account, IP address, MAC address, VLAN, and port number.

Using the switch in conjunction with IMC, you can manage and monitor online users in real time and take prompt action on illegitimate behaviors.



The switch offers a large number of inbound and outbound ACLs and VLAN-based ACL assignment. This simplifies configurations and saves ACL resources.

MACsec

MACsec is an ideal hop-by-hop link-layer security protocol for Ethernet networks, which are typically insecure. It provides the following services:

- Data encryption—Encrypts data over the Ethernet link to protect data against security issues such as eavesdropping.
- Anti-replay—Prevents packets from being intercepted and modified en route to protect the network against unauthorized access.
- Tampering protection—prevents packet tampering to protect data integrity.
- MACsec supports the following deployments:
 - Client-oriented—Protects data transmission over the link between the client and its access device.
 - Device-oriented mode—Protects data transmission over the link between two peering devices.

The switch can cooperate with iNode client and core switches such as S10500 and S7500E to provide a complete MACsec solution.

High availability

In addition to node and link protection, the switch offers the following hardware high availability features:

- 1+1 power module redundancy and 1+1 fan tray redundancy.
- Hot-swappable interface modules.
- Automatic power and fan tray status monitoring and alarming mechanisms.
- Automatic fan speed adjustment based on the change in temperature.
- Self-protection mechanisms that protect power modules against overcurrent, overvoltage, and overtemperature conditions.

Outstanding management capacity

The switch provides a variety of management features and is easy to manage. It offers the following device management features:

- Provides multiple management interfaces, including the console port, out-of-band management Ethernet port, and USB port.
- Supports configuration and management from CLI or a general-purpose Web-based manager, including IMC Intelligent Management Center.
- Supports multiple access methods, including SNMPv1/v2c/v3, Telnet, and more secure SSH 2.0 and SSL.
- Uses OAM to enhance system management capability.
- Supports FTP for system upgrade.



Smart Management Center (SmartMC)

SmartMC is 's latest offering and innovation that helps small and middle size enterprise network to address management issue and is free of charge, easy to use web management tool. SmartMC is embedded network management tool into the switch, it includes commander switches and other access switches.

SmartMC delivers the following benefits:

- Intelligent operation: once the switch is powered on and SmartMC function is enabled, topology will be created automatically and user can go enhanced web GUI to check the latest status.
- Centralized management: all management can be achieved via commander switch such as centralized configuration backup, and software version management, increasing working efficiency.
- One key device replacement: in case of one switch failure, the new added same type switch can download the same configuration and work as old switch immediately

Technical specifications

Item	S6520X-54HC-HI/S6520X-54QC-HI	S6520X-30HC-HI/S6520X-30QC-HI
Port Switching capacity	2160Gbps/1440Gbps	1680Gbps/960Gbps
Box Switching capacity	2.56Tbps	
Packet forwarding rate	1607Mpps/1071Mpps	1250Mpps/714Mpps
Dimensions (H × W × D)	43.6 × 440 × 360 mm (1.72 × 17.32 × 14.17 in)	
Weight	≤ 7.5 kg (16.53 lb)	≤ 7.5 kg (15.43 lb)
Flash/SDRAM	1GB/2GB	
Console ports	1	
Management Ethernet ports	1	
USB ports	1	
Micro USB ports	1	
Service ports	48 × 1/10GE SFP+ fiber ports 2 × QSFP28 fiber ports (for S6520X-54HC-HI) 2 × QSFP+ fiber ports(for S6520X-54QCHI)	24 × 1/10GE SFP+ fiber ports 2 × QSFP28 fiber ports(for S6520X-30HC-HI) 2 × QSFP+ fiber ports(for S6520X-30QC-HI)
Expansion slots	2	



Compatible interface modules	8-Port 10G SFP+ Interface Module 8-Port 10G SFP+ with MACSec Interface Module 8-Port 1/2.5/5G BASE-T Ethernet Copper Interface Module 8-Port 1/2.5/5/10G BASE-T Ethernet Copper Interface Module 2-port 25GE SFP28 interface module 2-port 40GE QSFP+ interface module 8-port 25GE SFP28 interface module 2-port 100GE QSFP28 interface module(for S6520X-30HC-HI and S6520X-54HC-HI)	
Input voltage range	Rated: 100 VAC to 240 VAC @ 50 Hz/60 Hz Max.: 90 VAC to 264 VAC @ 47 Hz to 63 Hz	
Fan trays	Hot swappable fan trays, invertible airflow	
Power consumption	MIN: single AC: 39W; dual AC: 44W MAX: single AC: 231W; dual AC: 234W	MIN: single AC: 38W; dual AC: 43W MAX: single AC: 179W; dual AC: 183W
Operating temperature	0°C to 45°C (32°F to 113°F)	
Operating humidity	10% RH to 90% RH, non-condensing	
VxLAN	VXLAN Layer 2 switching VXLAN routing switching VXLAN gateway Centralized VXLAN control through OpenFlow+Netconf	
Virtualization	Intelligent Resilient Framework 2 (IRF2) Intelligent Resilient Framework 3.1 (IRF3.1) Distributed device management Distributed link aggregation Distributed resilient routing Stacking through standard Ethernet ports Local device stacking and remote device stacking LACP-, BFD-, and ARP-based multi-active detection (MAD)	
Link aggregation	10GE/40GE/100GE port aggregation Static aggregation Dynamic aggregation	
Jumbo frame	Supported	
MAC address table	Max. 256K MAC address entries Static MAC address Blackhole MAC address MAC learning limit	



Openflow	Openflow1.3.1
VLAN	<ul style="list-style-type: none"> Port-based VLAN (up to 4094 VLANs) Default VLAN QinQ and flexible QinQ VLAN mapping PVST+ and RPVST+
Traffic monitoring	sFLOW
DHCP	<ul style="list-style-type: none"> DHCP client DHCP snooping DHCP relay DHCP server DHCP snooping Option 82/DHCP relay Option 82
ARP	<ul style="list-style-type: none"> Max. 128K ARP Static entry Gratuitous ARP Common proxy ARP and local proxy ARP Dynamic ARP inspection ARP anti-attack ARP source suppression ARP detection based on DHCP snooping safety entries, 802.1X entries, and IP/MAC static binding entries
Routing	<ul style="list-style-type: none"> Max. 128K IPV4 routing entries Max. 64K IPV6 routing entries IPv4/IPv6 static routing Dynamic routing such as RIP v1/2 and RIPng Policy routing
	<ul style="list-style-type: none"> Equal-cost multi-path routing (ECMP) VRRP OSPFv1/v2/v3 BGP IS-IS
IPv6	<ul style="list-style-type: none"> Neighbor Discovery (ND) PMTU ICMP v6, Telnet v6, SFTP v6, SNMP v6, BFD v6, VRRP v3 IPv6 Portal IPv6 tunnel IPV6 SAVI



Multicast	<p>IGMP Snooping v2/v3</p> <p>IGMP Snooping fast-leave</p> <p>IGMP Snooping group-policy</p> <p>PIM-SM and PIM-SSM</p> <p>PIM snooping</p> <p>MVRP</p> <p>MFF</p> <p>Enhanced Layer 3 multicast</p>
Zero configuration	<p>DHCP auto-config</p> <p>CWMP-TR069</p>
Storm suppression	<p>Storm suppression based on port bandwidth percentage</p> <p>Storm suppression based on PPS</p> <p>Storm suppression based on BPS</p>
Loop-free redundant Layer 2 topology	<p>STP/RSTP/MSTP</p> <p>STP Root Guard</p> <p>BPDU Guard</p> <p>BPDU Blocking and Root Guard</p> <p>Link Detection (UDLD)</p> <p>Digital Diagnostic Monitor (DDM)</p> <p>Time Domain Reflectometry (TDR)</p> <p>G.8032 Ethernet ring protection switching (ERPS)</p>
QoS/ACL	<p>Rate limit for receiving and transmitting packets</p> <p>CAR</p> <p>Eight output queues per port</p> <p>Flexible queue scheduling algorithms based on both port and queue, including SP, WDRR, WRR, WFQ, and SP+WRR</p> <p>802.1p priority and DSCP priority</p> <p>Layer 2 to Layer 4 packet filtering</p> <p>Traffic classification based on source MAC, destination MAC, source IP, destination IP, port, protocol, and VLAN</p> <p>Time range</p>
	<p>WRED</p>
Mirroring	<p>Flow mirroring</p> <p>N:4 port mirroring</p> <p>Local port mirroring and remote port mirroring</p> <p>Policy-based Mirroring</p> <p>Traffic Mirroring</p>



Security	<p>Hierarchical user management and password protection</p> <p>MAC-based authentication</p> <p>802.1X</p> <p>Storm constrain</p> <p>AAA authentication</p> <p>RADIUS authentication</p> <p>HWTACACS</p> <p>SSH2.0</p> <p>Port isolation</p> <p>IP/Port/MAC binding</p> <p>IP source guard</p> <p>HTTPs</p> <p>SSL</p> <p>Public Key Infrastructure (PKI)</p> <p>CPU protection</p>
Loading and upgrading	<p>Loading and upgrading through XMODEM/FTP/TFTP</p> <p>Loading and upgrading from USB</p>
Management and maintenance	<p>Configuration from CLI</p> <p>Login through Telnet, and the console port</p> <p>Job scheduler</p> <p>ISSU</p> <p>802.1ag and 802.3ah</p> <p>Simple Network Management Protocol (SNMP)</p> <p>IMC network management system</p> <p>System log</p> <p>Alarming based on severity</p> <p>NTP</p> <p>Power, fan, and temperature alarming</p> <p>Debugging information output</p> <p>Ping and Tracert</p> <p>Track</p> <p>Telnet-based remote maintenance</p>
EMC	<p>FCC Part 15 Subpart B CLASS A</p> <p>ICES-003 CLASS A</p> <p>VCCI CLASS A</p> <p>CISPR 32 CLASS A</p>
	<p>EN 55032 CLASS A</p> <p>AS/NZS CISPR32 CLASS A</p> <p>CISPR 24</p> <p>EN 55024</p> <p>EN 61000-3-2</p> <p>EN 61000-3-3</p> <p>GB/T 9254</p> <p>YD/T 993</p>



Safety	UL 60950-1 CAN/CSA C22.2 No 60950-1 IEC 60950-1 EN 60950-1 AS/NZS 60950-1 FDA 21 CFR Subchapter J GB 4943.1
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Ordering Information

Product ID	Product Description
G-SW-M24+2Q-GL	G-SW-M24+2Q L3 Ethernet Switch(24SFP Plus+2QSFP Plus+2Slot),No Power
G-SW-M48+2Q-GL	G-SW-M48+2Q L3 Ethernet Switch(48SFP Plus+2QSFP Plus+2Slot),No Power
G-SW-M24+2Q+-GL	G-SW-M24+2Q+-L3 Ethernet Switch(24SFP Plus+2QSFP28+2Slot),No Power
G-SW-M48+2Q+	G-SW-M48+2Q+
Fan	
LSWM1FANSCE	Ethernet Switch Fan Module(Power to Port Airflow)
LSWM1FANSCEB	Ethernet Switch Fan Module(Port to Power Airflow)
Power supply	
PSR250-12A-GL	250W AC Power Supply Module
PSR250-12A1-GL	250W AC Power Supply Module
Modules	
LSWM2QP2P	2-Port 40G QSFP Plus Interface Card
LSWM2SP8P	8-Port 10G SFP Plus Interface Card
LSWM4SP8PM	8-Port 10G SFP Plus with MACSec Interface Module
LSWM2ZSP8P	8-Port 25G SFP28 Interface Module
LSWM2ZQP2P	2-Port 100G QSFP28 Interface Module
Wireless license	



LIS-WX-128-BE	Enhanced Access Controller License,128 APs
LIS-WX-32-BE	Enhanced Access Controller License,32 APs
LIS-WX-16-BE	Enhanced Access Controller License,16 APs
LIS-WX-8-BE	Enhanced Access Controller License,8 APs
LIS-WX-1-BE	Enhanced Access Controller License,1 AP
Transceivers	
SFP-GE-SX-MM850-A	1000BASE-SX SFP Transceiver, Multi-Mode (850nm, 550m, LC)
SFP-GE-LX-SM1310-A	1000BASE-LX SFP Transceiver, Single Mode (1310nm, 10km, LC)
SFP-GE-LH40-SM1310	1000BASE-LH40 SFP Transceiver, Single Mode (1310nm, 40km, LC)
SFP-GE-LH40-SM1550	1000BASE-LH40 SFP Transceiver, Single Mode (1550nm, 40km, LC)
SFP-GE-LH80-SM1550	1000BASE-LH80 SFP Transceiver, Single Mode (1550nm, 80km, LC)
SFP-GE-LH100-SM1550	1000BASE-LH100 SFP Transceiver, Single Mode (1550nm, 100km, LC)
SFP-GE-LX-SM1310-BIDI	1000BASE-LX BIDI SFP Transceiver, Single Mode (TX1310/RX1490, 10km, LC)
SFP-GE-LX-SM1490-BIDI	1000BASE-LX BIDI SFP Transceiver, Single Mode (TX1490/RX1310, 10km, LC)
SFP-GE-T	1000BASE-T SFP
SFP-XG-LH40-SM1550	SFP+ Module(1550nm,40km,LC)
SFP-XG-LX-SM1310-E	SFP+ Module(1310nm,10km,LC)
SFP-XG-SX-MM850-E	SFP+ Module(850nm,300m,LC)
SFP-25G-SR-MM850	25G SFP28 Optical Transceiver Module (850nm,100m,SR,MM,LC)
QSFP-40G-LR4-WDM1300	40GBASE-LR4 QSFP+ Optical Transceiver Module
QSFP-40G-CSR4-MM850	QSFP+ 40GBASE Optical Transceiver Module (850nm,300m,CSR4,Support 40G to 4*10G)
QSFP-40G-SR4-MM850	QSFP+ 40GBASE Optical Transceiver Module (850nm,100m,SR4,Support 40G to 4*10G)
QSFP-100G-SR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SR4,MPO)



QSFP-100G-LR4-WDM1300	100G QSFP28 Optical Transceiver Module(1310nm,10km,LR4,WDM,LC)
QSFP-100G-LR4L-WDM1300	100G QSFP28 Optical Transceiver Module (1310nm,2km,LR4L,CWDM4,LC)
Cables	
CAB-CON-1.8m	Single Cable,Console Serial Port Cable,1.8m,D9F,28UL20276(4P)(P296U),MPH-8P8C
LSWM1STK	SFP+ Cable 0.65m
LSWM2STK	SFP+ Cable 1.2m
LSWM3STK	SFP+ Cable 3m
SFP-25G-D-CAB-1M	25G SFP28 to 25G SFP28 1m Passive Cable
SFP-25G-D-CAB-3M	25G SFP28 to 25G SFP28 3m Passive Cable
SFP-25G-D-CAB-5M	25G SFP28 to 25G SFP28 5m Passive Cable
LSWM1QSTK0	40G QSFP+ Cable 1m
LSWM1QSTK1	40G QSFP+ Cable 3m
LSWM1QSTK2	40G QSFP+ Cable 5m
LSWM1QSTK3	40G QSFP+ to 4x10G SFP+ Cable 1m
LSWM1QSTK4	40G QSFP+ to 4x10G SFP+ Cable 3m
LSWM1QSTK5	40G QSFP+ to 4x10G SFP+ Cable 5m
QSFP-100G-D-CAB-1M	100G QSFP28 to 100G QSFP28 1m Passive Cable
QSFP-100G-D-CAB-3M	100G QSFP28 to 100G QSFP28 3m Passive Cable
QSFP-100G-D-CAB-5M	100G QSFP28 to 100G QSFP28 5m Passive Cable
QSFP-100G-4SFP-25G-CAB-1M	100G QSFP28 to 4x25G SFP28 1m Passive Cable
QSFP-100G-4SFP-25G-CAB-3M	100G QSFP28 to 4x25G SFP28 3m Passive Cable
QSFP-100G-4SFP-25G-CAB-5M	100G QSFP28 to 4x25G SFP28 5m Passive Cable
QSFP-100G-D-AOC-7M	100G QSFP28 to 100G QSFP28 7m Active Optical Cable
QSFP-100G-D-AOC-10M	100G QSFP28 to 100G QSFP28 10m Active Optical Cable



QSFP-100G-D-AOC-20M	100G QSFP28 to 100G QSFP28 20m Active Optical Cable
OP-MPO8-8LC-10-M	Fiber Connector,MPO(8 core)/PC,8LC/PC(0.5m),Multimode(OM3),3.0mm,10.0m
OP-MPO8-MPO8-10-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,10.0m
OP-MPO8-MPO8-50-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,50.0m
OP-MPO8-MPO8-100-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,100.0m
OP-MPO8-MPO8-200-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,200.0m