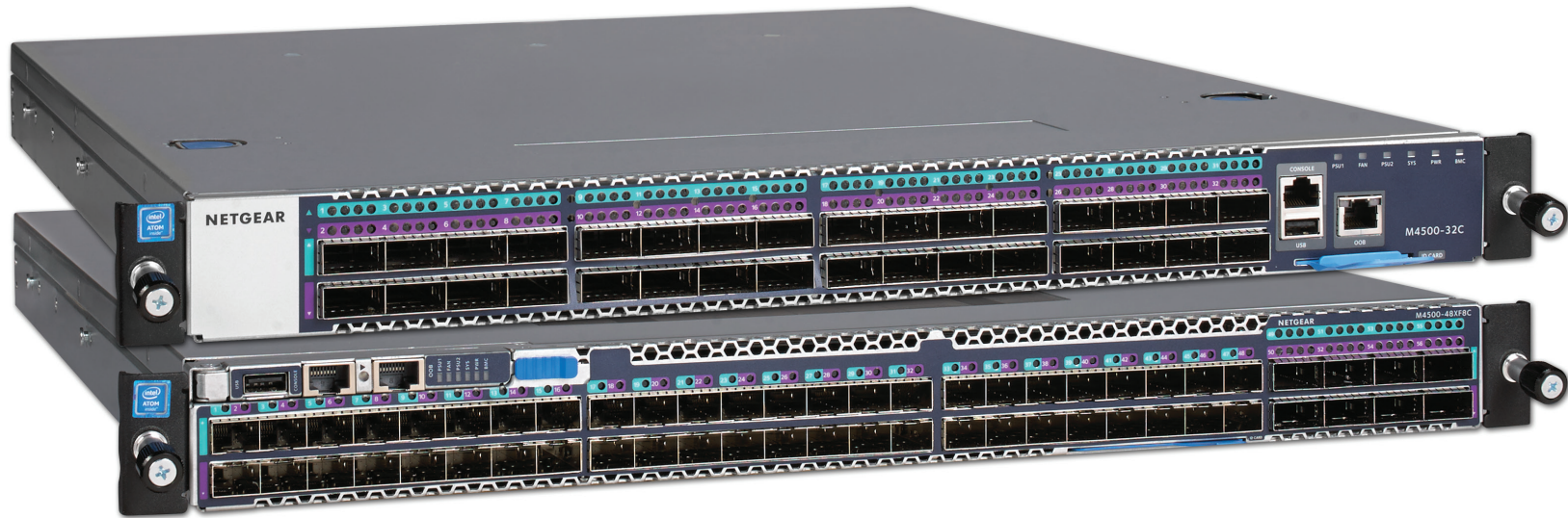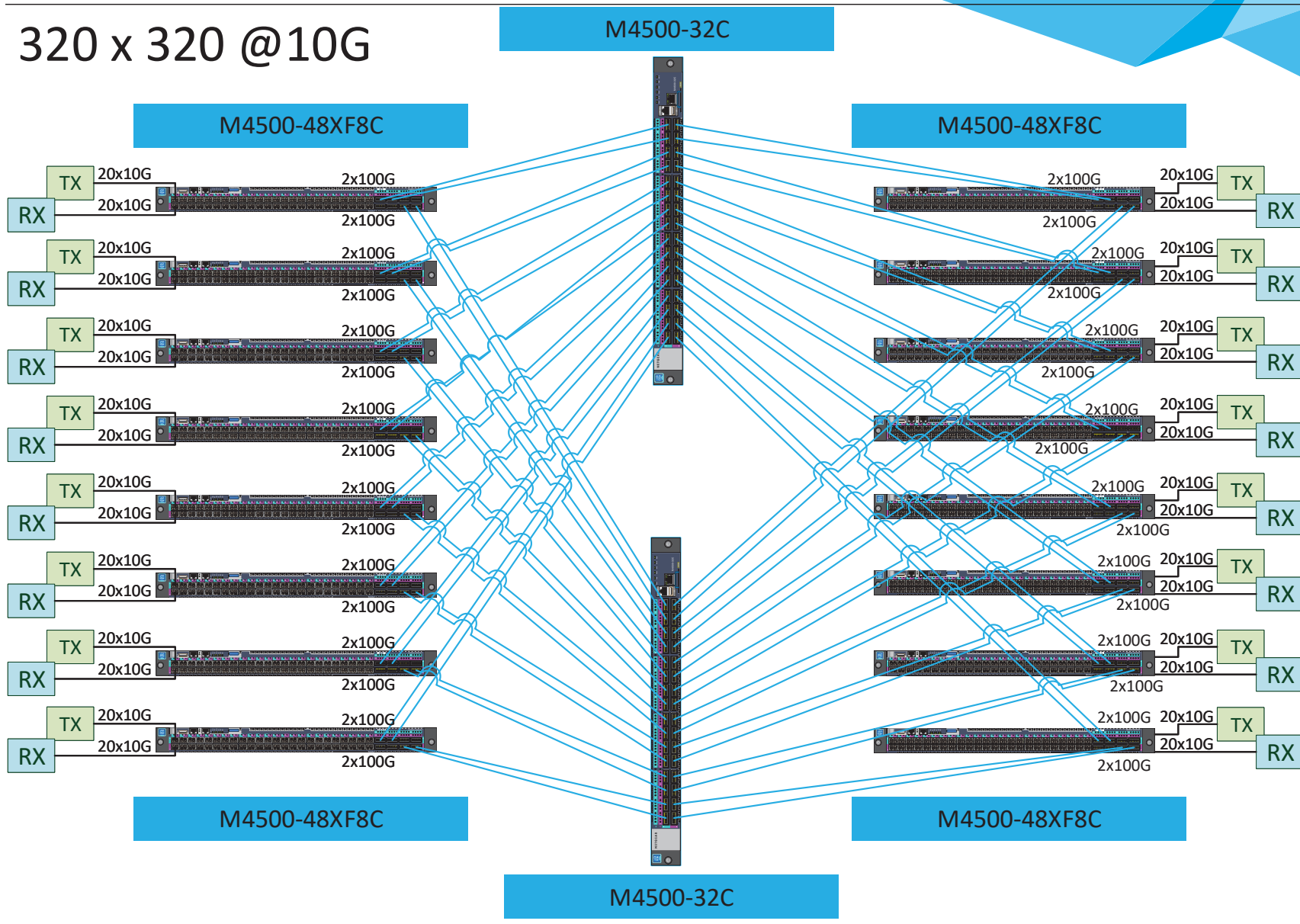# NETGEAR®

M4500 Series: AVoIP Aggregation

M4500 series

SDVoE-ready 100G and 10G Ethernet switches combining the configurability of a matrix switch with the power and scalability of Ethernet to support hundreds of AV over IP endpoints.

LIMITED LIFETIME Hardware Warranty

LIFETIME WARRANTY Next Business Day

LIFETIME Tech Support

320 x 320 @10G

M4500-32C

M4500-48XF8C

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

TX	20x10G	
RX	20x10G	2x100G
		2x100G

M4500-48XF8C

M4500-48XF8C

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

2x100G	20x10G	TX
	20x10G	RX
2x100G		

M4500-48XF8C

M4500-32C

For AV over IP installations

- Installers opting to use M4500-48XF8C switch in their installation will find that it is already preconfigured out of the box. Experience true AV and multicast Zero Touch network configuration. Connect AV over IP encoders and decoders, and power on the switch. It just works! Then use the M4500-32C switch to aggregate the edge switches for a complete set up in large projects up to 320x320 SDVoE (10Gb) devices in a single architecture.

Intelligent IGMP Plus

- IGMP Plus multicast allows for scalable ProAV installations at Layer 2 without the PIM (Protocol Independent Multicast) complexity. IGMP Plus is default on VLAN 1 out of the box and can be configured on another VLAN for automatic IGMP across M4500 and M4300 switches on that VLAN.

M4500 Series Features

Introducing two new, preconfigured M4500 100GE switches: M4500-32C and M4500-48XF8C. The trend of moving matrix switching into the Ethernet network is accelerating and a new class of switches has come to market. Combining the configurability of a matrix switch with the power and scalability of Ethernet, they support hundreds of AV over IP endpoints, at a price point dramatically lower than comparable matrix switches. The Layer 3 feature set includes static and dynamic routing with VRRP, OSPF, BGP, VRF-Lite and PIM. Removing the need for PIM routing, these new switches offer IGMP Plus and greatly simplify system architectures with the same well-known IGMP techniques across the entire AV over IP network while still operating at Layer 2. Installers opting to use M4500-48XF8C switch in their installation will find that it is already preconfigured out of the box. It comes with 48 10G Fiber ports with 8 100G uplink ports with true AV and multicast Zero Touch network configuration. Connect AV over IP encoders and decoders, and power on the switch. It just works! Then use the M4500-32C switch to aggregate the edge switches for a complete set up in large projects up to 320x320 SDVoE (10Gb) devices in a single architecture.

Key features

- Cost effective 100G aggregation and 10G access layer for AV deployments and redundant spine & leaf topologies
- Zero Touch AV-over-IP with pre-configured L2 Multicast on all models (10G AV encoders and decoders) and SDVoE-ready
- Advanced Layer 3 feature set including IP Multinetting/CIDR, Static, PBR, VRRPv2, OSPFv3, PIM-SM, VxLAN, BGP4, VRF-Lite
- Optimized for "Spine and Leaf" redundant AV installations, with or without MLAG between spine switches
- Up to 320 TX / 320 RX (10 Gigabit) Nodes all line rate with each other in a redundant spine and leaf architecture
- 2 power supply units (APS750W) and 6 redudant fan trays (AFT402) pre-installed for 1+1 power and 4+2 fan redundancy
- Ultra-low latency (spine 0.13μs @100G; leaf 0.119μs @10G) and scalable table size (32K MAC, 8K ARP, 4K VLANs, 32K routes)

Software

- Advanced classifier-based, time-based hardware implementation for L2 (MAC), L3 (IP) and L4 (UDP/TCP) security and prioritization
- Selectable Port-Channel / LAG (802.3ad - 802.1AX) L2/L3/L4 hashing for fault tolerance and load sharing with any Ethernet channeling
- Up to 64 Link Aggregation Groups (LAG, Port-Channel, LACP) with 32 ports per LAG and Multi-chassis Link Aggregation (MLAG)
- Comprehensive IPv4/IPv6 static and dynamic routing including IP Multinetting/CIDR, PBR, VRRPv2, OSPFv3, PIM-SM6, BGP4, VRF-Lite
- Enhanced IPv4/IPv6 multicast forwarding with IGMPv3/MLDv2 and IGMP Plus enhancement at the VLAN level
- IGMP Plus enhanced implementation for automatic multicast across a L2 network (igmp-plus <vlan-id> easy macro-command)
- High performance IPv4/IPv6 multicast routing with PIM-SM and PIM-SM6 associated with unicast static routes, or other L3 protocol
- Advanced IPv4/IPv6 security including malicious code detection, DHCP Snooping, IP Source Guard, and Control Plane Policing (CoPP)
- Priority-Based Flow Control (PFC), DCBX Bridging, Enhanced Transmission Selection (ETS) and VXLAN Gateway for server installations

Availability

- Two (2) redundant, modular power supplies are pre-installed contributing to business continuity management
- Six (6) hot-swappable fan trays are pre-installed for 4+2 fan redundancy
- Spine and leaf architecture with every leaf switch (10G/25G access) connecting to every spine switch (distributed 100G core)
- Up to 48 paths ECMP routing for load balancing and redundancy
- Link Dependency feature enables or disables ports based on the link state of different ports

Management

- Industry standard SNMP, RMON, MIB, LLDP, AAA, sFlow and RSPAN remote mirroring implementation
- Service port for out-of-band 1 Gigabit Ethernet management (OOB)
- Standard RS232 straight-through RJ45 for local management console (USB 2.0 to RS232 converter with PL203 chipset is advised)
- Non-Disruptive Configuration for applying a new configuration file without disrupting the operation of unchanged features
- Industry standard command line interface (CLI) only

NETGEAR warranty

- M4500 series is backed by a NETGEAR ProSAFE® Limited Lifetime Hardware Warranty*
- Lifetime Next Business Day Hardware Replacement
- ProSUPPORT 24x7 Advanced Technical Support via phone for 90 days (Remote diagnostics performed by our technical experts for prompt resolution of technical issues. ProSUPPORT coverage can be extended by purchasing one, three, or five year contracts)
- ProSUPPORT Lifetime 24x7 Advanced Technical Support via chat.

LIMITED LIFETIME Hardware Warranty

LIFETIME WARRANTY Next Business Day

LIFETIME Tech Support

Hardware at a Glance

Model name	Form-Factor	Switching Fabric	FRONT		REAR		MANAGEMENT	Model number
			25GBASE-X SFP28 ports	100GBASE-X QSFP28 ports	PSU	Fans	Out-of-band Console	
M4500-32C	**Full width** 1–unit 1U rack mount	6.4 Tbps		**32 ports** 1x100G; 1x50G; 1x40G; 4x25G; 4x10G **1x100G default mode**	**Modular 2 bays** 2 PSU included (1+1 redundancy): 2 x APS750W	**Modular 6 slots** 6 Fans included (4+2 redundancy): 6 x ATF402 Front-to-back 64.0dB	Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Front) Storage: USB (Front)	**CSM4532**
M4500-48XF8C	**Full width** 1–unit 1U rack mount	4 Tbps	**48 ports** 1x25G; 1x10G; 1x1G **1x10G default mode**	**8 ports** 1x100G; 1x100G; 1x50G; 1x40G; 4x25G; 4x10G **1x100G default mode**	**Modular 2 bays** 2 PSU included (1+1 redundancy): 2 x APS750W	**Modular 6 slots** 6 Fans included (4+2 redundancy): 6 x ATF402 Front-to-back 68.0dB	Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Front) Storage: USB (Front)	**XSM4556**

Front View

M4500-32C

M4500-48XF8C

Rear View

M4500-32C

M4500-48XF8C

Software at a Glance

Model name	Management[1]	Usability Enhancements	IPv4/IPv6 ACL and QoS, DiffServ	IPv4/IPv6 Multicast Filtering	Spanning Tree	VLANs	Trunking Port Channel	IPv4/IPv6 Authentication Security	IPv4/IPv6 Static Routing	IPv4/IPv6 Dynamic Routing	Datacenter Features	Model number
				LAYER 3 PACKAGE								
M4500 series	Out-of-band; CLI; Telnet; SSH SNMP, MIBs RSPAN Radius Users, TACACS+	Link Dependency (Enable or Disable one or more ports based on the link state of one or more different ports) CLI scheduler (Schedule fully-qualified EXEC mode CLI commands to run once, at specified intervals, at specified calendar dates and times, or upon system startup)	Ingress/ egress 1 Kbps shaping rate limit	IGMP Plus for automatic IGMP IGMPv3 MLDv2 Snooping, Proxy SSM IGMPv1,v2 Querier (compatible v3) Control Packet Flooding	STP, MTP, RSTP IEEE 802.1Q-2005 BPDU Guard	Static, Dynamic Double VLAN mod (QinQ)	Static or Dynamic LACP (LACP automatically reverts to and from Static LAG) Seven (7) L2/L3/L4 hashing algorithms Multi Chassis Link Aggregation Group (MLAG)	Successive Tiering (DOT1X; MAB) DHCP Snooping Dynamic ARP Inspection IP Source Guard	Port, Subnet, VLAN routing DHCP Relay Multicast static routes	IP Multinetting/CIDR PBR VRRPv2, OSPFv3 PIM-SM/SSM BGP4, VRF-Lite	PFC DCBX CoS Queuing and ETS VXLAN Gateway	All models

[1] CLI only

Performance at a Glance

Model name	MAC ARP/ NDP	Routing / Switching Capacity	Through-put	Application Route Scaling	Packet Buffer	Latency	IP Multicast Forwarding Entries	CPU	Multicast IGMP Group membership	VLANs	Link Aggregation Port Channel	sFlow	Model number
						TABLE SIZE							
M4500-32C	32K MAC 8K ARP 2.5K NDP	6.4 Tbps Line-rate	2 Bpps	Static routes: 128 IPv4 routes: 32K IPv6 routes: 24K IP IGMP/MLD: 2,048 PIM-SM: 1536 PIM-SMv6: 512	256 Mb	64-byte frames <0.13µs 100G QSFP28 <0.417µs 50G QSFP28 <0.15µs 40G QSFP+ <0.125µs 4x25G breakout <0.766µs 4x10G breakout	2,048 IPv4 2.048 IPv6	x86 Intel Atom® Processor C3558 8GB DDR3/ ECC RAM 128GB SSD storage	4K IPv4 / IPv6	4K VLANs	64 groups (LAG) 802.3ad with LACP 32 members/LAG 63 groups (MLAG) Multichassis LAG 32 members/MLAG	sFlow v5 8 sessions 416 samplers 416 pollers 8 receivers	CSM4532
M4500-48XF8C	32K MAC 8K ARP 2.5K NDP	4 Tbps Line-rate	2 Bpps	Static routes: 128 IPv4 routes: 32K IPv6 routes: 24K IP IGMP/MLD: 2,048 PIM-SM: 1536 PIM-SMv6: 512	256 Mb	64-byte frames <0.117µs 25G SFP28 <0.119µs 10G SFP+ <0.129µs 100G QSFP28 <0.129µs 50G QSFP28 <0.144µs 40G QSFP+							XSM4556

Components and Modules

M4500-32C
100GE Managed Switch

Ordering information

- Americas, Europe: CSM4532-100NAS
- Europe: CSM4532-100EUS
- Asia Pacific: CSM4532-100AJS
- China: CSM4532-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty

- The M4500-32C provides 32-port QSFP28 (100G, 50G and 40G)
- QSFP28 ports are preconfigured for 100G
- 6.4Tbps non-blocking fabric for 32 x 100G bi-directional
- Two modular power supplies APS750W are pre-installed for 1+1 redundancy
- Six modular fan trays AFT402 are pre-installed for 4+2 redundancy
- Two mounting ears and screws for rack mounting (front)
- One set of rail kits for rack mounting (back)
- Out-of-band 1G Ethernet Management port
- RJ45 RS232 console port and USB storage port
- L2/L3/L4 rich services for AV over IP (certified SDVoE-ready)
- Enhanced IGMP Plus for plug & play L2 Multicast between M4300/M4500 switches
- Line-rate spine and leaf with M4500-48XF8C (48-port SFP28 and 8-port QSFP28)
- Static and dynamic routing with VRRP, OSPF, BGP, VRF-Lite and PIM-SM/SSM
- 64dB @25°C / 77°F
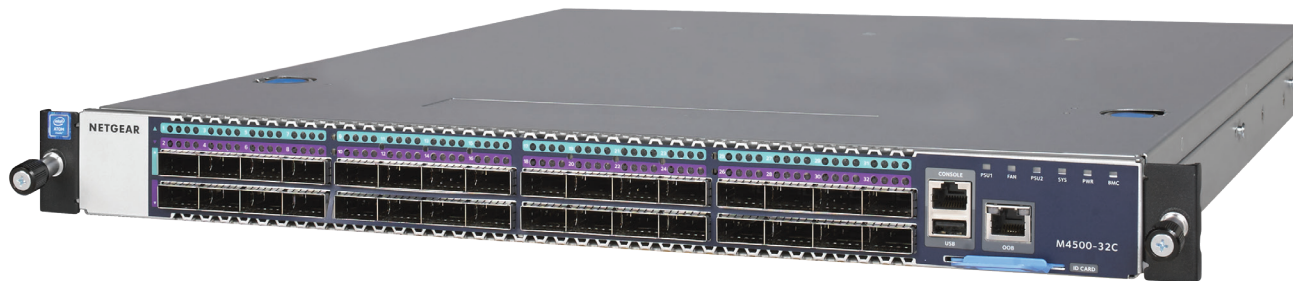
Components and Modules

M4500-48XF8C
25/100GE Managed Switch

Ordering information

- Americas, Europe: XSM4556-100NAS
- Europe: XSM4556-100EUS
- Asia Pacific: XSM4556-100AJS
- China: XSM4556-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty

- The M4500-48XF8C switch provides 48-port SFP28 (25G, 10G and 1G fiber)
- And it also provides 8-port QSFP28 (100G, 50G and 40G fiber)
- SFP28 ports are preconfigured for 10G, QSFP28 ports for 100G
- 4Tbps non-blocking fabric for 48 x 25G and 8 x 100G bi-directional
- Two modular power supplies APS750W are pre-installed for 1+1 redundancy
- Six modular fan trays AFT402 are pre-installed for 4+2 redundancy
- Two mounting ears and screws for rack mounting (front)
- One set of rail kits for rack mounting (back)
- Out-of-band 1G Ethernet Management port
- RJ45 RS232 console port and USB storage port
- L2/L3/L4 rich services for AV over IP (certified SDVoE-ready)
- Enhanced IGMP Plus for plug & play L2 Multicast between M4300/M4500 switches
- Line-rate spine and leaf with M4500-32C (32-port QSFP28)
- Static and dynamic routing with VRRP, OSPF, BGP, VRF-Lite and PIM-SM/SSM
- 68dB @25°C / 77°F

Accessories

APS750W
Power Supply Unit

Ordering information
- Wordwide: APS750W-10000S
- Without power cord
- Warranty: 5 years

- Modular PSU for M4500-32C and M4500-48XF8C
- C14 connector
- Spare unit (M4500 switches ship with two PSUs already)
- Capacity:
  – Up to 750W output power at 110V–240V AC

AFT402
Fan Tray

Ordering information
- Wordwide: AFT402-10000S
- Warranty: 5 years

- Modular fan tray for M4500-32C and M4500-48XF8C
- Front-to-back
- Spare unit (M4500 switches ship with six fans already)

GBIC QSFP28, QSFP+, SFP+ and SFP Optics for M4500 series

AGM734
1000BASE-T RJ45 SFP (Gigabit)

Ordering information
- Worldwide: AGM734-10000S
- Warranty: 5 years

- Fits into M4500 models SFP28 interfaces
- 1 port Gigabit RJ45
- Supports only 1000Mbps full-duplex mode
- Up to 100m (328 ft) with Cat5 RJ45 or better
- Conveniently adds 1G copper connectivity to M4500 fiber interfaces

AXM765
10GBASE-T RJ45 SFP+ (10 Gigabit)

Ordering information
- Worldwide: AXM765-10000S
- Warranty: 5 years

- Fits into M4500 models SFP28 interfaces
- 1 port 10GBASE-T RJ45
- Copper connectivity up to 30 m (98 feet) distance
- CAT6a or better wiring required for 10GBASE-T up to 30 meters
- Conveniently adds 10G copper connectivity to M4500 fiber interfaces

Accessories

GBIC QSFP28, QSFP+, SFP+ and SFP Optics for M4500 series

Ordering information · Worldwide: see table below · Warranty: 5 years	Multimode Fiber (MMF)		Single mode Fiber (SMF)
	OM1 or OM2 62.5/125µm	OM3 or OM4 50/125µm	9/125µm
100 Gigabit QSFP28 · Fits into M4500 models QSFP28 interfaces		**ACM761** 100GBASE-SR4 Duplex 4 MMF links – MTP/MPO connector up to 100m (328 ft) **ACM761-10000S (1 unit)**	**ACM762** 100GBASE-LR4 long reach single mode LC duplex connector up to 10km (6.2 miles) **ACM762-10000S (1 unit)**
40 Gigabit QSFP+ · Fits into M4500 models QSFP28 interfaces		**AXLM761** 40GBASE-SR4-BiDi Duplex 1 MMF link – LC duplex connector up to 100m (328 ft) **AXLM761-10000S (1 unit)**	**AXLM762** 40GBASE-LR4 long reach single mode LC duplex connector up to 10km (6.2 miles) **AXLM762-10000S (1 unit)**
10 Gigabit SFP+ · Fits into M4500 models QSFP28 interfaces	**AXM763** 10GBase-LRM long reach multimode 802.3aq – LC duplex connector up to 220m (722 ft) **AXM763-10000S (1 unit)**	**AXM763** 10GBase-LRM long reach multimode 802.3aq – LC duplex connector up to 260m (853 ft) **AXM763-10000S (1 unit)**	**AXM762** 10GBase-LR long reach single mode LC duplex connector up to 10km (6.2 miles) **AXM762-10000S (1 unit)** **AXM762P10-10000S (pack of 10 units)**
		AXM761 10GBase-SR short reach multimode LC duplex connector OM3: up to 300m (984 ft) OM4: up to 550m (1,804 ft) **AXM761-10000S (1 unit)** **AXM761P10-10000S (pack of 10 units)**	**AXM764** 10GBase-LR LITE single mode LC duplex connector up to 2km (1.2 mile) **AXM764-10000S (1 unit)**
Gigabit SFP · Fits into M4500 models QSFP28 interfaces	**AGM731F** 1000Base-SX short range multimode LC duplex connector up to 275m (902 ft) **AGM731F (1 unit)**	**AGM731F** 1000Base-SX short range multimode LC duplex connector OM3: up to 550m (1,804 ft) OM4: up to 1,000m (3,280 ft) **AGM731F (1 unit)**	**AGM732F** 1000Base-LX long range single mode LC duplex connector up to 10km (6.2 miles) **AGM732F (1 unit)**

Accessories

Direct Attach Cables for M4500 series

ORDERING INFORMATION **WORLDWIDE:** SEE TABLE BELOW **WARRANTY: 5 YEARS**	QSFP28 to QSFP28		
	1 meter (3.3 ft)	3 meters (9.8 ft)	
100 Gigabit DAC • Fits into M4500 models QSFP28 interfaces	**ACC761** 100G QSFP28 Cu (passive) QSFP28 connectors **ACC761-10000S (1 unit)**	**ACC763** 100G QSFP28 Cu (passive) QSFP28 connectors **ACC763-10000S (1 unit)**	
	QSFP+ to QSFP+		
40 Gigabit DAC • Fits into M4500 models QSFP28 interfaces	**AXLC761** 40G QSFP+ Cu (passive) QSFP+ connectors **AXLC761-10000S (1 unit)**	**AXLC763** 40G QSFP+ Cu (passive) QSFP+ connectors **AXLC763-10000S (1 unit)**	
	SFP+ to SFP+		
10 Gigabit DAC	1 meter (3.3 ft)	3 meters (9.8 ft)	5 meters (16.4 ft)
	AXC761 10GSFP+ Cu (passive) SFP+ connectors **AXC761-10000S (1 unit)**	**AXC763** 10GSFP+ Cu (passive) SFP+ connectors **AXC763-10000S (1 unit)**	**AXC765** 10GSFP+ Cu (active) SFP+ connectors **AXC765-10000S (1 unit)**
	7 meters (23.0 ft)	10 meters (32.8 ft)	15 meters (49.2 ft)
	AXC767 10GSFP+ Cu (active) SFP+ connectors **AXC767-10000S (1 unit)**	**AXC7610** 10GSFP+ Cu (active) SFP+ connectors **AXC7610-10000S (1 unit)**	**AXC7615** 10GSFP+ (duplex fiber optic) SFP+ connectors **AXC7615-10000S (1 unit)**
	20 meters (65.6 ft)		
	AXC7620 10GSFP+ (duplex fiber optic) SFP+ connectors **AXC7620-10000S (1 unit)**		

• Fits into M4500 models QSFP28 interfaces

NETGEAR ®