



SDVoE-Ready M4300-96X Up to 96-port 10G, PoE options

The NETGEAR® M4300 Stackable Switch Series delivers L2/L3/L4 and IPv4/IPv6 cost-effective services for mid-enterprise edge and SMB core deployments with unrivalled ease of use: 10/40 Gigabit models can seamlessly stack with 1 Gigabit models within the series, enabling spine and leaf line-rate topologies. Non-stop forwarding (NSF) virtual chassis architectures provide advanced High

Availability (HA) with hitless failover across the stack. Intelligent NETGEAR IGMP Plus™ multicast allows for scalable Pro AV installations at Layer 2 without the PIM complexity. Dual redundant, modular power supplies equipping full width models contribute to business continuity management. Layer 3 feature set includes static, dynamic and policy-based routing – as standard. The NETGEAR M4300

Switch Series is perfect for wireless access, unified communications and professional AV-over-IP installations.

NETGEAR Intelligent Edge Switch solutions combine latest advances in hardware and software engineering for higher flexibility, lower complexity and stronger investment protection, at a high-value price point.

Highlights

Best-in-class stacking

- M4300 is flexible enough for mixed stacking between 10/40 Gigabit and 1 Gigabit models, using any 10G/40G port with any media type (RJ45, SFP+, DAC cables)
- High-availability is another key differentiator for stackable solutions: in case of a master switch failure, NSF and hitless failover ensure the standby switch takes over while forwarding plane continues to forward traffic on the operational stack members without any service interruption

10G/40G modular solution

- The M4300-96X scales from 8 to 96 ports of 10G Ethernet by multiple of 8 ports, and from 2 to 24 ports of 40G Ethernet by multiple of 2 ports
- The 96X lets you start small with copper and fiber, including Multi-Gigabit 2.5G/5G and PoE+ over 10G, and grow later in “non-blocking” mode just by adding port expansion cards

Higher flexibility

- Two half-width M4300 switches can be paired in a single rack space for redundant Top of Rack installations with Auto-iSCSI prioritization
- Removing the need for Layer-3 PIM routing, IGMP Plus greatly simplifies system architectures with automated IGMP techniques across the entire AV over-IP network

Lower complexity

- Entire feature set including PTPv2, L2 switching (IGMP Plus) and L3 routing (static, RIP, OSPF, VRRP, PIM-SSM, PBR) is available without license
- DHCP/BootP innovative auto-installation including firmware and configuration file upload automation

Investment protection

- Line-rate spine and leaf stacking topologies offer multiple possibilities in server rooms, in branch collapsed cores or at the edge of growing networks
- Even if an organization is not ready for high-speed backbone, 10G and 40G models can be added later to stacks of 1G models

Secure services

- With successive tiering, the Authentication Manager allows for authentication methods per port for a tiered authentication based on configured time-outs
- With BYOD, tiered Dot1x -> MAB Captive Portal authentication is powerful and simple to implement with strict policies

Industry standard management

- Industry standard command line interface (CLI), functional NETGEAR web interface (GUI), SNMP, sFlow and RSPAN
- Single-pane-of-glass NMS300 management platform with centralized firmware updates and mass-configuration support

Industry leading warranty

- NETGEAR M4300 series is covered under NETGEAR ProSAFE Limited Lifetime Hardware Warranty**
- 90 days of Technical Support via phone and email, Lifetime Technical Support through online chat and Lifetime Next Business Day hardware replacement



Hardware at a Glance

| | | | FRONT | | | REAR | | MANAGEMENT | Model number | | | | | | | |
|---|--|------------------|---|---|------------------------------|---|--|--|------------------|---|-----------------------------|---|---|--|--|--|
| 10G models Model name | Form-Factor | Switching Fabric | 10GBASE-T RJ45 ports | 10GBASE-X SFP+ ports | 40GBASE-X QSFP+ ports | PSU | Fans | Out-of-band Console | | | | | | | | |
| M4300-8X8F | Half-width 1-unit 1U 2-unit 1U rack mount | 320 Gps | 8 ports (independent) 100M; 1G; 10G | 8 ports (independent) 1G; 10G | - | Modular 1 bay 1 PSU included: APS250W | Fixed Front-to-back 36.9dB | Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Front) Console: Mini-USB (Front) Storage: USB (Front) | XSM4316S | | | | | | | |
| M4300-16X | Half-width 1-unit 1U 2-unit 1U rack mount | 320 Gps | 16 ports PoE+100M; 1G; 2.5G; 5G; 10G | - | - | Modular 1 bay For either APS299W or APS600W | Fixed Front-to-back 35dB | Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | XSM4316PA | | | | | | | |
| | | | | | | | | 199W PoE Budget | | 1 PSU included: APS299W | XSM4316PB | | | | | |
| | | | | | | | | 500 W PoE Budget | | 1 PSU included: APS600W | | | | | | |
| M4300-12X12F | Half-width 1-unit 1U 2-unit 1U rack mount | 480 Gps | 12 ports (independent) 100M; 1G; 10G | 12 ports (independent) 1G; 10G | - | Modular 1 bay 1 PSU included: APS250W | Fixed Front-to-back 36.9dB | Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | XSM4324S | | | | | | | |
| M4300-24X | Half-width 1-unit 1U 2-unit 1U rack mount | 480 Gps | 24 ports 100M; 1G; 10G | 4 ports (shared, back) 1G; 10G | - | Modular 1 bay 1 PSU included: APS250W | Fixed Front-to-back 37dB | Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | XSM4324CS | | | | | | | |
| M4300-24XF | Half-width 1-unit 1U 2-unit 1U rack mount | 480 Gps | 24 ports (shared, back) 100M; 1G; 10G | 24 ports 1G; 10G | - | Modular 1 bay 1 PSU included: APS250W | Fixed Front-to-back 39.07dB | Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | XSM4324FS | | | | | | | |
| M4300-24X24F | Full width 1-unit 1U rack mount | 960 Gps | 24 ports (independent) 100M; 1G; 10G | 24 ports (independent) 1G; 10G | - | Modular 2 bays 1 PSU included: APS250W | Fixed Front-to-back 35.8dB | Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Front) Console: Mini-USB (Front) Storage: USB (Front) | XSM4348S | | | | | | | |
| M4300-48X | Full width 1-unit 1U rack mount | 960 Gps | 48 ports 100M; 1G; 10G | 4 ports (shared) 1G; 10G | - | Modular 2 bays 1 PSU included: APS250W | Fixed Front-to-back 40.3dB | Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | XSM4348CS | | | | | | | |
| M4300-48XF | Full width 1-unit 1U rack mount | 960 Gps | 2 ports (shared) 100M; 1G; 10G | 48 ports 1G; 10G | - | Modular 2 bays 1 PSU included: APS250W | Fixed Front-to-back 42.04dB | Ethernet: Out-of-band 1G port (Back) Console: RJ45 RS232 (Back) Console: Mini-USB (Back) Storage: USB (Back) | XSM4348FS | | | | | | | |
| M4300-96X | Modular 1-unit 2U rack mount | 1.920 Tbps | up to 96 ports 100M; 1G; 2.5G; 5G; 10G | up to 96 ports 1G; 10G | Up to 24 ports 40G | Modular 2 bays for APS600W or APS1200W | Fixed Front-to-back 35.8dB (no PoE) 66.8dB (max PoE) | | XSM4396K0 | | | | | | | |
| | | | | | | | | 12 slots for port expansion cards: | | APM408C (8 ports) APM408P (8 ports PoE+)* | APM408F (8 ports) | APM402XL (2 ports) | Empty switch version, no PSU (PSU must be purchased separately) | | | |
| | | | | | | | | * Only first 6 slots are delivering PoE power to APM408P cards for 48 PoE+ ports per switch. APS1200W PSU is preferred for PoE applications. | | | | | | | | |
| | | | | | | | | 110V/220V AC | | 34W (min) 232W (max) PoE Budget with 1 x APS600W PSU, or 1+1 redundant* | 110V/220V AC | 1,440W (min/max) PoE Budget with 2 x APS1200W PSUs in shared mode* | | | | |
| | | | | | | | | 110V/220V AC 110V AC | | 634W (min) 832W (max) PoE Budget with 2 x APS600W PSUs in shared mode 484W (min) 682W (max) PoE Budget with 1 x APS1200W PSU, or 1+1 redundant | 110V AC 220V AC | 1,084W (min) 1,282W (max) PoE Budget with APS600W+APS1200W PSUs in shared mode 432W (max) PoE Budget with APS600W+APS1200W PSUs in shared mode | | | | |
| 220V AC | 634W (min) 832W (max) PoE Budget with 1 x APS1200W PSU, or 1+1 redundant | | | | | | | | | | | | | | | |
| M4300-96X online configurator: www.netgear.com/96x-config | | | | | | | | | | | | | | | | |

* PoE Budget depends on number of PSU and APM port cards per switch. Min values above are guaranteed when 6xAPM408P (48x10G PoE+) plus any combination of 6 other port cards. Max values are guaranteed when only 6xAPM408P (48x10G PoE+) per switch, or less. APS600W provides 600W@110V/220VAC; APS1200W delivers 1,050W@110VAC or 1,200W@220VAC per PSU. The system consumes 110W, plus 5W per empty slot. APM408C/APM408P consume 38W per port card. APM408F/APM402XL consume 23W per port card.

Hardware at a Glance

| | | | FRONT | | | REAR | | MANAGEMENT | |
|-------------------------|--|------------------|--|--|--------------------------------------|---|---|--|--|
| 1G models Model name | Form-Factor | Switching Fabric | 10/100/ 1000 BASE-T RJ45 ports | 100/1000/ 10G BASE-T RJ45 ports | 1000/10G BASE-X SFP+ ports | PSU | Fans | Out-of-band Console | Model number |
| M4300-28G | Full width 1-unit 1U rack mount | 128 Gps | 24 ports (No 10M/half on ports 17-24) | 2 ports (independent) 100M; 1G; 10G | 2 ports (independent) 1G; 10G | Modular 2 bays 1 PSU included: APS150W | Fixed Front-to-back 30.3dB | Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | GSM4328S |
| M4300-52G | Full width 1-unit 1U rack mount | 176 Gps | 48 ports (No 10M/half 17-24 and 41-48) | 2 ports (independent) 100M; 1G; 10G | 2 ports (independent) 1G; 10G | Modular 2 bays 1 PSU included: APS150W | Fixed Front-to-back 31.5dB | Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | GSM4352S |
| M4300-28G-PoE+ | Full width 1-unit 1U rack mount | 128 Gps | 24 ports PoE+ (No 10M/half on ports 17-24) | 2 ports (independent) 100M; 1G; 10G | 2 ports (independent) 1G; 10G | Modular 2 bays 1 PSU included: APS550W | Fixed Front-to-back 39.8dB | Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | GSM4328PA |
| | | | | | | | | 110V AC input 220V AC input | 630W PoE Budget with 1 PSU 630W PoE Budget with 2 PSUs in RPS mode 720W PoE Budget with 2 PSUs in EPS mode |
| M4300-52G-PoE+ | Full width 1-unit 1U rack mount | 176 Gps | 48 ports PoE+ (No 10M/half 17-24 and 41-48) | 2 ports (independent) 100M; 1G; 10G | 2 ports (independent) 1G; 10G | Modular 2 bays RPS connector 1 PSU included: APS550W | Fixed Front-to-back 39.8dB | Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front) | GSM4352PA |
| | | | | | | | | 110V/220V AC input 110V AC input 220V AC input | 480W PoE Budget with 1 PSU 480W PoE Budget with 2 PSUs in RPS mode 720W PoE Budget with 2 PSUs in EPS mode |

PoE models: APS550W and APS1000W cannot be mixed and matched. A switch can only have two APS550W, or two APS1000W. PA versions can be upgraded to PB, but their APS550W must be replaced by APS1000W (and reverse).

Software at a Glance

| LAYER 3 PACKAGE | | | | | | | | | | | | |
|---------------------|--|---|--|--|---|--|--|---|--|---|---|-------------------|
| Model name | Management | Usability Enhancements | IPv4/IPv6 ACL and QoS, DiffServ | IPv4/IPv6 Multicast | IPv4 / IPv6 Policing and Convergence | Spanning Tree Green Ethernet | VLANs | Trunking Port Channel | IPv4/IPv6 Authentication Security | IPv4/IPv6 Static Routing | IPv4/IPv6 Dynamic Routing | Model number |
| M4300 series | Out-of-band; Web GUI; HTTPS; CLI; Telnet; SSH SNMP, MIBs RSPAN Radius Users, TACACS+ | Stacking NSF with Hitless Failover Link Dependency (Enable or Disable one or more ports based on the link state of one or more different ports) Syslog and Packet Captures can be sent to USB storage | Ingress/ egress 1 Kbps shaping Time-based Single Rate Policing | NETGEAR IGMP Plus™ for automatic IGMP IGMPv3 MLDv2 Snooping, Proxy ASM & SSM IGMPv1,v2 Querier (compatible v3) Control Packet Flooding | Auto-VoIP Auto-iSCSI Policy-based routing (PBR) LLDP-MED IEEE 1588 PTPv2** 1-Step End-to-End Transparent Clock | STP, MTP, RSTP PV(R)STP1 BPDU/STRG Root Guard EEE (802.3az) | Static, Dynamic, Voice, MAC GVRP/ GMRP Double VLAN mode Private VLANs | Distributed LAG across the stack Static or Dynamic LACP (LACP automatically reverts to and from Static LAG) Seven (7) L2/ L3/L4 hashing algorithms | Successful Tiering (DOT1X; MAB; Captive Portal) DHCP Snooping Dynamic ARP Inspection IP Source Guard | Port, Subnet, VLAN routing, DHCP Relay; Multicast static routes; Stateful DHCPv6 Server | IPv4: RIP, VRRP IPv4/IPv6: OSPF, Proxy ARP, PIM-SM, PIM-DM, 6-to-4 tunnels | All models |

CLI only ** All M4300 models except 48-port 10G platforms (M4300-24X24F, M4300-48X, M4300-48XF). Standalone mode, or Stack Master only. On M4300-52G and M4300-52G-PoE+ models, PTP is supported between port 1 and port 24, and between port 25 and port 48.

Performance at a Glance

| TABLE SIZE* | | | | | | | | | | | | | |
|--|-------------------------------|--|----------------|--|--|---|---------------------------------|---|---------------------------------|----------|---|--|---|
| Model name | MAC ARP/ NDP | Routing / Switching Capacity | Throughput | Application Route Scaling | Packet Buffer | Latency | IP Multicast Forwarding Entries | CPU | Multicast IGMP Group membership | VLANs | DHCP | sFlow | Model number |
| M4300-96X | 256K MAC* 8K ARP/ NDP* | 1.920 Tbps Line-rate | 2,857 Mpps | Static: 64v4/ 64v6 RIP: 512 OSPF: 12,000 | 96Mb | 64-byte frames <2.56µs 10G RJ45 <0.89µs 10G SFP | 2,048 IPv4 1,024 IPv6 | CPU 1.4 Ghz 2GB RAM 256MB Flash | | | | | XSM4396K0 XSM4396K1 |
| M4300-24X24F M4300-48X M4300-48XF | 128K MAC* 8K ARP/ NDP* | 960 Gbps Line-rate | 714 Mpps | Static: 64v4/ 64v6 RIP: 512 OSPF: 12,000 | 56Mb | M4300-24X24F <2.39µs 10G RJ45 <0.88µs 10G SFP+ M4300-48X <2.41µs 10G RJ45 <1.51µs 10G SFP+ M4300-48XF <1.245µs 10G RJ45 <0.9µs 10G SFP+ | 1,024 IPv4 512 IPv6 | CPU 800 Mhz 1GB RAM 256MB Flash | 2K IPv4 2K IPv6 | 4K VLANs | DHCP Server: 2K leases IPv4: 256 pools IPv6: 16 pools | 416 samplers 416 pollers 8 receivers | XSM4348S XSM4348CS XSM4348FS |
| M4300 other models | 16K MAC 888 ARP/ NDP | Up to 480 Gbps All models Line-rate | Up to 357 Mpps | Static: 64v4/ 64v6 RIP: 512 OSPF: 512 | M4300-12X12F, 24X and 24XF: 32Mb Others: 16Mb | M4300-8X8F: <2.43µs 10G RJ45 <0.89µs 10G SFP+ All others: <2.76µs 10G RJ45 <1.83µs 10G SFP+ | 96 IPv4 32 IPv6 | CPU 800 Mhz 1GB RAM 256MB Flash | | | | | All other models |

* For mixed stacking between more capable devices and less capable devices, SDM mixed stacking template is used based on "least common denominator" set of capacities and capabilities. Other SDM "native" templates can be used on superior platforms, for a larger table size. A stack requires an uniform table size across all stack members.

Product Brief

The M4300 Stackable L3 Managed Switch Series comes with 40G, 10G and 1G models in a variety of form factors including PoE+ full provisioning. M4300 Switch Series delivers IPv4/IPv6 rich services for mid-enterprise edge and SMB core with mixed stacking between 40-, 10- and 1-Gigabit models. Layer 3 feature set includes static and policy-based routing, RIP, VRRP, OSPF, and PIM dynamic routing. M4300 is ideal for server aggregation, wireless access, unified communications and Video-over-IP.

NETGEAR M4300 series key features:

- Cost effective 1G access layer in campus LAN networks, and high performance 10G/40G distribution layer for midsize organizations networks
- Zero Touch AV-over-IP with pre-configured L2 Multicast (SDVoE-ready)
- Advanced Layer 2, Layer 3 and Layer 4 feature set - no license required - including Policy Based Routing, RIP, VRRP, OSPF and PIM
- Innovative mixed “Spine and Leaf”, 1G, 10G and 40G stacking with nonstop forwarding (NSF) and hitless failover redundancy
- Low acoustics, half-width 16-port and 24-port 10G models can be paired in a single rack space for redundant Top of Rack
- Modular 12-slot 2RU model scaling up to 96-port 10G by multiple of 8 ports or 24-port 40G by multiple of 2 ports
- Up to 768 (10 Gigabit) ports, 192 (40 Gigabit) ports or 384 (1 Gigabit) ports, or a combination in a single logical switch
- PoE+ (30 watts per port) with hot swap, redundant power supplies and full provisioning

NETGEAR M4300 series software features:

- Advanced classifier-based, time-based hardware implementation for L2 (MAC), L3 (IP) and L4 (UDP/TCP transport ports) security and prioritization
- Selectable Port-Channel/LAG (802.3ad - 802.1AX) L2/L3/L4 hashing for fault tolerance and load sharing with any type of Ethernet channeling
- Voice VLAN with SIP, H323 and SCCP protocols detection and LLDP-MED IP phones automatic QoS and VLAN configuration
- Efficient authentication tiering with successive DOT1X, MAB and Captive Portal methods for streamlined BYOD
- Comprehensive IPv4/IPv6 static and dynamic routing including Proxy ARP, OSPF, Policy-based routing and automatic 6-to-4 tunneling
- Scalable Pro AV deployments with NETGEAR IGMP Plus™ automatic L2 multicast (only subscribed videos flow from one switch to the other across the L2 topology)
- High performance IPv4/IPv6 multicast routing with PIM timer accuracy and unhandled PIM (S,G,rpt) state machine events transitioning
- Advanced IPv4/IPv6 security implementation including malicious code detection, DHCP Snooping, IP Source Guard protection and DoS attacks mitigation
- Innovative multi-vendor Auto-iSCSI capabilities for easier virtualization optimization

NETGEAR M4300 series resiliency and availability features:

- Dual redundant, modular power supplies equipping full width models contribute to business continuity management
- Vertical or horizontal flexible stacking with management unit hitless failover and nonstop forwarding (NSF) across operational stack members
- Spine and leaf architecture with every leaf switch (1G access switches) connecting to every spine switch (distributed 10G “core” switches)
- Stacking and distributed link aggregation allow for multi-resiliency with zero downtime and load balancing capabilities
- Link Dependency new feature enables or disables ports based on the link state of different ports
- Per VLAN Spanning Tree and Per VLAN Rapid Spanning Tree (PVSTP/PVRSTP) offer interoperability with PVST+ infrastructures

NETGEAR M4300 series management features:

- DHCP/BootP innovative auto-installation including firmware and configuration file upload automation
- Industry standard SNMP, RMON, MIB, LLDP, AAA, sFlow, RSPAN and PTPv2 1-step transparent clock implementation (select M4300 models)
- Service port for out-of-band Ethernet management (OOB)
- Standard RS232 straight-through serial RJ45 and Mini-USB ports for local management console
- Standard USB port for local storage, logs, configuration or image files
- Dual firmware image for updates with minimum service interruption
- Industry standard command line interface (CLI) for IT admins used to other vendors commands
- Fully functional Web console (GUI) for IT admins who prefer an easy to use graphical interface
- Single-pane-of-glass NMS300 management platform with mass-configuration support

NETGEAR M4300 series warranty and support:

- NETGEAR ProSAFE Limited Lifetime Hardware Warranty**
- Included Lifetime Technical Support
- Included Lifetime Next Business Day Hardware Replacement

Modern access layer features highlights

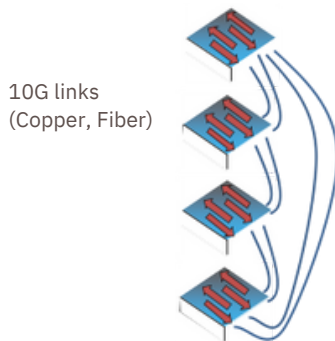
High Density Layer 2/Layer 3/Layer 4 Stackable Switch Solution

M4300 switch series supports Nonstop Forwarding (NSF) virtual chassis stacking with up to 8 switches in a single logical switch, with hitless management failover

- Any 40G or 10G port (copper, fiber) and any media type (RJ45, SFP+, DAC) can be used for stacking on any M4300 models
- Hot-swappable stacking of up to 8 units, vertical or horizontal
- 40G and 10G models can stack with 1G models in legacy dual ring topologies, or innovative spine and leaf topologies
- L2, L3 and L4 switching features (access control list, classification, filtering, IPv4/IPv6 routing, IPv6 transition services) are performed in hardware at interface line rate for voice, video, and data convergence

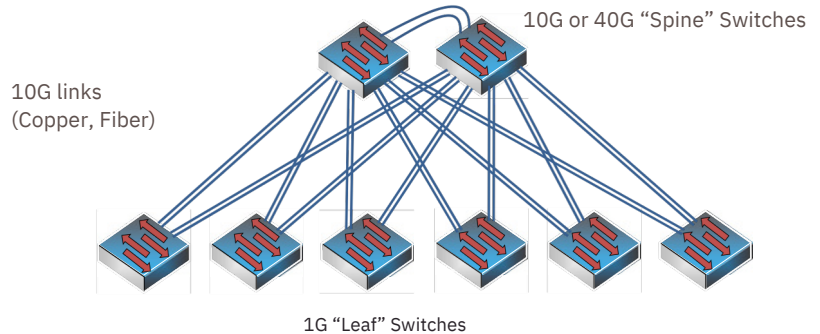
M4300 series Layer 3 software package provides advanced IPv4/IPv6 fault tolerant routing capabilities for interfaces, VLANs, subnets and multicast

Example of single or dual ring topology:



1G models: up to (4) 10G ports per switch can be used for stacking (depending on inter-switch links oversubscription requirements)

Example of spine and leaf topology:



10G/40G models: up to (16) 40G or 10G ports per switch can be used for stacking (again, depending on oversubscription requirements between switches)

Best value switching performance:

96p 10G models: 256K MAC address table, 4K concurrent VLANs and 12K Layer 3 route table size for the most demanding enterprise or campus networks

48p 10G models: 128K MAC address table and same other constants as 96p 10G models

All other models: 16K MAC address table, 4K concurrent VLANs and 512 Layer 3 route table size for typical midsize environments

Mixed stacking between more capable and less capable devices uses SDM template based on "least common denominator" set of capacities and capabilities

Each switch provides line-rate local switching and routing capacity

80 PLUS certified power supplies for energy high efficiency

Full width models come with two PSU bays: a second PSU (sold separately) will add 1+1 power redundancy

Increased packet buffering with up to 96Mb (96p 10G models), 72 Mb (48p 10G models), 32 Mb (24p 10G models) and 16 Mb (all other models)

Low latency at all network speeds, including 40 Gigabit and 10 Gigabit copper / fiber interfaces

Jumbo frames support of up to 9Kb accelerating storage performance for backup and cloud applications

iSCSI Flow Acceleration and Automatic Protection/ QoS for virtualization and server room networks containing iSCSI initiators and iSCSI targets

- Detecting the establishment and termination of iSCSI sessions and connections by snooping packets used in the iSCSI protocol
- Maintaining a database of currently active iSCSI sessions and connections to store data, including classifier rules for desired QoS treatment
- Installing and removing classifier rule sets as needed for the iSCSI session traffic
- Monitoring activity in the iSCSI sessions to allow for aging out session entries if the session termination packets are not received
- Avoiding session interruptions during times of congestion that would otherwise cause iSCSI packets to be dropped

Tier 1 availability

Virtual Chassis Stacking technology upsurges overall network availability, providing both better resiliency in network architectures, and better performance with advanced load balancing capabilities between network uplinks

- Up to (8) M4300 switches can be aggregated using a virtual back plane and a single console or web management interface
- There is no 10G or 40G port pre-configured as Stacking port: all 10G or 40G ports are configured in Ethernet mode by default
 - Port configuration can be changed to Stack mode in Web GUI (System/ Stacking/Advanced/Stack-port Configuration)
 - Or using CLI command << #stack-port unit/slot/port stack >> in Stack Global Configuration section
- Other devices in the network see the stack as a single bridge or a single router
- Within the stack, a switch is elected (or chosen based on priority settings) as the “management unit” responsible for the stack members’ routing tables
- Another switch is designated (or chosen based on priority settings) as an alternate, backup management unit
- In typical spine and leaf architectures, 10G / 40G “spine” switches are meant to handle management unit and backup management unit roles
- The Non-Stop Forwarding (NSF) feature enables the stack to secure forwarding end-user traffic when the management unit fails
- Non-Stop Forwarding is supported for the following events:
 - Power failure of the management unit
 - Other hardware failure causing the management unit to hang or to reset
 - Software failure causing the management unit to hang or to reset
 - Failover initiated by the administrator
 - Loss of cascade connectivity between the management unit and the backup unit
- As the backup management unit takes over, end-user data streams may lose a few packets, but do not lose their IP sessions, such as VoIP calls
- Instant failover from management unit to redundant management unit is hitless for world-class resiliency and availability
- Back to normal production conditions, hitless fallback requires a command in CLI or in GUI, for more control

Adding a second PSU to full width models enables redundant 1+1 power protection and contributes to business continuity management

Distributed Link Aggregation, also called Port Channeling or Port Trunking, offers powerful network redundancy and load balancing between stacked members

- Servers and other network devices benefit from greater bandwidth capacity with active-active teaming (LACP—link aggregation control protocol)
- From a system perspective, a LAG (Link Aggregation Group) is treated as a physical port by M4300 stack for even more simplicity

Rapid Spanning Tree (RSTP) and Multiple Spanning Tree (MSTP) allow for rapid transitioning of the ports to the Forwarding state and the suppression of Topology Change Notification

NETGEAR PVSTP implementation (CLI only) follows the same rules than other vendor’s Per VLAN STP for strict interoperability

- Including industry-standard PVST+ interoperability
- PVSTP is similar to the MSTP protocol as defined by IEEE 802.1s, the main difference being PVSTP runs one instance per VLAN
- In other words, each configured VLAN runs an independent instance of PVSTP
- FastUplink feature immediately moves an alternate port with lowest cost to forwarding state when the root port goes down to reduce recovery time
- FastBackbone feature selects new indirect port when an indirect port fails

NETGEAR PVRSTP implementation (CLI only) follows the same rules than other vendor’s Per VLAN RSTP for strict interoperability

- Including industry-standard RPVST+ interoperability
- PVRSTP is similar to the RSTP protocol as defined by IEEE 802.1w, the main difference being PVRSTP runs one instance per VLAN
- In other words, each configured VLAN runs an independent instance of PVRSTP
- Each PVRSTP instance elects a root bridge independent of the other
- Hence there are as many Root Bridges in the region as there are VLANs configured
- Per VLAN RSTP has in built support for FastUplink and FastBackbone

IP address conflict detection performed by embedded DHCP servers prevents accidental IP address duplicates from perturbing the overall network stability

IP Event Dampening reduces the effect of interface flaps on routing protocols: the routing protocols temporarily disable their processing (on the unstable interface) until the interface becomes stable, thereby greatly increasing the overall stability of the network

Ease of deployment

Automatic configuration with DHCP and BootP Auto Install eases large deployments with a scalable configuration files management capability, mapping IP addresses and host names and providing individual configuration files to multiple switches as soon as they are initialized on the network

Both the Switch Serial Number and Switch primary MAC address are reported by a simple "show" command in the CLI - facilitating discovery and remote configuration operations

M4300 DHCP L2 Relay agents eliminate the need to have a DHCP server on each physical network or subnet

- DHCP Relay agents process DHCP messages and generate new DHCP messages
- Supports DHCP Relay Option 82 circuit-id and remote-id for VLANs
- DHCP Relay agents are typically IP routing-aware devices and can be referred to as Layer 3 relay agents

Automatic Voice over IP prioritization with Auto-VoIP simplifies most complex multi-vendor IP telephones deployments either based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address; providing the best class of service to VoIP streams (both data and signaling) over other ordinary traffic by classifying traffic, and enabling correct egress queue configuration

An associated Voice VLAN can be easily configured with Auto-VoIP for further traffic isolation

When deployed IP phones are LLDP-MED compliant, the Voice VLAN will use LLDP-MED to pass on the VLAN ID, 802.1P priority and DSCP values to the IP phones, accelerating convergent deployments

Versatile connectivity

24- and 48-port 1G models with 10G uplinks, including 2-port 10GBASE-T and 2-port 10GBASE-X SFP+

IEEE 802.3at Power over Ethernet Plus (PoE+) provides up to 30W power per port using 2 pairs while offering backward compatibility with 802.3af

- IEEE 802.3at Layer 2 LLDP method and 802.3at PoE+ 2-event classification method fully supported for compatibility with most PoE+ PD devices

16-, 24-, 48- and 96-port 10G models with a variety of 10GBASE-T and 10GBASE-X SFP+ interfaces

M4300-96X offers 12 slots for 8x10G or 2x40G port expansion cards and hundreds of combinations

Large 10 Gigabit choice with SFP+ ports for fiber or short, low-latency copper DAC cables; 10GBASE-T ports for legacy Cat6 RJ45 short connections (up to 55m) and Cat6A / Cat7 connections up to 100m

Automatic MDIX and Auto-negotiation on all ports select the right transmission modes (half or full duplex) as well as data transmission for crossover or straight-through cables dynamically for the admin

1G models (M4300-28G and M4300-52G, PoE+ versions included): the 10 Mbps / Half Duplex mode isn't supported on ports 17-24 and 41-48

Link Dependency feature enables or disables one or more ports based on the link state of one or more different ports

IPv6 full support with IPv6 host, dual stack (IPv4 and IPv6), multicasting (MLD for IPv6 filtering and PIM-SM / PIM-DM for IPv6 routing), ACLs and QoS, static routing and dynamic routing (OSPFv3) as well as Configured 6to4 and Automatic 6to4 tunneling for IPv6 traffic encapsulation into IPv4 packets

Ease of management and granular control

Dual firmware image and dual configuration file for transparent firmware updates / configuration changes with minimum service interruption

Flexible Port-Channel/LAG (802.3ad - 802.1AX) implementation for maximum compatibility, fault tolerance and load sharing with any type of Ethernet channeling from other vendors switch, server or storage devices conforming to IEEE 802.3ad - including static (selectable hashing algorithms) - or to IEEE 802.1AX with dynamic LAGs or port-channel (highly tunable LACP Link Aggregation Control Protocol)

LACP mode automatically reverts to and from Static LAG, useful when the host isn't LACP anymore, for instance during a factory reset or re-configuration

Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD detect and avoid unidirectional links automatically, in order to prevent forwarding anomalies in a Layer 2 communication channel in which a bi-directional link stops passing traffic in one direction

Port names feature allows for descriptive names on all interfaces and better clarity in real word admin daily tasks

SDM (System Data Management, or switch database) templates allow for granular system resources distribution depending on IPv4 or IPv6 applications

- ARP Entries (the maximum number of entries in the IPv4 Address Resolution Protocol ARP cache for routing interfaces)
- IPv4 Unicast Routes (the maximum number of IPv4 unicast forwarding table entries)
- IPv6 NDP Entries (the maximum number of IPv6 Neighbor Discovery Protocol NDP cache entries)
- IPv6 Unicast Routes (the maximum number of IPv6 unicast forwarding table entries)
- ECMP Next Hops (the maximum number of next hops that can be installed in the IPv4 and IPv6 unicast forwarding tables)
- IPv4 Multicast Routes (the maximum number of IPv4 multicast forwarding table entries)
- IPv6 Multicast Routes (the maximum number of IPv6 multicast forwarding table entries)

Loopback interfaces management for routing protocols administration

Private VLANs and local Proxy ARP help reduce broadcast with added security

Management VLAN ID is user selectable for best convenience

Industry-standard VLAN management in the command line interface (CLI) for all common operations such as VLAN creation; VLAN names; VLAN “make static” for dynamically created VLAN by GVRP registration; VLAN trunking; VLAN participation as well as VLAN ID (PVID) and VLAN tagging for one interface, a group of interfaces or all interfaces at once

Simplified VLAN configuration with industry-standard Access Ports for 802.1Q unaware endpoints and Trunk Ports for switch-to-switch links with Native VLAN

System defaults automatically set per-port broadcast, multicast, and unicast storm control for typical, robust protection against DoS attacks and faulty clients which can, with BYOD, often create network and performance issues

IP Telephony administration is simplified with consistent Voice VLAN capabilities per the industry standards and automatic functions associated

Comprehensive set of “system utilities” and “Clear” commands help troubleshoot connectivity issues and restore various configurations to their factory defaults for maximum admin efficiency: traceroute (to discover the routes that packets actually take when traveling on a hop-by-hop basis and with a synchronous response when initiated from the CLI), clear dynamically learned MAC addresses, counters, IGMP snooping table entries from the Multicast forwarding database etc...

Syslog and Packet Captures can be sent to USB storage for rapid network troubleshooting

Replaceable factory-default configuration file for predictable network reset in distributed branch offices without IT personnel

All major centralized software distribution platforms are supported for central software upgrades and configuration files management (HTTP, TFTP), including in highly secured versions (HTTPS, SFTP, SCP)

Simple Network Time Protocol (SNTP) can be used to synchronize network resources and for adaptation of NTP, and can provide synchronized network timestamp either in broadcast or unicast mode (SNTP client implemented over UDP - port 123)

Embedded RMON (4 groups) and sFlow agents permit external network traffic analysis

Engineered for convergence and AV-over-IP

Audio (Voice over IP) and Video (multicasting) comprehensive switching, filtering, routing and prioritization

Auto-VoIP, Voice VLAN and LLDP-MED support for IP phones QoS and VLAN configuration

IEEE 1588 (section 10 and 11.5) PTPv2 Transparent Clock (TC) End-to-End implementation considering the residence time of PTPv2 packets from ingress to egress

- The 48-port 10G models (M4300-24X24F, M4300-48X, M4300-48XF) don't support PTPv2 E2E TC
- 1-step Transparent Clock mode, using the residence time of the PTPv2 packet at the egress port level in Standalone mode, or Stack Master only
- On M4300-52G and M4300-52G-PoE+ models, PTPv2 is supported between port 1 and port 24, and between port 25 and port 48
- The “Sync & Delay_Req” field of passing/egressing out PTPv2 packets is updated with the residence time in the switch, the other fields in PTPv2 packets (“Announce”, “Delay_Resp”, “Pdelay_Req” and “Pdelay_Resp”) are not updated

NETGEAR IGMP Plus™ enhanced implementation for automatic multicast across a M4300 / M4500 L2 network (Spine and Leaf topologies), removing the need for L3 PIM routing

- IGMP Plus is pre-configured on default VLAN 1 out of the box in all M4300 and M4500 models (M4300: starting 12.0.8.x release)
- IGMP Plus can be configured on another VLAN for automatic IGMP across switches on that VLAN (uplinks can make part of that VLAN in trunk mode)
- IGMP Plus allow AV-over-IP devices (TX/Encoders and RX/Decoders) to be connected across multiple M4300 and M4500 switches in a star topology
- New show igmpsnooping group command in CLI and GUI displays the Source and Group IP addresses along with their corresponding MAC addresses that are learnt through IGMP Snooping in a given VLAN on a given interface

IGMP Snooping and Proxy for IPv4, MLD Snooping and Proxy for IPv6, and Querier mode facilitate fast receivers joins and leaves for multicast streams and ensure multi-cast traffic only reaches interested receivers everywhere in a Layer 2 or a Layer 3 network, including source-specific (SSM) and any-source (ASM) multicast

Multicast VLAN Registration (MVR) uses a dedicated Multicast VLAN to forward multicast streams and avoid duplication for clients in different VLANs

Distance Vector Multicast Routing Protocol (DVMRP) is a dense mode multicast protocol also called Broadcast and Prune Multicasting protocol

- DVMRP uses a distributed routing algorithm to build per-source-group multicast trees
- DVMRP assumes that all hosts are part of a multicast group until it is informed of multicast group changes
- It dynamically generates per-source-group multicast trees using Reverse Path Multicasting
- Trees are calculated and updated dynamically to track membership of individual groups
- Multicast static routes allowed in Reverse Path Forwarding (RPF) selection
- Multicast dynamic routing (PIM associated with OSPF) including PIM multi-hop RP support for routing around

Multicast routing (PIM-SM and PIM-DM, both IPv4 and IPv6) ensure multicast streams can reach receivers in different L3 subnets

- damage advanced capabilities
- Full support of PIM (S,G,Rpt) state machine events as described in RFC 4601
- Improved Multicast PIM timer accuracy with hardware abstraction layer (HAPI) polling hit status for multicast entries in real time (without caching)

PoE power management and schedule enablement

Power redundancy for higher availability when mission critical convergent installation, including hot-swap main PSU replacement without interruption

Layer 3 routing package

Static Routes/ECMP Static Routes for IPv4 and IPv6

- Static and default routes are configurable with next IP address hops to any given destination
- Permitting additional routes creates several options for the network administrator
- The admin can configure multiple next hops to a given destination, intending for the router to load share across the next hops
- The admin distinguishes static routes by specifying a route preference value: a lower preference value is a more preferred static route
- A less preferred static route is used if the more preferred static route is unusable (down link, or next hop cannot be resolved to a MAC address)
- Preference option allows admin to control the preference of individual static routes relative to routes learned from other sources (such as OSPF) since a static route will be preferred over a dynamic route when routes from different sources have the same preference

Advanced Static Routing functions for administrative traffic control

- Static Reject Routes are configurable to control the traffic destined to a particular network so that it is not forwarded through the router
- Such traffic is discarded and the ICMP destination unreachable message is sent back to the source
- Static reject routes can be typically used to prevent routing loops
- Default routes are configurable as a preference option

In order to facilitate VLAN creation and VLAN routing using Web GUI, a VLAN Routing Wizard offers following automated capabilities:

- Create a VLAN and generate a unique name for VLAN
- Add selected ports to the newly created VLAN and remove selected ports from the default VLAN
- Create a LAG, add selected ports to a LAG, then add this LAG to the newly created VLAN
- Enable tagging on selected ports if the port is in another VLAN
- Disable tagging if a selected port does not exist in another VLAN
- Exclude ports that are not selected from the VLAN
- Enable routing on the VLAN using the IP address and subnet mask entered as logical routing interface
- The agent relays requests from a subnet without a DHCP server to a server or next-hop agent on another

DHCP Relay Agents relay DHCP requests from any routed interface, including VLANs, when DHCP server doesn't reside on the same IP network or subnet

- subnet
- Unlike a router which switches IP packets transparently, a DHCP relay agent processes DHCP messages and generates new DHCP messages
- Supports DHCP Relay Option 82 circuit-id and remote-id for VLANs
- Multiple Helper IPs feature allows to configure a DHCP relay agent with multiple DHCP server addresses per routing interface and to use different server addresses for client packets arriving on different interfaces on the relay agent server addresses for client packets arriving on different interfaces on the relay agent

Virtual Router Redundancy Protocol (VRRP) provides backup for any statically allocated next-hop router address going down, based on RFC 3768 (IPv4)

- VRRP is based on the concept of having more than one router recognize the same router IP address
- VRRP increases the availability of the default path without requiring configuration of dynamic routing, or router discovery protocols on end stations
- Multiple virtual routers can be defined on any single router interface
- One of the routers is elected the master router and handles all traffic sent to the specified virtual router IP address
- When the master router fails, one of the backup routers is elected in its place and starts handling traffic sent to the address

As an enhancement to RFC 3768, VRRP Interface can be configured as pingable to help troubleshoot network connectivity issues

- In that case, VRRP master responds to both fragmented and unfragmented ICMP echo requests packets destined to VRRP address(es)
- VRRP master responds with VRRP address as the source IPv4 address and VRMAC as the source MAC address
- A virtual router in backup state discards these ICMP echo requests

VRRP Route/Interface Tracking feature extends the capability of the Virtual Router Redundancy Protocol (VRRP)

- Allows tracking of specific route/interface IP states, within the router, that can alter the priority level of a virtual router for a VRRP group
- It ensures the best VRRP router is master for the group
- Based on RFC 1256 for IPv4

Router Discovery Protocol is an extension to ICMP and enables hosts to dynamically discover the IP address of routers on local IP subnets

- Routers periodically send router discovery messages to announce their presence to locally-attached hosts
- The router discovery message advertises one or more IP addresses on the router that hosts can use as their default gateway
- Hosts can send a router solicitation message asking any router that receives the message to immediately send a router advertisement
- Router discovery eliminates the need to manually configure a default gateway on each host
- It enables hosts to switch to a different default gateway if one goes down

Loopback interfaces are available as dynamic, stable IP addresses for other devices on the network, and for routing protocols

Tunnel interfaces are available for IPv4 and IPv6

- Each router interface (port, or VLAN interface) can have multiple associated tunnel interfaces
- Support for Configured 6to4 (RFC 4213) and Automatic 6to4 tunneling (RFC 3056) for IPv6 traffic encapsulation into IPv4 packets
- 6to4 tunnels are automatically formed for IPv4 tunnels carrying IPv6 traffic
- M4300 can act as a 6to4 border router that connects a 6to4 site to a 6to4 domain

Support of Routing Information Protocol (RIPv2) as a distance vector protocol specified in RFC 2453 for IPv4

- Each route is characterized by the number of gateways, or hops, a packet must traverse to reach its intended destination
- Categorized as an interior gateway protocol, RIP operates within the scope of an autonomous system
- Configurable when different routing protocols use different ways of expressing the distance to a destination or different metrics and formats

Route Redistribution feature enables the exchange of routing information among different routing protocols all operating within a router

- For instance, when OSPF redistributes a route from RIP, and needs to know how to set each of the route's path attributes

Open Shortest Path First (OSPF) link-state protocol for IPv4 and IPv6

- For IPv4 networks, OSPF version 2 is supported in accordance with RFC 2328, including compatibility mode for the RFC 1583 older specification
- For IPv6 networks, OSPF version 3 is fully supported
- OSPF can operate within a hierarchy, the largest entity within the hierarchy is the autonomous system (AS)
- An AS is a collection of networks under a common administration sharing a common routing strategy (routing domain)
- An AS can be divided into a number of areas or groups of contiguous networks and attached hosts
- Two different types of OSPF routing occur as a result of area partitioning: Intra-area and Inter-area
- Intra-area routing occurs if a source and destination are in the same area
- Inter-area routing occurs when a source and destination are in different areas
- An OSPF backbone distributes information between areas

Advanced OSPF implementation for large routing domains

- OSPF NSSA feature supports RFC 3101, The OSPF Not-So-Stubby Area (NSSA) Option
- Forwarding of OSPF Opaque LSAs is enabled by default
- Passive interface feature can disable sending OSPF routing updates on an interface
- Static Area Range Costs feature allows to configure a fixed OSPF cost that is always advertised when an area range is active
- OSPF Equal Cost Multipath (ECMP) feature allows to forward traffic through multiple paths, taking advantage of more bandwidth
- ECMP routes can be learned dynamically, or configured statically with multiple static routes to same destination but with different next hops
- OSPF Max Metric feature allows to to override the metric in summary type 3 and type 4 LSAs while in stub router mode
- Automatic Exiting of Stub Router Mode feature allows to exit stub router mode, reoriginating the router LSA with proper metric values on transit links
- Static Area Range Costs feature allows to configure a fixed OSPF cost that is always advertised when an area range is active

OSPF LSA Pacing feature improves the efficiency of LSA flooding, reducing or eliminating the packet drops caused by bursts in OSPF control packets

- LSA transmit pacing limits the rate of LS Update packets that OSPF can send
- With LSA refresh groups, OSPF efficiently bundles LSAs into LS Update packets when periodically refreshing self-originated LSAs

OSPF Flood Blocking feature allows to disable LSA flooding on an interface with area or AS (domain-wide) scope

- In that case, OSPF does not advertise any LSAs with area or AS scope in its database description packets sent to neighbors

OSPF Transit-Only Network Hiding is supported based on RFC 6860 with transit-only network defined as a network connecting only routers

- Transit-only networks are usually configured with routable IP addresses which are advertised in LSAs but are not needed for data traffic
- If router-to-router subnets are advertised, remote attacks can be launched against routers by sending packets to these transit-only networks
- Hiding transit-only networks speeds up network convergence and reduces vulnerability to remote attacks
- ‘Hiding’ implies that the prefixes are not installed in the routing tables on OSPFv2 and OSPFv3 routers

IP Multinetting allows to configure more than one IP address on a network interface (other vendors may call it IP Aliasing or Secondary Addressing)

ICMP Throttling feature adds configuration options for the transmission of various types of ICMP messages

- ICMP Redirects can be used by a malicious sender to perform man-in-the-middle attacks, or divert packets to a malicious monitor, or to cause Denial of Service (DoS) by blackholing the packets
- ICMP Echo Requests and other messages can be used to probe for vulnerable hosts or routers
- Rate limiting ICMP error messages protects the local router and the network from sending a large number of messages that take CPU and bandwidth

The Policy Based Routing feature (PBR) overrides routing decision taken by the router and makes the packet to follow different actions based on a policy

- It provides freedom over packet routing/forwarding instead of leaving the control to standard routing protocols based on L3
- For instance, some organizations would like to dictate paths instead of following the paths shown by routing protocols
- Network Managers/Administrators can set up policies such as:
 - My network will not carry traffic from the Engineering department
 - Traffic originating within my network with the following characteristics will take path A, while other traffic will take path B
 - When load sharing needs to be done for the incoming traffic across multiple paths based on packet entities in the incoming traffic

Enterprise security

Traffic control MAC Filter and Port Security help restrict the traffic allowed into and out of specified ports or interfaces in the system in order to increase overall security and block MAC address flooding issues

DHCP Snooping monitors DHCP traffic between DHCP clients and DHCP servers to filter harmful DHCP message and builds a bindings database of (MAC address, IP address, VLAN ID, port) tuples that are considered authorized in order to prevent DHCP server spoofing attacks

IP source guard and Dynamic ARP Inspection use the DHCP snooping bindings database per port and per VLAN to drop incoming packets that do not match any binding and to enforce source IP/MAC addresses for malicious users traffic elimination

Time-based Layer 2 / Layer 3-v4 / Layer 3-v6 / Layer 4 Access Control Lists (ACLs) can be binded to ports, Layer 2 interfaces, VLANs and LAGs (Link Aggregation Groups or Port channel) for fast unauthorized data prevention and right granularity

For in-band switch management, management ACLs on CPU interface (Control Plane ACLs) are used to define the IP/MAC or protocol through which management access is allowed for increased HTTP/HTTPS or Telnet/SSH management security

Out-of-band management is available via dedicated service port (1G RJ45 OOB) when in-band management can be prohibited via management ACLs

Bridge protocol data unit (BPDU) Guard allows the network administrator to enforce the Spanning Tree (STP) domain borders and keep the active topology consistent and predictable - unauthorized devices or switches behind the edge ports that have BPDU enabled will not be able to influence the overall STP by creating loops

Spanning Tree Root Guard (STRG) enforces the Layer 2 network topology by preventing rogue root bridges potential issues when for instance, unauthorized or unexpected new equipment in the network may accidentally become a root bridge for a given VLAN

Dynamic 802.1x VLAN assignment mode, including Dynamic VLAN creation mode and Guest VLAN / Un-authenticated VLAN are supported for rigorous user and equipment RADIUS policy server enforcement
802.1x MAC Address Authentication Bypass (MAB) is a supplemental authentication mechanism that lets non-802.1x devices bypass the traditional 802.1x process altogether, letting them authenticate to the network using their client MAC address as an identifier

- Up to 48 clients (802.1x) per port are supported, including the authentication of the users domain, in order to facilitate convergent deployments. For instance when IP phones connect PCs on their bridge, IP phones and PCs can authenticate on the same switch port but under different VLAN assignment policies (Voice VLAN versus other Production VLANs)
- A list of authorized MAC addresses of client NICs is maintained on the RADIUS server for MAB purpose
- MAB can be configured on a per-port basis on the switch
- MAB initiates after unsuccessful dot1x authentication process (configurable time out), when clients don't respond to any of EAPOL packets
- When 802.1X unaware clients try to connect, the switch sends the MAC address of each client to the authentication server
- The RADIUS server checks the MAC address of the client NIC against the list of authorized addresses
- The RADIUS server returns the access policy and VLAN assignment to the switch for each client

With Successive Tiering, the Authentication Manager allows for authentication methods per port for a Tiered Authentication based on configured time-outs

- By default, configuration authentication methods are tried in this order: Dot1x, then MAB, then Captive Portal (web authentication)
- With BYOD, such Tiered Authentication is powerful and simple to implement with strict policies
 - For instance, when a client is connecting, M4300 tries to authenticate the user/client using the three methods above, the one after the other
- The admin can restrict the configuration such that no other method is allowed to follow the captive portal method, for instance

Double VLANs (DVLAN) pass traffic from one customer domain to another through the “metro core” in a multi-tenancy environment: customer VLAN IDs are preserved and a service provider VLAN ID is added to the traffic so the traffic can pass the metro core in a simple, secure manner

Private VLANs (with Primary VLAN, Isolated VLAN, Community VLAN, Promiscuous port, Host port, Trunks) provide Layer 2 isolation between ports that share the same broadcast domain, allowing a VLAN broadcast domain to be partitioned into smaller point-to-multipoint subdomains across switches in the same Layer 2 network

- Private VLANs are useful in DMZ when servers are not supposed to communicate with each other but need to communicate with a router
- They remove the need for more complex port-based VLANs with respective IP interface/subnets and associated L3 routing
- Another Private VLANs typical application are carrier-class deployments when users shouldn't see, snoop or attack other users' traffic

SSL version 3 and TLS version 2 ensure Web GUI sessions are secured

Secure Shell (SSH version 2) and SNMPv3 (with or without MD5 or SHA authentication) ensure SNMP and Telnet sessions are secured

2048-bit RSA key pairs, SHA2-256 and SHA2-512 cryptographic hash functions for SSLv3 and SSHv2 are supported on all M4300 models

TACACS+ and RADIUS enhanced administrator management provides strict “Login” and “Enable” authentication enforcement for the switch configuration, based on latest industry standards: exec authorization using TACACS+ or RADIUS; command authorization using TACACS+ and RADIUS Server; user exec accounting for HTTP and HTTPS using TACACS+ or RADIUS; and authentication based on user domain in addition to user ID and password

Superior quality of service

Advanced classifier-based hardware implementation for Layer 2 (MAC), Layer 3 (IP) and Layer 4 (UDP/TCP transport ports) prioritization

8 queues (7 in a stack) for priorities and various QoS policies based on 802.1p (CoS) and DiffServ can be applied to interfaces and VLANs

Advanced rate limiting down to 1 Kbps granularity and minimum-guaranteed bandwidth can be associated with ACLs for best granularity

Single Rate Policing feature enables support for Single Rate Policer as defined by RFC 2697

- Committed Information Rate (average allowable rate for the class)
- Committed Burst Size (maximum amount of contiguous packets for the class)
- Excessive Burst Size (additional burst size for the class with credits refill at a slower rate than committed burst size)
- DiffServ feature applied to class maps

Automatic Voice over IP prioritization with protocol-based (SIP, H323 and SCCP) or OUI-based Auto-VoIP up to 144 simultaneous voice calls

iSCSI Flow Acceleration and automatic protection / QoS with Auto-iSCSI

Flow Control

802.3x Flow Control implementation per IEEE 802.3 Annex 31B specifications with Symmetric flow control, Asymmetric flow control or No flow control

Allows traffic from one device to be throttled for a specified period of time: a device that wishes to inhibit transmission of data frames from another device on the LAN transmits a PAUSE frame

The Priority Flow Control (PFC) is standardized by the IEEE 802.1Qbb specification and enables flow control per traffic class on IEEE 802 full-duplex links

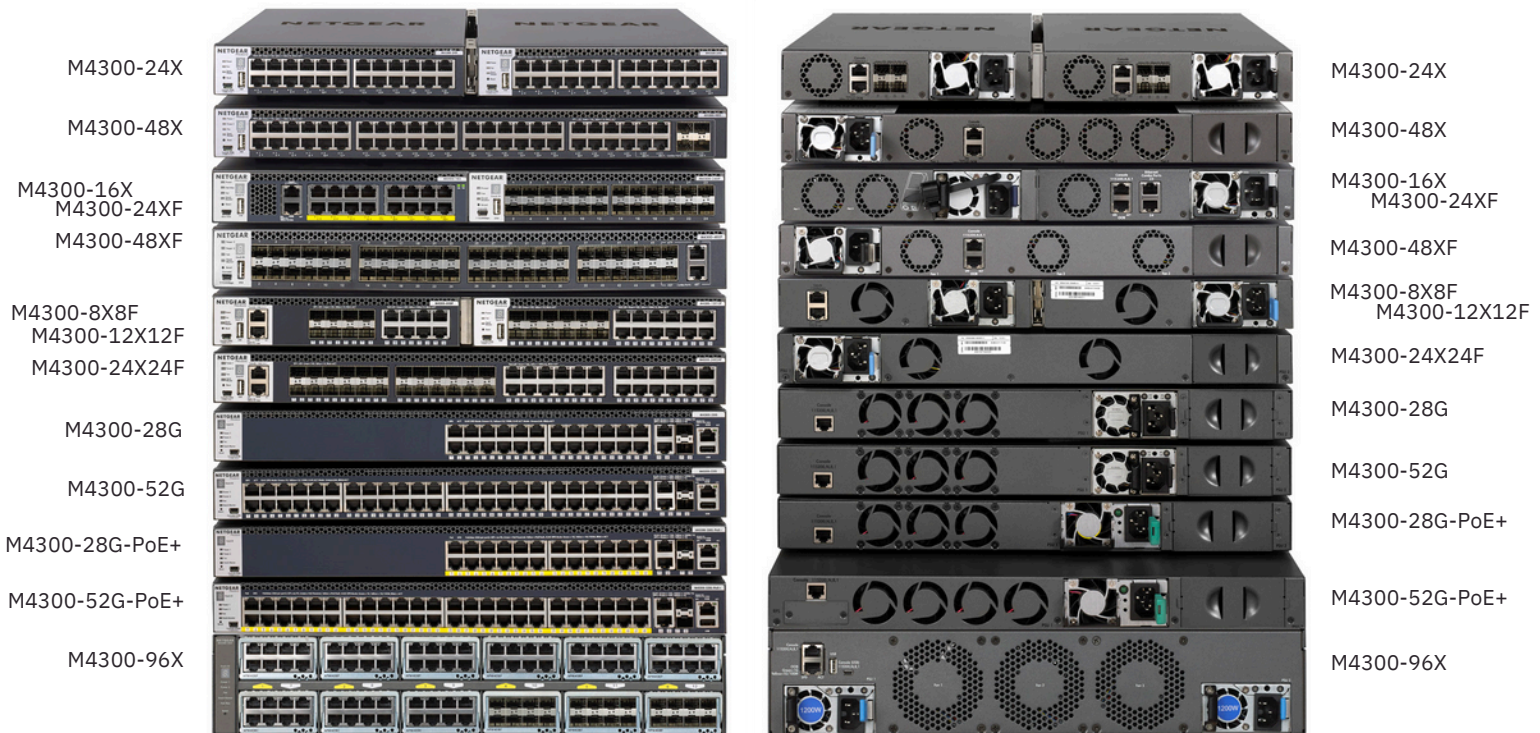
- Asymmetric flow control allows the switch to respond to received PAUSE frames, but the ports cannot generate PAUSE frames
- Symmetric flow control allows the switch to both respond to, and generate MAC control PAUSE frames
- A device that wishes to inhibit transmission of data frames from another device on the LAN transmits a PAUSE frame
- By pausing congested priorities independently, highly loss sensitive protocols can share the same link with traffic that has different loss tolerances
- The priorities are differentiated by the priority field of the 802.1Q VLAN header
- PFC uses a new control packet defined in 802.1Qbb and therefore disables 802.3x standard flow control on PFC configured interfaces
- PFC comes with CLI configuration and it is only supported on M4300-12X12F, 24X, 24X24F, 48X and 96X models

UDLD Support

UDLD implementation detects unidirectional links physical ports (UDLD must be enabled on both sides of the link in order to detect an unidirectional link)

- UDLD protocol operates by exchanging packets containing information about neighboring devices
- The purpose is to detect and avoid unidirectional link forwarding anomalies in a Layer 2 communication channel

Both “normal-mode” and “aggressive-mode” are supported for perfect compatibility with other vendors implementations, including port “D-Disable” triggering cases in both modes



Target Application (IT)

Building 1

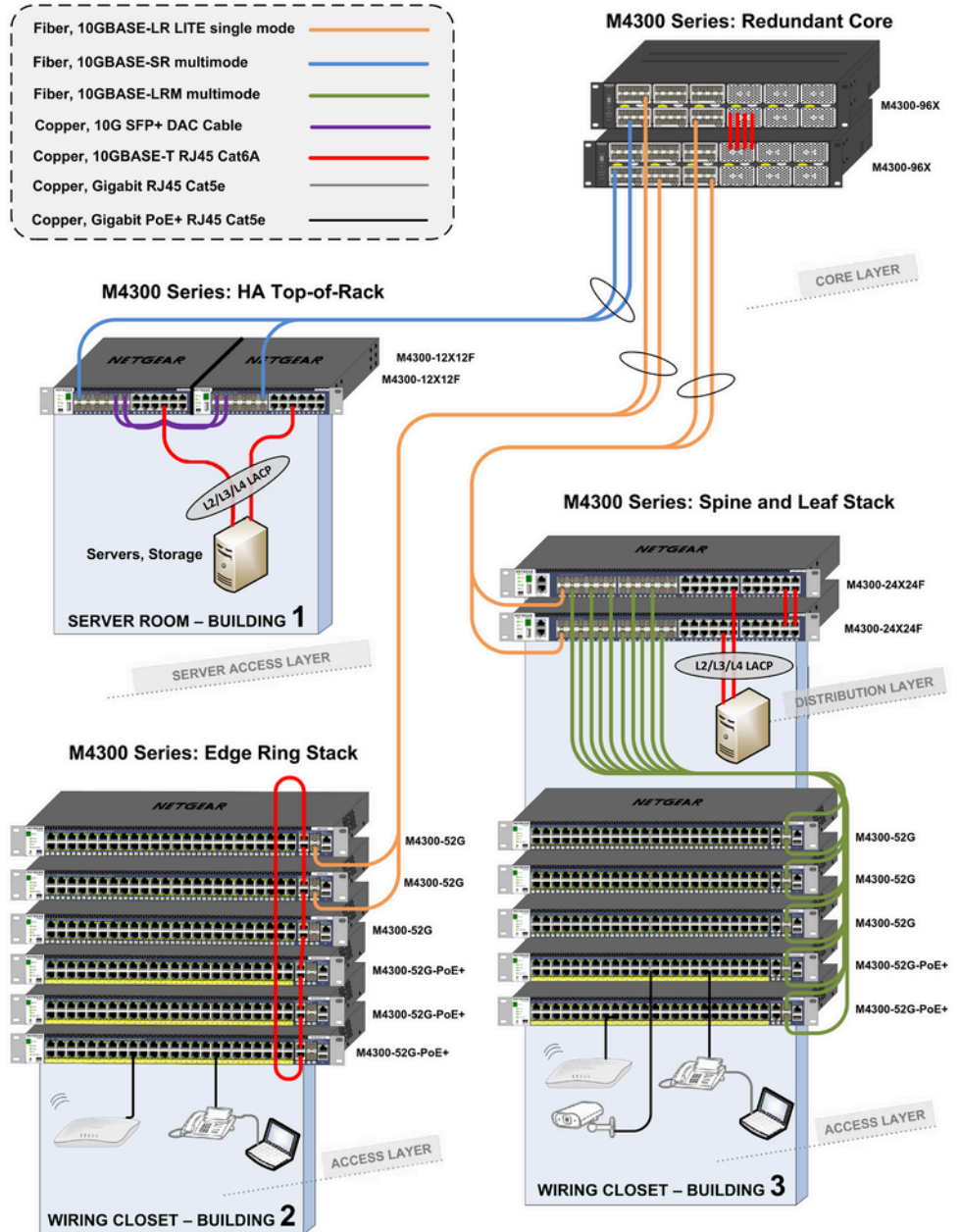
- For midsize server installations, two half-width M4300 10GbE models can be paired in a single rack space for redundant top-of-rack
- Compared with single top-of-rack switch installation, such two-unit horizontal stacking is cost-effective yet highly efficient for HA
- Management unit hitless failover and nonstop forwarding ensure no single point of failure for servers and storage

Building 2

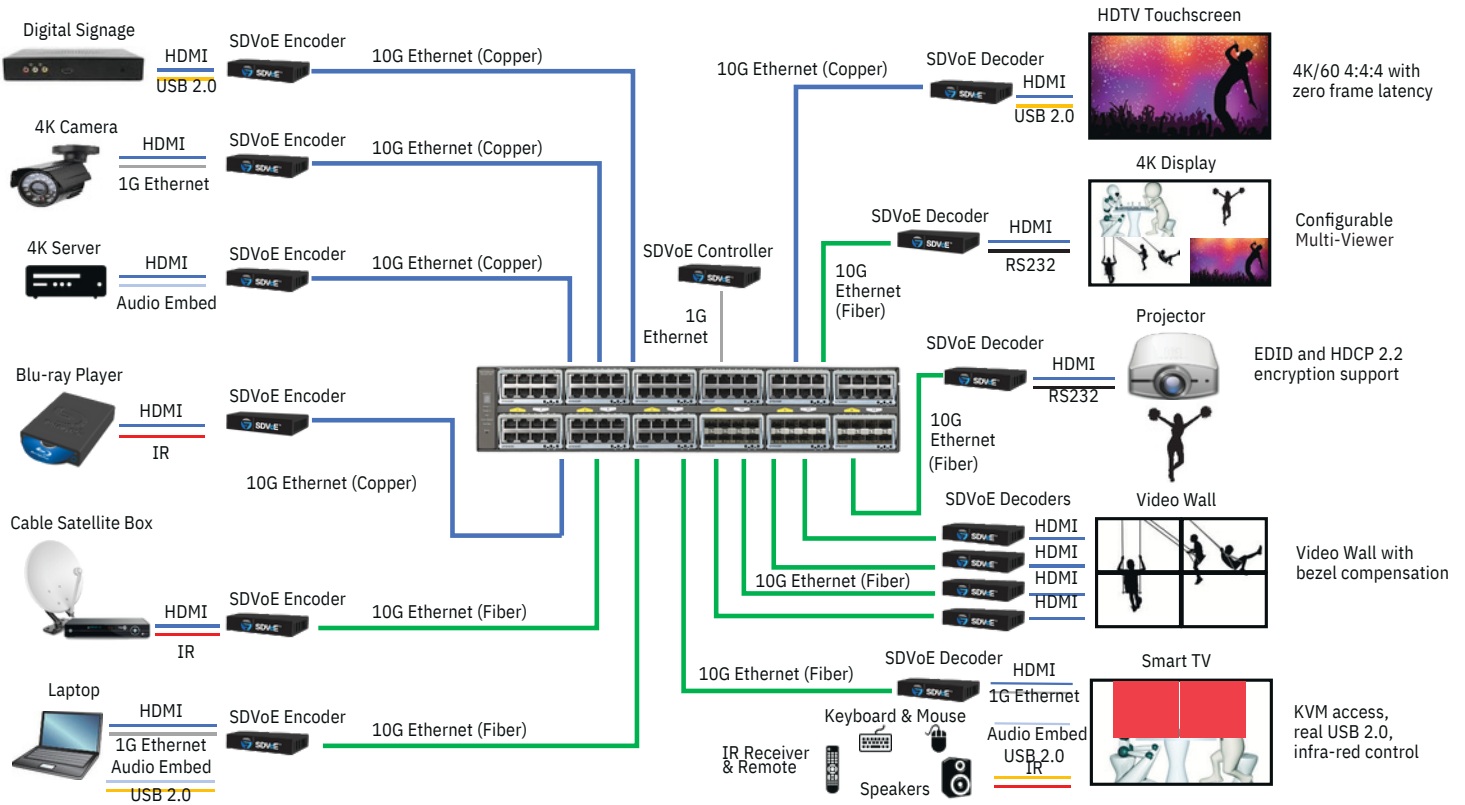
- Common for intermediate distribution frames (IDF) in K-12 and other large campuses, stacking topologies greatly simplify deployments at the edge
- While reducing the number of logical units to manage, stacking also brings network resiliency with distributed uplinks in aggregation to the core
- Management unit hitless failover and nonstop forwarding ensures continuous uptime for clients across the stack

Building 3

- For typical collapsed core installations, with a variety of 1G and 10G access ports in branch offices, server rooms or campus high performance labs
- M4300 10G models can stack with M4300 1G models, enabling innovative "spine and leaf" topologies
- Spine and leaf architectures deliver highest performance with every leaf switch (1G) connecting to every spine switch (10G) for a fully non-blocking deployment
- With management unit hitless failover and nonstop forwarding, leaf switches keep forwarding L2 and L3 traffic in and out, while backup spine unit guarantees connectivity to the core



Target Application (SDVoE)



To take the complexity out of your AV-over-IP deployment, NETGEAR created M4300 switches that are preconfigured for easy, true AV and multi-cast Zero Touch network configuration. Namely, IGMP Snooping, IGMP Fast Leave, IGMP Querier are already enabled for the default VLAN 1 that all your devices will automatically use. Connect your encoder and decoder devices, and power on the switch – it just works!

Enabling Zero-Touch install of SDVoE Video-over-IP

- M4300-96X streamlines AV-over-IP SDVoE solutions, replacing 48x48 switchers and any other in/out distribution
- Non-blocking fabric for 96x10G or 24x40G or a combination
- 12 empty slots in 2RU for 8x10G or 2x40G port expansion cards
- Use the M4300-96X online configurator to design your modular switch
 - www.netgear.com/96x-config
- Plug and play and ready to grow as per your requirements
- Takes the complexity out of your AV-over-IP deployment
- Zero Touch AV-over-IP with pre-configured L2 Multicast (SDVoE-ready)
 - IGMP Snooping, IGMP Fast Leave, IGMP Querier are already enabled
- Easy-to-use Web browser-based management GUI

The SDVoE Alliance is an eco-system of companies in and around the AV-over-IP space, working together to create a platform for the next generation of audiovisual applications. NETGEAR SDVoE Partners provide the SDVoE audio-video products and NETGEAR provides the backbone network that makes it all possible.



SDVoE is a trademark of the SDVoE Alliance

www.sdvoe.org
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Components and Modules

M4300-8X8F

Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4316S-100NES
- Asia Pacific: XSM4316S-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



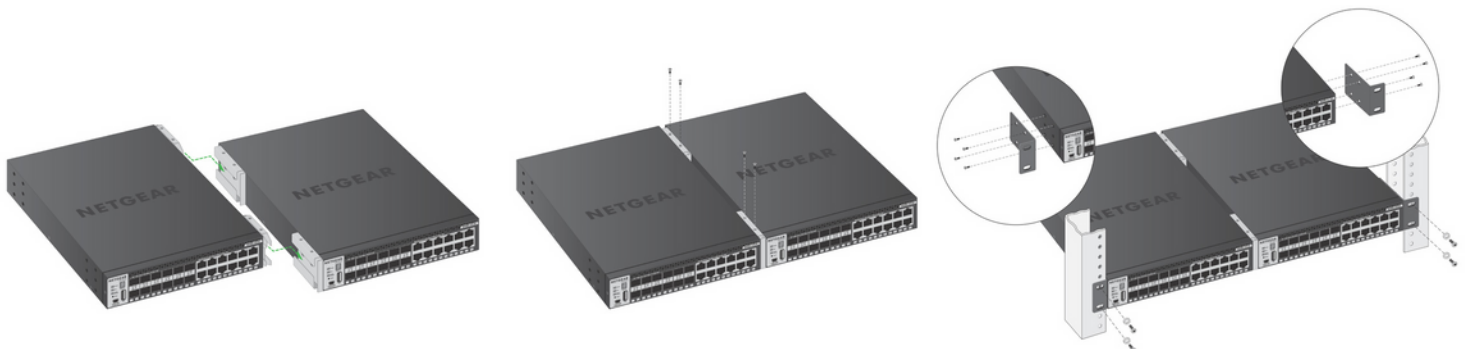
- 8-port 10GBASE-T (RJ45) all independent
- 8-port 10GBASE-X (SFP+) all independent
- 320Gbps non-blocking fabric across 16 ports
- Out-of-band 1G Ethernet management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Half-width form factor with one- and two-unit rack mount kit
- Two half-width switches can be installed in a single rack space for redundant top-of-rack
- Ships with one modular APS250W PSU in its power supply slot
- Low acoustics (36.9dB @25°C / 77°F), or fans off



To install a single half-width switch in a rack, a 19-inch rack-mount kit is supplied with the switch:



To install two half-width switches in a rack, inside and outside middle mounts and rack-mount brackets are supplied with the switches:



Components and Modules

M4300-12X12F

Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4324S-100NES
- Asia Pacific: XSM4324S-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 12-port 10GBASE-T (RJ45) all independent
- 12-port 10GBASE-X (SFP+) all independent
- 480Gbps non-blocking fabric across 24 ports
- Out-of-band 1G Ethernet management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Half-width form factor with one- and two-unit rack mount kit
- Two half-width switches can be installed in a single rack space for redundant top-of-rack
- Ships with one modular APS250W PSU in its power supply slot
- Low acoustics (36.9dB @25°C / 77°F)



M4300-16X

Stackable Managed Switch

Ordering information • Americas, Europe (299W PSU): XSM4316PA-100NES

- Americas, Europe (600W PSU): XSM4316PB-100NES
- Asia Pacific (299W PSU): XSM4316PA-100AJS
- Asia Pacific (600W PSU): XSM4316PB-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 16-port 100M/1G/2.5G/5G/10GBASE-T with PoE+ (copper RJ45)
- 320Gbps non-blocking fabric across 16 ports
- Out-of-band 1G Ethernet management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Half-width form factor with one- and two-unit rack mount kit
- Two half-width switches can be installed in a single rack space for redundant top-of-rack
- (XSM4316PA) Ships with one modular APS299W PSU in its power supply slot
- (XSM4316PB) Ships with one modular APS600W PSU in its power supply slot
- Low acoustics (36dB with APS299W, 35dB with APS600W, @25°C / 77°F)



Components and Modules

M4300-24X Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4324CS-100NES
- Asia Pacific: XSM4324CS-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 24-port 10GBASE-T (RJ45)
- 4-port 10GBASE-X (SFP+) (shared, back)
- 480Gbps non-blocking fabric across 24 ports
- Out-of-band 1G Ethernet management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Half-width form factor with one- and two-unit rack mount kit
- Two half-width switches can be installed in a single rack space for redundant top-of-rack
- Ships with one modular APS250W PSU in its power supply slot
- Low acoustics (37dB @25°C / 77°F)



M4300-24XF Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4324FS-100NES
- Asia Pacific: XSM4324FS-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 24-port 10GBASE-X (SFP+)
- 2-port 10GBASE-T (RJ45) (shared, back)
- 480Gbps non-blocking fabric across 24 ports
- Out-of-band 1G Ethernet management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Half-width form factor with one- and two-unit rack mount kit
- Two half-width switches can be installed in a single rack space for redundant top-of-rack
- Ships with one modular APS250W PSU in its power supply slot
- Low acoustics (39.7dB @25°C / 77°F)



Components and Modules

M4300-24X24F Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4348S-100NES
- Asia Pacific: XSM4348S-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 24-port 10GBASE-T (RJ45) all independent
- 24-port 10GBASE-X (SFP+) all independent
- 960Gbps non-blocking fabric across 48 ports
- Out-of-band 1G Ethernet Management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Full width form factor with one-unit rack mount kit
- Ships with one modular APS250W PSU in first power supply slot
- Ship with a blank cover in the second power supply slot
- Low acoustics (35.8dB @25°C / 77°F)



M4300-48X Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4348CS-100NES
- Asia Pacific: XSM4348CS-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 48-port 10GBASE-T (RJ45)
- 4-port 10GBASE-X (SFP+) (shared)
- 960Gbps non-blocking fabric across 48 ports
- Out-of-band 1G Ethernet Management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Full width form factor with one-unit rack mount kit
- Ships with one modular APS250W PSU in first power supply slot
- Ship with a blank cover in the second power supply slot
- Low acoustics (40.3dB @25°C / 77°F)



Components and Modules

M4300-48XF **Stackable Managed Switch**

Ordering information

- Americas, Europe: XSM4348FS-100NES
- Asia Pacific: XSM4348FS-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 48-port 10GBASE-X (SFP+)
- 2-port 10GBASE-T (RJ45) (shared)
- 960Gbps non-blocking fabric across 48 ports
- Out-of-band 1G Ethernet Management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Full width form factor with one-unit rack mount kit
- Ships with one modular APS250W PSU in first power supply slot
- Ship with a blank cover in the second power supply slot
- Low acoustics (42.4dB @25°C / 77°F)



Components and Modules

M4300-96X Stackable and Modular Managed Switch

Ordering information

- Worldwide (Empty Switch, No PSU): XSM4396K0-10000S
- Americas, Europe (Starter Kit 48xSFP+): XSM4396K1-100NES
- Asia Pacific (Starter Kit 48xSFP+): XSM4396K1-100AJS
- Worldwide (10G Copper card): APM408C-10000S
- Worldwide (10G Copper PoE+ card): APM408P-10000S
- Worldwide (10G Fiber card): APM408F-10000S
- Worldwide (40G Fiber card): APM402XL-10000S
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**

- 1.92Tbps non-blocking fabric for 96-port 10G or 24-port 40G or a combination
 - 12 slots (front) available in 2RU for 8x10G or 2x40G port expansion cards
 - XSM4396K0 is the SKU for the M4300-96X empty switch (no PSU) - XSM4396K1 is the starter kit including 48xSFP+ and 1x600W PSU
- 4 port cards and hundreds of combinations
 - APM408C features 8-port 100M/1G/2.5G/5G/10GBASE-T (copper RJ45)
 - APM408P features 8-port 100M/1G/2.5G/5G/10GBASE-T with PoE+ (copper RJ45)
 - APM408F features 8-port 1G/10GBASE-X (fiber SFP+)
 - APM402XL features 2-port 40GBASE-X (QSFP+)

- PoE over 10G is supported up to 48 x 10G PoE+ 30W per system (first 6 slots)
- Out-of-band 1G Ethernet Management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Full width 2RU form factor with 2-post and 4-post rack mount kit
- Ships with blank covers in empty slots (front I/O; rear PSU)
- Low acoustics (35.8dB @25°C / 77°F) when no PoE
- 66.8dB @25°C / 77°F with Max PoE (1,440W)



Empty version (XSM4396K0)



Use the **M4300-96X online configurator** to design your modular switch: www.netgear.com/96x-config



48xSFP+ and 1x600W PSU Starter Kit (XSM4396K1)



8x10GBASE-T Port Card - 100M/1G/2.5G/5G/10G (APM408C)



8xSFP+ Port Card - 1G/10G (APM408F)



8x10GBASE-T PoE+ Port Card - 100M/1G/2.5G/5G/10G (APM408P)



2xQSFP+ Port Card - 40G (APM402XL)

Components and Modules

M4300-28G Stackable Managed Switch

Ordering information

- Americas, Europe: GSM4328S-100NES
- Asia Pacific: GSM4328S-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 24-port 1000BASE-T (RJ45) • 2-port 10GBASE-T (RJ45) all independent • 2-port 10GBASE-X (SFP+) all independent • 128Gbps non-blocking fabric across 28 ports • Out-of-band 1G Ethernet Management port • Mini-USB and RJ45 RS232 console ports and USB storage port • Full L3 feature set and non-stop forwarding (NSF) stacking • Full width form factor with one-unit rack mount kit • Ships with one modular APS150W PSU in first power supply slot • Ship with a blank cover in the second power supply slot • Low acoustics (30.3dB @25°C / 77°F)



M4300-52G Stackable Managed Switch

Ordering information

- Americas, Europe: GSM4352S-100NES
- Asia Pacific: GSM4352S-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 48-port 1000BASE-T (RJ45) • 2-port 10GBASE-T (RJ45) all independent • 2-port 10GBASE-X (SFP+) all independent • 176Gbps non-blocking fabric across 52 ports • Out-of-band 1G Ethernet Management port • Mini-USB and RJ45 RS232 console ports and USB storage port • Full L3 feature set and non-stop forwarding (NSF) stacking • Full width form factor with one-unit rack mount kit • Ships with one modular APS150W PSU in first power supply slot • Ship with a blank cover in the second power supply slot • Low acoustics (31.5dB @25°C / 77°F)



Components and Modules

M4300-28G-PoE+ Stackable Managed Switch

Ordering information

- Americas, Europe (550W PSU): GSM4328PA-100NES
- Americas, Europe (1,000W PSU): GSM4328PB-100NES
- Asia Pacific (550W PSU): GSM4328PA-100AJS
- Asia Pacific (1,000W PSU): GSM4328PB-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 24-port 1000BASE-T (RJ45) PoE+ • 2-port 10GBASE-T (RJ45) all independent • 2-port 10GBASE-X (SFP+) all independent • 128Gbps non-blocking fabric across 28 ports • Out-of-band 1G Ethernet Management port • Mini-USB and RJ45 RS232 console ports and USB storage port • Full L3 feature set and non-stop forwarding (NSF) stacking • Full width form factor with one-unit rack mount kit • (GSM4328PA) Ships with one modular APS550W PSU in first power supply

slot

- (GSM4328PB) Ships with one modular APS1000W PSU in first power supply slot
- Ship with a blank cover in the second power supply slot



M4300-52G-PoE+ Stackable Managed Switch

Ordering information

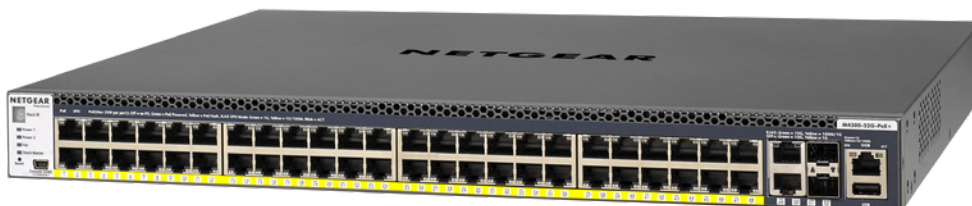
- Americas, Europe (550W PSU): GSM4352PA-100NES
- Americas, Europe (1,000W PSU): GSM4352PB-100NES
- Asia Pacific (550W PSU): GSM4352PA-100AJS
- Asia Pacific (1,000W PSU): GSM4352PB-100AJS
- Warranty: Limited Lifetime ProSAFE Hardware Warranty**



- 48-port 1000BASE-T (RJ45) PoE+ • 2-port 10GBASE-T (RJ45) all independent • 2-port 10GBASE-X (SFP+) all independent • 176Gbps non-blocking fabric across 52 ports • Out-of-band 1G Ethernet Management port • Mini-USB and RJ45 RS232 console ports and USB storage port • Full L3 feature set and non-stop forwarding (NSF) stacking • Full width form factor with one-unit rack mount kit • (GSM4352PA) Ships with one modular APS550W PSU in first power supply

slot

- (GSM4352PB) Ships with one modular APS1000W PSU in first power supply slot
- Ship with a blank cover in the second power supply slot



Accessories

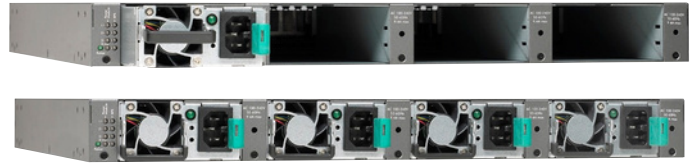
RPS4000v2 RPS unit for up to 4 concurrent switches

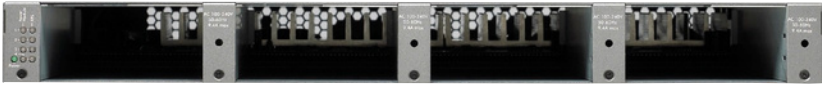
Ordering information

- Americas, Europe: RPS4000-200NES
- Asia Pacific: RPS4000-200AJS
- Warranty: 5 years

RPS mode: provide N+1 redundancy to M4300-52G-PoE+ when its two internal PSUs are used in EPS (shared) mode


- One APS1000W per M4300-52G-PoE+ connected to the RPS4000 unit
- Up to four (4) M4300-52G-PoE+ switches per RPS4000 unit






Front view

- RPS4000 is 1RU unit with four (4) empty slots



Rear view

- Four (4) embedded RPS connectors
- Switch selectors for RPS/EPS power modes



Included:

- Four (4) RPS cables - 60cm each (~2 ft)
- Rack mount kit

APS1200W Power Supply Unit

Ordering information

- Americas, Europe: APS1200W-100NES
- Asia Pacific: APS1200W-100AJS
- Warranty: 5 years



- Modular PSU for M4300-96X (PoE applications)
- C15 connector
- Capacity:
 - 110V-240V AC power input
 - Up to 1,050W output power at 110V AC
 - Up to 1,200W output power at 220V AC

APS1000W Power Supply Unit

Ordering information

- Americas, Europe: APS1000W-100NES
- Asia Pacific: APS1000W-100AJS
- Warranty: 5 years



- Power module for RPS4000 unit
- Additional PSU for M4300-28G-PoE+ (GSM4328PB) and M4300-52G-PoE+ (GSM4352PB)
- C15 connector
- Capacity:
 - 110V-240V AC power input
 - Up to 640W output power at 110V AC
 - Up to 910W output power at 220V AC

Accessories

APS600W Power Supply Unit

Ordering information

- Americas, Europe: APS600W-100NES
- Asia Pacific: APS600W-100AJS
- Warranty: 5 years



- Modular PSU for M4300-96X (non-PoE applications) • Replacement PSU for M4300-16X (PoE applications) • C14 connector
- Capacity:
 - 110V-240V AC power input
 - Up to 600W output power at 110/220V AC

APS550W Power Supply Unit

Ordering information

- Americas, Europe: APS550W-100NES
- Asia Pacific: APS550W-100AJS
- Warranty: 5 years



- Additional PSU for M4300-28G-PoE+ (GSM4328PA) and M4300-52G-PoE+ (GSM4352PA)
- C14 connector
- Capacity:
 - 110V-240V AC power input
 - Up to 575W output power at 110/220V AC

APS299W Power Supply Unit

Ordering information

- Americas, Europe: APS299W-100NES
- Asia Pacific: APS299W-100AJS
- Warranty: 5 years



- Replacement PSU for M4300-16X (no or limited PoE applications)
- C14 connector
- Capacity:
 - 110V-240V AC power input
 - Up to 250W output power at 110/220V AC

Accessories

APS250W Power Supply Unit

Ordering information

- Americas, Europe: APS250W-100NES
- Asia Pacific: APS250W-100AJS
- Warranty: 5 years



- Replacement PSU for M4300-8X8F, M4300-12X12F, M4300-24X, M4300-24XF
- Additional PSU for M4300-24X24F, M4300-48X, M4300-48XF
- C14 connector
- Capacity
 - 110V-240V AC power input
 - Up to 250W output power at 110/220V AC

APS150W Power Supply Unit

Ordering information

- Americas, Europe: APS150W-100NES
- Asia Pacific: APS150W-100AJS
- Warranty: 5 years



- Additional PSU for M4300-28G and M4300-52G
- C14 connector
- Capacity:
 - 110V-240V AC power input
 - Up to 150W output power at 110/220V AC

Copper SFP and SFP+ Optics for M4300 series

AGM734 1000BASE-T RJ45 SFP (Gigabit)

Ordering information

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



- Fits into M4300 models SFP+ 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 M4300 fiber interfaces

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




Ordering information

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







- Fits into M4300 models SFP+ 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 M4300 fiber interfaces

GBIC SFP and SFP+ Optics for M4300 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 |
| <p>40 Gigabit QSFP+</p>  <p>• Fits into M4300-96X / APM402XL QSFP+ interfaces</p> | | <p>AXLM761</p> <p>40GBASE-MR4 Duplex 1 MMF link - LC duplex connector up to 150m (492 ft) AXLM761-10000S (1 unit)</p> | <p>AXLM762</p> <p>40GBASE-LR4 long reach single mode LC duplex connector up to 10km (6.2 miles) AXLM762-10000S (1 unit)</p> |
| <p>10 Gigabit SFP+</p>  <p>• Fits into M4300 models SFP+ interfaces</p> | <p>AXM763</p> <p>10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 220m (722 ft) AXM763-10000S (1 unit)</p> | <p>AXM763</p> <p>10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 260m (853 ft) AXM763-10000S (1 unit)</p> | <p>AXM762</p> <p>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)</p> |
| | | <p>AXM761</p> <p>10GBase-SR short reach multi-mode 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)</p> | <p>AXM764</p> <p>10GBase-LR LITE single mode LC duplex connector up to 2km (1.2 mile) AXM764-10000S (1 unit)</p> |
| <p>Gigabit SFP</p>  <p>• Fits into M4300 models SFP+ interfaces</p> | <p>AGM731F</p> <p>1000Base-SX short range multi-mode LC duplex connector up to 275m (902 ft) AGM731F (1 unit)</p> | <p>AGM731F</p> <p>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)</p> | <p>AGM732F</p> <p>1000Base-LX long range single mode LC duplex connector up to 10km (6.2 miles) AGM732F (1 unit)</p> |

Direct Attach Cables for M4300 series

| ORDERING INFORMATION WORLDWIDE: SEE TABLE BELOW WARRANTY: 5 YEARS | SFP+ to SFP+ | | |
|---|--|--|---|
| | 1 meter (3.3 ft) | 3 meters (9.8 ft) | |
| <p>40 Gigabit DAC</p>  <p>• Fits into M4300-96X / APM402XL QSFP+ interfaces</p> | <p>AXLC761</p> <p>40G QSFP+ Cu (passive) QSFP+ connectors</p> <p>AXLC761-10000S (1 unit)</p> | <p>AXLC763</p> <p>40G QSFP+ Cu (passive) QSFP+ connectors</p> <p>AXLC763-10000S (1 unit)</p> | |
| <p>10 Gigabit DAC</p>    | 1 meter (3.3 ft) | 3 meters (9.8 ft) | 5 meters (16.4 ft) |
| | <p>AXC761</p> <p>10GSFP+ Cu (passive) SFP+ connectors</p> <p>AXC761-10000S (1 unit)</p> | <p>AXC763</p> <p>10GSFP+ Cu (passive) SFP+ connectors</p> <p>AXC763-10000S (1 unit)</p> | <p>AXC765</p> <p>10GSFP+ Cu (active) SFP+ connectors</p> <p>AXC765-10000S (1 unit)</p> |
| | 7 meters (23.0 ft) | 10 meters (32.8 ft) | 15 meters (49.2 ft) |
| | <p>AXC767</p> <p>10GSFP+ Cu (active) SFP+ connectors</p> <p>AXC767-10000S (1 unit)</p> | <p>AXC7610</p> <p>10GSFP+ Cu (active) SFP+ connectors</p> <p>AXC7610-10000S (1 unit)</p> | <p>AXC7615</p> <p>10GSFP+ Copper optic SFP+ connectors</p> <p>AXC7615-10000S (1 unit)</p> |
| | 20 meters (65.6 ft) | | |
| <p>AXC7620</p> <p>10GSFP+ Copper optic SFP+ connectors</p> <p>AXC7620-10000S (1 unit)</p> | | | |

• Fits into M4300 models SFP+ interfaces

Aurora Multimedia™ 24 port 10G PoE+ injector



NETGEAR has validated the Aurora Multimedia IP-24PoE+ injector for use with the M4300 switches. It can add PoE/PoE+ up to 30W per port to any 1G or 10G M4300 model. The IP-24PoE+ allows for a clean installation of 1G or 10G PD capable devices, such as 10G AV over IP encoders and decoders.



IP-24 PoE+

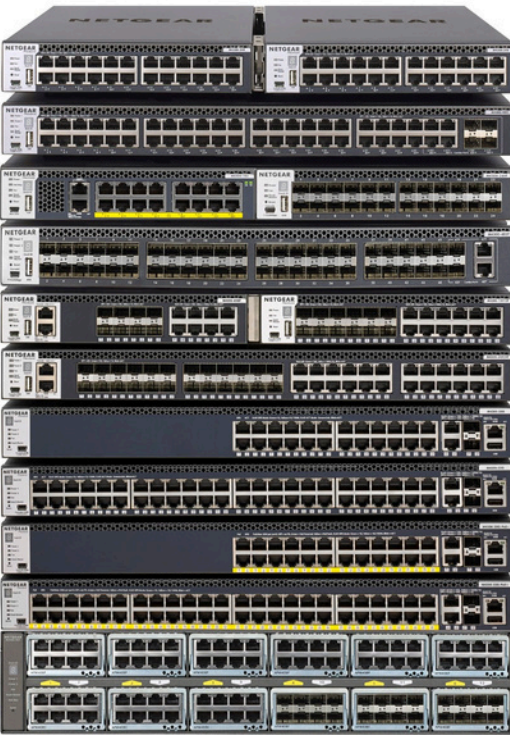
Highlights

- Input (top): 24 ports 1G/10GBASE-T
- Output (bottom): 24 ports 1G/10GBASE-T with added PoE+
- 30 Watts per port (IEEE 802.3af, IEEE 802.3at)
- 750 Watts total power, 1RU

Please visit <https://auroramultimedia.com/products/ip-24poe/> for more information or send an email to sales@aurorammm.com for procurement.

Technical Specifications

Requirements based on 12.0 software release



| Model Name | Description | Model number |
|----------------|--|--------------|
| M4300-8X8F | Half-Width 16x10G including 8x10GBASE-T and 8xSFP+ | XSM4316S |
| M4300-12X12F | Half-Width 24x10G including 12x10GBASE-T and 12xSFP+ | XSM4324S |
| M4300-16X | Half-Width 16x100M/1G/2.5G/5G/10GBASE-T with PoE+ (299W PSU) | XSM4316PA |
| | Half-Width 16x100M/1G/2.5G/5G/10GBASE-T with PoE+ (600W PSU) | XSM4316PB |
| M4300-24X | Half-Width 24x10G including 24x10GBASE-T and 4xSFP+ (shared) | XSM4324CS |
| M4300-24XF | Half-Width 24x10G including 24xSFP+ and 2x10GBASE-T (shared) | XSM4324FS |
| M4300-24X24F | 48x10G including 24x10GBASE-T and 24xSFP+ | XSM4348S |
| M4300-48X | 48x10G including 48x10GBASE-T and 4xSFP+ (shared) | XSM4348CS |
| M4300-48XF | 48x10G including 48xSFP+ and 2x10GBASE-T (shared) | XSM4348FS |
| M4300-96X | 12-slot 2RU empty switch (no PSU) | XSM4396K0 |
| | 48x10G SFP+ starter kit (600W PSU) | XSM4396K1 |
| APM408C | 8x100M/1G/2.5G/5G/10GBASE-T Port Card | APM408C |
| APM408P | 8x100M/1G/2.5G/5G/10GBASE-T PoE+ Port Card (6 first slots) | APM408P |
| APM408F | 8x1G/10G SFP+ Port Card | APM408F |
| APM402XL | 2x40G QSFP+ Port Card | APM402XL |
| M4300-28G | 24x1G with 2x10GBASE-T and 2xSFP+ | GSM4328S |
| M4300-28G-PoE+ | 24x1G PoE+ with 2x10GBASE-T and 2xSFP+ (550W PSU) | GSM4328PA |
| | 24x1G PoE+ with 2x10GBASE-T and 2xSFP+ (1,000W PSU) | GSM4328PB |
| M4300-52G | 48x1G with 2x10GBASE-T and 2xSFP+ | GSM4352S |
| M4300-52G-PoE+ | 48x1G PoE+ with 2x10GBASE-T and 2xSFP+ (550W PSU) | GSM4352PA |
| | 48x1G PoE+ with 2x10GBASE-T and 2xSFP+ (1,000W PSU) | GSM4352PB |
| APS150W | PSU for M4300-28G; M4300-52G | APS150W |
| APS250W | PSU for M4300-8X8F; -12X12F; -24X; -24XF, -24X24F; -48X; -48XF | APS250W |
| APS299W | PSU for M4300-16X (non- or limited PoE applications, PA version) | APS299W |
| APS550W | PSU for M4300-28G-PoE+; M4300-52G-PoE+ (PA versions) | APS550W |
| APS600W | PSU for M4300-16X (PoE applications), M4300-96X (non-PoE applications) | APS600W |
| APS1000W | PSU for M4300-28G-PoE+; M4300-52G-PoE+ (PB versions) | APS1000W |
| APS1200W | PSU for M4300-96X (PoE applications) | APS1200W |

| Physical Interfaces | | | | | |
|---|--|--------------------------------------|--|--|------------------------|
| Gigabit and 10 Gigabit Ethernet Ports | Auto-sensing RJ45 10/100/1000BASE-T | Auto-sensing RJ45 100/1000/10GBASE-T | Auto-sensing RJ45 100/1000/2.5/5/10GBASE-T | Auto-sensing SFP+ ports 1000/10GBASE-X | QSFP+ 40GBASE-X |
| M4300-8X8F | - | 8 | - | 8 (independent) | - |
| M4300-12X12F | - | 12 | - | 12 (independent) | - |
| M4300-16X | - | - | 16 | - | - |
| M4300-24X | - | 24 | - | 4 (shared, back) | - |
| M4300-24XF | - | 2 (shared, back) | - | 24 | - |
| M4300-24X24F | - | 24 | - | 24 (independent) | - |
| M4300-48X | - | 48 | - | 4 (shared) | - |
| M4300-48XF | - | 2 (shared, back) | - | 48 | - |
| M4300-96X (12 slots for port cards) | - | - | Up to 96 (independent) | Up to 96 (independent) | Up to 24 (independent) |
| APM408C Port Card | - | - | 8 | - | - |
| APM408P Port Card | - | - | 8 (first 6 slots for PoE+) | - | - |
| APM408F Port Card | - | - | - | 8 | - |
| APM402XL Port Card | - | - | - | - | 2 |
| M4300-28G, M4300-28G-PoE+ | 24 | 2 | - | 2 (independent) | - |
| M4300-52G, M4300-52G-PoE+ | 48 | 2 | - | 2 (independent) | - |
| M4300-28G, M4300-28G-PoE+, M4300-52G, M4300-52G-PoE+ | 10M Half-Duplex isn't supported on ports 17-24 and 41-48 | | | | |
| Total Usable Port Count | 1G Ports | 10G Ports | 40G Ports | | |
| M4300-8X8F, M4300-16X | - | 16 | - | | |
| M4300-12X12F, M4300-24X, M4300-24XF | - | 24 | - | | |
| M4300-24X24F, M4300-48X, M4300-48XF | - | 48 | - | | |
| M4300-96X | - | Up to 96 | Up to 24 | | |
| M4300-28G, M4300-28G-PoE+ | 24 | 4 | - | | |
| M4300-52G, M4300-52G-PoE+ | 48 | 4 | - | | |
| Management Ports | Console ports | | Service port (Out-of-band Ethernet) | Storage port | |
| M4300-8X8F, M4300-24X24F | Serial RS232 RJ45 (front) ; Mini-USB (front) | | 1 x RJ45 10/100/1000BASE-T (front) | 1 x USB (front) | |
| M4300-12X12F, -16X, -24X, -24XF, -48X, -48XF | Serial RS232 RJ45 (back) ; Mini-USB (front) | | 1 x RJ45 10/100/1000BASE-T (back) | 1 x USB (front) | |
| M4300-96X | Serial RS232 RJ45 (back) ; Mini-USB (back) | | 1 x RJ45 10/100/1000BASE-T (back) | 1 x USB (back) | |
| M4300-28G, M4300-28G-PoE+, M4300-52G, M4300-52G-PoE+ | Serial RS232 RJ45 (back) ; Mini-USB (front) | | 1 x RJ45 10/100/1000BASE-T (front) | 1 x USB (front) | |

| Modular Power Supplies | PSU Slots | Included | Application with 2nd PSU (sold separately) | | |
|---|---|--|--|--------------------|--|
| M4300-8X8F, M4300-12X12F, M4300-24X, M4300-24XF | 1 | PSU 1 x | - | | |
| M4300-16X (XSM4316PA version 199W PSU) | 1 | APS250W 1 x APS299W | - | | |
| M4300-16X (XSM4316PB version 600W PSU) | 1 | 1 x APS600W | - | | |
| M4300-24X24F, M4300-48X, M4300-48XF | 2 | 1 x APS250W | RPS (redundant) mode | | |
| M4300-96X (XSM4396K0 empty version) | 2 | None (APS600W or APS1200W sold separately) | RPS (redundant) or EPS (shared) modes | | |
| M4300-96X (XSM4396K1 starter kit) | 2 | 1 x APS600W | RPS (redundant) or EPS (shared) modes | | |
| M4300-28G, M4300-52G | 2 | 1 x APS150W | RPS (redundant) mode | | |
| M4300-28G-PoE+ (GSM4328PA version 550W PSU) | 2 | 1 x APS550W | RPS (redundant) or EPS (shared) modes | | |
| M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) | 2 | 1 x APS1000W | RPS (redundant) or EPS (shared) modes | | |
| M4300-52G-PoE+ (GSM4352PA version 550W PSU) | 2 + external RPS port | 1 x APS550W | RPS (redundant) or EPS (shared) modes | | |
| M4300-52G-PoE+ (GSM4352PB version 1,000W PSU) | 2 + external RPS port | 1 x APS1000W | RPS (redundant) or EPS (shared) modes | | |
| Fixed fans | | | | | |
| All models | Front-to-back airflow | | | | |
| Power over Ethernet | | | | | |
| PSE Capacity | PoE+ ports | | | | |
| M4300-16X (all versions) | 16 | | | | |
| M4300-96X | Up to 48 | Only first 6 slots are delivering PoE power to APM408P cards for 48 PoE+ ports per switch. APS1200W preferred. | | | |
| M4300-28G-PoE+ (all versions) | 24 | | | | |
| M4300-52G-PoE+ (all versions) | 48 | | | | |
| | PoE Budget @ 110V AC in | | PoE Budget @ 220V AC in | | External RPS Application |
| PoE Budget | 1 PSU or 2 in RPS mode | 2 PSUs in EPS mode | 1 PSU or 2 in RPS mode | 2 PSUs in EPS mode | |
| M4300-16X (XSM4316PA version APS299W PSU) | 199 Watts | - | 199 Watts | - | |
| M4300-16X (XSM4316PB version APS600W PSU) | 500 Watts | - | 500 Watts | - | |
| M4300-96X (APS600W PSU and 48x10G PoE+) | 232 Watts | 832 Watts | 232 Watts | 832 Watts | |
| M4300-96X (APS600W PSU and 96x10GBT incl. 48 PoE+) | 34 Watts | 634 Watts | 34 Watts | 634 Watts | |
| M4300-96X (APS600W+APS1200W PSU and 48x10G PoE+) | - | 1,282 Watts | - | 1,432 Watts | |
| M4300-96X (APS600W+APS1200W PSU and 96x10GGBT incl. 48 PoE+) | - | 1,084 Watts | - | 1,234 Watts | |
| M4300-96X | 682 Watts | 1,440 Watts | 832 Watts | 1,440 Watts | |
| M4300-96X (APS1200W PSU and 48x10G PoE+) | 484 Watts | 1,440 Watts | 634 Watts | 1,440 Watts | |
| M4300-96X (PoE Budget depends on number of PSU and APM port cards per switch) | APS600W provides 600W@110V/220VAC; APS1200W delivers 1,050W@110VAC or 1,200W@220VAC per PSU. The system consumes 110W, plus 5W per empty slot; APM408C/APM408P: 38W; APM408F/APM402XL: 23W. | | | | |
| M4300-28G-PoE+ (GSM4328PA version 550W PSU) | 480 Watts | 720 Watts | 480 Watts | 720 Watts | |
| M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) | 630 Watts | 720 Watts | 720 Watts | 720 Watts | |
| M4300-52G-PoE+ (GSM4352PA version 550W PSU) | 480 Watts | 720 Watts | 480 Watts | 720 Watts | Power redundancy (RPS) when 2 PSUs in EPS mode |
| M4300-52G-PoE+ (GSM4352PB version 1,000W PSU) | 591 Watts | 1,010 Watts | 860 Watts | 1,440 Watts | |

| Features Support | | |
|--|------------|--|
| IEEE 802.3af (up to 15.4W per port) | Ye | |
| IEEE 802.3at (up to 30W per port) | s | |
| IEEE 802.3at Layer 2 (LLDP) method | Ye | |
| IEEE 802.3at 2-event classification | s | |
| PoE timer/schedule (week, days, hours) | Ye | |
| | s | |
| Processor/Memory | Ye | |
| Processor (CPU) - M4300-96X | s | Integrated 1.4Ghz CPU in switching silicon |
| Processor (CPU) - all other models | Ye | |
| | s | Integrated 800Mhz CPU in switching silicon |
| System memory (RAM) - M4300-96X | | 2 GB |
| System memory (RAM) - all other models | | 1 GB |
| Code storage (flash) - all other models | 256 MB | Dual firmware image |
| Packet Buffer Memory | | |
| M4300-96X | 96 Mb | |
| M4300-24X24F, M4300-48X, M4300-48XF | 56 Mb | |
| M4300-12X12F, M4300-24X, M4300-24XF | 32 Mb | Dynamically shared across only used ports |
| All other models | 16 Mb | |
| Virtual Chassis Stacking | | |
| Max physical switches per stack | | 8 (any combination of M4300 switches) |
| Max physical ports per stack | | 384 x 1G ports or 768 x 10G ports or 192 x 40G ports or a combination |
| Mixed stacking between 1G models and 10G/40G models | | Yes |
| Mixed stacking table size | | Mixed stacking SDM template is used based on "least common denominator" set of capacities |
| Stacking ports (pre-configuration) | | No pre-configured stacking port: any 40G or 10G port (copper, fiber) and any media type (RJ45, SFP+, DAC) can be used for stacking |
| Stacking ports (max number) | | 1G models: up to 4 ports per switch 10G models: up to 16 ports per switch |
| Vertical and horizontal stacking topologies | | Chain, single ring, dual ring, mesh, spine and leaf |
| Distant stacking using fiber | | Yes |
| Non-stop forwarding (NSF) | | Yes |
| Hitless management unit failover and failback | | Yes, no service interruption across the stack |
| Automatic unit replacement (AUR) | | Yes |
| Distributed Link Aggregation (LAGs across the stack) | | Yes |
| Stack with previous M5300, M7100, M7300 versions | | Not supported |
| Performance Summary | | |
| Switching fabric | | |
| M4300-8X8F, M4300-16X | 320 Gbps | |
| M4300-12X12F, M4300-24X, M4300-24XF | 480 Gbps | |
| M4300-24X24F, M4300-48X, M4300-48XF | 960 Gbps | |
| M4300-96X | 1.920 Tbps | Line-rate (non blocking fabric) |
| M4300-28G, M4300-28G-PoE+ | 128 Gbps | |
| M4300-52G, M4300-52G-PoE+ | 176 Gbps | |
| Throughput | | |
| M4300-8X8F, M4300-16X | | 238 Mpps |
| M4300-12X12F, M4300-24X, M4300-24XF | | 357 Mpps |
| M4300-24X24F, M4300-48X, M4300-48XF | | 714 Mpps |
| M4300-96X | | 2,857 Mpps |
| M4300-28G, M4300-28G-PoE+ | | 95.2 Mpps |
| M4300-52G, M4300-52G-PoE+ | | 130.9 Mpps |

| Latency - 10G Fiber | M4300- | 64-byte frames | 512-byte frames | 1024-byte frames | 1518-byte frames |
|-----------------------------|---------------------------|-----------------------|------------------------|-------------------------|-------------------------|
| 8X8F | M4300-16X M4300-12X12F | 0.889µs | 0.874µs | 0.876µs | 0.87µs |
| | M4300-24XF | 1.189µs | 1.313µs | 1.373µs | 1.309µs |
| | M4300-24X24F M4300-48X | 1.827µs | 1.919µs | 1.971µs | 1.905µs |
| | M4300-48XF M4300-96X | 1.323µs | 1.432µs | 1.489µs | 1.421µs |
| | M4300-28G, M4300-28G-PoE+ | 0.879µs | 0.889µs | 0.89µs | 0.88µs |
| | M4300-52G, M4300-52G-PoE+ | 1.508µs | 1.516µs | 1.516µs | 1.523µs |
| Latency - 10G Copper | | | | | |
| | M4300-8X8F M4300-16X | 0.9µs | 0.907µs | 0.91µs | 0.898µs |
| | M4300-12X12F | 0.75µs | 1.170µs | 1.603µs | 1.970µs |
| | M4300-24X | 1.961µs | 1.952µs | 1.941µs | 1.95µs |
| | M4300-24XF | 1.24µs | 1.225µs | 1.232µs | 1.196µs |
| | M4300-24X24F | | | | |
| | M4300-48X M4300-48XF | 64-byte frames | 512-byte frames | 1024-byte frames | 1518-byte frames |
| | M4300-96X M4300-28G, | 2.432µs | 2.421µs | 2.421µs | 2.414µs |
| | M4300-28G-PoE+ M4300-52G, | 2.470µs | 2.460µs | 2.458µs | 2.453µs |
| | M4300-52G-PoE+ | 2.755µs | 2.879µs | 2.938µs | 2.876µs |
| | | 2.728µs | 2.85µs | 2.904µs | 2.841µs |
| Latency - 1G Fiber | | | | | |
| | M4300-8X8F M4300-16X | 2.722µs | 2.844µs | 2.895µs | 2.84µs |
| | M4300-12X12F | 2.387µs | 2.407µs | 2.415µs | 2.402µs |
| | M4300-24X M4300-24XF | 2.409µs | 2.425µs | 2.43µs | 2.432µs |
| | M4300-24X24F M4300-48X | 1.245µs | 1.247µs | 1.287µs | 1.265µs |
| | M4300-48XF M4300-96X | 1.491µs | 1.921µs | 2.354µs | 2.722µs |
| | M4300-28G, M4300-28G-PoE+ | 2.74µs | 2.71µs | 2.732µs | 2.706µs |
| | M4300-52G, M4300-52G-PoE+ | 2.71µs | 2.7µs | 2.692µs | 2.676µs |
| | | 64-byte frames | 512-byte frames | 1024-byte frames | 1518-byte frames |
| Latency - 1G Copper | | 2.622µs | 2.543µs | 2.538µs | 2.557µs |
| | M4300-8X8F M4300-16X | - | - | - | - |
| | M4300-12X12F M4300-24X | 2.741µs | 2.875µs | 2.901µs | 2.853µs |
| | M4300-24XF M4300-24X24F | 2.289µs | 2.393µs | 2.423µs | 2.379µs |
| | M4300-48X M4300-48XF | 2.333µs | 2.403µs | 2.427µs | 2.383µs |
| | M4300-96X M4300-28G, | 2.752µs | 2.767µs | 2.784µs | 2.752µs |
| | M4300-28G-PoE+ M4300-52G, | 2.285µs | 2.39µs | 2.426µs | 2.379µs |
| | M4300-52G-PoE+ | 2.153µs | 2.162µs | 2.176µs | 2.165µs |
| | | TBD | TBD | TBD | TBD |
| Green Ethernet | Energy | 1.908µs | 1.914µs | 1.918µs | 1.936µs |
| Efficient Ethernet (EEE) | | 1.618µs | 1.594µs | 1.578µs | 1.576µs |
| | | 64-byte frames | 512-byte frames | 1024-byte frames | 1518-byte frames |
| | | 2.572µs | 2.564µs | 2.592µs | 2.589µs |
| | | 4.479µs | 4.309µs | 4.298µs | 4.432µs |
| | | 2.751µs | 2.848µs | 2.941µs | 2.868µs |
| | | 2.707µs | 2.821µs | 2.866µs | 2.826µs |
| | | 3.805µs | 3.774µs | 3.822µs | 3.795µs |
| | | 2.772µs | 2.79µs | 2.814µs | 2.784µs |
| | | 2.702µs | 2.714µs | 2.73µs | 2.709µs |
| | | 2.83µs | 2.82µs | 2.822µs | 2.802µs |
| | | TBD | TBD | TBD | TBD |
| | | 3.745µs | 3.756µs | 3.746µs | 3.762µs |
| | | 2.688µs | 2.644µs | 2.648µs | 2.666µs |

Compliant with IEEE 802.3az Energy Efficient Ethernet Task Force

Deactivated by default

| Other Metrics | |
|--|--|
| Forwarding mode | Store-and-forward |
| Addressing | 48-bit MAC address |
| Address database size | 256K MAC addresses |
| (M4300-24X24F, M4300-48X, M4300-48XF) | 128K MAC addresses |
| (all other models) | 16K MAC addresses |
| Number of VLANs | 4,093 VLANs (802.1Q) simultaneously - standalone mode |
| | 4,093 VLANs - stack mode (except when mixed stacks of M4300-96X with other models - 1,024 VLANs only) |
| Number of multicast groups filtered (IGMP) | 4K total (2,048 IPv4 and 2,048 IPv6) |
| Number of Link Aggregation Groups (LAGs) | 128 LAGs with up to 8 ports per group |
| | 802.3ad / 802.1AX-2008 |
| Number of hardware queues for QoS (Standalone) | 8 queues |
| Number of hardware queues for QoS (Stack) | 7 queues |
| Number of routes (M4300-24X24F, -48X, -48XF, -96X) | 12,288 IPv4 Unicast Routes in IPv4 Routing Default SDM Template |
| IPv4 | 4,096 IPv6 Unicast Routes in Dual IPv4 and IPv6 SDM Template |
| IPv6 | 512 IPv4 Unicast Routes in IPv4 Routing Default SDM Template |
| (all other models) | 256 IPv6 Multicast Routes in Dual IPv4 and IPv6 SDM Template |
| IPv4 | |
| IPv6 | |
| | SDM (System Data Management, or switch database) templates allow for granular system resources distribution depending on IPv4 or IPv6 applications |
| Number of static routes | |
| IPv | 6 |
| 4 | 4 |
| IPv | 6 |
| RIP application route scaling | 4 |
| 6 | 512 |
| IPv4 | |
| OSPF application route scaling | |
| (M4300-24X24F, -48X, -48XF, -96X) | 12,288 |
| IPv4 | 4,096 |
| IPv6 | |
| (all other models) | 512 |
| IPv4 | 256 |
| IPv6 | |
| Number of IP interfaces (port or VLAN) | 128 |
| Jumbo frame support | up to 9KB packet size |
| Acoustic noise (ANSI-S10.12) | |
| @ 25°C ambient (77°F) | |
| M4300-8X8F | 36.9 dB |
| M4300-16X (XSM4316PA version, APS299W PSU) | 36 dB |
| M4300-16X (XSM4316PB version, APS600W PSU) | 35 dB |
| M4300-12X12F | 36.9 dB |
| M4300-24X | 37dB |
| M4300-24XF | 39.7 dB |
| M4300-24X24F | 35.8 dB |
| M4300-48X | 40.3dB |
| M4300-48XF | 42.4 dB |
| M4300-96X | 35.8dB (no PoE); 66.8dB (max PoE) |
| M4300-28G | 30.3 dB |
| M4300-28G-PoE+ | 39.8 dB |
| M4300-52G | 31.5 dB |
| M4300-52G-PoE+ | 39.8 dB |

Fan speed control

| Heat Dissipation (BTU) | 1 PSU | 2 PSUs in RPS mode | 2 PSUs in EPS mode | 2 PSUs in EPS mode with external RPS |
|---|-----------------|--------------------|--------------------|--------------------------------------|
| M4300-8X8F | 185.77 BTU/hr | - | - | - |
| M4300-16X (APS199W, without PoE) | 186 BTU/hr | - | - | - |
| M4300-16X (APS199W PSU, with max PoE 199W) | 1,053.43 BTU/hr | - | - | - |
| M4300-16X (APS600W PSU, with max PoE 500W) | 2,081.64 BTU/hr | - | - | - |
| M4300-12X12F | 367.75 BTU/hr | - | - | - |
| M4300-24X | 473.9 BTU/hr | - | - | - |
| M4300-24XF | 330.6 BTU/hr | - | - | - |
| M4300-24X24F | 610.39 BTU/hr | 610.39 BTU/hr | - | - |
| M4300-48X | 899.9 BTU/hr | 899.9 BTU/hr | - | - |
| M4300-48XF | 577.8 BTU/hr | - | - | - |
| M4300-96X (without PoE) | 2145.82 BTU/hr | 2145.82 BTU/hr | - | - |
| M4300-96X (with max PoE: 1,440W) | - | - | 7,605.15 BTU/hr | - |
| M4300-28G | 117.78 BTU/hr | 117.78 BTU/hr | - | - |
| M4300-28G-PoE+ (GSM4328PA version 550W PSU) | 1,969.88 BTU/hr | 1,963.05 BTU/hr | 2,720.96 BTU/hr | - |
| M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) | 2,844.55 BTU/hr | 2,842.15 BTU/hr | 2,844.55 BTU/hr | - |
| M4300-52G | 161.82 BTU/hr | 161.82 BTU/hr | - | - |
| M4300-52G-PoE+ (GSM4352PA version 550W PSU) | 2,079.13 BTU/hr | 2,085.95 BTU/hr | 2,953.11 BTU/hr | 3,123.81 BTU/hr |
| M4300-52G-PoE+ (GSM4352PB version 1,000W PSU) | 3,031.63 BTU/hr | 3,079.43 BTU/hr | 5,411.19 BTU/hr | 5,650.17 BTU/hr |

| Mean Time Between Failures (MTBF) | @ 25°C ambient (77°F) | @ 50°C ambient (131°F) |
|-----------------------------------|--------------------------------|-----------------------------|
| M4300-8X8F | 196,120 hours (~22.4 years) | 123,644 hours (~14.1 years) |
| M4300-16X | 690,301 hours (~78.8 years) | 207,500 hours (~23.7 years) |
| M4300-12X12F | 192,898 hours (~22 years) | 121,331 hours (~13.9 years) |
| M4300-24X | 247,437 hours (~28.2 years) | 153,855 hours (~17.5 years) |
| M4300-24XF | 968,447 hours (~110.6 years) | 159,042 hours (~18.2 years) |
| M4300-24X24F | 133,176 hours (~15.2 years) | 111,734 hours (~12.8 years) |
| M4300-96X | 519,784 hours (~59.3 years) | 196,635 hours (~22.4 years) |
| M4300-48X | 249,393 hours (28.4 years) | 154,220 hours (17.6 years) |
| M4300-48XF | 657,392 hours (~75 years) | 10,2690 hours (~11.7 years) |
| M4300-28G | 1,328,968 hours (~151.7 years) | 444,117 hours (~50.7 years) |
| M4300-28G-PoE+ | 1,189,685 hours (~135.8 years) | 491,811 hours (~56.1 years) |
| M4300-52G | 578,472 hours (~66 years) | 301,524 hours (~34.4 years) |
| M4300-52G-PoE+ | 673,207 hours (~76.9 years) | 247,969 hours (~28.3 years) |

| L2 Services - VLANs | | |
|--------------------------|-------------|---|
| IEEE 802.1Q VLAN Tagging | 802.1Q-1998 | Up to 4,093 VLANs - 802.1Q Tagging |
| Protocol Based VLANs | | Yes |
| IP subnet | | Yes |
| ARP | | Yes |
| IPX | | Yes |
| Subnet based VLANs | | Yes |
| MAC based VLANs | | Yes |
| Voice VLAN | Yes | Based on phones OUI bytes (internal database, or user-maintained) or protocols (SIP, H323 and SCCP) |
| Private Edge VLAN | | Yes |

| | | | |
|---|----------------|--|--|
| Private VLAN | | Yes | |
| IEEE 802.1x | Yes | | 802.1x-2004 |
| Guest VLAN | Yes | | |
| RADIUS based VLAN assignment via .1x | Yes | | IP phones and PCs can authenticate on the |
| RADIUS based Filter ID assignment via .1x | Yes | | same port but under different VLAN assignment |
| MAC-based .1x | Yes | | policies |
| Unauthenticated VLAN | Yes | | |
| Double VLAN Tagging | | Yes | |
| Enabling dvlan-tunnel makes interface | | Yes | |
| Global ethertype (TPID) | | Yes | |
| Interface ethertype (TPID) | | Yes | |
| Customer ID using PVID | | Yes | |
| GARP with GVRP/GMRP | Yes | | Automatic registration for membership in VLANs or in multicast groups |
| Multiple Registration Protocol (MRP) | | | Can replace GARP functionality |
| Multicast VLAN Registration Protocol (MVRP) | Yes | | Can replace GARP functionality |
| MVR (Multicast VLAN registration) | | Yes | |
| L2 Services - Availability | | | |
| IEEE 802.3ad - LAGs | Yes | | Up to 128 LAGs and up to 8 ports per group |
| LACP | Yes | | |
| LACP automatically reverts to and from Static LAG | Yes | | |
| Static LAGs | Yes | | |
| Local Preference per LAG | Yes | | |
| LAG Hashing | | Yes | |
| LAG Member Port Flaps Tracking | | Yes | |
| LAG Local Preference | Yes | | Known unicast traffic egresses only out of local blade LAG interface members |
| Distributed Link Aggregation | Yes | | LAGs across the stack |
| Storm Control | Yes | | |
| IEEE 802.3x (Full Duplex and flow control) | Yes | | |
| Per port Flow Control | Yes | | Asymmetric and Symmetric Flow Control |
| Priority Flow Control (PFC) Standardized by IEEE 802.1Qbb | | M4300-12X12F, 24X, 24XF, 24X24F, 48X, 48XF and 96X only | Enables Flow Control per traffic class, full-duplex, CLI |
| UDLD Support (Unidirectional Link Detection) | | | Yes |
| Normal-Mode | | | Yes |
| Aggressive-Mode | | | Yes |
| Link Dependency | Yes | Allow the link status of specified ports to be dependent on the link status of other ports | |
| IEEE 802.1D Spanning Tree Protocol | | | Yes |
| IEEE 802.1w Rapid Spanning Tree | | | Yes |
| IEEE 802.1s Multiple Spanning Tree | | | Yes |
| Per VLAN STP (PVSTP) with FastUplink and FastBackbone | Yes (CLI only) | | PVST+ interoperability |
| Per VLAN Rapid STP (PVRSTP) | Yes (CLI only) | | RPVST+ interoperability |
| STP Loop Guard | | | Yes |
| STP Root Guard | | | Yes |
| STP BPDU Guard | | | Yes |
| STP BPDU Filtering | | | Yes |
| STP BPDU Flooding | | | Yes |

| L2 Services - Multicast Filtering | |
|---|--|
| IGMPv2 Snooping Support | Yes |
| IGMPv3 Snooping Support | Yes |
| NETGEAR IGMP Plus™ Enhanced Implementation | Yes For automatic multicast across M4300/M4500 (Spine and Leaf) at Layer 2, removing the need for L3 PIM routing |
| MLDv1 Snooping Support | Yes |
| MLDv2 Snooping Support | Yes |
| Expedited Leave function | Yes |
| Static L2 Multicast Filtering | Yes |
| Enable IGMP / MLD Snooping per VLAN | Yes |
| IGMPv1/v2 Snooping Querier, compatible v3 queries | Yes |
| MLDv1 Snooping Querier | Yes |
| IGMP Snooping | |
| Enable IGMP Snooping per VLAN | Yes |
| Snooping Querier | Yes |
| MGMD Snooping | |
| Control Packet Flooding | Yes |
| Flooding to mRouter Ports | Yes |
| Remove Flood-All-Unregistered Option | Yes |
| Multicast VLAN registration (MVR) | Yes |
| L3 Services - Multicast Routing | |
| IGMP Proxy | Yes |
| MLD Proxy | Yes |
| Any Source Multicast (ASM) | Yes |
| Source Specific Multicast (SSM) | Yes |
| Multicast streams routing between subnets, VLANs | Yes |
| Multicast static routes (IPv4, IPv6) | Yes |
| DVMRP (Distance Vector Multicast Routing Protocol) | Yes |
| Neighbor discovery | Yes |
| PIM-DM (Multicast Routing - dense mode) | Yes |
| PIM-DM (IPv6) | Yes |
| PIM-SM (Multicast Routing - sparse mode) | Yes |
| PIM-SM (IPv6) | Yes |
| PIM multi-hop RP support | Yes |
| PIM Timer Accuracy | Yes |
| PIM-SM Unhandled Events | Yes |
| IPMC replication (hardware support) | Yes |
| L3 Services - DHCP | |
| DHCP IPv4 / DHCP IPv6 Client | Yes |
| DHCP IPv4 / DHCP IPv6 Server (Stateless, Stateful) | Yes |
| DHCP Snooping IPv4 / IPv6 | Yes |
| BootP Relay IPv4 / IPv6 | Yes |
| DHCP Relay IPv4 / IPv6 | Yes |
| DHCP Relay Option 82 circuit-id and remote-id for VLANs | Yes |
| Multiple Helper IPs | Yes |
| Auto Install (DHCP options 66, 67, 150 and 55, 125) | Yes |

L3 Services - Routing

| | | |
|--|-----|---|
| Static Routing / ECMP Static Routing | | IPv4/IPv6 |
| Multiple next hops to a given destination | | Yes |
| Load sharing, Redundancy | | Yes |
| Default routes | | Yes |
| Static Reject routes | | Yes |
| Port Based Routing | | Yes |
| VLAN Routing | | Yes |
| 802.3ad (LAG) for router ports | | Yes |
| VRRP | | IPv4 |
| Pingable VRRP interface | | Yes |
| VRRP Route/Interface Tracking | | Yes |
| Loopback Interfaces | | Yes |
| Tunnel interfaces | | IPv4 / IPv6 |
| Configured 6to4 tunnels | | Yes |
| Automatic 6to4 tunnels | | Yes |
| 6to4 Border Router | | Yes |
| RIP | | IPv4 |
| RIPv1/RIPv2 | | Yes |
| Route Redistribution | Yes | Enables the exchange of routing information among different routing protocols operating within a router |
| OSPF | | IPv4/IPv6 |
| OSPFv2 RFC 2328 including older RFC 1583 support | | Yes |
| OSPFv3 | | Yes |
| OSPF Not-So-Stubby Area (NSSA) Option | | Yes |
| Forwarding of OSPF Opaque LSAs | | Yes |
| Passive interface feature | | Yes |
| Static Area Range Costs feature | | Yes |
| OSPF Equal Cost Multipath (ECMP) | | Yes |
| Dynamically learned ECMP routes | | Yes |
| Statically learned ECMP routes | | Yes |
| OSPF Max Metric feature | | Yes |
| Automatic Exiting of Stub Router Mode feature | | Yes |
| Static Area Range Costs feature | | Yes |
| OSPF LCA Pacing feature | | Yes |
| OSPF Flood Blocking feature | | Yes |
| OSPF Transit-Only Network Hiding | | Yes |
| IP Multinetting | | Yes |
| ICMP throttling | | Yes |
| Router Discovery Protocol | | Yes |
| DNS Client | | IPv4/IPv6 |
| IP Helper | | Yes |
| Max IP Helper entries | | 512 |
| IP Event Dampening | | IPv4/IPv6 |
| Proxy ARP | | IPv4/IPv6 |
| ICMP | | Yes |
| ICMP redirect detection in hardware | | |
| Policy Based Routing (PBR) | | IPv4/IPv6 |
| Based on the size of the packet | | Yes |
| Based on the Protocol of the payload (Protocol ID field) | | Yes |
| Based on Source MAC address | | Yes |
| Based on Source or Destination IP address | | Yes |
| Based on VLAN tag | | Yes |
| Based on Priority(802.1P priority) | | Yes |

| Network Monitoring and Discovery Services | | | | |
|--|-----|--|---|--|
| ISDP (Industry Standard Discovery Protocol) | Yes | | | Can interoperate with devices running CDP |
| 802.1ab LLDP 802.1ab LLDP - MED SNMP | | | Yes | |
| RMON 1,2,3,9 sFlow | | | Yes | |
| Security | | | V1, V2, V3 | |
| | | | Yes | |
| | | | Yes (IPv4 and IPv6 headers) | |
| Network Storm Protection, DoS | | | | |
| Broadcast, Unicast, Multicast DoS Protection | Yes | | | |
| Denial of Service Protection (control plane) | Yes | | | Switch CPU protection |
| Denial of Service Protection (data plane) | Yes | | | Switch Traffic protection |
| DoS Attacks Protection | | SIPDIP SMACDMAC FIRSTFRAG TCPFRAG TCPFLAG TCPPORT | UDPPORT TCPFLAGSEQ TCPOFFSET TCPSYN TCPSYNFIN TCPFINURGPSH | L4PORT ICMP ICMPV4 ICMPV6 ICMPFRAG PINGFLOOD SYNACK |
| CPU Rate Limiting | Yes | Applied to IPv4 and IPv6 multicast packets with unknown L3 addresses when IP routing/multicast enabled | | |
| ICMP throttling | Yes | Restrict ICMP, PING traffic for ICMP-based DoS attacks | | |
| Management | | | | |
| Management ACL (MACAL) | Yes | | | Protects management CPU access through the LAN |
| Max Rules | 64 | | | |
| Out of band Management | Yes | | | In-band management can be shut down entirely when out-of-band management network |
| Radius accounting | Yes | | | RFC 2565 and RFC 2866 |
| TACACS+ | | | Yes | |
| Malicious Code Detection | Yes | | | Software image files and Configuration files with digital signatures |
| Network Traffic | | | | |
| Access Control Lists (ACLs) | | L2 / L3 / L4 | | MAC, IPv4, IPv6, TCP, UDP |
| Time-based ACLs | | | Yes | |
| Protocol-based ACLs | | | Yes | |
| ACL over VLANs | | | Yes | |
| Dynamic ACLs | | | Yes | |
| IEEE 802.1x Radius Port Access Authentication | Yes | | | Up to 48 clients (802.1x) per port are supported, including the authentication of the users domain |
| 802.1x MAC Address Authentication Bypass (MAB) | Yes | | | Supplemental authentication mechanism for non-802.1x devices, based on their MAC address only |
| Network Authentication Successive Tiering | Yes | | | Dot1x-> MAP -> Captive Portal successive authentication methods based on configured time-outs |
| Port Security | | | Yes | |
| IP Source Guard | Yes | | | IPv4 / |
| DHCP Snooping | Yes | | | IPv6 IPv4 |
| Dynamic ARP Inspection | Yes | | | / IPv6 |
| IPv6 RA Guard Stateless Mode | | | Yes | IPv4 / IPv6 |

| | | |
|-------------------|-----|---|
| MAC Filtering | | Yes |
| Port MAC Locking | | Yes |
| Private Edge VLAN | Yes | A protected port doesn't forward any traffic (unicast, multicast, or broadcast) to any other protected port - same switch |
| Private VLANs | Yes | Scales Private Edge VLANs by providing Layer 2 isolation between ports across switches in same Layer 2 network |

Quality of Service (QoS) - Summary

| | | |
|--|--|---|
| Access Lists | | Yes |
| L2 MAC, L3 IP and L4 Port ACLs | | Yes |
| Ingress | | Yes |
| Egress | | Yes |
| 802.3ad (LAG) for ACL assignment | | Yes |
| Binding ACLs to VLANs | | Yes |
| ACL Logging | | Yes |
| Support for IPv6 fields | | Yes |
| DiffServ QoS | | Yes |
| Edge Node applicability | | Yes |
| Interior Node applicability | | Yes |
| 802.3ad (LAG) for service interface | | Yes |
| Support for IPv6 fields | | Yes |
| Ingress/Egress | | Yes |
| IEEE 802.1p COS | | Yes |
| 802.3ad (LAG) for COS configuration | | Yes |
| WRED (Weighted Deficit Round Robin) | | Yes |
| Strict Priority queue technology | | Yes (CLI only) |
| Single Rate Policing | | Yes |
| Committed Information Rate | | Yes |
| Committed Burst Size | | Yes |
| Excessive Burst Size | | Yes |
| DiffServ feature applied to class maps | | Yes, based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address |
| Auto-VoIP | | |
| iSCSI Flow Acceleration | | Yes |
| Dot1p Marking | | Yes |
| IP DSCP Marking | | Yes |

QoS - ACL Feature Support

| | | |
|---|--|------------------|
| ACL Support (general, includes IP ACLs) | | Yes |
| MAC ACL Support | | Yes |
| IP Rule Match Fields: | | |
| Destination IP | | Inbound/Outbound |
| Destination IPv6 IP | | Inbound/Outbound |
| Destination L4 Port | | Inbound/Outbound |
| Every Packet | | Inbound/Outbound |
| IP DSCP | | Inbound/Outbound |
| IP Precedence | | Inbound/Outbound |
| IP TOS | | Inbound/Outbound |

| | |
|--|------------------|
| Protocol | Inbound/Outbound |
| Source IP (for Mask support see below) | Inbound/Outbound |
| Source IPv6 IP | Inbound/Outbound |
| L3 IPv6 Flow Label | Inbound |
| Source L4 Port | Inbound/Outbound |
| TCP Flag | Inbound/Outbound |
| Supports Masking | Inbound/Outbound |
| MAC Rule Match Fields | |
| COS | Inbound/Outbound |
| Destination MAC | Inbound/Outbound |
| Destination MAC Mask | Inbound/Outbound |
| Ethertype | Inbound/Outbound |
| Source MAC | Inbound/Outbound |
| Source MAC Mask | Inbound/Outbound |
| VLAN ID | Inbound/Outbound |
| Rules attributes | |
| Assign Queue | Inbound |
| Logging -- deny rules | Inbound/Outbound |
| Mirror (to supported interface types only) | Inbound |
| Redirect (to supported interface types only) | Inbound |
| Rate Limiting -- permit rules | Inbound/Outbound |
| Interface | |
| Inbound direction | Yes |
| Outbound direction | Yes |
| Supports LAG interfaces | Yes |
| Supports Control-plane interface | Yes |
| Multiple ACLs per interface, dir | Yes |
| Mixed-type ACLs per interface, dir | Yes |
| Mixed L2/IPv4 ACLs per interface, inbound | Yes |
| Mixed IPv4/IPv6 ACLs per interface, inbound | Yes |
| Mixed IPv4/IPv6 ACLs per interface, outbound | Yes |

QoS - DiffServ Feature Support

| | |
|--|------------------|
| DiffServ Supported | Yes |
| Class Type | |
| All | Yes |
| Class Match Criteria | |
| COS | Inbound/Outbound |
| COS2 (Secondary COS) | Inbound |
| Destination IP (for Mask support see below) | Inbound/Outbound |
| Destination IPv6 IP | Inbound/Outbound |
| Destination L4 Port | Inbound/Outbound |
| Destination MAC (for Mask support see below) | Inbound/Outbound |
| Ethertype | Inbound/Outbound |
| Every Packet | Inbound/Outbound |
| IP DSCP | Inbound/Outbound |
| IP Precedence | Inbound/Outbound |
| IP TOS (for Mask support see below) | Inbound/Outbound |
| Protocol | Inbound/Outbound |
| Reference Class | Inbound/Outbound |
| Source IP (for Mask support see below) | Inbound/Outbound |
| Source IPv6 IP | Inbound/Outbound |
| L3 IPv6 Flow Label | Inbound |
| Source L4 Port | Inbound/Outbound |
| Source MAC (for Mask support see below) | Inbound/Outbound |
| VLAN ID (Source VID) | Inbound/Outbound |
| VLAN ID2 (Secondary VLAN) (Source VID) | Inbound/Outbound |
| Supports Masking | Inbound/Outbound |

| | |
|--|---------|
| Policy | |
| Out Class Unrestricted | Yes |
| Policy Attributes -- Inbound | |
| Assign Queue | Yes |
| Drop | Yes |
| Mark COS | Yes |
| Mark COS-AS-COS2 | Yes |
| Mark COS2 (Secondary COS) | Yes |
| Mark IP DSCP | Yes |
| Mark IP Precedence | Yes |
| Mirror (to supported interface types only) | Yes |
| Police Simple | Yes |
| Police Single-Rate | Yes |
| Police Two-Rate | Yes |
| Police Color Aware Mode | Yes |
| Redirect (to supported interface types only) | Yes |
| Policy Attributes -- Outbound | |
| Drop | Yes |
| Mark COS | Yes |
| Mark IP DSCP | Yes |
| Mark IP Precedence | Yes |
| Mirror (to supported interface types only) | Yes |
| Police Simple | Yes |
| Police Single-Rate | Yes |
| Police Two-Rate | Yes |
| Police Color Aware Mode | Yes |
| Redirect (to supported interface types only) | Yes |
| Service Interface | |
| Inbound Slot.Port configurable | Yes |
| Inbound 'All' Ports configurable | Yes |
| Outbound Slot.Port configurable | Yes |
| Outbound 'All' Ports configurable | Yes |
| Supports LAG interfaces | Yes |
| Mixed L2/IPv4 match criteria, inbound | Yes |
| Mixed IPv4/IPv6 match criteria, inbound | Yes |
| Mixed IPv4/IPv6 match criteria, outbound | Yes |
| PHB Support | |
| EF | Yes |
| AF4x | Yes |
| AF3x | Yes |
| AF2x | Yes |
| AF1x | Yes |
| CS | Yes |
| Statistics -- Policy Instance | |
| Offered | packets |
| Discarded | packets |
| QoS - COS Feature Support | |
| COS Support | |
| Supports LAG interfaces | Yes |
| COS Mapping Config | |
| Configurable per-interface | Yes |
| IP DSCP Mapping | Yes |

| | |
|--|-----|
| COS Queue Config | |
| Queue ParmS configurable per-interface | Yes |
| Drop ParmS configurable per-interface | Yes |
| Interface Traffic Shaping (for whole egress interface) | Yes |
| Minimum Bandwidth | Yes |
| Weighted Deficit Round Robin (WDRR) Support | Yes |
| Maximum Queue Weight | 127 |
| WRED Support | Yes |

PTP - PTPv2 Feature Support

| | |
|--|--|
| PTPv2 | All M4300 models, except 48-port 10G models (M4300-24X24F, M4300-48X, M4300-48XF) |
| IEEE 1588 PTPv2 Section 10 and 11.5 | Yes |
| Implementation | Transparent Clock (TC) End-to-End implementation considering the residence time of PTPv2 packets from ingress to egress |
| Limitations | Standalone mode, or Stack Master only. On M4300-52G and M4300-52G-PoE+ models, PTPv2 is supported between port 1 and port 24, and between port 25 and port 48. PTPv1 packets are forwarded but not processed (no PTPv1 support). |
| Method | Residence time of the PTPv2 packet at the egress port level |
| PTPv2 packet fields that are updated | The "Sync & Delay_Req" field of passing/egressing out PTPv2 packets is updated with the residence time in the switch |
| PTPv2 packet fields that are NOT updated | Other fields in PTPv2 packets ("Announce", "Delay_Resp", "Pdelay_Req" and "Pdelay_Resp") are not updated |

Functional Summary - IETF RFC Standards and IEEE Network Protocols

Core Management

| | |
|--|--|
| RFC 854 – Telnet | RFC 3414 – User-Based Security Model |
| RFC 855 – Telnet option specifications | RFC 3415 – View-based Access Control Model |
| RFC 1155 – SMI v1 | RFC 3416 – Version 2 of SNMP Protocol Operations |
| RFC 1157 – SNMP | RFC 3417 – Transport Mappings |
| RFC 1212 – Concise MIB definitions | RFC 3418 – Management Information Base (MIB) for the Simple Network Management Protocol (SNMP) |
| RFC 1867 – HTML/2.0 forms with file upload extensions | Configurable Management VLAN |
| RFC 1901 – Community-based SNMP v2 | SSL 3.0 and TLS 1.2 |
| RFC 1908 – Coexistence between SNMP v1 and SNMP v2 | – RFC 2246 – The TLS protocol, version 1.0 |
| RFC 2068 – HTTP/1.1 protocol as updated by draft-ietf-http-v11-spec-rev-03 | – RFC 2346 – AES cipher suites for Transport layer security |
| RFC 2271 – SNMP framework MIB | – RFC 2818 – HTTP over TLS SSH 2.0 |
| RFC 2295 – Transparent content negotiation | – RFC 4253 – SSH transport layer protocol |
| RFC 2296 – Remote variant selection; RSVP/1.0 state management cookies – draft-ietf-http-state-mgmt-05 | – RFC 4252 – SSH authentication protocol |
| RFC 2576 – Coexistence between SNMP v1, v2, and v3 | – RFC 4254 – SSH connection protocol |
| RFC 2578 – SMI v2 | – RFC 4251 – SSH protocol architecture |
| RFC 2579 – Textual conventions for SMI v2 | – RFC 4716 – SECSH public key file format |
| RFC 2580 – Conformance statements for SMI v2 | – RFC 4419 – Diffie-Hellman group exchange for the SSH transport layer protocol |
| RFC 3410 – Introduction and Applicability Statements for Internet Standard Management Framework | |
| RFC 3411 – An Architecture for Describing SNMP Management Frameworks | HTML 4.0 specification, December 1997 |
| RFC 3412 – Message Processing & Dispatching | |
| RFC 3413 – SNMP Applications | Java Script™ 1.3 |

| Advanced Management | |
|--|---|
| Industry-standard CLI with the following features: | |
| <ul style="list-style-type: none"> - Scripting capability - Command completion - Context-sensitive help | <ul style="list-style-type: none"> Optional user password encryption Multisession Telnet server Auto Image Upgrade |
| Core Switching | |
| IEEE 802.1AB — Link level discovery protocol | IEEE 802.3ba — 40GbE (M4300-96X) |
| IEEE 802.1D — Spanning tree | IEEE 802.3ad — Link aggregation |
| IEEE 802.1p — Ethernet priority with user provisioning and mapping | IEEE 802.3ae — 10 GbE |
| IEEE 802.1Q — Virtual LANs w/ port-based VLANs | IEEE 802.3af — Power over Ethernet |
| IEEE 802.1S — Multiple spanning tree compatibility | IEEE 802.3at — Power over Ethernet Plus |
| IEEE 802.1v — Protocol-based VLANs | IEEE 802.3x — Flow control |
| IEEE 802.1W — Rapid spanning tree | ANSI/TIA-1057 — LLDP-MED |
| IEEE 802.1AB — LLDP | GARP — Generic Attribute Registration Protocol: clause 12, 802.1D-2004 |
| IEEE 802.1X — Port-based authentication | GMRP — Dynamic L2 multicast registration: clause 10, 802.1D-2004 |
| IEEE 802.3 — 10Base-T | GVRP — Dynamic VLAN registration: clause 11.2, 802.1Q-2003 |
| IEEE 802.3u — 100Base-T | RFC 4541 — IGMP snooping and MLD snooping |
| IEEE 802.3bz-2016 — 2.5G and 5GBASE-T (M4300-96X) | RFC 5171 — UniDirectional Link Detection (UDLD) Protocol |
| Additional Layer 2 Functionality | |
| Broadcast storm recovery | IGMP and MLD snooping querier |
| Double VLAN/VMAN tagging | Port MAC locking |
| DHCP Snooping | MAC-based VLANs |
| Dynamic ARP inspection | IP source guard |
| Independent VLAN Learning (IVL) support | IP subnet-based VLANs |
| IPv6 classification APIs | Voice VLANs |
| Jumbo Ethernet frames | Protected ports |
| Port mirroring | IGMP snooping |
| Static MAC filtering | Green Ethernet power savings mode |
| System Facilities | |
| Event and error logging facility | RFC 2030 — Simple Network Time Protocol (SNTP) V4 for IPv4, IPv6, and OSI |
| Runtime and configuration download capability | RFC 2131 — DHCP Client/Server |
| PING utility | RFC 2132 — DHCP options and BOOTP vendor extensions |
| XMODEM | RFC 2865 — RADIUS client |
| RFC 768 — UDP | RFC 2866 — RADIUS accounting |

| | |
|--|--|
| RFC 783 – TFTP | RFC 2868 – RADIUS attributes for tunnel protocol support |
| RFC 791 – IP | RFC 2869 – RADIUS extensions |
| RFC 792 – ICMP | RFC 28869bis – RADIUS support for Extensible Authentication Protocol (EAP) |
| RFC 793 – TCP | RFC 5176 – RADIUS Change of Auth |
| RFC 826 – ARP | RFC 3164 – The BSD syslog protocol with RFC 5424 update |
| RFC 951 – BOOTP | RFC 3580 – 802.1X RADIUS usage guidelines |
| RFC 1321 – Message digest algorithm | Power Source Equipment (PSE) IEEE 802.af Powered Ethernet (DTE Power via MDI) standard |
| RFC 1534 – Interoperability between BOOTP and DHCP | |

Core Routing

| | |
|---|--|
| RFC 826 – Ethernet ARP | RFC 2328 – OSPFv2 |
| RFC 894 – Transmission of IP datagrams over Ethernet networks | RFC 2385—Protection of BGP Sessions via the TCP MD5 Signature Option |
| RFC 896 – Congestion control in IP/TCP networks | RFC 2453 – RIP v2 |
| RFC 1027 – Using ARP to implement transparent subnet gateways (Proxy ARP) | RFC 3021 – Using 31-Bit Prefixes on Point-to-Point Links |
| RFC 1256 – ICMP router discovery messages | RFC 3046 – DHCP/BOOTP relay |
| RFC 1321 – Message digest algorithm | RFC 3101 – The OSPF “Not So Stubby Area” (NSSA) option |
| RFC 1519 – CIDR | RFC 3768 – Virtual Router Redundancy Protocol (VRRP) |
| RFC 1765 – OSPF database overflow | RFC 3623—Graceful OSPF Restart |
| RFC 1812 – Requirements for IPv4 routers | Route redistribution across RIP, BGP, and OSPF |
| RFC 2082 – RIP-2 MD5 authentication | VLAN routing |
| RFC 2131 – DHCP relay | |

Quality of Service - DiffServ

| | |
|--|--|
| RFC 2474 – Definition of the differentiated services field (DS Field) in IPv4/IPv6 headers | RFC 2697 – A Single Rate Three Color Marker |
| RFC 2475 – An architecture for differentiated services | RFC 3246 – An expedited forwarding PHB (Per-Hop Behavior) |
| RFC 2597 – Assured forwarding PHB group | RFC 3260 – New terminology and clarifications for DiffServ |

Quality of Service - Access Control Lists (ACLs)

Permit/deny actions for inbound or outbound IP traffic classification based on:

- Type of service (ToS) or differentiated services (DS) DSCP field
- Source IP address
- Destination IP address
- TCP/UDP source port
- TCP/UDP destination port
- IPv6 flow label
- IP protocol number

Permit/deny actions for inbound or outbound Layer 2 traffic classification based on:

- Source MAC address
 - Destination MAC address
 - EtherType
 - VLAN identifier value or range (outer and/or inner VLAN tag)
 - 802.1p user priority (outer and/or inner VLAN tag)
- Optional rule attributes:
- Assign matching traffic flow to a specific queue
 - Redirect or mirror (flow-based mirroring) matching traffic flow to a specific port
- Generate trap log entries containing rule hit counts

Quality of Service - Class of Service (CoS)

- | | |
|--|-----------|
| Direct user configuration of the following: | Auto VoIP |
| – IP DSCP to traffic class mapping | |
| – IP precedence to traffic class mapping | |
| – Interface trust mode: 802.1p, IP Precedence, IP DSCP, or untrusted | |
| – Interface traffic shaping rate | |
| – Minimum and maximum bandwidth per queue | |
| – Strict priority versus weighted (WRR/WDRR/WFQ) scheduling per queue | |
| – Tail drop versus Weighted Random Early Detection (WRED) queue depth management | |

Core Multicast

- | | |
|--|--|
| RFC 1112 – Host extensions for IP multicasting | RFC3973 – PIM-DM |
| RFC 2236 – IGMP v2 | RFC4601 – PIM-SM |
| RFC 2710 – MLDv1 | Draft-ietf-idmr-dvmrp-v3-10 – DVMRP |
| RFC 2365 – Administratively scoped boundaries | Draft-ietf-magma-igmp-proxy-06.txt – IGMP/MLD-based multicast forwarding (IGMP/MLD proxying) |
| RFC 3376 – IGMPv3 | Draft-ietf-magma-igmpv3-and-routing-05.txt – IGMPv3 and multicast routing protocol interaction |
| RFC3810 – MLDv2 | Static RP configuration |

Core IPv6 Routing

- | | |
|--|--|
| RFC 1981 – Path MTU for IPv6 | RFC 3513 – Addressing architecture for IPv6 |
| RFC 2373 – IPv6 addressing | RFC 3542 – Advanced sockets API for IPv6 |
| RFC 2460 – IPv6 protocol specification | RFC 3587 – IPv6 global unicast address format |
| RFC 2461 – Neighbor discovery | RFC 3736 – Stateless DHCPv6 |
| RFC 2462 – Stateless autoconfiguration | RFC 4213 – Basic transition mechanisms for IPv6 |
| RFC 2464 – IPv6 over Ethernet | RFC 4291 – Addressing architecture for IPv6 |
| RFC 2711 – IPv6 router alert | RFC 4443 – Internet Control Message Protocol (ICMPv6) for the IPv6 Specification |
| RFC 3056 – Connection of IPv6 Domains via IPv4 Clouds | RFC 5340 – OSPF for IPv6 |
| RFC 3315 – Dynamic Host Configuration Protocol for IPv6 (DHCPv6) | RFC 5187 – OSPFv3 Graceful Restart |
| RFC 3484 – Default address selection for IPv6 | RFC 6164 – Using 127-Bit IPv6 Prefixes on Inter-Router Links |
| RFC 3493 – Basic socket interface for IPv6 | RFC 6583 – Operational Neighbor Discovery Problems |

Supported MIBs

Base Package MIBs

MIBs can be downloaded here: <http://www.netgear.com/support/product/M4300-8X8F?cid=#download>

- | | |
|---|--|
| ANSI/TIA-1057 – LLDP-EXT-MED-MIB | RFC 2674 – Q-BRIDGE-MIB |
| DIFFSERV DSCP TC (Draft – no RFC) | RFC 2677 – IANA Address Family Numbers MIB |
| DNS-RESOLVER-MIB (IETF DNS Working Group) | RFC 2819 – RMON MIB |
| DNS-SERVER-MIB (IETF DNS Working Group) | RFC 2925 – DISMAN-PING-MIB and DISMAN-TRACEROUTE-MIB |
| GreenEthernet Private MIB | RFC 3273 – RMON MIB for High Capacity Networks |
| IANA-ADDRESS-FAMILY-NUMBERS-MIB (IANA (3/2002)) | RFC 3411 – SNMP Management Frameworks MIB |
| IEEE 802.1AB-2004 – LLDP MIB | RFC 3411 – SNMP-FRAMEWORK-MIB |

| | |
|---|--|
| IEEE 802.1AB-2005 – LLDP-EXT-DOT3-MIB | RFC 3412 – SNMP-MPD-MIB |
| POWER ETHERNET MIB (Draft – no RFC) | RFC 3413 – SNMP-NOTIFICATION-MIB |
| RFC 1155 – SMI-MIB | RFC 3413 – SNMP-PROXY-MIB (initial revision published as RFC 2273) |
| RFC 1450 – SNMPV2-MIB | RFC 3413 – SNMP-TARGET-MIB (initial revision published as RFC 2273) |
| RFC 2273 – SNMP Notification MIB, SNMP Target MIB | RFC 3414 – User-based Security Model for SNMPv3 MIB |
| RFC 2392 – IANA RTPROTO-MIB | RFC 3415 – View-based Access Control Model for SNMP MIB |
| RFC 2572 – SNMP Message Processing and Dispatching MIB | RFC 3417 – SNMPV2-TM |
| RFC 2574 – User-based Security Model for SNMPv3 MIB | RFC 3418 – SNMPv2 MIB |
| RFC 2575 – View-based Access Control Model for SNMP MIB | RFC 3434 – RMON MIB Extensions for High Capacity Alarms |
| RFC 2576 – SNMP Community MIB | RFC 3584 – SNMP Community MIB |
| RFC 2578 – SNMPV2-SMI | RFC 3621 – POWER-ETHERNET-MIB |
| RFC 2579 – SNMPV2-TC | SNMP-RESEARCH-MIB – SNMP research MIB definitions |
| RFC 2580 – SNMPV2-CONF | SR-AGENT-INFO-MIB – SNMP research MIB definitions |
| RFC 2613 – SMON-MIB | USM-TARGET-TAG-MIB – SNMP research MIB definitions |
| Switching Package MIBs | |
| RFC 1213 – MIB-II | RFC 2011 – SNMPv2 Management Information Base |
| ANSI/TIA 1057 – LLDP-MED MIB | RFC 2213 – Integrated Services MIB |
| FASTPATH Enterprise MIBs supporting switching features | RFC 2233 – IF-MIB |
| FASTPATH-MMRP-MIB – MMRP private MIB for IEEE 802.1Q devices | RFC 2233 – The Interfaces Group MIB using SMI v2 |
| FASTPATH-MSRP-MIB – MSRP private MIB for IEEE 802.1Q devices | RFC 2674 – VLAN and Ethernet Priority MIB (P-Bridge MIB) |
| FASTPATH-MVRP-MIB – MVRP private MIB for IEEE 802.1Q devices | RFC 2737 – Entity MIB (Version 2) |
| IANAifType-MIB – IANAifType Textual Convention | RFC 2819 – RMON Groups 1,2,3, & 9 |
| IEEE 802.1AB – LLDP MIB | RFC 2863 – Interfaces Group MIB |
| IEEE 802.3AD MIB (IEEE8021-AD-MIB) | RFC 3291 – INET Address MIB |
| IEEE Draft P802.1AS/D7.0 (IEEE8021-AS-MIB) | RFC 3291 – Textual Conventions for Internet Network Addresses |
| IEEE LAG-MIB – Link Aggregation module for managing IEEE 802.3ad | RFC 3621 – Power Ethernet MIB |
| LLDP-EXT-DOT3-MIB (part of IEEE Std 802.1AB) | RFC 3635 – Etherlike MIB |
| LLDP-MIB (part of IEEE Std 802.1AB) | RFC 3636 – IEEE 802.3 Medium Attachment Units (MAUs) MIB |
| Private MIB for 802.1Qat, 802.1Qav Configuration | RFC 4022 – Management Information Base for the Transmission Control Protocol (TCP) |
| RFC 1493 – Bridge MIB | RFC 4113 – Management Information Base for the User Datagram Protocol (UDP) |
| RFC 1643 – Definitions of managed objects for the Ethernet-like interface types | RFC 4444 – IS-IS MIB |
| Routing Package MIBs | |
| FASTPATH Enterprise MIBs supporting routing features | RFC 2096 – IP Forwarding Table MIB |
| IANA-Address-Family-Numbers-MIB | RFC 2668 – IEEE 802.3 Medium Attachment Units (MAUs) MIB |

RFC 1724 — RIP v2 MIB Extension

RFC 2787 — VRRP MIB

RFC 1850 — OSPF MIB

IPv6 Management MIBs

RFC 3419 — TRANSPORT-ADDRESS-MIB

IPv6-MIB (draft)

IPv6-ICMP-MIB (draft)

IPv6 Routing MIBs

RFC 2465 — IPv6 MIB

RFC 2466 — ICMPv6 MIB

QoS Package MIB

RFC 3289 — DIFFSERV-MIB & DIFFSERV-DCSP-TC MIBs

Private MIBs for full configuration of DiffServ, ACL, and CoS functionality

Security MIB

RFC 2618 — RADIUS Authentication Client MIB

IEEE8021-PAE-MIB — The Port Access Entity module for managing IEEE 802.1X

RFC 2620 — RADIUS Accounting MIB

IEEE 802.1X MIB (IEEE 8021-PAE-MIB 2004 Revision)

Multicast Package MIBs

RFC 2932 — IPv4 Multicast Routing MIB (for DVMRPv4 and PIMDMv4)

draft-ietf-idmr-dvmrp-mib-11.txt — DVMRP MIB

RFC 5060 — PIM-SM and PIM-DM MIB for IPv4 and IPv6

draft-ietf-magma-mgmd-mib-05.txt — Multicast Group Membership Discovery MIB (both IGMP and MLD)

RFC 5240 — BSR Protocol MIB

FASTPATH Enterprise MIBs supporting multicast features

Management

Password management

Yes

Configurable Management VLAN

Yes

Out-of-band Management

Yes

In-band management can be shut down using Management ACLs when separate management network

Auto Install

(BOOTP and DHCP options 66, 67, 150 and 55, 125)

Yes

Scalable deployment process (firmware, config)

Admin access control via Radius and TACACS+

Yes

Policies, Enable

Industry standard CLI (IS-CLI)

Yes

Command Line interface

CLI commands logged to a Syslog server

Yes

Web-based graphical user interface (GUI)

Yes

Fully functional GUI (exceptions are noted below:)

Features without Web GUI support

PFC (Priority Flow Control)
PV(R)STP

CLI only
CLI only

PFC only supported on M4300-12X12F, 24X, 24X24F, 48X and 96X

Authorization List

CLI only

Control Plane ACL

CLI only

UDLD

CLI only

Policy Based Routing

CLI only

LLPF

CLI only

QoS Policy for Single Rate

CLI only

DHCPv6 Snooping

CLI only

IPv6 DHCP Relay

CLI only

eMail Alerting

CLI only

MMRP

CLI only

Telnet

Yes

| | | |
|--|--|---|
| IPv6 management | Yes | |
| Dual Software (firmware) image | Yes | Allows non disruptive firmware upgrade process |
| Editable Configuration file | Yes | Text-based (CLI commands) configuration file |
| Non disruptive Config Management | Yes | With new startup configuration file, the switch gracefully resolves any differences with the running config |
| IS-CLI Scripting | Yes | |
| Port descriptions | Yes | |
| SNTP client over UDP port 123 | Yes | Provides synchronized network timestamp either in broadcast or unicast mode |
| XMODEM | Yes | |
| SNMP v1/v2 | Yes | |
| SNMP v3 with multiple IP addresses | Yes | |
| RMON 1,2,3,9 | | Yes |
| Max History entries | | 3 * (number of ports in the chassis + LAG + 10) |
| Max buckets per History entry | | 10 |
| Max Alarm entries | | 3 * (number of ports in the chassis + LAG + 10) |
| Max Event entries | | 3 * (number of ports in the chassis + LAG + 10) |
| Max Log entries per Event entry | | 10 |
| Port Mirroring | | Yes |
| Number of monitor sessions | | 1 (multiple sessions are configurable) |
| Tx/Rx | | Yes |
| Many to One Port Mirroring | | Yes |
| LAG supported as source ports | | Yes |
| Max source ports in a session | | Total switch port count |
| Remote Port Mirroring (RSPAN) | Yes | When a particular session is enabled, any traffic entering or leaving the source ports of that session is copied (mirrored) onto a Remote Switched Port Analyzer (RSPAN) VLAN |
| Flow based mirroring | Yes | |
| Cable Test utility | Yes | CLI, Web GUI |
| Outbound Telnet | Yes | |
| SSHv2 | Yes | Secure Shell version 2 (OpenSSH 7.5p1) |
| SSH Session Configuration | Yes | |
| SSL v3 and TLS v1.2 for HTTPS web-based access | Yes | (Open SSL 1.0.2o) |
| 2048-bit RSA key pairs | Yes | For SSLv3 and SSHv2 |
| SHA2-256 and SHA2-512 cryptographic hash functions | Yes | For SSLv3 and SSHv2 |
| File transfers (uploads, downloads) | | TFTP / HTTP |
| Secured protocols for file transfers | | SCP / SFTP / HTTPS |
| HTTP Max Sessions | | 16 |
| SSL/HTTPS Max Sessions | | 16 |
| HTTP Download (firmware) | Yes | |
| Email Alerting | Yes (CLI only) | |
| Syslog (RFC 3164) (RFC 5424) | Yes, forwarding messages via UDP using the Syslog protocol to one or more collectors or relays | |
| Persistent log supported | Yes | |

| | |
|--|--|
| Number of DHCP snooping bindings | 32K |
| Number of DHCPv6 snooping bindings | 32K |
| Number of DHCP snooping static entries | 1024 |
| LLDP-MED number of remote nodes | 2 x Total stack port count |
| LLDP Remote Management address buffers | 2 x Total stack port count |
| LLDP Unknown TLV address buffers | 100 |
| LLDP Organisationally Defined Large TLV buffers | Total stack port count |
| LLDP Organisationally Defined Small TLV buffers | 12 x Total stack port count |
| Port MAC Locking | Yes |
| Dynamic addresses per port | 4096 |
| Static addresses per port | 48 |
| sFlow | |
| Number of samplers | Total stack port count |
| Number of pollers | Total stack port count |
| Number of receivers | 8 |
| Radius | |
| Max Authentication servers | 3 |
| Max Accounting servers | 2 |
| | 3 |
| Number of Routes (v4/v6) | 12K (M4300-24X24F, -48X, -48XF, 96X) 512 (all other models) SDM (System Data Management, or switch database) |
| IPv4 only SDM build | |
| IPv4/IPv6 SDM build | |
| IPv4 routes | 8K (M4300-24X24F, -48X, -48XF, 96X) 512 (all other models) |
| IPv6 routes | 4K (M4300-24X24F, -48X, -48XF, 96X) 256 (all other models) |
| RIP application route scaling | 512 |
| OSPF application route scaling | 12K (M4300-24X24F, -48X, -48XF, 96X) 512 (all other models) |
| Number of routing interfaces (including port/vlan) | 128 |
| Number of static routes (v4/v6) | 64/64 |
| OSPF | |
| OSPFv2 max neighbors | 40 |
| OSPFv3 max neighbors | 0 |
| OSPFv3 max neighbors per interface | 40 |
| | 0 |
| Tunnels | |
| Number of configured v6-over-v4 tunnels | 10 |
| Number of automatic (6to4) tunnels | 0 |
| Number of 6to4 next hops | 1 |
| | 6 |
| DHCP Server | |
| Max number of pools | 256 |
| Total max leases | 2K |
| DNS Client | |
| Concurrent requests | 16 |
| Name server entries | 8 6 |
| Search list entries | 64 |
| Static host entries | 12 |
| Cache entries | 8 |
| Domain search list entries | 32 |
| DHCPv6 Server | |
| Max number of pools | 1 |
| DNS domain names within a pool | 6 |
| DNS server addresses within a pool | 5 |
| Delegated prefix definitions within a pool | 8 |
| | 1 |
| | 0 |

| | |
|---|---|
| Number of Host Entries (ARP/NDP) | |
| IPv4 only SDM build | 8192 (M4300-24X24F, -48X, 96X) 888 (all other models) SDM (System Data Management, or switch database) 6144 / 2560 (M4300-24X24F, -48X, 96X) 760 / 128 (all other models) |
| IPv4/IPv6 SDM build (v4/v6) | 128 |
| Static v4 ARP Entries | |
| Number of ECMP Next Hops per Route | 16 (M4300-24X24F, -48X, -48XF, 96X) 4 (all other models) |
| Number of ECMP groups | 256 (M4300-24X24F, -48X, -48XF, 96X) 128 (all other models) |
| Total ECMP nexthops in Hardware | 4,096 (M4300-24X24F, -48X, -48XF, 96X) 2,048 (all other models) |
| Maximum MFDB entries | |
| Native SDM template | 2K (M4300-24X24F, -48X, -48XF, 96X) 1K (all other models) SDM (System Data Management, or switch database) |
| Mixed Stacking mode template | 1K (M4300-24X24F, -48X, -48XF, 96X) 1K (all other models) |
| IGMPv3 / MLDv2 Snooping Limits | |
| IGMPv3/MLDv2 HW entries when IP Multicast present | 512/512 (M4300-24X24F, -48X, -48XF, 96X) 64/32 (all other models) |
| IP Multicast | |
| Number of IPv4/IPv6 Multicast Forwarding Entries | 1,024/512 (M4300-24X24F, -48X, -48XF, 96X) 96/32 (all other models) |
| IGMP Group Memberships per system | 2K (IPv4) and 2K (IPv6) 1.5K (M4300-24X24F, -48X, -48XF, 96X) 128 |
| IPv4 Multicast routes (IPv4 only) | (all other models) 256 256 256 5 20 5 73 |
| DVMRP Neighbors | |
| PIM-DM Neighbors | |
| PIM-SM Neighbors | |
| PIM-SM Static RP Entries | |
| PIM-SM Candidate RP Group Range Entries | |
| PIM-SM SSM Range Entries | |
| IGMP Sources processed per group per message | |
| ACL Limits | |
| Maximum Number of ACLs (any type) | 100 1,023 ingress / 511 |
| Maximum Number Configurable Rules per List | ingress 1,023 ingress / 511 |
| Maximum ACL Rules per Interface and Direction | ingress 893 ingress / 509 |
| Maximum ACL Rules per Interface and Direction (IPv6) | egress 16K 128 |
| Maximum ACL Rules (system-wide) | |
| Maximum ACL Logging Rules (system-wide) | |
| COS Device Characteristics | |
| Configurable Queues per Port | 8 queues (standalone) 7 queues (stack) |
| Configurable Drop Precedence Levels | 3 |
| DiffServ Device Limits | |
| Number of Queues | 8 queues (standalone) 7 queues (stack) |
| Requires TLV to contain all policy instances combined | Yes 13 28 3 116 |
| Max Rules per Class | |
| Max Instances per Policy | |
| Max Attributes per Instance | |
| Max Service Interfaces | |
| Max Table Entries | |
| Class Table | 32 |
| Class Rule Table | 416 |
| Policy Table | 64 |
| Policy Instance Table | 1,792 |
| Policy Attribute Table | 5,376 |
| Max Nested Class Chain Rule Count | 26 |
| AutoVoIP number of voice calls | 20 |
| iSCSI Flow Acceleration | |
| Max Monitored TCP Ports/IP Addresses | 16 |
| Max Sessions | 19 |
| Max Connections | 2 |
| | 19 |
| | 2 |

LEDs

| | |
|--------------------------------|---|
| Per port | Speed, Link, Activity |
| Per device (half-width models) | Power, Fan, Stack Master, Stack ID |
| Per device (full width models) | Power 1, Power 2, Fan, Stack Master, Stack ID |

Physical Specifications

Dimensions

| | |
|--|---|
| M4300-8X8F, -16X, -12X12F, -24X, -24XF | Width: 8.35 inches (21.2 cm) (half-width); Height: 1U - 1.73 inches (4.4 cm); Depth: 13.58 inches (34.5 cm) |
| M4300-24X24F, M4300-48X, M4300-48X | Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 13.58 inches (34.5 cm) |
| M4300-96X | Width: 17.32 inches (44 cm); Height: 2U - 3.47 inches (8.8 cm); Depth: 21.08 inches (53.5 cm) |
| M4300-28G, M4300-28G-PoE+, M4300-52G | Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 12.2 inches (31 cm) |
| M4300-52G-PoE+ | Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 15.28 inches (38.8 cm) |

Weight

| | | | |
|---|---------------------|----------------------------|-----------------------------|
| M4300-8X8F | 7.31 lb (3.32 kg) | | |
| M4300-16X | 7.11 lb (3.22 kg) | | |
| M4300-12X12F | 8.14 lb (3.69 kg) | | |
| M4300-24X | 9.12 lb (4.14 kg) | | |
| M4300-24XF | 7.85 lb (3.56 kg) | | |
| M4300-24X24F | 13.48 lb (6.12 kg) | | |
| M4300-48X | 14.44 lb (6.55 kg) | | |
| M4300-48XF | 12.92 lb (5.86 kg) | | |
| M4300-96X (XSM4396K0 empty version) | 25.90 lb (11.76 kg) | APM408C: 0.81 lb (0.37 kg) | APM408F: 0.67 lb (0.30 kg) |
| M4300-96X (XSM4396K1 starter kit) | 35.86 lb (16.28 kg) | APM408P: 0.95 lb (0.43 kg) | APM402XL: 0.66 lb (0.30 kg) |
| M4300-28G | 9.94 lb (4.51 kg) | | |
| M4300-28G-PoE+ (GSM4328PA version 550W PSU) | 11.21 lb (5.09 kg) | | |
| M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) | 11.47 lb (5.20 kg) | | |
| M4300-52G | 10.81 lb (4.91 kg) | | |
| M4300-52G-PoE+ (GSM4352PA version 550W PSU) | 14.44 lb (6.55 kg) | | |
| M4300-52G-PoE+ (GSM4352PB version 1,000W PSU) | 14.7 lb (6.67 kg) | | |

Power Consumption

Worst case, all ports used, full PoE, line-rate traffic

| | |
|---|--|
| M4300-8X8F | 49W max |
| M4300-16X (APS199W, without PoE) | 49W max 308.7W max 610W max 97W max 125W max 87.2W max 161W max 237.2W max |
| M4300-16X (APS199W PSU, with max PoE 199W) | 152.4W max 566W max 2,006W max 34.5W max 577W (1 PSU); 575W (2 PSUs in RPS mode); 797W (2 PSUs in EPS share mode) max 833.2W (1 PSU); 832.5W (2 PSUs in RPS mode); 833.2W (2 PSUs in EPS share mode) max 47.4W max 609W (1 PSU); 611W (2 PSUs in RPS mode); 865W (2 PSUs in EPS share mode); 915W (2 PSUs in EPS share mode with external RPS) max |
| M4300-16X (APS600W PSU, with max PoE 500W) | 888W (1 PSU); 902W (2 PSUs in RPS mode); 1,585W (2 PSUs in EPS share mode); 1,655W (2 PSUs in EPS share mode with external RPS) max |
| M4300-12X12F | |
| M4300-24X | |
| M4300-24XF | |
| M4300-24X24F | |
| M4300-48X | |
| M4300-48XF | |
| M4300-96X (without PoE) | |
| M4300-96X (with max PoE: 1,440W) | |
| M4300-28G | |
| M4300-28G-PoE+ (GSM4328PA version 550W PSU) | |
| M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) | |
| M4300-52G | |
| M4300-52G-PoE+ (GSM4352PA version 550W PSU) | |
| M4300-52G-PoE+ (GSM4352PB version 1,000W PSU) | |

Environmental Specifications

Operating:

| | |
|-------------|---|
| Temperature | 32° to 122°F (0° to 50°C) |
| Humidity | 90% maximum relative humidity, non-condensing |
| Altitude | 10,000 ft (3,000 m) maximum |

Storage:

| | |
|-------------|---|
| Temperature | - 4° to 158°F (-20° to 70°C) |
| Humidity | 95% maximum relative humidity, non-condensing |
| Altitude | 10,000 ft (3,000 m) maximum |

Electromagnetic Emissions and Immunity

| | |
|----------------|--|
| Certifications | CE: EN 55032:2012+AC:2013/CISPR 32:2012, EN 61000-3-2:2014, Class A, EN 61000-3-3:2013, EN 55024:2010 VCCI : VCCI-CISPR 32:2016, Class A RCM: AS/NZS CISPR 32:2013 Class A CCC: GB4943.1-2011; YD/T993-1998; GB/T9254-2008 (Class A) FCC: 47 CFR FCC Part 15, Class A, ANSI C63.4:2014 ISED: ICES-003:2016 Issue 6, Class A, ANSI C63.4:2014 BSMI: CNS 13438 Class A |
|----------------|--|

Safety

| | |
|----------------|---|
| Certifications | CB report / certificate IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 UL listed (UL 1950)/cUL IEC 950/EN 60950 CE LVD: EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 RCM (AS/NZS) 60950.1:2015 CCC (China Compulsory Certificate): GB4943.1-2011; YD/T993-1998; GB/T9254-2008 (Class A) BSMI: CNS 14336-1 |
|----------------|---|

Package Content

| | |
|--|---|
| All models | Power cord(s) RJ45 straight-through wiring serial console cable to DB9 Mini-USB console cable Rubber caps for the SFP+ sockets Rubber footpads for tabletop installation Installation guide Resource CD with a link to the following manuals and software: - Software setup manual - CLI manual - Software administration guide - Hardware installation guide - The driver for use with The Mini-USB console cable |
| M4300-8X8F, M4300-12X12F, M4300-24X, M4300-24XF | Half-width switch with one APS250W power supply unit 1-unit rack-mounting kit: one long bracket, one regular (short) bracket, and screws (for front posts) 2-unit rack-mounting kit: one pair of inside and outside middle mounts (for combining two half-width M4300 switches) |
| M4300-16X (XSM4316PA version 199W PSU) | Half-width switch with one APS199W power supply unit Two regular (short) brackets and screws for two-post rack mount (for front posts) |
| M4300-16X (XSM4316PB version 600W PSU) | Half-width switch with one APS600W power supply unit Two regular (short) brackets and screws for two-post rack mount (for front posts) |
| M4300-24X24F, M4300-48X, M4300-48XF | Full width switch with one APS250W power supply unit Two regular (short) brackets and screws for two-post rack mount (for front posts) 2RU empty switch without power supply unit (to be purchased separately) |
| M4300-96X (XSM4396K0 empty version) | Two regular (short) brackets and screws for two-post rack mount (for front posts) Rails and screws for four-post rack mount (for rear posts) |
| M4300-96X (XSM4396K1 starter kit) | 2RU switch with one APS600W power supply unit and six APM408F units (8x1G/10GBASE-X SFP+ Port Cards) in their packaging each Two regular (short) brackets and screws for two-post rack mount (for front posts) Rails and screws for four-post rack mount (for rear posts) |
| M4300-28G, M4300-52G | Full width switch with one APS150W power supply unit Two regular (short) brackets and screws for two-post rack mount (for front posts) Full width switch with one APS550W power supply unit Two regular (short) brackets and screws for two-post rack mount (for front posts) |
| M4300-28G-PoE+ (GSM4328PA version 550W PSU) M4300-52G-PoE+ (GSM4352PA version 550W PSU) | Full width switch with one APS1000W power supply unit Two regular (short) brackets and screws for two-post rack mount (for front posts) |
| M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) M4300-52G-PoE+ (GSM4352PB version 1,000W PSU) | Two regular (short) brackets and screws for two-post rack mount (for front posts) |

Optional Modules and Accessories

| | | |
|---------------------------|---|---------------------|
| APS150W | 150W AC PSU for M4300-28G and M4300-52G | APS150W-100NES/AJS |
| APS199W | 199W AC PSU for M4300-16X (non- or limited PoE applications) | APS199W-100NES/AJS |
| APS250W | 250W AC PSU for M4300-8X8F, M4300-12X12F, M4300-24X, M4300-24X24F and M4300-48X | APS250W-100NES/AJS |
| APS550W | 550W AC PSU for M4300-28G-PoE+ (GSM4328PA) and M4300-52G-PoE+ (GSM4352PA) | APS550W-100NES/AJS |
| APS600W | 600W AC PSU for M4300-96X (preferred for non-PoE applications) and M4300-16X (PoE applications) | APS600W-100NES/AJS |
| APS1000W | 1,000W AC PSU for M4300-28G-PoE+ (GSM4328PB), M4300-52G-PoE+ (GSM4352PB) and RPS4000 | APS1000W-100NES/AJS |
| APS1200W | 1,200W AC PSU for M4300-96X (preferred for non-PoE applications) | APS1200W-100NES/AJS |
| RPS4000 | External / Redundant Power Supply (up to four switches) for M4300-52G-PoE+ | RPS4000-200NES/AJS |
| AGM731F | 1000BASE-SX SFP GBIC (Multimode) | AGM731F |
| AGM732F | 1000BASE-LX SFP GBIC (Single mode) | AGM732F |
| AGM734 | 1000BASE-T RJ45 SFP GBIC | AGM734-10000S |
| AXC761 | 10GSFP+ Cu (passive) SFP+ to SFP+ Direct Attach Cable 1m | AXC761-10000S |
| AXC763 | 10GSFP+ Cu (passive) SFP+ to SFP+ Direct Attach Cable 3m | AXC763-10000S |
| AXC765 | 10GSFP+ Cu (active) SFP+ to SFP+ Direct Attach Cable 5m | AXC765-10000S |
| AXC767 | 10GSFP+ Cu (active) SFP+ to SFP+ Direct Attach Cable 7m | AXC767-10000S |
| AXC7610 | 10GSFP+ Cu (active) SFP+ to SFP+ Direct Attach Cable 10m | AXC7610-10000S |
| AXC7615 | 10GSFP+ (Duplex Fiber Optic) SFP+ to SFP+ Direct Attach Cable 15m | AXC7615-10000S |
| AXC7620 | 10GSFP+ (Duplex Fiber Optic) SFP+ to SFP+ Direct Attach Cable 20m | AXC7620-10000S |
| AXLC761 | 40GBASE-CR4 (passive) QSFP+ to QSFP+ Direct Attach Cable 1m | AXLC761-10000S |
| AXLC763 | 40GBASE-CR4 (passive) QSFP+ to QSFP+ Direct Attach Cable 3m | AXLC763-10000S |
| AXM761 | 10GBASE-SR SFP+ GBIC (OM3/OM4 Multimode) | AXM761-10000S |
| AXM761 (Pack of 10 units) | 10GBASE-SR SFP+ GBIC (OM3/OM4 Multimode) | AXM761P10-10000S |
| AXM762 | 10GBASE-LR SFP+ GBIC (Single mode) | AXM762-10000S |
| AXM762 (Pack of 10 units) | 10GBASE-LR SFP+ GBIC (Single mode) | AXM762P10-10000S |
| AXM763 | 10GBASE-LRM SFP+ GBIC (Long Reach Multimode for OM1/OM2, also compatible with OM3/OM4) | AXM763-10000S |
| AXM764 | 10GBASE-LR LITE SFP+ GBIC (Single mode) | AXM764-10000S |
| AXM765 | 10GBASE-T RJ45 SFP+ GBIC up to 30 meters on CAT6a or better | AXM765-10000S |
| AXLM761 | 40GBASE-MR4 Duplex LC (one duplex OM3/OM4 Multimode link) 150m QSFP+ Transceiver | AXLM761-10000S |
| AXLM762 | 40GBASE-LR4 Duplex LC (one duplex Single Mode link) 10km QSFP+ Transceiver | AXLM762-10000S |

Warranty and Support

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|---|----------------------------------|
| Limited Lifetime ProSAFE Hardware Warranty** | Included, limited lifetime |
| 90 days of Technical Support via phone and email* | Included, 90 days after purchase |
| Lifetime Technical Support through online chat* | Included, lifetime |
| Lifetime Next Business Day hardware replacement* | Included, lifetime |

ProSupport Service Packs

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| Installation contracts for: | All models |
| PSB0304-10000S | Remote Installation Setup and Configuration Service Contract |
| Supplemental support contracts for: | M4300-8X8F and -16X M4300-28G M4300-28G-PoE+ M4300-52G M4300-52G-PoE+ |
| PMB0313-10000S | OnCall 24x7 1-year CAT 3 |
| PMB0333-10000S | OnCall 24x7 3-year CAT 3 |
| PMB0353-10000S | OnCall 24x7 5-year CAT 3 |
| Supplemental support contracts for: | M4300-12X12F M4300-24X and -24XF M4300-24X24F M4300-48X and -48XF M4300-96X |
| PMB0314-10000S | OnCall 24x7 1-year CAT 4 |
| PMB0334-10000S | OnCall 24x7 3-year CAT 4 |
| PMB0354-10000S | OnCall 24x7 5-year CAT 4 |

Ordering Information

Ordering Information

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| M4300-8X8F | |
| Americas, Europe | XSM4316S-100NES |
| Asia Pacific | XSM4316S-100AJS |
| China | XSM4316S-100PRS |

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| M4300-16X with 199W PSU | |
| Americas, Europe | XSM4316PA-100NES |
| Asia Pacific | XSM4316PA-100AJS |
| China | XSM4316PA-100PRS |

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| M4300-16X with 600W PSU | |
| Americas, Europe | XSM4316PB-100NES |
| Asia Pacific | XSM4316PB-100AJS |
| China | XSM4316PB-100PRS |

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| M4300-12X12F | |
| Americas, Europe | XSM4324S-100NES |
| Asia Pacific | XSM4324S-100AJS |
| China | XSM4324S-100PRS |

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| M4300-24X | |
| Americas, Europe | XSM4324CS-100NES |
| Asia Pacific | XSM4324CS-100AJS |
| China | XSM4324CS-100PRS |

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| M4300-24XF | |
| Americas, Europe | XSM4324FS-100NES |
| Asia Pacific | XSM4324FS-100AJS |
| China | XSM4324FS-100PRS |

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| M4300-24X24F | |
| Americas, Europe | XSM4348S-100NES |
| Asia Pacific | XSM4348S-100AJS |
| China | XSM4348S-100PRS |

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| M4300-48X | |
| Americas, Europe | XSM4348CS-100NES |
| Asia Pacific | XSM4348CS-100AJS |
| China | XSM4348CS-100PRS |

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| M4300-48XF | |
| Americas, Europe | XSM4348FS-100NES |
| Asia Pacific | XSM4348FS-100AJS |
| China | XSM4348FS-100PRS |

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| M4300-96X | |
| Worldwide (Empty Switch, No PSU) | XSM4396K0-10000S |
| Americas, Europe (Starter Kit 48xSFP+) | XSM4396K1-100NES |
| Asia Pacific (Starter Kit 48xSFP+) | XSM4396K1-100AJS |
| Worldwide (10G Copper card) | APM408C-10000S |
| Worldwide (10G Copper PoE+ card) | APM408P-10000S |
| Worldwide (10G Fiber card) | APM408F-10000S |
| Worldwide (40G Fiber card) | APM402XL-10000S |
| Americas, Europe (600W PSU) | APS600W-100NES |
| Asia Pacific (600W PSU) | APS600W-100AJS |
| Americas, Europe (1,200W PSU) | APS1200W-100NES |
| Asia Pacific (1,200W PSU) | APS1200W-100AJS |

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| M4300-28G | |
| Americas, Europe | GSM4328S-100NES |
| Asia Pacific | GSM4328S-100AJS |
| China | GSM4328S-100PRS |

M4300-28G-PoE+ with 550W PSU

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| Americas, Europe | GSM4328PA-100NES |
| Asia Pacific | GSM4328PA-100AJS |
| China | GSM4328PA-100PRS |

M4300-28G-PoE+ with 1,000W PSU

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| Americas, Europe | GSM4328PB-100NES |
| Asia Pacific | GSM4328PB-100AJS |
| China | GSM4328PB-100PRS |

M4300-52G

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| Americas, Europe | GSM4352S-100NES |
| Asia Pacific | GSM4352S-100AJS |
| China | GSM4352S-100PRS |

M4300-52G-PoE+ with 550W PSU

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| Americas, Europe | GSM4352PA-100NES |
| Asia Pacific | GSM4352PA-100AJS |
| China | GSM4352PA-100PRS |

M4300-52G-PoE+ with 1,000W PSU

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| Americas, Europe | GSM4352PB-100NES |
| Asia Pacific | GSM4352PB-100AJS |
| China | GSM4352PB-100PRS |

