NETGEAR®

ProSAFE® Intelligent Edge Managed Switches

Data Sheet

M4300 series

The NETGEAR® M4300 Stackable Switch Series delivers L2/L3/L4 and IPv4/IPv6 cost-effective services for mid-enterprise edge with full PoE+ and SMB core deployments with unrivalled ease of use: 10 Gigabit models can seamlessly stack with 1 Gigabit models within the series, enabling spine and leaf line-rate stacking topologies. Non-stop forwarding (NSF) virtual chassis architectures provide advanced High Availability (HA) with hitless failover across the stack. 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. Perfect for wireless access, unified communications and IP video, the NETGEAR M4300 Switch Series is also ready for the future, with Software-defined Network (SDN) and OpenFlow 1.3 enabled for your network.

NETGEAR Intelligent Edge Switch solutions combine the 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 Gigabit and 1 Gigabit models, using any 10G 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

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
- 10 Gigabit ports are all independent and 1G backward compatible for progressive transition to 10G speeds

Lower complexity

- Entire feature set including L2 switching (multi-tiered access control) and L3 routing (static, RIP, OSPF, VRRP, PIM, 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 SDN, OpenFlow support offers future-ready design for maximum investment protection

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 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

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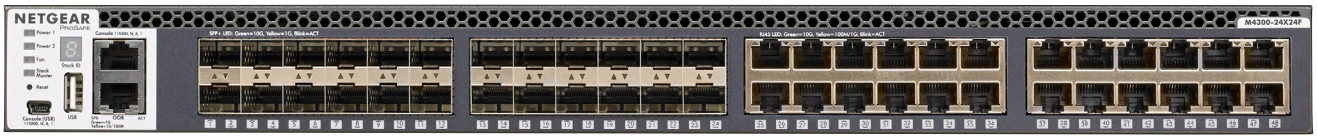
Hardware at a Glance

			FRONT		REAR		MANAGEMENT	
10G models Model name	Form-Factor	Switching Fabric	100/1000/10GBASE-T RJ45 ports	1000/10GBASE-X SFP+ ports	PSU	Fans	Out-of-band Console	Model number
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**
M4300-12X12F	**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)	**XSM4324S**
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 (Front) Console: RJ45 RS232 (Front) Console: Mini-USB (Front) Storage: USB (Front)	**XSM4348S**

			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**	**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**	**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+**	**2 ports** (independent) 100M; 1G; 10G	**2 ports** (independent) 1G; 10G	**Modular 2 bays**	**Fixed** Front-to-back 39.8dB	Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front)	
			110V/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		1 PSU included: APS550W			**GSM4328PA**
			110V 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		1 PSU included: APS1000W			**GSM4328PB**
			220V AC input	720W PoE Budget with 1 PSU 720W PoE Budget with 2 PSUs in RPS mode					
M4300-52G-PoE+	**Full width** 1-unit 1U rack mount	176 Gps	**48 ports PoE+**	**2 ports** (independent) 100M; 1G; 10G	**2 ports** (independent) 1G; 10G	**Modular 2 bays** RPS connector	**Fixed** Front-to-back 39.8dB	Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Back) Console: Mini-USB (Front) Storage: USB (Front)	
			110V/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		1 PSU included: APS550W	External RPS4000 for power redundancy (RPS) when 2 internal PSUs are used in EPS mode		**GSM4352PA**
			110V AC input	591W PoE Budget with 1 PSU 591W PoE Budget with 2 PSUs in RPS mode 1,010W PoE Budget with 2 PSUs in EPS mode		1 PSU included: APS1000W	External RPS4000 for power redundancy (RPS) when 2 internal PSUs are used in EPS mode		**GSM4352PB**
			220V AC input	860W PoE Budget with 1 PSU 860W PoE Budget with 2 PSUs in RPS mode 1,440W 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 reversely).



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Software at a Glance

	LAYER 3 PACKAGE											
Model name	Management	Usability Enhancements	IPv4/IPv6 ACL and QoS, DiffServ	IPv4/IPv6 Multicast filtering	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	IGMPv3 MLDv2 Snooping, Proxy ASM & SSM IGMPv1,v2 Querier Control Packet Flooding	Auto-VoIP Auto-iSCSI Policy-based routing (PBR) LLDP-MED	STP, MTP, RSTP PV(R)STP[1] BPDU/STRG Root Guard EEE[2] (802.3az)	Static, Dynamic, Voice, MAC GVRP/ GMRP QinQ, Private VLANs	Distributed LAG across the stack Static or Dynamic LACP Seven (7) L2/L3/L4 hashing algorithms	Successive 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**

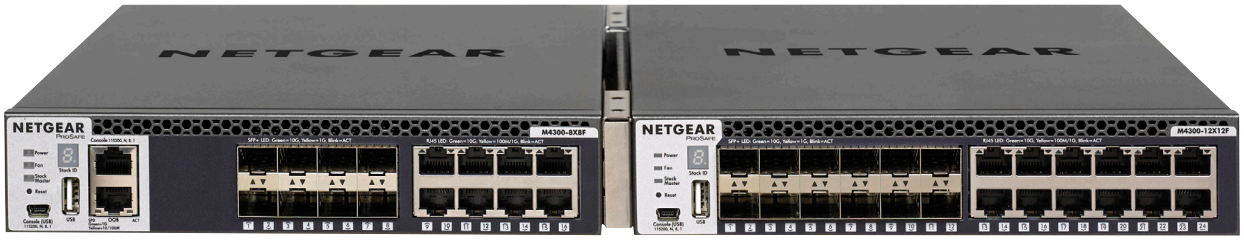
[1] CLI only

[2] Future firmware upgrade

Performance at a Glance

	TABLE SIZE*											
Model name	MAC ARP/ NDP	Routing / Switching Capacity	Through-put	Application Route Scaling	Packet Buffer	Latency	IP Multicast Forwarding Entries	Multicast IGMP Group member-ship	CPU	VLANs	DHCP	sFlow	Model number
M4300-24X24F	128K MAC 8K ARP/ NDP	960 Gbps Line-rate	714 Mpps	Static: 64v4/ 64v6 RIP: 512 OSPF: 12,000	56Mb	64-byte frames <2.39µs 10G RJ45 <0.88µs 10G SFP+	1,024 IPv4 512 IPv6	2K IPv4 2K IPv6	CPU 800 Mhz 1GB RAM 256MB Flash	4K VLANs	DHCP Server: 2K leases IPv4: 256 pools IPv6: 16 pools	416 samplers 416 pollers 8 receivers	**XSM4348S**
M4300 other models	16K MAC 2K ARP/ NDP	Up to 480 Gbps All models Line-rate	Up to 357 Mpps	Static: 64v4/ 64v6 RIP: 512 OSPF: 512	M4300-12X12F: 32Mb Others: 16Mb	M4300-8X8F: <2.43µs 10G RJ45 <0.89µs 10G SFP+ M4300-28Gxxx: <2.74µs 10G RJ45 <1.96µs 10G SFP+ All others: <2.76µs 10G RJ45 <1.24µs 10G SFP+	96 IPv4 32 IPv6						**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



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Product Brief

ProSAFE® M4300 Stackable L3 Managed Switch Series comes with 10G and 1G models in a variety of form factors and PoE+ full provisioning. SDN-ready with OpenFlow 1.3, M4300 Switch Series delivers IPv4/IPv6 rich services for mid-enterprise edge and SMB core with mixed stacking between 10 Gigabit and 1 Gigabit models. Layer 3 feature set includes static and policy-based routing, RIP, VRRP, OSPF, and Multicast PIM dynamic routing. M4300 is ideal for server aggregation with Auto-iSCSI prioritization, wireless access, unified communications and IP video.

NETGEAR M4300 series key features:

- Cost effective 1G access layer in campus LAN networks, and high performance 10G distribution layer for midsize organizations networks
- 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 and 10G stacking with nonstop forwarding 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
- Up to 384 (Gigabit) ports, or 384 (10 Gigabit) ports, or a combination of both in a single logical switch
- PoE+ (30 watts per port) with hot swap, redundant power supplies and full provisioning
- 48-port 10G models ultra-low latency and scalable table size with 128K MAC, 8K ARP/NDP, 4K VLANs, 12K routes
- Mixed Stack of 1G and 10G models provides 16K MAC, 2K ARP/NDP, 4K VLANs and 512 routes
- SDN-Ready OpenFlow 1.3 support for maximum investment protection

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
- Enhanced IPv4/IPv6 multicast forwarding with IGMPv3/MLDv2 ASM and SSM Proxy and Control Packet Flooding protection
- 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 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

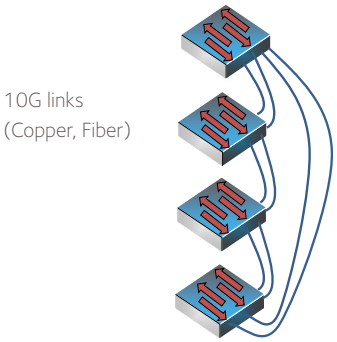
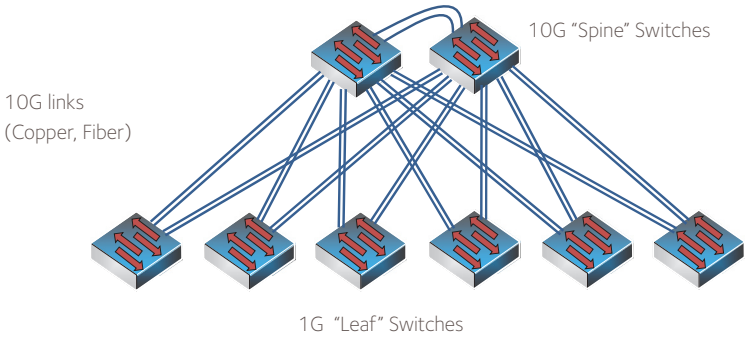
NETGEAR M4300 series management features:

- DHCP/BootP innovative auto-installation including firmware and configuration file upload automation
- Industry standard SNMP, RMON, MIB, LLDP, AAA, sFlow and RSPAN remote mirroring implementation
- 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 and configuration file 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 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 384 ports in a single logical switch, with hitless management failover	• Any 10G port (copper, fiber) and any media type (RJ45, SFP+, DAC) can be used for stacking on any M4300 model • Hot-swappable stacking of up to 8 units, vertical or horizontal • 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 models: up to (16) 10G ports per switch can be used for stacking (again, depending on oversubscription requirements between switches)
Best value switching performance:	
48p 10G models: 128K MAC address table, 4K concurrent VLANs and 12K Layer 3 route table size for the most demanding enterprise or campus networks	
All other models: 16K MAC address table, 4K concurrent VLANs and 512 Layer 3 route table size for typical midsize environnements	
Mixed stacking between more capable and less capable devices uses SDM template based on "least commom 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 and one modular power supply: a second PSU (sold separately) will add 1+1 power redundancy	
Increased packet buffering with up to 72 Mb (48p 10G models), 32 Mb (24p 10G models) and 16 Mb (all other models) for most intensive applications	
Low latency at all network speeds, including 10 Gigabit copper and 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

SDN-ready, M4300 OpenFlow feature enables the switch to be managed by a centralized OpenFlow Controller using the OpenFlow protocol	• Support of a single-table OpenFlow 1.3 data forwarding path • The OpenFlow feature can be administratively enabled and disabled at any time • The administrator can allow the switch to automatically assign an IP address to the OpenFlow feature or to specifically select which address should be used • The administrator can also direct the OpenFlow feature to always use the service port (out-of-band management port) • The Controller IP addresses are specified manually through the switch user interface • The list of OpenFlow Controllers and the controller connection options are stored in the Controller Table • The OpenFlow component in M4300 software uses this information to set up and maintain SSL connections with the OpenFlow Controllers • M4300 implements a subset of the OpenFlow 1.0.0 protocol and a subset of the OpenFlow 1.3 • It also implements enhancements to the OpenFlow protocol to optimize it for the Data Center environment and to make it compatible with Open vSwitch
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 port pre-configured as Stacking port: all 10G 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 "spine" switches are meant to handle management unit and backup management unit roles • The Nonstop Forwarding (NSF) feature enables the stack to secure forwarding end-user traffic when the management unit fails • Nonstop 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 failback 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 transitionning 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 compatilibity 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- and 48-port 10G models with a variety of 10GBASE-T and 10GBASE-X SFP+ interfaces	
Large 10 Gigabit choice with SFP+ ports for fiber or short, low-latency copper DAC cables; 10GBASE-T ports for legacy Cat6 RJ45 short connexions (up to 50m) 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	
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)	
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	
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	
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 multicast 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	

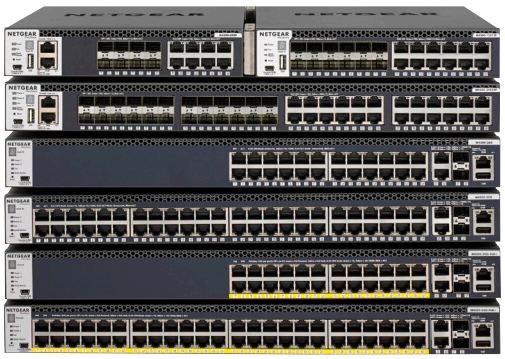
Distance Vector Multicast Routing Protocol (DVMRP) is a dense mode multicast protocol also called Broadcast and Prune Multicasting protocol	• DVMRP uses a distributed routing algorithm to build per-source-group multicast trees • DVMRP assumes that all hosts are part of a multicast group until it is informed 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 routing (PIM-SM and PIM-DM, both IPv4 and IPv6) ensure multicast streams can reach receivers in different L3 subnets	• 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 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
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	• The agent relays requests from a subnet without a DHCP server to a server or next-hop agent on another 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
Router Discovery Protocol is an extension to ICMP and enables hosts to dynamically discover the IP address of routers on local IP subnets	• Based on RFC 1256 for IPv4 • 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
Route Redistribution feature enables the exchange of routing information among different routing protocols all operating within a router	• Configurable when different routing protocols use different ways of expressing the distance to a destination or different metrics and formats • 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 / Unauthenticated VLAN are supported for rigorous user and equipment RADIUS policy server enforcement	• 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)
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	• 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 unsuccesful 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 - QinQ) 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 accross 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
Secure Shell (SSH) and SNMPv3 (with or without MD5 or SHA authentication) ensure SNMP and Telnet sessions are secured	
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 mininum-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	• 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
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	• A device that wishes to inhibit transmission of data frames from another device on the LAN transmits a PAUSE frame
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	



M4300-8X8F
M4300-12X12F

M4300-24X24F

M4300-28G

M4300-52G

M4300-28G-PoE+

M4300-52G-PoE+

M4300-8X8F
M4300-12X12F

M4300-24X24F

M4300-28G

M4300-52G

M4300-28G-PoE+

M4300-52G-PoE+

Target Application

Building 1

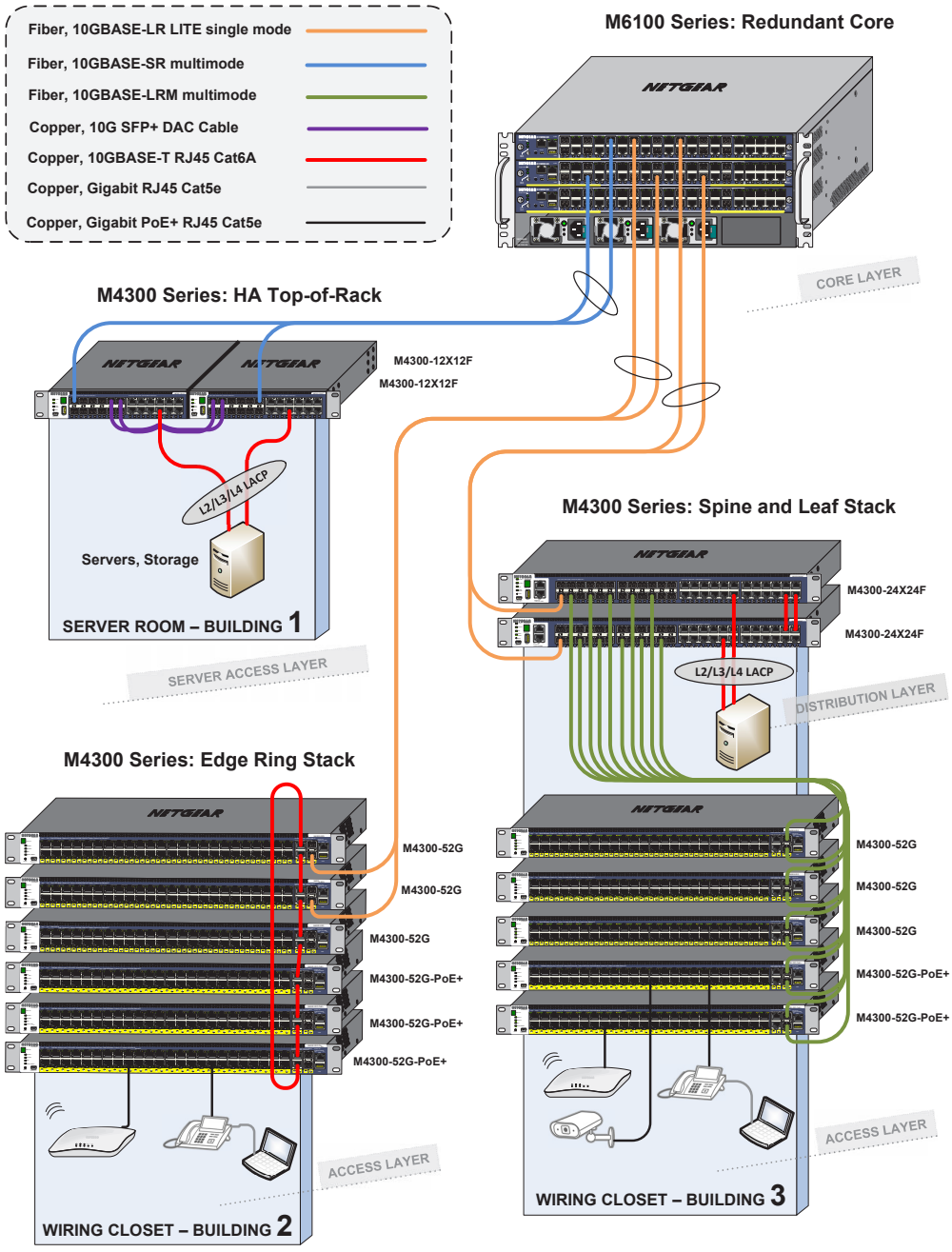
- For midsize server installations, two half-width M4300 10GbE models can be paired in a single rack space for redundant top-of-rack
- Compared with single top-of-rack switch installation, such two-unit horizontal stacking is cost-effective yet highly efficient for HA
- Management unit hitless failover 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

Building 1: High Availability (HA) Top-of-Rack

- 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 equipment
- All devices can connect to both redundant top-of-rack switches using link aggregation (L2/L3/L4 LACP) with load-balancing and failover
- Variety of 10 Gigabit copper and fiber ports - all backward compatible with 1G speeds - enable any type of virtualization
- iSCSI Flow Acceleration and Automatic Protection / QoS enhance server room networks containing iSCSI initiators and iSCSI targets
- Any 10 Gigabit copper and fiber ports can be used for stacking, depending on inter-switch links oversubscription requirements
- Within the stack, a switch is elected (or chosen based on priority settings) as the "management unit"
- The other switch is designated (or chosen based on priority settings) as an alternate, backup management unit
- The Nonstop Forwarding (NSF) feature enables the stack to secure forwarding server and storage traffic when the management unit fails:
  - 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
- Instant failover from management unit to redundant management unit is hitless for the servers and storage equipment connecting to both switches using LACP
- As the backup management unit takes over, data streams may lose a few packets, but do not lose their IP sessions, such as iSCSI, NFS, CIFS etc...
- **Other lower end solutions are causing service interruptions across the entire stack without NSF and hitless failover**
- Back to normal production conditions, hitless failback requires a command in CLI or in GUI, for more control
- Hitless failback is automatic in case of new management unit (triggered or accidental) failure
- M4300 Virtual Chassis stacking technology upsurges overall network availability, providing better resiliency in network architectures, and better performance with advanced load balancing capabilities between network uplinks

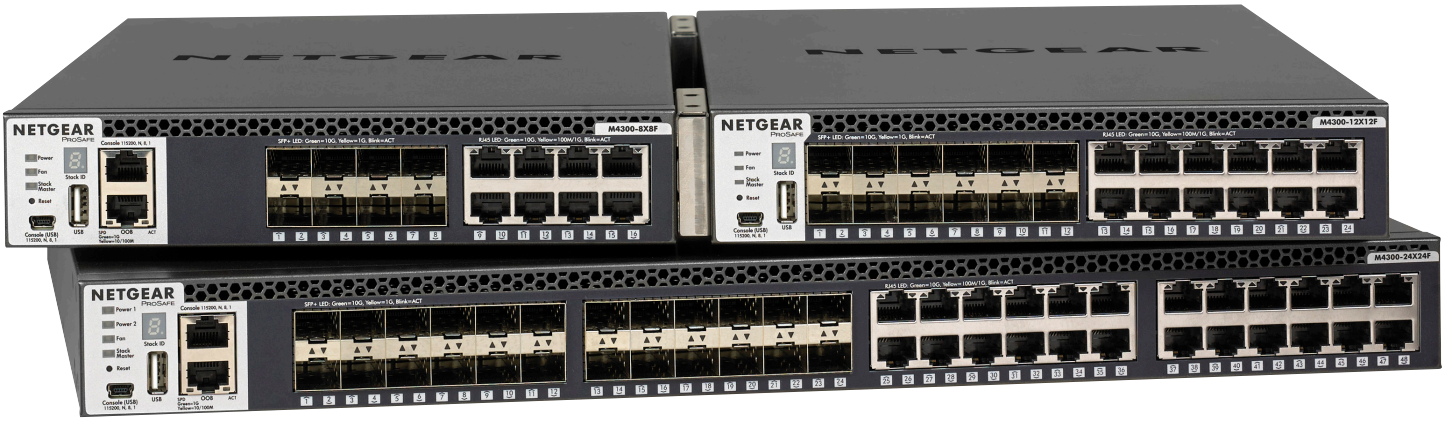
Building 2: Edge Ring Stack

- Common for intermediate distribution frames (IDF) in K-12 and other large campuses, stacking topologies greatly simplify deployments at the edge
- Up to (8) M4300 switches can be aggregated using a virtual backplane and a single console or web management interface
- While reducing the number of logical units to manage, stacking also brings network resiliency with distributed uplinks in aggregation to the core
- Horizontal or vertical ring topologies make sense with Gigabit models when inter-switch links oversubscription requirements aren't critical
- M4300 PoE and non-PoE versions are highly cost-effective at the edge, with built-in 10GBASE-T and SFP+ fiber uplinks and no hidden costs
- Hot swap, redundant power supplies and PoE+ full provisioning are other M4300 unique advantages in this affordable price range
- While any 10 Gigabit port can be used for stacking, SFP+ ports can be reserved for fiber uplinks to the core
- 10 Gigabit copper ports can be used for local stacking ring topology and unused 10 Gigabit fiber ports can connect remote switches to the stack
- Ideally the two top switches connecting back to the core should have priority settings forcing their roles as "management unit" and "backup unit"
- This way, management unit hitless failover and nonstop forwarding ensure no single point of failure:
  - Nonstop Forwarding (NSF) enables the stack to secure forwarding end-user traffic on all other switches when the management unit fails
  - Instant failover from management unit to backup management unit is hitless for the rest of the stack
  - Since both the management unit and the backup unit connect to the core using distributed link aggregation (LACP), there is no possible service interruption while the backup management unit takes over
  - All other switches in the stack keep forwarding L2 and L3 traffic in and out, while backup unit guarantees connectivity to the core
- **Other lower end solutions are causing service interruptions across the entire stack without NSF and hitless failover**
- Back to normal production conditions, hitless failback requires a command in CLI or in GUI, for more control
- Hitless failback is automatic in case of new management unit (triggered or accidental) failure
- M4300 Virtual Chassis stacking technology upsurges overall network availability, providing better resiliency in network architectures, and better performance with advanced load balancing capabilities between network uplinks

Target Application

Building 3: Spine and Leaf Stack

- 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 (other ring topologies are also possible)
- Spine and leaf architectures deliver highest performance with every leaf switch (1G) connecting to every spine switch (10G)
  - In Building 3 above, every 1G "leaf" access switch connects to both 10G "spine" distribution switches
- Any 10G port (copper, fiber) and any media type (RJ45, SFP+, DAC) can be used for stacking on any M4300 model
  - On 1G models, up to (4) 10G ports per switch can be used for stacking, hence allowing for line-rate aggregation to their spine
  - On 10G models, any 10G ports can be used for stacking, depending on inter-switch links oversubscription requirements
- Up to (8) M4300 switches can be aggregated using a virtual backplane and a single console or web management interface
- Hot swap, redundant power supplies and PoE+ full provisioning are other M4300 unique advantages in this affordable price range
- While reducing the number of logical units to manage, stacking also brings network resiliency with distributed uplinks in aggregation to main core
  - In this architecture, both 10G "spine" switches connect to main core using 10G LACP link aggregation
- Using adequate priorities in the stack, both 10G "spine" switches are meant to handle "management unit" and "backup management unit" roles
- This way, management unit hitless failover and nonstop forwarding ensures no single point of failure:
  - Nonstop Forwarding (NSF) enables the stack to secure forwarding end-user traffic on all other switches when the management unit fails
  - Instant failover from management unit to backup management unit is hitless for the rest of the stack
  - Since both the management unit and the backup unit connect to the core using distributed link aggregation (LACP), there is no possible service interruption while the backup management unit takes over
  - All other switches in the stack keep forwarding L2 and L3 traffic in and out, while backup unit guarantees connectivity to the core
- **Other lower end solutions are causing service interruptions across the entire stack without NSF and hitless failover**
- Back to normal production conditions, hitless failback requires a command in CLI or in GUI, for more control
- Hitless failback is automatic in case of new management unit (triggered or accidental) failure
- M4300 Virtual Chassis stacking technology upsurges overall network availability, providing better resiliency in network architectures, and better performance with advanced load balancing capabilities between network uplinks



Components and Modules

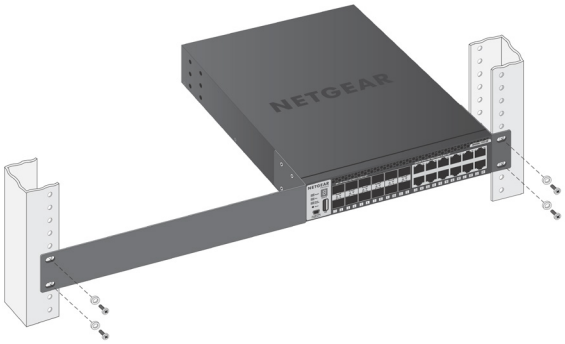
M4300-8X8F
Stackable Managed Switch

Ordering information

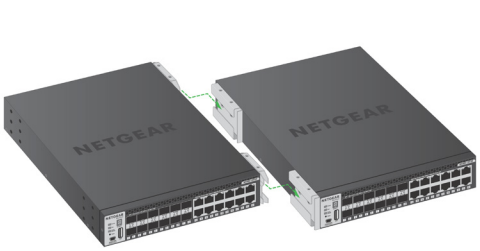
- Americas, Europe: XSM4316S-100NES
- Asia Pacific: XSM4316S-100AJS
- Warranty: Lifetime ProSafe Hardware Warranty

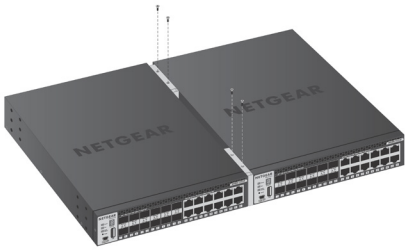
- 8-port 10GBASE-T (RJ45) all independent
- 8-port 10GBASE-X (SFP+) all independent
- 320Gbps non-blocking fabric across 16 ports
- Out-of-band 1G Ethernet management port
- Mini-USB and RJ45 RS232 console ports and USB storage port
- Full L3 feature set and non-stop forwarding (NSF) stacking
- Half-width 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)

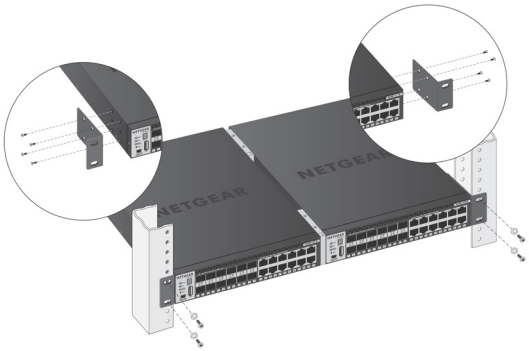
To install a single half-width switch in a rack, a 19-inch rack-mount kit is supplied with the switch:



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: 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)

M4300-24X24F
Stackable Managed Switch

Ordering information

- Americas, Europe: XSM4348S-100NES
- Asia Pacific: XSM4348S-100AJS
- Warranty: 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)

Components and Modules

M4300-28G
Stackable Managed Switch

Ordering information

- Americas, Europe: GSM4328S-100NES
- Asia Pacific: GSM4328S-100AJS
- Warranty: 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: 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)

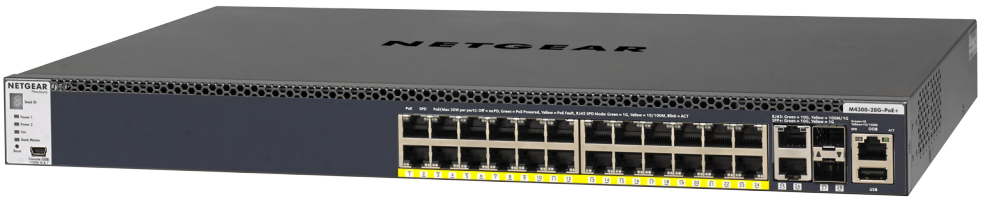
Components and Modules

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: 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

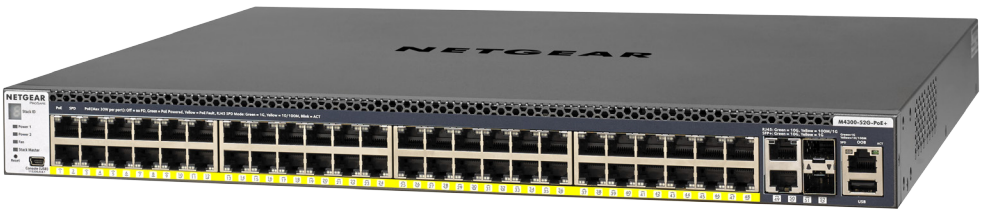


M4300-52G-PoE+
Stackable Managed Switch

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: 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

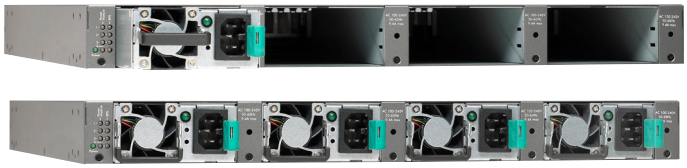
RPS4000v2
RPS unit for up to 4 concurrent switches

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

APS1000W
Power Supply Unit

Ordering information

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

- Power module for RPS4000 unit
- Additionnal 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

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

Accessories

APS250W Power Supply Unit

Ordering information

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

- Additional PSU for M4300-8X8F, M4300-12X12F and M4300-24X24F
- 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

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
10 Gigabit SFP+  • Fits into M4300 models SFP+ interfaces	**AXM763** 10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 220m (722 ft) **AXM763-10000S (1 unit)**	**AXM763** 10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 260m (853 ft) **AXM763-10000S (1 unit)** **AXM761** 10GBase-SR short reach multimode LC duplex connector OM3: up to 300m (984 ft) OM4: up to 550m (1,804 ft) **AXM761-10000S (1 unit)** **AXM761P10-10000S (pack of 10 units)**	**AXM762** 10GBase-LR long reach single mode LC duplex connector up to 10km (6.2 miles) **AXM762-10000S (1 unit)** **AXM762P10-10000S (pack of 10 units)** **AXM764** 10GBase-LR LITE single mode LC duplex connector up to 2km (1.2 mile) **AXM764-10000S (1 unit)**
Gigabit SFP  • Fits into M4300 models SFP+ interfaces	**AGM731F** 1000Base-SX short range multimode LC duplex connector up to 275m (902 ft) **AGM731F (1 unit)**	**AGM731F** 1000Base-SX short range multimode LC duplex connector OM3: up to 550m (1,804 ft) OM4: up to 1,000m (3,280 ft) **AGM731F (1 unit)**	**AGM732F** 1000Base-LX long range single mode LC duplex connector up to 10km (6.2 miles) **AGM732F (1 unit)**

Accessories

AGM734
1000Base-T Gigabit RJ45 SFP

ORDERING INFORMATION
- WORLDWIDE: AGM734-10000S
- WARRANTY: 5 YEARS

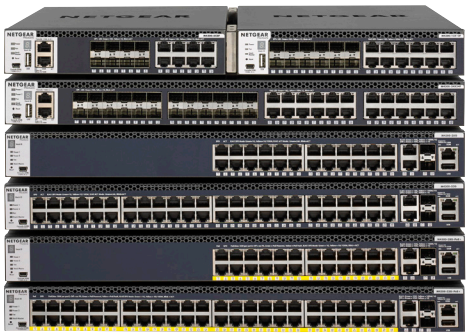
- Fits into M4300 models SFP+ interfaces
- 1 port Gigabit RJ45
- Supports only 1000Mbps full-duplex mode
- Up to 100m (328 ft) with Cat5 RJ45 or better
- Conveniently adds copper connectivity to M4300 fiber interfaces

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)
10 Gigabit DAC  • Fits into M4300 models SFP+ interfaces	**AXC761** 10GSFP+ Cu (passive) SFP+ connectors on both end **AXC761-10000S (1 unit)**	**AXC763** 10GSFP+ Cu (passive) SFP+ connectors on both end **AXC763-10000S (1 unit)**

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
M4300-24X24F	48x10G including 24x10GBASE-T and 24xSFP+	XSM4348S
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; M4300-12X12F; M4300-24X24F	APS250W
APS550W	PSU for M4300-28G-PoE+; M4300-52G-PoE+ (PA versions)	APS550W
APS1000W	PSU for M4300-28G-PoE+; M4300-52G-PoE+ (PB versions)	APS1000W

PHYSICAL INTERFACES

Gigabit and 10 Gigabit Ethernet Ports	Auto-sensing RJ45 10/100/1000BASE-T	Auto-sensing RJ45 100/1000/10GBASE-T	Auto-sensing SFP+ ports 1000/10GBASE-X
M4300-8X8F	-	8	8
M4300-12X12F	-	12	12
M4300-24X24F	-	24	24
M4300-28G, M4300-28G-PoE+	24	2	2
M4300-52G, M4300-52G-PoE+	48	2	2

All 10G ports are fully independent

Total Usable Port Count	1G Ports	10G Ports
M4300-8X8F	-	16
M4300-12X12F	-	24
M4300-24X24F	-	48
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	Serial RS232 RJ45 (back) ; Mini-USB (front)	1 x RJ45 10/100/1000BASE-T (back)	1 x USB (front)
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 PSU	Application with 2nd PSU (sold separately)
M4300-8X8F, M4300-12X12F	1	1 x APS250W	-
M4300-24X24F	2	1 x APS250W	RPS (redundant) mode
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				
M4300-28G-PoE+ (all versions)	24				
M4300-52G-PoE+ (all versions)	48				
PoE Budget	PoE Budget @ 110V AC in		PoE Budget @ 220V AC in		External RPS Application
	1 PSU or 2 in RPS mode	2 PSUs in EPS mode	1 PSU or 2 in RPS mode	2 PSUs in EPS mode	
M4300-28G-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)	Yes				
IEEE 802.3at (up to 30W per port)	Yes				
IEEE 802.3at Layer 2 (LLDP) method	Yes				
IEEE 802.3at 2-event classification	Yes				
PoE timer/schedule (week, days, hours)	Yes				

PROCESSOR/MEMORY		
Processor (CPU) - all blades	Integrated 800Mhz CPU in switching silicon	
System memory (RAM) - all blades	1 GB	
Code storage (flash) - all blades	256 MB	Dual firmware image, dual configuration file
Packet Buffer Memory		
M4300-24X24F	56 Mb	Dynamically shared across only used ports
M4300-12X12F	32 Mb	
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 384 x 10G ports or a combination
Mixed stacking between 1G models and 10G 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 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	320 Gbps		Line-rate (non blocking fabric)	
M4300-12X12F	480 Gbps			
M4300-24X24F	960 Gbps			
M4300-28G, M4300-28G-PoE+	128 Gbps			
M4300-52G, M4300-52G-PoE+	176 Gbps			
Throughput				
M4300-8X8F	238 Mpps			
M4300-12X12F	357 Mpps			
M4300-24X24F	714 Mpps			
M4300-28G, M4300-28G-PoE+	95.2 Mpps			
M4300-52G, M4300-52G-PoE+	130.9 Mpps			
Latency - 10G Fiber	64-byte frames	512-byte frames	1024-byte frames	1518-byte frames
M4300-8X8F	0.889µs	0.874µs	0.876µs	0.87µs
M4300-12X12F	1.189µs	1.313µs	1.373µs	1.309µs
M4300-24X24F	0.879µs	0.889µs	0.89µs	0.88µs
M4300-28G, M4300-28G-PoE+	1.961µs	1.952µs	1.941µs	1.95µs
M4300-52G, M4300-52G-PoE+	1.24µs	1.225µs	1.232µs	1.196µs
Latency - 10G Copper	64-byte frames	512-byte frames	1024-byte frames	1518-byte frames
M4300-8X8F	2.432µs	2.421µs	2.421µs	2.414µs
M4300-12X12F	2.755µs	2.879µs	2.938µs	2.876µs
M4300-24X24F	2.387µs	2.407µs	2.415µs	2.402µs
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
Latency - 1G Fiber	64-byte frames	512-byte frames	1024-byte frames	1518-byte frames
M4300-8X8F	2.622µs	2.543µs	2.538µs	2.557µs
M4300-12X12F	2.741µs	2.875µs	2.901µs	2.853µs
M4300-24X24F	2.752µs	2.767µs	2.784µs	2.752µs
M4300-28G, M4300-28G-PoE+	1.908µs	1.914µs	1.918µs	1.936µs
M4300-52G, M4300-52G-PoE+	1.618µs	1.594µs	1.578µs	1.576µs
Latency - 1G Copper	64-byte frames	512-byte frames	1024-byte frames	1518-byte frames
M4300-8X8F	2.572µs	2.564µs	2.592µs	2.589µs
M4300-12X12F	2.751µs	2.848µs	2.941µs	2.868µs
M4300-24X24F	2.772µs	2.79µs	2.814µs	2.784µs
M4300-28G, M4300-28G-PoE+	3.745µs	3.756µs	3.746µs	3.762µs
M4300-52G, M4300-52G-PoE+	2.688µs	2.644µs	2.648µs	2.666µs
Green Ethernet				
Energy Efficient Ethernet (EEE)	Future firmware upgrade for IEEE 802.3az Energy Efficient Ethernet Task Force compliance			Deactivated by default

Other Metrics		
Forwarding mode	Store-and-forward	
Addressing	48-bit MAC address	
Address database size (M4300-24X24F) (all other models)	128K MAC addresses 16K MAC addresses	
Number of VLANs	4,093 VLANs (802.1Q) simultaneously	
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) IPv4 IPv6 (all other models) IPv4 IPv6	12,288 IPv4 Unicast Routes in IPv4 Routing Default SDM Template 4,096 IPv6 Unicast Routes in Dual IPv4 and IPv6 SDM Template 512 IPv4 Unicast Routes in IPv4 Routing Default SDM Template 256 IPv6 Multicast Routes in Dual IPv4 and IPv6 SDM Template	SDM (System Data Management, or switch database) templates allow for granular system resources distribution depending on IPv4 or IPv6 applications
Number of static routes IPv4 IPv6	64 64	
RIP application route scaling IPv4	512	
OSPF application route scaling (M4300-24X24F) IPv4 IPv4 IPv6 (all other models) IPv4 IPv6	12,288 4,096 512 256	
Number of IP interfaces (port or VLAN)	128	
Jumbo frame support (M4300-24X24F) (all other models)	up to 12KB packet size up to 9KB packet size	
Acoustic noise (ANSI-S10.12)	@ 25°C ambient (77°F)	
M4300-8X8F	36.9 dB	Fan speed control
M4300-12X12F	36.9 dB	
M4300-24X24F	35.8 dB	
M4300-28G	30.3 dB	
M4300-28G-PoE+	39.8 dB	
M4300-52G	31.5 dB	
M4300-52G-PoE+	39.8 dB	

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	-	-	-
M4300-12X12F	367.75 BTU/ht	-	-	-
M4300-24X24F	610.39 BTU/hr	610.39 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)
M4300-12X12F	192,898 hours (~22 years)	121,331 hours (~13.9 years)
M4300-24X24F	133,176 hours (~15.2 years)	111,734 hours (~12.8 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	Yes	Up to 4,093 VLANs - 802.1Q Tagging
Protocol Based VLANs IP subnet ARP IPX	Yes Yes Yes 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 Guest VLAN RADIUS based VLAN assignment via .1x RADIUS based Filter ID assignment via .1x MAC-based .1x Unauthenticated VLAN	Yes Yes Yes Yes Yes Yes	IP phones and PCs can authenticate on the same port but under different VLAN assignment policies
Double VLAN Tagging (QoQ) Enabling dvlan-tunnel makes interface Global ethertype (TPID) Interface ethertype (TPID) Customer ID using PVID	Yes Yes Yes Yes Yes	
GARP with GVRP/GMRP	Yes	Automatic registration for membership in VLANs or in multicast groups
Multiple Registration Protocol (MRP)	Yes	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 LACP Static LAGs Local Preference per LAG	Yes Yes Yes Yes	Up to 128 LAGs and up to 8 ports per group
LAG Hashing	Yes	
LAG Member Port Flaps Tracking	Yes	
LAG Local Preference	Yes	Known unicast traffic egresses only out of local blade LAG interfarce members
Distributed Link Aggregation	Yes	LAGs across the stack
Storm Control	Yes	
IEEE 802.3x (Full Duplex and flow control) Per port Flow Control	Yes Yes	Asymmetric and Symmetric Flow Control

UDLD Support (Unidirectional Link Detection) Normal-Mode Aggressive-Mode		Yes Yes 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	
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		Yes	
MLDv1 Snooping Querier		Yes	
IGMP Snooping Enable IGMP Snooping per VLAN Snooping Querier		 Yes Yes	
MGMD Snooping Control Packet Flooding Flooding to mRouter Ports Remove Flood-All-Unregistered Option		 Yes Yes 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 Multiple next hops to a given destination Load sharing, Redundancy Default routes Static Reject routes	IPv4/IPv6 Yes Yes Yes Yes	
Port Based Routing	Yes	
VLAN Routing 802.3ad (LAG) for router ports	Yes Yes	
VRRP Pingable VRRP interface VRRP Route/Interface Tracking	IPv4 Yes Yes	
Loopback Interfaces	Yes	
Tunnel interfaces Configured 6to4 tunnels Automatic 6to4 tunnels 6to4 Border Router	IPv4 / IPv6 Yes Yes Yes	
RIP RIPv1/RIPv2	IPv4 Yes	
Route Redistribution	Yes	Enables the exchange of routing information among different routing protocols operating within a router
OSPF OSPFv2 RFC 2328 including older RFC 1583 support OSPFv3 OSPF Not-So-Stubby Area (NSSA) Option Forwarding of OSPF Opaque LSAs Passive interface feature Static Area Range Costs feature OSPF Equal Cost Multipath (ECMP) Dynamically learned ECMP routes Statically learned ECMP routes OSPF Max Metric feature Automatic Exiting of Stub Router Mode feature Static Area Range Costs feature OSPF LCA Pacing feature OSPF Flood Blocking feature OSPF Transit-Only Network Hiding	IPv4/IPv6 Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	
IP Multinetting	Yes	

ICMP throttling	Yes			
Router Discovery Protocol	Yes			
DNS Client	IPv4/IPv6			
IP Helper Max IP Helper entries	Yes 512			
IP Event Dampening	IPv4/IPv6			
Proxy ARP	IPv4/IPv6			
ICMP ICMP redirect detection in hardware	IPv4/IPv6 Yes			
Policy Based Routing (PBR) Based on the size of the packet Based on the Protocol of the payload (Protocol ID field) Based on Source MAC address Based on Source or Destination IP address Based on VLAN tag Based on Priority(802.1P priority)	IPv4/IPv6 Yes Yes Yes Yes Yes Yes			
NETWORK MONITORING AND DISCOVERY SERVICES				
ISDP (Industry Standard Discovery Protocol)	Yes		Can interoperate with devices running CDP	
802.1ab LLDP	Yes			
802.1ab LLDP - MED	Yes			
SNMP	V1, V2, V3			
RMON 1,2,3,9	Yes			
sFlow	Yes			
SECURITY				
Network Storm Protection, DoS				
Broadcast, Unicast, Multicast DoS Protection Denial of Service Protection (control plane) Denial of Service Protection (data plane)	Yes Yes Yes		Switch CPU protection 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) Max Rules	Yes 64		Protects management CPU access through the LAN	
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 / IPv6
DHCP Snooping	Yes	IPv4 / IPv6
Dynamic ARP Inspection	Yes	IPv4 / IPv6
IPv6 RA Guard Stateless Mode	Yes	
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	
Single Rate Policing	Yes (CLI only)	
Committed Information Rate	Yes	
Committed Burst Size	Yes	
Excessive Burst Size	Yes	
DiffServ feature applied to class maps	Yes	

Auto-VoIP	Yes, based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address
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	Yes
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	Yes
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

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 1.0
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

RFC 2295 — Transparent content negotiation	SSH 1.5 and 2.0 – RFC 4253 — SSH transport layer protocol – RFC 4252 — SSH authentication protocol – RFC 4254 — SSH connection protocol – RFC 4251 — SSH protocol architecture – RFC 4716 — SECSH public key file format – RFC 4419 — Diffie-Hellman group exchange for the SSH transport layer protocol
RFC 2296 — Remote variant selection; RSVA/1.0 state management cookies — draft-ietf-http-state-mgmt-05	
RFC 2576 — Coexistence between SNMP v1, v2, and v3	
RFC 2578 — SMI v2	
RFC 2579 — Textual conventions for SMI v2	
RFC 2580 — Conformance statements for SMI v2	
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	Java Script™ 1.3
RFC 3413 — SNMP Applications	
Advanced Management	
Industry-standard CLI with the following features: – Scripting capability – Command completion – Context-sensitive help	Optional user password encryption Multisession Telnet server Auto Image Upgrade
Core Switching	
IEEE 802.1AB — Link level discovery protocol	IEEE 802.3ac — VLAN tagging
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 802.3ab — 1000Base-T	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	IEEE Draft P802.1AS/D6.7 — IEEE 802.1AS Time Synchronization Protocol
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: – 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	Auto VoIP
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 dowloaded here: http://support.netgear.com/for_business/default.aspx
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 PV(R)STP Authorization List Control Plane ACL UDLD Policy Based Routing LLPF QoS Policy for Single Rate DHCPv6 Snooping IPv6 DHCP Relay eMail Alerting MMRP	 CLI only CLI only CLI only CLI only CLI only CLI only CLI only CLI only CLI only CLI only CLI only	
Telnet	Yes	
IPv6 management	Yes	
Dual Software (firmware) image	Yes	Allows non disruptive firmware upgrade process
Dual 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 Max History entries Max buckets per History entry Max Alarm entries Max Event entries Max Log entries per Event entry	Yes 3 * (number of ports in the chassis + LAG + 10) 10 3 * (number of ports in the chassis + LAG + 10) 3 * (number of ports in the chassis + LAG + 10) 10	
Port Mirroring Number of monitor sessions Tx/Rx Many to One Port Mirroring LAG supported as source ports Max source ports in a session	Yes 1 (multiple sessions are configurable) Yes Yes Yes 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	
SSH SSH Session Configuration	v1 / v2 Yes	Secure Shell
SSL/HTTPS and TLS v1.0 for web-based access	Yes	

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	
OpenFlow 1.3	Supports a single-table OpenFlow 1.3 data forwading path	
USER ADMIN MANAGEMENT		
User ID configuration Max number of configured users Support multiple READWRITE Users Max number of IAS users (internal user database)	Yes 6 Yes 100	
Authentication login lists	Yes	
Authentication Enable lists	Yes	
Authentication HTTP lists	Yes	
Authentication HTTPS lists	Yes	
Authentication Dot1x lists	Yes	
Accounting Exec lists	Yes	
Accounting Commands lists	Yes	
Login History	50	
M4300 SERIES - PLATFORM CONSTANTS		
Maximum number of remote Telnet connections	5	
Maximum number of remote SSH connections	5	
Number of MAC Addresses	128K (M4300-24X24F)	16K (all other models)
Number of VLANs	4K	
VLAN ID Range	1 - 4093	
Number of 802.1p Traffic Classes	8 classes (standalone)	7 classes (stack)
IEEE 802.1x Number of .1x clients per port	48	
Number of LAGs	128 LAGs with up to 8 ports per group	
Maximum multiple spanning tree instances (MSTP)	32	
Maximum per VLAN spanning tree instances (PVST)	32	
MAC based VLANS Number supported	Yes 256	
Number of network buffers	246	
Number of log messages buffered	200	

Static filter entries	
Unicast MAC and source port	20
Multicast MAC and source port	20
Multicast MAC and destination port (only)	2,048
Subnet based VLANs	Yes
Number supported	128
Protocol Based VLANs	Yes
Max number of groups	128
Max protocols	16
Maximum Multicast MAC Addresses entries	2K
Jumbo Frame Support	Yes
Max Size Supported	12k (M4300-24X24F) 9k (all other models)
Number of IP Source Guard stations	379
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	32
Max Accounting servers	32
Number of Routes (v4/v6)	
IPv4 only SDM build	12K (M4300-24X24F) 512 (all other models)
IPv4/IPv6 SDM build	
IPv4 routes	8K (M4300-24X24F) 512 (all other models)
IPv6 routes	4K (M4300-24X24F) 256 (all other models)
RIP application route scaling	512
OSPF application route scaling	12K (M4300-24X24F) 512 (all other models)
Number of routing interfaces (including port/vlan)	128
Number of static routes (v4/v6)	64/64
OSPF	
OSPFv2 max neighbors	400
OSPFv3 max neighbors	400
OSPFv3 max neighbors per interface	100
Tunnels	
Number of configured v6-over-v4 tunnels	8
Number of automatic (6to4) tunnels	1
Number of 6to4 next hops	16
DHCP Server	
Max number of pools	256
Total max leases	2K

DNS Client	
Concurrent requests	16
Name server entries	8
Seach list entries	6
Static host entries	64
Cache entries	128
Domain search list entries	32
DHCPv6 Server	
Max number of pools	16
DNS domain names within a pool	5
DNS server addresses within a pool	8
Delegated prefix definitions within a pool	10
Number of Host Entries (ARP/NDP)	
IPv4 only SDM build	8K (M4300-24X24F) 2K (all other models)
IPv4/IPv6 SDM build (v4/v6)	6K (M4300-24X24F) 2.5K (all other models)
Static v4 ARP Entries	128
Number of ECMP Next Hops per Route	16 (M4300-24X24F) 4 (all other models)
Number of ECMP groups	256 (M4300-24X24F) 128 (all other models)
Total ECMP nexthops in Hardware	4,096 (M4300-24X24F) 2,048 (all other models)
IGMPv3 / MLDv2 Snooping Limits	
IGMPv3/MLDv2 HW entries when IP Multicast present	512/512 (M4300-24X24F) 64/32 (all other models)
IP Multicast	
Number of IPv4/IPv6 Multicast Forwarding Entries	1,024/512 (M4300-24X24F) 96/32 (all other models)
IGMP Group Memberships per system	2K (IPv4) and 2K (IPv6)
IPv4 Multicast routes (IPv4 only)	1.5K (M4300-24X24F) 128 (all other models)
DVMRP Neighbors	256
PIM-DM Neighbors	256
PIM-SM Neighbors	256
PIM-SM Static RP Entries	5
PIM-SM Candidate RP Group Range Entries	20
PIM-SM SSM Range Entries	5
IGMP Sources processed per group per message	73
ACL Limits	
Maximum Number of ACLs (any type)	100
Maximum Number Configurable Rules per List	1,023 ingress / 511 ingress
Maximum ACL Rules per Interface and Direction	1,023 ingress / 511 ingress
Maximum ACL Rules per Interface and Direction (IPv6)	893 ingress / 509 egress
Maximum ACL Rules (system-wide)	16K
Maximum ACL Logging Rules (system-wide)	128
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
Max Rules per Class	13
Max Instances per Policy	28
Max Attributes per Instance	3
Max Service Interfaces	116
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 Max Sessions Max Connections	 16 192 192
OpenFlow 1.3 Number of max OpenFlow access rules Number of max OpenFlow forwarding rules	 1,024 1,792
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 M4300-12X12F M4300-24X24F M4300-28G M4300-28G-PoE+ M4300-52G M4300-52G-PoE+	 Width: 8.35 inches (21.2 cm) (half-width); Height: 1U - 1.73 inches (4.4 cm); Depth: 13.58 inches (34.5 cm) Width: 8.35 inches (21.2 cm) (half-width); Height: 1U - 1.73 inches (4.4 cm); Depth: 13.58 inches (34.5 cm) Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 13.58 inches (34.5 cm) Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 12.2 inches (31 cm) Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 12.2 inches (31 cm) Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 12.2 inches (31 cm) Width: 17.32 inches (44 cm); Height: 1U - 1.73 inches (4.4 cm); Depth: 15.28 inches (38.8 cm)
Weight M4300-8X8F M4300-12X12F M4300-24X24F 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)	 7.31 lb (3.32 kg) 8.14 lb (3.69 kg) 13.48 lb (6.12 kg) 9.94 lb (4.51 kg) 11.21 lb (5.09 kg) 11.47 lb (5.20 kg) 10.81 lb (4.91 kg) 14.44 lb (6.55 kg) 14.7 lb (6.67 kg)
Power Consumption	
Worst case, all ports used, full PoE, line-rate traffic M4300-8X8F M4300-12X12F M4300-24X24F 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)	 49W max 97W max 161W 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 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
Environmental Specifications	
Operating: Temperature Humidity Altitude	 32° to 122°F (0° to 50°C) 90% maximum relative humidity, non-condensing 10,000 ft (3,000 m) maximum
Storage: Temperature Humidity Altitude	 – 4° to 158°F (–20° to 70°C) 95% maximum relative humidity, non-condensing 10,000 ft (3,000 m) maximum

Electromagnetic Emissions and Immunity	
Certifications	CE mark, commercial FCC Part 15 Class A VCCI Class A Class A EN 55022 (CISPR 22) Class A Class A C-Tick EN 50082-1 EN 55024
Safety	
Certifications	CE mark, commercial CSA certified (CSA 22.2 #950) UL listed (UL 1950)/cUL IEC 950/EN 60950
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 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	Half-width switch with one APS250W power supply unit 1-unit rack-mounting kit: one long bracket, one regular (short) bracket, and screws 2-unit rack-mounting kit: one pair of inside and outside middle mounts (for combining two half-width M4300 switches)
M4300-24X24F	Full width switch with one APS250W power supply unit 1-unit rack-mounting kit
M4300-28G, M4300-52G	Full width switch with one APS150W power supply unit 1-unit rack-mounting kit
M4300-28G-PoE+ (GSM4328PA version 550W PSU) M4300-52G-PoE+ (GSM4352PA version 550W PSU)	Full width switch with one APS550W power supply unit 1-unit rack-mounting kit
M4300-28G-PoE+ (GSM4328PB version 1,000W PSU) M4300-52G-PoE+ (GSM4352PB version 1,000W PSU)	Full width switch with one APS1000W power supply unit 1-unit rack-mounting kit

Optional Modules and Accessories		
APS150W	150W AC PSU for M4300-28G and M4300-52G	APS150W-100NES/AJS
APS250W	250W AC PSU for M4300-8X8F, M4300-12X12F and M4300-24X24F	APS250W-100NES/AJS
APS550W	550W AC PSU for M4300-28G-PoE+ (GSM4328PA) and M4300-52G-PoE+ (GSM4352PA)	APS550W-100NES/AJS
APS1000W	1,000W AC PSU for M4300-28G-PoE+ (GSM4328PB), M4300-52G-PoE+ (GSM4352PB) and RPS4000	APS1000W-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
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

WARRANTY AND SUPPORT	
ProSAFE Lifetime Hardware Warranty*	Included, 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	
Installation contracts for:	All models
PSB0304-10000S	Remote Installation Setup and Configuration Service Contract
PSP1104-10000S	Onsite Installation Setup and Configuration Service Contract
Supplemental support contracts for:	M4300-8X8F M4300-28G M4300-28G-PoE+ M4300-52G M4300-52G-PoE+
PMP3133-10000S	OnSite NBD Replacement 3-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 M4300-24X24F
PMP3134-10000S	OnSite NBD Replacement 3-year CAT 4
PMB0334-10000S	OnCall 24x7 3-year CAT 4
PMB0354-10000S	OnCall 24x7 5-year CAT 4

Ordering Information

ORDERING INFORMATION	
M4300-8X8F Americas, Europe Asia Pacific China	 XSM4316S-100NES XSM4316S-100AJS XSM4316S-100PRS
M4300-12X12F Americas, Europe Asia Pacific China	 XSM4324S-100NES XSM4324S-100AJS XSM4324S-100PRS
M4300-24X24F Americas, Europe Asia Pacific China	 XSM4348S-100NES XSM4348S-100AJS XSM4348S-100PRS
M4300-28G Americas, Europe Asia Pacific China	 GSM4328S-100NES GSM4328S-100AJS GSM4328S-100PRS
M4300-28G-PoE+ with 550W PSU Americas, Europe Asia Pacific China	 GSM4328PA-100NES GSM4328PA-100AJS GSM4328PA-100PRS
M4300-28G-PoE+ with 1,000W PSU Americas, Europe Asia Pacific China	 GSM4328PB-100NES GSM4328PB-100AJS GSM4328PB-100PRS
M4300-52G Americas, Europe Asia Pacific China	 GSM4352S-100NES GSM4352S-100AJS GSM4352S-100PRS
M4300-52G-PoE+ with 550W PSU Americas, Europe Asia Pacific China	 GSM4352PA-100NES GSM4352PA-100AJS GSM4352PA-100PRS
M4300-52G-PoE+ with 1,000W PSU Americas, Europe Asia Pacific China	 GSM4352PB-100NES GSM4352PB-100AJS GSM4352PB-100PRS

* This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller and modifications to product may void the warranty; covers hardware, fans and internal power supplies - not software or external power supplies See http://www.netgear.com/about/warranty/ for details. Lifetime technical support includes basic phone support for 90 days from purchase date and lifetime online chat support when purchased from a NETGEAR authorized reseller.