NETGEAR® PROSAFE®

ProSafe® Next-Gen Edge Managed Switches
M5300 series

Data Sheet

The NETGEAR® Next-Gen Edge M5300 series consists of three fully managed, stackable Gigabit Ethernet switches, with embedded 10 Gigabit Ethernet uplink connectivity. There are 24-port and 48-port models including Gigabit copper versions, and a Fiber aggregation solution. They are ideal for all organizations considering reliable, affordable and simple 10 Gigabit Ethernet backbone architectures. As a proficient component of converged voice, video and data networking solutions, NETGEAR M5300 series delivers a resilient access layer in server rooms for virtualization, campus LAN environments and commercial buildings. Virtual Chassis stacking technology - including meshed stacking - scales both the entire network's performance and its redundancy.

Layer 2+ or Layer 3: you can choose the right one (there are upgrade paths)

- Because RIP, OSPF, VRRP or PIM aren't always needed, M5300 series comes with port-based/VLAN-based/subnet-based "static routing" Layer 2+ versions
- You can save costs now and should new applications arise, there's a seamless upgrade path with Layer 3 license upgrades
- When dynamic routing an immediate requirement, M5300 series directly comes with Layer 3 version for fiber aggregation
- All M5300 series versions share the same code base for easier deployment and maintenance; same firmware across all platforms
- M5300 series is flexible enough for mixed stacking between Layer 2+ and Layer 3 versions

10 Gigabit Ethernet and IPv6 ready

- Two embedded 10 Gigabit interfaces streamline network uplinks with SFP+ and 10GBase-T (RJ45) combo ports
- Two supplemental 10 Gigabit I/O bays for uplinks or local/distant stacking, provide versatile 10 Gigabit deployment capabilities

Industry leading availability

- Removable, modular power module for the main power supply
- Hot-swap RPS/EPS capabilities for 100% uptime when the main power supply is replaced
- 8 switches/384 Gbps stacking interconnect with sub-second master failover for highest redundancy

Industry standard management

- Industry standard command line interface (CLI)
- Fully functional NETGEAR web interface (GUI)

Industry leading warranty

- NETGEAR 5300 series is backed by NETGEAR ProSafe Lifetime Hardware Warranty+
- Also included ProSupport Lifetime 24x7 Advanced Technical Support*
- Also included 3-Year Next Business Day Onsite Hardware Replacement**

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24/7 TECHNICAL SUPPORT*

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Email: info@NETGEAR.com

NETGEAR PROSAFE LIFETIME WARRANTY*

Lifetime Tech Support

NBD* 3-year on-site service

Hardware at a Glance

	FRONT				REAR						
Model name	10/100/1000 Base-T RJ45 ports	100/1000X Fiber SFP ports	100/1000/ 10GBase-T RJ45 ports	1000/ 10GBase-X Fiber SFP+ ports	Additional 10 Gigabit I/O bays	Modular PSU (hot-swap when RPS)	RPS connector	PoE budget	Manage-ment console	Storage (image, config, log files)	Model number
M5300-28G	24	4 (shared)	2 built-in	2 (shared) built-in	2 modules	1 (APS135W)	1 (RPS)	-	1 x RS232 DB9, 1 x Mini-USB (selectable)	1 x USB	GSM7228S v1h1
M5300-52G	48	4 (shared)				1 (APS135W)	1 (RPS)	-			GSM7252S v1h1
M5300-28GF3	4 (shared)	24				1 (APS135W)	1 (RPS)	-			GSM7328FS v2h1

M5300-28G is a "24 + 4x10GbE" version, Layer 2+

- Upgradeable to Layer 3

M5300-52G is a "48 + 4x10GbE" version, Layer 2+

- Upgradeable to Layer 3

M5300-28GF3 is a "24 fiber + 4x10GbE" version, Layer 3

- M5300 series rear view with two I/O bays; RPS connector
- Management ports (DB9, mini-USB); storage port (USB)
- Each M5300 series ships with its installed modular PSU
- Spare PSU units are available for hot swap HA with RPS
- External Power Supply (EPS) available for PoE+ versions

Software at a Glance

	LAYER 2+ PACKAGE						LAYER 3 PACKAGE				
Model name	IPv4/IPv6 ACL and QoS	IPv4/IPv6 Multicast filtering	Auto-VoIP Auto-iSCSI	VLANs	Convergence	IPv4 Static Routing	IPv6 Static Routing	IPv4 Dynamic Routing	IPv6 Dynamic Routing	IPv4/IPv6 Multicast Routing	Model number
M5300-28G	L2, L3, L4, ingress, egress, 1 Kbps	IGMP amd MLD Snooping and Proxy, Querier mode, MVR	Yes	Static, Dynamic, Voice, MAC, Subnet, Protocol-based, QoQ, Private VLANs	LLDP-MED, RADIUS, 802.1X, PoE timer	Yes (Port-based, Subnet, VLANs)	Layer 3 licence upgrade: GSM7228L-10000S				GSM7228S v1h1
M5300-52G							Layer 3 licence upgrade: GSM7252L-10000S				GSM7252S v1h1
M5300-28GF3							Yes (Port-based, Subnet, VLANs)	RIP, OSPF, VRRP, ECMP, Proxy ARP, Multinet-ting	OSPFv3 Config-ured 6to4 Automatic 6to4	Static routes, PIM-SM, PIM-DM	GSM7328FS v2h1

Performance at a Glance

	TABLE SIZE										
Model name	Packet buffer	CPU	ACLs	MAC ARP/ NDP VLANs DHCP server	Number of Routes (IPv4/IPv6)	RIP/OSPF application route scaling	Static Routes	Multicast IGMP Group membership	IP Multicast Forwarding Entries	sFlow	Model number
M5300-28G	16 Mb	800Mhz 512M RAM 128M Flash	2K ingress 512 egress	32K MAC 6K ARP/NDP VLANs: 4K DHCP:16 pools 1,024 max leases	L3 route table size: 12,256	RIP: 512 OSPF: 12,256	512 IPv4 512 IPv6	2K IPv4 2K IPv6	1K IPv4 or 512 IPv4 256 IPv6	32 samplers 52 pollers 8 receivers	GSM7228S v1h1
M5300-52G	32 Mb										GSM7252S v1h1
M5300-28GF3	16 Mb										GSM7328FS v2h1

True, Virtual Chassis Stacking

NETGEAR Virtual Chassis stacking technology provides resilient network architecture: up to 8 independent switches are consolidated around a single management IP address, which simplifies network operations. Up to 384 Gigabit ports and 16 available 10 Gigabit uplinks per virtual chassis for unparallel density at this price point.

Each 5300 series joins the Virtual Chassis architecture with a 48 Gbps switching stack interconnect: when 8 members in the stack, overall stacking "backplane" performance is 384 Gbps full duplex.

Within the stack, a switch is elected as the "Master": the master is responsible for the control plane and forwarding/routing tables for the stack members. As for a Chassis switch, the control plane and the management plane are unified but each switch performs its local, line-rate switching and routing. Automatic Unit Replacement guarantees stack members' smooth replacement without manual reconfiguration. Stack master redundancy is also automatic with sub-second failover. As for a Chassis switch, VLAN tagging, port mirroring and link aggregation are available from every port to every port across the stack (see page 9).

Product Brief

The Next-Gen Edge M5300 series switches are NETGEAR top of the line Gigabit stackable fully managed switches for modern access layer in campus and enterprise networks with 10 Gigabit Ethernet backbone requirements. The M5300 series delivers pure line-rate performance for virtualization or convergence, without having to pay the exorbitant acquisition and maintenance costs associated by other networking vendors. NETGEAR Next-Gen Edge solutions combine the latest advances in hardware and software engineering for higher availability, stronger security, better scalability, and even more energy efficiency (1.5W per port line-rate traffic for 48+4 port versions). Like all NETGEAR products, the M5300 series delivers more functionality with less difficulty: operating software and system management features take the complexity out of delivering network services for virtualized servers, IP telephony, wireless deployments, and video surveillance infrastructures.

NETGEAR Next-Gen Edge M5300 series key features:

- 24 and 48 Gigabit models, and one 24 Gigabit SFP fiber model
- Layer 2+ models with Layer 3 license upgrades available, or built-in Layer 3 models for the exact fit per application and best investment protection
- IPv4 routing in Layer 2+ package (static routing) and IPv4/IPv6 routing in Layer 3 package (dynamic routing)
- Enterprise-class L2/L3 tables with 32K MAC, 6K ARP/NDP, 4K VLANs, 12K route table size
- 4 or 24 uplink fiber (SFP) ports for Fast Ethernet or Gigabit optics
- 2 built-in uplink 10 Gigabit combo ports with either 10Gbase-T copper RJ45, or SFP+ fiber
- 2 additional uplink or stacking 10 Gigabit I/O bays for a large variety of modules and various 10 Gigabit installations
- Uplink capacity per switch is 4-port 10 Gigabit total, mixing 10GBase-T (RJ45), 10GBase-X (SFP+), 10GBase-CX4 (802.3ak) and 48 Gbps stacking ports

NETGEAR Next-Gen Edge M5300 series software features:

- Automatic multi-vendor Voice over IP prioritization based on SIP, H323 and SCCP protocol detection
- Voice VLAN and LLDP-MED for automatic IP phones QoS and VLAN configuration
- Multi-hop RP multicast PIM routing advanced implementation for resilient video deployments
- Advanced classifier-based hardware implementation for L2 (MAC), L3 (IP) and L4 (UDP/TCP transport ports) security and prioritization
- Innovative multi-vendor Auto-iSCSI capabilities for easier virtualization optimization

NETGEAR Next-Gen Edge M5300 series stacking features:

- True Virtual Chassis Stacking technology with up to 384 Gbps interconnect for network operations simplification
- Meshed stacking for multi-resiliency and advanced load balancing capabilities
- Up to 384 ports Gigabit and 16 available 10 Gigabit uplink ports per Virtual Chassis of 8 switches
- Highest availability with sub-second master failover for L2 and L3 seamless switching
- Investment protection: backward stacking capability with previous GSM72xxPS v1h1 and GSM73xxS v2h1 models

NETGEAR Next-Gen Edge M5300 series management features:

- DHCP/BootP innovative auto-installation including firmware and configuration file upload automation
- Industry standard SNMP, RMON, MIB, LLDP, AAA and sFlow implementation
- Selectable serial RS232 DB9 and Mini-USB port for 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

NETGEAR Next-Gen Edge M5300 series warranty and support:

- NETGEAR ProSafe Lifetime Hardware Warranty†
- Included ProSupport Lifetime 24x7 Advanced Technical Support*
- Included 3-Year Next Business Day Onsite Hardware Replacement**

Modern Access Layer Features Highlights

Layer 3 hardware with L2+/L3 software flexibility	
All M5300 series models are built upon the same hardware platform while Layer 2+ and Layer 3 software packages allow for better budget optimization	• M5300 series uses latest generation silicon low-power 65-nanometer technology • M5300 series L2 and L3 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
M5300 series Layer 2+ software package provides straight forward IP static routing capabilities for physical interfaces, VLANs and subnets:	• M5300-28G; M5300-52G; • At the edge of campus networks or in the server room, static routes are often preferred for simplicity (L3 fixed routes to the next hop towards the destination network are manually added to the routing table), without any impact on performance because L3 routing is wire-speed in M5300 series hardware • M5300 series Layer 2+ versions offer perfect investment protection in case of future routing resiliency applications with Layer 3 license upgrades
Layer 3 license will unlock IPv6 routing, Multicast routing and all dynamic routing features for a given M5300 series L2+ model without any firmware upgrade nor configuration change - not even a service interruption	
When closer to the distribution layer, or at the edge of larger campus networks with "routing around damage" requirements, M5300 series conveniently offer Layer 3 versions with the Layer 3 license already installed	• M5300-28GF3 • M5300 series Layer 3 software package dynamic routing protocols (RIP, VRRP, OSPF; associated with PIM for Multicast) provide line rate fault tolerant routing
Top-of-the-line switching performance	
32K MAC address table, 4K concurrent VLANs and 12,256 Layer 3 route table size for the most demanding enterprise or campus network access layers	
80 PLUS certified power supplies for energy high efficiency	
Increased packet buffering with up to 32 Mb dynamically shared accross all interfaces for most intensive virtualization applications	
Low latency at all network speeds, including 10 Gigabit uplinks and 48 Gbps flexible chain, ring or meshed Virtual Chassis Stacking topologies	
Jumbo frames support of up to 12Kb accelerating storage performance for backup and cloud applications	
SCSI Flow Acceleration and Automatic Protection / QoS for virtualization and server room networks containing iSCSI initiators and iSCSI targets by:	• 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 about the participants; this allows the formulation of classifier rules giving the data packets for the session the 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
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	
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	
Largest 10 Gigabit choice for uplinks with SFP+ ports for fiber optic or short, low-latency copper DAC cables; 10GBase-T ports for legacy Cat6 RJ45 short connections (up to 50m) and Cat6A connections up to 100m; CX4 for legacy 802.3ak infiniband wiring	
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	
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	

Modern Access Layer Features Highlights (continued)

Tier 1 availability

Virtual Chassis Stacking technology upsurges overall network availability with distributed link aggregations (LAGs) accross several switches, providing both better resiliency in network architectures, and better performance with advanced load balancing capabilities between network uplinks	• Within the Virtual Chassis, automatic unit replacement (AUR) guarantees stack members' smooth replacement without manual reconfiguration; the Stack Master redundancy is also automatic with a sub-second secondary master recovery for all switching and routing functions in the stack • Since all switches can potentially participate as a master for the control plane and forwarding/routing tables, there is virtually no single point of failure in the network topology in the unlikely event of an unit failure

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

IP address conflict detection performed by the embedded DHCP server 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 management and control

Virtual Chassis Stacking technology consolidates up to 8 switches around a single management IP address, which simplifies network operations even when switches are in distant closets (distant stacking)	• Because the Virtual Chassis acts as a single switch in the network, other switches also "see" the stack as a typical chassis eliminating the need for complex spanning tree architectures and allowing for simple, load balanced distributed link aggregations instead • Software (firmware) updates are automatic for all switches in the Virtual Chassis when the master switch gets updated

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

Flexible Port-Channel / LAG (802.3ad) 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 dynamic LAGs (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) and 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 GRVP 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

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...

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

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

Multicast routing (PIM-SM and PIM-DM, both IPv4 and IPv6) ensure multicast streams can reach receivers in different L3 subnets	• Multicast static routes • Multicast dynamic routing (PIM associated with OSPF) including PIM multi-hop RP support for routing around damage advanced capabilities

PoE power management and schedule enablement

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

Modern Access Layer Features Highlights (continued)

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	
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	
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	
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 topology 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 data 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 only after the dot1x authentication process times out, and only when clients don't respond to any of the EAPOL packets sent by the switch • 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
Double VLANs (DVLAN - QoQ) pass traffic from one customer domain to another through the "metro core" in a multi-tenancy environment: customer VLAN IDs are pre-served 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 inter face/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 secure	
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 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
Automatic Voice over IP prioritization with Auto-VoIP
iSCSI Flow Acceleration and automatic protection/QoS with Auto-iSCSI

Flow Control

802.3x Flow Control implementation per IEEE 802.3 Annex 31 B 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	

UDLD Support

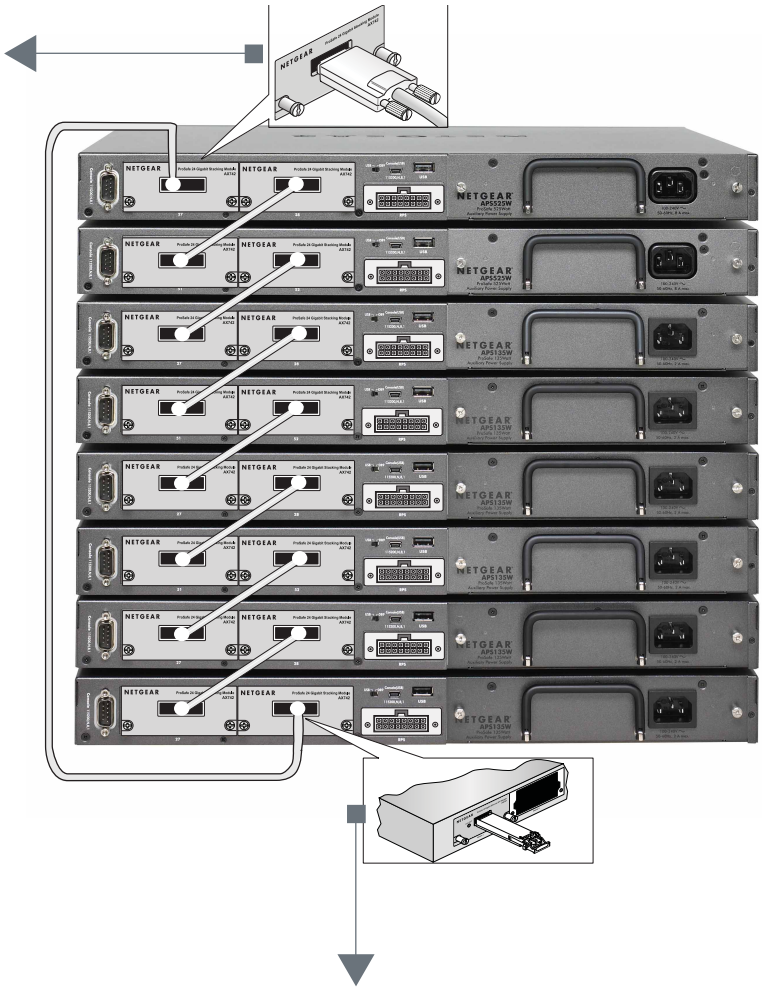
UDLD implementation detects unidirectional links physical ports (UDLD must be enabled on both sides of the link in order to detect an unidirectional link)	• UDLD protocol operates by exchanging packets containing information about neighboring devices • The purpose is to detect and avoid unidirectional link forwarding anomalies in a Layer 2 communication channel in which a bi-directional link stops passing traffic in one direction
Both "normal-mode" and "aggressive-mode" are supported for perfect compatibility with other vendors implementations, including port "D-Disable" triggering cases in both modes	

Virtual Chassis Stacking Technology

AX742 v1h3
24 Gbps Stacking Kit (48 Gbps per switch)

- Both rear I/O 10GbE bays are preset for stacking using any AX74x module
- AX742 is a bundle: 2 CX4 I/O modules AX744 + 1 stacking CX4 cable (1m)
- One AX742 Stacking Kit per switch is required for dual ring topology
- Each module half-duplex speed is 12 Gbps (24 Gbps full duplex) with 1m cable
- When one AX742 kit per switch (two modules):
  - Dual ring stacking interconnect is 24 Gps per switch (half duplex)
  - Dual ring stacking interconnect is 48 Gbps per switch (full duplex)
  - 8-switch global stacking interconnect is 384 Gbps (full duplex)
- Longer version of the stacking cable is available as an option:
  - AXC743-10000S (3 meter infiniband CX4 cable)
  - Half-duplex speed 10 Gbps (20 Gbps full duplex) with 3m version
  - Longer standard CX4 cables can be used; performance may vary

Dual-Ring Topology:



Rear I/O bays preset for zero-touch stacking

For deployment convenience, the two rear I/O bays are pre-configured for stacking mode in factory default settings: this allows for zero-touch stacking as soon as back connectivity is detected. AX742 Stacking Kit (24 Gbps half duplex/48 Gbps full duplex interconnect per switch, 1 meter cable) is cost-effective preferred method for local Virtual Chassis Stacking using both rear I/O bays; a longer stacking cable is available as an option (AXC743, 3 meter version) and any standard, high quality infiniband CX4 cable can be used instead. When some switches are distant, affordable SFP+ (AX743) and 10GBase-T (AX745) I/O modules allow for fiber or copper distant connections, still leveraging rear bays zero-touch stacking functionality. Copper, fiber can be mixed and matched for stacking interconnect.

Both front, embedded 10 Gigabit combo ports (SFP+/10GBase-T) are pre-configured for Ethernet (uplink) mode in factory default settings.

Configuration can be changed: two front 10GbE ports and two rear 10GbE ports can each run Ethernet (uplink) and/or Stacking modes for maximum flexibility.

For instance, in standalone applications all four 10GbE ports can be used for Ethernet uplinks. Reversely, all four 10GbE ports can be set to Stacking mode for Full Mesh stacking shown on page 9.

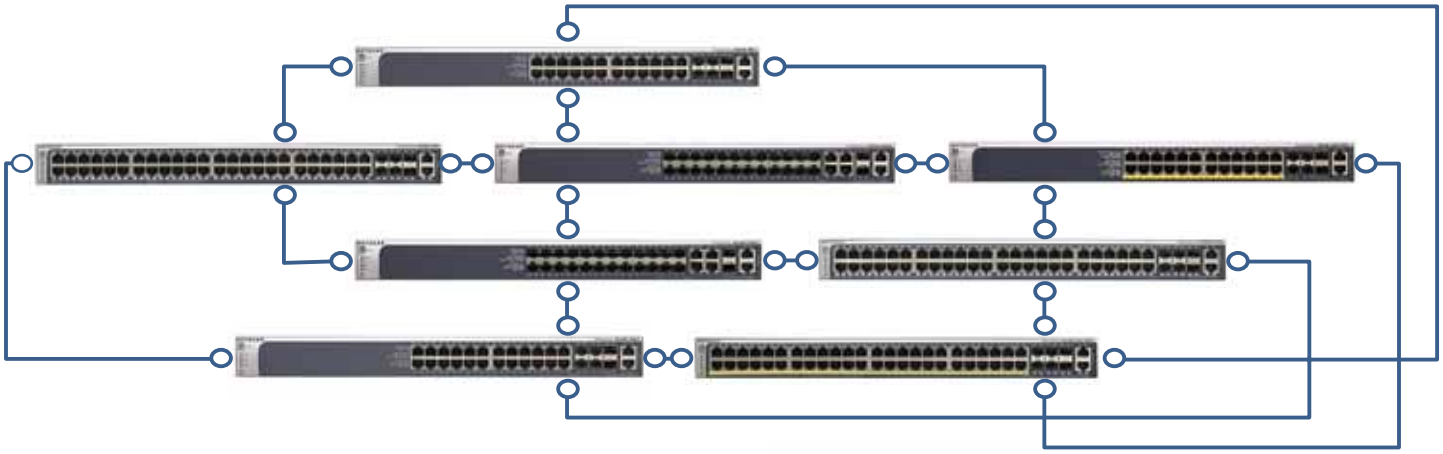
AX743
1 port SFP+ I/O module

AX745
1 port 10GBase-T I/O module

- Both rear I/O 10GbE bays are preset for Stacking mode using any AX74x module
- Local stacking and Distant stacking are supported within the same stack
- AX742, AX743 and AX745 can be mixed and matched for Virtual Chassis
  - AX743-10000S (1 port SFP+ for 10GBase-X fiber optics)
  - AX745-10000S (1 port 10GBase-T for copper - 100 meters RJ45 Cat6A)

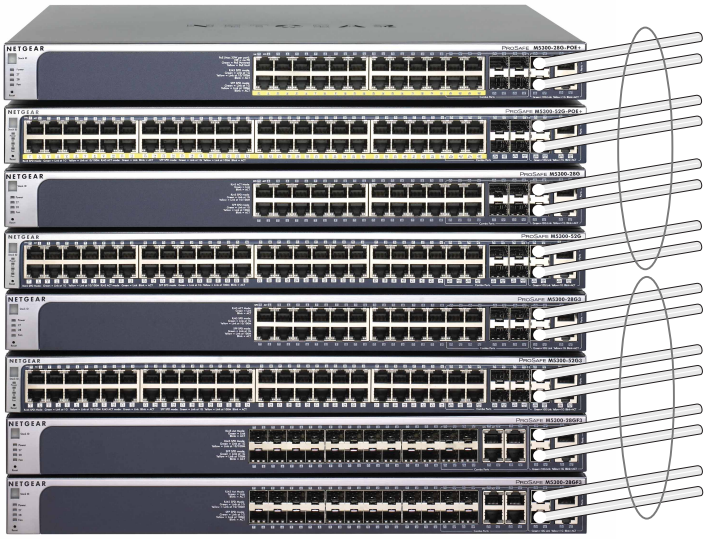
Virtual Chassis Stacking Technology

Full Mesh Topology



Technology Overview

- NETGEAR Virtual Chassis stacking technology provides resilient network architecture:
  - Up to 8 independent switches are consolidated around a single management IP address
  - It simplifies network operations
- Up to 384 available Gigabit ports and 16 available 10 Gigabit uplinks per virtual chassis for unparallel density when in dual ring topology
- Each 5300 series joins the Virtual Chassis architecture with a 48 Gbps switching stack interconnect
  - When 8 members in the stack, overall stacking "backplane" performance is 384 Gbps full duplex in dual ring topology
- In full mesh toplogy (4 ports 10GbE used per switch), each 5300 can join the Virtual Chassis architecture with a switching stack interconnect of up to 88 Gbps
  - Overall stacking "backplane" performance can scale up to 704 Gpbs



The stack acts as a single switch in the network:

- One CLI and one web interface managing the virtual chassis
- The other switches in the network also "see" the stack as a virtual chassis
- The virtual chassis has only one configuration file, and VLANs / LAGs / Port mirroring are available across the member units as for "blades", similar to a typical modular chassis switch

NETGEAR Virtual Chassis stacking technology is flexible:

- M5300 series switches intelligently join the Virtual Chassis architecture with a 48Gbps switching stack interconnect, when using local AX742 stacking kits for dual ring topology
- 10 Gigabit copper (10GBase-T) and 10 Gigabit fiber (SFP+) are also available for distant M5300 series units – local and distant switches can join the same stack

NETGEAR Virtual Chassis stacking technology delivers a bi-directional, highly resilient topology:

- Higher throughput capacity with lower latency and jitter for VoIP and Multicast traffic
- Each switch in the stack understands the shortest path to forward traffic, bi-directionally both up and down
- Dual ring architecture (or better) ensures that if a switch fails within the stack, all others switches can still communicate with one another
- Automatic Unit Replacement (AUR) guarantees stack member's replacement without even a stack reboot or manual configuration
- Stack master redundancy is also automatic: with sub-second failover, the secondary master will take over and become the new master without any significant network interruption for the clients

Virtual Chassis functionality

- Within the stack, a switch is elected as the "Master": the master is responsible for the control plane and forwarding/routing tables for the stack members
- Simultaneously, another switch is selected as the "Secondary Master" for sub-second failover in the unlikely event the "Master" fails
- "Master" and "Secondary Master" unit can be manually selected within the stack, although the process is completely automatic by default for convenience

Virtual Chassis Stacking Technology

Technology Overview

- As for a Chassis switch, the data plane, the control plane and the management plane are unified but each switch performs its local, line-rate switching and routing
- As for a Chassis switch, VLAN tagging, port mirroring and link aggregation are available from every port to every port across the stack
- **Distributed Link Aggregation**
  - Distributed trunking across the stack allows redundant uplinks without creating loops
  - LACP automatic load-balancing and port failover ensure greater bandwidth network layers and maximize redundancy without spanning tree
- Active-active connections radically improve performance for servers at the same time
- NETGEAR true Virtual Chassis Stacking technology delivers resiliency, simplicity and better performance throughout the entire network

Layer 2+ and Layer 3 units mixed stacking

For budget optimization, M5300 series Virtual Chassis architecture allows for mixed Layer 2+/Layer 3 units stacking.

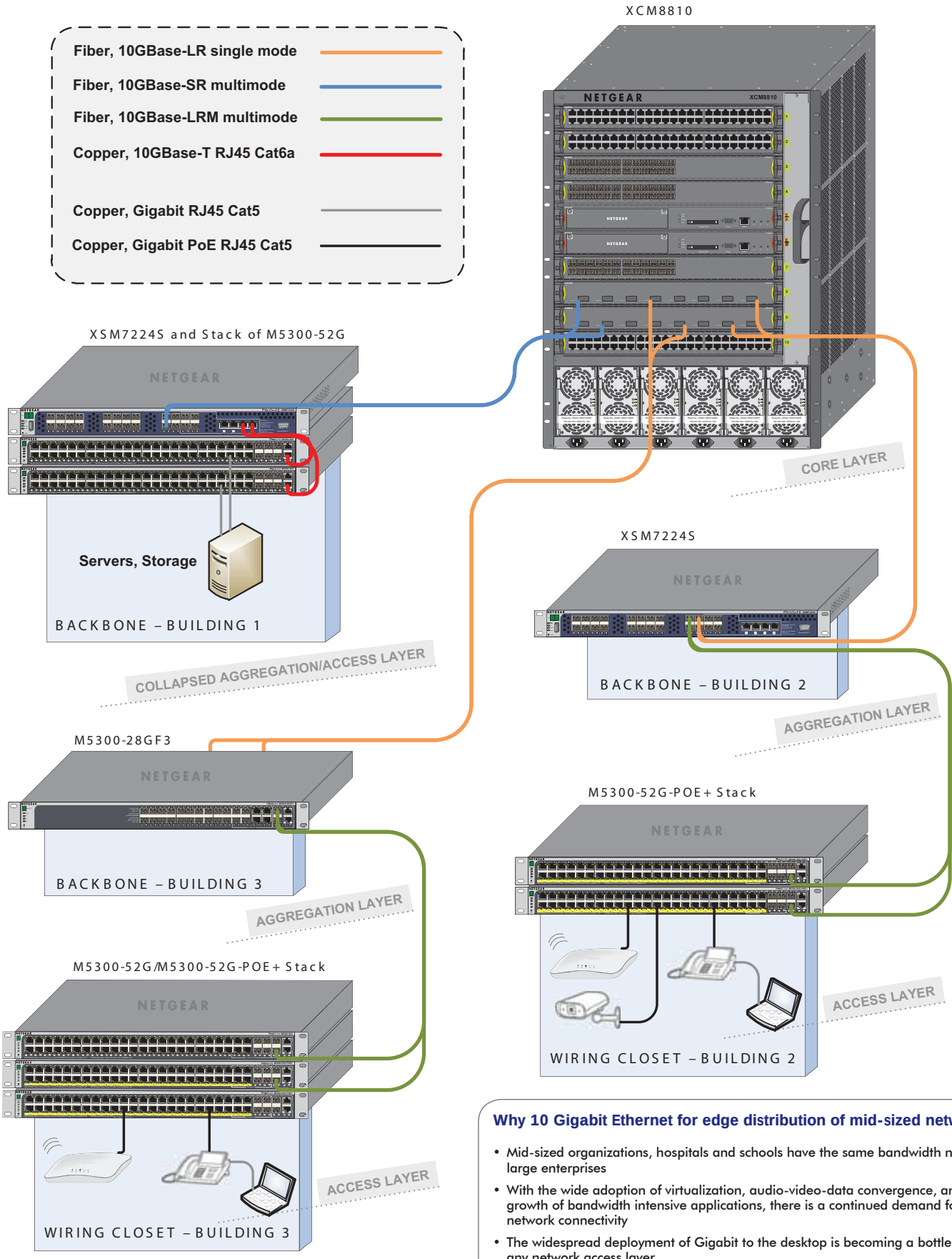
- Mechanism is simple: the configuration is maintained by the Stack Master unit, as well as the control plane and all switching/forwarding tables
  - When the Stack Master is a Layer 3 unit, or a Layer 2+ unit equipped with its L3 license upgrade, the entire Stack runs Layer 3 software package
  - When the Stack Master is a Layer 2+ unit, the entire Stack will run Layer 2+ software package; even when Layer 3 units are present
- Functional guidelines for a Layer 3 Stack using Layer 2+ units are as follows:
  - When mixed Layer 2+/Layer 3 units, it is recommended to manually select one Layer 3 unit as the Stack Master in order to run Layer 3 software package
  - All other units can be Layer 2+ units without any inpact on Virtual Chassis Layer 3 performance; their Layer 3 capabilities are unlocked by the Master
  - For redundancy, it is preferable to manually set up a second Layer 3 unit as the Secondary Master; in the unlikely event the Stack Master unit fails
  - This way the Virtual Chassis Stack will automatically recover, keeping the Layer 3 configuration and all forwarding/routing active tables
  - If not, should Stack Master unit fail, the entire Virtual Chassis Stack would loose its Layer 3 configuration and downgrade to Layer 2+ software package

Previous generation units mixed stacking

For investment protection, M5300 series Virtual Chassis architecture allows for mixed GSM72xxPS V1H1 and GSM73xxS V2H1 units stacking.

- Mechanism is simple: with 10.0 software release comes a SDM (System Data Management, or switch database)
  - For customers already running GSM72xxPS V1H1 and GSM73xxS V2H1 stack, they need to upgrade the stack firmware to 10.0 release
  - New M5300 series units (H2 new version) will need to have their SDM template match the GSM72xxPS/GSM73xxS running template
- Functional guidelines for a previous generation mixed stacking are as follows:
  - When existing GSM72xxPS V1H1 and GSM73xxS V2H1 stack, it is required to upgrade their firmware to same 10.0.x version as new M5300 series unit
  - Next, it is recommended to make sure the existing stack SDM template is the same as the new M5300 series unit SDM template
  - With the same SDM template, new M5300 series can seamlessly join the existing stack as a new member

Target Application



Why 10 Gigabit Ethernet for edge distribution of mid-sized networks?

- Mid-sized organizations, hospitals and schools have the same bandwidth needs as large enterprises
- With the wide adoption of virtualization, audio-video-data convergence, and rapid growth of bandwidth intensive applications, there is a continued demand for faster network connectivity
- The widespread deployment of Gigabit to the desktop is becoming a bottleneck for any network access layer
- 10 Gigabit Ethernet represents the solution to many of the scaling challenges presented by the edge of today's networks

Target Application

Get started today with NETGEAR M5300 series

NETGEAR 10 Gigabit Aggregation managed switches and NETGEAR Next-Gen Edge M5300 series managed switches are ideal for all organizations considering reliable, affordable and simple 10 Gigabit Ethernet backbone architectures. The move toward deploying 10GbE closer to the network's edge makes sense given the current requirements of modern networks. Such high-performance connections are necessary to enable the following business-critical applications:

- **Desktop and workstations data workload aggregation**
  - Bandwidth requirements among desktop users within organizations is increasing exponentially as workloads and associated applications require greater, more intense processing power
  - For example, PC backup programs that run continuously and automatically in the background place a such heavy strain on the network that, without 10 Gigabit Ethernet, can slow overall network performance
- **IP voice and video applications**
  - Bandwidth-rich IP voice and video applications stand to improve productivity and reduce costs
  - Executives can use teleconferencing, for example, to build stronger relationships with geographically dispersed teams, speed up decision-making and reduce travel time
  - Yet such media-rich applications can generate many megabytes of data in a very short amount of time, resulting in significant network bandwidth consumption
- **Vertical Industry-specific applications**
  - Many vertical industry-specific applications are extremely bandwidth-intensive and require higher-speed connectivity
  - For example, digital imaging applications used by the healthcare industry to enable procedures such as CAT scans and MRIs, or CAD and CAM programs used in the manufacturing industry, require more robust, powerful and real-time performance only possible over 10 Gigabit Ethernet connections
  - Deploying 10 Gigabit Ethernet at the aggregation layer will increase network performance and reliability; mid-sized businesses should look for a high-capacity, scalable architecture that can support continued growth and increasing bandwidth requirements over time
- **In modern networks, key applications for 10 Gigabit Ethernet are:**
  - Low-cost aggregation of uplinks from Gigabit edge switches
  - Edge switch stacking for easier management and resiliency
  - Low-latency interconnect switching for servers and network storage
  - Used as a foundation for virtualized applications in the server room

M5300 series intelligent switching solutions a Must

Successful 10 Gigabit Ethernet deployments require intelligent switching solutions with advanced features such as integrated security, high availability, delivery optimization, enhanced manageability, and support for new applications. Such solutions are most beneficial if they enable organizations to leverage their existing investments in network infrastructure. Key requirements include:

- **High performance backbone links**
  - In desktop switching environments, wire-speed performance with full QoS control for all 10/100/1000 interfaces is critical
  - Switches that provide flexibility through the use of 10 Gigabit Ethernet Combo ports simplify integration with existing copper or fiber cabling
- **High level of redundancy**
  - Distributed link aggregation, redundant links and sub-second failover capabilities are essential to minimize downtime
  - They largely increase network reliability and availability
- **Stacking capability for network growth and reduced management**
  - When switches function as a single stack, they are much easier to monitor and manage
  - Stacking also adds network resiliency and allows for easier network scaling

10 Gigabit Virtual Chassis hardware stacking technology and 10 Gigabit distributed link aggregation present an opportunity to scale both the entire network's performance and redundancy.

M5300 series edge switches and servers benefit from greater bandwidth capacity with traditional active-active teaming (LACP—link aggregation control protocol) and load balancing.

Stackable M5300 series switches allow for redundancy, distributing these multiple connections across the stack. The stack acts as a single logical switch and it's transparent for the server or the aggregation switch.

Virtual Chassis stacking allows IT administrators to easily add more ports to their switch fabric, simplifying management and adding network resiliency.

Accessories

RPS4000
RPS/EPS unit for up to 4 concurrent switches

Ordering information

- Americas, Europe: RPS4000-100NES
- Asia Pacific: RPS4000-100AJS
- Warranty: 5 years

- **RPS mode**: provide power backup for up to four switches concurrently
  - With same level of protection as with four dedicated, "one-to-one" RPS units
- **EPS mode**: provide supplemental PoE power up to four switches concurrently
  - Up to 2,880W shared PoE+ budget
  - When in EPS mode, RPS4000 supersedes each switch main PSU
  - Switch main PSU system power reverts to redundant power supply (RPS) function

Front view
- RPS4000 is 1RU unit with four (4) empty slots
- Power modules (APS1000W) are sold separately
- APS1000W requirement depends on RPS, EPS, PoE application

Rear view
- Four (4) embedded RPS connectors
- Switch selectors for RPS/EPS power modes
- Switch selectors for power modules two-by-two bridging

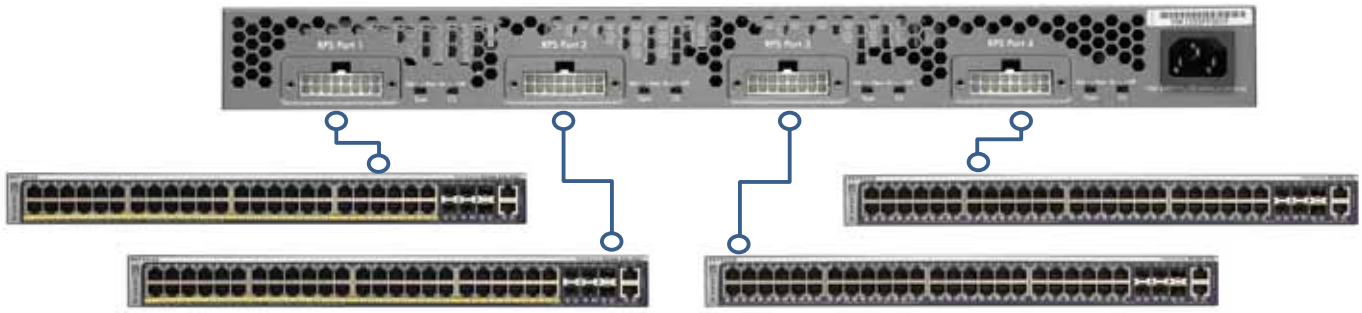
Included:
- Four (4) RPS cables - 60cm each (~2 ft)
- Rack mount kit
- Power cord

The RPS4000 RPS/EPS unit supports the following key features:

- The RPS4000 can be connected to a maximum of four switches (any combination of M5300 series switches is supported) using RPS switch connectors and RPS cables
- The RPS4000 provides protection against electrical issues such as high-voltage (input, output) or short circuits for maximum security
- The RPS4000 can accommodate up to four hot-swap APS1000W power modules
  - Either one, two, three or four APS1000W power modules are required, depending on RPS or EPS application (see combinations in "Number of APS1000W" table)
- In RPS mode with only one APS1000W power module, RPS4000 can protect up to four (4) non-PoE or PoE M5300 series switches
  - In case of a general switches power feed failure, powering all four switches simultaneously for 12V DC system power only (not -56V DC PoE)
  - RPS4000 takes over and delivers adequate power without any service interruption (continuous monitoring)
  - The switch main PSU can be replaced during that time (M5300 series main PSU is modular and hot-swapable during the time when power comes from RPS)
  - When the switch internal power is restored, the RPS4000 stops supplying power to the switch automatically, again without any service interruption
- In RPS mode with multiple APS1000W power module combinations, RPS4000 can protect up to four (4) PoE M5300 series switches
  - In case of a general switches power feed failure, powering all four switches simultaneously (12V DC system power and -56V DC PoE)
  - Same RPS functionality as with non-PoE switches including PoE power budget protection
- In EPS mode with multiple APS1000W power module combinations, RPS4000 allows for various PoE 802.3af and 802.3at "full power" applications
  - Supports M5300-28G-PoE+ and M5300-52G-PoE+
  - Superseding switches main PSU for PoE budget and switch powering
  - Delivering -56V DC for PoE power and 12V for switch power
  - Switch main PSU system acts as built-in RPS for both switch power and PoE budget protection of up to 380W
- In EPS mode, power slots can be organized into groups of two (Group 1 and Group 2) allowing for APS1000W power modules bridging
  - Two APS1000W power modules can be bridged and deliver 1,440W PoE budget to one 48-port switch M5300-52G-PoE+
- Power slots can be configured for RPS or EPS mode
  - All four power slots can be combined together with only one APS1000W power module for four (4) 12V switches RPS application
  - Power slots can be utilized in one-to-one mode for PoE switches RPS applications
  - Power slots can be bridged two by two for PoE switches EPS applications

Accessories

Number of APS1000W	1 POWER MODULE	2 POWER MODULES	3 POWER MODULES	4 POWER MODULES
RPS mode (Redundant Power Supply)	**Up to 4 switches (non-PoE versions)** M5300-28G or M5300-52G or M5300-28GF3 or M5300-28G3 or M5300-52G3 **Complete protection** 12V system power Or: **Up to 4 switches (PoE versions)** but only for 12V system power, not PoE M5300-28G-PoE+ or M5300-52G-POE+	**2 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+ **Complete protection** 12V system power and -56V PoE power	**3 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+ **Complete protection** 12V system power and -56V PoE power	**4 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+ **Complete protection** 12V system power and -56V PoE power
EPS mode (External Power Supply)	**720W PoE budget available (total) for up to 2 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+	**1,440W PoE budget available (total) for up to 2 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+	**2,160W PoE budget available (total) for up to 4 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+	**2,880W PoE budget available (total) for up to 4 switches (PoE versions)** M5300-28G-PoE+ or M5300-52G-POE+
Example for PoE applications: (802.3af full power)	One M5300-52G-PoE+ providing 720W **48 ports full power 802.3af PoE**	Two M5300-52G-PoE+ providing 720W each **96 ports full power 802.3af PoE**	Three M5300-52G-PoE+ providing 720W each **144 ports full power 802.3af PoE**	Four M5300-52G-PoE+ providing 720W each **192 ports full power 802.3af PoE**
Example for PoE+ applications: (802.3at full power)	One M5300-28G-PoE+ (24 ports) providing 720W **24 ports full power 802.3at PoE+**	One M5300-52G-PoE+ (48 ports) providing 1,440W **48 ports full power 802.3at PoE+**	One M5300-28G-PoE+ providing 720W One M5300-52G-PoE+ providing 1,440W **72 ports full power 802.3at PoE+**	Two M5300-52G-PoE+ providing 1,440W each **96 ports full power 802.3at PoE+**



Accessories

APS1000W
Power Module for RPS4000

- Capacity:
  - 110V-240V AC power input
  - Up to 960W DC 12V output power for up to 4 switches (RPS)
  - Up to 720W DC -56V PoE budget output power for up to 2 PoE switches (EPS)

Inserting one APS1000W in RPS4000 power slot #1

(front view)

RPS4000 equipped with 4 APS1000W power modules

(front view)

Ordering information

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

RPS5412
RPS unit for 1 switch by Optimal Power®

- Optimal Power® RPS unit certified by NETGEAR for M5300 series
- Includes the RPS cable for the switch RPS connector
- Provides seemless “one-to-one” redundant power to the Switch
- 56V DC power limited to 300W (maximum PoE budget)

Ordering information

- Americas: RPS5412-100NAS
- Europe: RPS5412-100EUS
- Asia Pacific: RPS5412-100AJS
- Warranty: 3 years

Modular PSUs for M5300 series

APS135W
Modular Power Supply

- PSU unit for M5300 series non-PoE switches
  - M5300-28G
  - M5300-52G
  - M5300-28GF3
  - M5300-28G3
  - M5300-52G3
- Hot swap replacement when the switch is powered by an RPS unit

Ordering information

- Worldwide: APS135W-10000S
- Warranty: 5 years

APS525W
Modular Power Supply

- PSU unit for M5300 series POE switches
  - M5300-28G-POE+
  - M5300-52G-POE+
- Hot swap replacement when the switch is powered by an RPS unit

Ordering information

- Worldwide: APS525W-10000S
- Warranty: 5 years

Accessories

I/O Modules for M5300 series rear bays

AX742 v1h3
24 Gbps Stacking Kit

Ordering information

- Worldwide: AX742
- Warranty: 5 years

- AX742 is a bundle: 2 CX4 I/O modules AX744 + 1 stacking CX4 cable (1m - 3.3 ft)
- One AX742 Stacking Kit per switch is required for dual ring topology
- Each module half-duplex speed is 12 Gbps (24 Gbps full duplex) with 1m cable
- Dual ring stacking interconnect is 48 Gbps per switch (384 Gbps per stack)
- When one AX742 kit per switch (two modules)
- Longer version of the stacking cable is available as an option (AXC743)

AXC743
3m CX4 Cable

Ordering information

- Worldwide: AXC743-10000S
- Warranty: 5 years

- 3 meter (9.8 ft) infiniband CX4 high quality cable with secured pull points (latch)
- Fully compliant with CX4 10-GbE (IEEE 802.3ak Type 10Gbase-CX4) standard
- Allows for longer stacking distances when used with AX742 Stacking Kit
  - Half-duplex speed 10 Gbps (20 Gbps full duplex) per AX744 module

AX743
SFP+ I/O Module

Ordering information

- Worldwide: AX743-10000S
- Warranty: 5 years

- 1 port 10 Gigabit SFP+ for M5300 series rear I/O bays
- Compliant with 10-GbE SFP+ fiber optics (GBICs) MSA
- Supports passive Direct Attach copper cables (10GSFP+Cu)
- Allows for distant (fiber) stacking or uplinks

AX744
CX4 I/O Module

Ordering information

- Worldwide: AX744-10000S
- Warranty: 5 years

- 1 port 10 Gigabit CX4 for M5300 series rear I/O bays
- Compliant with CX4 10GbE (IEEE 802.3ak Type 10Gbase-CX4) standard
- Allows for local (copper) stacking or uplinks

AX745
10GBase-T I/O Module

Ordering information

- Worldwide: AX745-10000S
- Warranty: 5 years

- 1 port 10 Gigabit RJ45 for M5300 series rear I/O bays
- Compliant with 10GBase-T (IEEE 802.3an-2006) standard
- Supports 100Mbps, 1000Mbps speeds
- Supports 10GbE speed up to 100m (328 ft) with Cat6A RJ45 or better
- Supports 10GbE speed up to 30m (98 ft) with legacy Cat6 RJ45
- Allows for local (copper) stacking or uplinks

Accessories

GBIC SFP Optics for M5300 series

Ordering information Worldwide: see table below Warranty: 5 years	Multimode Fiber (MMF)		Single mode Fiber (SMF)
	OM1 or OM2 62.5/125µm	**OM3 50/125µm**	**9/125µm**
10 Gigabit SFP+  • Fits into M5300 series built-in SFP+ interfaces (front) • Fits into AX743 I/O modules SFP+ interface (rear)	**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 up to 300m (984 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)**
Gigabit SFP  • Fits into M5300 series SFP interfaces (front)	**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 up to 550m (1,804 ft) **AGM731F (1 unit)**	**AGM732F** 1000Base-LX long range single mode LC duplex connector up to 10km (6.2 miles)) **AGM732F (1 unit)**
Fast Ethernet SFP  • Fits into M5300 series SFP interfaces (front)	**AFM735** 100Base-FX IEEE 802.3 LC duplex connector up to 2km (1.24 miles) **AFM735-10000S (1 unit)**	**AFM735** 100Base-FX IEEE 802.3 LC duplex connector up to 2km (1.24 miles) **AFM735-10000S (1 unit)**	**AFM735** 100Base-FX IEEE 802.3 LC duplex connector up to 2km (1.24 miles) **AFM735-10000S (1 unit)**

AGM734
1000Base-T Gigabit RJ45 SFP

- 1 port Gigabit RJ45 for M5300-28GF3 (SFP ports)
- Supports only 1000Mbps full-duplex mode
- Up to 100m (328 ft) with Cat5 RJ45 or better
- Conveniently adds copper connectivity density to M5300-28GF3 fiber switch

Ordering information

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

Accessories

Direct Attach Cables for M5300 series

Ordering information Worldwide: see table below Warranty: 5 years	SFP+ to SFP+		SFP+ to XFP
	1 meter (3.3 ft)	3 meters (9.8 ft)	3 meters (9.8 ft)
10 Gigabit DAC  • Fits into M5300 series built-in SFP+ interfaces (front) • Fits into AX743 I/0 modules SFP+ interface (rear)	**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)**	**AXC753** 10GSFP+ Cu (passive) one SFP+ connector one XFP connector **AXC753-10000S (1 unit)**

Technical Specifications

- Requirements based on 10.x unified software release
- Otherwise noted, specifications are valid for all models
- When "Layer 3 software package required" specified, the feature only applies to Layer 3 versions (M5300-28GF3) and to Layer 2+ versions with their Layer 3 license upgrade (M5300-28G with GSM7228L, M5300-52G with GSM7252L)

Model Name	Description	Model number	Layer 3 license upgrade
M5300-28G	24 ports Gigabit, Layer 2+ software package	GSM7228S v1h1	GSM7228L-10000S
M5300-52G	48 ports Gigabit, Layer 2+ software package	GSM7252S v1h1	GSM7252L-10000S
M5300-28GF3	24 ports Gigabit Fiber, Layer 3 software package	GSM7328FS v2h1	-

TECHNICAL SPECIFICATIONS

PHYSICAL INTERFACES

Front	**Auto-sensing RJ45 10/100/1000**	**Auto-sensing SFP ports 100/1000**	**Auto-sensing RJ45 100/1000/10GBase-T**	**Auto-sensing SFP+ ports 1000/10GBase-X**
M5300-28G	24	4 (shared with last 4 Gigabit RJ45)	2	2 (shared with the two 10GBT)
M5300-52G	48			
M5300-28GF3	4 (shared with last 4 SFP)	24		

Rear	**10 Gigabit I/O bays**	**Modular PSU**	**RPS/EPS connector**	**Console port**
All models	2 independent bays	1	1	Serial RS232 DB9, Mini-USB (selectable)

Total Port Count	**Gigabit**	**10 Gigabit**
M5300-28G, M5300-28GF3	24 ports total	4 ports total
M5300-52G	48 ports total	

PROCESSOR/MEMORY

Processor (CPU)	Freescale P1010 800Mhz (45nm technology)	
System memory (RAM)	512 MB	
Code storage (flash)	128 MB	Dual firmware image, dual configuration file
Packet Buffer Memory		
M5300-28G, M5300-28GF3	16 Mb	Dynamically shared across only used ports
M5300-52G	32 Mb	

VIRTUAL CHASSIS STACKING

Max physical switches per stack	8	Any combination of M5300 series switches
Max physical ports per slot	52	
Max physical ports per stack	416	1, 2, 3 or 4 10GbE ports can be used for stacking
Stacking topology	Chain, dual-ring, mesh using any of 10GbE interfaces	Loop-free stacking mode, automatic topology
Distant stacking	Yes	Using 10GbE fiber for distant switches
Non-stop forwarding	Yes	Failed units don't affect service
Rapid master failover with minimum packet loss	Yes	Sub-second Secondary Master fail-over
Automatic unit replacement (AUR)	Yes	No service interruption

Distributed Link Aggregation (LAGs across the stack)	Yes	As well as VLAN tagging, port mirroring
Stack with previous versions GSM73xxS-200 and GSM72xxPS	M5300 series can stack with previous generations GSM7328Sv2h1, GSM7352Sv2h1, GSM7228PSv1h1 and GSM7252PSv1h1 M5300 series table size and feature set are reduced to previous GSM73xxS and GSM72xxS capabilities when mixed stacking	
Stack with previous versions GSM73xxS v1, GSM7328FS v1	Not supported	
PERFORMANCE SUMMARY		
Switching fabric		
M5300-28G, M5300-28GF3	144 Gbps	Line-rate (non blocking fabric)
M5300-52G	192 Gbps	
Throughput		
M5300-28G, M5300-28GF3	107.1 Mpps	
M5300-52G	142.8 Mpps	
Other Metrics		
Forwarding mode	Store-and-forward	
Latency (64-byte frames, 10Mbps, Copper)	<61 µs	
Latency (64-byte frames, 100 Mbps, Copper)	<9 µs	
Latency (64-byte frames, 1 Gbps, Copper)	< 4.1µs	
Latency (64-byte frames, 1 Gbps, Fiber SFP)	<3.4 µs	
Latency (64-byte frames, 10 Gbps, Copper 10GBase-T)	<3.5 µs	
Latency (64-byte frames, 10 Gbps, Fiber SFP+)	<2.5 µs	
Addressing	48-bit MAC address	
Address database size	32,000 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)	IPv4/IPv6 table size can be adjusted using SDM (IPv4 only or dual v4/v6)
Number of Link Aggregation Groups (LAGs - 802.3ad)	64 LAGs with up to 8 ports per group	
Number of hardware queues for QoS	Standalone mode: 8 queues; Stacking mode: 7 queues	
Number of routes IPv4 IPv6	12,256 in IPv4 only SDM build 6,112 in IPv4/IPv6 SDM build 3,072 in IPv4/IPv6 SDM build	
Number of static routes IPv4 IPv6	512 512	
Number of IP interfaces (port or VLAN)	128	
Jumbo frame support	up to 12K packet size	
Acoustic noise (ANSI-S10.12)	@ 25 °C ambient (77 °F)	
M5300-28G	37.3 dB	Fan speed control
M5300-52G	34.9 dB	
M5300-28GF3	35.6 dB	
Heat Dissipation (BTU)		
M5300-28G	186 Btu/hr	
M5300-52G	268 Btu/hr	
M5300-28GF3	186 Btu/hr	

Mean Time Between Failures (MTBF)	@ 25 °C ambient (77 °F)	@ 55 °C ambient (131 °F)	
M5300-28G	560,449 hours (~64.0 years)	183,046 hours (~20.9 years)	
M5300-52G	421,113 hours (~48.1 years)	126,162 hours (~14.4 years)	
M5300-28GF3	539,481 hours (~61.6 years)	163,656 hours (~18.7 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
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 64 LAGs and up to 8 physical ports per LAG
LAG Hashing	Yes		
Storm Control	Yes		
IEEE 802.3x (Full Duplex and flow control) Per port Flow Control	Yes		Asymmetric and Symmetric Flow Control
UDLD Support (Unidirectional Link Detection) Normal-Mode Aggressive-Mode	Yes Yes Yes Yes		
IEEE 802.1D Spanning Tree Protocol	Yes		
IEEE 802.1w Rapid Spanning Tree	Yes		
IEEE 802.1s Multiple Spanning Tree	Yes		
STP Loop Guard	Yes		
STP Root Guard	Yes		
BPDU Guard	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	
IGMP Snooping Enable IGMP Snooping per VLAN Snooping Querier	Yes Yes Yes	
Multicast VLAN registration (MVR)	Yes	
L3 SERVICES - MULTICAST ROUTING		
IGMP Proxy	Yes	Layer 3 software package required
MLD Proxy	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	
IPMC replication (hardware support)	Yes	
L3 SERVICES - DHCP		
DHCP IPv4 / DHCP IPv6 Client	Yes	
DHCP IPv4 / DHCP IPv6 Server	Yes	Layer 3 software package required
DHCP Snooping IPv4	Yes	
DHCP Snooping IPv6	Yes	Layer 3 software package required
DHCP/BootP Relay IPv4	Yes	
DHCP/BootP Relay IPv6	Yes	Layer 3 software package required
Auto Install (DHCP options 66, 67, 150 and 55, 125)	Yes	
L3 SERVICES - IPV4 ROUTING		
Static Routing	Yes	
Port Based Routing	Yes	
VLAN Routing 802.3ad (LAG) for router ports	Yes Yes	

OSPFv2	Yes		Layer 3 software package required	
OSPFv2 point-to-point links	Yes			
RIP v1, v2	Yes			
VRRP	Yes			
Router Discovery	Yes			
IP Helper Max IP Helper entries	Yes 512			
IP Source Guard	Yes			
IP Event Dampening	Yes			
ECMP (equal-cost multi-path for OSPF)	Yes			
Proxy ARP	Yes			
Multinetting	Yes			
ICMPv6	Yes			
ICMP redirect detection in hardware	Yes			
DNSv4	Yes			
ICMP throttling	Yes			
L3 SERVICES - IPV6 ROUTING				
IPv6 Routing	Yes		Layer 3 software package required	
Static routing	Yes			
Neighbor discovery	Yes			
OSPFv3	Yes			
IP Event Dampening	Yes			
Configured v6-over-v4 tunnels	Yes			
Automatic (6to4) tunnels	Yes			
DNSv6	Yes			
NETWORK MONITORING AND DISCOVERY SERVICES				
ISDP (Industry Standard Discovery Protocol)	Yes		inter-operates 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	SIPDIP	UDPPORT	L4PORT	
	SMACDMAC	TCPFLAGSEQ	ICMP	
	FIRSTFRAG	TCPOFFSET	ICMPV4	
	TCPFRAG	TCPSYN	ICMPV6	

	TCPFLAG	TCPSYNFIN	ICMPFRAG	
	TCPPORT	TCPFINURGPSH		
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	
Radius accounting	Yes		RFC 2565 and RFC 2866	
TACACS+	Yes			
Network Traffic				
Access Control Lists (ACLs)	L2 / L3 / L4		MAC, IPv4, IPv6, TCP, UDP	
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	
Port Security	Yes			
IP Source Guard	Yes			
DHCP Snooping	Yes			
Dynamic ARP Inspection	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 accross switches in same Layer 2 network	
QUALITY OF SERVICE (QOS) - SUMMARY				
Access Lists L2 MAC, L3 IP and L4 Port ACLs Ingress Egress 802.3ad (LAG) for ACL assignment Binding ACLs to VLANs ACL Logging Support for IPv6 fields	 Yes Yes Yes Yes Yes Yes Yes			
DiffServ QoS Edge Node applicability Interior Node applicability 802.3ad (LAG) for service interface Support for IPv6 fields Ingress/Egress	Yes Yes Yes Yes Yes Yes			
IEEE 802.1p COS 802.3ad (LAG) for COS configuration WRED (Weighted Deficit Round Robin) Strict Priority queue technology	Yes Yes Yes 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 Dot1p Marking IP DSCP Marking	Yes Yes Yes			

QOS - ACL FEATURE SUPPORT		
ACL Support (general, includes IP ACLs)	Yes	
MAC ACL Support	Yes	
IP Rule Match Fields:		
Dst IP	Inbound/Outbound	
Dst IPv6 IP	Inbound/Outbound	
Dst L4 Port	Inbound/Outbound	
Every Packet	Inbound/Outbound	
IP DSCP	Inbound/Outbound	
IP Precedence	Inbound/Outbound	
IP TOS	Inbound/Outbound	
Protocol	Inbound/Outbound	
Src IP (for Mask support see below)	Inbound/Outbound	
Src IPv6 IP	Inbound/Outbound	
L3 IPv6 Flow Label	Inbound	
Src L4 Port	Inbound/Outbound	
Supports Masking	Inbound/Outbound	
MAC Rule Match Fields		
COS	Inbound/Outbound	
COS2 (Secondary COS)	Yes	
Dst MAC	Inbound/Outbound	
Dst MAC Mask	Inbound/Outbound	
Ethertype	Inbound/Outbound	
Src MAC	Inbound/Outbound	
Src MAC Mask	Inbound/Outbound	
VLAN ID	Inbound/Outbound	
VLAN ID2 (Secondary VLAN)	Yes	
VLAN ID2 (Secondary VLAN)	Yes	
Rules attributes:		
Assign Queue	Inbound	
Logging -- deny rules	Inbound/Outbound	
Mirror (to supported interface types only)	Inbound	
Redirect (to supported interface types only)	Inbound	
Interface		
Inbound direction	Yes	
Outbound direction	Yes	
Supports LAG interfaces		
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)	Yes	
Dst IP (for Mask support see below)	Inbound/Outbound	
Dst IPv6 IP	Inbound/Outbound	
Dst L4 Port	Inbound/Outbound	
Dst 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	
Class	Inbound/Outbound	
Src IP (for Mask support see below)	Inbound/Outbound	
Src IPv6 IP	Inbound/Outbound	
L3 IPv6 Flow Label	Inbound	

Src L4 Port	Inbound/Outbound	
Src MAC (for Mask support see below)	Inbound/Outbound	
VLAN ID (Source VID)	Inbound/Outbound	
VLAN ID2 (Secondary VLAN) (Source VID)	Yes	
Supports Masking	Inbound/Outbound	
Policy		
Out Class Unrestricted	Yes	
Policy Attributes -- Inbound		
Assign Queue	Inbound	
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)	Inbound	
Police Simple	Yes	
Police Color Aware Mode	Yes	
Redirect (to supported interface types only)	Inbound	
Policy Attributes -- Outbound	Yes	
Assign Queue	Inbound	
Drop	Yes	
Mark COS	Yes	
Mark COS2 (Secondary COS)	Yes	
Mark IP DSCP	Yes	
Mark IP Precedence	Yes	
Mirror (to supported interface types only)	Inbound	
Police Simple	Yes	
Police Color Aware Mode	Yes	
Redirect (to supported interface types only)	Inbound	
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	
Statistics -- Service Level		
Offered	packets	
Discarded	packets	
QOS - COS FEATURE SUPPORT		
COS Support	Yes	
Supports LAG interfaces	Yes	
COS Mapping Config	Yes	
Configurable per-interface	Yes	
IP DSCP Mapping	Yes	

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

IEEE NETWORK PROTOCOLS			
IEEE 802.3 Ethernet	IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX	IEEE 802.1D Spanning Tree (STP)	IEEE 802.1Q VLAN tagging
IEEE 802.3i 10BASE-T	IEEE 802.3ae 10-Gigabit Ethernet	IEEE 802.1s Multiple Spanning Tree (MSTP)	IEEE 802.1v Protocol-based VLAN
IEEE 802.3u 100BASE-T	IEEE 802.3ad Trunking (LACP)	IEEE 802.1w Rapid Spanning Tree (RSTP)	IEEE 802.1p Quality of Service
IEEE 802.3ab 1000BASE-T	IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)	IEEE 802.1X Radius network access control	IEEE 802.3x Flow control

IETF RFC STANDARDS AND MIBS		
System Facilities		
RFC 768 – UDP	RFC 2131 – DHCP Client/Server	
RFC 783 – TFTP	RFC 2132 – DHCP options & BOOTP vendor extensions	
RFC 791 – IP	RFC 2030 – Simple Network Time Protocol (SNTP) Version 4 for IPv4, IPv6 and OSI	
RFC 792 – ICMP	RFC 2865 – RADIUS Client (both Switch and Management access)	
RFC 793 – TCP	RFC 2866 – RADIUS Accounting	
RFC 826 – Ethernet ARP	RFC 2868 – RADIUS Attributes for Tunnel Protocol support	
RFC 894 – Transmission of IP datagrams over Ethernet networks	RFC 2869 – RADIUS Extensions	
RFC 896 – Congestion control in IP/TCP Networks	RFC2869bis – RADIUS Support for Extensible Authentication Protocol (EAP)	
RFC 951 – BOOTP	RFC 3164 – The BSD Syslog Protocol	
RFC 1321 – Message-digest algorithm	RFC 3580 – 802.1X RADIUS usage guidelines (VLAN assignment via RADIUS, dynamic VLAN)	
RFC 1534 – Interoperation between BOOTP and DHCP	RFC 3580 – 802.1X RADIUS usage guidelines (VLAN assignment via RADIUS, dynamic VLAN)	
Switching MIB		
RFC 1213 – MIB-II	RFC 2620 – RADIUS Accounting MIB	
RFC 1493 – Bridge MIB	RFC 2737 – Entity MIB version 2	
RFC 1643 – Ethernet-like MIB	RFC 2819 – RMON Groups 1,2,3 & 9	
RFC 2233 – The Interfaces Group MIB using SMI v2	IEEE 802.1X MIB (IEEE 802.1-PAE-MIB 2004 Revision)	
RFC 2674 – VLAN MIB	IEEE 802.1AB – LLDP MIB	
RFC 2613 – SMON MIB	ANSI/TIA 1057 – LLDP-MED MIB	
RFC 2618 – RADIUS Authentication Client MIB	Private Enterprise MIBs supporting switching features	
IPv4 Routing		
RFC 1027 – Using ARP to implement transparent subnet Gateways (Proxy ARP)	RFC 2453 – RIP v2	Layer 3 software package required
RFC 1256 – ICMP Router Discovery Messages Layer 3 software package required	RFC 3046 – DHCP Relay Agent Information option	
RFC 1765 – OSPF Database Overflow Layer 3 software package required	RFC 3101 – The OSPF "Not So Stubby Area" (NSSA) Option	Layer 3 software package required
RFC 1812 – Requirements for IP Version 4 routers	RFC 3137 – OSPF Stub Router Advertisement	Layer 3 software package required
RFC 2082 – RIP-2 MD5 authentication Layer 3 software package required	RFC 3768 – VRRP – Virtual Router Redundancy Protocol	Layer 3 software package required

RFC 2131 – DHCP relay	Route Redistribution across RIP, and OSPF	Layer 3 software package required
RFC 2328 – OSPF Version 2 Layer 3 software package required	VLAN routing	
RFC 2370 – The OSPF Opaque LSA Option Layer 3 software package required	VLAN routing	
IPv4 Routing MIB		
RFC 1724 – RIP v2 MIB Extension Layer 3 software package required	RFC 2787 – VRRP MIB	Layer 3 software package required
RFC 1850 – OSPF MIB Layer 3 software package required	Private enterprise MIB supporting routing features	
RFC 2096 – IP Forwarding Table MIB	Private enterprise MIB supporting routing features	
Multicast		
RFC 1112 – Host extensions for IP Multicasting	RFC 3973 – Protocol Independent Multicast - Dense Mode (PIM-DM)	Layer 3 software package required
RFC 2236 – Internet Group Management Protocol, Version 2	RFC 4601 – Protocol Independent Multicast - Sparse Mode (PIM-SM)	Layer 3 software package required
RFC 2365 – Administratively Scoped IP Multicast	Draft-ietf-idmr-dvmrp-v3-10 Distance Vector Multicast Routing Protocol	
RFC 2710 – Multicast Listener Discovery (MLD) for IPv6	Draft-ietf-magma-igmp-proxy-06 IGMP/MLD-based Multicast Forwarding ("IGMP/MLD Proxy-ing")	
RFC 3376 – Internet Group Management Protocol, Version 3	Draft-ietf-magma-igmpv3-and-routing-05 IGMPv3/MLDv2 and Multicast Routing Protocol Interaction	
RFC 3810 – Multicast Listener Discovery Version 2 (MLDv2) for IPv6	Draft-ietf-pim-sm-bsr-05 Bootstrap Router (BSR) Mechanism for PIM	Layer 3 software package required
Multicast MIB		
RFC 2932 – IPv4 Multicast Routing MIB	Draft-ietf-magma-mgmd-mib-05 Multicast Group Membership Discovery MIB	
RFC 5060 – Protocol Independent Multicast MIB	Draft-ietf-pim-bsr-mib-06 – PIM Bootstrap Router MIB	Layer 3 software package required
Draft-ietf-idmr-dvmrp-mib-11 Distance-Vector Multicast Routing Protocol MIB	Private Enterprise MIB supporting Multicast features	
IPv6 Routing		
RFC 1981 – Path MTU for IPv6	RFC 3484 – Default Address Selection for IPv6	
RFC 2460 – IPv6 Protocol specification	RFC 3493 – Basic Socket Interface for IPv6	
RFC 2461 – Neighbor Discovery	RFC 3542 – Advanced Sockets API for IPv6	
RFC 2462 – Stateless Auto Configuration	RFC 3587 – IPv6 Global Unicast Address Format	
RFC 2464 – IPv6 over Ethernet	RFC 3736 – Stateless DHCPv6	Layer 3 software package required
RFC 2711 – IPv6 Router Alert Layer 3 software package required	RFC 4213 – Basic Transition Mechanisms for IPv6	Layer 3 software package required
RFC 2740 – OSPFv3 Layer 3 software package required	RFC 4291 - Addressing Architecture for IPv6	
RFC 3056 – Connection of IPv6 Domains via IPv4 Clouds	RFC 4443 – ICMPv6	Layer 3 software package required
RFC 3315 – DHCPv6 (stateless + relay) Layer 3 software package required	RFC 4443 – ICMPv6	Layer 3 software package required
IPv6 Routing MB		
RFC 2465 – IPv6 MIB Layer 3 software package required	RFC 2466 – ICMPv6 MIB	Layer 3 software package required
QoS		
RFC 2474 – Definition of Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers	RFC 3260 – New Terminology and Clarifications for DiffServ	
RFC 2475 – An Architecture for Differentiated Services	RFC 3289 – Management Information Base for the Differentiated Services Architecture (read-only)	
RFC 2597 – Assured Forwarding PHB Group RFC 3246 – An Expedited Forwarding PHB (Per-Hop Behavior)	Private MIBs for full configuration of DiffServ, ACL and CoS functionality	

Management		
RFC 854 – Telnet	RFC 3412 – Message Processing & Dispatching	
RFC 855 – Telnet Option	RFC 3413 – SNMP Applications	
RFC 1155 – SMI v1	RFC 3414 – User-Based Security Model	
RFC 1157 – SNMP	RFC 3415 – View-based Access Control Model	
RFC 1212 – Concise MIB Definitions	RFC 3416 – Version 2 of SNMP Protocol Operations	
RFC 1867 – HTML/2.0 Forms with file upload extensions	RFC 3417 – Transport Mappings	
RFC 1901 – Community-based SNMP v2	RFC 3418 – Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)	
RFC 1908 – Coexistence between SNMP v1 & SNMP v2	SSL 3.0 and TLS 1.0 - RFC 2246 – The TLS Protocol, Version 1.0 - RFC 2818 – HTTP over TLS - RFC 2346 – AES Ciphersuites for Transport Layer Security	
RFC 2068 – HTTP/1.1 protocol as updated by draft-ietf-http-v11-spec-rev-03		
RFC 2271 – SNMP Framework MIB		
RFC 2295 – Transparent Content Negotiation		
RFC 2296 – Remote Variant Selection; RSVA/1.0 State Management "cookies" – draft-ietf-http-state-mgmt-05	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 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		
MANAGEMENT		
Password management	Yes	
Configurable Management VLAN	Yes	
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
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
IS-CLI Scripting	Yes	Industry standard CLI commands scripts for automation
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 stack + LAG + 10) 10 3 * (number of ports in the stack + LAG + 10) 3 * (number of ports in the stack + 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 Yes Yes Yes Total switch port count	
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	
Syslog (RFC 3164)	Yes	
Persistent log supported	Yes	
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 Y 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	
M5300 SERIES - PLATFORM CONSTANTS		
Maximum number of remote Telnet connections	5	
Maximum number of remote SSH connections	5	
Number of MAC Addresses	32K	
Number of VLANs	4K	
VLAN ID Range	1 - 4093	
Number of 802.1p Traffic Classes	Standalone mode: 8 classes ; Stacking mode: 7 classes	
IEEE 802.1x Number of .1x clients per port	 48	

Number of LAGs	64 LAGs with up to 8 ports per group	
Maximum multiple spanning tree instances	32	
MAC based VLANS Number supported	Yes 256	
Number of log messages buffered	200	
Static filter entries Unicast MAC and source port Multicast MAC and source port Multicast MAC and destination port (only)	 20 20 2048	
Subnet based VLANs Number supported	Yes 128	
Protocol Based VLANs Max number of groups Max protocols	Yes 128 16	
Maximum Multicast MAC Addresses entries	2K	SDM (System Data Management, or switch database)
Jumbo Frame Support Max Size Supported	Yes 12k	
Number of DHCP snooping bindings	32K	
Number of DHCP snooping static entries	1024	
LLDP-MED number of remote nodes LLDP Remote Management address buffers LLDP Unknown TLV address buffers LLDP Organisationally Defined Large TLV buffers LLDP Organisationally Defined Small TLV buffers	2 x Total switch port count 100 100 Total switch port count 12 x Total switch port count	
Port MAC Locking Dynamic addresses per port Static addresses per port	Yes 4096 48	
sFlow Number of samplers Number of pollers Number of receivers	 32 416 8	
Radius Max Authentication servers Max Accounting servers	 32 32	
Number of Routes (v4/v6) IPv4 only SDM build IPv4/IPv6 SDM build IPv4 routes IPv6 routes RIP application route scaling OSPF application route scaling	 12256 6112 3072 512 Can be scaled to maximum number of routes	
Number of routing interfaces (including port/vlan)	128	
Number of static routes (v4/v6)	512/512	
Routing Heap size IPv4 only SDM build IPv4/IPv6 SDM build	 26M 32M	SDM (System Data Management, or switch database)
OSPF Max OSPFv2 LSAs IPv4 only SDM build IPv4/IPv6 SDM build OSPFv2 max neighbors Max OSPFv3 LSAs OSPFv3 max neighbors OSPFv3 max neighbors per interface	 36968 18536 400 9416 400 100	SDM (System Data Management, or switch database)
Tunnels Number of configured v6-over-v4 tunnels Number of automatic (6to4) tunnels Number of 6to4 next hops	 8 1 16	

DHCP Server		
Max number of pools	16	
Total max leases	1024	
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)		
Device Hardware Capacity (v4/v6)	8K/4K	SDM (System Data Management, or switch database)
IPv4 only SDM build	6K	
IPv4/IPv6 SDM build (v4/v6)	4K/1K	
Static v4 ARP Entries	128	
Number of ECMP Next Hops per Route	4	
Total ECMP nexthops in Hardware	2048	
IP Multicast		
Number of IPv4/IPv6 Multicast Forwarding Entries	1K (512v4 256v6)	
IGMP Group Memberships per system	2K (each for v4 & v6)	
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	200	
ACL Limits		
Maximum Number of ACLs (any type)	100	
Maximum Number Configurable Rules per List	1023 ingress/511 egress	
Maximum ACL Rules per Interface and Direction (IPv4/L2)	1023 ingress/511 egress	
Maximum ACL Rules per Interface and Direction (IPv6)	1021 ingress/509 egress	
Maximum ACL Rules (system-wide)	16384	
Maximum ACL Logging Rules (system-wide)	128	
COS Device Characteristics		
Configurable Queues per Port	Standalone mode: 8 queues; Stacking mode: 7 queues	
Configurable Drop Precedence Levels	3	
DiffServ Device Limits		
Number of Queues (stk/non-stk)	Standalone mode: 8 queues; Stacking mode: 7 queues	
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 (non-stk/stk)	Standalone mode: 58 interfaces; Stacking mode: 422 interfaces	
Max Table Entries		
Class Table	32	
Class Rule Table	192	
Policy Table	64	
Policy Instance Table	640	
Policy Attribute Table	1920	
Max Nested Class Chain Rule Count	26	
AutoVoIP number of voice calls	16	
iSCSI Flow Acceleration		
Max Monitored TCP Ports/IP Addresses	16	
Max Sessions	192	
Max Connections	192	

LED		
Per port	Speed, Link, Activity	
Per device	Power, Fan status, Stack ID, Rear I/O bays	
PHYSICAL SPECIFICATIONS		
Dimensions	440 x 391 x 43 mm (17.3 x 15.4 x 1.7 in)	
Weight M5300-28G M5300-52G M5300-28GF3	 6.3 kg (13.89 lb) 6.8 kg (14.99 lb) 5.4 kg (11.91 lb)	
POWER CONSUMPTION		
Worst case, all ports used, line-rate traffic, max PoE M5300-28G, M5300-28GF3 M5300-52G	 55W (240VAC@63Hz) max 79W (240VAC@63Hz) 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	ProSafe® M5300 series switch Power cord Rubber footpads for tabletop installation Rubber caps for the SFP and SFP+ sockets Rack-mounting kit Mini-USB to USB cable for console Resource CD with links to online documentation, installation guides, software manual, CLI admin guide, Web GUI management guide ProSafe NMS200 Network Management System DVD with 5-device free test capability	
OPTIONAL MODULES AND ACCESSORIES		
All models:		**Ordering SKU:**
AFM735	100Base-FX SFP GBIC (Multimode)	AFM735-10000S
AGM731F	1000Base-SX SFP GBIC (Multimode)	AGM731F
AGM732F	1000Base-LX SFP GBIC (Single mode)	AGM732F
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
AXC753	10GSFP+ Cu (passive) SFP+ to XFP Direct Attach Cable 3m	AXC753-10000S
AXM761	10GBase-SR SFP+ GBIC (OM3 Multimode)	AXM761-10000S

AXM761 (Pack of 10 units)	10GBase-SR SFP+ GBIC (OM3 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, OM1, OM2 or OM3)	AXM763-10000S
AX742	48 Gigabit Stacking Kit (2 I/O modules AX744 + 1m CX4 stacking cable) (v1h3)	AX742
AXC743	Infiniband CX4 Cable 3m (secured pull points)	AXC743-10000S
AX743	10Gigabit SFP+ I/O Module (10GBase-X)	AX743-10000S
AX744	10Gigabit CX4 I/O Module (10Gbase-CX4)	AX744-10000S
AX745	10Gigabit RJ45 I/O Module (10GBase-T)	AX745-10000S
RPS4000	External / Redundant Power Supply (up to four switches)	RPS4000-100NES/AJS
APS1000W	Power Module for RPS4000	APS1000W-100NES/AJS
RPS5412	Optimal Power® Redundant Power Supply (one switch)	RPS5412-100NAS/EUS/AJS
M5300-28GF3		
AGM734	1000Base-T RJ45 SFP GBIC	AGM734-10000S
M5300-28G, M5300-52G, M5300-28GF3		
APS135W	Modular Power Supply	APS135W-10000S
WARRANTY AND SUPPORT		
ProSafe Lifetime Warranty†	Included, lifetime	
ProSupport Lifetime 24x7 Advanced Technical Support*	Included, lifetime	
Next Business Day onsite hardware replacement support**	Included, 3 years	
PROSUPPORT SERVICE PACKS		
3-year Next Business Day hardware replacement contract		
M5300-28G, M5300-28GF3 XPressHW, Category 3	PRR0333 service contract	(applicable where next business day onsite hardware replacement is not available)
M5300-52G XPressHW, Category 4	PRR0334 service contract	
ORDERING INFORMATION		
M5300-28G Americas, Europe Asia Pacific Layer 3 license upgrade, worldwide	 GSM7228S-100NES GSM7228S-100AJS GSM7228L-10000S (Electronic SKU: license key delivered by email)	 V1H1 V1H1
M5300-52G Americas, Europe Asia Pacific Layer 3 license upgrade, worldwide	 GSM7252S-100NES GSM7252S-100AJS GSM7252L-10000S (Electronic SKU: license key delivered by email)	 V1H1 V1H1
M5300-28GF3 Americas, Europe Asia Pacific	 GSM7328FS-200NES GSM7328FS-200AJS	 V2H1 V2H1

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+ Lifetime warranty for product purchased after 05/01/2007. For product purchased before 05/01/2007, warranty is 5 years.

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