

# NETGEAR®

Connect with Innovation™

## ProSafe® Next-Gen Edge Managed Switches

Unmatched Gigabit performance and 10GBase-T scalability for virtualized servers, storage and sensitive audio/video deployments

**Auto-iSCSI**  
DETECTION  
OPTIMIZATION



Lifetime  
Tech Support

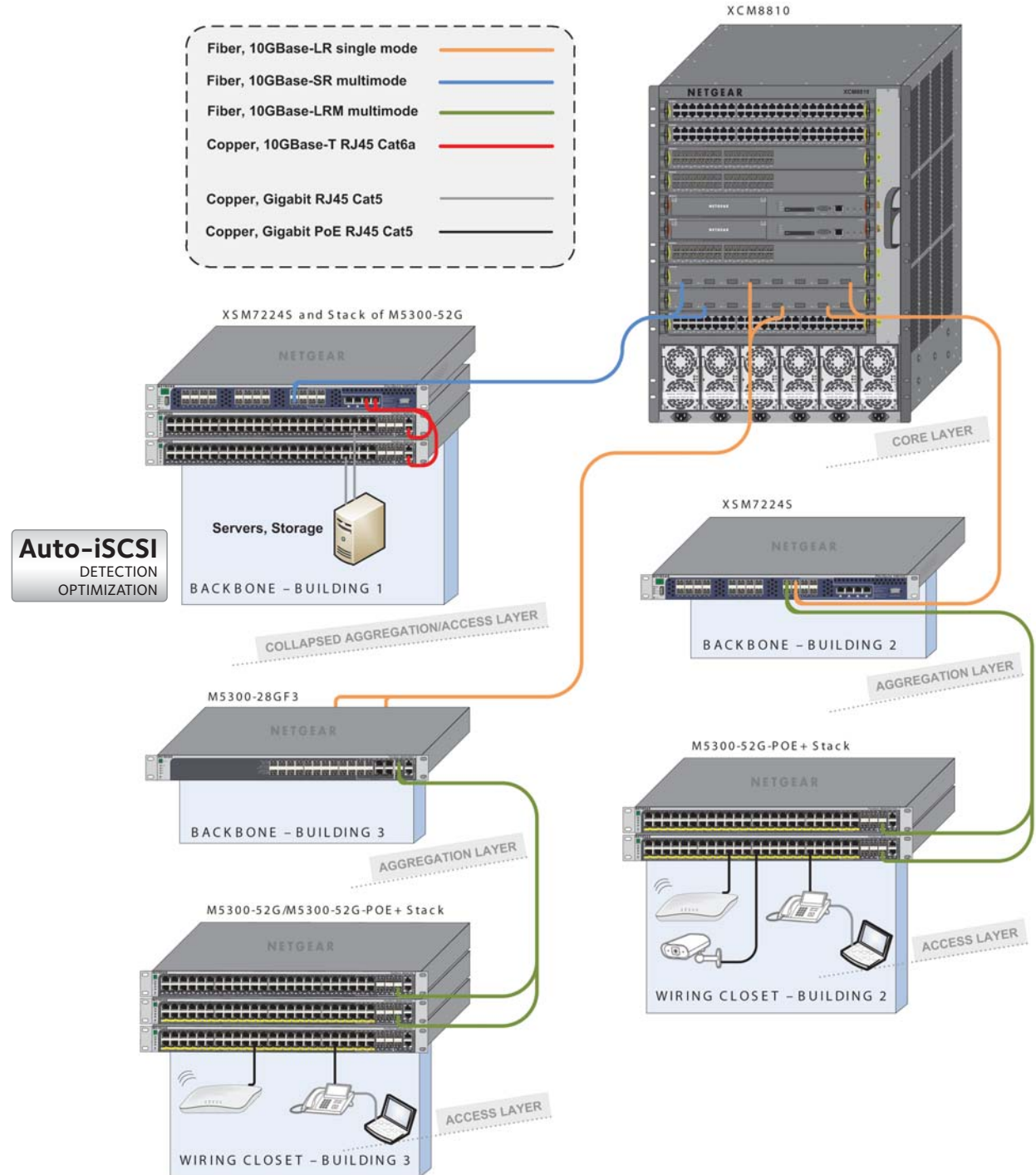
NBD\* 3-year  
on-site service

M5300 series

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.

## 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

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 or desktop virtualization, 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

- **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

Key requirements for successful 10 Gigabit Ethernet deployments 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

- **Stacking capability for 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

- **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

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.

## 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 unparalleled 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.

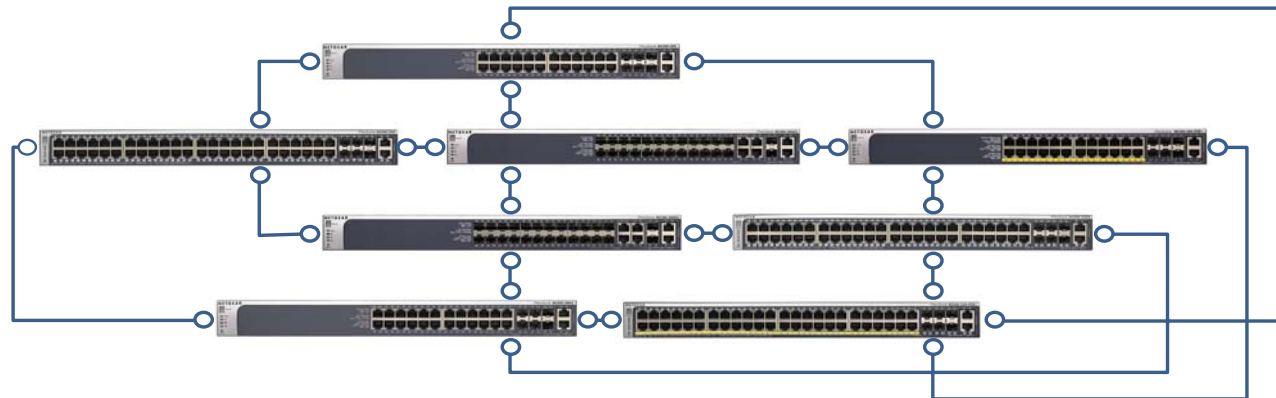
Automatic Unit Replacement guarantees stack members’ smooth replacement without manual reconfiguration. Stack master redundancy is also automatic with sub-second failover. As for a Chassis switch, VLAN tagging, port mirroring and link aggregation are available from every port to every port across the stack.



## Virtual Chassis Stacking Technology

### Full Mesh Topology

- In full mesh topology (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 Gbps



# Virtual Chassis Stacking Technology

## 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 other 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



- 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

# M5300 Series Features

## Top of the line access layer for 10GbE backbones:

- Embedded 10 Gigabit 10GBase-T/SFP+ uplinks
- Virtual Chassis stacking technology
- Line-rate for virtualization and convergence
- Innovative multi-vendor Auto-iSCSI optimization
- Multi-vendor SIP, H323, SCCP protocol-based Auto-VoIP
- No hidden cost for 10 gigabit
- Including full mesh stacking, remote stacking and sub-second stack master failover
- Highest-end hardware platform with massive table size (32K MAC, 6K ARP/NDP, 4K VLANs etc..)
- For server/storage admins who don't know QoS strategies very well
- For rapid IP telephones zero-touch, zero-config deployments

## 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:

- Innovative multi-vendor Auto-iSCSI capabilities for easier virtualization optimization
- 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
- Unidirectional Link Detection Protocol UDLD prevents forwarding anomalies
- IP Event Dampening reduces the effect of interface flaps on routing protocols

## 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\*\*

# 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 | Management 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 Multi-cast 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, Multinetting | OSPFv3 Configured 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<br>512M RAM<br>128M Flash | 2K ingress | 32K MAC 6K ARP/NDP VLANs: 4K DHCP: 16 pools 1,024 max leases | L3 route table size: 12,256  | RIP: 512<br>OSPF: 12,256           | 512 IPv4<br>512 IPv6 | 2K IPv4<br>2K IPv6              | 1K IPv4 or 512 IPv4 256 IPv6    | 32 samplers<br>52 pollers 8 receivers | GSM7228S v1h1  |
| M5300-52G   | 32 Mb         |                                  | 512 egress |  |                              |                                    |                      |                                 |                                 |                                       | GSM7252S v1h1  |
| M5300-28GF3 | 16 Mb         |                                  |            |  |                              |                                    |                      |                                 |                                 |                                       | GSM7328FS v2h1 |



# 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

# 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<br>Worldwide: see table below<br>Warranty: 5 years   | Multimode Fiber (MMF)   |  | Single mode Fiber (SMF)   |
|---|---|--|---|
|   | OM1 or OM2<br>62.5/125µm  | OM3<br>50/125µm  | 9/125µm   |
| <b>10 Gigabit SFP+</b>  <ul style="list-style-type: none"> <li>Fits into M5300 series built-in SFP+ interfaces (front)</li> <li>Fits into AX743 I/O modules SFP+ interface (rear)</li> </ul> | <b>AXM763</b><br>10GBase-LRM long reach multimode 802.3aq - LC duplex connector<br>up to 220m (722 ft)<br><b>AXM763-100005 (1 unit)</b> | <b>AXM763</b><br>10GBase-LRM long reach multimode 802.3aq - LC duplex connector<br>up to 260m (853 ft)<br><b>AXM763-100005 (1 unit)</b><br><br><b>AXM761</b><br>10GBase-SR short reach multimode LC duplex connector<br>up to 300m (984 ft)<br><b>AXM761-100005 (1 unit)</b><br><b>AXM761P10-100005 (pack of 10 units)</b> | <b>AXM762</b><br>10GBase-LR long reach single mode LC duplex connector<br>up to 10km (6.2 miles)<br><b>AXM762-100005 (1 unit)</b><br><b>AXM762P10-100005 (pack of 10 units)</b> |
| <b>Gigabit SFP</b>  <ul style="list-style-type: none"> <li>Fits into M5300 series SFP interfaces (front)</li> </ul>   | <b>AGM731F</b><br>1000Base-SX short range multimode LC duplex connector<br>up to 275m (902 ft)<br><b>AGM731F (1 unit)</b>               | <b>AGM731F</b><br>1000Base-SX short range multimode LC duplex connector<br>up to 550m (1,804 ft)<br><b>AGM731F (1 unit)</b>  | <b>AGM732F</b><br>1000Base-LX long range single mode LC duplex connector<br>up to 10km (6.2 miles)<br><b>AGM732F (1 unit)</b>   |
| <b>Fast Ethernet SFP</b>  <ul style="list-style-type: none"> <li>Fits into M5300 series SFP interfaces (front)</li> </ul>  | <b>AFM735</b><br>100Base-FX IEEE 802.3 LC duplex connector<br>up to 2km (1.24 miles)<br><b>AFM735-100005 (1 unit)</b>                   | <b>AFM735</b><br>100Base-FX IEEE 802.3 LC duplex connector<br>up to 2km (1.24 miles)<br><b>AFM735-100005 (1 unit)</b>  | <b>AFM735</b><br>100Base-FX IEEE 802.3 LC duplex connector<br>up to 2km (1.24 miles)<br><b>AFM735-100005 (1 unit)</b>   |

### AGM734 1000Base-T Gigabit RJ45 SFP

#### Ordering information

- Worldwide: AGM734-100005
- Warranty: 5 years



- 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

**NETGEAR**<sup>®</sup>  
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† 24x7 Lifetime Advanced Technical Support includes Remote Diagnostics performed by our technical experts for prompt resolution of technical issues.

\*\* 3-year Next business day onsite hardware replacement support included: see <http://onsite.netgear.com> for coverage, availability and terms and conditions.

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