NETGEAR®

AV Line

Datasheet | **M4250 series**

AV Line Managed Switches

Switching Engineered for AV over IP

The NETGEAR M4250 Switch Series introduces the AV Line, developed and engineered for audio/video professionals with dedicated service and support. M4250 has been built from the ground up for the growing AV over IP market, combining years of networking expertise in AV with M4300 and M4500 series with best practices from leading experts in the professional AV market. AV codecs generally use 1Gbps or 10Gbps per stream and the AV Line of M4250 targets the widespread 1Gbps codecs.

PoE+, Ultra90 PoE++ and rear-facing ports ensure a clean integration in AV racks. M4250 switches come pre-configured for standard audio and video signals. When requirements are more specific, an AV user interface offers customization with port-based profiles. For audio Dante, Q-SYS and AES67 profiles are available, as well as an AVB profile requiring an AVB license sold separately. For video the M4250 offers profiles for NVX, SVSI, Q-SYS, NDI, Dante etc. as well as audio/video/control mixed profiles. When multiple switches, NETGEAR IGMP Plus™ brings automation for you to just connect them together, or with M4300 and M4500 switches.

Highlights

Extended AV features

- Dedicated AV web-based GUI interface for more specific AV installations
- Color-based AV profiles can be applied to the different ports
- Dante, Q-SYS, AES67 and AVB audio profiles
- AVB requires a license (sold separately)
- NVX, SVSI, Q-SYS, NDI and Dante video profiles
- Audio / video / control mixed profiles
- Automatic switch interconnect with NETGEAR IGMP Plus™
- Common Layer 2 and Layer 3 switching engine across all M4250 models
- Built-in IT web GUI, console, telnet and SSH consistent with other NETGEAR M4300 and M4500 series
- Feature set includes static, RIP and PIM routing, DHCP Server and PTPv2

Audio Video Bridging (AVB) services

- AVB is one of the many features designed into the M4250 product line
- AVB is an industry standard for transporting content over a network
- AVB is used most often when very low latency is required such as in live performances when lip sync is critical
- All of the AV Line M4250 switches can be optionally licensed for AVB support

Other IT use cases

- Standard or recessed mounting with all ports in the back, or all ports in the front
- Fully featured L2/L3/L4 platform for midsize Enterprise campus networks, IoT and IPTV

Industry standard management

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

Industry leading warranty

- NETGEAR M4250 series is covered under NETGEAR ProSAFE Limited Lifetime Hardware Warranty*
- 90 days of Technical Support via phone and email, Lifetime Technical Support through online chat and Lifetime Next Business Day hardware replacement

Hardware-at-a-Glance

			REAR (REVERSIBLE)*					LEDs	MANAGEMENT	
Model Name	Form-Factor	Switching Fabric	10/100/1000 BASE-T RJ45 ports	100/1000/2.5G BASE-T RJ45 ports	1000BASE-X SFP ports	1000/10G BASE-X SFP+ ports	PSU	Status Information	Out-of-band Console	Model Number
M4250-10G2F-PoE+	1U rack mount 440 x 43.2 x 200mm	24 Gbps	8 ports PoE+ (125W) 2 additional ports 10M, 100M, 1G	-	2 ports SFP 1G	-	Fixed (C14 connector) Power switch (On/Off)	Available both in front and in the rear: Power LED PoE Max LED (PoE models) Fan LED Port LEDs	Ethernet: 1G Out-of-band (Rear) Console: RJ45 RS232 (Rear) Console: USB-C (Rear) Storage: USB-A (Front) LED Ext: USB-C (Front)	GSM4212P
M4250-10G2XF-PoE+	1U rack mount 440 x 43.2 x 200mm	60 Gbps	8 ports PoE+ (240W) 2 additional ports 10M, 100M, 1G	-	-	2 ports SFP+ 1G, 10G				GSM4212PX
M4250-10G2XF-PoE++	1U rack mount 440 x 43.2 x 257mm	60 Gbps	8 ports PoE++** (720W) 2 additional ports 10M, 100M, 1G	-	-	2 ports SFP+ 1G, 10G				GSM4212UX
M4250-12M2XF	1U rack mount 440 x 43.2 x 100mm	100 Gbps	-	12 ports 100M, 1G, 2.5G	-	2 ports SFP+ 1G, 10G				MSM4214X
M4250-16XF	1U rack mount 440 x 43.2 x 200mm	320 Gbps	-		-	16 ports SFP+ 1G, 10G				XSM4216F

* Reversed mounting is possible when ports are desired on the front of the rack by using the standard rackmout ears, or the included alternate rackmount ears to mount the switch recessed by 2-Inches to allow for the cabling.

** Ultra90 PoE++ 802.3bt is compatible with 802.3af PoE (15.4W), 802.3at PoE++ (30W) and 802.3bt (60W, 75W and 90W).

Acoustic-at-a-Glance

	FAN OFF MODE Setting / maximum loading*					QUIET MODE Setting at 25°C ambient**					COOL MODE Setting at 25°C ambient**			
Model Name	Fanless State	Ambient	Sensor	PoE Power Load	Conditions	PoE Power Load	Fan Duty	Sensor	Case Temp (Top)	Acoustic	Fan Duty	Case Temp (Top)	Acoustic	Model Number
M4250-10G2F-PoE+	0dBA / 37.1°C Case Temp	25°C	<= 42°C	80W	All ports can be used	125W	25	<= 36°C	35.9°C	27.38dBA	100	27.2°C	55dBA	GSM4212P
M4250-10G2XF-PoE+	0dBA / 38.4°C Case Temp	25°C	<= 44°C	90W	All ports can be used	240W	25	<= 37°C	40.6°C	27.4dBA	100	30.9°C	56dBA	GSM4212PX
M4250-10G2XF-PoE++	0dBA / 42.3°C Case Temp	25°C	<= 67°C	45W	All ports can be used	90W 90-180W 180W-720W	25 30 40	<= 49°C <= 49°C <= 49°C	41.1°C 40.8°C 52.1°C	34.57dBA 40dBA 47.19dBA	100	41.8°C	60dBA	GSM4212UX
M4250-12M2XF	0dBA / 56°C Case Temp	25°C	<= 64°C	-	8 ports 2.5G (no SFP+)	-	25	<= 58°C	53.5°C	28.5dBA	100	33.2°C	55dBA	MSM4214X
M4250-16XF	0dBA / 36.2°C Case Temp	25°C	<= 78°C	-	8 ports SFP+	-	25	<= 67°C	41.6°C	27.44dBA	100	30.3°C	57dBA	XSM4216F

* Software-controlled fan adjustments enable the fans to be turned off when ambient temperature and PoE loads are appropriate for a totally fanless operation.

** dBA values are SPL (Sound Pressure Level) values, testing following the ISO-7779 standard. Bystander Mode. Chamber Temp 25°C during testing. Full, 100%, Data and PoE loaded. Worst case.

Software-at-a-Glance

	LITE LAYER 3 PACKAGE											
Model Name	Management	AV Dedicated UI	IPv4 / IPv6 ACL and QoS, DiffServ	IPv4 / IPv6 Multicast Filtering	IPv4 / IPv6 Policing and Convergence	Spanning Tree Green Ethernet	VLANs	Trunking Port Channel	IPv4 / IPv6 Authentication Security	IPv4 / IPv6 Static Routing	IPv4 / IPv6 Dynamic Routing	Model Number
M4250 series	Out-of-band IT Web GUI (main) HTTPs CLI; Telnet; SSH SNMP, MIBs RSPAN Radius Users, TACACS+	AV web-based GUI available at [Switch IP Address]:8080 Designed for AV installers AV-related controls Audio over IP profiles AVB profile* Video over IP profiles Mixed Audio and Video profiles	Ingress/ egress 1 Kbps shaping Time-based Single Rate Policing	NETGEAR IGMP™ Plus for automated IGMP between switches IGMPv3 MLDv2 Snooping, Proxy ASM & SSM IGMPv1,v2 Querier (compatible v3) Control Packet Flooding	Auto-VoIP Policy-based routing (PBR) LLDP-MED IEEE 1588 PTPv2 1-Step End-to-End Transparent Clock AVB*: 802.1AS, 802.1Qav, 802.1Qat MSRP, 802.1ak MMRP, 802.1ak MVRP	STP, MTP, RSTP PV(R)STP BPDU/STRG Root Guard EEE 802.3az (EEE is disabled by default)	Static, Dynamic, Voice, MAC GVRP/ GMRP Double VLAN mode Private VLANs	Static LAG, or Dynamic LACP (LACP automati-cally reverts to and from Static LAG) Seven (7) L2/L3/L4 hashing algorithms	Successive Tiering (DOT1X; MAB; Captive Portal) DHCP Snooping Dynamic ARP Inspection IP Source Guard	Port, Subnet, VLAN routing Multicast static routes DHCPv4 Server DHCP Relay Stateful DHCPv6 Server	IPv4: RIP IPv4/IPv6: PIM-SM PIM-DM SSM	All models

* Requires AVB license, sold separately. All other software features are available, license-free.

Performance-at-a-Glance

	TABLE SIZE												
Model Name	MAC ARP/NDP	Routing/ Switching Capacity	Throughput 64-byte	Application Route Scaling	Packet Buffer	Latency	IP Multicast Routing Entries	CPU	Jumbo Frames	Multicast IGMP Group member-ship	VLANs	DHCP	sFlow	Model Number
M4250-10G2F-PoE+	16K MAC 4K ARP/ NDP	24 Gbps Line-Rate	17.86 Mpps	Static: 894v4/126v6 RIP: 32v4	16Mb	<2.27µs 1G	512 IPv4 128 IPv6	ARM A9 1.25Ghz 2GB RAM 256MB Flash	Up to 12K	2K IPv4 2K IPv6	4K VLANs	DHCP Server: 2K leases IPv4: 256 pools IPv6: 16 pools	16 samplers 16 pollers 8 receivers	GSM4212P
M4250-10G2XF-PoE+	16K MAC 4K ARP/ NDP	60 Gbps Line-Rate	44.64 Mpps	Static: 894v4/126v6 RIP: 32v4	16Mb	<2.14µs 1G <0.84µs 10G								GSM4212PX
M4250-10G2XF-PoE++	16K MAC 4K ARP/ NDP	60 Gbps Line-Rate	44.64 Mpps	Static: 894v4/126v6 RIP: 32v4	16Mb	<1.84µs 1G <0.81µs 10G								GSM4212UX
M4250-12M2XF	16K MAC 4K ARP/ NDP	100 Gbps Line-Rate	74.40 Mpps	Static: 894v4/126v6 RIP: 32v4	16Mb	<2.84.µs 1G <6.02µs 2.5G <0.81µs 10G								MSM4214X
M4250-16XF	16K MAC 4K ARP/ NDP	320 Gbps Line-Rate	238.08 Mpps	Static: 894v4/126v6 RIP: 32v4	16Mb	<1.30µs 1G <0.86µs 10G								XSM4216F

Product Brief

The NETGEAR AV Line M4250 series was designed with input from AV Professionals. The result is a line of switches built from the ground up to support 1Gb audio and video over IP with customized hardware and software along with dedicated service and support.

NETGEAR M4250 series key features:

- Ranges from 8 to 16 ports with a variety of PoE+ and Ultra90 PoE++ options for 15.4W, 30W, 60W, 75W and 90W AVoIP endpoints
- Uplink options include 1G for audio installations or standalone video installations as well as 10G uplinks for larger scale video deployments
- Also includes 12-port multi-gigabit Ethernet and 16-port 1G/10G fiber models for plug and play aggregation in a star topology
- Designed for a clean integration with traditional rack-mounted, AV equipment
- The M4250 switches come with a sleek, black display panel with status in front and all cabling plus additional status in the back
- Reversed mounting is possible when ports are desired on the front of the rack
- A second pair of rackmount ears allows the switches to be mounted recessed by 2-inches to allow for the cabling
- Software-controlled fan adjustments enable the fans to be turned off when ambient temperature and PoE loads are appropriate for a totally fanless operation
- Threaded holes on the bottom (4xM5 for 50x100mm VESA) and in front (1xM10 for clamps) allow for universal mounting options outside the rack as well

NETGEAR M4250 series AV software features:

- Pre-configured for audio and video over IP out of the box, the M4250 switches enable encoders and decoders to be connected with zero configuration
- When more configuration is required, an AV web-based GUI is available at the switch IP address:8080
- This interface has been specially designed for AV installers with specific AV-related controls made more accessible and with port-based profiles
- For audio, profiles for Dante, Q-SYS and AES67 are built-in, as well as an AVB profile (AVB license sold separately)
- For video, the M4250 offers profiles for NVX, SVSI, Q-SYS, NDI, Kramer KDS, Aurora Multimedia, ZeeVee, Atlona, Dante and SDVoE
- Other AV CODECs and manufactures are supported as well as audio/video/control mixed profiles
- To further simplify star deployments, NETGEAR IGMP Plus™ brings multicast automation between all M4250 switches, and with M4300/M4500
- Simply connect the switches together and you are done!

NETGEAR M4250 series other software features:

- All M4250 switches share the same high-end NETGEAR Layer 2 / Layer 3 switching engine for a consistent experience
- All switches in the M4250 series have another main, IT web-based GUI for midsize Enterprise campus networks, IoT and IPTV

- Additional features include static, RIP and PIM-SM, DM and SSM multicast routing, DHCP Server and PTPv2 Transparent Clock (1-step E2E)
- AVB is the only feature requiring a license, all other advanced features are available license-free
- Advanced classifier-based, time-based hardware implementation for L2 (MAC), L3 (IP) and L4 (UDP/TCP transport ports) security and prioritization
- Selectable Port-Channel / LAG (802.3ad - 802.1AX) L2/L3/L4 hashing for fault tolerance and load sharing with any type of Ethernet channeling
- Voice VLAN with SIP, H323 and SCCP protocols detection and LLDP-MED IP phones automatic QoS and VLAN configuration
- Efficient authentication tiering with successive DOT1X, MAB and Captive Portal methods for streamlined BYOD
- Comprehensive IPv4/IPv6 static and dynamic routing including Policy-based routing and 6-to-4 tunneling
- Advanced IPv4/IPv6 security implementation including malicious code detection, DHCP Snooping, IP Source Guard protection and DoS attacks mitigation

NETGEAR M4250 series management features:

- DHCP/BootP innovative auto-installation including firmware and configuration file upload automation
- Industry standard SNMP, RMON, MIB, LLDP, AAA, sFlow, RSPAN and PTPv2
- Service port for out-of-band Ethernet management (OOB)
- Standard RS232 straight-through serial RJ45 and USB Type-C ports for local management console
- Standard USB-A port for local storage, logs, configuration or image files
- Dual firmware image for updates with minimum service interruption
- Single-pane-of-glass NMS300 management platform with mass configuration support
- Industry standard command line interface (CLI) for IT admins used to other vendors commands
- Fully functional Web console (main GUI) for IT admins who prefer an easy to use graphical interface
- Dedicated AV web-based GUI interface available at [switch IP address:8080] for AV installations

NETGEAR M4250 series warranty and support:

- NETGEAR ProSAFE Limited Lifetime Hardware Warranty**
- Included Lifetime Technical Support
- Included Lifetime Next Business Day Hardware Replacement
- Offering free network design services and installation support, the NETGEAR Engineering Services Team is ready to help ensure your 1G deployments with the M4250 AV over IP switches go as smooth as possible. Just drop us an email at ProAVDesign@netgear.com to get started!

Features highlights

Dedicated AV UI available at http://IPAddress:8080

M4250 switch series is pre-configured for Audio and Video over IP out of the box with a dedicated AV web-based GUI interface for more specific AV installations

- Color-based AV profiles can be applied to the different ports
- Dante, Q-SYS, AES67 and AVB audio profiles (AVB license sold separately)
- NVX, SVSI, Q-SYS, NDI, Kramer KDS, Aurora Multimedia, ZeeVee, Atlona, Dante, etc. video profiles
- Audio / video / control mixed profiles

Best value switching performance:

16K MAC address table, 4K ARP and 4K concurrent VLANs for typical midsize environnements

Low latency at all network speeds, including 10 Gigabit fiber interfaces

Jumbo frames support of up to 12KB accelerating performance with compatible nodes

Ranges from 8 to 16 ports with a variety of PoE+ and Ultra90 PoE++ 802.3bt options for 15.4W, 30W, 60W, 75W and 90W AVoIP (1G) endpoints

Tier 1 availability

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

NETGEAR PVSTP implementation follows the same rules than other vendor's Per VLAN STP for strict interoperability

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

NETGEAR PVRSTP implementation follows the same rules than other vendor's Per VLAN RSTP for strict interoperability

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

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

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

Ease of deployment

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

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

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

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

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

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

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

Ease of management and granular control

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

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

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

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

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

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

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

Loopback interfaces management for routing protocols administration

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

Management VLAN ID is user selectable for best convenience

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

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

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

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

Comprehensive set of "system utilities" and "Clear" commands help troubleshoot connectivity issues and restore various configurations to their factory defaults for maximum admin efficiency: traceroute (to discover the routes that packets actually take when traveling on a hop-by-hop basis and with a synchronous response when initiated from the CLI), clear dynamically learned MAC addresses, counters, IGMP snooping table entries from the Multicast forwarding database etc...	
Syslog and Packet Captures can be sent to USB storage for rapid network troubleshooting	
Replaceable factory-default configuration file for predictable network reset in distributed branch offices without IT personnel	
All major centralized software distribution platforms are supported for central software upgrades and configuration files management (HTTP, TFTP), including in highly secured versions (HTTPS, SFTP, SCP)	
Simple Network Time Protocol (SNTP) can be used to synchronize network resources and for adaptation of NTP, and can provide synchronized network timestamp either in broadcast or unicast mode (SNTP client implemented over UDP - port 123)	
Embedded RMON (4 groups) and sFlow agents permit external network traffic analysis	
Engineered for convergence and AV-over-IP	
Audio (Voice over IP) and Video (multicasting) comprehensive switching, filtering, routing and prioritization	
Auto-VoIP, Voice VLAN and LLDP-MED support for IP phones QoS and VLAN configuration	
IEEE 1588 (section 10 and 11.5) PTPv2 Transparent Clock (TC) End-to-End implementation considering the residence time of PTPv2 packets from ingress to egress	• 1-step Transparent Clock mode, using the residence time of the PPTPv2 packet at the egress port level in Standalone mode, or Stack Master only • The "Sync & Delay_Req" field of passing/egressing out PTPv2 packets is updated with the residence time in the switch, the other fields in PTPv2 packets ("Announce", "Delay_Resp", "Pdelay_Req" and "Pdelay_Resp") are not updated
NETGEAR IGMP Plus™ for automatic multicast across a M4250 / M4300 / M4500 L2 network (Spine and Leaf topologies), removing the need for L3 PIM routing	• IGMP Plus is pre-configured on default VLAN 1 out of the box • IGMP Plus can be configured on another VLAN for automatic IGMP across switches on that VLAN (uplinks can make part of that VLAN in trunk mode) • IGMP Plus allow AV-over-IP devices (TX/Encoders and RX/Decoders) to be connected across multiple switches in a star topology • The `show igmpsnooping group` command in CLI and GUI displays the Source and Group IP addresses along with their corresponding MAC addresses that are learnt through IGMP Snooping in a given VLAN on a given interface
IGMP Snooping and Proxy for IPv4, MLD Snooping and Proxy for IPv6, and Querier mode facilitate fast receivers joins and leaves for multicast streams and ensure multi-cast traffic only reaches interested receivers everywhere in a Layer 2 or a Layer 3 network, including source-specific (SSM) and any-source (ASM) multicast	
Multicast VLAN Registration (MVR) uses a dedicated Multicast VLAN to forward multicast streams and avoid duplication for clients in different VLANs	
Multicast routing (PIM-SM and PIM-DM, both IPv4 and IPv6) ensure multicast streams can reach receivers in different L3 subnets	
PoE power management and schedule enablement for powering on and powering off PoE nodes connected to the switch	
AVB is one of the many features designed into the M4250 product line	• IEEE 802.1BA-2011 Audio Video Bridging (AVB) when an AVB license is properly installed in the switch (license sold separately) • IEEE 802.1AS-2011 gPTP, IEEE 802.1Qav-2009 FQTSS, IEEE 802.1Qat-2010 MSRP, IEEE 802.1ak MMRP, IEEE 802.1ak MVRP • Maximum of 256 AVB streams per switch • AVB is not supported in LAG (link aggregation groups, or Etherchannel)
Layer 3 routing package	
Static Routes/ECMP Static Routes for IPv4 and IPv6	• Static and default routes are configurable with next IP address hops to any given destination • Permitting additional routes creates several options for the network administrator • The admin can configure multiple next hops to a given destination, intending for the router to load share across the next hops • The admin distinguishes static routes by specifying a route preference value: a lower preference value is a more preferred static route • A less preferred static route is used if the more preferred static route is unusable (down link, or next hop cannot be resolved to a MAC address)

Advanced Static Routing functions for administrative traffic control	• Static Reject Routes are configurable to control the traffic destined to a particular network so that it is not forwarded through the router • Such traffic is discarded and the ICMP destination unreachable message is sent back to the source • Static reject routes can be typically used to prevent routing loops • Default routes are configurable as a preference option
In order to facilitate VLAN creation and VLAN routing using Web GUI, a VLAN Routing Wizard offers following automated capabilities:	• Create a VLAN and generate a unique name for VLAN • Add selected ports to the newly created VLAN and remove selected ports from the default VLAN • Create a LAG, add selected ports to a LAG, then add this LAG to the newly created VLAN • Enable tagging on selected ports if the port is in another VLAN • Disable tagging if a selected port does not exist in another VLAN • Exclude ports that are not selected from the VLAN • Enable routing on the VLAN using the IP address and subnet mask entered as logical routing interface
DHCP Relay Agents relay DHCP requests from any routed interface, including VLANs, when DHCP server doesn't reside on the same IP network or subnet	• The agent relays requests from a subnet without a DHCP server to a server or next-hop agent on another subnet • Unlike a router which switches IP packets transparently, a DHCP relay agent processes DHCP messages and generates new DHCP messages • Supports DHCP Relay Option 82 circuit-id and remote-id for VLANs • Multiple Helper IPs feature allows to configure a DHCP relay agent with multiple DHCP server addresses per routing interface and to use different server addresses for client packets arriving on different interfaces on the relay agent server addresses for client packets arriving on different interfaces on the relay agent
Router Discovery Protocol is an extension to ICMP and enables hosts to dynamically discover the IP address of routers on local IP subnets	• Based on RFC 1256 for IPv4 • Routers periodically send router discovery messages to announce their presence to locally-attached hosts • The router discovery message advertises one or more IP addresses on the router that hosts can use as their default gateway • Hosts can send a router solicitation message asking any router that receives the message to immediately send a router advertisement • Router discovery eliminates the need to manually configure a default gateway on each host • It enables hosts to switch to a different default gateway if one goes down
Loopback interfaces are available as dynamic, stable IP addresses for other devices on the network, and for routing protocols	
Support of Routing Information Protocol (RIPv2) as a distance vector protocol specified in RFC 2453 for IPv4	• Each route is characterized by the number of gateways, or hops, a packet must traverse to reach its intended destination • Categorized as an interior gateway protocol, RIP operates within the scope of an autonomous system
IP Multinetting allows to configure more than one IP address on a network interface (other vendors may call it IP Aliasing or Secondary Addressing)	
ICMP Throttling feature adds configuration options for the transmission of various types of ICMP messages	• ICMP Redirects can be used by a malicious sender to perform man-in-the-middle attacks, or divert packets to a malicious monitor, or to cause Denial of Service (DoS) by blackholing the packets • ICMP Echo Requests and other messages can be used to probe for vulnerable hosts or routers • Rate limiting ICMP error messages protects the local router and the network from sending a large number of messages that take CPU and bandwidth
The Policy Based Routing feature (PBR) overrides routing decision taken by the router and makes the packet to follow different actions based on a policy	• It provides freedom over packet routing/forwarding instead of leaving the control to standard routing protocols based on L3 • For instance, some organizations would like to dictate paths instead of following the paths shown by routing protocols • Network Managers/Administrators can set up policies such as: – My network will not carry traffic from the Engineering department – Traffic originating within my network with the following characteristics will take path A, while other traffic will take path B – When load sharing needs to be done for the incoming traffic across multiple paths based on packet entities in the incoming traffic

Enterprise security	
Traffic control MAC Filter and Port Security help restrict the traffic allowed into and out of specified ports or interfaces in the system in order to increase overall security and block MAC address flooding issues	
DHCP Snooping monitors DHCP traffic between DHCP clients and DHCP servers to filter harmful DHCP message and builds a bindings database of (MAC address, IP address, VLAN ID, port) tuples that are considered authorized in order to prevent DHCP server spoofing attacks	
IP source guard and Dynamic ARP Inspection use the DHCP snooping bindings database per port and per VLAN to drop incoming packets that do not match any binding and to enforce source IP/MAC addresses for malicious users traffic elimination	
Time-based Layer 2 / Layer 3-v4 / Layer 3-v6 / Layer 4 Access Control Lists (ACLs) can be binded to ports, Layer 2 interfaces, VLANs and LAGs (Link Aggregation Groups or Port channel) for fast unauthorized data prevention and right granularity	
For in-band switch management, management ACLs on CPU interface (Control Plane ACLs) are used to define the IP/MAC or protocol through which management access is allowed for increased HTTP/HTTPS or Telnet/SSH management security	
Out-of-band management is available via dedicated service port (1G RJ45 OOB) when in-band management can be prohibited via management ACLs	
Bridge protocol data unit (BPDU) Guard allows the network administrator to enforce the Spanning Tree (STP) domain borders and keep the active topology consistent and predictable - unauthorized devices or switches behind the edge ports that have BPDU enabled will not be able to influence the overall STP by creating loops	
Spanning Tree Root Guard (STRG) enforces the Layer 2 network topology by preventing rogue root bridges potential issues when for instance, unauthorized or unexpected new equipment in the network may accidentally become a root bridge for a given VLAN	
Dynamic 802.1x VLAN assignment mode, including Dynamic VLAN creation mode and Guest VLAN / Un-authenticated VLAN are supported for rigorous user and equipment RADIUS policy server enforcement	• Up to 48 clients (802.1x) per port are supported, including the authentication of the users domain, in order to facilitate convergent deployments. For instance when IP phones connect PCs on their bridge, IP phones and PCs can authenticate on the same switch port but under different VLAN assignment policies (Voice VLAN versus other Production VLANs)
802.1x MAC Address Authentication Bypass (MAB) is a supplemental authentication mechanism that lets non-802.1x devices bypass the traditional 802.1x process altogether, letting them authenticate to the network using their client MAC address as an identifier	• A list of authorized MAC addresses of client NICs is maintained on the RADIUS server for MAB purpose • MAB can be configured on a per-port basis on the switch • MAB initiates after unsuccessful dot1x authentication process (configurable time out), when clients don't respond to any of EAPOL packets • When 802.1X unaware clients try to connect, the switch sends the MAC address of each client to the authentication server • The RADIUS server checks the MAC address of the client NIC against the list of authorized addresses • The RADIUS server returns the access policy and VLAN assignment to the switch for each client
With Successive Tiering, the Authentication Manager allows for authentication methods per port for a Tiered Authentication based on configured time-outs	• By default, configuration authentication methods are tried in this order: Dot1x, then MAB, then Captive Portal (web authentication) • With BYOD, such Tiered Authentication is powerful and simple to implement with strict policies – For instance, when a client is connecting, M4300 tries to authenticate the user/client using the three methods above, the one after the other • The admin can restrict the configuration such that no other method is allowed to follow the captive portal method, for instance
Double VLANs (DVLAN) pass traffic from one customer domain to another through the "metro core" in a multi-tenancy environment: customer VLAN IDs are preserved and a service provider VLAN ID is added to the traffic so the traffic can pass the metro core in a simple, secure manner	
Private VLANs (with Primary VLAN, Isolated VLAN, Community VLAN, Promiscuous port, Host port, Trunks) provide Layer 2 isolation between ports that share the same broadcast domain, allowing a VLAN broadcast domain to be partitioned into smaller point-to-multipoint subdomains accross switches in the same Layer 2 network	• Private VLANs are useful in DMZ when servers are not supposed to communicate with each other but need to communicate with a router • They remove the need for more complex port-based VLANs with respective IP interface/subnets and associated L3 routing • Another Private VLANs typical application are carrier-class deployments when users shouldn't see, snoop or attack other users' traffic
SSL version 3 and TLS version 2 ensure Web GUI sessions are secured	
Secure Shell (SSH version 2) and SNMPv3 (with or without MD5 or SHA authentication) ensure SNMP and Telnet sessions are secured	
2048-bit RSA key pairs, SHA2-256 and SHA2-512 cryptographic hash functions for SSLv3 and SSHv2 are supported on all M4300 models	

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

Superior quality of service

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

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

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

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

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

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

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

Flow Control

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

- Asymmetric flow control allows the switch to respond to received PAUSE frames, but the ports cannot generate PAUSE frames
- Symmetric flow control allows the switch to both respond to, and generate MAC control PAUSE frames

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

- A device that wishes to inhibit transmission of data frames from another device on the LAN transmits a PAUSE frame

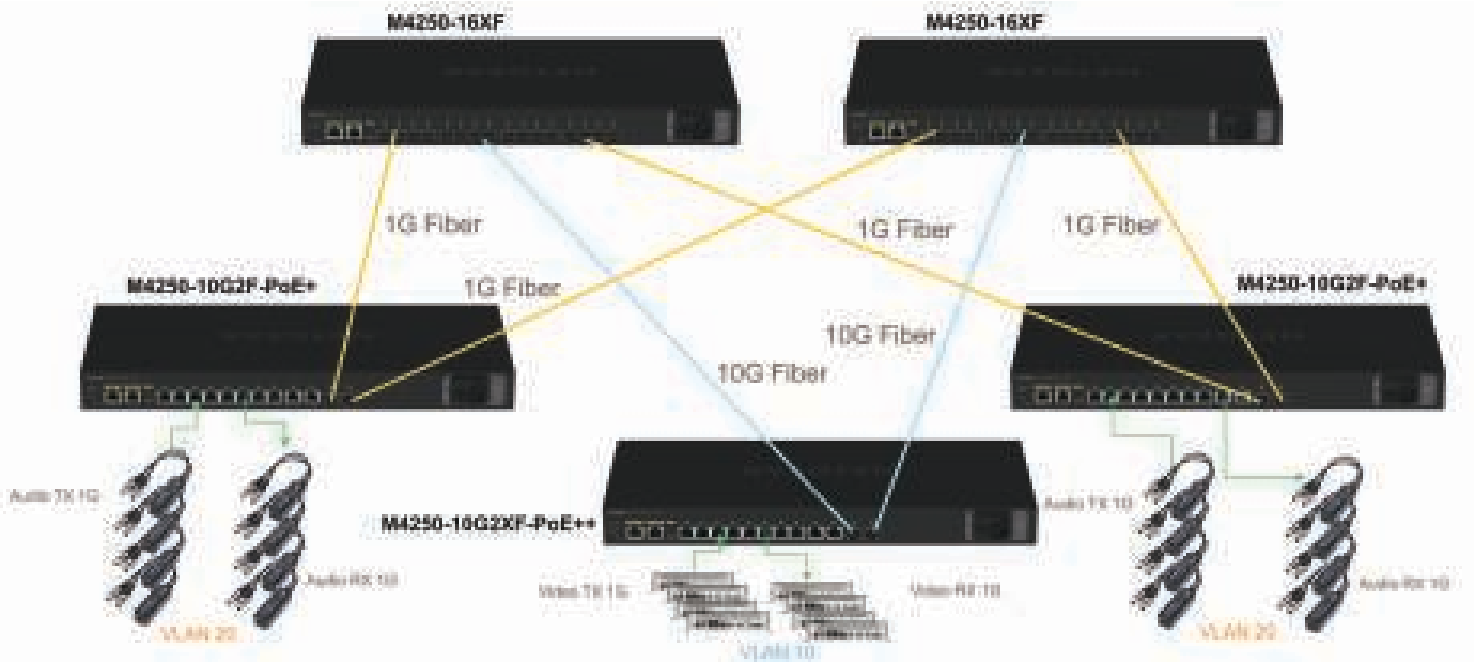
UDLD Support

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

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

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

Target Application

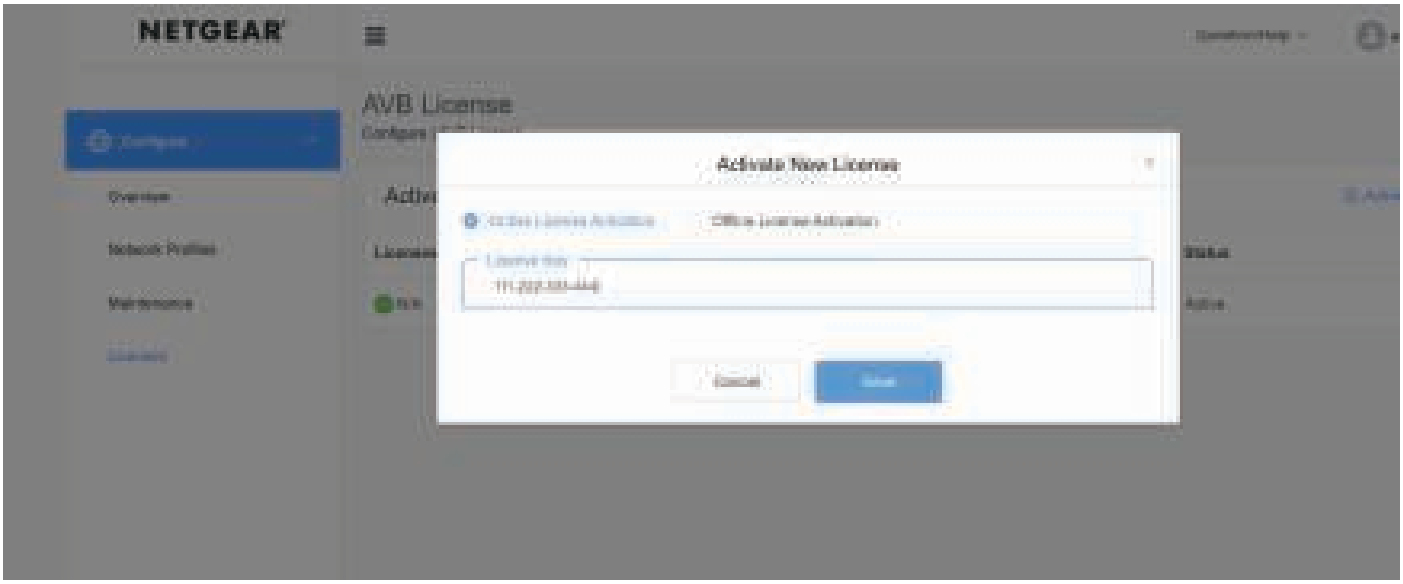


A new AV Line of M4250 switches with out-of-the-box functionality and an industry-first: a concurrent second user interface solely designed with the AV Pro in mind.

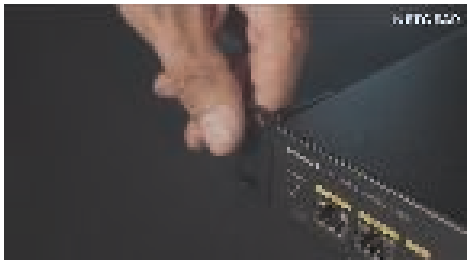
NETGEAR has enhanced the experience for AV professionals by including a new user interface designed from the ground up. Pro AV customers don't have to settle for an IT-centric interface with settings and IT-specific functionality they will never need. The new M4250 AV interface presents the common AV controls right up front with user-selectable profiles for common AV platforms making it a snap to ensure the settings are correct for a specific audio or video application.

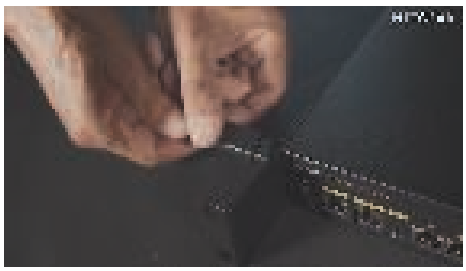
Components and Modules

M4250 AV Licenses



M4250 AVB Licenses are electronic SKUs. A license registration key is received by email and can be copied and pasted directly in the AV UI [Switch IP Address:8080] when the switch is online.





Components and Modules

M4250-10G2F-PoE+
AV Line Managed Switch

Ordering information

- Americas: GSM4212P-100NAS
- Europe: GSM4212P-100EUS
- Asia Pacific: GSM4212P-100AJS
- China: GSM4212P-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty
- AVB License: AVB4212P-10000S (sold separatel

- 8-port 10/100/1000BASE-T (RJ45) PoE+ with 125W PoE budget
- 2-port 10/100/1000BASE-T (RJ45)
- 2-port 1000BASE-X (SFP)
- 24 Gbps non-blocking fabric across 12 ports
- Out-of-band 1G Ethernet management port
- USB-C and RJ45 RS232 console ports and USB-A storage port
- Front black display panel and all ports in the back
- Possible reversed mounting with ports in the front
- Rack-mounting standard brackets
- Longer brackets for recessed mounting (2 inches / 5 cm)
- Threaded hole in front (1xM10) for clamps
- Threaded holes on the bottom (4xM5) for 50x100mm VESA plates
- Selectable fan modes for fanless, quiet, or cool operation
- Dimensions (WxDxH): 440 x 200 x 43.2 mm
- Weight: 2.85Kg (6.28lb)

Components and Modules

M4250-10G2XF-PoE+
AV Line Managed Switch

Ordering information

- Americas: GSM4212PX-100NAS
- Europe: GSM4212PX-100EUS
- Asia Pacific: GSM4212PX-100AJS
- China: GSM4212PX-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty
- AVB License: AVB4212PX-10000S (sold separately)

- 8-port 10/100/1000BASE-T (RJ45) PoE+ with 240W PoE budget
- 2-port 10/100/1000BASE-T (RJ45)
- 2-port 1000/10GBASE-X (SFP+)
- 60 Gbps non-blocking fabric across 12 ports
- Out-of-band 1G Ethernet management port
- USB-C and RJ45 RS232 console ports and USB-A storage port
- Front black display panel and all ports in the back
- Possible reversed mounting with ports in the front
- Rack-mounting standard brackets
- Longer brackets for recessed mounting (2 inches / 5 cm)
- Threaded hole in front (1xM10) for clamps
- Threaded holes on the bottom (4xM5) for 50x100mm VESA plates
- Selectable fan modes for fanless, quiet, or cool operation
- Dimensions (WxDxH): 440 x 200 x 43.2 mm
- Weight: 2.9Kg (6.39lb)

Components and Modules

M4250-10G2XF-PoE++
AV Line Managed Switch

Ordering information

- Americas: GSM4212UX-100NAS
- Europe: GSM4212UX-100EUS
- Asia Pacific: GSM4212UX-100AJS
- China: GSM4212UX-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty
- AVB License: AVB4212UX-10000S (sold separately)

- 8-port 10/100/1000BASE-T (RJ45) Ultra90 PoE++ with 720W PoE budget
- 2-port 10/100/1000BASE-T (RJ45)
- 2-port 1000/10GBASE-X (SFP+)
- Compatible 802.3af (15.4W), 802.3at (30W), 802.3bt (60, 75 and 90W)
- 60 Gbps non-blocking fabric across 12 ports
- Out-of-band 1G Ethernet management port
- USB-C and RJ45 RS232 console ports and USB-A storage port
- Front black display panel and all ports in the back
- Possible reversed mounting with ports in the front
- Rack-mounting standard brackets
- Longer brackets for recessed mounting (2 inches / 5 cm)
- Threaded hole in front (1xM10) for clamps
- Threaded holes on the bottom (4xM5) for 50x100mm VESA plates
- Selectable fan modes for fanless, quiet, or cool operation
- Dimensions (WxDxH): 440 x 257 x 43.2 mm
- Weight: 3.83Kg (8.44lb)

Components and Modules

M4250-12M2XF
AV Line Managed Switch

Ordering information

- Americas: MSM4214X-100NAS
- Europe: MSM4214X-100EUS
- Asia Pacific: MSM4214X-100AJS
- China: MSM4214X-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty
- AVB License: AVB4214X-10000S (sold separately)

- 12-port 100/1000/2.5GBASE-T (RJ45)
- 2-port 1000/10GBASE-X (SFP+)
- 100 Gbps non-blocking fabric across 14 ports
- Out-of-band 1G Ethernet management port
- USB-C and RJ45 RS232 console ports and USB-A storage port
- Front black display panel and all ports in the back
- Possible reversed mounting with ports in the front
- Rack-mounting standard brackets
- Longer brackets for recessed mounting (2 inches / 5 cm)
- Threaded hole in front (1xM10) for clamps
- Threaded holes on the bottom (4xM5) for 50x100mm VESA plates
- Selectable fan modes for fanless, quiet, or cool operation
- Dimensions (WxDxH): 440 x 100 x 43.2 mm
- Weight: 1.74Kg (3.85lb)

Components and Modules

M4250-16XF

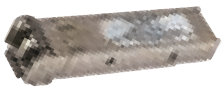
AV Line Managed Switch

Ordering information

- Americas: XSM4216F-100NAS
- Europe: XSM4216F-100EUS
- Asia Pacific: XSM4216F-100AJS
- China: XSM4216F-100PRS
- Warranty: Lifetime ProSAFE Hardware Warranty
- AVB License: AVB4216F-10000S (sold separately)

- 16-port 1000/10GBASE-X (SFP+)
- 320 Gbps non-blocking fabric across 16 ports
- Out-of-band 1G Ethernet management port
- USB-C and RJ45 RS232 console ports and USB-A storage port
- Front black display panel and all ports in the back
- Possible reversed mounting with ports in the front
- Rack-mounting standard brackets
- Longer brackets for recessed mounting (2 inches / 5 cm)
- Threaded hole in front (1xM10) for clamps
- Threaded holes on the bottom (4xM5) for 50x100mm VESA plates
- Selectable fan modes for fanless, quiet, or cool operation
- Dimensions (WxDxH): 440 x 100 x 43.2 mm
- Weight: 1.74Kg (3.85lb)

GBIC SFP and SFP+ Optics for M4250 series

Ordering information • Worldwide: see table below • Warranty: 5 years	**Multimode Fiber (MMF)**		**Single mode Fiber (SMF)**
	OM1 or OM2 62.5/125µm	OM3 or OM4 50/125µm	9/125µm
10 Gigabit SFP+  • Fits into M4250 SFP+ interfaces	**AXM763** 10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 220m (722 ft) **AXM763-10000S (1 unit)**	**AXM763** 10GBase-LRM long reach multimode 802.3aq - LC duplex connector up to 260m (853 ft) **AXM763-10000S (1 unit)** **AXM761** 10GBase-SR short reach multimode LC duplex connector 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)** **AXM764** 10GBase-LR LITE single mode LC duplex connector up to 2km (1.2 mile) **AXM764-10000S (1 unit)**
Gigabit SFP  • Fits into M4250 SFP+ and SFP interfaces	**AGM731F** 1000Base-SX short range multimode LC duplex connector up to 275m (902 ft) **AGM731F (1 unit)**	**AGM731F** 1000Base-SX short range multimode LC duplex connector OM3: up to 550m (1,804 ft) OM4: up to 1,000m (3,280 ft) **AGM731F (1 unit)**	**AGM732F** 1000Base-LX long range single mode LC duplex connector up to 10km (6.2 miles) **AGM732F (1 unit)**

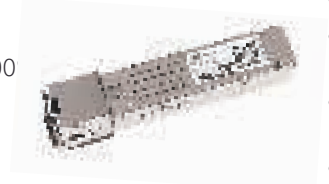
AGM734
1000BASE-T RJ45 SFP (Gigabit)

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

- Fits into M4250 SFP+ and SFP interfaces
- 1 port Gigabit RJ45
- Supports only 1000Mbps full-duplex mode
- Up to 100m (328 ft) with Cat5 RJ45 or better
- Conveniently adds 1G copper connectivity to M4250 fiber interfaces

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

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



- Fits into M4250 SFP+ interfaces
- 1 port 10GBASE-T RJ45
- Copper connectivity up to 30 m (98 feet) distance
- CAT6a or better wiring required for 10GBASE-T up to 30 meters
- Conveniently adds 10G copper connectivity to M4250 fiber interfaces

Direct Attach Cables for M4250 series

Ordering information • Worldwide: see table below • Warranty: 5 years	SFP+ to SFP+		
	1 meter (3.3 ft)	3 meters (9.8 ft)	5 meters (16.4 ft)
10 Gigabit DAC 	**AXC761** 10GSFP+ Cu (passive) SFP+ connectors **AXC761-10000S (1 unit)**	**AXC763** 10GSFP+ Cu (passive) SFP+ connectors **AXC763-10000S (1 unit)**	**AXC765** 10GSFP+ Cu (active) SFP+ connectors **AXC765-10000S (1 unit)**
	7 meters (23.0 ft)	10 meters (32.8 ft)	15 meters (49.2 ft)
	**AXC767** 10GSFP+ Cu (active) SFP+ connectors **AXC767-10000S (1 unit)**	**AXC7610** 10GSFP+ Cu (active) SFP+ connectors **AXC7610-10000S (1 unit)**	**AXC7615** 10GSFP+ (duplex fiber optic) SFP+ connectors **AXC7615-10000S (1 unit)**
	20 meters (65.6 ft)		
	**AXC7620** 10GSFP+ (duplex fiber optic) SFP+ connectors **AXC7620-10000S (1 unit)**		
• Fits into M4250 SFP+ interfaces			

Technical Specifications

Requirements based on 13.0 software release

Model Name	Description	Model number
M4250-10G2F-PoE+	AV Line 8x1G PoE+ 125W 2x1G and 2xSFP Managed Switch	GSM4212P
M4250-10G2XF-PoE+	AV Line 8x1G PoE+ 240W 2x1G and 2xSFP+ Managed Switch	GSM4212PX
M4250-10G2XF-PoE++	AV Line 8x1G Ultra90 PoE++ 720W 2x1G and 2xSFP+ Managed Switch	GSM4212UX
M4250-12M2XF	AV Line 12x2.5G and 2xSFP+ Managed Switch	MSM4214X
M4250-16XF	AV Line 16x1G/10G SFP+ Managed Switch	XSM4216F

Physical Interfaces

Gigabit and 10 Gigabit Ethernet Ports	Auto-sensing RJ45 PoE 10/100/1000BASE-T	Auto-sensing RJ45 10/100/1000BASE-T	Auto-sensing RJ45 100/1000/2.5GBASE-T	Auto-sensing SFP 100/1000BASE-X	Auto-sensing SFP+ 1000/10GBASE-X
M4250-10G2F-PoE+	8 ports PoE+ (125W)	2	-	2	-
M4250-10G2XF-PoE+	8 ports PoE+ (240W)	2	-	-	2
M4250-10G2XF-PoE++	8 ports Ultra90 PoE++ (720W)	2	-	-	2
M4250-12M2XF	-	-	12	-	2
M4250-16XF	-	-	-	-	16

Total Usable Port Count	1G Ports	2.5G Ports	10G Ports
M4250-10G2F-PoE+	12	-	-
M4250-10G2XF-PoE+	10	-	2
M4250-10G2XF-PoE++	10	-	2
M4250-12M2XF	-	12	2
M4250-16XF	-	-	16

Management Ports	Console ports	Service port (Out-of-band Ethernet)	Storage port
All models	Serial RS232 RJ45 (rear); USB-C (rear)	1 x RJ45 10/100/1000BASE-T (rear)	1 x USB-A (front)

Fixed Power Supplies
All models: Internal PSU with on/off switch

Fixed fans
All models: Side-to-side airflow

Power over Ethernet

PSE Capacity	PoE+ Ports (802.3at)	Ultra90 PoE++ Ports (802.3bt)
M4250-10G2F-PoE+	8	-
M4250-10G2XF-PoE+	8	-
M4250-10G2XF-PoE++	-	8

Ultra90 PoE++ 802.3bt is compatible with: 802.3af PoE (15.4W), 802.3at PoE++ (30W), and 802.3bt (60W, 75W and 90W).

PoE Budget	PoE Budget @ 110V AC in
M4250-10G2F-PoE+	125 Watts
M4250-10G2XF-PoE+	240 Watts
M4250-10G2XF-PoE++	720 Watts

Features Support	M4250-10G2F-PoE+	M4250-10G2XF-PoE+	M4250-10G2XF-PoE++
IEEE 802.3af (up to 15.4W per port)	Yes	Yes	Yes
IEEE 802.3at (up to 30W per port)	Yes	Yes	Yes
IEEE 802.3bt (up to 90W per port)	No	No	Yes
IEEE 802.3at Layer 2 (LLDP) method	Yes	Yes	Yes
IEEE 802.3at 2-event classification	Yes	Yes	Yes
IEEE 802.3bt Layer 2 (LLDP) method	No	No	Yes
IEEE 802.3bt auto-classification method	No	No	Yes
Pre-802.3bt standard method	No	No	Yes
PoE timer / schedule (week, days, hours)	Yes	Yes	Yes

Processor/Memory				
Processor (CPU) - all models	Integrated ARM A9 1.25Ghz CPU in switching silicon (32-bit)			
System memory (RAM) - all models	2 GB			
Code storage (flash) - all models	256 MB		Dual firmware image	
Packet Buffer Memory				
All models	16 Mb		Dynamically shared across only used ports	
Performance Summary				
Switching fabric				
M4250-10G2F-PoE+	24 Gbps		Line-rate (non blocking fabric)	
M4250-10G2XF-PoE+, M4250-10G2XF-PoE++	60 Gbps			
M4250-12M2XF	100 Gbps			
M4250-16XF	320 Gbps			
Throughput (64-byte frames)				
M4250-10G2F-PoE+	17.86 Mpps			
M4250-10G2XF-PoE+, M4250-10G2XF-PoE++	44.64 Mpps			
M4250-12M2XF	74.40 Mpps			
M4250-16XF	238.08 Mpps			
Latency - 10G Fiber	**64-byte frames**	**512-byte frames**	**1024-byte frames**	**1518-byte frames**
M4250-10G2F-PoE+	-	-	-	-
M4250-10G2XF-PoE+	0.838µs	0.821µs	0.820µs	0.819µs
M4250-10G2XF-PoE++	0.807µs	0.791µs	0.790µs	0.789µs
M4250-12M2XF	0.807µs	0.791µs	0.790µs	0.789µs
M4250-16XF	0.811µs	0.834µs	0.860µs	0.831µs
Latency - 1G Fiber	**64-byte frames**	**512-byte frames**	**1024-byte frames**	**1518-byte frames**
M4250-10G2F-PoE+	2.271µs	2.257µs	2.267µs	2.266µs
M4250-10G2XF-PoE+	1.169µs	1.174µs	1.159µs	1.154µs
M4250-10G2XF-PoE++	1.148µs	1.141µs	1.137µs	1.156µs
M4250-12M2XF	1.186µs	1.178µs	1.156µs	1.173µs
M4250-16XF	1.274µs	1.292µs	1.291µs	1.297µs
Latency - 1G Copper	**64-byte frames**	**512-byte frames**	**1024-byte frames**	**1518-byte frames**
M4250-10G2F-PoE+	2.133µs	2.136µs	2.131µs	2.142µs
M4250-10G2XF-PoE+	2.140µs	2.140µs	2.137µs	2.144µs
M4250-10G2XF-PoE++	1.837µs	1.829µs	1.828µs	1.826µs
M4250-12M2XF	2.843µs	2.836µs	2.834µs	2.836µs
M4250-16XF	-	-	-	-
Latency - 2.5G Copper	**64-byte frames**	**512-byte frames**	**1024-byte frames**	**1518-byte frames**
M4250-10G2F-PoE+	-	-	-	-
M4250-10G2XF-PoE+	-	-	-	-
M4250-10G2XF-PoE++	-	-	-	-
M4250-12M2XF	6.013µs	6.014µs	6.012µs	6.016µs
M4250-16XF	-	-	-	-
Green Ethernet				
Energy Efficient Ethernet (EEE)	Compliant with IEEE 802.3az Energy Efficient Ethernet Task Force		Deactivated by default	

Other Metrics					
Forwarding mode	Store-and-forward				
Addressing	48-bit MAC address				
Address database size	16K MAC addresses				
Number of VLANs	4,093 VLANs (802.1Q) simultaneously				
Number of multicast groups filtered (IGMP)	4K total (2,048 IPv4 and 2,048 IPv6)				
Number of Link Aggregation Groups (LAGs)	8 LAGs with up to 8 ports per group	802.3ad / 802.1AX-2008			
Number of hardware queues for QoS	8 queues				
Number of routes IPv4 IPv6	894 IPv4 Unicast Routes in Default IPv4 Basic SDM Template 126 IPv6 Unicast Routes in Default IPv4 Basic SDM Template	SDM (System Data Management, or switch database) templates allow for granular system resources distribution depending on IPv4 or IPv6 applications			
Number of static routes IPv4 IPv6	 64 64				
RIP application route scaling IPv4	 32 in Default IPv4 Basic SDM Template				
Number of IP interfaces (port or VLAN)	128				
Jumbo frame support	up to 12KB packet size				
Acoustic noise	@ 25°C ambient (77°F)				
Testing method	Following the ISO-7779 standard. Bystander Mode. Chamber Temp 25°C during testing unless noted otherwise. Full, 100%, Data and PoE loaded. Worst case.				
SPL (Sound Pressure Level)	dBA values are SPL (Sound Pressure Level) values, testing following the ISO-7779 standard				
Fan management	Three modes are configurable using the AV GUI or the CLI: Fan Off mode, Quiet mode (default), and Cool mode				
Fan Off mode	M4250-10G2F-PoE+	M4250-10G2XF-PoE+	M4250-10G2XF-PoE++	M4250-12M2XF	M4250-12M2XF
Acoustic noise	0dBA (fanless)	0dBA (fanless)	0dBA (fanless)	0dBA (fanless)	0dBA (fanless)
Maximum conditions	Ambient 25°C, Sensor ≤42°C, PoE Power Load 80W, all ports can be used	Ambient 25°C, Sensor ≤44°C, PoE Power Load 90W, all ports can be used	Ambient 25°C, Sensor ≤67°C, PoE Power Load 45W, all ports can be used	Ambient 25°C, Sensor ≤64°C, 4 ports 2.5G used in block 1-6 and 4 ports 2.5G used in block 7-12, no SFP+	Ambient 25°C, Sensor ≤78°C, 8 ports SFP+
Case Temperature (top)	37.1°C	38.4°C	42.3°C	56°C	36.2°C
Quiet mode	M4250-10G2F-PoE+	M4250-10G2XF-PoE+	M4250-10G2XF-PoE++	M4250-12M2XF	M4250-12M2XF
Conditions	Ambient 25°C, Sensor ≤36°C, PoE Power Load 125W, all ports can be used	Ambient 25°C, Sensor ≤37°C, PoE Power Load 240W, all ports can be used	Ambient 25°C, Sensor ≤49°C, PoE Power Load 0-90W, all ports can be used	Ambient 25°C, Sensor ≤58°C, all ports can be used	Ambient 25°C, Sensor ≤67°C, all ports can be used
Fan duty	25	25	25	25	25
Acoustic noise	27.38dBA	27.4dBA	34.57dBA	28.5dBA	27.44dBA
Case Temperature (top)	35.9°C	40.6°C	41.1°C	53.5°C	41.6°C
Conditions	If ambient temperature is higher than 25°C and when 36°C < Sensor ≤39°C	If ambient temperature is higher than 25°C and when 37°C < Sensor ≤40°C	Ambient 25°C, Sensor ≤49°C, PoE Power Load 90-180W	If ambient temperature is higher than 25°C and when 58°C < Sensor ≤61°C	If ambient temperature is higher than 25°C and when 67°C < Sensor ≤70°C
Fan duty	50	50	30	50	50
Acoustic noise	TBD	39.22dBA	40dBA	TBD	TBD
Case Temperature (top)	TBD	34°C	40.8°C	TBD	TBD

Conditions	If ambient temperature is higher than 25°C and when 39°C < Sensor ≤42°C	If ambient temperature is higher than 25°C and when 40°C < Sensor ≤43°C	Ambient 25°C, Sensor ≤49°C, PoE Power Load 180-720W, all ports can be used	If ambient temperature is higher than 25°C and when 61°C < Sensor ≤64°C	If ambient temperature is higher than 25°C and when 70°C < Sensor ≤73°C
Fan duty	75	75	40	75	75
Acoustic noise	TBD	TBD	47.19dBA	TBD	TBD
Case Temperature (top)	TBD	TBD	52.1°C	TBD	TBD
Conditions	If ambient temperature is higher than 25°C and when Sensor > 42°C	If ambient temperature is higher than 25°C and when Sensor > 43°C	If ambient temperature is higher than 25°C and when 49°C < Sensor ≤55°C 55°C < Sensor ≤60°C Sensor > 60°C	If ambient temperature is higher than 25°C and when Sensor > 64°C	If ambient temperature is higher than 25°C and when Sensor > 73°C
Fan duty	100	100	60 80 100	100	100
Acoustic noise	55dBA	56dBA	TBD TBD 60dBA	55dBA	57dBA
Case Temperature (top)	27.2°C	30.9°C	TBD TBD 41.8°C	33.2°C	30.3°C
Cool mode	M4250-10G2F-PoE+	M4250-10G2XF-PoE+	M4250-10G2XF-PoE++	M4250-12M2XF	M4250-12M2XF
Fan duty	100	100	100	100	100
Acoustic noise	55dBA	56dBA	60dBA	55dBA	57dBA
Case Temperature (top)	27.2°C when ambient 25°C	30.9°C when ambient 25°C	41.8°C when ambient 25°C	33.2°C when ambient 25°C	30.3°C when ambient 25°C

Heat Dissipation (BTU)	Without PoE, all ports	With Max PoE, all ports	Standby without any port connection
M4250-10G2F-PoE+	17.32W - 59.13 BTU/hr	163.9W - 559.55 BTU/hr	8.53W - 29.12BTU/hr
M4250-10G2XF-PoE+	25W - 85.35 BTU/hr	306.4W - 1046.05 BTU/hr	12.96W - 44.24BTU/hr
M4250-10G2XF-PoE++	26.3W - 89.79 BTU/hr	837.7W - 2859.91 BTU/hr	18W - 61.45BTU/hr
M4250-12M2XF	37.9W - 129.39 BTU/hr	-	14.1W - 48.14BTU/hr
M4250-16XF	47.84W - 163.33 BTU/hr	-	19.27W - 65.78BTU/hr

Mean Time Between Failures (MTBF)	25 °C ambient (77 °F)	@ 45 °C ambient (113 °F)	@ 50 °C ambient (122 °F)
M4250-10G2F-PoE+	778,769 hours (~88.9 years)	530,659 hours (~60.6 years)	-
M4250-10G2XF-PoE+	576,889 hours (~65.9 years)	562,708 hours (~64.2 years)	-
M4250-10G2XF-PoE++	947,871 hours (~108.2 years)	493,860 hours (~56.4 years)	-
M4250-12M2XF	720,892 hours (~82.3 years)	-	416,021 hours (~47.5 years)
M4250-16XF	844,633 hours (~96.4 years)	-	490,265 hours (~56 years)

L2 Services - VLANs			
IEEE 802.1Q VLAN Tagging	Yes	802.1Q-1998	Up to 4,093 VLANs - 802.1Q Tagging
Protocol Based VLANs	Yes		
IP subnet	Yes		
ARP	Yes		
IPX	Yes		
Subnet based VLANs	Yes		
MAC based VLANs	Yes		
Voice VLAN	Yes	Based on phones OUI bytes (internal database, or user-maintained) or protocols (SIP, H323 and SCCP)	
Private Edge VLAN	Yes		
Private VLAN	Yes		
IEEE 802.1x	Yes	802.1x-2004	
Guest VLAN	Yes		
RADIUS based VLAN assignment via .1x	Yes	IP phones and PCs can authenticate on the same port but under different VLAN assignment policies	
RADIUS based Filter ID assignment via .1x	Yes		
MAC-based .1x	Yes		
Unauthenticated VLAN	Yes		
Double VLAN Tagging	Yes		
Enabling dvlan-tunnel makes interface	Yes		
Global ethertype (TPID)	Yes		
Interface ethertype (TPID)	Yes		
Customer ID using PVID	Yes		
GARP with GVRP/GMRP	Yes	Automatic registration for membership in VLANs or in multicast groups	
Multiple Registration Protocol (MRP)	Yes	Can replace GARP functionality	
Multicast VLAN Registration Protocol (MVRP)	Yes	Can replace GARP functionality	
MVR (Multicast VLAN registration)	Yes		
L2 Services - Availability			
IEEE 802.3ad - LAGs	Yes	Up to 8 LAGs and up to 8 ports per group	
LACP	Yes		
LACP automatically reverts to and from Static LAG	Yes		
Static LAGs	Yes		
LAG Hashing	Yes		
LAG Member Port Flaps Tracking	Yes		
Storm Control	Yes		
IEEE 802.3x (Full Duplex and flow control)	Yes		
Per port Flow Control	Yes	Asymmetric and Symmetric Flow Control	
UDLD Support (Unidirectional Link Detection)	Yes		
Normal-Mode	Yes		
Aggressive-Mode	Yes		
Link Dependency	Yes	Allow the link status of specified ports to be dependent on the link status of other ports	
IEEE 802.1D Spanning Tree Protocol	Yes		
IEEE 802.1w Rapid Spanning Tree	Yes		
IEEE 802.1s Multiple Spanning Tree	Yes		
Per VLAN STP (PVSTP) with FastUplink and FastBackbone	Yes	PVST+ interoperability	
Per VLAN Rapid STP (PVRSTP)	Yes	RPVST+ interoperability	

STP Loop Guard	Yes	
STP Root Guard	Yes	
STP BPDU Guard	Yes	
STP BPDU Filtering	Yes	
STP BPDU Flooding	Yes	
L2 Services - Multicast Filtering		
IGMPv2 Snooping Support	Yes	
IGMPv3 Snooping Support	Yes	
NETGEAR IGMP Plus™ Enhanced Implementation	Yes	For automatic multicast across M4250 / M4300 / M4500 (Spine and Leaf) at Layer 2, removing the need for L3 PIM routing
MLDv1 Snooping Support	Yes	
MLDv2 Snooping Support	Yes	
Expedited Leave function	Yes	
Static L2 Multicast Filtering	Yes	
Enable IGMP / MLD Snooping per VLAN	Yes	
IGMPv1/v2 Snooping Querier, compatible v3 queries	Yes	
MLDv1 Snooping Querier	Yes	
MGMD Snooping		
Control Packet Flooding	Yes	
Flooding to mRouter Ports	Yes	
Remove Flood-All-Unregistered Option	Yes	
Multicast VLAN registration (MVR)	Yes	
L3 Services - Multicast Routing		
IGMP Proxy	Yes	
MLD Proxy	Yes	
Any Source Multicast (ASM)	Yes	
Source Specific Multicast (SSM)	Yes	
Multicast streams routing between subnets, VLANs	Yes	
Multicast static routes (IPv4, IPv6)	Yes	
Neighbor discovery	Yes	
PIM-DM (Multicast Routing - dense mode)	Yes	
PIM-DM (IPv6)	Yes	
PIM-SM (Multicast Routing - sparse mode)	Yes	
PIM-SM (IPv6)	Yes	
PIM multi-hop RP support	Yes	
PIM Timer Accuracy	Yes	
PIM-SM Unhandled Events	Yes	
IPMC replication (hardware support)	Yes	
L3 Services - DHCP		
DHCP IPv4 / DHCP IPv6 Client	Yes	
DHCP IPv4 / DHCP IPv6 Server (Stateless, Stateful)	Yes	
DHCP Snooping IPv4 / IPv6	Yes	
BootP Relay IPv4 / IPv6	Yes	
DHCP Relay IPv4 / IPv6	Yes	

DHCP Relay Option 82 circuit-id and remote-id for VLANs	Yes	
Multiple Helper IPs	Yes	
Auto Install (DHCP options 66, 67, 150 and 55, 125)	Yes	
L3 Services - Routing		
Static Routing / ECMP Static Routing	IPv4/IPv6	
Multiple next hops to a given destination	Yes	
Load sharing, Redundancy	Yes	
Default routes	Yes	
Static Reject routes	Yes	
Port Based Routing	Yes	
VLAN Routing	Yes	
802.3ad (LAG) for router ports	Yes	
Loopback Interfaces	Yes	
RIP	IPv4	
RIPv1/RIPv2	Yes	
IP Multinetting	Yes	
ICMP throttling	Yes	
Router Discovery Protocol	Yes	
DNS Client	IPv4/IPv6	
IP Helper	Yes	
Max IP Helper entries	512	
IP Event Dampening	IPv4/IPv6	
Proxy ARP	IPv4/IPv6	
ICMP	IPv4/IPv6	
ICMP redirect detection in hardware	Yes	
Policy Based Routing (PBR)	IPv4/IPv6	
Based on the size of the packet	Yes	
Based on the Protocol of the payload (Protocol ID field)	Yes	
Based on Source MAC address	Yes	
Based on Source or Destination IP address	Yes	
Based on VLAN tag	Yes	
Based on Priority(802.1P priority)	Yes	
Network Monitoring and Discovery Services		
ISDP (Industry Standard Discovery Protocol)	Yes	Can interoperate with devices running CDP
802.1ab LLDP	Yes	
802.1ab LLDP - MED	Yes	
SNMP	V1, V2, V3	
RMON 1,2,3,9	Yes	
sFlow	Yes (IPv4 and IPv6 headers)	
Security		
Network Storm Protection, DoS		
Broadcast, Unicast, Multicast DoS Protection	Yes	
Denial of Service Protection (control plane)	Yes	Switch CPU protection
Denial of Service Protection (data plane)	Yes	Switch Traffic protection

DoS Attacks Protection	SIPDIP SMACDMAC FIRSTFRAG TCPFRAG TCPFLAG TCPPORT	UDPPORT TCPFLAGSEQ TCPOFFSET TCPSYN TCPSYNFIN TCPFINURGPSH	L4PORT ICMP ICMPV4 ICMPV6 ICMPFRAG PINGFLOOD	SYNACK	
CPU Rate Limiting	Yes	Applied to IPv4 and IPv6 multicast packets with unknown L3 addresses when IP routing/ multicast enabled			
ICMP throttling	Yes	Restrict ICMP, PING traffic for ICMP-based DoS attacks			
Management					
Management ACL (MACAL) Max Rules	Yes 64	Protects management CPU access through the LAN			
Out of band Management	Yes	In-band management can be shut down entirely when out-of-band management network			
Radius accounting	Yes	RFC 2565 and RFC 2866			
TACACS+	Yes				
Malicious Code Detection	Yes	Software image files and Configuration files with digital signatures			
Network Traffic					
Access Control Lists (ACLs)	L2 / L3 / L4	MAC, IPv4, IPv6, TCP, UDP			
Time-based ACLs	Yes				
Protocol-based ACLs	Yes				
ACL over VLANs	Yes				
Dynamic ACLs	Yes				
IEEE 802.1x Radius Port Access Authentication	Yes	Up to 48 clients (802.1x) per port are supported, including the authentication of the users domain			
802.1x MAC Address Authentication Bypass (MAB)	Yes	Supplemental authentication mechanism for non-802.1x devices, based on their MAC address only			
Network Authentication Successive Tiering	Yes	Dot1x-> MAP -> Captive Portal successive authentication methods based on configured time-outs			
Port Security	Yes				
IP Source Guard	Yes			IPv4 / IPv6	
DHCP Snooping	Yes			IPv4 / IPv6	
Dynamic ARP Inspection	Yes			IPv4 / IPv6	
IPv6 RA Guard Stateless Mode	Yes				
MAC Filtering	Yes				
Port MAC Locking	Yes				
Private Edge VLAN	Yes	A protected port doesn't forward any traffic (unicast, multicast, or broadcast) to any other protected port - same switch			
Private VLANs	Yes	Scales Private Edge VLANs by providing Layer 2 isolation between ports across switches in same Layer 2 network			
Quality of Service (QoS) - Summary					
Access Lists	Yes				
L2 MAC, L3 IP and L4 Port ACLs	Yes				
Ingress	Yes				
Egress	Yes				
Time-based	Yes				
802.3ad (LAG) for ACL assignment	Yes				
Binding ACLs to VLANs	Yes				
ACL Logging	Yes				
Support for IPv6 fields	Yes				

DiffServ QoS	Yes
Edge Node applicability	Yes
Interior Node applicability	Yes
802.3ad (LAG) for service interface	Yes
Support for IPv6 fields	Yes
Ingress/Egress	Yes
IEEE 802.1p COS	Yes
802.3ad (LAG) for COS configuration	Yes
WRED (Weighted Deficit Round Robin)	Yes
Strict Priority queue technology	Yes
Single Rate Policing	Yes (CLI only)
Committed Information Rate	Yes
Committed Burst Size	Yes
Excessive Burst Size	Yes
DiffServ feature applied to class maps	Yes
Auto-VoIP	Yes, based on protocols (SIP, H323 and SCCP) or on OUI bytes (default database and user-based OUIs) in the phone source MAC address
iSCSI Flow Acceleration	Yes
Dot1p Marking	Yes
IP DSCP Marking	Yes
QoS - ACL Feature Support	
ACL Support (general, includes IP ACLs)	Yes
MAC ACL Support	Yes
IP Rule Match Fields:	
Destination IP	Inbound/Outbound
Destination IPv6 IP	Inbound/Outbound
Destination L4 Port	Inbound/Outbound
Every Packet	Inbound/Outbound
IP DSCP	Inbound/Outbound
IP Precedence	Inbound/Outbound
IP TOS	Inbound/Outbound
Protocol	Inbound/Outbound
Source IP (for Mask support see below)	Inbound/Outbound
Source IPv6 IP	Inbound/Outbound
L3 IPv6 Flow Label	Inbound
Source L4 Port	Inbound/Outbound
TCP Flag (ack, est, fin)	Inbound/Outbound
Supports Masking	Inbound/Outbound
MAC Rule Match Fields	
COS	Inbound/Outbound
Destination MAC	Inbound/Outbound
Destination MAC Mask	Inbound/Outbound
Ethertype	Inbound/Outbound
Source MAC	Inbound/Outbound
Source MAC Mask	Inbound/Outbound
VLAN ID	Inbound/Outbound
Rules attributes	
Assign Queue	Inbound
Logging -- deny rules	Inbound/Outbound
Mirror (to supported interface types only)	Inbound
Redirect (to supported interface types only)	Inbound
Rate Limiting -- permit rules	Inbound/Outbound

Interface	
Inbound direction	Yes
Outbound direction	Yes
Supports LAG interfaces	Yes
Supports Control-plane interface	Yes
Multiple ACLs per interface, dir	Yes
Mixed-type ACLs per interface, dir	Yes
Mixed L2/IPv4 ACLs per interface, inbound	Yes
Mixed IPv4/IPv6 ACLs per interface, inbound	Yes
Mixed IPv4/IPv6 ACLs per interface, outbound	Yes
QoS - DiffServ Feature Support	
DiffServ Supported	Yes
Class Type	
All	Yes
Class Match Criteria	
COS	Inbound/Outbound
COS2 (Secondary COS)	Inbound
Destination IP (for Mask support see below)	Inbound/Outbound
Destination IPv6 IP	Inbound/Outbound
Destination L4 Port	Inbound/Outbound
Destination MAC (for Mask support see below)	Inbound/Outbound
Ethertype	Inbound/Outbound
Every Packet	Inbound/Outbound
IP DSCP	Inbound/Outbound
IP Precedence	Inbound/Outbound
IP TOS (for Mask support see below)	Inbound/Outbound
Protocol	Inbound/Outbound
Reference Class	Inbound/Outbound
Source IP (for Mask support see below)	Inbound/Outbound
Source IPv6 IP	Inbound/Outbound
L3 IPv6 Flow Label	Inbound
Source L4 Port	Inbound/Outbound
Source MAC (for Mask support see below)	Inbound/Outbound
VLAN ID (Source VID)	Inbound/Outbound
VLAN ID2 (Secondary VLAN) (Source VID)	Inbound/Outbound
Supports Masking	Inbound/Outbound
Policy	
Out Class Unrestricted	Yes
Policy Attributes -- Inbound	
Assign Queue	Yes
Drop	Yes
Mark COS	Yes
Mark COS-AS-COS2	Yes
Mark COS2 (Secondary COS)	Yes
Mark IP DSCP	Yes
Mark IP Precedence	Yes
Mirror (to supported interface types only)	Yes
Police Simple	Yes
Police Single-Rate	Yes
Police Two-Rate	Yes
Police Color Aware Mode	Yes
Redirect (to supported interface types only)	Yes

Policy Attributes -- Outbound	Yes
Drop	Yes
Mark COS	Yes
Mark IP DSCP	Yes
Mark IP Precedence	Yes
Mirror (to supported interface types only)	Yes
Police Simple	Yes
Police Single-Rate	Yes
Police Two-Rate	Yes
Police Color Aware Mode	Yes
Redirect (to supported interface types only)	Yes
Service Interface	
Inbound Slot.Port configurable	Yes
Inbound 'All' Ports configurable	Yes
Outbound Slot.Port configurable	Yes
Outbound 'All' Ports configurable	Yes
Supports LAG interfaces	Yes
Mixed L2/IPv4 match criteria, inbound	Yes
Mixed IPv4/IPv6 match criteria, inbound	Yes
Mixed IPv4/IPv6 match criteria, outbound	Yes
PHB Support	
EF	Yes
AF4x	Yes
AF3x	Yes
AF2x	Yes
AF1x	Yes
CS	Yes
Statistics -- Policy Instance	
Offered	packets
Discarded	packets
QoS - COS Feature Support	
COS Support	Yes
Supports LAG interfaces	Yes
COS Mapping Config	
Configurable per-interface	Yes
IP DSCP Mapping	Yes
COS Queue Config	
Queue Parms configurable per-interface	Yes
Drop Parms configurable per-interface	Yes
Interface Traffic Shaping (for whole egress interface)	Yes
Minimum Bandwidth	Yes
Weighted Deficit Round Robin (WDRR) Support	Yes
Maximum Queue Weight	127
WRED Support	Yes
PTP - PTPv2 Feature Support	
PTPv2	
IEEE 1588 PTPv2 Section 10 and 11.5	Yes
Implementation	Transparent Clock (TC) End-to-End implementation considering the residence time of PTPv2 packets from ingress to egress
Limitations	PTPv1 packets are forwarded but not processed (no PTPv1 support).
Method	Residence time of the PPTPv2 packet at the egress port level
PTPv2 packet fields that are updated	The "Sync & Delay_Req" field of passing/egressing out PTPv2 packets is updated with the residence time in the switch
PTPv2 packet fields that are NOT updated	Other fields in PTPv2 packets ("Announce", "Delay_Resp", "Pdelay_Req" and "Pdelay_Resp") are not updated

TSN - Time Sensitive Networking AVB Feature Support	
AVB	
IEEE 802.1BA-2011 Audio Video Bridging (AVB)	Yes, when an AVB license is properly installed in the switch (license sold separately, see Ordering Information at the end of the Tech Spec section)
IEEE 802.1AS-2011 gPTP	Yes, with an AVB license
IEEE 802.1Qav-2009 FQTSS	Yes, with an AVB license
IEEE 802.1Qat-2010 MSRP	Yes, with an AVB license
IEEE 802.1ak MMRP	Yes, with an AVB license
IEEE 802.1ak MVRP	Yes, with an AVB license
Max number of AVB streams	256 streams per switch
Limitations	AVB isn't supported on a LAG (link aggregation group, or port channel)

Functional Summary - IETF RFC Standards and IEEE Network Protocols

Core Management

RFC 854 – Telnet	RFC 3414 – User-Based Security Model
RFC 855 – Telnet option specifications	RFC 3415 – View-based Access Control Model
RFC 1155 – SMI v1	RFC 3416 – Version 2 of SNMP Protocol Operations
RFC 1157 – SNMP	RFC 3417 – Transport Mappings
RFC 1212 – Concise MIB definitions	RFC 3418 – Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
RFC 1867 – HTML/2.0 forms with file upload extensions	Configurable Management VLAN

RFC 1901 – Community-based SNMP v2	SSL 3.0 and TLS 1.2
RFC 1908 – Coexistence between SNMP v1 and SNMP v2	– RFC 2246 – The TLS protocol, version 1.0
RFC 2068 – HTTP/1.1 protocol as updated by draft-ietf-http-v11-spec-rev-03	– RFC 2346 – AES cipher suites for Transport layer security
RFC 2271 – SNMP framework MIB	– RFC 2818 – HTTP over TLS SSH 2.0
RFC 2295 – Transparent content negotiation	SSH 2.0
RFC 2296 – Remote variant selection; RSVA/1.0 state management cookies – draft-ietf-http-state-mgmt-05	– RFC 4253 – SSH transport layer protocol
RFC 2576 – Coexistence between SNMP v1, v2, and v3	– RFC 4252 – SSH authentication protocol
RFC 2578 – SMI v2	– RFC 4254 – SSH connection protocol
RFC 2579 – Textual conventions for SMI v2	– RFC 4251 – SSH protocol architecture
RFC 2580 – Conformance statements for SMI v2	– RFC 4716 – SECSH public key file format
RFC 3410 – Introduction and Applicability Statements for Internet Standard Management Framework	– RFC 4419 – Diffie-Hellman group exchange for the SSH transport layer protocol
RFC 3411 – An Architecture for Describing SNMP Management Frameworks	HTML 4.0 specification, December 1997
RFC 3412 – Message Processing & Dispatching	Java Script™ 1.3
RFC 3413 – SNMP Applications	

Advanced Management

Industry-standard CLI with the following features:

– Scripting capability	Optional user password encryption
– Command completion	Multisession Telnet server
– Context-sensitive help	Auto Image Upgrade

Core Switching	
IEEE 802.1AB – Link level discovery protocol	IEEE 802.1BA-2011, 802.1AS-2011 gPTP, 802.1Qav-2009 FQTSS, 802.1Qat-2010 MSRP, 802.1ak MMRP, MVRP with AVB license
IEEE 802.1D – Spanning tree	IEEE 802.3ac – VLAN tagging
IEEE 802.1p – Ethernet priority with user provisioning and mapping	IEEE 802.3ad – Link aggregation
IEEE 802.1Q – Virtual LANs w/ port-based VLANs	IEEE 802.3ae – 10 GbE
IEEE 802.1S – Multiple spanning tree compatibility	IEEE 802.3af – Power over Ethernet
IEEE 802.1v – Protocol-based VLANs	IEEE 802.3at – Power over Ethernet Plus
IEEE 802.1W – Rapid spanning tree	IEEE 802.3x – Flow control
iEEE 802.1AB – LLDP	ANSI/TIA-1057 – LLDP-MED
IEEE 802.1X – Port-based authentication	GARP – Generic Attribute Registration Protocol: clause 12, 802.1D-2004
IEEE 802.3 – 10Base-T	GMRP – Dynamic L2 multicast registration: clause 10, 802.1D-2004
IEEE 802.3u – 100Base-T	GVRP – Dynamic VLAN registration: clause 11.2, 802.1Q-2003
IEEE 802.3ab – 1000Base-T	RFC 4541 – IGMP snooping and MLD snooping
IEEE 802.3bz-2016 – 2.5GBASE-T	RFC 5171 – UniDirectional Link Detection (UDLD) Protocol
Additional Layer 2 Functionality	
Broadcast storm recovery	IGMP and MLD snooping querier
Double VLAN/VMAN tagging	Port MAC locking
DHCP Snooping	MAC-based VLANs
Dynamic ARP inspection	IP source guard
Independent VLAN Learning (IVL) support	IP subnet-based VLANs
IPv6 classification APIs	Voice VLANs
Jumbo Ethernet frames	Protected ports
Port mirroring	IGMP snooping
Static MAC filtering	Green Ethernet power savings mode
System Facilities	
Event and error logging facility	RFC 2030 – Simple Network Time Protocol (SNTP) V4 for IPv4, IPv6, and OSI
Runtime and configuration download capability	RFC 2131 – DHCP Client/Server
PING utility	RFC 2132 – DHCP options and BOOTP vendor extensions
XMODEM	RFC 2865 – RADIUS client
RFC 768 – UDP	RFC 2866 – RADIUS accounting
RFC 783 – TFTP	RFC 2868 – RADIUS attributes for tunnel protocol support
RFC 791 – IP	RFC 2869 – RADIUS extensions
RFC 792 – ICMP	RFC 28869bis – RADIUS support for Extensible Authentication Protocol (EAP)
RFC 793 – TCP	RFC 5176 – RADIUS Change of Auth

RFC 826 – ARP	RFC 3164 – The BSD syslog protocol with RFC 5424 update
RFC 951 – BOOTP	RFC 3580 – 802.1X RADIUS usage guidelines
RFC 1321 – Message digest algorithm	Power Source Equipment (PSE) IEEE 802.af Powered Ethernet (DTE Power via MDI) standard
RFC 1534 – Interoperability between BOOTP and DHCP	

Core Routing

RFC 826 – Ethernet ARP	RFC 1812 – Requirements for IPv4 routers
RFC 894 – Transmission of IP datagrams over Ethernet networks	RFC 2082 – RIP-2 MD5 authentication
RFC 896 – Congestion control in IP/TCP networks	RFC 2131 – DHCP relay
RFC 1027 – Using ARP to implement transparent subnet gateways (Proxy ARP)	RFC 2385–Protection of BGP Sessions via the TCP MD5 Signature Option
RFC 1256 – ICMP router discovery messages	RFC 2453 – RIP v2
RFC 1321 – Message digest algorithm	RFC 3021 – Using 31-Bit Prefixes on Point-to-Point Links
RFC 1519 – CIDR	RFC 3046 – DHCP/BOOTP relay

Quality of Service - DiffServ

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

Quality of Service - Access Control Lists (ACLs)

Permit/deny actions for inbound or outbound IP traffic classification based on: – Type of service (ToS) or differentiated services (DS) DSCP field – Source IP address – Destination IP address – TCP/UDP source port – TCP/UDP destination port – IPv6 flow label – IP protocol number	Permit/deny actions for inbound or outbound Layer 2 traffic classification based on: – Source MAC address – Destination MAC address – EtherType – VLAN identifier value or range (outer and/or inner VLAN tag) – 802.1p user priority (outer and/or inner VLAN tag) Optional rule attributes: – Assign matching traffic flow to a specific queue – Redirect or mirror (flow-based mirroring) matching traffic flow to a specific port – Generate trap log entries containing rule hit counts

Quality of Service - Class of Service (CoS)

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

Core Multicast

RFC 1112 – Host extensions for IP multicasting	RFC3973 – PIM-DM
RFC 2236 – IGMP v2	RFC4601 – PIM-SM
RFC 2710 – MLDv1	Draft-ietf-magma-igmp-proxy-06.txt – IGMP/MLD-based multicast forwarding (IGMP/MLD proxying)

RFC 2365 – Administratively scoped boundaries	Draft-ietf-magma-igmpv3-and-routing-05.txt – IGMPv3 and multicast routing protocol interaction
RFC 3376 – IGMPv3	Static RP configuration
RFC3810 – MLDv2	Static RP configuration
Core IPv6 Routing	
RFC 1981 – Path MTU for IPv6	RFC 3493 – Basic socket interface for IPv6
RFC 2373 – IPv6 addressing	RFC 3513 – Addressing architecture for IPv6
RFC 2460 – IPv6 protocol specification	RFC 3542 – Advanced sockets API for IPv6
RFC 2461 – Neighbor discovery	RFC 3587 – IPv6 global unicast address format
RFC 2462 – Stateless autoconfiguration	RFC 3736 – Stateless DHCPv6
RFC 2464 – IPv6 over Ethernet	RFC 4213 – Basic transition mechanisms for IPv6
RFC 2711 – IPv6 router alert	RFC 4291 – Addressing architecture for IPv6
RFC 3056–Connection of IPv6 Domains via IPv4 Clouds	RFC 4443 – Internet Control Message Protocol (ICMPv6) for the IPv6 Specification
RFC 3315 –Dynamic Host Configuration Protocol for IPv6 (DHCPv6)	RFC 6164 – Using 127-Bit IPv6 Prefixes on Inter-Router Links
RFC 3484 – Default address selection for IPv6	RFC 6583 – Operational Neighbor Discovery Problems
Supported MIBs	
Base Package MIBs	
ANSI/TIA-1057 – LLDP-EXT-MED-MIB	RFC 2674 – Q-BRIDGE-MIB
DIFFSERV DSCP TC (Draft – no RFC)	RFC 2677 – IANA Address Family Numbers MIB
DNS-RESOLVER-MIB (IETF DNS Working Group)	RFC 2819 – RMON MIB
DNS-SERVER-MIB (IETF DNS Working Group)	RFC 2925 – DISMAN-PING-MIB and DISMAN-TRACEROUTE-MIB
GreenEthernet Private MIB	RFC 3273 – RMON MIB for High Capacity Networks
IANA-ADDRESS-FAMILY-NUMBERS-MIB (IANA (3/2002)	RFC 3411 – SNMP Management Frameworks MIB
IEEE 802.1AB-2004 – LLDP MIB	RFC 3411 – SNMP-FRAMEWORK-MIB
IEEE 802.1AB-2005 – LLDP-EXT-DOT3-MIB	RFC 3412 – SNMP-MPD-MIB
POWER ETHERNET MIB (Draft – no RFC)	RFC 3413 – SNMP-NOTIFICATION-MIB
RFC 1155 – SMI-MIB	RFC 3413 – SNMP-PROXY-MIB (initial revision published as RFC 2273)
RFC 1450 – SNMPV2-MIB	RFC 3413 – SNMP-TARGET-MIB (initial revision published as RFC 2273)
RFC 2273 – SNMP Notification MIB, SNMP Target MIB	RFC 3414 – User-based Security Model for SNMPv3 MIB
RFC 2392 – IANA RTPROTO-MIB	RFC 3415 – View-based Access Control Model for SNMP MIB
RFC 2572 – SNMP Message Processing and Dispatching MIB	RFC 3417 – SNMPV2-TM
RFC 2574 – User-based Security Model for SNMPv3 MIB	RFC 3418 – SNMPv2 MIB
RFC 2575 – View-based Access Control Model for SNMP MIB	RFC 3434 – RMON MIB Extensions for High Capacity Alarms
RFC 2576 – SNMP Community MIB	RFC 3584 – SNMP Community MIB
RFC 2578 – SNMPV2-SMI	RFC 3621 – POWER-ETHERNET-MIB

RFC 2579 – SNMPV2-TC	SNMP-RESEARCH-MIB– SNMP research MIB definitions
RFC 2580– SNMPV2-CONF	SR-AGENT-INFO-MIB– SNMP research MIB definitions
RFC 2613 – SMON-MIB	USM-TARGET-TAG-MIB – SNMP research MIB definitions
Switching Package MIBs	
RFC 1213 – MIB-II	RFC 2011 – SNMPv2 Management Information Base
ANSI/TIA 1057 – LLDP-MED MIB	RFC 2213 – Integrated Services MIB
FASTPATH Enterprise MIBs supporting switching features	RFC 2233 – IF-MIB
FASTPATH-MMRP-MIB – MMRP private MIB for IEEE 802.1Q devices	RFC 2233 – The Interfaces Group MIB using SMI v2
FASTPATH-MSRP-MIB – MSRP private MIB for IEEE 802.1Q devices	RFC 2674 – VLAN and Ethernet Priority MIB (P-Bridge MIB)
FASTPATH-MVRP-MIB – MVRP private MIB for IEEE 802.1Q devices	RFC 2737 – Entity MIB (Version 2)
IANAifType-MIB – IANAifType Textual Convention	RFC 2819 – RMON Groups 1,2,3, & 9
IEEE 802.1AB – LLDP MIB	RFC 2863 – Interfaces Group MIB
IEEE 802.3AD MIB (IEEE8021-AD-MIB)	RFC 3291 – INET Address MIB
IEEE Draft P802.1AS/D7.0 (IEEE8021-AS-MIB)	RFC 3291 – Textual Conventions for Internet Network Addresses
IEEE LAG-MIB – Link Aggregation module for managing IEEE 802.3ad	RFC 3621 – Power Ethernet MIB
LLDP-EXT-DOT3-MIB (part of IEEE Std 802.1AB)	RFC 3635 – Etherlike MIB
LLDP-MIB (part of IEEE Std 802.1AB)	RFC 3636 – IEEE 802.3 Medium Attachment Units (MAUs) MIB
Private MIB for 802.1Qat, 802.1Qav Configuration	RFC 4022 – Management Information Base for the Transmission Control Protocol (TCP)
RFC 1493 – Bridge MIB	RFC 4113 – Management Information Base for the User Datagram Protocol (UDP)
RFC 1643 – Definitions of managed objects for the Ethernet-like interface types	RFC 4444 – IS-IS MIB
Routing Package MIBs	
FASTPATH Enterprise MIBs supporting routing features	RFC 2096 – IP Forwarding Table MIB
IANA-Address-Family-Numbers-MIB	RFC 2668 – IEEE 802.3 Medium Attachment Units (MAUs) MIB
IPv6 Management MIBs	
RFC 3419 – TRANSPORT-ADDRESS-MIB IPv6-ICMP-MIB (draft)	IPv6-MIB (draft)
IPv6 Routing MIBs	
RFC 2465 – IPv6 MIB	RFC 2466 – ICMPv6 MIB
QoS Package MIB	
RFC 3289 – DIFFSERV-MIB & DIFFSERV-DCSP-TC MIBs	Private MIBs for full configuration of DiffServ, ACL, and CoS functionality
Security MIB	
RFC 2618 – RADIUS Authentication Client MIB	IEEE8021-PAE-MIB – The Port Access Entity module for managing IEEE 802.1X
RFC 2620 – RADIUS Accounting MIB	IEEE 802.1X MIB (IEEE 8021-PAE-MIB 2004 Revision)

Multicast Package MIBs		
RFC 2932 – IPv4 Multicast Routing MIB for PIMDMv4	draft-ietf-magma-mgmd-mib-05.txt –Multicast Group Membership Discovery MIB (both IGMP and MLD)	
RFC 5060 – PIM-SM and PIM-DM MIB for IPv4 and IPv6	FASTPATH Enterprise MIBs supporting multicast features	
RFC 5240 – BSR Protocol MIB		
NETGEAR-BOXSERVICES-PRIVATE-MIB for SFP/SFP+ MIB Support		
boxServicesFiberPortsOpticsTable	boxServicesFiberPortOpticsPowerOut	
BoxServicesFiberPortsOpticsEntry	boxServicesFiberPortOpticsPowerIn	
boxServicesFiberPortIndex	boxServicesFiberPortOpticsTxFault	
boxServicesFiberPortOpticsTemperature	boxServicesFiberPortOpticsLos	
boxServicesFiberPortOpticsVoltage	boxServicesFiberPortOpticsFaultStatus	
boxServicesFiberPortOpticsCurrent		
Management		
Password management	Yes	
Configurable Management VLAN	Yes	
Out-of-band Management	Yes	In-band management can be shut down using Management ACLs when separate management network
Auto Install (BOOTP and DHCP options 66, 67, 150 and 55, 125)	Yes	Scalable deployment process (firmware, config)
Admin access control via Radius and TACACS+	Yes	Policies, Enable
Industry standard CLI (IS-CLI)	Yes	Command Line interface
CLI commands logged to a Syslog server	Yes	
Web-based graphical user interface (GUI)	Yes	Fully functional GUI (exceptions are noted below:)
Features without Web GUI support		
Authorization List	CLI only	
Control Plane ACL	CLI only	
UDLD	CLI only	
Policy Based Routing	CLI only	
LLPF	CLI only	
QoS Policy for Single Rate	CLI only	
DHCPv6 Snooping	CLI only	
IPv6 DHCP Relay	CLI only	
eMail Alerting	CLI only	
MMRP	CLI only	
Telnet	Yes	
IPv6 management	Yes	
Dual Software (firmware) image	Yes	Allows non disruptive firmware upgrade process
Editable Configuration file	Yes	Text-based (CLI commands) configuration file
Non disruptive Config Management	Yes	With new startup configuration file, the switch gracefully resolves any differences with the running config
IS-CLI Scripting	Yes	
Port descriptions	Yes	

SNTP client over UDP port 123	Yes	Provides synchronized network timestamp either in broadcast or unicast mode
XMODEM	Yes	
SNMP v1/v2	Yes	
SNMP v3 with multiple IP addresses	Yes	
RMON 1,2,3,9	Yes	
Max Ether Stats entries	34	
Max History entries	102	
Max buckets per History entry	10	
Max Alarm entries	102	
Max Event entries	102	
Max Log entries per Event entry	10	
Port Mirroring	Yes	
Number of monitor sessions	1 (multiple sessions are configurable)	
Tx/Rx	Yes	
Many to One Port Mirroring	Yes	
LAG supported as source ports	Yes	
Max source ports in a session	Total switch port count	
Remote Port Mirroring (RSPAN)	Yes When a particular session is enabled, any traffic entering or leaving the source ports of that session is copied (mirrored) onto a Remote Switched Port Analyzer (RSPAN) VLAN	
Flow based mirroring	Yes	
Cable Test utility	Yes	CLI, Web GUI
Outbound Telnet	Yes	
SSHv2	Yes	Secure Shell version 2 (OpenSSH 7.5p1)
SSH Session Configuration	Yes	
SSL v3 and TLS v1.2 for HTTPS web-based access	Yes	Open SSL 1.0.2o)
2048-bit RSA key pairs	Yes	For SSLv3 and SSHv2
SHA2-256 and SHA2-512 cryptographic hash functions	Yes	For SSLv3 and SSHv2
File transfers (uploads, downloads)	TFTP / HTTP	
Secured protocols for file transfers	SCP / SFTP / HTTPS	
HTTP Max Sessions	16	
SSL/HTTPS Max Sessions	16	
HTTP Download (firmware)	Yes	
Email Alerting	Yes (CLI only)	
Syslog (RFC 3164) (RFC 5424)	Yes, forwarding messages via UDP using the Syslog protocol to one or more collectors or relays	
Persistent log supported	Yes	
User Admin Management		
User ID configuration	Yes	
Max number of configured users	6	
Support multiple READWRITE Users	Yes	
Max number of IAS users (internal user database)	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
M4250 series - Platform Constants	
Maximum number of remote Telnet connections	5
Maximum number of remote SSH connections	5
Number of MAC Addresses	16K
Number of VLANs	4,093 VLANs (802.1Q) simultaneously
VLAN ID Range	1 - 4093
Number of 802.1p Traffic Classes	8 classes
IEEE 802.1x Number of .1x clients per port	 48
Number of LAGs	8 LAGs with up to 8 ports per group
Maximum multiple spanning tree instances (MSTP)	16
Maximum per VLAN spanning tree instances (PVST)	32
MAC based VLANS Number supported	Yes 256
Number of network buffers	182
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 1024
Subnet based VLANs Number supported	Yes 128
Protocol Based VLANs Max number of groups Max protocols	Yes 128 16
Maximum Multicast MAC Addresses entries	1K
Jumbo Frame Support Max Size Supported	Yes 12k
Number of IP Source Guard stations	379
Number of DHCP snooping bindings	32K
Number of DHCPv6 snooping bindings	32K
Number of DHCP snooping static entries	1024
LLDP-MED number of remote nodes LLDP Remote Management address buffers LLDP Unknown TLV address buffers LLDP Organisationally Defined Large TLV buffers LLDP Organisationally Defined Small TLV buffers	32 32 100 16 100

Port MAC Locking	Yes	
Dynamic addresses per port	600	
Static addresses per port	20	
sFlow		
Number of samplers	16	
Number of pollers	16	
Number of receivers	8	
Radius		
Max Authentication servers	32	
Max Accounting servers	32	
Number of Routes (v4/v6)		
IPv4 Unicast Routes in Default IPv4 Basic SDM Template	894	SDM (System Data Management, or switch database)
IPv6 Unicast Routes in Default IPv4 Basic SDM Template	126	
RIP application route scaling (IPv4 only)	32	
Number of routing interfaces (including port/vlan)	128	
Number of static routes (v4/v6)	64/64	
DHCP Server		
Max number of pools	256	
Total max leases	2K	
DNS Client		
Concurrent requests	16	
Name server entries	8	
Seach list entries	6	
Static host entries	64	
Cache entries	128	
Domain search list entries	32	
DHCPv6 Server		
Max number of pools	16	
DNS domain names within a pool	5	
DNS server addresses within a pool	8	
Delegated prefix definitions within a pool	10	
Number of Host Entries (ARP/NDP)		
IPv4 only SDM build	4K	SDM (System Data Management, or switch database)
IPv4/IPv6 SDM build (v4/v6)	512	
Static v4 ARP Entries	128	
Number of ECMP Next Hops per Route	16	
Number of ECMP groups	128	
Total ECMP nexthops in Hardware	2048	
Maximum MFDB entries	1K	
IGMPv3 / MLDv2 Snooping Limits		
IGMPv3/MLDv2 HW entries when IP Multicast present	128/64	
IP Multicast		
IGMP Group Memberships per system	2K (IPv4) and 2K (IPv6)	
Multicast Routes	512 (IPv4) and 128 (IPv6)	
PIM-DM Neighbors	256	
PIM-SM Neighbors	256	
PIM-SM Static RP Entries	5	
PIM-SM Candidate RP Group Range Entries	20	
PIM-SM SSM Range Entries	5	
IGMP Sources processed per group per message	73	

ACL Limits	
Maximum Number of ACLs (any type)	100
Maximum Number Configurable Rules per List	1,023
Maximum ACL Rules per Interface and Direction	1,023 ingress / 511 ingress
Maximum ACL Rules per Interface and Direction (IPv6)	893 ingress / 253 egress
Maximum ACL Rules (system-wide)	16K
Maximum ACL Logging Rules (system-wide)	128
Maximum ACL per VLAN (system-wide)	64
COS Device Characteristics	
Configurable Queues per Port	8 queues (standalone) 7 queues (stack)
Configurable Drop Precedence Levels	3
DiffServ Device Limits	
Number of Queues	8 queues (standalone) 7 queues (stack)
Requires TLV to contain all policy instances combined	Yes
Max Rules per Class	13
Max Instances per Policy	28
Max Attributes per Instance	3
Max Service Interfaces	116
Max Table Entries	
Class Table	32
Class Rule Table	192
Policy Table	64
Policy Instance Table	768
Policy Attribute Table	2304
Max Nested Class Chain Rule Count	26
AutoVoIP number of voice calls	16
Voice VLAN number of devices	16
iSCSI Flow Acceleration	
Max Monitored TCP Ports/IP Addresses	16
Max Sessions	192
Max Connections	192
LEDs	
Per port	Speed, Link, Activity, PoE - Available both in front and in the rear
Per device	Power, Fan - Available both in front and in the rear
Physical Specifications	
Dimensions	
M4250-10G2F-PoE+	Width: 17.32 inches (440 mm); Height: 1U - 1.70 inches (43.2 mm); Depth: 7.87 inches (200 mm)
M4250-10G2XF-PoE+	Width: 17.32 inches (440 mm); Height: 1U - 1.70 inches (43.2 mm); Depth: 7.87 inches (200 mm)
M4250-10G2XF-PoE++	Width: 17.32 inches (440 mm); Height: 1U - 1.70 inches (43.2 mm); Depth: 10.12 inches (257 mm)
M4250-12M2XF	Width: 17.32 inches (440 mm); Height: 1U - 1.70 inches (43.2 mm); Depth: 3.94 inches (100 mm)
M4250-16XF	Width: 17.32 inches (440 mm); Height: 1U - 1.70 inches (43.2 mm); Depth: 7.87 inches (200 mm)
Weight	
M4250-10G2F-PoE+	6.28 lb (2.850 kg)
M4250-10G2XF-PoE+	6.39 lb (2.900 kg)
M4250-10G2XF-PoE++	8.44 lb (3.830 kg)
M4250-12M2XF	3.85 lb (1.745 kg)
M4250-16XF)	6.17 lb (2.800 kg)

Power Consumption	
All ports used, max PoE load, line-rate traffic, maximum	
M4250-10G2F-PoE+	163.9W - 559.55 BTU/hr
M4250-10G2XF-PoE+	306.4W - 1046.05 BTU/hr
M4250-10G2XF-PoE++	837.7W - 2859.91 BTU/hr
M4250-12M2XF	-
M4250-16XF	-
All ports used, no PoE, line-rate traffic, maximum	
M4250-10G2F-PoE+	17.32W - 59.13 BTU/hr
M4250-10G2XF-PoE+	25W - 85.35 BTU/hr
M4250-10G2XF-PoE++	26.3W - 89.79 BTU/hr
M4250-12M2XF	37.9W - 129.39 BTU/hr
M4250-16XF	47.84W - 163.33 BTU/hr
Standby, no connection on any port	
M4250-10G2F-PoE+	8.53W - 29.12BTU/hr
M4250-10G2XF-PoE+	12.96W - 44.24BTU/hr
M4250-10G2XF-PoE++	18W - 61.45BTU/hr
M4250-12M2XF	14.1W - 48.14BTU/hr
M4250-16XF	19.27W - 65.78BTU/hr
Environmental Specifications	
Operating:	
Temperature (non-PoE models: M4250-12M2XF, M4250-16XF)	32° to 122°F (0° to 50°C)
Temperature (all other models)	32° to 113°F (0° to 45°C)
Humidity	90% maximum relative humidity, non-condensing
Altitude	10,000 ft (3,000 m) maximum
Storage:	
Temperature	– 4° to 158°F (–20° to 70°C)
Humidity	95% maximum relative humidity, non-condensing
Altitude	10,000 ft (3,000 m) maximum
Electromagnetic Emissions and Immunity	
Certifications	CE: EN 55032:2012+AC:2013/CISPR 32:2012, EN 61000-3-2:2014, Class A, EN 61000-3-3:2013, EN 55024:2010 VCCI : VCCI-CISPR 32:2016, Class A RCM: AS/NZS CISPR 32:2013 Class A CCC: GB4943.1-2011; YD/T993-1998; GB/T9254-2008 (Class A) FCC: 47 CFR FCC Part 15, Class A, ANSI C63.4:2014 ISED: ICES-003:2016 Issue 6, Class A, ANSI C63.4:2014 BSMI: CNS 13438 Class A
Safety	
Certifications	CB report / certificate IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 UL listed (UL 1950)/cUL IEC 950/EN 60950 CE LVD: EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 RCM (AS/NZS) 60950.1:2015 CCC (China Compulsory Certificate): GB4943.1-2011; YD/T993-1998; GB/T9254-2008 (Class A) BSMI: CNS 14336-1

Package Content	
All models	Switch
	Power cord(s)
	RJ45 straight-through wiring serial console cable to DB9
	USB Type-C to USB-A 2.0 console cable
	Rubber caps for the SFP/SFP+ sockets
	Rubber footpads for tabletop installation
	Installation guide
	Two regular (short) brackets and screws for two-post rack mount (for front posts) allowing for mounting with ports on the back, or ports on the front of the rack
	Two longer brackets for two-post rack mount (for front posts) recessing the switch by 2 inches in order to make room for the cabling

Optional Modules and Accessories		
AGM731F	1000BASE-SX SFP LC Transceiver (multimode, 550m OM4/OM3 50/125µm, 275m OM2/OM1 62.5/125µm)	AGM731F
AGM732F	1000BASE-LX SFP LC Transceiver (single mode, 10km 9/125µm)	AGM732F
AGM734	1000BASE-T SFP RJ45 Transceiver	AGM734-10000S
AXC761	10G Direct Attach SFP+ to SFP+ 1 Meter Passive DAC Cable	AXC761-10000S
AXC763	10G Direct Attach SFP+ to SFP+ 3 Meter Passive DAC Cable	AXC763 -10000S
AXC765	10G Direct Attach SFP+ to SFP+ 5 Meter Active DAC Cable	AXC765-10000S
AXC767	10G Direct Attach SFP+ to SFP+ 7 Meter Active DAC Cable	AXC767 -10000S
AXC7610	10G Direct Attach SFP+ to SFP+ 10 Meter Active DAC Cable	AXC7610-10000S
AXC7615	10G Direct Attach SFP+ to SFP+ 15 Meter Fiber DAC Cable	AXC7615 -10000S
AXC7620	10G Direct Attach SFP+ to SFP+ 20 Meter Fiber DAC Cable	AXC7620 -10000S
AXM761	10GBASE-SR SFP+ LC Transceiver (multimode, 300m OM4/OM3 50/125µm, 33m OM2/OM1 62.5/125µm)	AXM761-10000S
AXM761 (pack of 10)	Pack of 10 AXM761 Transceivers (multimode, 300m OM4/OM3 50/125µm, 33m OM2/OM1 62.5/125µm)	AXM761P10-10000S
AXM762	10GBASE-LR SFP+ LC Transceiver (single mode, 10km 9/125µm)	AXM762-10000S
AXM762 (pack of 10)	Pack of 10 AXM762 Transceivers (single mode, 10km 9/125µm)	AXM762P10-10000S
AXM763	10GBASE-LRM SFP+ LC Transceiver (multimode, 260m OM4/OM3 50/125µm, 220m OM2/OM1 62.5/125µm)	AXM763-10000S
AXM764	10GBASE-LR LITE SFP+ LC Transceiver (single mode, 2km 9/125µm)	AXM764-10000S
AXM765	10GBASE-T SFP+ RJ45 Transceiver (30m)	AXM765-10000S

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

ProSupport Service Packs	
Installation contracts for:	All models
PSB0304-10000S	Remote Installation Setup and Configuration Service Contract (2-hour planned appointment)
Supplemental support contracts for:	All models
PMB0312-10000S	OnCall 24x7 1-year Category 2
PMB0332-10000S	OnCall 24x7 3-year Category 2
PMB0352-10000S	OnCall 24x7 5-year Category 2

Ordering Information

NETGEAR AV Line M4250-10G2F-PoE+ 8x1G PoE+ 125W 2x1G and 2xSFP Managed Switch (GSM4212P)			
Americas	GSM4212P-100NAS	Optional AVB License	AVB4212P-10000S
Europe	GSM4212P-100EUS		
Asia Pacific	GSM4212P-100AJS		
China	GSM4212P-100PRS		
NETGEAR AV Line M4250-10G2XF-PoE+ 8x1G PoE+ 240W 2x1G and 2xSFP+ Managed Switch (GSM4212PX)			
Americas	GSM4212PX-100NAS	Optional AVB License	AVB4212PX-10000S
Europe	GSM4212PX-100EUS		
Asia Pacific	GSM4212PX-100AJS		
China	GSM4212PX-100PRS		
NETGEAR AV Line M4250-10G2XF-PoE++ 8x1G Utra90 PoE++ 802.3bt 720W 2x1G and 2xSFP+ Managed Switch (GSM4212UX)			
Americas	GSM4212UX-100NAS	Optional AVB License	AVB4212UX-10000S
Europe	GSM4212UX-100EUS		
Asia Pacific	GSM4212UX-100AJS		
China	GSM4212UX-100PRS		
NETGEAR AV Line M4250-12M2XF 12x2.5G and 2xSFP+ Managed Switch (MSM4214X)			
Americas	MSM4214X-100NAS	Optional AVB License	AVB4214X-10000S
Europe	MSM4214X-100EUS		
Asia Pacific	MSM4214X-100AJS		
China	MSM4214X-100PRS		
NETGEAR AV Line M4250-16XF 16x1G/10G Fiber SFP+ Managed Switch (XSM4216F)			
Americas	XSM4216F-100NAS	Optional AVB License	AVB4216F-10000S
Europe	XSM4216F-100EUS		
Asia Pacific	XSM4216F-100AJS		
China	XSM4216F-100PRS		

** This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller, and covers unmodified hardware, fans and internal power supplies – not software or external power supplies, and requires product registration at https://www.netgear.com/business/registration within 90 days of purchase; see https://www.netgear.com/about/warranty for details. Intended for indoor use only.

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