NETGEAR ProSAFE® M4300 Intelligent Edge Series
Frequently Asked Questions

1. What is the M4300 series?

The ProSAFE® M4300 Stackable L3 Managed Switch Series come with 10G and 1G models in a variety of form factors and PoE+ full provisioning. All 10 Gigabit ports are independent and 1G backward compatible for progressive transition to 10G speeds. The M4300 Switch Series delivers L2/L3/L4 and IPv4/IPv6 rich services for mid-enterprise edge and SMB core with unrivalled ease of use: 10 Gigabit models can seamlessly stack with 1 Gigabit models, enabling line-rate spine and leaf stacking topologies. Non-stop forwarding (NSF) virtual chassis architecture provides advanced High Availability (HA) with hitless failover across the stack. Dual redundant, modular power supplies equipping full width models contribute to business continuity management. M4300 is ideal for server aggregation with Auto-iSCSI prioritization: two half-width M4300 switches can be installed in a single rack space for redundant Top of Rack installations. Layer 3 feature set includes static and policy-based routing, RIP, VRRP, OSPF, and PIM dynamic routing – as standard. Perfect for wireless access, unified communications and IP video, the NETGEAR M4300 Switch Series is also ready for the future, with Software-defined Network (SDN) and OpenFlow 1.3 enabled for your network.

2. What are the available M4300 models?

Model Name	M4300-8X8F	M4300-12X12F	M4300-24X24F	M4300-28G	M4300-52G	M4300-28G-PoE+	M4300-52G-PoE+
Model Number	XSM4316S	XSM4324S	XSM4348S	GSM4328S	GSM4352S	GSM4328PA (550W PSU) GSM4328PB (1,000W PSU)	GSM4352PA (550W PSU) GSM4352PB (1,000W PSU)
10/100/1000 RJ45	–	–	–	24 ports	48 ports	24 ports PoE+	48 ports PoE+
10GBASE-T RJ45	8 ports	12 ports	24 ports	2 ports	2 ports	2 ports	2 ports
1G/10G SFP+	8 ports	12 ports	24 ports	2 ports	2 ports	2 ports	2 ports
Form Factor Rack Mount	Half-width 1- or 2-unit 1U	Half-width 1- or 2-unit 1U	Full width 1-unit 1U	Full width 1-unit 1U	Full width 1-unit 1U	Full width 1-unit 1U	Full width 1-unit 1U
Power Supply	Modular 1 bay	Modular 1 bay	Modular 2 bays	Modular 2 bays	Modular 2 bays	Modular 2 bays	Modular 2 bays + RPS
Included PSU	(1) APS250W	(1) APS250W	(1) APS250W	(1) APS150W	(1) APS150W	GSM4328PA: (1) APS550W GSM4328PB: (1) APS1000W	GSM4352PA: (1) APS550W GSM4352PB: (1) APS1000W
Fans	Front-to-back	Front-to-back	Front-to-back	Front-to-back	Front-to-back	Front-to-back	Front-to-back
Noise @25°C	36.9dB	36.9dB	35.8dB	30.3dB	31.5dB	39.8dB	39.8dB
Max Power Consumption	49 Watts	97 Watts	161 Watts	34.5 Watts	47.4 Watts	GSM4328PA: 797 Watts GSM4328PB: 833.2 Watts	GSM4352PA: 865 Watts GSM4352PB: 1,628 Watts
PoE+ Budget	@110V AC	With 1 PSU, or With 2 PSUs in Redundant mode			PA Version	480 Watts	480 Watts
					PB Version	630 Watts	591 Watts
		With 2 PSUs in Shared mode			PA Version	720 Watts	720 Watts
					PB Version	720 Watts	1,010 Watts
	@220V AC	With 1 PSU, or With 2 PSUs in Redundant mode			PA Version	480 Watts	480 Watts
					PB Version	720 Watts	860 Watts
		With 2 PSUs in Shared mode			PA Version	720 Watts	720 Watts
					PB Version	720 Watts	1,440 Watts
Management	Ethernet: Out-of-band 1G port		Console: RJ45 RS232 and Mini-USB			Storage: USB	

3. The M4300 comes with half-width 10G models: how does it work?

M4300 half-width models come with two rack-mount kits: 1-unit and 2-unit kits. To install a single half-width switch in a single rack space, you will find one regular short bracket and one long mounting bracket. To install two half-width switches in a single rack space, you will find a pair of inside and outside middle mounts. After installing these middle mounts, you can slide the inside middle mounts on the left switch into the outside middle mounts on the right switch. Then you can attach the supplied short mounting brackets to the left side of the left switch and to the right side of the right switch to rack them into a single U.

4. Are the 10G copper/fiber ports "Combo"?

No, all 10G ports are fully independent on M4300-8X8F, M4300-12X12F, M4300-24X24F, M4300-28G, M4300-52G, M4300-28G-PoE+ and M4300-52G-PoE+ models.

5. Are there any pre-configured 10G stacking ports?

No, all 10G ports are configured in Ethernet mode by default. Port configuration can be easily changed to Stack mode in Web GUI (System/ Stacking / Advanced / Stack-port Configuration) or using CLI command <<#stack-port unit/slot/port stack >> in Stack Global Configuration section.

6. The M4300 offers PoE+, spine and leaf resiliency and 10G stacking in a virtual chassis footprint. What are the primary reasons to select the M4300 over the M6100 Chassis?

M4300 is cost effective solution for PoE+ edge deployment, midsize server/storage top-of-rack and SMB dependable core. While M4300 nonstop forwarding and master hitless failover offers unique high availability for stack architectures, the M6100 chassis provides the following, unmatched benefits:

- **High speed fabric** with 80G half-duplex 160G full duplex access to the backplane for each M6100 blade (1G blades line-rate to the fabric and 10G blades 3:1 oversubscription) which is must faster than comparable M4300 stack topologies. This would correspond to eight 10G ports used for any switch to switch interconnect in M4300 stack.
- **Centralized power management system** with N+1 power redundancy at the chassis level (one redundant PSU for the entire chassis, when M4300 switches require one redundant PSU per switch)
- **Modular and redundant architecture** with everlasting passive backplane and highly reliable fabric-based design
- **Modular PoE+ (30 watts per port) and UPOE (60 watts per ports)** allow to turn PoE on, with easy upgrade, easy downgrade (M4300 switches are fixed PoE+ or non-PoE switches)
- **Advanced software features** with BGP and DCB (including DCBX 802.1Qaz; Priority Flow Control PFC; Enhanced Transmission Selection ETS and FCoE FIP Snooping)

7. What are ring topologies and associated benefits?

Common for intermediate distribution frames (IDF) in K-12, horizontal or vertical ring stacking topologies, or dual ring topologies greatly simplify deployments at the edge and bring network resiliency with distributed uplinks in aggregation to the core. While reducing the number of logical units to manage, stacking also brings network resiliency with distributed uplinks in aggregation to the core:

- Horizontal or vertical ring topologies makes sense with Gigabit models when inter-switch links oversubscription requirements aren't critical
- Up to (8) M4300 switches can be aggregated using a virtual backplane and a single console or web management interface
- M4300 PoE and non-PoE versions are highly cost-effective at the edge, with built-in 10GBASE-T and SFP+ fiber uplinks and no hidden costs
- While any 10 Gigabit port can be used for stacking, SFP+ ports can be reserved for fiber uplinks to the core
- 10 Gigabit copper ports can be used for local stacking ring topology and unused 10 Gigabit fiber ports can connect remote switches to the stack
- Ideally the two top switches connecting back to the core should have priority settings forcing their roles as "management unit" and "backup unit" respectively
- This way, management unit hitless failover and nonstop forwarding ensures no single point of failure:
  - Nonstop Forwarding (NSF) enables the stack to secure forwarding end-user traffic on all other switches when the management unit fails
  - Instant failover from management unit to backup management unit is hitless for the rest of the stack
  - Since both the management unit and the backup unit connect to the core using distributed link aggregation (LACP), there is no possible service interruption while the backup management unit takes over
  - All other switches in the stack keep forwarding L2 and L3 traffic in and out, while backup unit guarantees connectivity to the core
- Other lower end solutions are causing service interruptions across the entire stack without NSF and hitless failover

8. What are redundant top-of-rack topologies and associated benefits?

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

- Management unit hitless failover and nonstop forwarding ensures no single point of failure for servers and storage equipment
- All devices can connect to both redundant top-of-rack switches using link aggregation (L2/L3/L4 LACP) with load-balancing and failover
- Variety of 10 Gigabit copper and fiber ports – all backward compatible with 1G speeds – enable any type of virtualization

- iSCSI Flow Acceleration and Automatic Protection / QoS enhance server room networks containing iSCSI initiators and iSCSI targets

- Any 10 Gigabit copper and fiber ports can be used for stacking, depending on inter-switch links oversubscription requirements

- Within the stack, a switch is elected (or chosen based on priority settings) as the "management unit"

- The other switch is designated (or chosen based on priority settings) as an alternate, backup management unit

- The Nonstop Forwarding (NSF) feature enables the stack to secure forwarding server and storage traffic when the management unit fails:
  - Power failure of the management unit
  - Other hardware failure causing the management unit to hang or to reset
  - Software failure causing the management unit to hang or to reset
  - Failover initiated by the administrator
  - Loss of cascade connectivity between the management unit and the backup unit

- Instant failover from management unit to redundant management unit is hitless for the servers and storage equipment connecting both

- As the backup management unit takes over, data streams may lose a few packets, but do not lose their IP sessions, such as iSCSI, NFS, CIFS etc...

- Other lower end solutions are causing service interruptions across the stack for servers and storage without NSF and hitless failover

- Back to normal production conditions, hitless failback requires a command in CLI or in GUI, for more control

- Hitless failback is automatic in case of new management unit (triggered or accidental) failure

9. What are spine and leaf topologies and associated benefits?

For typical collapsed core installations, with a variety of 1G and 10G access ports in branch offices, server rooms or campus high performance labs: M4300 10G models can stack with M4300 1G models, enabling innovative "spine and leaf" topologies (other ring topologies are also possible).

- Spine and leaf architectures deliver highest performance with every leaf switch (1G) connecting to every spine switch (10G)

- Every 1G "leaf" access switch connects to both 10G "spine" distribution switches

- Any 10G port (copper, fiber) and any media type (RJ45, SFP+, DAC) can be used for stacking on any M4300 model

- On 1G models, up to (4) 10G ports per switch can be used for stacking, hence allowing for line-rate aggregation to their spine

- On 10G models, up to (16) 10G ports per switch can be used for stacking, depending on inter-switch links oversubscription requirements

- Up to (8) M4300 switches can be aggregated using a virtual backplane and a single console or web management interface

- While reducing the number of logical units to manage, stacking also brings network resiliency with distributed uplinks in aggregation to main core

- In this architecture, both 10G "spine" switches connect to main core using 10G LACP link aggregation

- Using adequate priorities in the stack, both 10G "spine" switches are meant to handle "management unit" and "backup management unit" roles

- This way, management unit hitless failover and nonstop forwarding ensures no single point of failure:
  - Nonstop Forwarding (NSF) enables the stack to secure forwarding end-user traffic on all other switches when the management unit fails
  - Instant failover from management unit to backup management unit is hitless for the rest of the stack
  - Since both the management unit and the backup unit connect to the core using distributed link aggregation (LACP), there is no possible service interruption while the backup management unit takes over
  - All other switches in the stack keep forwarding L2 and L3 traffic in and out, while backup unit guarantees connectivity to the core

- Back to normal production conditions, hitless failback requires a command in CLI or in GUI, for more control

- Hitless failback is automatic in case of new management unit (triggered or accidental) failure

- M4300 Virtual Chassis stacking technology upsurges overall network availability, providing better resiliency in network architectures, and better performance with advanced load balancing capabilities between network uplinks

10. What is active-active teaming?

Any server, storage equipment or any type of host can connect to two different M4300 switches in a stack, using simple LACP Ethernet channeling. A server for instance, will use its two network cards in active-active teaming mode instead of standard failover mode. It means more performance, more bandwidth for the server for same level of redundancy: in case of a switch failure, nonstop forwarding architecture ensures no service interruption for the other switches in the stack. For the server, it means the traffic will continue to flow through the other link without noticeable effect.

11. What are the unique qualities that differentiate the M4300 from other market alternatives?

Mixed stacking between 1G models and 10G models – using 10G ports – is an important differentiator: only high-end series with costly and complex stacking kits are available in the market as of today. This brings even more simplicity for edge to core topologies, and greater performance with spine and leaf stacking topologies.

Nonstop forwarding architecture and hitless failover are key for high availability in a stack: when the management unit fails, most competitive "redundant" solutions block the traffic across the stack

during the failover. This can take 10, 20, 30 seconds – even longer sometimes – and clients connected to all other switches in the stack go totally offline. Distributed uplinks to the core are also down. M4300 offers real high availability instead: Nonstop Forwarding (NSF) enables the stack to secure forwarding end-user traffic on all other switches when the management unit fails. And when both the management unit and the backup unit connect to the core using distributed link aggregation (LACP), there is no possible service interruption while the backup management unit takes over.

M4300 1G models additional advantages are:

- Dual, redundant modular power supplies for cost-effective power redundancy
- More PoE budget than most competitive solutions, up to PoE+ full provisioning
- Full Layer 3 feature set including Policy-based routing and OSPF with zero licensing charges

M4300 10G models additional advantages are:

- Half-width models with low acoustics for active-active server and storage connections across two switches in 1U and redundant top-of-rack
- Hybrid 10G copper and 10G fiber port counts because 10 Gigabit Ethernet itself is hybrid: many server and storage equipment come with SFP+ fiber or DAC cables for low latency reasons, while 10G copper is increasingly more widely available.
- Full Layer 3 feature set including Policy-based routing and OSPF with zero licensing charges

12. What are the Layer 2/3/4 software features supported?

- **Management**: Out-of-band; Web GUI; HTTPs; CLI; Telnet; SSH; SNMP; MIBs; RSPAN; Radius Users, TACACS+
- **Usability Enhancements**: Link Dependency (Enable or Disable one or more ports based on the link state of one or more different ports); Syslog and Packet Captures can be sent to USB storage
- **IPv4/IPv6 ACL and QoS, DiffServ**: Ingress 1 Kbps shaping; Time-based ACLs; Single Rate Policing
- **IPv4/IPv6 Multicast Filtering**: IGMPv3 MLDv2 Snooping and Proxy ASM & SSM; IGMPv1,v2 Querier; Control Packet Flooding
- **IPv4/IPv6 Policing and Convergence**: Auto-VoIP; Auto-iSCSI; Policy-based routing (PBR); LLDP-MED
- **Spanning Tree**: STP, MTP, RSTP; Per VLAN PV(R)STP (CLI only); BPDU/STRG Root Guard
- **Green Ethernet**: EEE (802.3az) with future firmware upgrade
- **VLANs**: Access Ports; Trunk Ports with Native VLAN; Static; Dynamic; Voice; MAC; GVRP/GMRP; QinQ; Private VLANs
- **Trunking, Port Channel**: Static or Dynamic LACP Seven (7) L2/L3/L4 hashing algorithms
- **IPv4/IPv6 Authentication Security**: Successive Tiering (DOT1X; MAB; Captive Portal); DHCP Snooping; Dynamic ARP Inspection; IP Source Guard
- **IPv4/IPv6 Static Routing**: Port, Subnet, VLAN routing; DHCP Relay; DHCP Server including Stateful DHCPv6 Server; Multicast static routes

- **IPv4 Dynamic Routing**: RIP; VRRP
- **IPv4 / IPv6 Dynamic Routing:** OSPF, Proxy ARP, PIM-SM PIM-DM, 6-to-4 tunnels

13. M4300 support SDN and OpenFlow 1.3. What is supported?

M4300 OpenFlow feature enables the switch to be managed by a centralized OpenFlow Controller using the OpenFlow protocol.

- Support of a single-table OpenFlow 1.3 data forwarding path
- The OpenFlow feature can be administratively enabled and disabled at any time
- The administrator can allow the switch to automatically assign an IP address to the OpenFlow feature or to specifically select which address should be used
- The administrator can also direct the OpenFlow feature to always use the service port (out-of-band management port)
- The Controller IP addresses are specified manually through the switch user interface
- The list of OpenFlow Controllers and the controller connection options are stored in the Controller Table
- The OpenFlow component in M4300 software uses this information to set up and maintain SSL connections with the OpenFlow Controllers
- M4300 implements a subset of the OpenFlow 1.0.0 protocol and a subset of the OpenFlow 1.3
- It also implements enhancements to the OpenFlow protocol to optimize it for the Data Center environment and to make it compatible with Open vSwitch (OVS 2.3.0)

14. What is the USB port for on front panel?

The USB port allows user to download/upload switch firmware or configuration file using USB flash device. It is also used to recover the firmware image through the utility menu during boot up. It is more effective and easier than using XMODEM serial port protocol for file transfer. Latest 12.0 enhancements allow Syslog and Packet Captures to be sent to USB storage as well.

15. What are M4300 console ports for serial connection?

M4300 provides two serial ports:

- One mini-USB console port
- One straight-through wiring RJ45 serial port

Both ports are active simultaneously. Mini-USB console port allows user to directly access M4300 switch using one USB cable. USB driver must be installed first. The USB driver can be obtained either from the CD that comes with the switch, either from the following link:

http://support.netgear.com/for_business/default.aspx

Drivers for the mini-USB console port are provided for Windows Server 2008; Windows Server 2003; Windows 10; Windows 8; Windows 8 x64; Windows 7; Windows 7 x64; Windows Vista; Windows Vista x64; and Windows XP.

16. Is out-of-band management for Telnet, SSH and GUI network access supported by M4300?

Yes, M4300 Switch provides the admin with two differentiated methods (in-band and out-of-band) for Telnet, SSH and Web GUI network access. For security, the admin can decide to allow or restrict any of these two methods. Out-of-band management is possible through the dedicated OOB RJ45 10/100/1000 port on the front. If OOB restriction is not a requirement, in-band management can be also available from any network port: Management ACLs are available to restrict which port(s) can reach M4300 CPU in that case.

17. What is the warranty of the M4300 Switch Series?

The M4300 series is covered under NETGEAR Lifetime Warranty and it includes:

- 90 days of Technical Support via phone and email
- Lifetime Technical Support through online chat
- Lifetime Next Business Day Hardware Replacement

You can find more information here:

http://www.netgear.com/business/documents/prosafe-lifetime-warranty/default.aspx

and here:

http://support.netgear.com/general/contact/default.aspx

18. Where can I download software updates for M4300 Switch Series?

The M4300 series technical documentation and firmware updates can be found here:

http://support.netgear.com/for_business/default.aspx

19. Where can I find more information on M4300 Switch Series?

Please visit http://www.netgear.com/managed