Power Over Ethernet
frequently asked questions

M4100-12G-POE+
M4100-26-POE

M4100-D12G-POE+
M4100-12GF

From Wireless Access Points to Network Switches, NETGEAR Provides Reliable, Affordable and Simple PoE Solutions

What is PoE?

PoE is Power Over Ethernet. It allows network switches to pass power through Cat5 cabling to power devices and peripherals.

Why use PoE?

Traditionally, devices connected to the network had at least two types of cables connected to them. The Ethernet cable for data and a power cable for power. The need for the power cable has been a limiting factor in device deployment, requiring that devices either need to be located near existing power outlets, or install new outlets in the vicinity of the device. PoE solves this issue and greatly enhances the flexibility of deploying such devices. PoE is an IEEE standard for distributing simultaneous data transmission and low-voltage power across the network using existing Ethernet data cabling. This centralized, reliable source of power enables network devices such as IP telephones, WLAN Access Points and CCTV devices to operate without additional power adapters, cords, or AC outlets.

What is the difference between PoE and PoE+?

PoE was the first generation and PoE+ is the latest generation. The original PoE standard (IEEE 802.3af) provides up to 15.4 W of DC power to each device. The latest standard IEEE 802.3at is also known as PoE+ or PoE plus and provides up to 30W of power to each device. PoE+ is suited to devices that draw more power, for example, Pan-Tilt-Zoom (PTZ) CCTV cameras and high performance 11n Access Points.

Can I plug a non-PoE device into a PoE capable port?

PoE switches can detect if a non-PoE device is connected and ensure no power is supplied.

What are the benefits of using PoE?

- Lower infrastructure and installation costs: Fewer, separate power adapters are needed and only one cable run is required rather than two
- No need for electricians; uses existing IT networking infrastructure
- Extends wired and wireless network reach; not limited to fixed power outlet placements
- Overcomes hard to wire environments such as old or 'protected' buildings
- Reliability: Redundant Power Supply (RPS) backup options helps keep devices running even in the event of a power outage. This makes it more acceptable to deploy for business critical services, such as IP Telephony based Call Centers
- Centralized control: Manage power to devices from a centralized switch. Power down/up devices as required for energy and cost savings

How much power do typical devices need?

The following are a guide and actual power requirements vary and should be checked device by device when defining PoE budget requirements.

- IP Camera: 7-10W
- IP Phone: 3-7W
- PTZ Camera: 15-25+ W
- Access Point: 8W for a/g radios and upwards of 20W for n radios

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Questions and points to consider when specifying a PoE network		NETGEAR options
• What devices will need PoE?	This should also consider future PoE+ requirements, even if not initially needed today.	• All ProSAFE Access Points support PoE • M4100-D12G-POE+ (GSM5212P) and M4100-D12G (GSM5212) can receive power from an upstream switch
• How many devices will need PoE?	Some PoE switches only have a proportion of ports supporting PoE; e.g. a 24-port switch may only have 12 ports capable of supporting PoE. This will influence the number and type of PoE switch needed.	• Partial and Full PoE switches are available
• What power will each device require, in Watts?	Some switches allow you to prioritize PoE ports and vary the power per port providing flexibility of deployment. A feature called LLDP supports this need and determines the status of the powered device and its power needs.	• ProSAFE Smart and Fully managed switches auto-sense power requirements and adjust accordingly
• Per switch, what is the total Wattage of all devices that will be connected?	Each PoE switch has a Power Budget. This is shared across the PoE enabled ports, so the right switch should be specified to ensure the right power is provided to the devices connected.	• Power Budgets are available on all PoE switch data sheets
• Do you need a switch downstream, but that is powered upstream by another PoE switch?	For hard to wire places, a Powered Switch can receive power from another switch and in turn provide PoE to connected devices.	• M4100-D12G-POE+ (GSM5212P) and M4100-D12G (GSM5212) can receive power from an upstream switch
• How many PoE ports are needed?	A partial PoE switch may be sufficient depending on user needs.	• PoE can be found on a range of NETGEAR switches from 8 port 10/100 unmanaged models through to Fully Managed Gigabit 48 ports
• Can ports be prioritized for power?	Powered Source Equipment (PSE), such as PoE switches can detect how much power is needed as well as monitor and stop supply.	• ProSAFE Smart and Fully Managed PoE switches can prioritize ports for power and benefit from dynamic power management
• How many ports will need to be PoE+ enabled?	PoE+ support varies from model to model. Check how many PoE+ ports you need and how many ports are PoE+ capable on the switch.	• A number of ProSafe Smart and Fully Managed Switches support PoE+ (see next page for applicable models)
• Do you need a Redundant Power Supply (RPS) back-up solution for the PoE switch?	Where critical services are supported by a PoE solution, backup is essential. An RPS is needed to provide backup power in the event of a power outage.	• Select NETGEAR products include an RPS module option, e.g. M4100 Series, M5300 Series.
• Are you expanding or putting in a new Wireless LAN?	As roaming and concentration patterns change over time, the need to add more or re-locate access points becomes easier with PoE; providing for a dynamic deployment environment.	• All ProSAFE Access Points support PoE (see next page for current listing)

PoE and PoE+ Deployment Examples
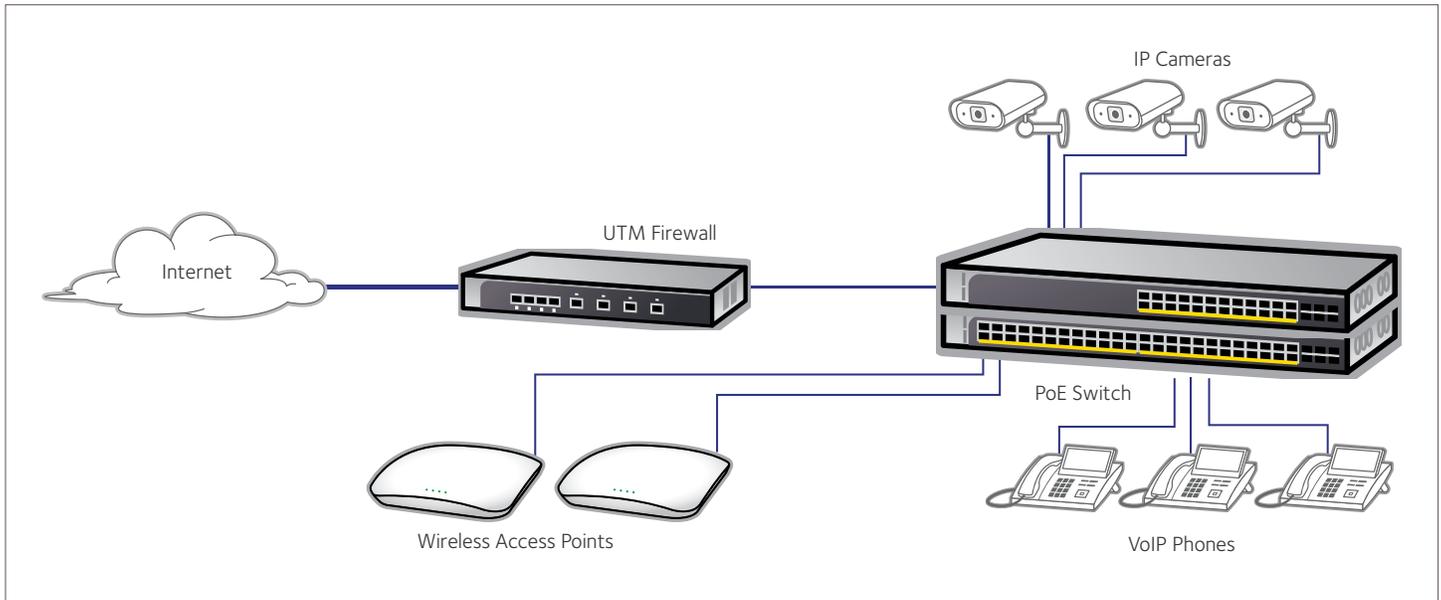
PoE CLASS CHART				
PoE Class Chart	Min. power levels the PSE needs to provide	Max. power available to the PD	Class Description	Powered Devices (PD)
1	4.0W	0.44W–3.84W	Very low power	IP phone
2	7.0W	3.84W–6.49W	Low power	IP camera
3	15.4W	6.49W–12.95W	Mid power	Single-band wireless access point, video phone
4 (PoE+)	30.0W	12.95W–25.50W	High power	PTZ IP camera, dual-band 11N wireless access point

PD CHART		
PD Product	Product Description	Power Consumption
GS108T	Gigabit Smart Switch	6W
M4100-D12G	Gigabit Managed Switch	19.8W
M4100-D12G-POE+	Gigabit Managed Switch	22.6W typical, 60W max
WG103	Wireless 11G Access Point	5W
WN203	Wireless 11N Access Point	4W
WNAP210	Wireless 11N Access Point	6W
WNAP320	Wireless 11N Access Point	5.8W
WNDAP350	Dual-Band Wireless 11N Access Point	12.7W
WNDAP360	Dual-Band Wireless 11N Access Point	12.7W
WNDAP620	3 x 3 Dual-Band Wireless 11N Access Point	8W
WNDAP660	3 x 3 Dual-Band Wireless 11N Access Point	11.8W

ProSAFE® SWITCHES WITH POE/POE+			
MODEL	PORTS	PoE PORTS	PoE BUDGET
UNMANAGED SWITCHES			
FS108P	8 x FE	4	53W
FS116P	16 x FE	8	55W
GS108P	8 x GbE	4	50W
PLUS SWITCHES			
GS108PE	8 x GbE	4	45W
SMART SWITCHES			
GS110TP	8 x GbE + 2 SFP	8	46W
GS510TP	8 x GbE + 2 SFP	8 (PoE+)	130W
FS726TP	24 x FE + 2 x GbE	12	100W
FS728TP	24 x FE + 4 GbE	24	192W
FS752TP	48 x FE + 4 GbE	48 (4 PoE+)	384W
GS728TP	24 x GbE and 4 GbE dedicated SFP	24 (8 PoE+)	192W
GS728TPP	24 x GbE and 4 GbE dedicated SFP	24 PoE+	384W and up to 720W w/EPS
GS724TP	24 x GbE + 2 Combo SFP	24	192W
GS748TP	48 x GbE + 4 Combo SFP	48	384W
GS752TP	48 x GbE and 4 GbE deciated SFP	48 (8PoE+)	384W
STACKABLE SMART SWITCHES			
GS724TPS	24 x GbE + 4 Combo SFP	24 (4 PoE+)	192W
GS728TPSB (incl. AGC761 stacking cable)	24 x GbE and 2 Combo SFP and 4 Dedicated 1G/2.5G SFP	24 (8 PoE+)	192W
GS748TPS	48 x GbE + 4 Combo SFP	48 (4 PoE+)	384W
GS752TPSB (incl. AGC761 stacking cable)	48 x GbE and 2 Combo SFP and 4 Dedicated 1G/2.5G SFP	48 (8 PoE+)	384W
M4100 SERIES MANAGED SWITCHES (L2+ STANDALONE)			
M4100-D10-POE (FSM5210P)	8 x FE + 2 x GbE Combo SFP	12	66W
M4100-26-POE (FSM7226P)	24 x FE + 2 GbE Combo SFP	24	380W
M4100-50-POE (FSM7250P)	48 x FE + 2 GbE Combo SFP	48	380W and up to 720W w/EPS
M4100-D12G-POE+ (GSM5212P)	12 x GbE + 4 Combo SFP	12 (10 PoE+)	125W
M4100-12GF (GSM7212F)	12 x GbE with 12 shared SFP and 4 GbE PoE+	4 (PoE+)	150w
M4100-12G-POE+ (GSM7212P)	12 x GbE + 4 Combo SFP	12 (12 PoE+)	380W
M4100-26G-POE (GSM7226LP)	26 x GbE + 4 Combo SFP	24	192W and up to 380W w/EPS
M4100-24G-POE+ (GSM7224P)	24 x GbE + 4 Combo SFP	24 (24 PoE+)	380W and up to 720W w/EPS
M4100-50G-POE+ (GSM7248P)	50 x GbE + 4 Combo SFP	48 (48 PoE+)	380W and up to 1,440W w/EPS
M5300 SERIES MANAGED SWITCHES (L2+ L3 STACKABLE)			
M5300-28G-POE+ (GSM7228PS)	24 GbE and 2 x 10GBASE-T (4 Max) and 2 x SFP+ (4 Max) and 4 Combo SFP	24 (24 PoE+)	380W and up to 720W w/EPS
M5300-52G-POE+ (GSM7252PS)	48 GbE and 2 x 10GBASE-T (4 Max) and 2 x SFP+ (4 Max) and 4 Combo SFP	48 (48 PoE+)	380W and up to 1,440W w/EPS
RPS/EPS OPTIONS			
PRODUCT	DESCRIPTION		ORDERING SKU
RPS4000	External / Redundant Power Supply (up to four switches – RPS or EPS mode)		RPS4000-100NES / -100AJS
APS1000W	Power Module for RPS4000		APS1000W-100NES /-100AJS

Actual power supplied by the PoE switch may vary due to Ethernet cable length: The switch's PoE budget requirement should be slightly higher than what the PD devices actually consume.

For more PoE information, visit www.netgear.com