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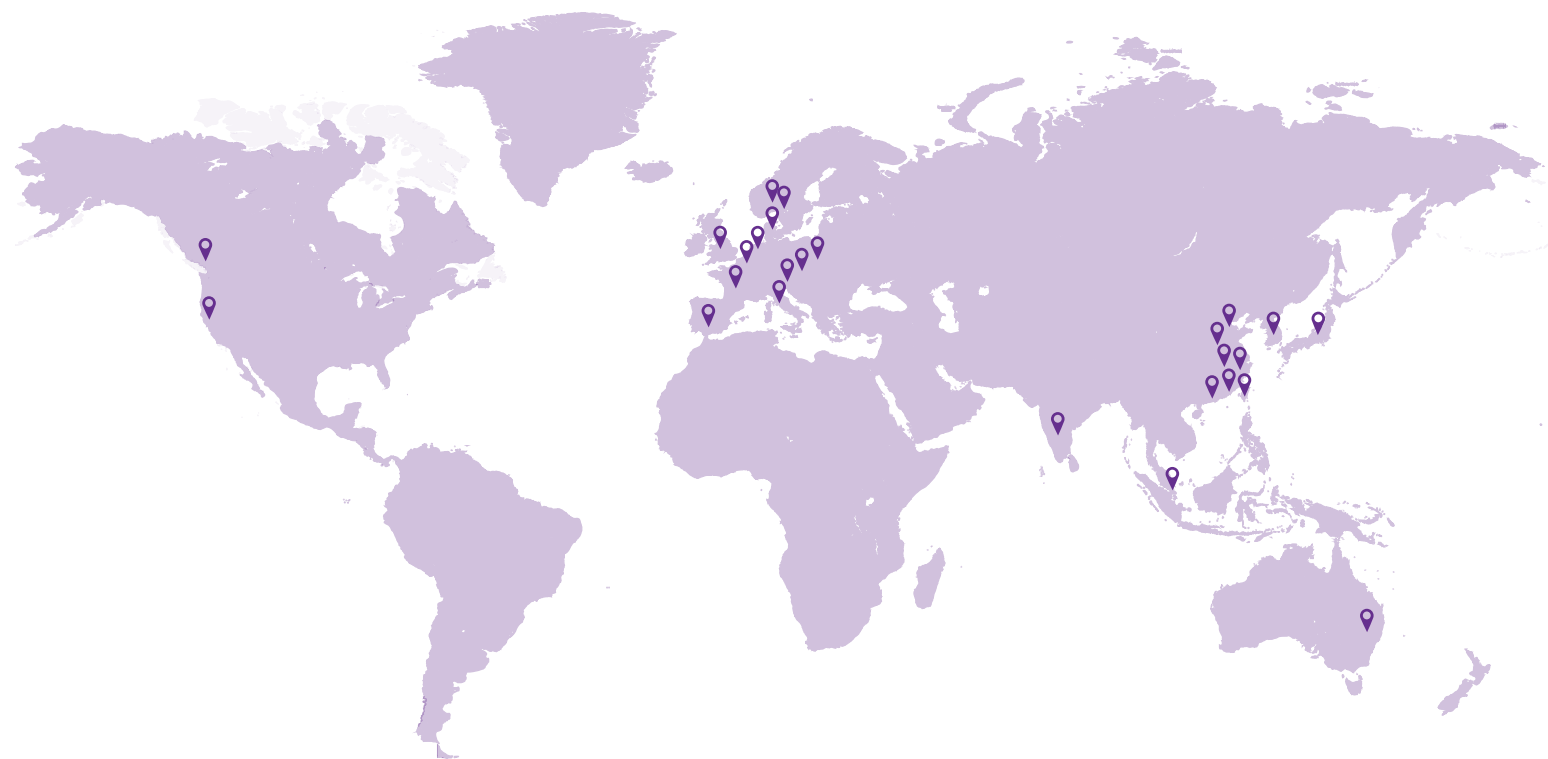
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NETGEAR  
BUSINESS

# ProAV Catalog

Networking solutions  
engineered for the needs  
of the Pro AV community





## NETGEAR GLOBAL OFFICES

- |                   |             |
|-------------------|-------------|
| NORTH AMERICA     | INDIA       |
| AUSTRALIA         | IRELAND     |
| BELGIUM           | ITALY       |
| CANADA            | JAPAN       |
| CHINA - BEIJING   | KOREA       |
| CHINA - DONGGUAN  | NETHERLANDS |
| CHINA - GUANGZHOU | POLAND      |
| CHINA - NANJING   | SINGAPORE   |
| CHINA - SHANGHAI  | SWITZERLAND |
| CHINA - SUZHOU    | SPAIN       |
| DENMARK           | SWEDEN      |
| FRANCE            | TAIWAN      |
| GERMANY           | UK          |
| HONG KONG         |             |

# DESIGNED WITH YOUR BUSINESS IN MIND

NETGEAR has pioneered advanced networking technologies for homes, businesses, and service providers around the world.

Since 1996, we've led the industry with a broad range of award-winning products designed to simplify and improve people's lives.

We are dedicated to empowering our customers to collaborate and connect to a world of information by enhancing homes and powering businesses with an unmatched line of the innovative, intelligent, and easy to use WiFi and networking solutions.

Breaking boundaries to power the future.

Patrick Lo

NETGEAR CEO and Co-founder

When we were a startup, 25 years ago, we built our very first hub. We created it to help power the future. To open doors we had only dreamt about. We began to imagine homes without wires or boundaries. Business networking without walls or barriers. Tools and services that make what matters most more secure, scalable, and enjoyable to use. And we built what we imagined.

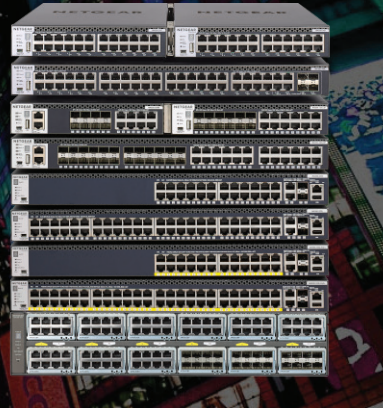
It earned us awards, a reputation, and respect as a trusted leader in connectivity.



## Switches Engineered for AV over IP

NETGEAR's ProAV solutions are engineered specifically for AV over IP with an unmatched ease of use, reliability, and cost savings that benefit all networked AV solutions.

- Zero-touch install
- Rapid deployment
- High reliability
- Easy expandability
- Dedicated engineering services team
- Next business day replacement



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## OVERVIEW

NETGEAR's commitment to AV over IP includes a range of products and dedicated support services. Our M4250, M4300 and M4500 series of high-performance, flexible switches are engineered for AV over IP.

NETGEAR Business means solutions that fit your needs and your budget. Our comprehensive portfolio of switches enables you to order exactly the combination of fiber or copper ports you need now with room to expand for the future. Providing the ability to connect any type of AV over IP device, NETGEAR switches offer you flexible speed options from 1 Gigabit up to 100 Gigabits per port!

### Certified Partners (partial list)

The following list of NETGEAR Pro AV Partners ensures your AV over IP installation will be successful. All of these partners work with us to make certain that our switches work with their products. Our Engineering Services team has worked with these manufacturers to provide you with peace of mind when it comes to your deployment.



## APPLICATIONS

### Video over IP

NETGEAR recognizes the explosion of video over Ethernet and has specifically designed products for AV over IP installations.

From NETGEAR IGMP Plus™, which allows out-of-the-box functionality for most all multicast installations, to modular switches accommodating copper, fiber, and HDMI inputs, we will work with you to find the right solution at the right price.



### Audio over IP

The Pro AV world has adopted IP as their delivery method of choice and NETGEAR is here to help. Our switches provide range of sizes and mounting methods to accommodate any install - from the university campus to touring road show.

If you are using Dante or AVB (license required) in your audio deployment, you can trust that NETGEAR's Pro AV switches are designed to seamlessly integrate into your solution. Easy to use, easy to manage.



NETGEAR is a founding member of the Software Defined Video over Ethernet (SDVoE) alliance. A nonprofit consortium of technology providers collaborating to standardize the adoption of Ethernet to transport AV signals in professional AV environments, and to create an ecosystem around SDVoE technology allowing software to define AV applications.

Our switches are designed to accommodate the high bandwidth required for SDVoE-enabled products transporting high-resolution video, multi-channel audio, and control with negligible latency.

## SUPPORT & DESIGN SERVICES

NETGEAR offers free design services to support partners as they design and deploy professional audio and video solutions which require IP networking infrastructure.

This dedicated Pro AV Engineering Services team of experts has been conceived to empower those who are designing and installing AV over IP systems by providing free network design assistance, training, and installation support.



### ProSUPPORT for Business

The NETGEAR ProSUPPORT for Business offerings provide you with peace of mind by extending and enhancing the standard warranty or support coverage included with your product purchase.

With ProSUPPORT, you get 24/7 direct access to NETGEAR technical support engineers who can rapidly resolve technical issues both big and small. Connect with the people that have built your products and build the relationship that will contribute to your business success.

Contact the Engineering Services team:  
[ProAVDesign@netgear.com](mailto:ProAVDesign@netgear.com)

## TECHNICAL TRAINING

At NETGEAR we believe in working with our integration partners and end users to empower them with the knowledge to be more self-sufficient. As part of this commitment, we offer free training courses at our online Academy.

From technical training on AV over IP topics to general business networking concepts, this Academy provides the skills you need to become better equipped for the challenges of today's world of networking.



Most courses offer valuable AVIXA Renewal Units and provide a Certificate of Completion for you to download.

Signup for training: [www.netgear.academy](http://www.netgear.academy)

## Fully Managed Switches

Pre-configured M4250 switches engineered for AV over IP, the AV Line

Fully Managed, M4250 series



MODEL	M4250-9G1F-POE+	M4250-8G2XF-POE+	M4250-10G2F-POE+
SKU	GSM4210PD	GSM4210PX	GSM4212P
Primary Port Speed	1G	1G	1G
1G Copper Ports			10
2.5G Copper Ports			
SFP/QSFP Ports	1 (SFP)	2 (SFP+)	2 (SFP)
PoE Type	PoE+	PoE+	PoE+
PoE Ports	8	8	8
PoE Budget	110W	220W	125W
IGMP Plus™ Support	Yes	Yes	Yes
AVB Support**	Yes	Yes	Yes
Acoustic Noise***	Fanless	Quiet mode (19.3dBA) or Cool mode (35.3dBA)	Fanless, Quiet mode (27.38dBA) or Cool mode (55dBA)
Management	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

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

\*\*\* 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.

Find out more: [www.netgear.com/proav](http://www.netgear.com/proav)

## Fully Managed Switches

Pre-configured M4250 switches engineered for AV over IP, the AV Line

Fully Managed, M4200 series



MODEL	M4250-10G2XF-POE+	M4250-10G2XF-POE++	M4250-12M2XF
SKU	GSM4212PX	GSM4212UX	MSM4214X
Primary Port Speed	1G	1G	2.5G
1G Copper Ports	10	10	
2.5G Copper Ports			12
SFP/QSFP Ports	2 (SFP+)	2 (SFP+)	2 (SFP+)
PoE Type	PoE+	Ultra90 PoE++	
PoE Ports	8	8	
PoE Budget	240W	720W	
IGMP Plus™ Support	Yes	Yes	Yes
AVB Support**	Yes	Yes	Yes
Acoustic Noise***	Fanless, Quiet mode (27.4dBA) or Cool mode (56dBA)	Fanless, Quiet mode (250W PoE, 34.57dBA; 380W PoE, 40dBA; 720W PoE, 47.19dBA) or Cool mode (66.23dBA)	Fanless, Quiet mode (28.5dBA) or Cool mode (55dBA)
Management	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

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

\*\*\* 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.

## Fully Managed Switches

Pre-configured M4250 switches engineered for AV over IP, the AV Line

Fully Managed, M4200 series



MODEL	M4250-16XF	M4250-26G4F-POE+	M4250-26G4XF-POE+	M4250-26G4F-POE++
SKU	XSM4216F	GSM4230P	GSM4230PX	GSM4230UP
Primary Port Speed	10G	1G	1G	1G
1G Copper Ports		26	26	26
2.5G Copper Ports				
SFP/QSFP Ports	16 (SFP+)	4x1G (SFP)	4x10G (SFP+)	4x1G (SFP)
PoE Type		PoE+	PoE+	Ultra90 PoE++
PoE Ports		24	24	24
PoE Budget		300W	480W	1,440W
IGMP Plus™ Support	Yes	Yes	Yes	Yes
AVB Support**	Yes	Yes	Yes	Yes
Acoustic Noise***	Fanless, Quiet mode (27.44dBA) or Cool mode (57dBA)	Fanless, Quiet mode (200W PoE, 28dBA; 300W PoE, 34dBA) or Cool mode (57dBA)	Fanless, Quiet mode (350W PoE, 25dBA; 480W PoE, 42dBA) or Cool mode (67dBA)	Quiet mode (280W PoE, 28dBA; 480W PoE, 47dBA; 1440W PoE, 60dBA) or Cool mode (69dBA)
Management	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

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

\*\*\* 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.

## Fully Managed Switches

Pre-configured M4250 switches engineered for AV over IP, the AV Line

Fully Managed, M4200 series



MODEL	M4250-40G8F-POE+	M4250-40G8XF-POE+	M4250-40G8XF-POE++
SKU	GSM4248P	GSM4248PX	GSM4248UX
Primary Port Speed	1G	1G	1G
1G Copper Ports	40	40	40
2.5G Copper Ports			
SFP/QSFP Ports	8x1G (SFP)	8x10G (SFP+)	8x10G (SFP+)
PoE Type	PoE+	PoE+	Ultra90 PoE++
PoE Ports	40	40	40
PoE Budget	480W	960W	2,880W
IGMP Plus™ Support	Yes	Yes	Yes
AVB Support**	Yes	Yes	Yes
Acoustic Noise***	Fanless, Quiet mode (150W PoE, 30dBA; 340W PoE, 40dBA; 480W PoE, 47dBA) or Cool mode (68dBA)	Quiet mode (400W PoE, 29dBA; 640W PoE, 48dBA; 960W PoE, 59dBA) or Cool mode (69dBA)	Quiet mode (160W PoE, 30dBA; 480W PoE, 51dBA; 2880W PoE, 60dBA) or Cool mode (71dBA)
Management	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI	AV UI, IT GUI, CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

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

\*\*\* 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.

## Fully Managed Switches

Fully Managed, M4300 series (L3), Gigabit and 10-Gigabit



MODEL	M4300-28G	M4300-28G-POE+ (550W PSU)	M4300-28G-POE+ (1000W PSU)	M4300-52G
SKU	GSM4328S	GSM4328PA	GSM4328PB	GSM4352S
Primary Port Speed	1G	1G	1G	1G
1G Copper Ports	24	24	24	48
10G Copper Ports	2	2	2	2
SFP/QSFP Ports	2 (SFP+)	2 (SFP+)	2 (SFP+)	2 (SFP+)
PoE Type		PoE+	PoE+	
PoE Ports		24	24	
PoE Budget		480W	630W, 720W w/2nd PSU	
IGMP Plus™ Support	Yes	Yes	Yes	Yes
AVB Support				
Acoustic Noise	30.3dBA	39.8dBA	39.8dBA	31.5dBA
Stackable	Yes	Yes	Yes	Yes
Management	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

## Fully Managed Switches

Fully Managed, M4300 series (L3), Gigabit and 10-Gigabit



MODEL	M4300-52G-POE+ (550W PSU)	M4300-52G-POE+ (1000W PSU)	M4300-8X8F	M4300-12X12F
SKU	GSM4352PA	GSM4352PB	XSM4316S	XSM4324S
Primary Port Speed	1G	1G	10G	10G
1G Copper Ports	48	48		
10G Copper Ports	2	2	8	12
SFP/QSFP Ports	2 (SFP+)	2 (SFP+)	8 (SFP+)	12 (SFP+)
PoE Type	PoE+	PoE+		
PoE Ports	48	48		
PoE Budget	480W, 1,440 w/ redundant PSU	591W, 1,440 w/ redundant PSU		
IGMP Plus™ Support	Yes	Yes	Yes	Yes
AVB Support				
Acoustic Noise	39.8dBA	39.8dBA	36.9dBA	36.9dBA
Stackable	Yes	Yes	Yes	Yes
Management	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

## Fully Managed Switches

Fully Managed, M4300 series (L3), Gigabit and 10-Gigabit



MODEL	M4300-16X (299W PSU)	M4300-16X (600W PSU)	M4300-24X	M4300-24XF
SKU	XSM4316PA	XSM4316PB	XSM4324CS	XSM4324FS
Primary Port Speed	10G	10G	10G	10G
1G Copper Ports				
10G Copper Ports	16 (Multi-Gigabit)	16 (Multi-Gigabit)	24	2
SFP/QSFP Ports			4 (SFP+)	24 (SFP+)
PoE Type	PoE+	PoE+		
PoE Ports	16	16		
PoE Budget	199W	500W		
IGMP Plus™ Support	Yes	Yes	Yes	Yes
AVB Support				
Acoustic Noise	35dBA	35dBA	37dBA	39.07dBA
Stackable	Yes	Yes	Yes	Yes
Management	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

## Fully Managed Switches

Fully Managed, M4300 series (L3), Gigabit and 10-Gigabit



MODEL	M4300-24X24F	M4300-48X	M4300-48XF	M4300-96X (EMPTY SWITCH)
SKU	XSM4348S	XSM4348CS	XSM4348FS	XSM4396K0
Primary Port Speed	10G	10G	10G	10G
1G Copper Ports				
10G Copper Ports	24	48	2	up to 96 (Multi-Gigabit)
SFP/QSFP Ports	24 (SFP+)	4 (SFP+)	48 (SFP+)	up to 96 (SFP+) / 24 (QSFP+)
PoE Type				PoE+
PoE Ports				up to 48
PoE Budget				1,440W
IGMP Plus™ Support	Yes	Yes	Yes	Yes
AVB Support				
Acoustic Noise	35.8dBA	40.3dBA	42.4dBA	35.8dBA no PoE 66.8dBA max PoE
Stackable	Yes	Yes	Yes	Yes
Management	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI	Local GUI or CLI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

## Fully Managed Switches

Fully Managed, M4300 series (L3), Gigabit and 10-Gigabit



MODEL	M4300-96X (STARTER KIT)	APM408C	APM408P	APM408F	APM402XL
SKU	XSM4396K1	APM408C	APM408P	APM408F	APM402XL
Primary Port Speed	10G	10G	10G	10G	10G
1G Copper Ports					
10G Copper Ports	up to 48 (Multi-Gigabit)	8 (Multi-Gigabit)	8 (Multi-Gigabit)		
SFP/QSFP Ports	48 (SFP+) / up to 96 (SFP+) or 12 (QSFP+)			8 (SFP+)	2 (QSFP+)
PoE Type	PoE+		PoE+		
PoE Ports	up to 48		8		
PoE Budget	1,440W				
IGMP Plus™ Support	Yes	Yes	Yes	Yes	Yes
AVB Support					
Acoustic Noise	35.8dBA no PoE 66.8dBA max PoE	fanless	fanless	37.2dBA	37.2dBA
Stackable	Yes	Yes	Yes	Yes	Yes
Management	Local GUI or CLI	Local GUI	Local GUI	Local GUI	Local GUI
Warranty	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*	Limited Lifetime*

## Fully Managed Switches

Fully Managed, M4500 series (L3), 10, 25, 50 and 100-Gigabit




MODEL	M4500-32C	M4500-48XF8C
SKU	CSM4532	XSM4556
Primary Port Speed	100G	25G
1G Copper Ports		
10G Copper Ports		
SFP/QSFP Ports	32 (QSFP28)	48 (SFP28) / 8 (QSFP28)
PoE Type		
PoE Ports		
PoE Budget		
IGMP Plus™ Support	Yes	Yes
AVB Support		
Acoustic Noise	64dBA	68dBA
Stackable		
Management	CLI	CLI
Warranty	Limited Lifetime*	Limited Lifetime*

# Modules and Accessories for Switches

For use with managed switches

**Gigabit Fiber Modules**



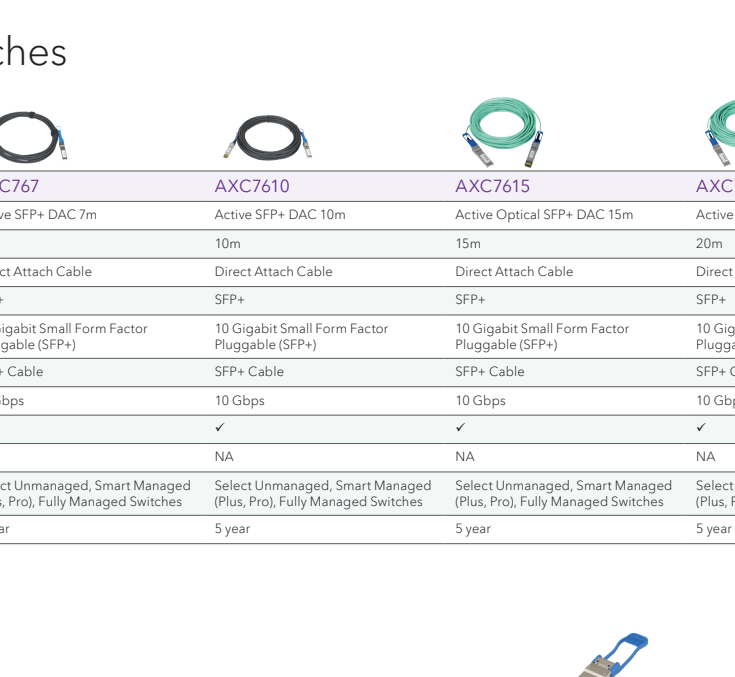
MODEL	AGM731F	AGM732F	AGM734	AFM735
Product Description	SFP Transceiver 1000BASE-SX	SFP Transceiver 1000BASE-LX	SFP Transceiver 1000BASE-T	SFP Transceiver 1000BASE-FX
Distance	Up to 550m	Up to 10km	Up to 100m	Up to 2km
Cabling Type	IEEE 802.3z 1000BASE-SX	IEEE 802.3z 1000BASE-LX	1000BASE-T	IEEE 802.3-2002 100BASE-FX
Connector	LC duplex	LC duplex	RJ45	LC duplex
Interface (Bus) Type	Small Form Factor Pluggable (SFP)	Small Form Factor Pluggable (SFP)	Small Form Factor Pluggable (SFP)	Small Form Factor Pluggable (SFP)
Form Factor	Plug-in module	Plug-in module	Plug-in module	Plug-in module
Data Transfer Rate	1 Gbps	1 Gbps	1 Gbps	100 Mbps
Hot-Swappable	✓	✓	✓	✓
Fiber Cable Support	50µm OM4 multimode (1000m); 50µm OM3 multimode (550m); 62.5µm OM1/OM2 multimode (275m)	9µm single mode (10km)	Copper CAT5E or better (1000 Mbps Full Duplex only)	50µm/62.5µm OM1/OM2/OM3/OM4 multimode (2km)
Switch Compatibility	Select Smart Managed (Plus, Pro), Fully Managed Switches	Select Smart Managed (Plus, Pro), Fully Managed Switches	Select Smart Managed (Plus, Pro), Fully Managed Switches	Select Smart Managed (Plus, Pro), Fully Managed Switches
Warranty	5 years	5 years	5 years	5 years

**10-Gigabit Copper and Fiber Modules**



MODEL	AX742	AX743	AX745	AXM761	AXM762
Product Description	24 / 48 Gigabit Stacking Kit	I/O Module SFP+	I/O Module 10GBase-T	SFP+ Transceiver 10GBASE-SR	SFP+ Transceiver 10GBASE-LR
Distance	N/A	N/A	Up to 100m	Up to 500m	Up to 10km
Cabling Type	CX4 Cable	Fiber or DAC	CAT5/5E: GIGABIT CAT6: 10GBASE-T 30m CAT6A/7: 10GBASE-T 100m	10GBASE-SR "Short Reach"	10GBASE-LR "Long Reach"
Connector	CX4	SFP+	One RJ45 connection	LC duplex	LC duplex
Interface (Bus) Type	24/48 Gigabit High-speed Stacking	10-Gigabit Small Form Factor Pluggable (SFP+)	10-Gigabit 10GBASE-T	10-Gigabit Small Form Factor Pluggable (SFP+)	10-Gigabit Small Form Factor Pluggable (SFP+)
Form Factor	Plug-in module	I/O Module	I/O Module	Plug-in SFP+	Plug-in SFP+
Data Transfer Rate	12 Gbps Full-duplex (24 Gbps)	10 Gbps	10 Gbps	10 Gbps	10 Gbps
Hot-Swappable	✓	✓	✓	✓	✓
Fiber Cable Support	NA	Depends on SFP+ optics	NA	50µm OM4 multimode (500m); 50µm OM3 multimode (300m); 62.5µm OM1/OM2 multimode (33m)	9µm single mode (10km)
Switch Compatibility	M5300 series (rear bays)	M5300 series (rear bays)	M5300 series (rear bays)	Select Smart Managed (Plus, Pro), Fully Managed Switches	Select Smart Managed (Plus, Pro), Fully Managed Switches
Warranty	5 years	5 years	5 years	5 years	5 years

**10-Gigabit Copper and Fiber Modules**

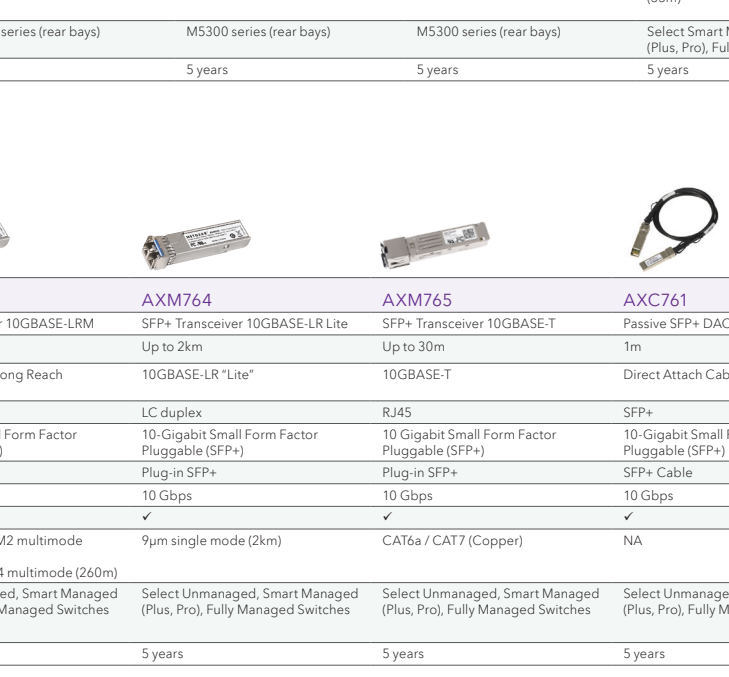


MODEL	AXM763	AXM764	AXM765	AXC761	AXC763
Product Description	SFP+ Transceiver 10GBASE-LRM	SFP+ Transceiver 10GBASE-LR Lite	SFP+ Transceiver 10GBASE-T	Passive SFP+ DAC 1m	Passive SFP+ DAC 3m
Distance	Up to 260m	Up to 2km	Up to 30m	1m	3m
Cabling Type	10GBASE-LRM Long Reach Multimode	10GBASE-LR "Lite"	10GBASE-T	Direct Attach Cable	Direct Attach Cable
Connector	LC duplex	LC duplex	RJ45	SFP+	SFP+
Interface (Bus) Type	10-Gigabit Small Form Factor Pluggable (SFP+)	10-Gigabit Small Form Factor Pluggable (SFP+)	10-Gigabit Small Form Factor Pluggable (SFP+)	10-Gigabit Small Form Factor Pluggable (SFP+)	10-Gigabit Small Form Factor Pluggable (SFP+)
Form Factor	Plug-in SFP+	Plug-in SFP+	Plug-in SFP+	SFP+ Cable	SFP+ Cable
Data Transfer Rate	10 Gbps	10 Gbps	10 Gbps	10 Gbps	10 Gbps
Hot-Swappable	✓	✓	✓	✓	✓
Fiber Cable Support	62.5µm OM1/OM2 multimode (220m); 50µm OM3/OM4 multimode (260m)	9µm single mode (2km)	CAT6a / CAT7 (Copper)	NA	NA
Switch Compatibility	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches
Warranty	5 years	5 years	5 years	5 years	5 years

# Modules and Accessories for Switches

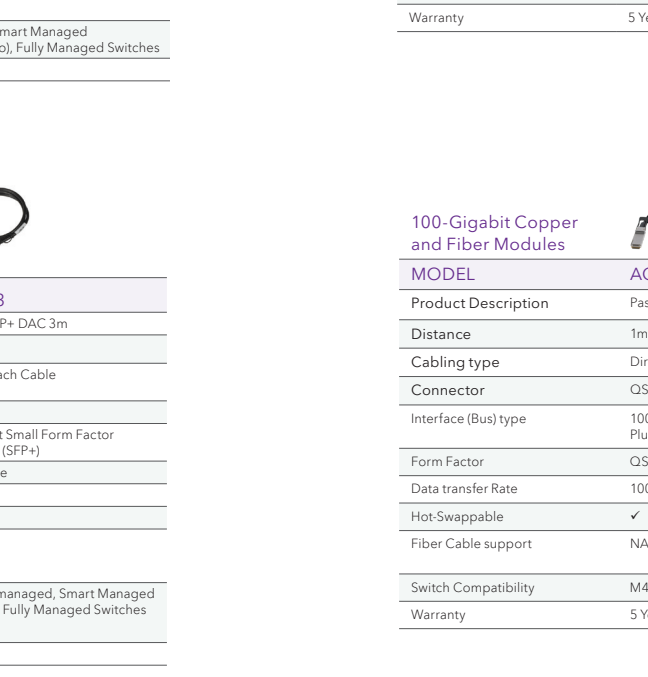
For use with managed switches

**10-Gigabit Copper and Fiber Modules**



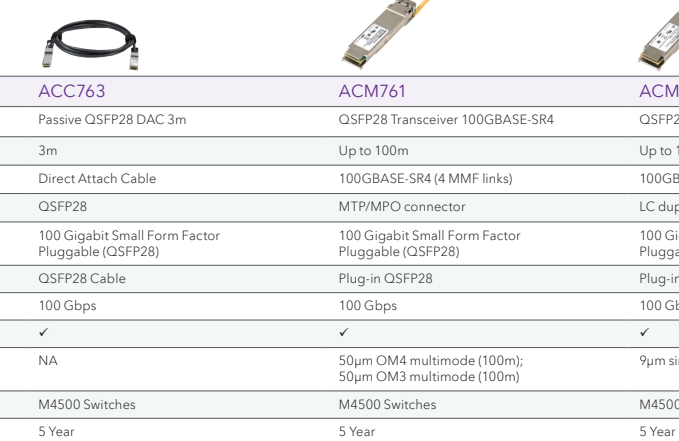
MODEL	AXC765	AXC767	AXC7610	AXC7615	AXC7620
Product Description	Active SFP+ DAC 5m	Active SFP+ DAC 7m	Active SFP+ DAC 10m	Active Optical SFP+ DAC 15m	Active Optical SFP+ DAC 20m
Distance	5m	7m	10m	15m	20m
Cabling Type	Direct Attach Cable	Direct Attach Cable	Direct Attach Cable	Direct Attach Cable	Direct Attach Cable
Connector	SFP+	SFP+	SFP+	SFP+	SFP+
Interface (Bus) Type	10 Gigabit Small Form Factor Pluggable (SFP+)	10 Gigabit Small Form Factor Pluggable (SFP+)	10 Gigabit Small Form Factor Pluggable (SFP+)	10 Gigabit Small Form Factor Pluggable (SFP+)	10 Gigabit Small Form Factor Pluggable (SFP+)
Form Factor	SFP+ Cable	SFP+ Cable	SFP+ Cable	SFP+ Cable	SFP+ Cable
Data Transfer Rate	10 Gbps	10 Gbps	10 Gbps	10 Gbps	10 Gbps
Hot-Swappable	✓	✓	✓	✓	✓
Fiber Cable Support	NA	NA	NA	NA	NA
Switch Compatibility	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches	Select Unmanaged, Smart Managed (Plus, Pro), Fully Managed Switches
Warranty	5 year	5 year	5 year	5 year	5 year

**40-Gigabit Copper and Fiber Modules**



MODEL	AXLC761	AXLC763	AXLM762
Product Description	Passive QSFP+ DAC 1m	Passive QSFP+ DAC 3m	QSFP+ Transceiver 40GBASE-LR4
Distance	1m	3m	Up to 10km
Cabling type	Direct Attach Cable	Direct Attach Cable	40GBASE-LR4
Connector	QSFP+	QSFP+	LC duplex
Interface (Bus) type	40 Gigabit Small Form Factor Pluggable (QSFP+)	40 Gigabit Small Form Factor Pluggable (QSFP+)	40 Gigabit Small Form Factor Pluggable (QSFP+)
Form Factor	QSFP+ Cable	QSFP+ Cable	Plug-in QSFP+
Data transfer Rate	40 Gbps	40 Gbps	40 Gbps
Hot-Swappable	✓	✓	✓
Fiber Cable support	NA	NA	9µm single mode (10km)
Switch Compatibility	M4300-96X, M4500 Switches	M4300-96X, M4500 Switches	M4300-96X, M4500 Switches
Warranty	5 Year	5 Year	5 Year

**100-Gigabit Copper and Fiber Modules**



MODEL	ACC761	ACC763	ACM761	ACM762
Product Description	Passive QSFP28 DAC 1m	Passive QSFP28 DAC 3m	QSFP28 Transceiver 100GBASE-SR4	QSFP28 Transceiver 100GBASE-LR4
Distance	1m	3m	Up to 100m	Up to 10km
Cabling type	Direct Attach Cable	Direct Attach Cable	100GBASE-SR4 (4 MMF links)	100GBASE-LR4 (1 SMF link)
Connector	QSFP28	QSFP28	MTP/MPO connector	LC duplex
Interface (Bus) type	100 Gigabit Small Form Factor Pluggable (QSFP28)	100 Gigabit Small Form Factor Pluggable (QSFP28)	100 Gigabit Small Form Factor Pluggable (QSFP28)	100 Gigabit Small Form Factor Pluggable (QSFP28)
Form Factor	QSFP28 Cable	QSFP28 Cable	Plug-in QSFP28	Plug-in QSFP28
Data transfer Rate	100 Gbps	100 Gbps	100 Gbps	100 Gbps
Hot-Swappable	✓	✓	✓	✓
Fiber Cable support	NA	NA	50µm OM4 multimode (100m); 50µm OM3 multimode (100m)	9µm single mode (10km)
Switch Compatibility	M4500 Switches	M4500 Switches	M4500 Switches	M4500 Switches
Warranty	5 Year	5 Year	5 Year	5 Year



## Modules and Accessories for Switches

For use with managed switches

Modular Power Supply					
MODEL	APS135W	APS150W	APS199W	APS250W	APS550W
Product Description	135-Watt Modular Power Supply	150-Watt Modular Power Supply	199-Watt Modular Power Supply	250-Watt Modular Power Supply	550-Watt Modular Power Supply
Hot-Swappable	When used with an RPS	When 2 PSUs	-	When 2 PSUs	When 2 PSUs
Switch Compatibility	M5300 series (non-PoE versions)	M4300 series (1G non-PoE models)	M4300-16X (PA)	M4300 series (10G models)	M4300 series (PoE PA models)
Warranty	5 year	5 year	5 year	5 year	5 year

Modular Power Supply					
MODEL	APS600W	APS750W	APS1000W	APS1200W	RPS4000v2
Product Description	600-Watt Modular Power Supply	750-Watt Modular Power Supply	1,000-Watt Modular Power Supply	1,200-Watt Modular Power Supply	Redundant/External Power Supply (RPS/EPs for up to 4 switches)
Hot-Swappable	When 2 PSUs	When 2 PSUs	When 2 PSUs	When 2 PSUs	
Switch Compatibility	M4300-16X (PB), M4300-96X	M4500 series	RPS4000v2, M4300 series (PoE PB models), M6100	M4300-96X	S3300 (PoE), M4100, M4300 (48p PoE models), M5300, M6100
Warranty	5 year	5 year	5 year	5 year	5 year

## Third-Party Modules

### ZeeVee HDMI Module for M4300-96X



MFG: ZEEVEE

Model No: ZyPer4K Quad Encoder

Description: 4x HDMI Input module for M4300-96X, on-board SDVoE encoder

Contact ZeeVee for details: <https://www.zeevee.com/zyper4k-hdmi-module/>

### DVIGear HDMI Module for M4300-96X



MFG: DVIgear

Model No: DN-150-TX-Quad

Description: 4x HDMI Input module for M4300-96X, on-board SDVoE encoder

Contact DVIGear for details: <https://www.dvigeear.com/displaynet-dn-150-tx-quad.html>

## Smart and Plus Switches



MODEL	GS110TPV3	GS110TPP	MS510TXPP	MS510TXUP
SKU	GC108P	GC108PP	GC728XP	GC752XP
Copper 1G	8	10	4	
Copper 2.5G			4	4
Copper 10G			1	4
SFP 1G	2			
SFP+ 10G			1	
QSFP+ 40G				
SFP28 100G				
Management	Local GUI or Insight Cloud	Local GUI or Insight Cloud	Local Web GUI	Local GUI or Insight Cloud
PoE Type	PoE+	PoE+	PoE+	PoE++ (60W)
PoE Ports/Budget	8 (55W)	8 (120W)	8 (180W)	8 (295W)
IGMP Support	Yes	Yes	Yes	Yes

## Smart and Plus Switches



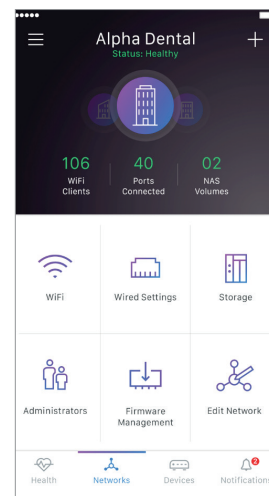
MODEL	GS105E	GS108PE	MS108EUP
SKU	GS105E	GS108PE	MS108EUP
Copper 1G	5	8	8
Copper 2.5G			8
Copper 10G			
SFP 1G			
SFP+ 10G			
QSFP+ 40G			
SFP28 100G			
Management	Web Managed	Web Managed	Local Web GUI
PoE Type		PoE	PoE++
PoE Ports/Budget		4 (53W)	8 (230W)
IGMP Support	Yes	Yes	Yes

## INTRODUCING ONE-TOUCH WIRELESS VISIBILITY & MANAGEMENT

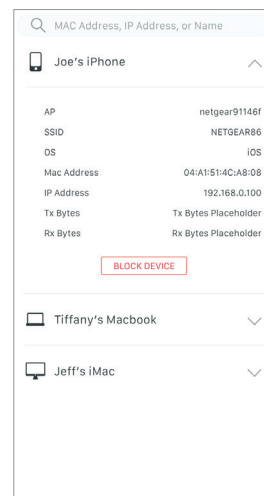
NETGEAR introduces the new IT revolution for small businesses with "One-touch connectivity" through our Insight Remote Management application. Experience easy set-up, remote management and full control of your wireless network. With over 25 years of experience in small & medium business networking, NETGEAR is now delivering wireless connectivity that "just works" at your fingertips.

NETGEAR Insight enables multi-device configuration of your NETGEAR Insight Managed wireless access points, either locally or remotely. It provides network management, monitoring and service deployment across multiple remote and local sites for the easiest and most user-friendly wireless networking experience. Anywhere management also includes Insight Managed switches and Insight Managed Wireless Access points, enabling whole network visibility and management. Insight app also allows you discover select wired and wireless devices from your local or remote network.

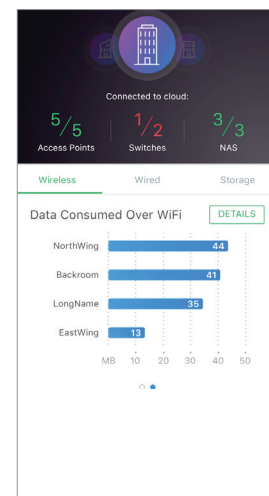
**NETGEAR**  
INSIGHT



WIRED/WIRELESS DASHBOARD



DETAILED CLIENT STATISTICS



WIRED AND WIRELESS DATA



WiFi 6E by numbers vs. WiFi 5:

**x4**  
MORE DEVICES THAT CAN BE CONNECTED SIMULTANEOUSLY

**x3**  
FASTER

**x3.5**  
MORE CHANNELS

WiFi 6E is the key to taking business connectivity to a whole new level.

### WiFi 6E

It is estimated that WiFi capacity worldwide will double in 2022, to keep pace with the explosion of online traffic and the number of connected devices, there is a new type of WiFi in town, WiFi 6E. This breakthrough in network capacity means that a much larger volume of devices can be connected via wireless, even in very dense usage areas, without compromising performance.

With WiFi 6E, there is less competition and interference between WiFi equipment, dramatically reduced network congestion, as well as smoother, faster connectivity without worrying about everything freezing or slowing down. This new industry standard builds on the existing WiFi 6 standard (the 'E' stands for extended), taking it into the much wider 6GHz radio spectrum. Nothing else operates on 6GHz: no other WiFi standards, no radar airports, nearby TV stations, nothing.

### WiFi 6E Applications

- High density, high volume - lots of users and connected devices nearby needing WiFi
- WiFi 6E Devices - Samsung Galaxy S21 Ultra, Google Pixel 6 and Pixel 6 Pro, Intel Xeon, Windows 11, Galaxy Z Fold 3 5G
- Collaboration and video conferencing - consistent access is essential to the user experience

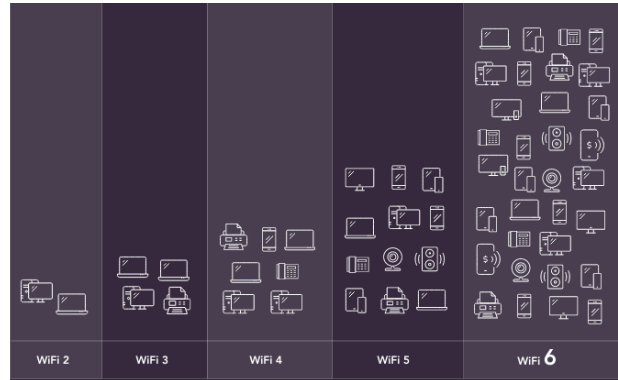


### WiFi 6E and NETGEAR

The industry's first Tri-Band WiFi 6E access point for SMBs, WAX630E, delivers up to 7.8Gbps, by combining speeds across those three bands. It is also designed to take advantage of multi-gigabit connectivity (2.5GbE), leading to better streaming, conferencing, and collaboration.

## The WiFi 6 difference

Increased speed, coverage, and capacity for today's WiFi demands



### Speed

Up to 70% faster speeds on both bands

### Coverage

Up to 50% more coverage, with no dead zones

### Device Capacity

More simultaneous users, with high WiFi quality for everyone



### WAX610

Perfect for high density client environments such as schools, hotels, restaurants and conference centers with speeds up to 1.8Gbps. It provides enterprise grade WiFi network security combined with Insight management that allows it to immediately integrate with your current NETGEAR Insight managed switches.



### WAX610Y

The WAX610Y is the outdoor version of the WAX610. It's waterproof, dustproof and protected by a P2i nano-coating that meets the IP55 rating to withstand rain and outdoor atmosphere.



### WAX615

The NETGEAR Insight Managed dual-band WiFi 6 Release 2 AX3000 access point WAX615 is a business grade Cloud Managed 11ax access point featuring 160MHz channelization, MU-MIMO, Beamforming and Airtime fairness with an aggregate throughput of 3 Gbps, and Power-over-Ethernet (PoE).



### WAX620

WAX620 is a high-performance dual band 4x4 WiFi 6 access point with speeds up to 3.6Gbps. It provides enterprise grade WiFi network security combined with Insight management that allows it to immediately integrate with your current NETGEAR Insight managed switches.



### WAX630

WAX630 is a superior tri-band WiFi 6 access point with fast and reliable speeds up to 6.0Gbps. It provides enterprise grade WiFi network security combined with Insight management that allows it to immediately integrate with your current NETGEAR Insight managed switches.



### WAX630E

NETGEAR Insight Managed Wireless Access Point WAX630E is the first business-grade Tri-Band WiFi 6E access point. With WiFi 6E, a new 6GHz band has been added to WiFi 6 making it the fastest WiFi available.



## WiFi 6 for business and home office

NETGEAR has been at the forefront of innovation and cutting-edge solution for more than 20 years, providing innovative and ground-breaking network solutions which include a suite of advanced WiFi 6 products - giving you access to the most advanced WiFi on the planet.

## WiFi 6 overcomes these challenges

- Coverage and range, especially through walls in blind spots
- Need for faster and easier set up
- Network and per device speed, especially with more devices
- Demand for security and access control
- Need for smooth configuration and firmware updates

## WiFi 6 for business

Why are businesses adopting WiFi 6?

- Best WiFi Speed - 70% more throughput than WiFi 5
- Connect More Devices - optimized speed even in high density areas
- Improved Coverage
- Future-Proofing
- Compatibility
- Battery Efficiency
- Seamless Roaming
- Faster Backbone with 2.5G - Multi-gig networking and connectivity
- High Density IoT
- Safer Networks



## Remote WiFi 6 management

Most NETGEAR WiFi 6 business access points include NETGEAR Insight, the award-winning remote cloud management solution for easy installation, monitoring, and management from anywhere.

NETGEAR Insight is an industry first in network management, providing easy plug-and-play setup and management. Its cloud portal can be accessed via an intuitive web interface or the Insight mobile app. Insight offers a wide variety of configuration options for the most basic networks to multi-tenancy and multi-roles.

NETGEAR Insight enables easy configuration, monitoring, and management of your wireless access points together with Insight-managed switches and storage. Wireless management features include: Instant WiFi for automatic wireless configuration to limit interferences, frequency band selection, VLAN creation and association with SSID, WiFi security configuration, visibility into WiFi clients, reporting, and many more.

Learn more: <https://www.netgear.com/business/services/insight/>

# Wireless Access Points

## Insight Managed Access Points



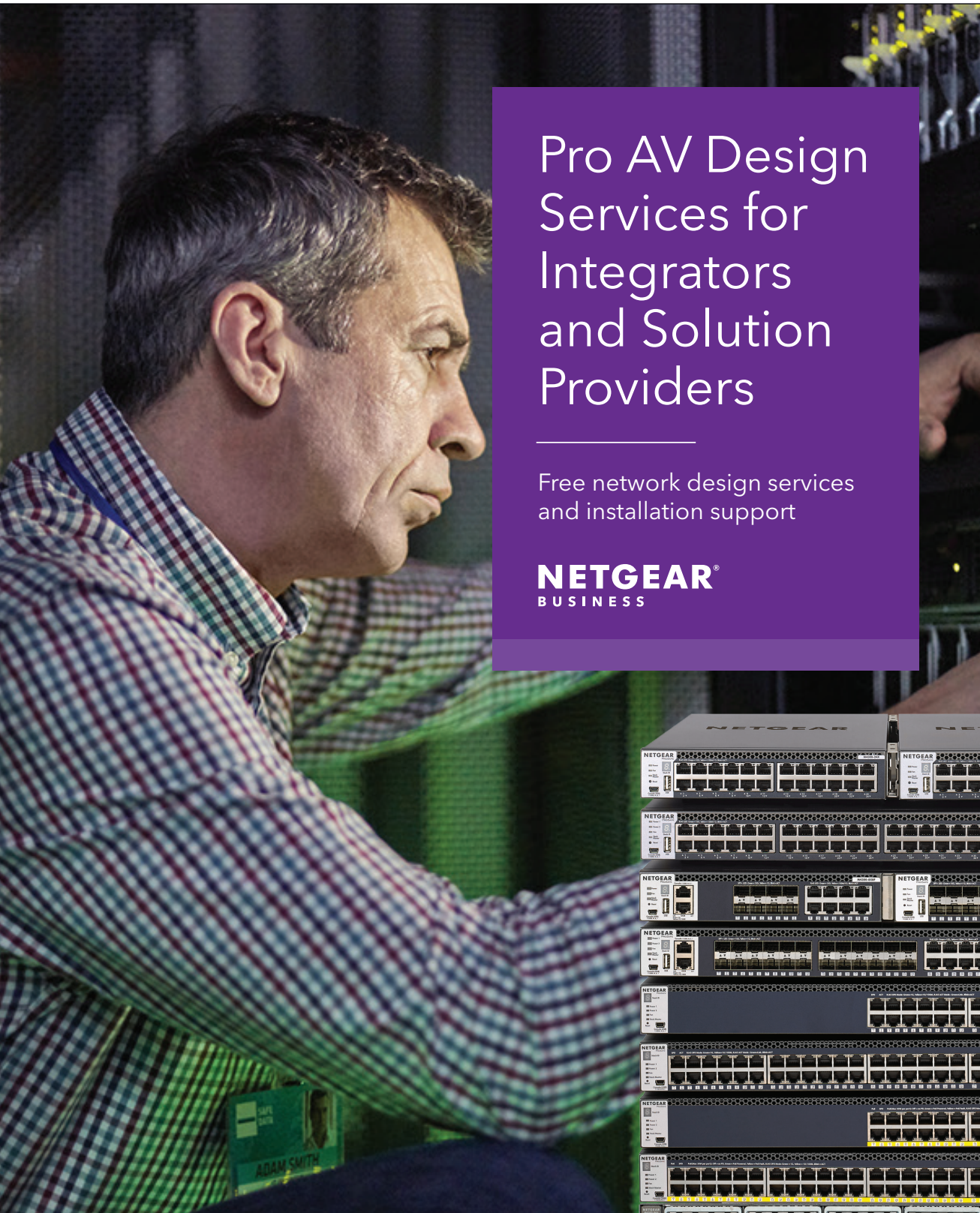
MODEL	WAX610	WAX610Y	WAX615
Product Description	Insight Managed WiFi 6 AX1800 Dual Band AP	Insight Managed WiFi 6 AX1800 Dual Band Outdoor PoE AP	Insight Managed WiFi 6 AX3000 Dual Band AP
Typical Deployment	Small to Mid-size customers for ease of deployment	Outdoor deployment for schools, hotels, Small and medium enterprise	Small to Mid-size customers for ease of deployment
<b>WIRELESS</b>			
Standard	802.11 a/g/n/ac/ax	802.11 a/g/n/ac/ax	802.11 a/g/n/ac/ax
Single Band			
Dual Band	✓	✓	✓
Tri-Band			
2.4 GHz	✓	✓	✓
5 GHz	✓	✓	✓
6 GHz			
TX by Rv	2 x 2	2 x 2	2 x 2
Throughput per Radio	600/1200 Mbps	600/1200 Mbps	600/2400 Mbps
Max # of Concurrent Clients (standalone)	30	30	60
Max # of Concurrent Clients (managed)	250	250	256
<b>HARDWARE</b>			
# of Ethernet Ports	1	1	1
Speed of Ethernet Ports	100/1000/2500 Mbps	100/1000/2500 Mbps	100/1000/2500Mbps
PoE	✓	✓	✓
Antenna Type	Internal	Internal	Internal
Antenna Gain	Internal 3.8/4.5dBi (2.4GHz/5GHz)	Internal 3.8/4.5dBi (2.4GHz/5GHz)	Internal 2.9/2.8dBi (2.4GHz/5GHz)
Additional External Antenna Connectors	No	No	No
Plenum		IP55	
Physical Size	160.9 x 160.9 x 33.25 mm	181 x 305 x 34 mm	241.5 x 241.5 x 40.2mm
Enclosure Material	Plastic Front/Metal Back	Plastic	Plastic Front/Metal Back
Kensington Lock			
Ceiling/Wall Mounting	Wall, Ceiling	Wall, ceiling, and pole mounting	Wall, Ceiling
Power Consumptions (W) Max	15.3W	16.1W	21.2W
<b>MANAGEMENT</b>			
Deployment Options	Standalone/Insight	Standalone/Insight	Standalone/Insight
<b>FEATURES</b>			
# of SSIDs	8	8	8
<b>WEP</b>			
WPA-PSK/TKIP	✓	✓	✓
WPA2-PSK/AES	✓	✓	✓
WPA3-Personal[SAE]	✓	✓	✓
802.1X	✓	✓	✓
Rogue AP Detection	No	No	No
WIDS/WIPS	No	No	No
Wireless Distribution Systems (WDS)	✓	✓	✓
Repeater	✓	✓	✓
Point-to-Point/Multi-Point	✓	✓	✓
Simultaneous Bridge /Client Association	✓	✓	✓
Captive Portal	Yes	Yes	Yes
VLANs	✓	✓	✓
MAC ACL	✓	✓	✓
802.11e/WMM	✓	✓	✓
Rate Limiting	✓	✓	✓
Bandwidth Management	✓	✓	✓
Beamforming	✓	✓	✓
IPv6	✓	✓	✓
Bandsteering	✓	✓	✓
<b>ORDERING</b>			
Warranty	5 years	5 years	5 years
Product Ordering SKU	WAX610-100NAS WAX610-100EUS WAX610PA-100NAS (power adapter included)	WAX610Y-100NAS WAX610Y-100EUS	WAX615-100NAS WAX615-100EUS WAX615PA-100NAS
ProSUPPORT Maintenance PKGS	OnCall 24x7 1-year PMB0311-100005 OnCall 24x7 3-year PMB0331-100005 OnCall 24x7 5-year PMB0351-100005	PMB0311-100005 PMB0331-100005 PMB0351-100005	

# Wireless Access Points

## Insight Managed Access Points

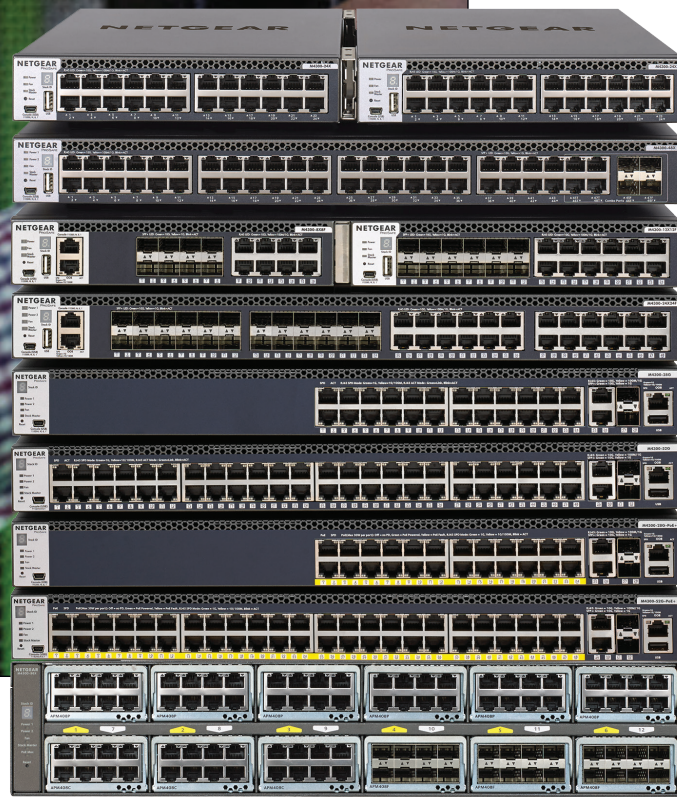


MODEL	WAX620	WAX630	WAX630E
Product Description	Insight Managed WiFi 6 AX3600 Dual Band AP	Insight Managed WiFi 6 AX6000 Tri-Band AP	Insight Managed WiFi 6E AX7800 Tri-Band AP
Typical Deployment	Small to Mid-size customers for ease of deployment	Small to Mid-size customers for ease of deployment	Small to Mid-size customers for ease of deployment
<b>WIRELESS</b>			
Standard	802.11a/g/n/ac/ax	802.11a/g/n/ac/ax	802.11a/g/n/ac/ax
Single Band			
Dual Band	✓	✓	
Tri-Band			✓
2.4 GHz	✓	✓	✓
5 GHz	✓	✓	✓
6 GHz			✓
TX by Rv	4 x 4	4 x 4	2 x 4 x 2e
Throughput per Radio	1200/2400 Mbps	1200/2400/2400 Mbps	600/4800/2400 Mbps
Max # of Concurrent Clients (standalone)	75	100	100
Max # of Concurrent Clients (managed)	250	250	456
<b>HARDWARE</b>			
# of Ethernet Ports	1	2	2
Speed of Ethernet Ports	100/1000/2500Mbps	100/1000/2500Mbps and 100/1000Mbps (2 ports)	100/1000/2500Mbps and 100/1000Mbps (2 ports)
PoE	✓	✓	✓
Antenna Type	Internal	Internal	Internal
Antenna Gain	3.1/4.3dBi (2.4GHz/5GHz)	Internal 2.86/4.41/4.98 dBi (2.4GHz/5GHz L/5GHz H)	Internal 4.4/6.3/3.1dBi (2.4GHz/5GHz/6GHz)
Additional External Antenna Connectors	No	No	No
Plenum			
Physical Size	205.7 x 205.7 x 34.3 mm	266.61 x 268.29 x 55.5 mm	266.6 x 268.3 x 55.5 mm
Enclosure Material	Plastic Front/Metal Back	Plastic Front/Metal Back	Plastic Front/Metal Back
Kensington Lock			
Ceiling/Wall Mounting	Wall, Ceiling	Wall, Ceiling	Wall, Ceiling
Power Consumptions (W) Max	25.5W	30.1W	27.64W
<b>MANAGEMENT</b>			
Deployment Options	Standalone/Insight	Standalone/Insight	Standalone/Insight
<b>FEATURES</b>			
# of SSIDs	8	8	8
<b>WEP</b>			
WPA-PSK/TKIP	✓	✓	✓
WPA2-PSK/AES	✓	✓	✓
WPA3-Personal[SAE]	✓	✓	✓
802.1X	✓	✓	✓
Rogue AP Detection	No	No	No
WIDS/WIPS	No	No	No
Wireless Distribution Systems (WDS)	✓	✓	✓
Repeater	✓	✓	✓
Point-to-Point/Multi-Point	✓	✓	✓
Simultaneous Bridge /Client Association	✓	✓	✓
Captive Portal	Yes	Yes	Yes
VLANs	✓	✓	✓
MAC ACL	✓	✓	✓
802.11e/WMM	✓	✓	✓
Rate Limiting	✓	✓	✓
Bandwidth Management	✓	✓	✓
Beamforming	✓	✓	✓
IPv6	✓	✓	✓
Bandsteering	✓	✓	✓
<b>ORDERING</b>			
Warranty	5 years	5 years	5 years
Product Ordering SKU	WAX620-100NAS WAX620-100EUS WAX620PA-100EUS	WAX630-100NAS WAX630-100EUS WAX630PA-100NAS	WAX630E-100NAS WAX630E-100EUS WAX630EP-100NAS
ProSUPPORT Maintenance PKGS	OnCall 24x7 1-year PMB0311-100005 OnCall 24x7 3-year PMB0331-100005 OnCall 24x7 5-year PMB0351-100005	PMB0312-100005 PMB0332-100005 PMB0352-100005	PMB0312-100005 PMB0332-100005 PMB0352-100005



# Pro AV Design Services for Integrators and Solution Providers

Free network design services and installation support



NETGEAR offers free design services to support partners as they design and deploy professional audio and video solutions which require IP networking infrastructure.

This dedicated Pro AV Engineering Services team of experts has been conceived to empower those who are designing and installing AV over IP systems by providing free network design assistance, training, and installation support. From pre-sales and post-sales support to technical training, to white papers and best practices, these services are positioned to help educate tech managers and integrators to become masters of AV deployments which require IP networking.

NETGEAR has reshaped the organization to address the specific needs of both enterprise and residential AV systems integrators. In order to streamline the adoption of AV over IP and to ensure the successful transition from legacy matrix switching to AV over ethernet, residential and business integrators depend on a solid partner to guide the way. NETGEAR is determined to be this partner. This new structure for NETGEAR is essentially a design center with a number of the company's top networking professionals who are accomplished at documenting, drawing, and producing AV architectures.

"This technology transition to AV over IP is an exciting new space where NETGEAR is driving the integration. We are in the market to simplify and streamline IP networking for small and medium partners who don't have the resources, the budget, or the right IT teams to leverage more complex AV installations."

Laurent Masia, director of product line management for NETGEAR



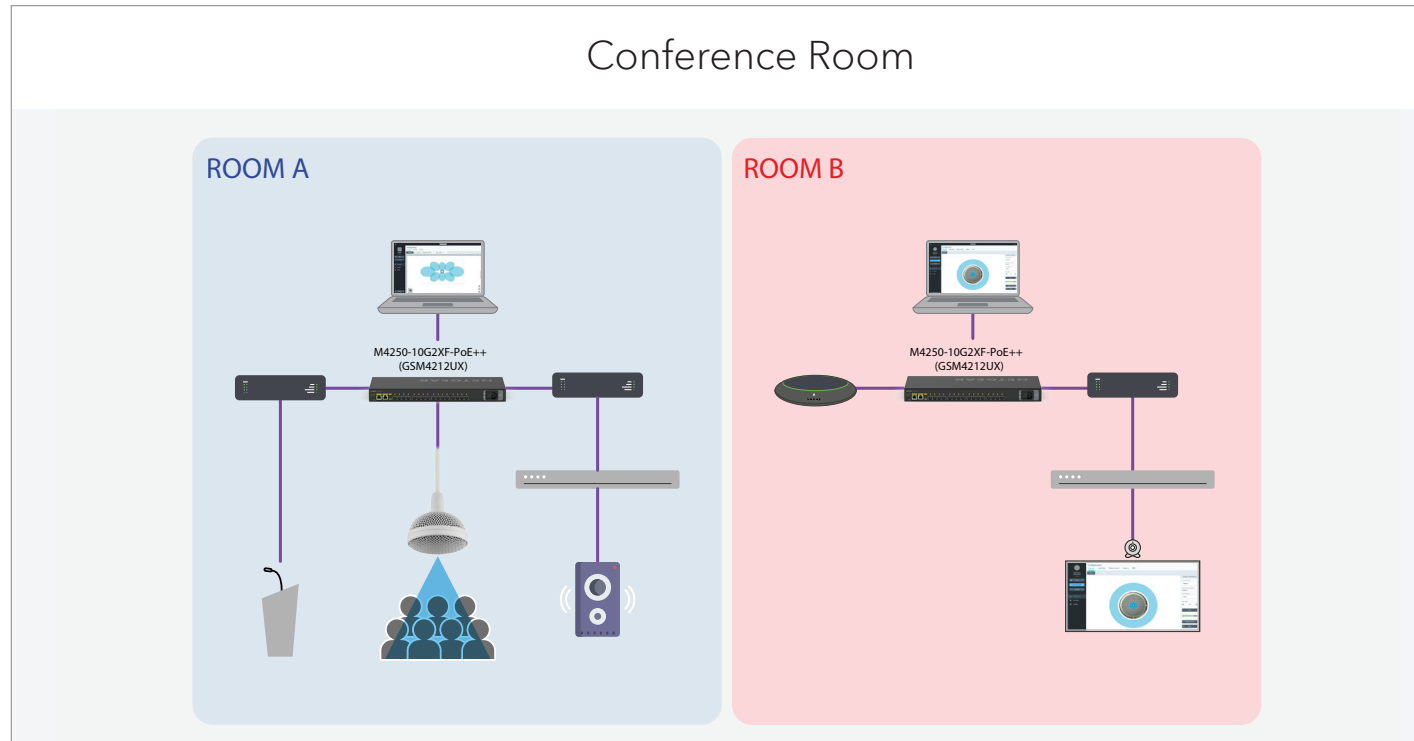
-  24/7 pre-sales services by knowledgeable Pro AV technical networking experts
-  Consistent, reliable and effective Pro AV pre and post-sales support
-  Technical training for installers and integrators
-  Product training on demand
-  Configuration guides and coaching
-  Deployment support
-  Installation troubleshooting
-  Isolating problems for escalation triage

To learn more about Pro AV custom integration visit [netgear.com/av-over-ip](https://netgear.com/av-over-ip). This new service from NETGEAR for the AV installer and integrator communities is available now.

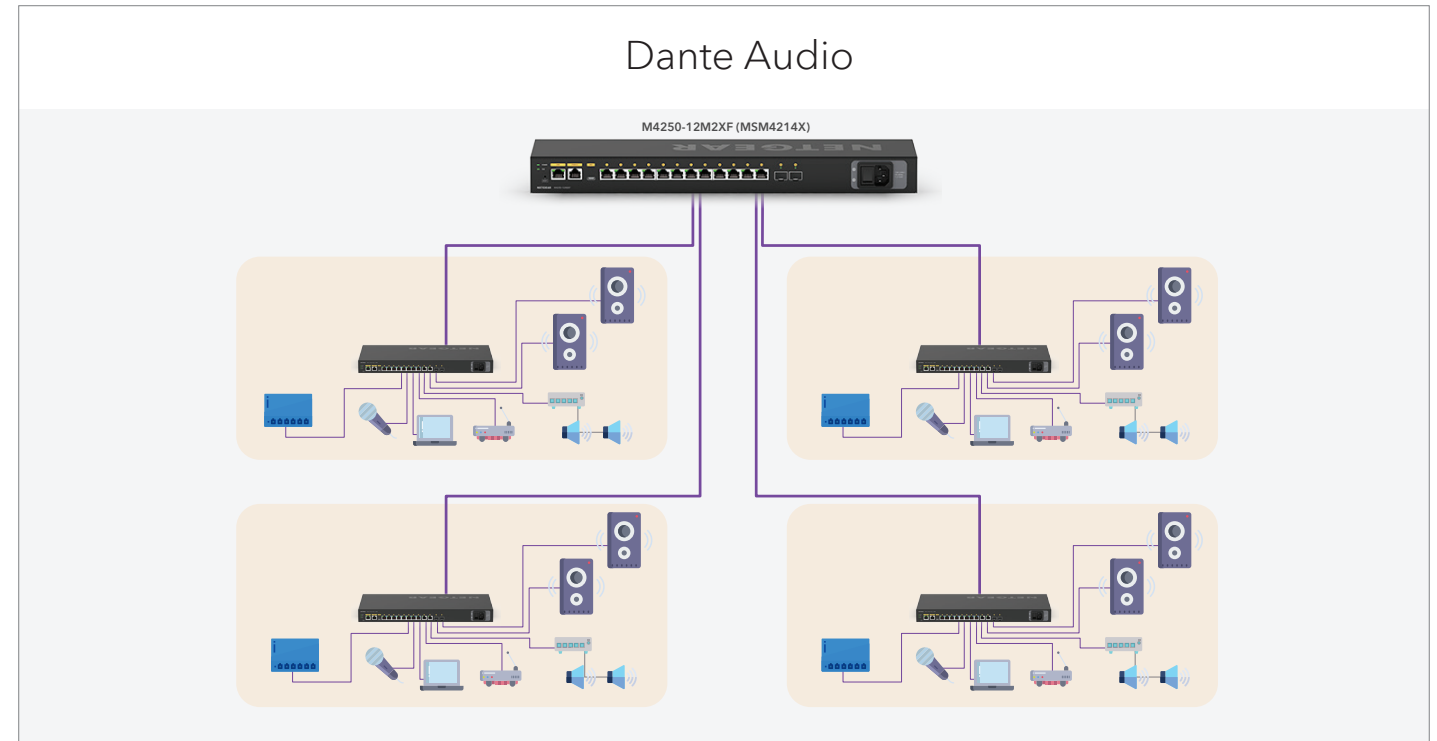
Contact the team: [ProAVDesign@netgear.com](mailto:ProAVDesign@netgear.com).

# Sample System Design Drawings

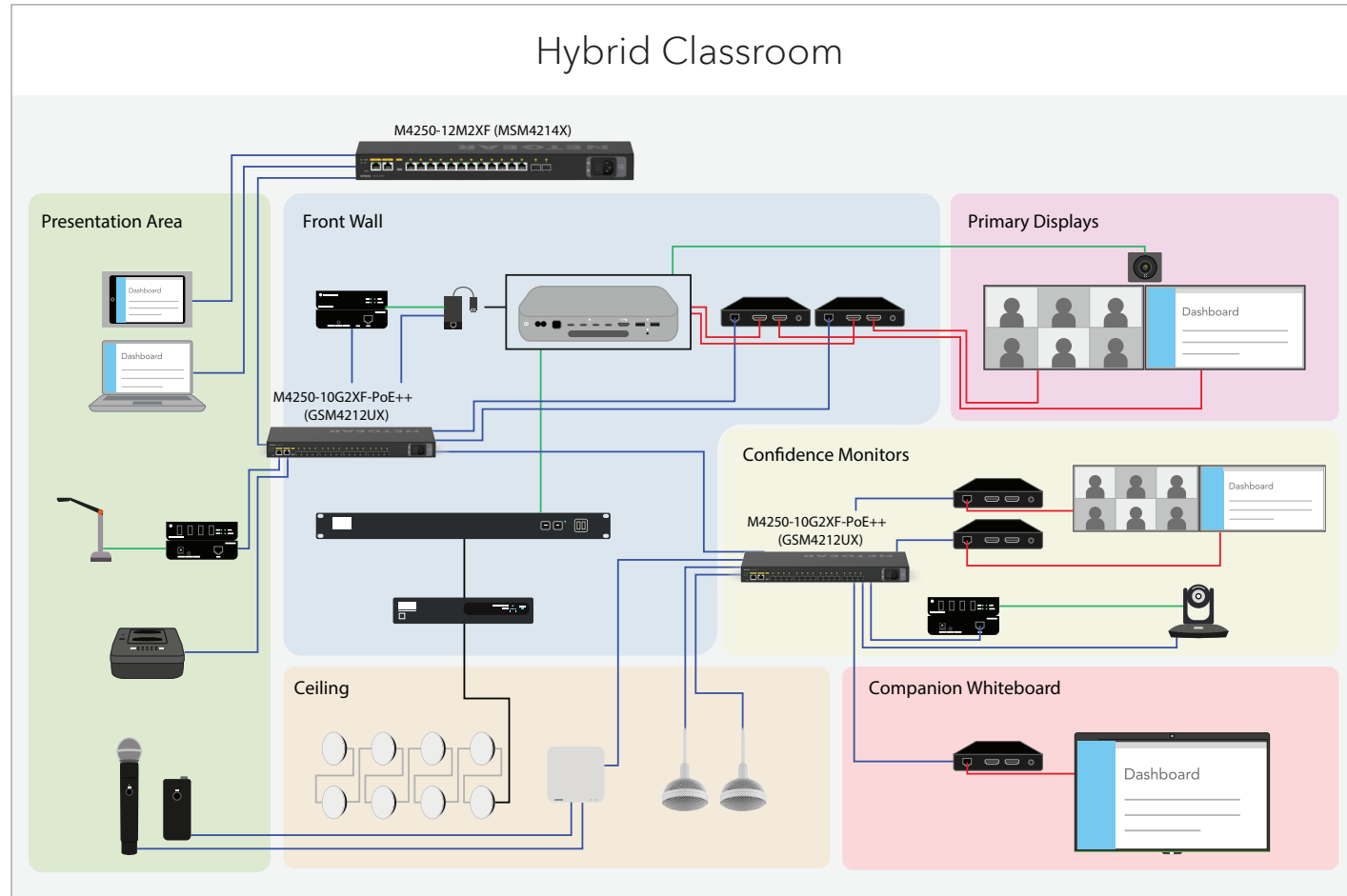
## Conference Room



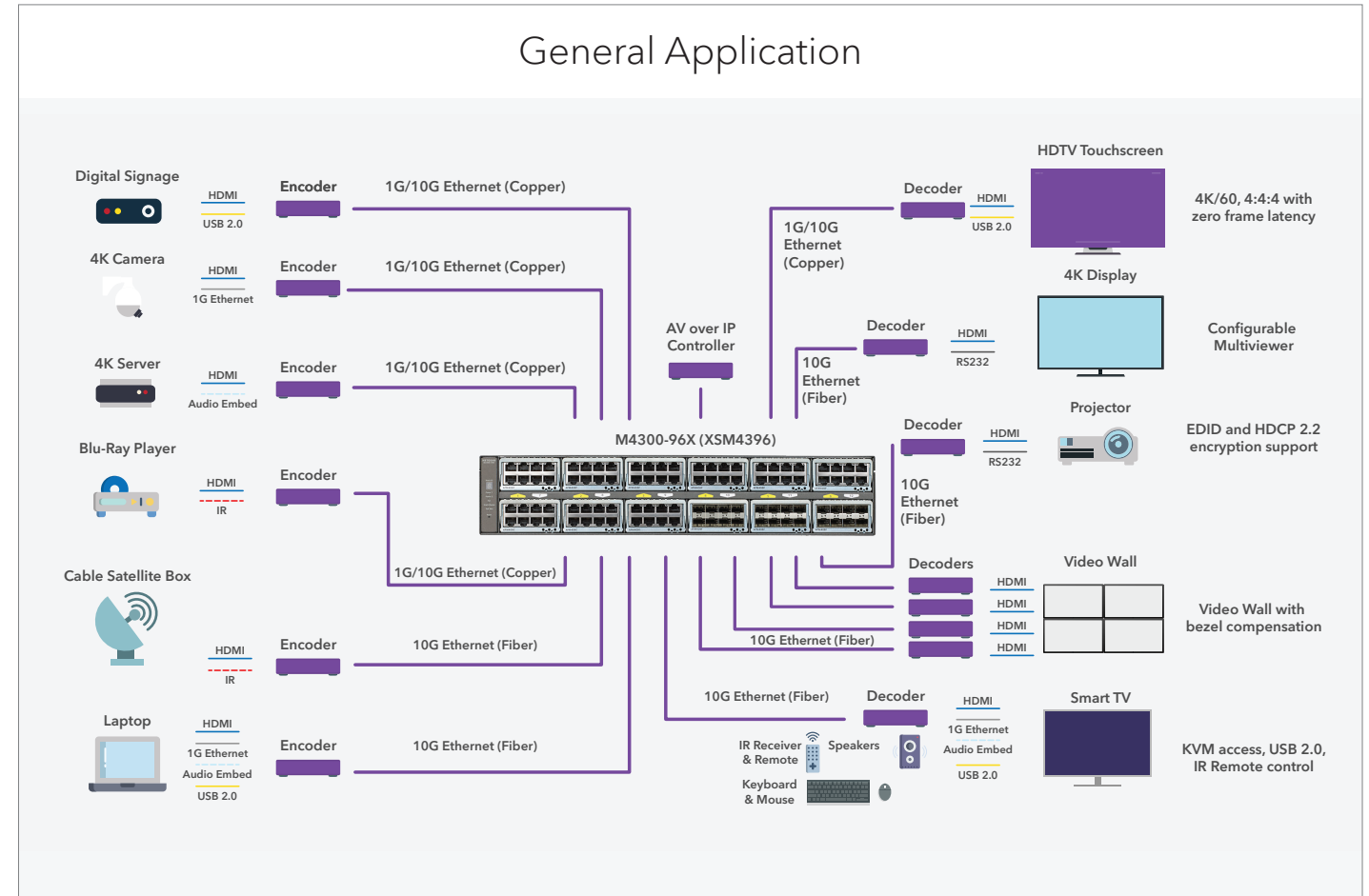
## Dante Audio



## Hybrid Classroom



## General Application





“The NETGEAR solution is very flexible and expandable, plus I know that we have access to top-notch support services.”  
 Mark Collins, KRAMER Training & Support Specialist



“It has indirectly helped us sell our products, which is of course very beneficial for the business.”  
 Mark Collins, KRAMER Training & Support Specialist

**Company name:**  
Kramer Electronics UK Ltd

**Company size:**  
11-50 employees

**Industry:**  
Electrical & Electronic Manufacturing

**Company website:**  
www.kramerav.com/UK

**Geographic region:**  
Worldwide

## NETGEAR and Kramer Electronics work together to upgrade their training academy to a solid, future proofed SDVoE solution.

### BACKGROUND

A leading player and pioneer in the Pro AV industry since 1981, Kramer Electronics are a widely established brand that has customers in 90 countries, working across numerous sectors including government, education and healthcare.

An award winning company, Kramer Electronics has consistently turned the nice-to-have into a necessity and has been at the forefront of analog, digital and IP-driven solutions in an ever-evolving Pro-AV industry; helping companies to deliver their message through audio and visual technologies that amplify what they want to say.

### PROBLEM/OBJECTIVE

Previously, Kramer Electronics was using several different manufacturers to compliment their business strategy, however, this was usually achieved through a combination of availability and distribution rather than through building core relationships. Previously, Kramer Electronics’ training centre had 5 different networking devices split across three manufacturers.

While most of their previous experiences had generally been solid, as time went on it became clear that it wasn’t keeping up with more modern devices, affecting the speed and efficiency of their services. In particular, their training center was designed in order to encourage a BYOD (Bring Your Own Device) policy as well as starting to handle SDVoE (Software Defined Video-over-Ethernet) products - this meant that having the best wireless capabilities to have desirable conditions for demonstrations was essential.

### SOLUTION

With that many different devices in one place, ranging from iPads, iPhones, laptops, Chromebooks and Android tablets, as well as the training centre’s own devices such as a touch-screen teaching desk with three interactive pods and an 84-inch display which creates a collaborative classroom, it was imperative that it all ran efficiently. To do this, they needed a way of routing the video signal from each one of the pods to every display in the room and a way of helping their products shine in the best light possible.

With this in mind, Kramer Electronics reached out to NETGEAR and we were able to provide a range of products that matched their ambitions and helped them to create the experience that they desired.

We provided them with an M4300 switch that replaced their two previous switches while a WAC540 AP was also installed.

NETGEAR’s M4300 is a stackable platform that is specifically designed for server and audiovisual installations and was a perfect fit for Kramer Electronics needs. It’s ability to scale from a 8-port 1G PoE+ up to a 96-port 10G or 24 port 40G switch means that it offers edge to core stacking and unrivalled ease of use, allowing Kramer to concentrate on what they do best without worrying about the tech that powers it.

The accompanying WAC540 AP is ideal for a high-density environment such as Kramer Electronics’ training centre, where a multitude of devices are used as it can support up to 600 users while still providing a speed of 3Gbps with consistent coverage.

### Products Installed

- 1 x M4300-96X (ProAV 1/2.5/5/10G Modular Switch)
- 3 x APM408P 8 Port PoE line card (24 ports of PoE ports)
- 5 x APM408C 8 Port Copper line card ( 40 Copper ports)
- 1 x APM408F 8 Port Fibre line card (8 fibre ports)
- 1 x WAC540 Wireless Access Point

### RESULTS

With this new infrastructure, Kramer Electronics has been able to incorporate a solution that’s solid and much faster than their previous one. Its flexibility and ability to expand also falls in line with Kramer Electronics desire to potentially grow their training center over the next few years.

It connects them much faster to WiFi and has allowed them to manage everyone’s device, resulting in fewer concerns when they have large attendances at their training centers. They are now also installing SDVOE products that require a 10G network rather than products that didn’t support such a high video resolution but only required a 1G network.

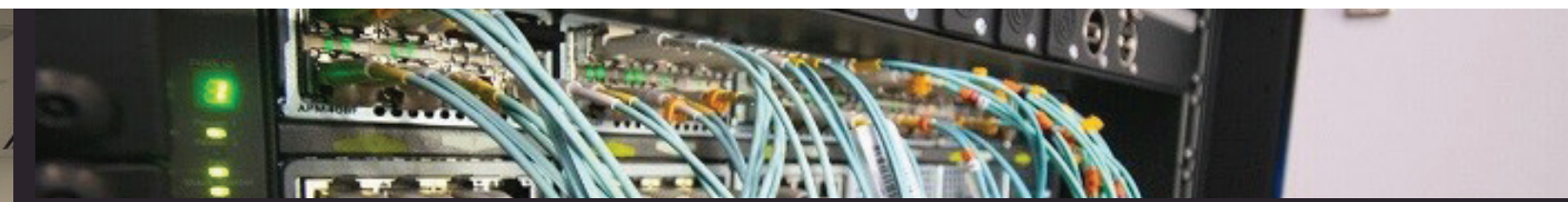
In the short-term, it has allowed them to view the room in a different light and utilize the space in a much more dynamic way, whilst also giving them ways of improving plans for future demonstrations and training sessions in that area. A more solid structure has also allowed Kramer Electronics to help sell their products, as they are being shown off in the best possible environment, indirectly impacting them in a very beneficial way for the business.





“It developed the first endoscopy site in the UK – and to the best of our knowledge on the planet – utilising uncompressed 4K video (SDVoE) over a 10GB Ethernet network using fibre interconnectivity.”

Andrew Chapple, Communications Manager, Quadram Institute



### SOLUTION

**Two-Way Audio & Uncompressed 4K:** For performing endoscopies that could be monitored by medical staff, students and researchers onsite and in remote locations. Using NETGEAR’s M4300 switches afford us 10G connectivity which is considerable bandwidth for the required two-way audio and uncompressed 4K video with near zero latency from four sources simultaneously.

“We used NETGEAR switches as we needed a modular switch that would allow us to provide maximum flexibility and expandability in the future. The nice thing about this NETGEAR solution is that it is basically pre-configured to work with ZeeVee’s encoders/decoders. Multicast configuration can be tricky; using NETGEAR switches was very simple.” – Kevin Madeja – Snelling Business System

This multi-view platform enables live visual and voice interaction between clinicians performing procedures in the four interconnected endoscopy suites and those viewing from other locations in the facility and beyond its walls.

All specifications of the system meet stringent government and industry requirements for medical applications.

For example, the equipment in the endoscopy suites that is directly connected to the endoscopic medical equipment have medical grade power supplies, galvanized isolation and anti-bacterial coating.

**Innovative Uncompressed 4K AVoIP Solution:** “As the leading facility for endoscopies in the country, it is important that the AV system does all it can to support those performing the procedures, as well as those being trained to perform them,” said Kevin Medeja, Group Technical Officer, Snelling Business Solutions.

“The level of performance and sophistication we were able to achieve would not have been possible using an HDBaseT or compressed SDVoE AVoIP (AV over IP solution).”

To capture and stream AV sources for this ground-breaking system, Snelling selected ZeeVee ZyPer4K SDVoE encoders for fiber Ethernet, which deliver uncompressed 4K 4:4:4 video over a 10G NETGEAR optical IP network.

Outputs from the high-resolution endoscopy camera, as well as the suite’s PTZ cameras, were connected to the encoders. ZeeVee’s technology enables streams from multiple sources to be seen in multi-view format on a single display, all in real-time.

**IP Switch Choice:** To support the required 10G Ethernet infrastructure, NETGEAR M4300 switches were selected. NETGEAR are also an SDVoE Alliance co-founding member.

“This ambitious project underscores how the demands of today’s AV applications in the medical arena, including the requirements for the highest video quality and low latency, can be met and exceeded in healthcare environments,” said Richard Jonker, VP SMB Product Line Management, NETGEAR.

“The convergence between AV and IT is here and it’s supporting new ways for practitioners to deliver better outcomes.

### RESULTS

ZeeVee ZyPer4K, NETGEAR M4300 switches and SDVoE technology combined to provide the following benefits to Quadram Institute’s endoscopy suite, seminar rooms and remote medical community:

**Multiview was Critical:** Multiview processing built into the decoder reduced the complexity of the installation by removing additional image processing hardware.

**Image Quality:** The 10G system provided pixel-perfect resolution, clarity, and color reproduction. A 1G compressed SDVoE AVoIP solution had the potential to introduce compression artifacts and reduced quality, which is unacceptable for medical applications.

**Latency:** The system’s two-way communication required near zero latency, and SDVoE technology provides sub-100 microseconds of latency.

**Galvanic Isolation:** Stray currents that compromise visual acuity are unacceptable in a facility performing endoscopic procedures on patients. The 100% fibre infrastructure eliminated this threat.

**Worry-free Deployment and Configuration:** ZeeVee products are auto-discovered by the ZyPer Management Platform and NETGEAR switches are pre-configured for AV over IP distribution.

**Future-proofing:** Built-in 10-Bit HDR support allows Quadram Institute to expand its application with the latest technology at any point in the future without having to replace any of the core infrastructure.

**Company name:**  
Quadram Institute

**Company size:**  
400+

**Industry:**  
Medical

**Company website:**  
quadram.ac.uk

**Social:**  
facebook.com/  
QuadramInstitute

**Geographic region:**  
Norwich, England

## NETGEAR’s M4300 helps implement a system with zero-latency and pixel-perfect uncompressed 4K video quality.

### BACKGROUND

The Quadram Institute in Norwich, England, is a groundbreaking medical centre focusing on food science and health. The new £84 million facility brings together more than 100 clinicians and 300 researchers from several founding partner organisations.

It also includes one of the UK’s largest endoscopic and bowel cancer screening suites capable of handling more than 40,000 procedures a year, making it one of the largest in Europe.

To support its crucial diagnostic, teaching and research mandates, the Quadram Institute needed an AV system to elevate the level of collaboration between clinicians, students and researchers conducting and monitoring the procedures performed on site.

In addition to meeting rigorous health codes, the system would need to provide video imaging of the highest quality as well as video switching with near zero latency to facilitate real-time viewing and interaction among medical and clinical staff.

### PROBLEM/OBJECTIVE

Snelling Business Systems, the UK-based global AV systems integrator, was selected to handle the comprehensive and critical AV requirements—creating the first endoscopy site in the UK utilising SDVoE technology to distribute uncompressed 4K video over a NETGEAR 10GB Ethernet network.

For reasons of bandwidth as well as electrical isolation, the system infrastructure was specified for 100% optical fibre connectivity, another first for a medical imaging facility.

“There was no doubt the integration of cutting-edge video and networking technology would be critical to achieving our vision of a world-class, forward-thinking institute,” said Andrew Chapple, Communications Manager, Quadram Institute.

“Snelling Business Systems has proven its merit as a technology partner who helped us realise our vision with zero compromise.”







“This project has been a great example of how we can work together with customers and our partners – such as Barco, Sennheiser, and NETGEAR – to deliver AV experiences that are not just high-quality, but are seamless and effortless for the user.”

Cory Schaeffer, Director, Alliances & Ecosystem, QSC



“You get the whole package: high-quality audio, stunning visual communication, lots of control, remote capabilities: what else could you want?”

Greg Harper - President of Harpervision Associates, VP of infrastructure for Shorelight Education

**Company:**  
Gateway

**Industry:**  
Corporate

**Website:**  
gateway-nyc.com

**Location:**  
New York, USA

## A user-centric, state-of-the-art AV experience for the US’s oldest chamber of commerce

### SUMMARY

Part of the Swedish-American Chamber of Commerce New York (SACCNYS), Gateway is an innovation hub for companies looking to extend their success in the US. It includes state-of-the-art AV facilities that create an immersive user-focused experience, making AV as easy-to-use and flexible as possible while at the same time ensuring high quality. Supporting all the AV technologies from QCS, Barco, and Sennheiser, Gateway uses a backbone of NETGEAR-manufactured network switches, providing robust performance throughout the location.

### BACKGROUND

Over 100 years ago, the Swedish-American Chamber of Commerce, New York (SACCNYS) was founded to promote and strengthen trade and commerce between Sweden and the United States. Today, SACCNYS continues to thrive, with Anna Throne-Holst, appointed SACCNYS’s president in 2017, at the helm. “In my public life, much of my work was supporting small business,” she said, “So, when I was offered the opportunity with SACCNYS, I jumped on it, with the goal of creating a model chamber, offering both services and support to the innovation and start-up sectors, while facilitating important synergies with the long time, large corporate members.”

This led to Gateway, which provides members with everything they need to help accelerate their success, including business matching, partnerships, administrative setup, desk and event space. The opening of Gateway also coincided with a move to SACCNYS’s current 20,000 square foot home on the 29th floor of 900 Third Avenue in New York City, with spectacular city views and capacity to grow. “The move meant we could create a myriad of working and event-based areas for these entrepreneurs and innovators,” said Throne-Holst, “I wanted to create a state-of-the-art meeting space.”

### THE REQUIREMENT

To move the project forward, Throne-Holst engaged Greg Harper, president of Harpervision Associates, VP of infrastructure for Shorelight Education, and technology advisor to various other organizations. Harper pitched the idea to Sennheiser, Barco, and QSC, resulting in a collaboration between all parties, using some of the latest innovations from these technology leaders.

Most importantly, the vision was for an environment that was flexible, seamless, easy to use, and as invisible as possible. Said Greg Harper, “Executives don’t want to have to think about the technology – they want a videoconferencing experience to be as authentic as possible.”

### THE SOLUTION

The subsequent and impressive design of Gateway includes a showcase space referred to as ‘A Room with a View,’ which provides seating and videoconferencing for up to 12 people. The Q-SYS OS, the software-based foundation for Q-SYS, drives and manages the room’s Q-SYS Core 110f processor and its connected peripherals. Up to 256 network audio channels and multiple VoIP instances are supported.

Three Q-SYS PTZ-IP Conference cameras allow multiple vantages and an immersive remote experience. Plus, QSC Partner Sennheiser’s TeamConnect Ceiling 2 (TCC2) microphone has been easily integrated into the Q-SYS system design, and its beamforming ‘follows the speaker.’

“The TCC2 triggers the camera position presets based on the speaker’s location. So we are getting the data from the Sennheiser TCC2 microphone and using that data to switch the cameras based on who is speaking,” said Greg Harper. In addition, one of the highlights of this particular space is a high-impact 14 foot LED video wall.

### BRING YOUR OWN MEETING

In alignment with the SACCNYS’s vision of a seamless user experience, agnostic ‘Bring Your Own Meeting’ enables users to access conference-mode switching via a Q-SYS Touch Screen Controller easily. So, users can instantly shift the setup to Teams, Zoom, or whatever AV meeting service of choice. Furthermore, users can connect and present wirelessly anywhere within Gateway, through a Barco ClickShare Conference integrated with Q-SYS.

Beyond the Room with a View, there is also an 18 seat Board Room and a storage room converted into the Media Lab and the Event Room, with a capacity for 60 people (or 100 standing). In common with the ‘Room with a View,’ all these spaces feature technologies from QSC, Barco, and Sennheiser, providing similar combinations of flexibility and simplicity and a rich AV experience.

### NETWORK BACKBONE

Critical to the successful deployment of the Gateway’s sophisticated AV environment is having a network switch backbone that ensures all audio and video are delivered robustly and with consistently excellent quality from the system’s core components to all endpoints. For this task, Q-SYS recommended its NV Series Gen 2, a range of enterprise-grade NETGEAR-manufactured network switches. These are pre-configured specifically to meet the performance requirements for Q-SYS, AES67, and Dante.

Said Cory Schaeffer, Director, Alliances & Ecosystem, QSC, “These switches are already configured for Q-SYS, meaning that they are both straightforward to install in advanced AV applications. Once in place, we know we can rely on these switches to perform well. We have been partners of NETGEAR for many years, and as well as products, we share a solid relationship.”

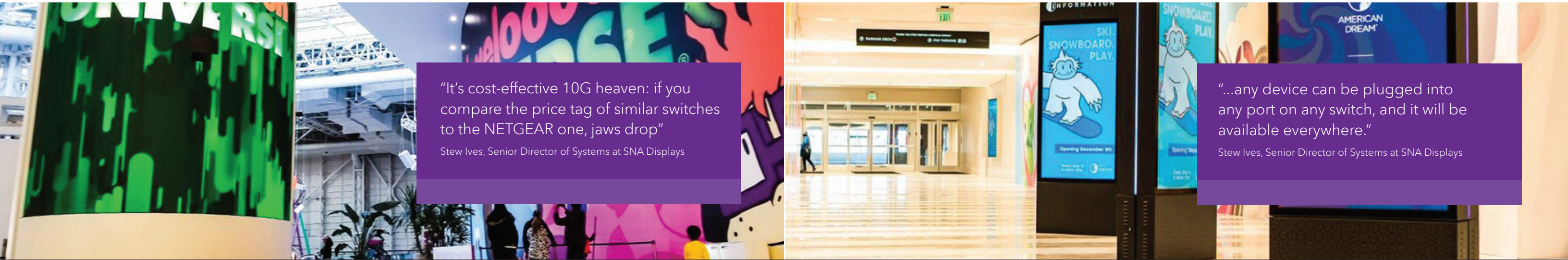
One of the most significant plus points of this series of switches is NETGEAR IGMP Plus™, a feature developed by NETGEAR to provide improved and automatic multicast data management. This means system architectures are greatly simplified using familiar IGMP techniques across the entire AV over IP network, minimizing configuration complexity and the risk of manual error. These switches also feature Power over Ethernet (PoE), reducing the need to install additional electrical power cables.

### THE OUTCOME

The installation was completed in 2021 and today provides the SACCNYS community with a highly immersive user experience. Said Greg Harper, “Our setup is truly BYOD – this is extremely powerful, and you don’t get that in many places. You get the whole package: high-quality audio, stunning visual communication, lots of control, remote capabilities: what else could you want?”

Concluded Cory Schaeffer at QSC: “This project has been a great example of how we can work together with customers and our partners – such as Barco, Sennheiser, and NETGEAR – to deliver AV experiences that are not just high-quality, but are seamless and effortless for the user.”





"It's cost-effective 10G heaven: if you compare the price tag of similar switches to the NETGEAR one, jaws drop"  
Stew Ives, Senior Director of Systems at SNA Displays

"...any device can be plugged into any port on any switch, and it will be available everywhere."  
Stew Ives, Senior Director of Systems at SNA Displays

**Company name:**  
SNA Displays

**Industry:**  
LED Display  
Manufacturing

**Company website:**  
www.snadisplays.com

**Geographic region:**  
Times Square, NYC, USA

## American Dream – visitor AV that delivers a real wow factor

### INTRODUCTION

New Jersey's American Dream takes entertainment, dining and retail to a whole new level, underpinned by interactive and immersive AV. Set to become one of the leading and biggest visitor experiences in North America, American Dream is a feast for the senses, with its impressive LED walls and hundreds of digital signage kiosks.

Integral to delivering a large-scale, high-quality AV experience throughout the vast site is a powerful and flexible Ethernet network, using NETGEAR switches designed for AV. These form part of an integrated and sophisticated solution that also uses advanced AV over IP technology from Aurora Multimedia.

The primary digital signage supplier for American Dream is SNA Displays, a New York-based LED display manufacturer, which is providing more than 40,000 square feet of digital display technology to the development.

### BACKGROUND

Occupying a multi-million-square foot site at Meadowlands in East Rutherford, American Dream is 70 percent entertainment, featuring water parks, indoor gardens, a ski slope, an ice rink, roller coasters, golf and more. When it is time for some retail therapy or refreshment, familiar names in the mall include H&M, Primark, Zara, Taco Bell and Five Guys. In addition to multiple LED video displays, over 200 digital signage kiosks throughout the location support a fantastic visitor experience, delivering information, wayfinding and interactive entertainment.

Sansi Development Group (SDG) operates and manages the interior and exterior digital signage network. It brought in expertise from SNA Displays to provide a complete turn-key content management and display network to support American Dream's AV needs, as well as to manage on-going network operations. SNA Displays is a global provider of high-end digital displays and has designed and built some of the largest and most well-known digital spectacles worldwide.

### THE CHALLENGE

Delivering AV on this scale would have been impossible using traditional AV, so networked AV-over-IP was the only way to go. That means a heavy-duty backbone of switches that can efficiently communicate with each other, while having enough bandwidth to support a huge matrix of 360 sources and 300 destinations. The existing switches on site were not seen as viable long-term to support this size of an installation and any expansion in the future.

Stew Ives, Senior Director of Systems at SNA Displays, was the project lead and explains what he was looking for: "The AV network is critical in the mall, so downtime or latency is not acceptable. We also wanted a "plug and play" SDVoE-compliant switching solution that didn't require outsourcing of the configuration or maintenance to a third-party. We were also looking for a manufacturer we could work with directly during set-up and afterwards."

Aurora Multimedia was already playing a critical role in the project, including provision of its ground-breaking IPX-TC3 IP/AV streaming, the industry's first 4K2K transceiver and receiver with zero compression and latency, which synergizes various IP/AV standards to work together as one and is based on Aurora's IPBaseT® technology. Well-versed in AV-over-IP, Aurora understood SNA Displays' switching requirements and recommended Stew took a look at what NETGEAR had to offer. Says Aurora CEO Paul Harris: "As a NETGEAR Platinum Partner, we were already aware of the company's wide range of AV-over-IP switches and knew these were the right fit for American Dream."

### THE SOLUTION

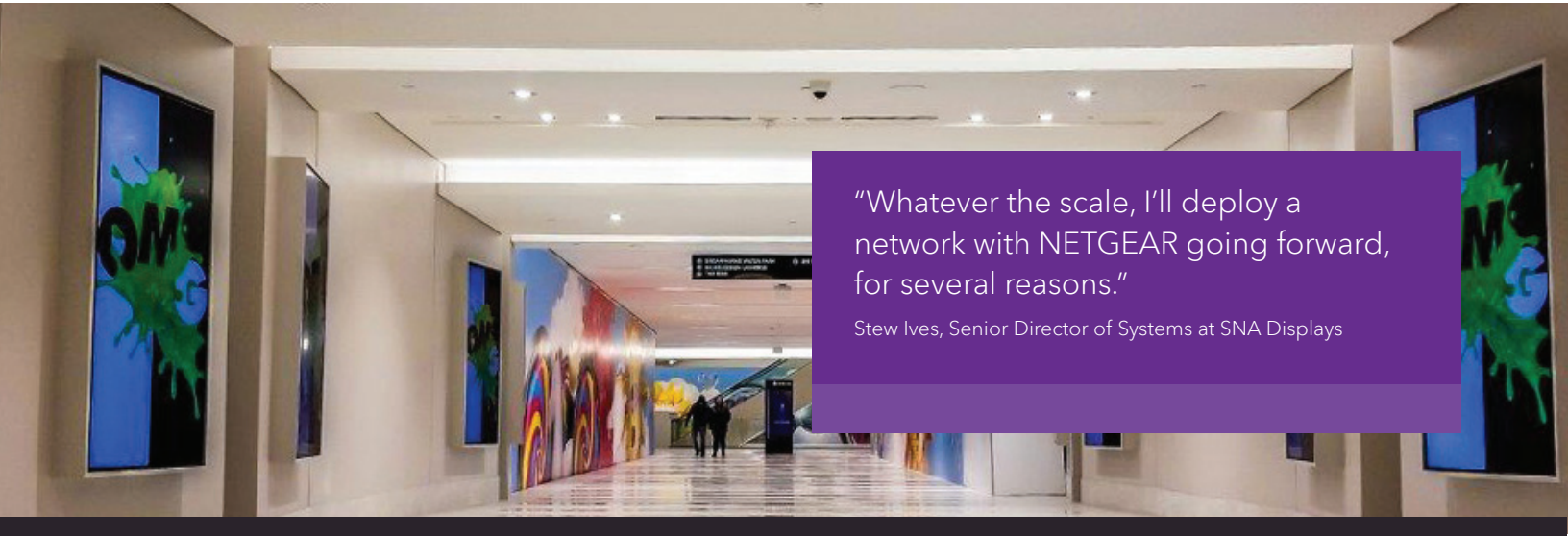
Following a consultation period, Aurora's recommendation led to the NETGEAR M4500 Series of switches being chosen. The NETGEAR M4500 series ticked several important boxes, including SDVoE compliance for easy integration with compatible equipment. The simple and fast configuration of the switches themselves was another big factor, thanks to NETGEAR IGMP Plus™. This makes it straightforward for the M4500s to connect and communicate with each other, eliminating the complexity that traditional Layer 3 switching would require.

Adds Ives "The network must flex with building changes. The M4500 provides a full, non-blocking design, so together with the IPX-TC3-Pro from Aurora, this means that any device can be plugged into any port on any switch, and it will be available everywhere."

There is full 4K/60 4:4:4 10Gb data to every kiosk and LED video wall, delivering consistent, latency-free image quality, with IPBaseT Manager software from Aurora controlling and routing all signaling. This adds up to a powerful and very flexible AV network that can keep pace with any changes across the entire site.

A further benefit is return-on-investment, with the M4500 series costing a fraction of comparable switches. "It's cost-effective 10G heaven: if you compare the price tag of similar switches to the NETGEAR one, jaws drop," says Ives.





“Whatever the scale, I’ll deploy a network with NETGEAR going forward, for several reasons.”

Stew Ives, Senior Director of Systems at SNA Displays

#### INSTALLATION

The original plan was to move from the legacy switches to the new ones overnight to minimize visitor disruption. However, Covid-19 meant that American Dream had to temporarily close its doors, and installation had to be carried out without on-site support from NETGEAR. Stew Ives: “Fortunately, the out-of-the-box set-up and remote NETGEAR network management meant we could do all the work ourselves. We anticipated 12 hours downtime to complete the change-over, but it only took four hours, and most of that was physical labor.”

Ives continues, “When we needed them, the NETGEAR Pro AV Engineering Services team was very helpful. I have a shared Slack channel between our team and theirs, and that’s critical to keeping up with what’s going on during a demanding project like this. There are always going to be unforeseen hiccups, but as long as someone responds straight away, that’s all we ask.”

#### RESULTS

The finished installation includes 16 M4500-48XF8C edge switches, and four M4500-32C core switches carrying AV traffic. As of Fall 2020, the total number of kiosks stood at 220, with approximately 140 other outputs going to LED screens and video walls managed by Analog Way processors.

SNA Displays also replaced the existing data network with a M4300-96X core switch, supported by multiple smaller NETGEAR S3300 switches. Says Ives, “While the M4300 is purpose-built for AV, it is excellent for carrying other network traffic.”

Concludes Ives, “Whatever the scale, I’ll deploy a network with NETGEAR going forward, for several reasons: you are dealing directly with the experts, the switches meet our customers’ requirements, and no time is wasted. In the meantime, with the American Dream project, we have contributed towards the groundwork of what is a phenomenal place.”

For more information on NETGEAR’s Pro AV switches and services:  
[www.netgear.com/proav](http://www.netgear.com/proav)

For more information on SNA Displays:  
[www.snadisplays.com](http://www.snadisplays.com)

For more information on Aurora Multimedia:  
[www.auroramultimedia.com](http://www.auroramultimedia.com)