FUTURE

Making the Switch

EXECUTIVE VIEWPOINT: NETGEAR'S AV-OVER-IP SWITCH SERIES

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The picture is coming into sharp focus: the professional-AV market is swiftly moving to a converged network where AV assets will live within the traditional IT infrastructure. Driving this evolution are AV over IP systems which deliver audio and video feeds via IP pathways. "[AV over IP] is a game changer for the industry and its impact cannot be overstated," said Anthony Brennan, research analyst, FutureSource Consulting, in a global report published in 2017. "We're seeing the beginnings of a trend that will shake up the industry, with our forecasts pointing to a volume CAGR (compound annual growth rate) of nearly 50 percent during the next five years. Make no mistake, AV over IP will transform the way the pro-AV market interacts with and controls AV systems."[1]

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>
> Anthony Brennan
> Research analyst
> FutureSource Consulting

While the scalable nature of AV over IP is poised to revolutionize the industry, it requires the right infrastructure to achieve the full benefits and ROI. Because of this, technology stakeholders are now thinking more critically about physical requirements and networking partnerships in order to transport high-quality, bandwidth-heavy streams with no delay. NETGEAR has been at the forefront of enterprise networking for more than two decades, and now the company is laying the groundwork for the future of AV over IP. NETGEAR's ProAV solutions are custom-engineered for AV-over-IP deployments, with IT protocols and workflows in mind—and optimal AV performance as the goal. The company's M4300 and M4500 Series switches are preconfigured with the multicast functionality required for both 1GB and 10GB AV-over-IP installations. Features such as non-stop forwarding and NETGEAR IGMP Plus™ ensure that AV-over-IP systems will operate at their full potential with no compromise in content quality or performance.

1. https://www.futuresource-consulting.com/reports/posts/2018/december/futuresource-av-over-ip-market-report-worldwide-dec-18/

NETGEAR supports the entire ecosystem as AV and IT converge, providing purpose-built solutions, network design services, and 24/7 installation support by ProAV networking experts. From its robust switching portfolio, to its education and design services, NETGEAR is helping clients large and small make the switch to AV over IP.

A CLEARER PICTURE IN 2020

The "analog sun" set in 2012, meaning that many businesses, schools, and organizations are nearly one decade into the digital transformation. The time is right for institutions large and small to level up and conduct the needs analysis for IP-based media ecosystems.

With its retail, commercial, and networking services teams fully in place, NETGEAR wanted to get ahead of the AV-over-IP trends and engineer solutions specifically for the AV channel. As a founding member of the SDVoE Alliance, the organization dedicated to advancing software-defined video over Ethernet, NETGEAR began to "understand where the legendary switching company could really focus its AV-over-IP product set," said Randy Keener, NETGEAR's business development manager, ProAV.

NETGEAR, one of the CE industry's go-to switching brands, now offers a comprehensive, diverse, and purpose-built series of switches for the ProAV market that ensures distribution of virtually any type of AV over IP.

There is no denying the power and resilience of the Ethernet. But many infrastructure switches are still hard to configure for ProAV applications, and interoperability is not guaranteed. That's why NETGEAR opted for a different approach for its AV-over-IP solutions. "We took a Layer 3 switch, which is really no different than other manufacturers such as Cisco, HP, Juniper, and a number of others, and packed it with necessary AV features and tailored it for AV over IP. We purposely built this product category," said Alex Pendleton, ProAV System Design Engineer, NETGEAR. "Our M4300s and the new M4500 100GB switch are targeted for the AV market. We've taken a lot of the key streaming video features and enabled them right out of the box. However, they still have all the comprehensive IT functionality if you need it. We didn't dumb these switches down, simply made them easier for AV purposes."

NEW VALUE PROPOSITION

The value equation for integrators is changing; value is no longer defined exclusively by equipment costs. NETGEAR offers a compelling new value

Takeaway for the AV Installer

AV integrators can work with NETGEAR to custom order the right solution for their venues. Order exactly the combination of fiber or copper ports needed now with the flexibility to upgrade in the future. Certified online and in-person training ensure the integrator is armed with the knowledge required for a smooth installation. NETGEAR Business is committed to helping ProAV installations by offering limited lifetime warranties and next business day hardware replacement if a hardware failure occurs.

proposition with its AV-over-IP focus, ease of install, in-house design services and installation team, and limited lifetime warranty. The modular M4300-96X switch accommodates SDVoE encoder cards directly in the chassis, eliminating the need for an external encoding device. This capability reduces system complexity, user error, and points of failure while providing a streamlined AV-over-IP configuration. NETGEAR also decreases the total cost of ownership (TCO).

As AV professionals move forward, and networked video and audio at higher resolutions become more prevalent, the investment in a NETGEAR switch will bring long-term value. Adding another switch in a connected environment will be quick and painless. Clients will not need to rip and replace; instead, they can just add switches as needed. The NETGEAR approach is far more flexible and scalable than a "typical matrix switcher," said Keener, where "you have one input to one output, and if you move something to a different port, it might not work, depending on the situation."

Similarly, configuring and troubleshooting competitor switches for ProAV networks can be time-consuming. That can drive installation and support costs up. With NETGEAR's IGMP Plus™ feature on the M4300 and M4500 switches, clients get a quick, out-of-the-box solution. IGMP Plus eliminates the headache of command-line configuration and speeds up the process of implementing an AV-over-IP solution on a complex ProAV network topology.

The only constant is flux, and NETGEAR's unique AV-over-IP strategy ensures ROI now and along the product lifecycle.

USE CASES

NETGEAR's M4300 Series is the ideal switching product for video walls and connected AV installations of every size and flavor: restaurants, sports bars, hotels, colleges/universities, training facilities, bars, theme parks, government facilities, and airports.

Because the NETGEAR M4300 easily handles larger port counts, offers better bandwidth capabilities and flexible modules for 1G and 10G solutions, integrators can also provide fiber as well as copper for more complex installations like stadium signage.

This feature-rich solution is also useful in healthcare applications where clients require 4K video with zero visible latency for surgery instruction, or

Takeaways for the Tech Manager

"When you bring an AV environment into a typical IT network, it can get complicated," said Randy Keener. "When you start adding streaming video, content sharing, or voice over IP, you can break things. It takes a high-level engineer to do the due diligence to make sure that, again, they don't break anything in a production network. With NETGEAR, we've done all of the due diligence in-house. We are educating integrators and taking a proactive approach today. We are also focusing on manufacturers, IT and AV managers—all the players in the marketplace. We have aligned our ProAV team to support manufacturers, integrators, managers, and consultants, and we believe that no one else is really proactively doing that."

when vivid color clarity is critically important. At the Quadram Institute, a leading medical facility based in the UK, the NETGEAR M4300 is an essential component of a 10GB AV-over-IP system running lossless 4K over IP. Built-in 10-Bit HDR support allows the 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.

Similarly, offices with networked projectors and conference rooms are benefiting from NETGEAR's highly configurable approach. "We've done a number of law offices in New York City where you know you have large distance requirements and video will be critical," said Pendleton. "Command and control centers for emergency services, or control rooms where security depends on high quality video and facial recognition—these are perfect fits for NETGEAR."

Smart homes are also realizing the immediate benefits of NETGEAR's AV-over-IP strategy. "We're working with a range of manufacturers, some of whom do residential," Keener explained. "They'll need commercial-grade switching when they get the whole home system installed. In a 5,000- or 8,000-square foot home, if you want everything connected—from power, to LED lights, to home theaters, and AI assistants or wireless speakers—with easy operation, that takes engineering. We're working with partners in the AV industry to come up with solutions for that."

QUICK INSTALL, NO DOWNTIME

NETGEAR's purpose-built strategy helps integrators in the AV environment right out of the box. There is very little or no provisioning required. IT departments understand the nuances of OSI Layers and their associated protocols, but if a traditional AV integrator doesn't have in-depth knowledge of configuring Layer 3 switching, NETGEAR's M4300 and M4500 switches work with Layer 2 technology and protocols, operating seamlessly, instantly, and reliably. NETGEAR even enhances Layer 2 so users can get to bigger and broader multi-switch environments. "That's the differentiator for us. It's called NETGEAR IGMP Plus™," said Pendleton. "It's something that is proprietary to us, and it's a smart handling of the IGMP Group query in order to have that switch to switch communication to prevent flooding the network with unnecessary video traffic."

"As we move that traditional switching fabric over to the AV-over-IP market, we want to make sure that right out of the box that it's a good experience. No one does this better than NETGEAR," said Keener. "This is our heritage. This is where we came from. We've spent years perfecting

Takeaways for the IT Director

A NETGEAR M4300 switch is a secure, reliable, and zero-touch configuration solution. It should never have to be reconfigured unless a client wants to add to it. It offers DHCP/BootP innovative auto-installation including firmware and configuration file upload automation; industry-standard SNMP, RMON, MIB, LLDP, AAA, sFlow, and RSPAN remote mirroring implementation; service port for out-of-band Ethernet management; and industry-standard command line interface for IT directors familiar with other vendor's commands. It also offers a fully functional Web console (GUI) for the IT staff who prefer to use a graphical interface.

the way to make networking as easy as possible. Now that we're in the ProAV side, we're taking that same methodology and tailoring it for AV over IP. We've committed executive management, we've committed an entire design services team, and engineering and product line management resources to the AV industry."

As a founding member of the SDVoE Alliance, NETGEAR engineered its products to work seamlessly with all SDVoE member products—more than 40 members and 100 design partners. "We sat down with the [Alliance] engineers and created solutions to fix all of the mundane problems that AV integrators have to deal with day in and day out," stated Pendleton.

Since there are several types of both 1G and 10G AV over IP technologies, NETGEAR recognizes the importance of guaranteeing a smooth install by reaching out to various manufacturers to get certified. This approach ensures that the NETGEAR switch is certified, and the AV over IP endpoints are NETGEAR certified. Certification from major players like Crestron affords integrators the flexibility to use whatever endpoints are right for the job, with the peace of mind and confidence that the NETGEAR AV over IP switch will work flawlessly in every scenario.

Because the NETGEAR 4300 line is PoE capable and leverages Layer 2 protocols, from a performance standpoint and a configuration standpoint, "it's incredibly easy to deploy, but it also provides better traffic flows," Keener noted. "There are less broadcasts across the network. There are easier ways to prune off a video stream once a user disconnects that data flow. It's much faster. You will improve the user experience because you won't have different artifacts and jitter."

The benefits of NETGEAR's streamlined strategy extend to operational maintenance as well. A firmware upgrade is instantaneous across the stack. There is no need for an IT or AV manager to separately upgrade each switch or manually reconfigure the whole stack.

SECURITY & REMOTE MANAGEMENT

Security is a paramount concern for IT, AV, and facilities stakeholders, and NETGEAR is making security a priority. "Security analysts are starting to come to us, asking about audits, asking what is capable on our switches," Pendleton reported.

Takeaways for the CIO/CTO

"You're actually future-proofing from a switch perspective, because the Ethernet technology is mature," said Keener. "The roadmap that we can provide from a NETGEAR perspective is extensive. We're adding reuse storage, and we opened our design center and services group, and global support. We are providing not only the technology but also the support capabilities and the design team that'll make sure that when we architect that infrastructure, it is well considered. When CIOs choose to deploy NETGEAR, we're going to stage it and make sure it works before we put it in a production environment."

NETGEAR is compatible with all industry standards for security, and the company is constantly scouring the research on security. It even offers a "bug bounty" for any security issues encountered in the field. "We're committed to staying up to date and secure," said Keener.

With NETGEAR's switching line, the integrator can lock the system down tight—right to the Mac address or the IP address.

When it comes to management of the device, the integrator or manager can lock it away and have it disconnected from the core network, if necessary.

"We can take you out of band, if requested," said Pendleton. "This is a completely different system from other products. It locks down and there's no need to access it, like a closed matrix. You can set it up then truly forget it. You don't have to worry about it after that."

8K ON THE HORIZON

For some facilities, the next logical step in the AV/IT convergence lifecycle is to consider solutions like the NETGEAR M4300 and M4500 switches that are built specifically for AV over IP. Unlike peer products, NETGEAR's solutions don't require complicated setup to make them work for AV deployments. Many companies have pushed the envelope, as far as GB connections go, offering innovative compression methods to work over 1GB networks. But there will soon be a critical mass. Demands for content and resolution are skyrocketing. Commercial clients need ever more pipeline. 2020 is being flagged as a banner year—the 10GB path has become more affordable.

"It's time to go lossless," said Pendleton, "and it's time to go at faster data rates than the AV industry has ever gone before. If the system platform can do it, why not? We also offer a better price-point for each port, and that gives NETGEAR another advantage. With the 1GB changeover, even if you have twenty-five 1GB devices, you're going to have a 10G-plus uplink," he said. To prepare your facility for tomorrow's AV streams, "you need to have 10GB in the network," said Pendleton. NETGEAR offers exceptional value per port, making the 10GB path feasible.

Therefore, it makes sense to specify a platform like NETGEAR's that can uplink from a 10G-capable solution at 8.5G per second, up to its 40G connection with the 96X. "And our new M4500 devices can combine up to 32 10GB members, then reports in a link aggregate," Pendleton

Takeaways for the CEO

Partnering with NETGEAR gives CEOs the ultimate peace of mind because of the company's legacy as a networking innovator and reputation for superior service. CEOs and organizational leaders can be absolutely confident in NETGEAR's purpose-built fail-safe switches that also offer incredible value. Certified training of the sales, design, and technician staff are also available to ensure reliable operations. NETGEAR knows that data security is a top priority for CEOs, that's why NETGEAR's AV-over-IP portfolio is compliant with all industry standards for security.

noted. “We can get up to extreme speeds, and those are a fully 100GB connection.”

What’s more, consider the requirements for moving 4K and 8K content across an enterprise with visually lossless quality and low latency. “Everybody’s trying to figure out 8K and how we’re going to do that,” Pendleton added. “It’s coming next. You know that 10G or even up to 40G will be required as the superstructure to achieve that.”

The next great step forward in AV/IT convergence is already happening, and NETGEAR is there, paving the way. ■

PRODUCT SHOWCASE

M4300 Intelligent Edge Series: Stackable Switches with Non-Stop Forwarding

- The world’s only 1GB, 10GB and 40GB stackable platform designed for server and audiovisual installations, converged access layer and dependable core in SMB environments. M4300 stacking topologies deliver 384-port 1GB, 768-port 10GB, 192-port 40G, or a combination in redundant, unstoppable systems for edge to core connectivity. Non-stop forwarding (NSF) virtual chassis architectures provide advanced High Availability (HA) with hitless failover across the stack. Dual redundant, modular power supplies equipping full width models contribute to business continuity management.
- Layer 3 feature set includes static, dynamic, and policy-based routing as standard. The NETGEAR M4300 Switch Series is perfect for wireless access, unified communications and professional AV-over-IP installations. Cost-effective 1G access layer in campus LAN networks, and high-performance 10G distribution layer for midsize organizations networks.
- Zero Touch AV-over-IP with pre-configured L2 Multicast on all 1G models (1G AV encoders and decoders) and 10G models (SDVoE-ready).
- Advanced Layer 2, Layer 3 and Layer 4 feature set. No license required, including Policy Based Routing, RIP, VRRP, OSPF and PIM.
- nnovative mixed “Spine and Leaf,” 1G and 10G stacking with nonstop forwarding and hitless failover redundancy.
- Low acoustics, half-width 16-port and 24-port 10G models can be paired in a single rack space for redundant Top of Rack.
- Up to 384 (Gigabit) ports, 768 (10GB) ports, 192 (40 GB) ports or a combination in a stack seen as one “logical” switch.
- PoE+ (30 watts per port) with hot swap, redundant power supplies and full provisioning.
- 48- and 96-port 10GB models’ ultra-low latency and scalable table size with 128K MAC, 8K ARP/NDP, 4K VLANs, 12K routes.

M4500 Series: 100G, 50G, 40G, 25G and 10G Switches

These switches combine the configurability of a matrix switcher with the power and scalability of Ethernet to support hundreds of AV over IP endpoints. M4300 and M4500 switches offer IGMP Plus™ and greatly simplify system architectures with the same well-known IGMP techniques across the entire AV-over-IP network.

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