

# Houston Museum of Natural Science's **Bulletproof Network** Solution



With NETGEAR AV switches and NETGEAR's free Engage 2.0 app, the Houston Museum of Natural Science ensures reliable, high-performance connectivity for Houston's Energy City, one of the world's most advanced projection mapping installations. 32 projectors work together to create and enhance a seamless visitor experiences while providing peace of mind for the technical teams managing this mission-critical system.

## Summary

Visiting the Houston Museum of Natural Science, guests can experience Energy City, a breathtaking 2,500-square-foot projection mapping installation that animates a miniature Houston landscape. Behind the scenes, another essential operation takes place: the technology that enables flawless projection mapping across 32 laser projectors, real-time content synchronization, and continuous system monitoring. Smooth running of these critical systems is ensured by NETGEAR AV switches and Engage 2.0, a free application designed to simplify configuring AV networks.





## **“This is exactly what the AV industry needed - a platform built for how we actually work. Engage 2.0 has changed the way I approach network design.”**

**Cory Froke**, Founder/Chief Ninjaneer, Supertech Industries

### Background

The Houston Museum of Natural Science's Energy City exhibit needed an upgrade after it opened in 2017 as the centerpiece of the renovated Wiess Energy Hall. The installation features a 2,500-square-foot 3D landscape representing Houston and surrounding areas, brought to life through projection mapping technology that displays the energy value chain as the city cycles from day to night.

As one of the most complex projection mapping installations in any museum worldwide, Energy City operates continuously throughout museum hours, serving over 1.5 million visitors annually. The exhibit features 32 laser projectors mapping content onto approximately 15,000 individual objects, from downtown Houston skyscrapers to rural Texas farmhouses.

Cory Froke, the system integration specialist who designed the technical infrastructure, emphasizes that reliability is paramount: “This system needs to run more than 65 hours per week for at least 10 years, with minimal upkeep. When you have hundreds of thousands of visitors depending on the experience working flawlessly, you can't have network failures.”

### Challenge

Like many large-scale AV installations, the Energy City exhibit originally relied on traditional discrete networking approaches that created significant operational challenges. After eight years of continuous operation, the museum needed to completely refresh the infrastructure to ensure bulletproof reliability for the next decade.

The original system used separate network switches for each function, creating management complexity and limited diagnostic capabilities. After eight years of 50+ hour weekly operation, the original servers and networking equipment were reaching end-of-life with increasing failure risks. Without modern VLAN capabilities and unified management, troubleshooting system issues was time-consuming and reactive rather than proactive. The museum also required enhanced capabilities for off-site monitoring and rapid issue resolution to minimize any impact on visitor experience.

AJ Freysteinson from RabCup, the production company managing the exhibit, explained: “We had to come up with bulletproof technology, because the exhibit has to run for at least as long as it has before. The museum reinvested to put in brand new servers, brand new projectors, and a completely new network infrastructure.”



## Solution

After extensive evaluation, the team selected NETGEAR AV network switches because of their reliability, unified management capabilities, and proven track record for handling complex AV networks. The NETGEAR solution was deployed across seven equipment racks, with three NETGEAR M4350-series switches configured as a cohesive ecosystem.

The implementation supports the full projection mapping network with 32 projectors, Green Hippo media servers, and comprehensive system monitoring. NETGEAR switches also serve as the backbone for control room operations, IP-based communications systems, and remote access capabilities for technical support.

The real game-changer for this deployment was NETGEAR's Engage 2.0, a platform that transforms traditionally painful network builds into a smooth, highly visual process built specifically for AV workflows. "I chose NETGEAR because they've clearly been listening to AV professionals", said Cory Froke, who, as Founder and Chief Ninjanee of Supertech Industries, was responsible for the design and programming of the exhibit systems. "The AV line doesn't force you into enterprise-style workflows that just don't make sense for our industry."

Instead of manually configuring each switch or writing scripts for VLAN assignments, Froke used Engage 2.0 to preconfigure the entire system remotely. "From my living room, I built the whole network: port roles, VLANs, WiFi, even security rules. When we got to site, we dropped the hardware in the rack, powered it up, and it just worked."

All three switches, plus the router and the WAPs were managed in one pane of glass - no stacking required, which avoided the typical multicast and latency issues that can derail AVoIP deployments. "Stacking always introduces risk in AV", Froke noted. "Being able to logically address each switch independently, but still manage them centrally as a singular, cohesive system through Engage made this an ideal fit."

Engage 2.0 also provided point-and-click VLAN management, intuitive port labeling, and real-time monitoring tools, enabling proactive diagnostics and simplified documentation. "This platform let me move fast without cutting corners. I didn't touch the CLI once," said Froke. "Engage 2.0 gave me everything I needed - and nothing I didn't."





HOUSTON MUSEUM  
of NATURAL SCIENCE

**“Engage 2.0 transformed what used to be the most painful part of AV projects into something intuitive, fast, and even enjoyable. It’s the first networking platform I’ve used that truly understands how integrators work.”**

**Cory Froke**, Founder/Chief Ninjaneer, Supertech Industries

## Results

After completing the 2025 infrastructure upgrade, the NETGEAR-based solution has delivered exceptional performance across all key areas.

The system now operates with bulletproof reliability, supporting over 120 switch ports and continuous real-time monitoring of all 32 projectors and associated equipment. Through NETGEAR Engage 2.0, basic operations can be handled by non-specialists while advanced configuration remains accessible to network engineers. Real-time system status monitoring for every device, including the NETGEAR switches – using QSYS’s NETGEAR plugin – enables proactive maintenance and rapid issue resolution.

The digital network approach has enabled precise control and monitoring that was impossible with the previous architecture. Remote VPN access allows technical support to diagnose and resolve issues quickly, while the unified management platform provides comprehensive visibility into system health.

AJ Freysteinson emphasizes the value that NETGEAR brings to the project: “This is something no one ever says about setting up a network, but this was actually an enjoyable experience. Cory had it 90% pre-setup before we got on site and everything just went into the rack and started working.”

Cory Froke summed up the experience: “It’s flexible, it’s reliable, and this solution was the right choice. The NETGEAR infrastructure gives us complete confidence that this system will operate flawlessly for the next decade and beyond.”



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