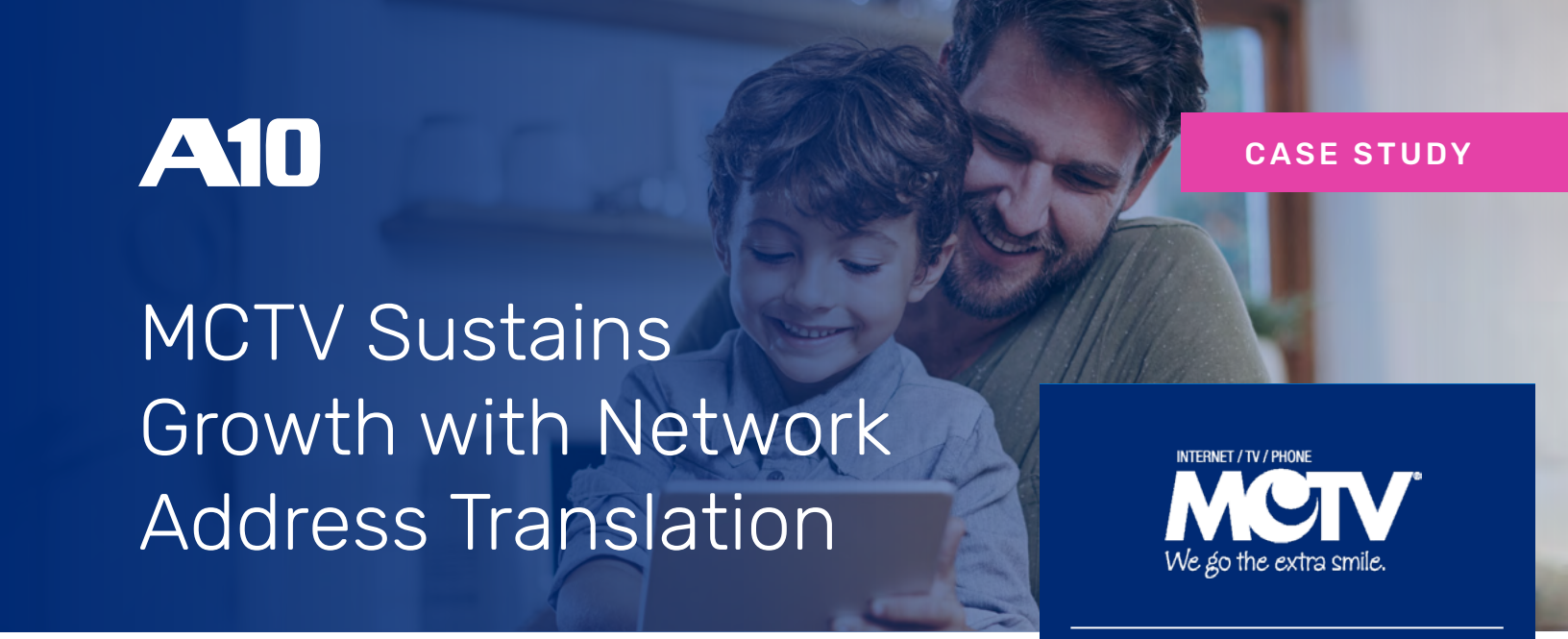


CASE STUDY

MCTV Sustains Growth with Network Address Translation

MCTV, a regional service provider, is run with small-town values of community and service. The family-owned company started more than 50 years ago as a local cable operator in Ohio. Today, it provides and security to approximately 55,000 homes and businesses in Ohio and West Virginia.

> *With Thunder CGN to address IPv4 exhaustion, we are able to extend our network and allow our company to continue growing in a way that is cost effective.*
>
> – Michael Robinson
> Systems Engineer, MCTV

INTERNET / TV / PHONE
MCTV
We go the extra smile.

Industry | Service Providers

Network Solution

A10 Thunder® CGN

Critical Issues

- Expand coverage to new areas in Ohio and West Virginia while maximizing its IPv4 addresses
- IPv4 address exhaustion

Results

- Solved IPv4 address exhaustion for both fiber-to-the-home and cable networks
- Enabled higher subscriber coverage by 31X for each IPv4 address
- Provided support for unique requirements of online gamers and others
- Expanded into new service areas by extending IPv4 addresses through CGNAT
- Ensured availability of residential internet, digital TV, and phone services
- Seamlessly migrated 90 percent of customers to A10 Thunder CGN

Challenge

"During the past few years, MCTV has continued to 'go the extra smile' to communities by expanding into new service areas to provide exceptional service in more local communities," says Michael Robinson, who has been a systems engineer at MCTV for two decades.

MCTV built a fiber network to deliver fast, ultra-reliable connectivity to homes and businesses. Residential customers can enjoy fiber-to-the-home at speeds up to 100 Mbps with no data caps. In addition to building and operating its optical and cable networks, the company has grown by acquisition.

As MCTV expanded, the company noticed a significant resource constraint: A steady depletion of its IPv4 addresses.

"As we continued to grow, we needed more IP addresses," says Robinson. "But the price associated with purchasing IP addresses on the secondary market was not cost efficient for us," he says.

Selection Criteria

Robinson and the team set out to find a solution to address IPv4 exhaustion.

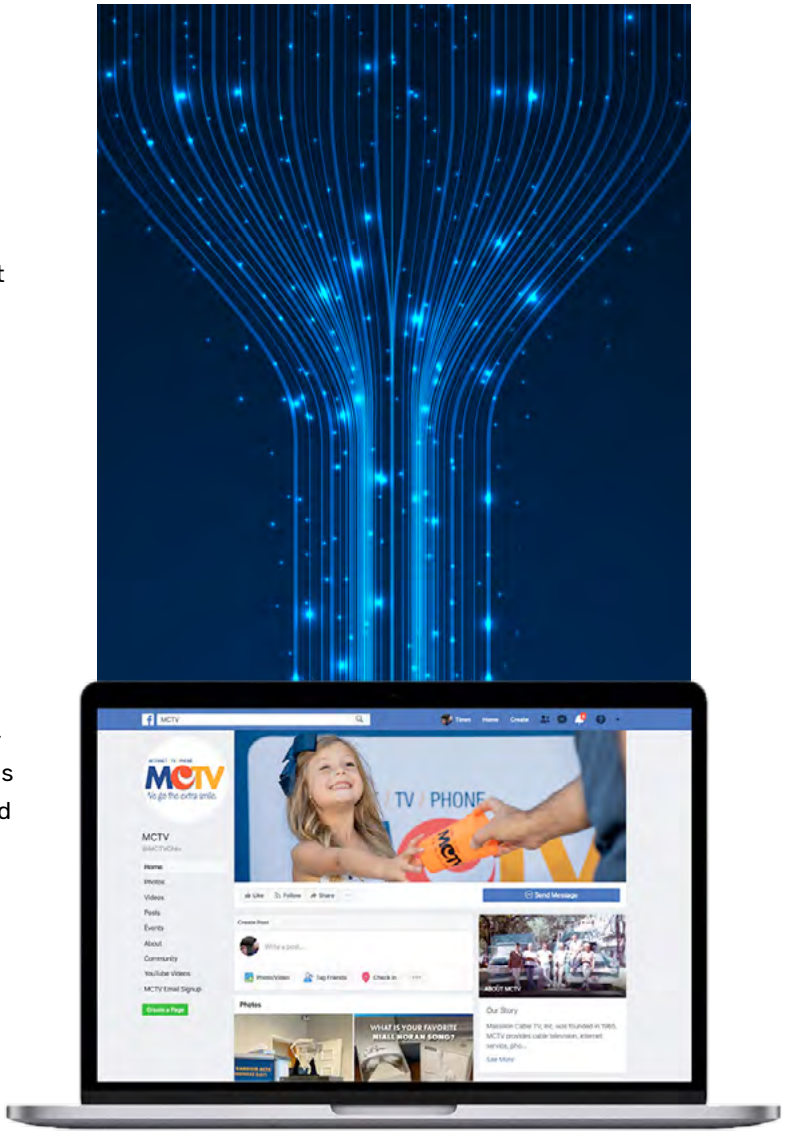
"We needed to continue our growth, but we didn't have any more IPv4 addresses to give to customers, so we considered a commercial-grade NAT solution," says Robinson.

MCTV evaluated three commercial providers of carrier-grade network address translation (CGNAT) solutions as well as an open-source option. As Robinson researched the market, he did due diligence with several service providers in the region.

"When we spoke with other cable operators who face similar challenges with IPv4 depletion, A10 Networks came up repeatedly," he says. "Those discussions also addressed how Thunder CGN works and how simple it would be to configure."

Intrigued, Robinson ran an extensive proof-of-concept test of A10 Networks Thunder® Carrier-Grade Networking (CGN) in the lab and then piloted the solution to IPv4 exhaustion with employees for a real-world user experience.

> *"Thunder CGN was a significant change to our network, so we wanted to be confident that it would not impact our subscriber experience," says Robinson.*



Solution

MCTV first deployed Thunder CGN in its fiber network to support carrier-grade network address translation for residential customers. Thunder CGN provides high-performance, transparent network address and protocol translation, enabling MCTV to extend IPv4 connectivity. Thunder CGN is built on A10 Networks' proven Advanced Core Operating System (ACOS®) to deliver advanced functionality and high performance.

With Thunder CGN, MCTV resolved IPv4 exhaustion and continues to expand into new service areas. And MCTV can ensure that critical applications and services are secure and always available.

As a company that prides itself on going "the extra smile" for customers, MCTV wanted to ensure a smooth transition to Thunder CGN. The engineering team was concerned about the experience of serious gamers, game providers, and customers who installed their own home security systems.

"We wanted to ramp up our carrier-grade networking usage gradually so we could identify which customers needed public IP addresses," he says. "When a game hoster is sharing an IP address with 31 other people, people can't connect to the game correctly."

MCTV worked with A10 Networks on a Thunder CGN configuration that allows the customer service reps to remove a customer from the NAT pool without tier-three engineering support. Now, if a customer calls with a complaint about using a shared IP address, the rep can remove them through the billing system. On the backend, it's a simple VLAN change.

The transition to a large-scale carrier-grade NAT solution was barely noticed by subscribers.

"Now, 90 percent of our residential fiber-to-the-home customers go through Thunder CGN," says Robinson. "And our customer care center has only received five calls from people needing public IP addresses."

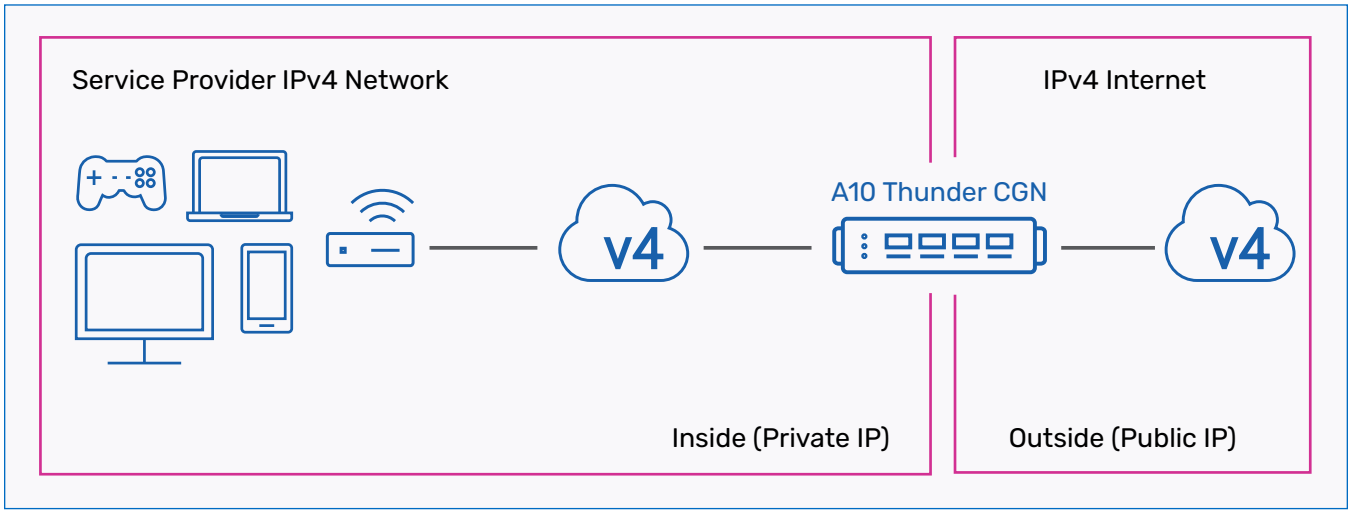


Figure 1: Leverage existing IPv4 infrastructure with A10 Thunder CGN

Results

MCTV recently extended its service area further into southeastern Ohio and West Virginia through a strategic acquisition.

"With Thunder CGN to address IPv4 exhaustion, we are able to extend our network and allow our company to continue growing in a way that is cost effective," Robinson says.

After using Thunder CGN on its passive optical network (PON) that has delivered fiber-to-the-home services for more than a year, MCTV rapidly rolled out CGNAT capabilities to its cable network as COVID-19 first spread across the nation.

When Ohio issued a stay-at-home order, MCTV moved quickly to offer free internet to students in its service area. "We had an increase of installations in March and April, but using Thunder CGN allowed us to do these installations without needing additional IPv4 addresses," Robinson explains.

Nearly all 160 MCTV employees shifted to work-from-home, including its 50-person customer service center. The team, including Robinson, is made up of essential employees that worked to ensure customers had the internet service they needed for work, school, and to stay connected with family and friends.

> *"In the first weeks, we constantly added more bandwidth to the last mile for both our PON and DOCSIS networks," Robinson said. "To maintain safety for our team and our customers, our installation team members and customer care representatives provided remote support to customers to complete self-installation while not entering homes. It was an entire team effort and it was very successful."*

Based on the success, MCTV is rolling out Thunder CGN across its entire cable network to preserve IPv4 address resources as the company continues to expand.

"Every customer behind Thunder CGN gives me 31 IP addresses back," says Robinson. "We've already recovered 155,000 IP addresses, giving us plenty of IP addresses to sustain our growth."

Thunder CGN has been operationally efficient. The high-performance Thunder CGN has a compact form factor, delivering lower OpEx and CapEx through efficient rack space usage, lower power consumption, and reduced cooling requirements.

Robinson has appreciated working with the A10 Networks team from the initial deployment through ongoing operations.

"Working with A10 has been an excellent experience," says Robinson. "I worked with A10's systems engineers through videoconferencing and screen sharing to set up Thunder CGN."

When issues cropped up, A10 resolved them swiftly. "When we discovered an issue, the bug fix was available in the next release," he says. "The A10 TAC identified the concerns with us, and our sales representative worked with engineering to recreate and resolve the issue. I couldn't be happier with A10's customer service."

Robinson is confident that the company's investment in Thunder CGN is protected. "As our bandwidth grows and we need larger Thunder CGN boxes, we can turn our current ones into load balancers for mail or use them for internal services," he says. "With the A10 software, carrier-grade networking isn't the only job Thunder can perform."

Success and Next Steps

Robinson is a proponent of sharing his experience with peers. “I love working with other service providers in our region,” he says. “It’s great to have a professional and helpful relationship with each other.”

Based on his own experience, Robinson has advice for other network architects and engineers considering the move to large-scale carrier-grade network address translation.

"I know of larger companies that have purchased carrier-grade network address translation products but never implemented them because they didn’t know how to take the first step,” he says. “Don’t be afraid to deploy CGNAT. Grow with the product as you move subscribers over, and you’ll find you’ll be very comfortable with your experience.”

About MCTV

MCTV “goes the extra smile” for its customers, adding high-touch service to high-tech telecommunications. Since 1965, MCTV’s 165+ local employees have been serving their neighbors with a full complement of advanced broadband products for home and business, including High-Speed Internet, Digital TV, Phone, television advertising, dedicated fiber optic connections and security systems. Approximately 55,000 homes and businesses in Ohio and West Virginia counties including Stark, Wayne, Summit, Holmes, Carroll, Monroe, Jefferson, Columbiana, Tuscarawas, Belmont, Harrison, Brooke and Ohio counties rely on MCTV for their telecommunications needs.

Find out how to manage
IPv4 exhaustion using CGNAT

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About A10 Networks

A10 Networks (NYSE: ATEN) provides secure application services for on-premises, multi-cloud and edge-cloud environments at hyperscale. Our mission is to enable service providers and enterprises to deliver business-critical applications that are secure, available and efficient for multi-cloud transformation and 5G readiness. We deliver better business outcomes that support investment protection, new business models and help future-proof infrastructures, empowering our customers to provide the most secure and available digital experience. Founded in 2004, A10 Networks is based in San Jose, Calif. and serves customers globally.

For more information, visit A10networks.com and follow us @A10Networks.

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