Navigating Explosive Growth: Overcoming a Rapid IPv4 Exhaustion Crisis with CGNAT

CaseStudy

Turning to ZCorum helped Centaur accommodate future growth without compromising on network performance.

AT A GLANCE

Experiencing explosive growth and losing ground on new IPv4 addresses, Centaur Cable Network embarked on an initiative to find a solution to this escalating problem.

Centaur found a valuable ally in ZCorum's CGNAT, a remedy for expanding IPv4 addresses. Using CGNAT to address the challenges of IPv4 exhaustion made it possible for Centaur to accommodate the growing demand for connectivity, and create the foundation for future network resilience.

INTRODUCTION

Belize, a country located on the northeast coast of Central America, is a land of mountains, jungle, Maya archaeology sites and coastline on the Caribbean Sea. Orange Walk Town, two hours north of the capital of Belize, is the home of Centaur Cable Network, a cable television and internet provider operating in Orange Walk for over thirty years. Founded in 1990, Centaur began as a small cable system in Orange Walk Town with 8 cable channels. Today, Centaur maintains a state of the art Hybrid-fiber-coax network and offers its services to Corozal and the Belize Rural area.

THE CHALLENGE

In 2001, Centaur moved into content development covering national and local news. With over one hundred and eighty channels along with high-speed internet, this improved the subscriber experience, but the growing numbers of subscribers began putting a strain on Centaur's network.

This explosive growth had Centaur facing an unprecedented challenge as they experienced a rapid surge in subscriber numbers. Growth was a good thing, but the surge was so substantial and swift that it outpaced the company's available IPv4 address pool.

This left Centaur in a precarious situation, as the depletion of IPv4 addresses would hinder their ability to efficiently serve and connect their growing subscriber base. Purchasing blocks of IPv4 addresses to keep up with demand became burdensome as the after-market prices skyrocketed.

To reduce the need for IPv4 addresses, Centaur deployed an ACS firewall to do address translation. They initially started with a unit supporting one gig in throughput and later upgraded to a 10-gig-capable unit. However, when their network traffic reached around 6 gigs, the equipment began dropping packets due to the high number of connections. The issue stemmed from a shortage of IPv4 addresses, and their existing natting solution being unable to keep pace with their expanding needs.

THE SOLUTION

Recognizing the urgency of the situation, Centaur's management embarked on a plan to implement Carrier Grade Network Address Translation (CGNAT) equipment. Facing packet loss at 6 gigs, Centaur sought our assistance in finding the right solution. ZCorum's CGNAT offered an efficient solution to the address exhaustion challenge by allowing multiple private addresses to share a single public IP address without a loss in network performance.

With both IPv4 and IPv6 on their network, subscribers that connect are assigned both address types, with IPv4 addresses distributed through CGNAT. This enables Centaur to continue expanding its subscriber base without the constraints imposed by the limits of IPv4 address space. The implementation of CGNAT involved careful planning and collaboration with network architects and engineers at both ZCorum and Centaur. The chosen CGNAT solution was tailored to Centaur's specific needs, ensuring seamless integration with their existing infrastructure. The deployment process included thorough testing to guarantee minimal disruption to existing subscribers while accommodating the influx of new customers.

"We were at a crossroads, grappling with the challenges of our unprecedented growth, and the natting solution we had deployed was not keeping up with network demand. ZCorum's CGNAT solution provided a seamless implementation that not only resolved our technical hurdles, but our network is now more robust and the scalability is unparalleled. Our decision to embrace CGNAT is a success, and we couldn't be happier with the results."

Daniel Cawich
Network Engineering
Centaur Communications

THE RESULTS

The implementation of CGNAT proved to be a pivotal success for the cable company, which is able to assign one public IPv4 address for every 64 subscribers. The scalability of the CGNAT solution allowed Centaur to seamlessly onboard new subscribers, meeting the demands of their expanding customer base.

With the newfound ability to efficiently manage IP addresses, the company significantly improved overall network performance and reduced the operational burden on the company's network infrastructure team.

Additionally, the CGNAT solution saved Centaur from the need to invest in expensive IPv4 address acquisition. Centaur's Network Engineer, Daniel Cawich, stated that the network's performance with CGNAT has been consistently reliable, offering a significantly improved experience for subscribers. After a year and a half on CGNAT, their network traffic has surged to 21 gigs, showcasing the scalability and effectiveness of the deployed solution.

THE BOTTOM LINE

In summary, the cable company's journey from IPv4 exhaustion to CGNAT implementation serves as a compelling case study in strategic network management. By addressing the challenge head-on with a well-planned solution, the company not only overcame the immediate hurdles but also laid the groundwork for sustained growth. Centaur's satisfaction with the CGNAT solution translated into improved customer relations and cost savings.

ZCorum is the leading provider of innovative diagnostics and managed broadband solutions to telecommunications companies, helping them reduce costs, increase operational efficiency and improve the subscriber experience. For more information on ZCorum CGNAT solutions, visit ZCorum.com/solutions/cgnat/.

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