

## vCGNAT Solution Solves an IPv4 Address Shortage for a Leading Eastern European Provider

### AT A GLANCE

### THE CHALLENGE

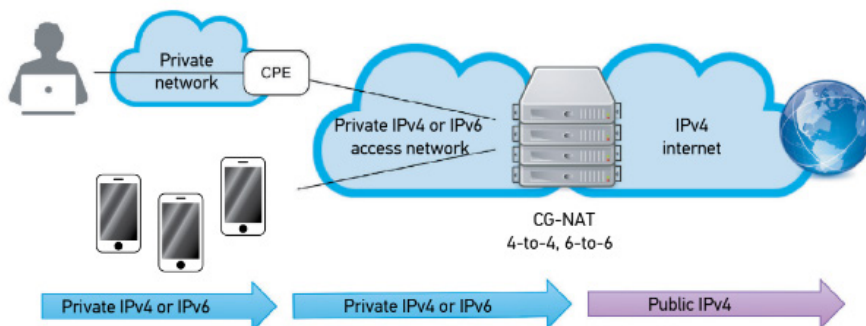
In a country of over 19 million people, with only 3.24 million IPv4 addresses, a large provider in Eastern Europe had a shortage of addresses for a growing, Internet-connected society.

This prominent provider was launching new services for its subscribers, including the Internet of Things (IoT) and 5G, which created a high demand for connectivity and the subsequent need for more IPv4 addresses. But IPv4 addresses are expensive and sometimes difficult to find and they knew they needed to prepare for seamless growth.

The provider already had a virtual Carrier Grade Nat (vCGNAT) solution for its wireline services. Virtual CGNAT helps service providers overcome the IPv4 address shortage problem by translating public IPv4 addresses to local addresses. Instead of allocating one IPv4 address to a single subscriber, vCGNAT allows dozens of subscribers to use one public IPv4 address. But for its growing wireless services - and to expand its existing wireline service - the provider needed a new deployment for much larger development that would reach customers around the country and be adaptable to accommodate future growth.

CGNAT allows broadband operators to share a single public IPv4 address among many subscribers. The CGNAT software maps a private IP address on the subscriber's network to the shared address. In this way, only a fraction of the public IPv4 addresses are needed at any one time. The effectiveness of CGNAT is the reason why the world's more than 20 billion connected devices can be squeezed into an address space of 4.3 billion IPv4 addresses. Our vCGNAT solution easily supports an oversubscription ratio of 128:1, meaning each IPv4 address can be used by up to 128 subscribers.

vCGNAT is more cost effective for IP address translation than proprietary hardware solutions. Being virtualized, it utilizes commercial off-the-shelf hardware, achieving best-in-class performance on Intel architecture servers. For large deployments it can be deployed in a cluster, allowing multiple servers to work together for higher throughput and higher network uptime.



## THE SOLUTION

The provider again looked to VCGNAT for its large deployments. They knew they needed a solution that would provide:

- ✓ **Large-scale deployment** to reach customers across the country
- ✓ **High capacity** using a cluster of vCGNAT servers to process a large amount of traffic
- ✓ **Reliability** by building the cluster with N+1 redundancy at each site, so if one server in the cluster fails, customer service is not impaired
- ✓ **Scalability** for expected growth in the user base with easy scalability to accommodate future traffic growth



The provider deployed the vCGNAT software on UniServer R4900 servers from H3C. The UniServer 4900 is a dual-processor, 2U-high rack unit using the most recent Intel® Xeon® scalable processors for optimized processing of virtualized applications. The servers support ample expandability and flexibility in their configuration, enabling the use of dual 100 GbE network interface cards (NICs) for maximum throughput. Two 100 GbE NIC cards were installed on each server in the deployment.

The vCGNAT solution provides logging capabilities, port block allocation, mapping, filtering, hair pinning, and many other NAT-related features that have become a standard for Tier-1 operator networks. It also supports a set of application layer gateways (ALGs) that provide compatibility with various internet protocols, including FTP, DNS, PPTP, IPSec, SIP and RTSP. In addition, in NAT64 mode the vCGNAT software offers operators a seamless transition path to migrate their network to IPv6 when they are ready.

## THE RESULTS

The vCGNAT software, coupled with high-performance Intel architecture servers and NIC cards, provided the right CGNAT solution for the operator. The combined technologies delivered outstanding performance, flexibility and scalability for future growth. The vCGNAT's fast packet processing capability, plus the power and flexibility of H3C servers and NICs led to a high-performance Carrier Grade NAT solution that delivered 200 Gbps for each server in the cluster.

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## ABOUT ZCORUM

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's vCGNAT solutions, visit [ZCorum.com](http://ZCorum.com).

