

# NFWare Virtual CGNAT

Virtualized cost-effective solution to solve IPv4 depletion problem

A globe of the Earth is shown from a high-angle perspective, with a network of glowing yellow lines overlaid on it. These lines represent data connections and network paths, radiating from various points across the continents and connecting to each other. The background is a gradient of blue and orange, suggesting a sunset or sunrise sky.

**NFWare**

# NFWare

## HIGH PERFORMANCE CLOUD-READY NETWORKING SOLUTIONS

NFWare develops the world's fastest virtualized packet processing technology for Service Providers and Data Centers which processes traffic at the speed of hardware, while running on standard x86 servers.

We help companies significantly reduce the costs of building network infrastructure while increasing productivity – essential components in a today dynamically changing digital world.

«Innovation – Upstart of the Year  
2019»



«The leading VNF  
vendor»



«HOT Telco Innovator  
2017»



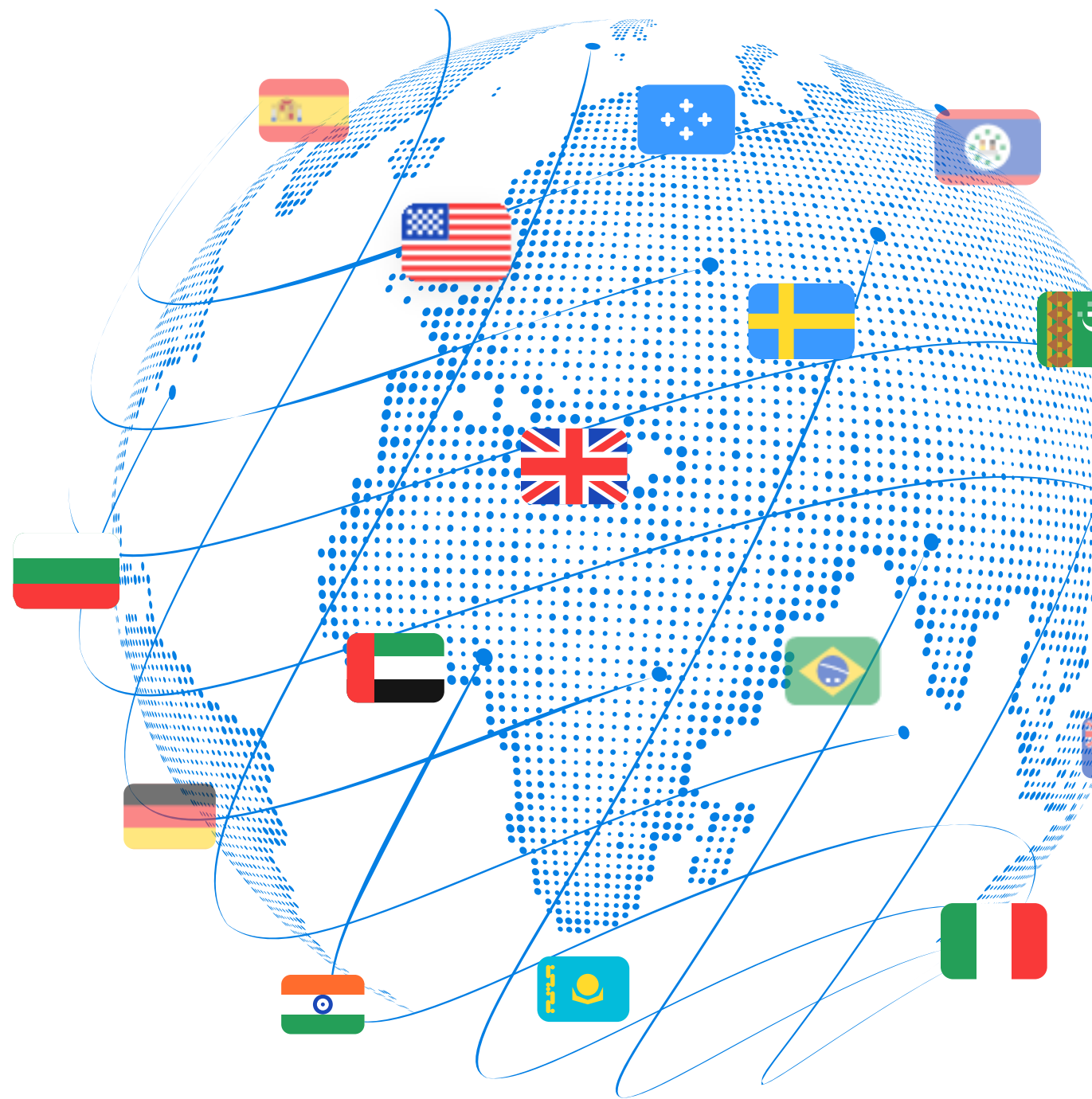
«TOP-50 of the world's most prominent  
vendors»



# Worldwide Customers

## 100+ customers worldwide:

- 3x Tier-1 Mobile Operators
- 2x Tier-1 Broadband Operators
- 2x Mobile MVNOs
- Several EMEA Tier-2 ISPs
- Several USA Tier-2 ISPs
- Several APAC Tier-2 ISPs
- Several LATAM Tier-2 ISPs
- Web-scale Cloud Company



# NFWare vCGNAT

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High-performance virtual IP address translation solution

NFWare vCGNAT allows operators to extend the use of the IPv4 address space, serving a growing number of concurrent connections, and facilitating a smooth migration to IPv6 addressing.



## Flexible pay-as-you-go

No excess capacity and no excess cost of licensing



## Ultimate Performance

Up to 400 Gbps



## Flexibility and Scalability







Reduced time-to-market thanks to instant scalability

Virtual  
Carrier  
Grade NAT



# NFWare Competitive Advantages

NFWare processes more traffic on less hardware which leads to better TCO.

	 NFWare Virtual CGNAT	 Virtual Edition	 Virtual ASA	 Thunder CGN	 vSRX	 Linux
Scalability and maximum throughput, Gbps	400 Gbps	100 Gbps	20 Gbps	100 Gbps	141 Gbps	3 Gbps
Hardware utilization for same Gbps	1x	8x	4x	3x	3x	100x
Total cost of ownership	1x	> 5x	> 10x	> 5x	> 5x	> 50x

NFWare Hardware Configuration: 4x100G MLX ConnectX-6, 2xIntel(R) Xeon(R) Platinum 8360Y CPU @ 2.40GHz

[1] <https://f5.com/products/deployment-methods/virtual-editions>

[2] <https://www.cisco.com/c/en/us/products/collateral/security/adaptive-security-virtual-appliance-asav/datasheet-c78-733399.html>

[3] <https://www.a10networks.com/wp-content/uploads/A10-DS-Thunder-CGN.pdf>

[4] <https://www.juniper.net/content/dam/www/assets/datasheets/us/en/security/vsrx-virtual-firewall-datasheet.pdf>

# vCGNAT technical specification

NFWare

## Modes

NAT44  
NAT64

## Routing

VRF  
Static routing  
BGP  
BFD  
OSPF  
IS-IS  
RIP

## OAM

CLI  
SNMP  
Performance monitoring and statistics

## Mapping and Filtering

EIM/EIF  
Address Dependent Filtering  
Address and Port Dependent Filtering

## Logging

Syslog  
NetFlow  
IPFIX  
RADIUS

## Advanced Logging Features

Deterministic NAT  
Ability to send logs to multiple syslog servers  
Port Block Allocation (PBA)

## Other NAT Features

Hairpinning  
Paired Pooling  
Port Control Protocol (PCP)  
Access Control Lists (ACL)

## Interface management

Link Aggregation Control Protocol (LACP)  
VLAN support

## Application Layer Gateways (ALG)

FTP  
DNS  
PPTP  
IPSec  
SIP  
RTSP

## AAA

TACACS+  
Radius

## High Availability

Active-Standby  
Active-Active N+1  
VRRP version 3 IPv4/IPv6  
Real Time Management (RTM) subsystem  
Sessions' synchronization

## Cloud

OpenStack integration  
MANO compliant  
ETSI compliant

## Hypervisor Compatibility

KVM

# Hardware requirements

## Required CPU

Any Intel Xeon processors starting from the Haswell (v3) family

## Required NICs

- Intel X520
- Intel X710
- Intel E810
- Mellanox Connect X-5
- Mellanox Connect X-6

## Memory requirements

Concurrent Sessions	Memory (1xCPU)	Memory (2xCPU)
10M	23 GB	37 GB
50M	77 GB	91 GB
100M	144 GB	158 GB
200M	270 GB	284 GB
300M	358 GB	371 GB



# Examples of Hardware Configuration

Max throughput	CPU model	NICs	# of v-cores per CPU (hyper-threading enabled)
3 Gbps	1 x Intel Xeon Bronze 3106	1 x 10 GbE Intel X520/X710	4
10 Gbps	1 x Intel Xeon Silver 4110	1 x 10 GbE Intel X520/X710	4
20 Gbps	1 x Intel Xeon Silver 4110	2 x 10 GbE Intel X520/X710	8
40 Gbps	1 x Intel Xeon Silver 4110	1 x 40 GbE Intel XL710	14
80 Gbps	1 x Intel Xeon Gold 6230	1 x 100 GbE ConnectX-6	20
100 Gbps	1 x Intel Xeon Gold 6230	1 x 100 GbE ConnectX-6	26
150 Gbps	1 x Intel Xeon Gold 6230	2 x 100 GbE ConnectX-6	38
180 Gbps	1 x Intel Xeon Platinum 8360Y	2 x 100 GbE ConnectX-6	30
280 Gbps	2 x Intel Xeon Platinum 8360Y	4 x 100 GbE ConnectX-6	22 + 22
330 Gbps	2 x Intel Xeon Platinum 8360Y	4 x 100 GbE ConnectX-6	26 + 26
440 Gbps	2 x Intel Xeon Platinum 8360Y	4 x 100 GbE ConnectX-6	66 + 66

**Note:** Maximum throughput means maximum possible throughput. For commercial installations, it is not recommended to load the system more than 70% to leave some space for a possible traffic increase.



# Summary

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## WHY

NFWare vCGNAT?



It's a **fully software application providing CG-NAT functions** with the same performance level as hardware.



NFWare flexible licensing **pay-as-you-grow model based on number of subscribers** provides the best cost per unit.



NFWare provides a **cost-effective and flexible solution** for extending IPv4 usage and providing smooth **migration to IPv6 infrastructure**.



NFWare Carrier Grade NAT is software that is optimized to **run on standard x86 servers and in hypervisor**.

# Why NFWare?



Industry's most modern , innovative and technically advanced fully virtualized product line



The optimal cost of network functions depending on the real business needs



Rapid and flexible scaling in response to traffic growth on customer demand



«TOP-50 of the world's most prominent vendors of NFV-solutions»



«HOT Telco Innovator 2017»



«The leading VNF vendor»

