

# A Transformation Is Underway

Every company today is essentially an internet-enabled software company.



So by definition, your applications either live on the network, or they aren't going to make it—and security has to be a part of the equation.

Netgate provides the fastest, lowest cost, and most flexible secure networking software platform for today's savvy IT infrastructure providers.

## THE PROBLEM

Every aspect of modern IT is undergoing transformation.



**Data centers are moving to the cloud.**



**Employees are always on - and regularly mobile - with powerful devices.**



**Empowered users demand fast, secure access to decision support systems.**

Information owners are under intense pressure to make information highly accessible - but at the same time secure from damage, loss or theft. And this must be accomplished inexpensively.

Commodity silicon-based hardware platforms have risen to the occasion with orders of magnitude improvements in processing speed, connection flexibility, scale and cost.

But secure networking as a whole has remained slow, inflexible, and expensive.

*Why is this true?*

## GETTING TO WHY - A LOOK AT THE HISTORY AND THE MATH

When the Internet (ARPAnet) first started, all routers were software routers.

As the Internet matured, demand for speed grew beyond 3 Gbps local ethernet and 56 kbps leased lines, software routers came under strain. Early researchers and commercial companies moved to boards with faster CPUs to address the strain. Still, CPUs of the day were overwhelmed by the needs of packet processing.

The dominant commercial product providers of the time, e.g., Cisco, Juniper et al moved to custom-designed ASICs to keep up with the workload. ASIC/FPGA-centric and /or offload strategies remained the path to high-performance packet processing for two decades.

Fast forward to today. Now, we can route up to 1 Tbps (14+ Mpps) in software.

Let's stop for a second and think about that number.

If you want to fill a 10 Gbps link with 1500 byte packets - let's call that a large file download use case - you need software (running on commodity CPUs) capable of processing 812,743 packets per second. Not everyday software by any stretch.

But, now let's consider a far more demanding use case. One where we need to support hundreds or thousands of individual sessions, each requiring 64 byte "application-sized" packets. And worse, they will be encrypted. With 64 byte packets (84 bytes on the wire) we will need to process 14,880,952 packets per second to fill a 10 Gbps link.

Let's take it one step further.

By extension, to route at 100 Gbps, we need  $14,880,952 \times 10$ , or 148,809,520 packets per second to fill the wire. And since we can do essentially 14 Mpps per core, we need 10 CPU cores to get us there.

This would have been unheard of in software on commodity hardware - *until now*.

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## THE DISRUPTION

There is a second transformation underway.

Open source software is unlocking previously monolithic, expensive and speed-constrained packet processing functions that underpin secure networking functions including routers, firewalls, VPNs, IDS/IPS, and more.

But to make open-source ready for enterprise and carrier-class deployments, integration development, testing, quality assurance, packaging, delivery and support are still required.

*Now it's here.*

## INTRODUCING TNSR FROM NETGATE

The company that provides pfSense®, the world's most popular and widely-deployed open source firewall/router solution is now providing a highly-scalable, orchestration-managed, open-source stack-based secure networking software platform.



Secure network complexity and cost are removed from the equation.

User demands of applications and data can be met instantly - just as with any utility.

Advanced open-source technologies including VPP, DPDK, Clixon, YANG models, NAPALM, Linux and more can now fully empower commodity CPUs to deliver fast, flexible and affordable secure networking solutions.

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## THE APPLICATIONS

Cloud-based secure networking instances - for throughput needs from 1 to hundreds of gigabits per second - can be activated in seconds to enable high-speed VPC interconnect, application access control, or content mirroring for sophisticated inspection and policy invocation purposes.

Premises-based secure networking appliances now easily scale to 1, 10, 25 Gbps - irrespective of packet size or encryption schema. Multi-device orchestration management and control is easily achieved through a standards-based API.

Embedded secure networking functions can be run directly on system on a chip (SOC) platforms poised to transform IoT and virtual service provider equipment solutions.

The opportunities for transformation are limitless.

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## NETGATE IS YOUR PARTNER IN TRANSFORMATION

In the end, transformations only occur when a pressing need exists and the promise of high buyer value is real.

Netgate's TNSR secure networking software platform delivers on the promise.

With the knowledge and expertise required to shape open-source technology advancements into enterprise / carrier class products, unmatched price-performance is delivered.

Transparent deployment from embedded software to premises appliances to utility-based cloud instances combined with management and control options ranging from CLI to API-enabled orchestration ensures compelling total cost of ownership.

Finally, IT secure networking need will undoubtedly continue to rapidly evolve. With the advent of artificial intelligence, augmented reality, machine learning and more, the questions, analyses and decisions we may impose upon network traffic are far from rote. The third leg of the "TNSR value stool" is services flexibility. Being able to quickly and easily enable new in-band or out-of-band packet processing functions ensures that service flexibility - for end customers or service providers - can address future needs.

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## GET STARTED TODAY

Wherever you are in your own IT transformation - 100% cloud-based, moving to cloud rapidly, still heavily invested in premises infrastructure, looking to extend your reach to IoT, or move your service boundary closer to the edge - TNSR delivers necessary secure networking capabilities with outstanding value.

But don't take our word for it. Check it out for yourself.

Head over to the AWS marketplace and set up a TNSR hourly instance right now.

Or sign up for our newsletter and/or follow our blog - where we'll keep you posted as we're steadily adding platform features and deployment options.

If you'd like to learn more, visit [netgate.com](http://netgate.com).

**Accelerate your IT secure networking transformation  
today with Netgate TNSR.**



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