If they can't find you, they can't attack you!™

Network Privacy as a Service – Securing Digital Transformation

EXECUTIVE SUMMARY – THE PROBLEM WE SOLVE

Public cloud computing has rendered traditional enterprise wide area networks (WANs) suboptimal, from a price, performance, and security perspective. Software Defined Wide Area Networks (SD-WAN) have revolutionized how enterprises manage their wide area networks. However, SD-WANs significantly increase the enterprise's public exposure and therefore its cyber profile, rendering traditional security methods inadequate. NetAbstraction provides the protection lacking in the traditional SD-WAN and is the next generation of wide area networking. NetAbstraction provides a simple but very effective solution that obfuscates and anonomizes traffic enabling private browsing and private application to cloud connections.

While SD-WAN has made the enterprise's use of their WAN more efficient, it has not solved some of the fundamental issues in today's WAN. Leased lines are static and make a fixed target for cyber attack. They also limit the ability to elastically meet bandwidth demands. In addition, they are expensive. MPLS services are also costly, complicated and largely inflexible resulting in a fixed target. When considering the use of the Internet or cloud, there are significant cost savings, but performance and security are key considerations. NetAbstraction's next generation networking service makes the Internet the preferred solution – NetAbstraction is cheaper, faster, more secure, more resilient, and more flexible.

WAN traffic is continuing to grow over 200 percent on a yearly basis. At the same time, MPLS bandwidth pricing, unlike decreasing cloud pricing, has remained fairly constant, further supporting the shift to SD-WANs. Purchasing lower cost bandwidth is a great way to handle the rise in overall WAN traffic without breaking the bank.

Network leaders must continue to evolve their WAN, driven by the enterprises' needs for digital business transformation, the increasing use of as-a-service models and the increased adoption of real-time applications across the WAN. This is creating a need to incorporate the Internet as an intrinsic part of the enterprise WAN in concert with more traditional (e.g. MPLS) services. Gartner predicts a rapid adoption of Internet services for enterprise connectivity needs. They anticipate that by 2020, more than 60% of enterprises will have deployed direct Internet access, up from less than 30% in 2016.

NetAbstraction's extensive expertise is rooted within the Intellgence Community. Our backgrounds are in: offensive and defensive cyber; protection of user identities; and innovative engineering, implementing networks to support clandestine communications. Building from a deep understanding of the current state-of-the-art technologies, we innovate and provide the next generation of privacy, identity protection, and security capabilities.

We understand, first hand, the challenges our customers face when meeting today's cyber and privacy needs.

NETABSTRACTION OVERVIEW

NetAbstraction was founded and developed it's flagship service to address the needs of enterprises in this dynamic new environment, offering additional security, performance and significant cost reductions to provide the WAN capabilities that all enterprises need as we continue to move to new business models.

NetAbstraction Overview
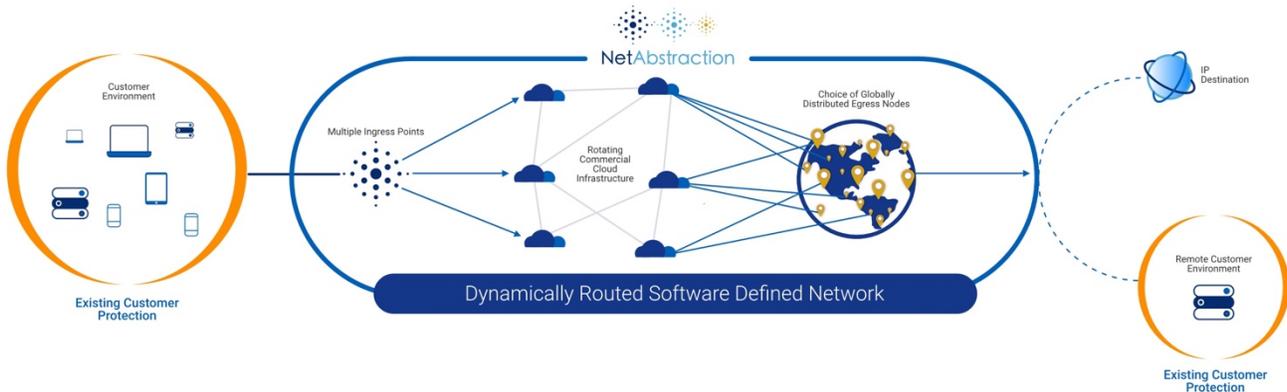
NetAbstraction is a carrier class Network Privacy As A Service that protects your identity and provides additional security for your communications on the Internet. NetAbstraction's patented design obscures and varies network pathways while protecting customer identities and systems via implementation of Software Defined Network (SDN) virtualization across multiple cloud providers. NetAbstraction provides secure, varied, and non-apparent network connectivity, a range of identity management and persona attribution options to alter or reduce the cyber attack profile, and system designs to help control customer information held within commercial cloud provider databases. In addition, NetAbstraction augments the multi-layered security capabilities provided by the commercial cloud providers, to include implementing dynamic security policies to help ensure that malicious traffic is not allowed to enter the network.

Cloud infrastructure is acquired using identity management domain expertise that the NetAbstraction leadership gained through our background in the Intelligence Community. We are cloud agnostic and always implement our network communications pathways across at least two different cloud provider networks.

We add an additional layer of virtualization in the acquired infrastructure using containers. We then deploy the components of our SDN software to create the Software Defined Network Layer 2 overlay across the commercial providers' Layer 3 fabric.We automate the tunneling and provisioning of the network to dynamically shift and adjust communications pathways on the fly, in real-time, without impacting our customer's communications.

Our patented ability to control the network routing protects our customers' identities and locations, enhances performance, and creates isolated channels of communications.

In order to efficiently manage the complexity of establishing and maintaining the network supporting the NetAbstraction service, we have chosen to use a commercial software product, Nicira Network Virtualization Platform (currently renamed NSX with its purchase by VMWare). NSX is a distributed software suite that creates scalable, fully featured, isolated virtual networks that are completely decoupled and independent from the physical network. The NSX product is predominantly used in data centers to address the barriers of scaling network infrastructure in order to keep pace with the rapid expansion of cloud technology. While it is a non-traditional use, the NetAbstraction service has taken advantage of and adapted most of the features of the standard NSX product to our architecture. Our service has been designed to establish a logical Layer 2 SDN network across the commercial provider's Layer 3 network.

NETABSTRACTION SECURITY FEATURES

NetAbstraction is the future of networking for businesses. Software Defined Networking provides the opportunity for businesses to leverage the Internet while providing an additional layer of security protection. NetAbstraction's secret sauce addresses key fundamental deficiencies in SDN. We improve performance, increase security, and increase agility to provide better resiliency and a reduced cyber attack vector. Our key differentiators that enhance our value proposition for prospective customers:

PERFORMANCE – NetAbstraction's patented design was initially conceived to protect our customer's identity through the network. It was imperative to control the routing through the network to ensure that the traffic traversed the intermediate nodes to obfuscate the originating point and identity. Our NetAbstraction network gateways provide routing instructions, including path selection, through the network. Because we control the routing through our network, NetAbstraction is able to provide carrier grade performance. Every packet traverses the same path, reducing the re-compile time at the end of the path which reduces overall latency. In addition, there is no processing in the intermediary nodes. We are only throttled by limitations of the commercial cloud providers themselves. This allows customers access to the full capabilities of the Internet, streaming video, social media content, as well as all the features of any applications they are using. We leverage the QoS of the commercial cloud providers; our efficient network design allows us to basically pass-on the same quality or better than the commercial providers.

In addition to performance benefits, NetAbstraction's patented ability to control network routing also has tremendous benefit to organization's HIPAA and GDPR compliance efforts. NetAbstraction's ability to control routing through the network enables organizations to meet **HIPAA and GDPR data governance requirements** by providing complete insight, access and control over network pathways and data. NetAbstraction's global network enables customers to control network routing on a worldwide basis.

AGILITY – NetAbstraction uses native features of NSX to quickly make configuration changes in the network. Our ability to dynamically shift network pathways, on the fly, in real-time, without interrupting or degrading customer communications a unique capability because of our control of the routing through the network. In addition, most SDN implementations must tear down and re-establish a virtual connection and thus have too much latency to keep the communications connections up and running when changing the network communications path. Most other providers establish static, pre-defined connections within the SD-WAN that rely on traffic monitoring to choose the "best" path, whereas NetAbstraction can dynamically establish these connections based on a near infinite number of conditions. We are also able to establish new network nodes and paths on the fly through our network, including deployment of new customer applications and payloads.

SECURITY – NetAbstraction leverages all the security features of traditional SDN technology and the commercial providers, and enhances them through our patented implementation. Some specific benefits provided by the NetAbstraction network implementation:

- We disguise your network communications pathways – if they can't find you, they can't target you!

- We protect your identity by providing alternate subscriber information, which is typically exposed in commercial providers' databases.

- We use multiple providers/technologies and geographic locations to disperse and layer any points of possible attack.

- We regularly rotate and exchange the infrastructure and subscribing identities that we use to establish our physical infrastructure.

- We dynamically shift your network – it is hard to identify or hit a moving target. We shift our customers' communications pathways on a regular basis or dynamically in response to a perceived cyber threat, without interrupting or degrading customer communications.

- We use a new tunneling protocol that is misidentified as normal TCP traffic, enabling the tunnels to hide, (become lost), within the traffic of the commercial provider networks. While the protocol (STT) has been available for some time, this is the first implementation of the protocol on the Internet.

- We logically isolate each customer's communications on top of our physical infrastructure, hiding the customer network topology from any external scrutiny and insuring customer data is segregated and not exposed to others.

- Because we control the routing through the network, we provide additional advantages over other SDN implementations:

- ❋ We have the ability to encrypt end-to-end through the network – most SDN implementations require decryption at each intermediary node.

- ❋ We have the ability to establish our VPN without the need to broadcast the identity of participating nodes.

❋ By creating a virtualized network, we decouple the logical network from the commercial provider's physical network. The logical decoupling of virtual servers from the physical network reduces the opportunity for attackers to reach resources connected to the network. It also isolates the logical network from vulnerabilities inherent in the physical network infrastructure.   We work at the core layer 2 and 3 of the technical infrastructure; most SD-WAN implementations work at the Layers 4, 5, and 6. As a result we can support a wider range of activities with less performance impact.

PRIVACY / IDENTITY MANAGEMENT – The NetAbstraction service's operational design is based on using intermediaries (cutouts or surrogates) to acquire the commercial infrastructure used to implement the network. None of the infrastructure has been acquired in the name of NetAbstraction (to reduce possible targeting of publically known services). The network also has been implemented with a minimum of three "hops" between customer locations and/or the Internet and we use at least two commercial providers. This alters the attribution of each segment and disguises the customer's presence. We regularly rotate and exchange the infrastructure that we use to establish our network. This makes it very difficult for anyone to trace the operational path of our customers' network connections or associate users – "If they can't find you, they can't attack you."

EASE OF IMPLEMENTATION – NetAbstraction is a software-based implementation that seamlessly integrates with existing customer infrastructure and networks. NetAbstraction does not require customers to purchase hardware or work through complex re-configuration of existing resources and no specialized circuit-by-circuit basis, minimizing disruption of on-going operations. There are no required appliances – we work with customers to define and implement the interface that best serves their requirements. This is typically a VLAN on the customer's existing edge equipment.

ABOUT US

NetAbstraction™

NetAbstraction, Inc. is an Internet and cyber security firm that offers services that lower your organization's systems "visibility" as a target on the Internet. Our management comes from backgrounds working for the federal government, enabling capabilities to support several Intelligence Community missions.

With substantial experience in offensive cyber operations and in designing, creating, and implementing non-traditional, non-attributable, telecommunications networks, we have a deep understanding of the current state of the art technologies. We are innovating and providing the next generation of privacy and identity protection capabilities while understanding, first hand, the challenges our customers face when meeting today's cyber and privacy needs.

www.netabstraction.com   **info@netabstraction.com**   **(703) 870-7481**