NetAbstraction Key Differentiators:
A Carrier-Class Network with Unique Privacy and Security

If they can't find you…they can't attack you ™

The Current Situation

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 obfuscates traffic, improves on network infrastructure cost and enhances network security.**

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 traffic, enabling private browsing and private application to cloud connections.

SD-WAN technology enables customers to measure quality, steer traffic and remediate impairments across multiple network pathways. The benefits to an SD-WAN approach are substantial, including simplified management and operations, reduced costs and increased visibility, and potentially increased security. Adopters of SD-WAN are experiencing 30 to 40 percent savings in their WAN network infrastructure costs. NetAbstraction can reduce these costs even further and will greatly enhance network protection.

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 for 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.

> **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.**
> *Gartner Group*

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 more secure, more resilient and more flexible.**

WAN traffic is continuing to grow more than 200% 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 enterprise's need 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.

The NetAbstraction Response

Anyone directly using the Internet exposes their IP address, location and network identity. Any external connection that your company has is a potential source of attack on your data and your systems, and even more problematically, typical networks are fixed, static and easily located. If you notice a breach, you've already lost the battle. Your adversaries have found your network; they know who you are and where you are.

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

NetAbstraction, Inc. was founded and developed its flagship Network Privacy-as-a-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.

The NetAbstraction cloud-based Network Privacy-as-a-Service is the future of wide-area networking. Our solution provides a Software-Defined Network (SDN) overlay on top of commercial provider infrastructure. NetAbstraction's patented capabilities address fundamental deficiencies inherent in most SDN implementations, thus delivering **improved performance, increased security and better agility**. We provide significantly increased resiliency and a dramatically reduced cyber-attack vector. With NetAbstraction, enterprises have the opportunity to leverage the Internet for most, if not all, of their WAN requirements.

Network Privacy-as-a-Service is the future of wide-area networking.

NetAbstraction Overview
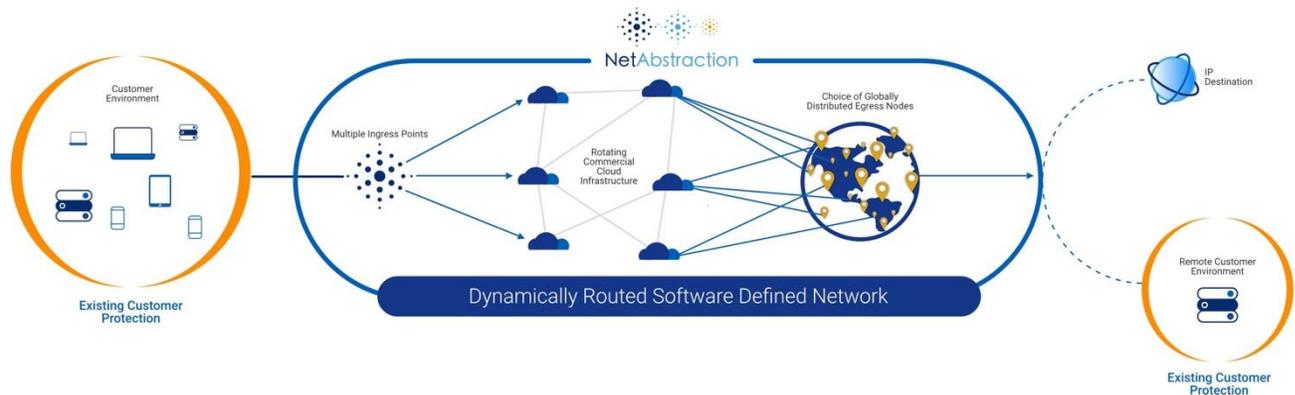
NetAbstraction is a carrier-class Network Privacy Service that protects your organization's identity and provides additional security for your communications on the Internet. NetAbstraction's patented design **obscures and varies network pathways** while **protecting customer identities and systems** 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 U.S. 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 rea -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.**

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How NetAbstraction is Different

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.

Key differentiators enhance our value proposition for prospective customers.

Network Privacy/Identity Management

The NetAbstraction 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 publicly known services).

Our key differentiators:

- **Unique obfuscation methodologies**
- **Network privacy and security for our customers**
- **Carrier-class performance**
- **Dynamically shifts the network**
- **Ability to encrypt end-to-end through our network**
- **Ability to establish new nodes on-the-fly**
- **Reduces overall cyber-attack surface**

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."*

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 attack 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 your 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.
- 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**.

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* 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.

We also **isolate 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, NetAbstraction can support a wider range of activities with less performance impact.

Performance

Because we control the routing through our network, NetAbstraction provides **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.

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.

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**.

Cost-Competitive

Save money by leveraging cost-effective secure and private Internet-based transport.

NetAbstraction's network is delivered as a service overlaying your existing Internet broadband or WAN transport. NetAbstraction offers a **subscription-based pricing model** that is considerably more cost-effective than traditional MPLS circuits and leased lines.

Agility/Scale/Interoperability

NetAbstraction's ability to **dynamically shift network pathways on-the-fly**, in real time, without interrupting or degrading customer communications, is a unique capability. 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 able to establish new network nodes and paths on-the-fly through our network, including deployment of new customer applications and payloads.

Ease of Implementation

NetAbstraction provides a **software-based implementation** that seamlessly integrates with existing customer infrastructure and networks. With NetAbstraction, you don't need to purchase hardware or work through complex re-configuration of existing resources, and you need no specialized circuit-by-circuit basis, thereby minimizing disruption of ongoing operations. There are no required appliances – we work with customers to define and implement the interface that best serves their requirements.

About Us

NetAbstraction protects identities and systems by intelligently selecting and obscuring global network pathways of the Internet. Our company name, NetAbstraction, is derived from a very simple concept in the real world and in computer programming. Abstraction's main goal is to handle complexity by hiding unnecessary details from the user.

Really simple - **abstraction** is hiding stuff! The philosophy of NetAbstraction, Inc. is to provide privacy and security to our customers' network by protecting their identity.

Developed from roots in the U.S. Intelligence Community, NetAbstraction's technology is born from our expertise in designing, creating and implementing non-traditional and non-attributable telecommunication networks in support of critical U.S. Intelligence Community missions.

Now, that same unparalleled technology is available to enterprises that need to protect their information, people and networks from the growing pool of cyber attacks.

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