As part of our Software Defined Networking product suite, Virtual Network Services turns your physical network into an on-demand virtual network. That helps simplify management and control capital expense while increasing business agility, scalability and responsiveness. That means you can:

• Deploy services and updates in days, hours or even minutes.
• React automatically to spikes in demand, and quickly scale to meet evolving service deployments with rules-based management.
• Easily budget and manage costs via an OpEx model, including our consolidated billing option, Virtual Network Services - One.
• Maintain agility and innovation by eliminating vendor lock-in.
• Decrease risk as you test, innovate and evolve new services.
• Create a more intelligent network, with enhanced routing, easier management and greater flexibility.

Your network needs are constantly evolving to meet the demands of your business; but deploying and managing traditional network services can be complex and costly. You frequently need many different devices from different vendors to address each individual function. This not only drives up costs and limits your ability to respond quickly to changing needs, it also leaves you with a mishmash of disparate devices, applications and configuration models.

Meet the new enterprise network.

Virtual Network Services from Verizon lets you leave behind the old labor-intensive, slow-to-deploy and complex mix of devices, technologies and configuration models. Instead, you can use an agile, resilient and fluid service delivery model to quickly and easily help you capitalize on new opportunities in automation, analytics and customer engagement. Our solution provides a scalable, orchestrated and fully managed platform that integrates with a portfolio of technologies from industry-leading providers.

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For more than 20 years, Verizon has been providing managed network services. Today, Verizon is recognized by Gartner as a Magic Quadrant leader for Global Network Services and Global Security Services.

Available on either our high-performance Hosted Network Services platform, or via easy-to-deploy universal customer premises equipment (uCPE), both options offer a wide selection of plug-and-play network services – such as routing, WAN optimization, security and software-defined WAN (SD WAN) – that all integrate and work together seamlessly.

An end-to-end Enterprise Orchestration platform, zero-touch provisioning (ZTP) and an integrated service portal make it easy to deploy, maintain and upgrade services whenever your needs warrant (zero-touch provisioning coming soon*).

Plus, our world-class, end-to-end, full-service management means you can stay focused on your core business, not network administration.

Create a competitive edge with an application-driven network.

Simplify your network. Virtual Network Services.

Transform your network with world-class services from our rich ecosystem of leading technology providers, with service chaining tested, certified and fully managed by tenured staff.

*Planned for Q1 2018
Get the flexibility your business needs.

Virtual Network Services is all about flexibility and scalability, with size options to fit your specific service requirements – whether it’s a retail kiosk or a data center deployment:

<table>
<thead>
<tr>
<th>Virtual Network Service Function</th>
<th>Capacity Unit</th>
<th>Extra Small</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>X-Large</th>
<th>XX-Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routing</td>
<td>Bandwidth (Mbps)</td>
<td>Up to 10</td>
<td>Up to 20</td>
<td>Up to 50</td>
<td>Up to 100</td>
<td>Up to 1000</td>
<td>Up to 2000</td>
</tr>
<tr>
<td>Security</td>
<td>Bandwidth (Mbps)</td>
<td>Up to 10</td>
<td>Up to 20</td>
<td>Up to 50</td>
<td>Up to 100</td>
<td>Up to 1000</td>
<td>Up to 2000</td>
</tr>
<tr>
<td>SBC</td>
<td>Max Simultaneous Sessions</td>
<td>Up to 250</td>
<td>Up to 1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAN Optimization</td>
<td>Max Connections</td>
<td>150</td>
<td>650</td>
<td>2300</td>
<td>6000</td>
<td>14000</td>
<td>100000</td>
</tr>
<tr>
<td>SD-WAN</td>
<td>Bandwidth (Mbps)</td>
<td>Up to 10</td>
<td>Up to 20</td>
<td>Up to 50</td>
<td>Up to 100</td>
<td>Up to 1000</td>
<td>Up to 2000</td>
</tr>
<tr>
<td>SD Secure Branch</td>
<td>Bandwidth (Mbps)</td>
<td>Up to 10</td>
<td>Up to 20</td>
<td>Up to 50</td>
<td>Up to 100</td>
<td>Up to 1000</td>
<td>Up to 2000</td>
</tr>
</tbody>
</table>

For even more flexibility, up to three Service Package options (Essential, Core, Complete) are available for each network function.

**Essential.**

- **Routing.**
  Provides basic routing features.

- **Security.**
  Includes standard firewall protection and Virtual Private Network.

- **SBCaaS.**
  Comprehensive Session Border Controller features with common industry service functionality covering standard session border control use cases.

- **SD-WAN.**
  Delivers secure overlay across any transport using IPSec, basic QoS (Quality of Service) and Split Tunnel. Offers static IP routing, automatic secure tunnel setup at scale.

- **Software Defined Secure Branch.**
  Encompasses the features available in the “Advanced SD WAN” license.

**Core.**

Essential services, plus:

- **Routing.**
  Includes standard features provided by router vendor, plus full service management and transport services.

- **Security.**
  Provides a selected set of popular additional features, such as intrusion detection and intrusion prevention services.

- **SBCaaS.**
  SIP Header Manipulation, Encryption (signaling and media), DTMF detection and insertion and media transcoding support.

- **SD-WAN.**
  Supports a greater number of VPNs and allows advanced policy setting and management.

- **Software Defined Secure Branch.**
  Includes Advanced SD WAN + Next Generation Firewall add-on license.
Essential and Core services, plus all available features from your selected virtual network function Technology Provider.

**Complete.**

Virtualized network functions - Network as a Service.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Deploy on premise or in the cloud</strong></td>
<td><strong>Define the path</strong></td>
<td><strong>Select the path</strong></td>
<td><strong>Secure and protect</strong></td>
<td><strong>Accelerate</strong></td>
<td><strong>Communicate</strong></td>
</tr>
<tr>
<td>OpenStack x86 server with Verizon hypervisor.</td>
<td>All standard routing protocols supported.</td>
<td>WAN Segmentation.</td>
<td>IDS/IPS.</td>
<td>WAN Optimization.</td>
<td>IPv4 to IPv6 NAT.</td>
</tr>
<tr>
<td></td>
<td>Multicast.</td>
<td>VPN.</td>
<td>URL filtering.</td>
<td>Caching.</td>
<td>SIP Header manipulation.</td>
</tr>
<tr>
<td></td>
<td>High Availability options.</td>
<td></td>
<td>Antivirus/antispam.</td>
<td></td>
<td>DTMF Detection.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Content filtering.</td>
<td></td>
<td>Signaling &amp; media encryption.</td>
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<td></td>
<td>Far End Camera Control.</td>
</tr>
</tbody>
</table>

Software Defined Secure Branch

**Access the services you want and control costs.**

A move from traditional to virtual networks allows you to control spending. Since the solution is technology provider neutral, you have the freedom to shop from a rich ecosystem of Verizon-approved industry-leading technology providers, mixing and matching the services that best suit your organization. Pricing models include cost-efficient, flat monthly billing and optional Virtual Network Services - One single line invoicing, wrapping software licensing, hardware and management.

- WAN Optimization.
  Covers a predefined set of essential services required for any network environment, including TCP acceleration/transport streamlining, deep packet inspection (DPI), QoS and DPI-and host table-authenticated application path selection.
Free up more resources.

To make it even easier to benefit from your virtual network, we give you world-class, end-to-end fully managed services. We take care of everything from your initial deployment to your life-cycle management needs. All backed by our global team of more than 1,000 professional services experts and competitive service level agreements. We take care of your network, so you can focus on growing your business.

The Verizon advantage.

As your one-stop shop for managed Virtual Network Services, we make it easy to get the agility, flexibility and performance you need from your network. Verizon is globally recognized as a leader in providing networking, security and cloud solutions and we deliver game-changing virtualization for the modern, hyper-connected world. With our experience managing more than 400,000 security, network and hosting devices, and over 4,000 customer networks in 150+ countries, you can be confident in our ability to deliver the end- to-end managed services you need.

Learn more.

Find out how you can deploy and manage a more efficient, intelligent network with Virtual Network Services. Visit verizonenterprise.com/products/networking/sdn-nfv or contact your account representative today.