

Only WarpVM™ Boosts Cloud Performance 2-10X Without Boosting Cloud Costs

WarpVM Features

- Boosts cloud network throughput and application performance up to 80% under normal operating conditions, and 2-10X or more in high traffic environments.
- Leverages patented technology to overcome the root causes of poor performance at a small fraction of the cost of VM and network upgrades that rapidly lose effectiveness.
- Installs in minutes in AWS, Azure, Google Cloud, VMWare, or KVM environments.
- No mods to client or server applications, and no additional hardware or software is required on-premises.
- Delivers the same performance benefits for all traffic—encrypted, unencrypted, and compressed, unlike legacy optimization solutions that require payload access.
- Ideal for real-time streaming, IoT, VDI, DaaS, SaaS, edge cloud and multi-cloud applications that require fast, reliable large data transfers.

The Challenge

Slow performance is the new downtime. Cloud administrators typically try to overcome it with expensive VM and network upgrades that rapidly lose their effectiveness because they don't address the root cause – the massive amount of packet delay variation (PDV), more commonly referred to as jitter, generated by virtualization.

In cloud environments, random VM scheduling conflicts, hypervisor packet delays, and hops between virtual and physical subnets are a constant source of jitter. Hosted web, streaming and IoT applications that send data in unpredictable bursts, and RF-induced jitter from last-mile mobile and Wi-Fi networks on the client side compound it. TCP, the dominant network protocol used by AWS and other cloud platforms interprets jitter as a sign of congestion. It responds by slowing traffic to prevent data loss, even when the network isn't saturated and plenty of bandwidth is available. Just modest amounts of jitter can cause throughput to collapse and applications to stall.

Some IT organizations turn to jitter buffers for a solution. Jitter buffers realign packet timing for consistency before packets are passed to the receiving application. However, packet realignment can ruin performance for real-time applications like live video streaming and IoT, and create random random delays that become yet another source of jitter.

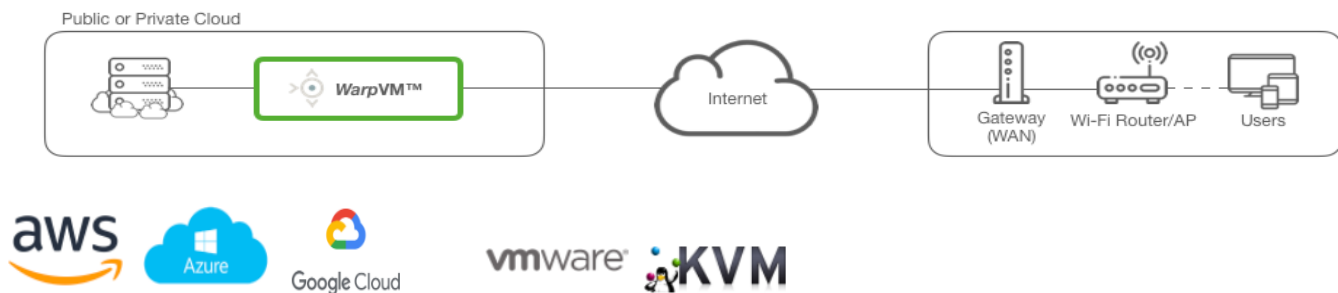
Jitter's negative impact on cloud application workloads goes undetected by even the most sophisticated management and monitoring tools, and there's only one solution that overcomes it.

The WarpVM Solution

Only WarpVM eliminates jitter-induced throughput collapse with patented technology that determines in real-time whether jitter is due to congestion, and prevents network throughput from collapsing and applications from stalling when it's not. WarpVM builds on this unique capability with other performance enhancing features that benefit not only TCP, but also UDP and other traffic sharing a network. These features include packet prioritization, and flow control that accelerates network traffic by making optimal use of all available bandwidth.

As a result, WarpVM delivers up to an 80% improvement in cloud network throughput and application performance under normal operating conditions, and 2-10X or more in high traffic, high latency, jitter-prone environments. WarpVM accomplishes this at a small fraction of the cost of VM and network upgrades.

In addition, WarpVM doesn't require payload access for deduplication and compression, unlike other optimization solutions. This means that WarpVM eliminates the encryption/decryption overhead at network endpoints imposed by these other solutions, enabling it to deliver the same performance benefit for all traffic – encrypted, unencrypted and compressed. Another major advantage of not requiring payload access is that it eliminates the maintenance overhead and security risk of exposing encryption keys to third party vendor tools at network endpoints.



WarpVM is a single-ended, VM-based transparent proxy that deploys in minutes in AWS, MS Azure, Google Cloud, VMWare or KVM environments. No modifications to client or server applications are required, and no other hardware or software is needed on-premises. The only modification necessary is to the on-premises DNS server so that it points to the WarpVM proxy IP address as the destination, instead of the IP addresses of the VMs or containers hosting the target applications. This enables WarpVM to optimize traffic before forwarding it to and from the target cloud applications.

Key Features

- Delivers up to an 80% improvement in cloud network throughput and hosted application performance under normal operating conditions, and a 2-10X boost in high traffic, high latency, jitter-prone environments. WarpVM achieves these results at a small fraction of the cost of VM and network upgrades.
- Allows packets to be prioritized, and accelerates traffic between cloud and on-premises environments by filling unused gaps in bandwidth to keep TCP, UDP and all other traffic flowing, regardless of network protocol.
- Delivers the same performance benefit for all traffic – encrypted, unencrypted or compressed, because it doesn't require payload access for compression and deduplication, unlike other optimization solutions. This eliminates significant performance overhead from random encryption/decryption delays at network endpoints.
- Significantly reduces TCO
 - Single-ended VM-based transparent proxy architecture enables deployment in minutes.
 - Requires no changes to client or server applications, or network stacks.
 - No additional hardware or software needed at the customer site.
 - Eliminates the maintenance overhead and security risk of exposing encryption keys to third party vendor tools at each network endpoint, unlike network optimization tools that require payload access.

Use Cases

- Large Enterprises and SMBs using cloud-hosted applications that require quick response times and fast, reliable large data transfers.
- Edge cloud IoT.
- VDI (Virtual Desktop Infrastructure) and (DaaS) Desktop as a Service Implementations.
- Cloud migration projects.
- Cloud service providers needing better performance to the edge from their PoPs at minimal cost.
- eCommerce sites requiring fast web page load times.
- Content delivery networks.
- SaaS vendors seeking to improve performance.

Nutanix Hybrid Multi-Cloud



WarpVM has achieved Nutanix Ready certification for compatibility and performance with Nutanix's AHV hypervisor. AHV is at the heart of Nutanix's hyperconverged infrastructure (HCI) platform. With Nutanix HCI, hybrid multi-cloud solutions can be deployed across multiple public and private clouds with continuous availability, and none of the complexity. Gartner and other industry analysts have consistently recognized Nutanix as a market leader in the HCI space.

Technical Specifications*

Max Throughput	2Gbps
Max Sessions	300,000
Form Factor	Virtual Machine
Storage	200GB
Single-Ended	Yes
Optimize Wireless Traffic	Yes
Optimize SSL Traffic	Yes
Optimize VPN Traffic	Yes
Multi-Host Support	Yes

*Note that these specifications are for a default implementation of WarpVM. Please consult Badu Networks for deployments that require support for greater scalability than the specifications shown here.

About Badu Networks

Badu Networks provides patented next generation network optimization technology that delivers dramatic improvements in WAN, mobile, Wi-Fi, broadband and cloud network performance and throughput without costly and disruptive upgrades, enabling our customers to maximize ROI from their existing infrastructure. Our innovative software and appliance solutions significantly reduce webpage load times, accelerate enterprise applications hosted on-premises and in the cloud, and speed traffic across the Internet. Learn more at www.badunetworks.com.