Solution Brief

Multi-Cloud Software-Defined Networking

intel + vmware®

VMware SD-WAN Edge Drives Performance and Security with Intel® Processor Technologies

VMware SD-WAN Edge uses Intel platform technologies to deliver branch-office connectivity that meets demanding requirements for high throughput, low latency and robust network security. It is the foundation for IT network operations that deliver key performance metrics with optimized efficiency and TCO.

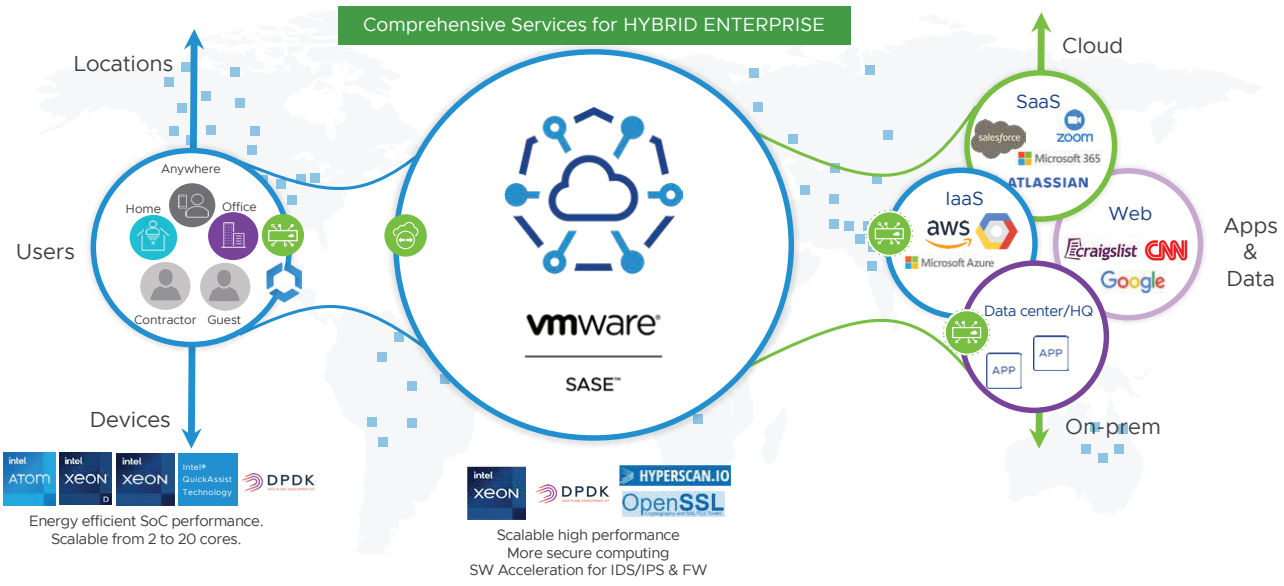
The transformation of enterprise networks over the past several years has been manifold. Older topologies based on static arrangements of network hardware have given way to more flexible ones that are defined dynamically in software. Multi-cloud topologies have been the result, where applications and networks are built to operate using relatively ad hoc, shifting collections of resources from multiple providers.

The shift to multi-cloud topologies is driven by a range of well-understood business benefits, including agility, elastic scale and the ability to defer capital investment in favor of operating expense. Branch-office WANs offer particular opportunities for transformation. Most depend either on expensive leased lines or on unpredictable and insecure broadband connections. At the same time, bandwidth requirements — as elsewhere — are growing dramatically with the increased use of video collaboration and conferencing, cloud-based services and large rich-media files.

VMware SD-WAN addresses these challenges with a purpose-built solution that gives branch offices enterprise-grade network performance and security. From an enterprise IT and OT perspective, VMware SD-WAN is efficient to deploy and administer, which together with excellent power efficiency delivers a lasting TCO advantage. The platform provides high visibility and control over both public internet connections and private networks. It builds on these advantages with zero-touch deployment, one-click business policy, enhanced security implementations and an easy path to insert new services.

VMware SD-WAN: Branch connectivity with performance and security

Secure, optimized connectivity for branch offices is provided by VMware SD-WAN Edge appliances. With flexible choices among available WAN connections such as broadband, MPLS and 5G, it detects and automatically remediates degradations for reliable performance and capacity. It also integrates state-of-the-art, cloud-native security services such as end-to-end encryption, VPN, stateful firewall and IDS/IPS.



The broad and deep VMware SD-WAN ecosystem based on Intel® architecture.

Simplicity built for adaptation to any scale

Physical VMware SD-WAN appliances powered by Intel architecture are sized to meet the needs of branch locations at any scale. The Edge 500 and 600 Series based on Intel Atom® processors offer flexible, cost-effective performance for small to moderate-sized sites. They offer capacity ranging from low-power, entry-level two-core CPUs up to high-throughput advanced processors with 20 cores. To support higher scale, the Edge 3000 Series powers large sites with hardware based on Intel® Xeon® Scalable processors. Software compatibility across this entire range of Intel architecture helps ensure that the SD-WAN software environment scales smoothly across CPU families, core counts and frequencies, as well as instruction sets and extensions for workload acceleration and security.

Lasting value of co-engineering by VMware and Intel

Decades of VMware-Intel collaboration have fostered a mutual expertise with each other's technologies that manifests in high optimization of solution building blocks. Together, the two companies have provided industry leadership in the development of enterprise virtualization. Drawing on this deep well of co-engineering expertise positions the combination of VMware and Intel technologies for unique success in virtualizing the WAN. On the foundation of Intel Virtualization Technology, VMware SD-WAN incorporates performance drivers that include the following:

- **Advanced memory subsystems** of Intel CPUs are utilized by VMware code structures for high performance, to scale up to 800 tunnels or support additional VNFs, including a cache increase over predecessors to 6 MB and increased data rates from LPDDR5 memory operating at 5200 MT/s.
- **Intel® QuickAssist Technology (Intel® QAT)** and cryptography instruction sets on CPUs accelerate symmetric and asymmetric encryption using hardware, reducing the performance burden usually associated with pervasive encryption and freeing up CPU cycles.
- **Data Plane Development Kit (DPDK)** is an open source set of libraries and drivers to offload packet processing from kernel space to user space, avoiding interrupts to dramatically increase throughput and more efficiently use compute resources available on Intel CPUs.

The VMware SD-WAN Edge utilizes the latest generation of Intel® processors for performance, efficiency and scalability. The Intel Atom® X Series offers higher per-core performance and new acceleration capabilities in a very low-power range. Intel® Advanced Vector Extensions 2 (Intel® AVX2) provides double-width floating-point instructions, which handle twice the data per clock compared to predecessors, benefiting AI algorithms and complex cryptography processing.

The Edge devices can make use of Intel® Deep Learning Boost (Intel® DL Boost) to accelerate deep learning inferencing for convolutional neural networks (CNNs). Using such advances, the Edge devices will drive higher throughput at scale, for AI-powered edge computing and other services at a competitive price point. As AI becomes more embedded in network security, this functionality becomes more critical to securing the network.

Branch offices made ready for the future

To help enterprises rise to the opportunity for branch-office WAN transformation, VMware SD-WAN Edge provides a simple but sophisticated path. The solution is easy to deploy and maintain, continually optimizing network traffic based on changing needs and conditions. The software is highly optimized to operate on Edge devices based on Intel architecture at any scale of branch office site, whatever its bandwidth requirements. The solution built on VMware and Intel building blocks delivers a future-ready, multi-cloud foundation for enterprise branches and remote sites.

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intel.com/vmware

vmware.com/partners/strategic-technology-partners/intel.html

Solution provided by:

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