

Supercharge Workload Performance at Lower TCO with Accelerated Infrastructure on VMware vSphere 8

vSphere on DPUs – Prepare your infrastructure to meet the demands of next-gen apps

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Next-Generation Applications are Influencing Changes to Data Center Architecture

Today's apps are data intensive and process lots of unstructured data such as text, images and log files, and utilize advanced AI/ML techniques and analytics. They are often distributed in nature and utilize a complex set of microservices to accomplish their tasks.

The resulting increase in demand for infrastructure services such as networking and storage places more demands on already strained compute resources, leaving fewer cycles to run mission critical workloads.

Furthermore, specialized accelerators such as data processing units (DPUs) and GPUs (graphics processing units) are increasingly being used to accelerate application and infrastructure specific functions. This trend has resulted in the creation of infrastructure silos, which leads to higher operational burden for IT infrastructure teams.

In addition, as enterprise computing expands into a distributed scaled-out infrastructure across the data center, edge and cloud, the nature of security vulnerabilities and overall impact of threats is changing constantly.



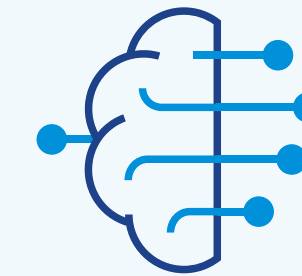
These application-driven macro trends are making it difficult for IT infrastructure teams to manage overall cost, performance and efficiency. Enterprise IT infrastructure teams are looking for an agile, on-demand infrastructure that is easily scalable.

IDC predicts that over 500 million new applications and services will be developed using cloud native methods by 2023.¹

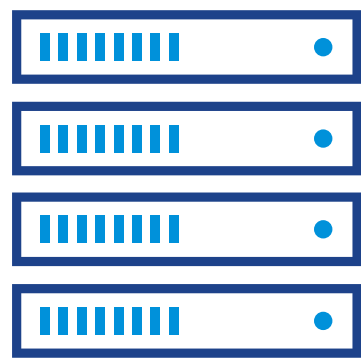
1. IDC FutureScape. "Worldwide IT Industry 2020 Predictions." IDC #US45599219. October 2019.

Challenges of Traditional Infrastructure Architectures

Traditional infrastructure architectures are not equipped to handle the demands of heterogeneous, distributed, multi-cloud applications. Without a redesign of the software and hardware infrastructure management layer, supporting modern applications on existing infrastructures will lead to an unsustainable increase in both total cost of ownership (TCO) and security risks. It is clear that a new approach is required.



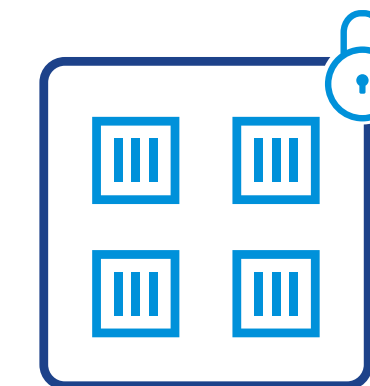
Some AI/ML inference services spend as little as **33% serving the application needs** and the rest in orchestrating services.²



Increased operational complexity from infrastructure silos – With the increase in application-specific silos to meet the needs of modern distributed workloads, IT operations teams need to create and maintain specialized infrastructures in addition to the traditional IT infrastructure. The divergence in the operating models of these specialized silos results in increased complexity and cost.



Higher server scale-out costs to meet infrastructure services demands – Traditional server scale-out techniques don't work well as an ever-increasing portion of the newly added server capacity is used by infrastructure services.



Unacceptable security risks to mission-critical applications from a CPU- and OS-centric security model – The current data center architecture where both the application and infrastructure services run on the same CPU must be strengthened with additional layers of defense against low-level threats. Enterprises are looking for ways to offer more robust security models that isolate the workload from the infrastructure domains.

2. IEEE Micro. "Understanding Acceleration Opportunities at Hypescale." Akshitha Sriraman, Abhishek Dhanotia, May/June 2021.

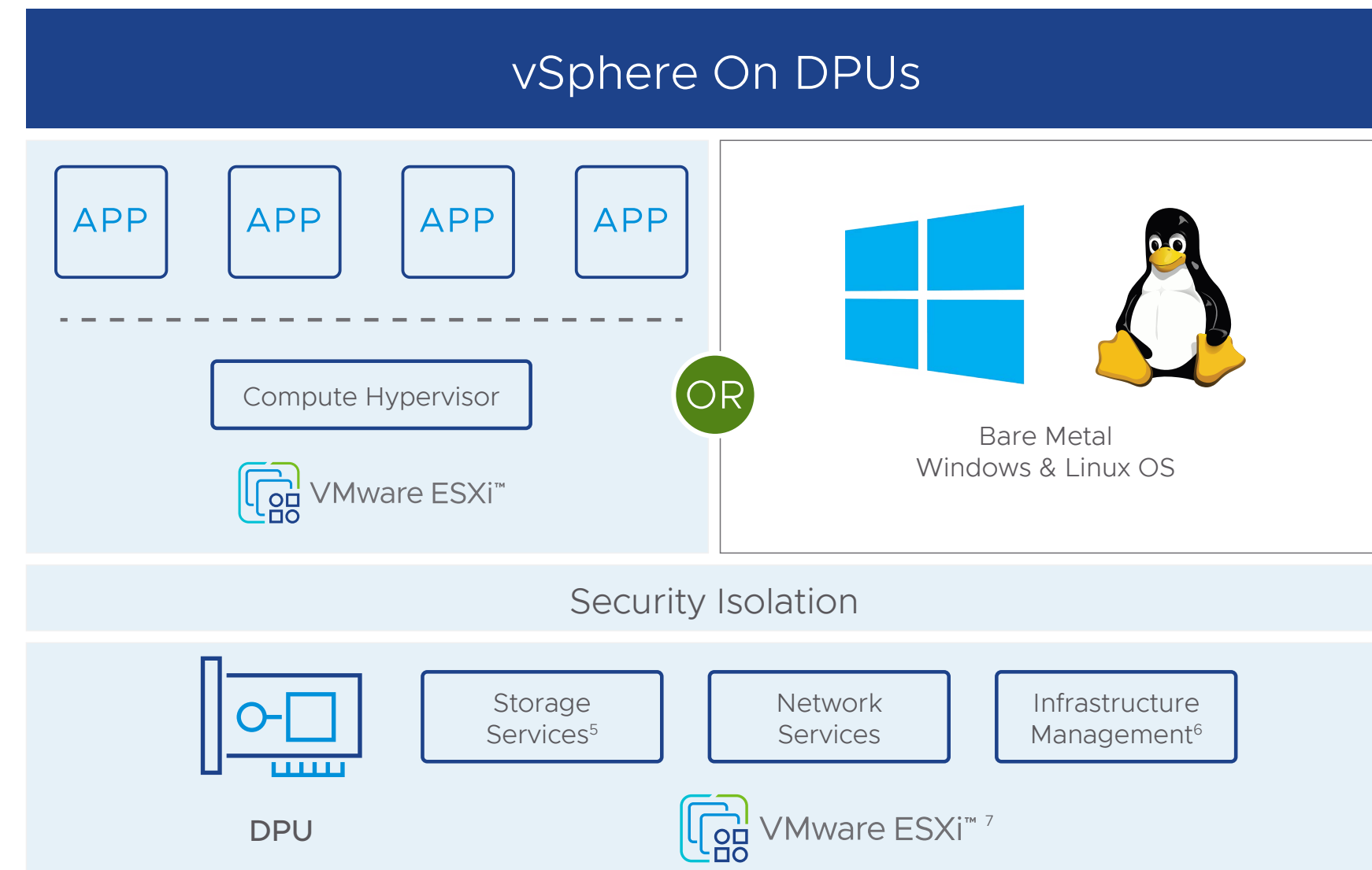
vSphere On DPUs

Modernizes cloud infrastructure by offloading and accelerating network functions on DPUs. It enables modern distributed workloads to run with lower network latency and improved data throughput.

vSphere on DPUs, enabled by vSphere Distributed Services Engine, is a new way to architect the core infrastructure by

- Using DPUs as a backbone to offload and accelerate infrastructure functions such as vSphere Distributed Switch and NSX Networking and NSX Distributed Firewall ³
- Managing lifecycle of DPUs with pre-established vSphere workflows and processes
- Isolating workload domain by running infrastructure services on the DPU

vSphere Distributed Services Engine leverages existing tools and user experiences to preserve the Day 0, Day 1 and Day 2 experiences that vSphere customers are familiar with.



3. Available as Tech Preview. Not suitable to deploy in production until promoted to GA

4. – 6. Not available in vSphere 8

7. DPU version of ESXi does not offer full capabilities that are offered on host

vSphere Distributed Services Engine Helps Enterprises Meet the Infrastructure Needs of Modern Workloads

Improved Performance

vSphere Distributed Services Engine enhances the performance of workloads with lower latency and higher packet throughput by accelerating infrastructure functions such as NSX Networking and NSX Distributed Firewall⁸ on the DPUs.

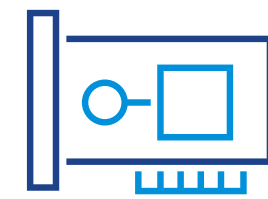
It achieves lower overall infrastructure TCO by utilizing freed up CPU cycles to consolidate more workloads per host.

Simplified Lifecycle Management

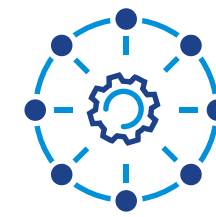
vSphere Distributed Services Engine reduces the operational overhead of managing DPU lifecycle by leveraging familiar and known VMware tools and methods.

Enhanced Infrastructure Security

vSphere Distributed Services Engine hardens the security posture of the infrastructure by providing an air-gapped isolation between infrastructure and workload domains.



Offload and accelerate infrastructure service functions on DPUs



Simplify lifecycle management of DPUs

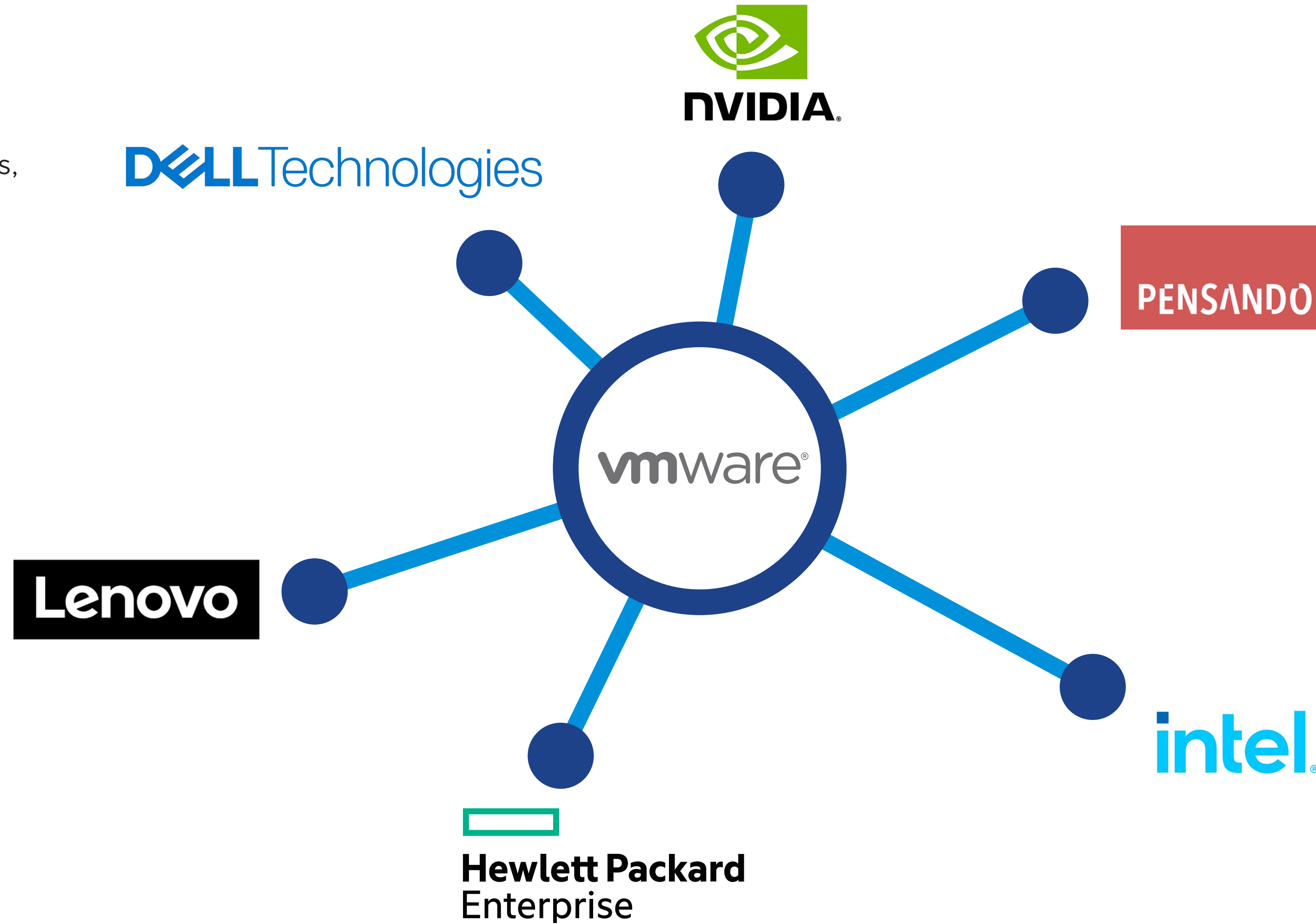


Isolation of workload domain from the infrastructure domain

⁸ NSX Distributed Firewall running on the DPU is only available as a beta feature in NSX 4

Partner Ecosystem

VMware is bringing together a broad ecosystem of leading DPU (NVIDIA, Pensando and Intel) and server vendors (Dell Technologies, HPE and Lenovo) to deliver flexible and integrated solutions.





vSphere on DPUs Efficiently Support the Needs of Next-Gen Applications

Deliver higher performance at a lower TCO for next-gen distributed workloads.

Reduces operational overhead of DPU lifecycle management.

Improves the security posture of the infrastructure by isolating infrastructure and workload domains.

Get Started Today

To learn more about vSphere Distributed Services Engine and VMware's collaborative approach to developing a vibrant ecosystem, visit our website.

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