Accelerate your Financial Services Applications with VMware vSphere® and NVIDIA BlueField DPUs

Learn how vSphere with NVIDIA BlueField DPUs can help financial services organizations secure IT and boost performance with less overhead

Increase operational efficiency and save costs while getting more from your IT resources

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Technology Trends and an Evolving Financial Services Industry

Over the last two years, the financial services industry has successfully navigated unprecedented levels of uncertainty. The sector responded to the COVID-19 global pandemic with remarkable resilience and adaptability, helping people, corporations and governments adjust to major changes and get back on their feet.

Financial organizations continued to deliver on evolving customer expectations, kept pace with ever-changing but strictly mandated regulatory requirements, and accelerated technology adoption to drive strategic business transformation.

Today, new technologies like AI/ML are disrupting established financial protocols and redefining how applications are developed and leveraged across the industry. App-based services including fraud prevention, know-your-customer, behaviour profiling for physical and cyber security, and digital payments through embedded finance are forcing the sector to innovate rapidly. What's more, futuristic technology trends like metaverse, crypto and NFTs and even generative AI solutions and quantum-resistant security have started to show an initial impact on the sector. Overall, financial institutions are looking to modernize their technology to take advantage of the speed, agility and innovation that capitalizing on these trends can deliver while prioritizing safety and security.

McKinsey estimates that artificial intelligence (AI) can generate up to $1 trillion additional value for the global banking industry annually.

Challenges in Modernizing IT within the Financial Services Industry

But this continuous investment in optimizing the customer experience comes with its own challenges. One of the unique hurdles the sector faces is in adhering to the risk and regulatory mandates that continue to evolve with changes in geo-political, technological and societal shifts. While adopting a zero-risk approach to compliance is the norm across the industry, the best financial services organizations are looking to evolve their business models, products, and practices to stay ahead of the regulatory environment while finding new ways to create value for their customers and their organizations.

As financial institutions continue to evolve in the face of dynamic trends in technology and a shifting regulatory environment, the challenges mentioned below have continued to affect the sector.

- **Cyber and Data:** According to the 2022 IBM Cost of a Data Breach Report, the finance industry had the second highest average cost per breach, trailing only health care. Given the highly interconnected nature of the financial services sector and its dependence on critical third-party service providers, risk mitigation and resilience initiatives need constant investment. Current or emerging threats include malware (e.g., ransomware), supply chain risk, and sophisticated DDOS. The complexity of complying with regulations that mandate digital operational resilience like DORA in EMEA only add to this challenge.
- **Increased Regulatory and Compliance Requirements:** The proposed European Union's (EU) AI Act (AIA), meeting the obligations under the Anti-Money Laundering (AML) Act of 2020, the continued imposition and enforcement of sanctions on Russia, and deficiencies in effective cybersecurity policies and procedures have put added pressure on an already highly-regulated industry.
- **Climate and Sustainability:** The Environmental, Social and Governance (ESG) charter, pushed largely by regulations (like the Sustainable Finance Disclosure Regulation (SFDR) in European Union, Financial Conduct Authority (FCA) in United Kingdom (UK)) and augmented by a global energy crisis has, in conjunction with increasing investor demand and numerous voluntary disclosure frameworks, driven sweeping changes that will continue, with rigor.

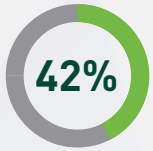
> As we look to 2023, significant questions remain about how the regulatory perimeter should expand to address known risks that investors and consumers are facing, including clarity on how banks should engage with distributed ledger technologies and digital assets more broadly."
>
> **– Deloitte**

How are financial institutions tackling these problems?

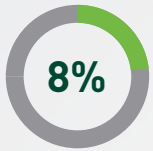
In the face of these challenges, financial services organizations have invested heavily in their IT infrastructure, developing distributed IT infrastructures to accommodate new and specialized workloads to innovate while trying to balance these concerns.

But this approach has led to its own sets of challenges:

1. Many applications deployed by financial services organizations require high performance and low latency to deliver the expected customer and employee experience- several organizations invested in distributed IT infrastructure for this very reason.
2. Distributed infrastructures require more resources committed to networking processes and workloads, which in turn puts a strain on available CPU, impacting performance and taxing IT infrastructure - particularly when these organizations are required to implement zero-trust security.
3. Managing and securing these disparate infrastructures while adhering to evolving regulatory requirements in a distributed environment adds complexity to organizations.



According to the 2022 IBM Cost of a Data Breach Report, the average financial organizations breach costs hit $5.97 million per breach.



Data centers are forecast to consume from 2% (best case) to 8% (worst case) of global electricity demand by 2030.

(Source: Huawei 2020 paper by Anders S.G. Andrae.)

The IT Modernization Dilemma

Financial services organizations are modernizing their IT to accelerate innovation in how they do business with their customers - but don't always have the tools or expertise needed to realize the full potential of these investments.

vSphere with NVIDIA BlueField DPUs for Financial Services

vSphere with NVIDIA BlueField DPUs is a new architecture that helps organizations reimagine their IT infrastructure.

vSphere on NVIDIA BlueField DPUs modernizes cloud infrastructure by offloading and accelerating infrastructure services, such as networking and security, on DPUs. It enables modern distributed workloads to run with lower network latency and improved data throughput.

Capabilities and Benefits

1. **Improve Infrastructure Performance while Offloading Infrastructure Services**
   Improve workload performance by offloading and accelerating infrastructure services such as VMware NSX and VMware vSphere Distributed Switch (VDS) onto the DPUs. Get enhanced performance of infrastructure services with lower latency and higher throughput and higher workload consolidation per host and lower infrastructure TCO. Proactively monitor, identify, and mitigate network bottlenecks without complex network taps.
2. **Simplify DPU Lifecycle Management with Integrated vSphere Workflows**
   Install and update ESXi images simultaneously on DPU and CPU. Provide metrics and insights on DPU performance alongside CPU metrics. Reduce operational overhead of DPU lifecycle management with integrated vSphere workflows, removing the need for proprietary tools.
3. **Boost Infrastructure Security**
   vSphere on NVIDIA BlueField DPUs hardens the security posture of the infrastructure by decoupling the workload domain by running infrastructure services on the DPUs thereby providing air-gapped isolation between infrastructure and workload domains.

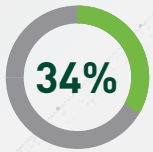
Unlock Performance to Run More Modern Workloads on the Same Infrastructure

vSphere with NVIDIA BlueField DPUs enhances the performance of workloads enabling lower latency and higher packet throughput by accelerating networking and infrastructure functions (such as NSX Networking and NSX Distributed Firewall) on the DPUs. It reduces overall infrastructure TCO by utilizing freed up CPU cycles to consolidate more workloads per host.

What does this mean for your business?

- Run new and modern workloads using dramatically faster architecture for virtualization that accelerates your infrastructure and lowers Total Cost of Ownership (TCO)
- Cut down the need for specialized infrastructure and get more from your current resources
- Go-to-market faster with lower response times and meet your customer expectations while virtualizing more workloads and applications
- Commit to your ESG goals by reducing your CO_2 footprint while saving money on energy bills

> (Banks are) under pressure from stakeholders to reduce the financed emissions footprint of their loan portfolios. Many have committed to reaching net-zero financed emissions by 2050, with interim results in 2030."
>
> Bain and Company



Network Offload Power Savings from Watts to Dollars

Offloading networking tasks to a BlueField DPU reduces power consumption by as much as 34% or up to 247 Watts per server*

*NVIDIA DPU POWER EFFICIENCY WHITEPAPER

Simplify Infrastructure and Consolidate Workloads

For many financial services organizations, the need of many critical workloads for low latency and high performance has limited their ability to fully embrace virtualization across their data center. This has resulted in disparate, specialized infrastructure islands that are difficult to manage and maintain.

vSphere with NVIDIA BlueField DPUs has changed this paradigm. It reduces the operational overhead of managing the DPU lifecycle by leveraging familiar and known VMware tools and methods to deploy DPUs, offload infrastructure work, manage newly virtualized applications.

By offloading networking and infrastructure processes to the DPU, you unlock CPU cycles dedicated to your higher value workloads. What's more, improved performance and lower latency through accelerated network functions can help organizations consider new applications and workloads to virtualize.

While it may always make sense to keep a few applications such as high frequency trading running on dedicated, non-virtualized infrastrucutre, moving more of your workloads to a software-defined, virtualized data center will simplify management, limit the number of proprietary tools your teams must use, and help achieve a cloud-like experience for your on-premises workloads.

What does this mean for your business?

- Reduce the need for specialized infrastructure and virtualize workloads that previously hadn't been considered for virtualization
- Reduces operational overhead by virtualizing more workloads and managing fewer specialized infrastructures
- Get more control over your IT by bringing more applications and workloads into a software-defined, virtualized data center
- Maintain and improve your customer experience while simplifying the strain on IT

Boost Infrastructure Security

Financial Services organizations are working towards improving and securing their data center infrastructure, a challenge when considering their distributed nature. Enterprises are looking for ways to offer more robust security models that isolate the workload and infrastructure domains.

For Banking and Financial Institutions, the need to embrace security in response to regulatory pressures and the fear of breaches, has increased demand to continue to improve network security, while avoiding adding strain on IT infrastructure that would impact compute availability and performance.

By deploying vSphere with NVIDIA BlueField DPUs, organizations can be more secure without impacting performance by leveraging a solution with networking security, micro-segmentation enabled via NSX, and a layer 4-7 firewall across virtualized servers—all while using a DPU to offload and accelerate these network security functions to minimize impact on application and host performance.

What does this mean for your business?

- Harden the security posture of your distributed data center with firewalls in each of your servers without impacting their performance
- Enable an air-gapped isolation between infrastructure and workload domains.
- Keep pace with challenging and ever-evolving regulatory and compliance requirements without jeopardizing the security of your network
- Empower your employees with the flexibility of hybrid work without risking security by embracing an architecture that helps isolate devices and applications and prevent attacks from spreading to other parts of the network
- Enjoy advanced threat prevention, strong perimeter defences, and granular micro-segmentation with a single solution that provides consistent policy and automation across virtualized, containerized, and bare metal workloads

Ready to Get Started?

Experience how vSphere with NVIDIA BlueField DPUs free with NVIDIA LaunchPad.

LaunchPad runs on private accelerated computing infrastructure in VMware vSphere environments, offering familiar toolsets and systems.

Learn more about the platform by visiting our webpage here.