DELL EMC VXFLEX

HYPERCONVERGED INFRASTRUCTURE FOR MULTI-HYPERVISOR SUPPORT, TWO-LAYER ENVIRONMENTS, AND HIGH PERFORMANCE DATABASES AND APPLICATIONS

VXFLEX INTEGRATED SYSTEMS

VxFlex appliance
Simplified, economic form factor

VxFlex integrated rack
Engineered system with integrated rack-scale network fabric

Dell EMC VxFlex is a hyperconverged system that delivers an unmatched combination of performance, resiliency and flexibility to address enterprise data center needs.

Organizations that want to accelerate their IT transformation with hyperconverged infrastructure (HCI) are often worried that they cannot get the same results that their legacy environment provides: resiliency, performance and scale. VxFlex is the answer to replicate the benefits of a legacy environment while also delivering on the advantages that HCI promises.

VxFlex integrated systems create a server-based SAN by combining storage virtualization software, known as VxFlex OS, with Dell EMC PowerEdge servers to deliver flexible, scalable performance and capacity on demand. Local storage resources are combined to create a virtual pool of block storage with varying performance tiers. The architecture enables you to scale from a small environment to enterprise scale with over a thousand nodes. In addition, it provides enterprise-grade data protection, multi-tenant capabilities, and add-on enterprise features such as QoS, compression, thin provisioning, and snapshots. VxFlex systems deliver the performance and time-to-value required to meet the demands of the modern enterprise data center.

HIGH PERFORMANCE APPLICATIONS AND DATABASES

VxFlex delivers the performance you need for any high performance database and application. VxFlex OS is the virtualization software and enabling technology behind VxFlex systems and it can deliver millions of IOPS at consistent submillisecond response times. Every node in the VxFlex cluster acts as a storage controller and is used in the processing of I/O operations, making all I/O and throughput accessible to any application within the cluster. Such massive I/O parallelism eliminates performance bottlenecks and infrastructure silos.

Throughput and IOPS scale in direct proportion to the number of nodes added to the system, improving cost/performance rates with growth. High performance is desired for databases and applications, but it is also a key factor when rebuilds and rebalances resulting from media and server failure are needed. These all occur in the background with minimal to no impact to applications and users. The VxFlex system automatically manages and optimizes data layout, preventing performance hot spots. These unique VxFlex OS features are why the most discerning and competitive businesses rely on VxFlex for their mission critical databases and applications.

VXFLEX DIFFERENTIATORS

Flexibility

- Flexible architecture allows multi-hypervisor support for vSphere, Red Hat Virtualization, and Windows/Hyper-V
- Deployment options include two-layer, HCI, storage only, or mix and match

Linear scalability and elasticity

- Start small and grow incrementally with no bottlenecks or resiliency tradeoffs
- Scale compute and storage independently (or together) for minimum TCO
- Linear scalability delivers consistent performance and latency

Predictable high performance and resiliency

- Reliable, repeatable, fast rebuilds deliver 6x9's Tier 1 resiliency
- Predictability even in mixed workloads with high variability
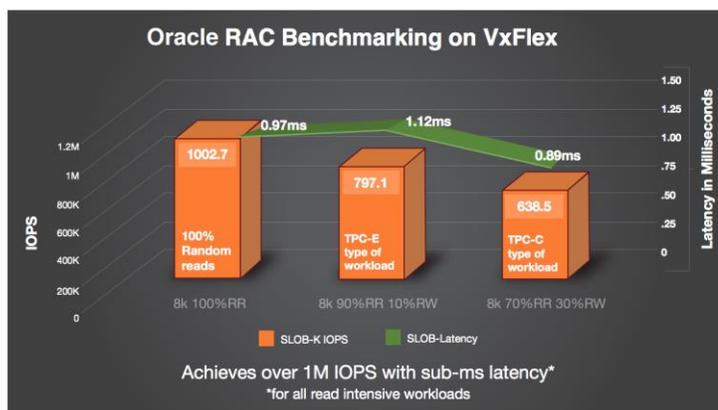- Even better performance and resiliency as you scale

Full stack architecture support

- Ability to take M&O to the network level
- Single source of support for both hardware and software

LAB TESTING DEMONSTRATES HIGH PERFORMANCE

VxFlex integrated rack can achieve over 1M IOPs with less than 1 millisecond latency using only six 1U nodes.*

MULTI-HYPERVISOR AND BARE METAL OPTIONS

VxFlex systems offer VMware® vSphere, Red Hat Virtualization, and Windows/Hyper-V integration as an engineered system, alongside the ability to support other hypervisors and operating systems through bare metal configurations**. This unique ability provides workload flexibility and gives organizations many options with no future lock-in if IT and business requirements change as new projects and workloads arise.

Enabling different nodes to run different hypervisors, all while sharing the same storage pool, allows independent upgrades and shifting to different virtual environments as needed.

FLEXIBLE DEPLOYMENT OPTIONS

The VxFlex storage environment can be designed to resemble a hyperconverged or traditional two-layer SAN architecture. Hyperconverged combines compute and storage together on the same node while a two-layer model separates them.

- **HCI/single-layer architecture**: An HCI model, where compute and storage reside within the same server, creates a single-layer architecture and offers the best TCO savings while allowing you to modernize your data center with greater efficiency.

- **Two-layer model**: Maintain your storage environment using a two-layer model to resemble a traditional SAN architecture with compute and storage on separate nodes. This two-layer model provides efficient parallelism and no single points of failure. Additionally, storage and compute nodes remain separate operationally, giving teams the flexibility to manage each infrastructure component independently. And if an organization is compute-heavy or storage-heavy, a two-layer model allows them to scale each component independently, preventing unused resources.

- **Storage-only cluster:** A storage-only deployment provides additional flexibility to customers wanting to move to software-defined, but need to start slowly. This option allows customers to start with a storage-only architecture to meet immediate needs, then add compute or HCI nodes at a later time as business needs grow.

START SMALL AND SCALE OUT

VxFlex enables flexible scale out capabilities for your data center. As compute and storage resources are consumed, add nodes one by one, or scale by adding entire racks. VxFlex provides your infrastructure with unparalleled elasticity and scalability. Start with a small environment for your proof of concept or new application and add nodes as needed when requirements evolve – even to web-scale size.

DELL EMC POWEREDGE SERVERS

VxFlex, built on Dell EMC PowerEdge servers, provides better all-flash economics, improved performance, and workload flexibility to address new customer use cases for both traditional and cloud-native workloads running in mixed environments.

For VxFlex, three PowerEdge-based options are available (1U/1N based on PowerEdge R640; 2U/1N based on PowerEdge R740XD and R840), all of which can be configured with SSD (all-flash) options.

MANAGEMENT AND OPERATIONS

VxFlex Manager is a comprehensive IT Operations Management (ITOM) software purpose-built for VxFlex appliance and integrated rack to automate and simplify implementation, expansion and lifecycle management.

VxFlex Manager brings together multiple management consoles, workflow automation and an intuitive interface that allows customers to monitor, manage, deploy and maintain physical and virtual resources with the click of a button. Key tenets of the new VxFlex Manager architecture include:

- System assurance: compliance and drift management with non-disruptive remediation

- Insights: monitoring, alerting, and health checks

- Simplified implementation: simplified and automated system deployment and workflows

- Serviceability: automation for node and disk replacement

- Ease of expansion: template-based duplication built-in
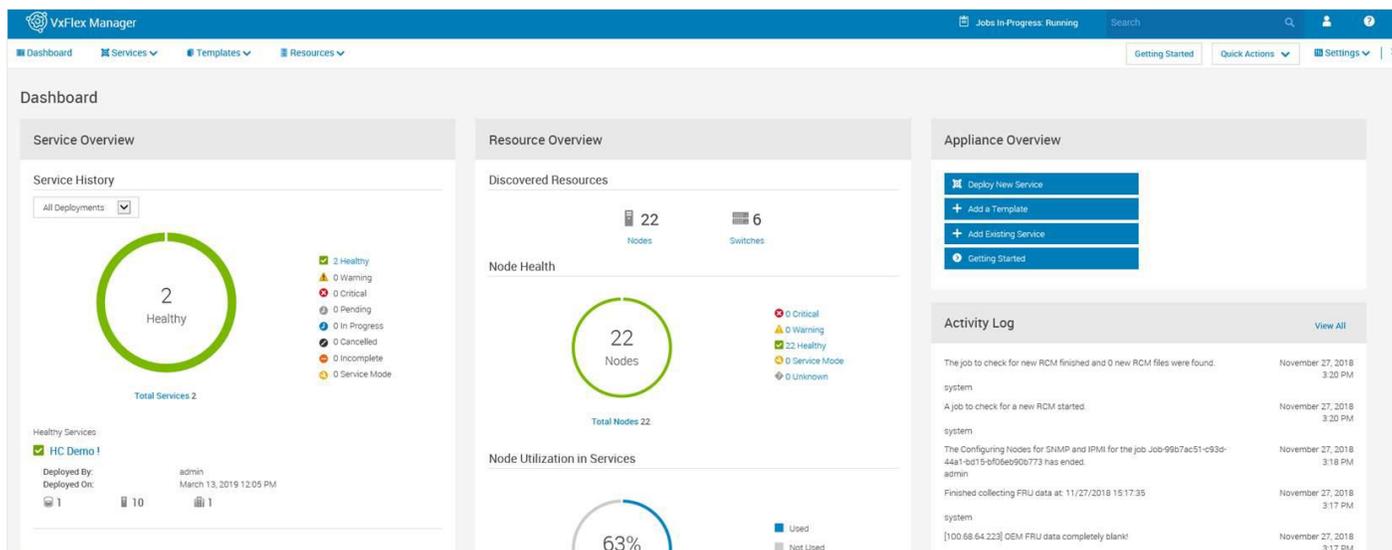
VxFlex Manager provides alerting and monitoring on node hardware (Dell EMC PowerEdge servers). These monitoring capabilities proactively detect errors and when connected to Dell EMC Secure Remote Support (SRS), provide remote alerting and protection for system nodes. Remote monitoring enables you to easily establish a stateless compute environment, so you can achieve greater agility and control of your server node resources. When node maintenance operations are required, or in the case of a disaster recovery incident, failures are quickly identified, and Dell EMC Support is informed immediately for speedy resolutions. This proactive alerting and automated technical support means less time is spent troubleshooting so more time can be spent addressing business priorities.

By leveraging a powerful reporting engine, customized reports are also available and provide easy access to specific node information as needed.

The VxFlex Manager architecture delivers a wide range of services to support VxFlex including nodes, switches, VxFlex OS, and other hypervisors. It also supports the latest PowerEdge server configurations. With VxFlex and VxFlex Manager, it has never been easier to simplify and advance your HCI strategy.

VXFLEX CONSUMPTION MODELS

Dell EMC strongly believes that one size does not fit all when it comes to HCI. That's why for VxFlex integrated systems, you have choice and flexibility in how you choose to consume the VxFlex architecture:

- **VxFlex appliance** allows customers the flexibility and savings to 'bring their own' compatible networking*. With VxFlex appliance, customers benefit from a smaller starting point, with massive scale potential, without having to compromise on performance and resiliency.

- **VxFlex integrated rack** is a rack-scale engineered system with integrated networking for easy scale-out. A white glove deployment service ensures a complete turnkey experience while the Release Certification Matrix (RCM) further simplifies upgrades and keep systems stabilized and optimized and removes the challenge of self-testing all firmware and software.

	VxFlex appliance	VxFlex integrated rack
Server	Dell EMC PowerEdge servers, R640, R740XD, R840	Dell EMC PowerEdge servers, R640, R740XD, R840
Networking	Choice of Dell or Cisco switches*	Integrated Dell or Cisco switches
Software-defined storage	VxFlex OS	VxFlex OS
Management	VxFlex Manager: Alerting, monitoring, reporting	VxFlex Manager: Alerting, monitoring, reporting, RCM
Lifecycle Management	VxFlex Manager	VxFlex Manager, RCM
License	Capacity-based	Capacity-based
Cluster Expansion	Per node (automated via VxFlex Manager)	Per node/rack (automated via VxFlex Manager)
Expansion	Add nodes	Add nodes/racks
Environmental	n/a	Intelligent physical infrastructure consisting of Cabinet 2.0— fully welded and dynamically load-rated Smart Power Deliver Units (PDU) HID reader and thermal sensors
Hypervisor support	VMware vSphere, Red Hat Virtualization, Windows/Hyper-V	VMware vSphere, Red Hat Virtualization, Windows/Hyper-V
Bare metal support	Yes	Yes**

*must be supported by VxFlex Manager
**Bare metal support requires preapproval

SUMMARY

VxFlex is an HCI offering that can replace an enterprise grade SAN using Dell EMC PowerEdge servers and intelligent software. VxFlex appliance and integrated rack exhibit balanced and predictable behavior, allows for varying performance and capacity ratios, decouples the scalability of compute and storage resources, and can scale enormously and non-disruptively.

VxFlex provides a completely distributed pool of storage capacity and performance. It delivers consistent IOPS and low latency, eliminating hotspots—no matter the workload.

DELL EMC EXPERIENCE

Dell EMC is a leading innovator of intelligent converged and hyperconverged infrastructure systems. Dell EMC systems are engineered to deliver the highest performance, operational simplicity, and scalability for the lowest TCO. Every system is a true converged infrastructure—each is engineered, manufactured, managed, supported, and sustained as one product.

- Dell EMC systems are standardized architectures based on best-in-breed technologies.

- Dell EMC manufacturing completes integration, testing, and validation of every Dell EMC VxFlex. This ensures that it is delivered within 60 days and is operational within hours of arrival.

- Dell EMC uses a process known as the Logical Configuration Survey (LCS) to customize integration and deployment. All system elements are pre-integrated, pre-configured, then tested and validated before shipping. Turnkey integration allows you to operate and manage your system as a single engineered product, rather than as individual, siloed components. Ongoing, component-level testing, and qualification result in a drastically simplified update process. The result is significant time and resource savings throughout the system life cycle, allowing you to focus your resources on business innovation.

- Every VxFlex integrated rack is sustained by a Release Certification Matrix (RCM), a documented set of firmware and software releases for all integrated rack components that are pre-tested and certified for interoperability, and regularly delivered to customers to simplify upgrades and keep systems stabilized and optimized.

To learn more visit dellemc.com/vxflex.
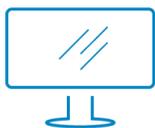
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