DELL EMC XTREMIO FOR VIRTUALIZED SERVER INFRASTRUCTURE
Realizing the promise of a fully-virtualized, agile data center with XtremIO all-flash storage

CHALLENGES

- Traditional infrastructure is unable to handle the large number of random IO requests common in mixed-tier and multiple tier 1 workload environments

- Applications are deployed on separate siloes

- Even if applications consolidated on common compute infrastructure, storage is managed in siloes—leading to overprovisioning, complex administration, and unwieldy rigid infrastructure

SOLUTION

- XtremIO enables high-performance consolidation of mixed-tier and multiple tier 1 workloads on a common shared platform

The growing challenges of virtualized data centers

Virtualization is ubiquitous in today's data centers. It enables IT organizations to reduce infrastructure footprint, simplify management, and be more responsive to business needs. Yet many organizations struggle to move towards a modern, agile, and fully virtualized data center.

Many applications and services deemed mission-critical and performance-sensitive are still largely deployed on physical siloes of infrastructure due to performance concerns. Mixed-tiered workloads and multiple tier 1 workloads are generally not virtualized on a shared infrastructure. If virtualized, these applications share virtualized compute resources, but storage is managed in disparate siloes due to performance concerns. This is because as the scale of the virtual environment grows, the environment typically becomes unpredictable.

As applications are virtualized and consolidated on common compute resources, the hypervisor randomizes the storage IOs generated from each virtual machine, creating what is commonly known as the IO Blender Effect. Traditional storage platforms are not designed to handle a large number of random IO requests, and thus create IO bottlenecks and introduce unacceptable levels of latency.

An ideal storage solution, designed for the virtual era, must be able to optimally and efficiently tackle the random IO demands of the virtual environment while providing easy scalability and enabling agile service delivery. It must be simple to deploy, manage, and integrate with broader infrastructure management frameworks.

The right storage platform can transform the data center, enabling IT to consolidate all of its workloads—of varying criticality and performance characteristics—on a common shared storage platform. It can allow IT to move at the speed of business by provisioning new services rapidly. And it can accelerate application lifecycles and data analytics by quickly and efficiently creating copies that can run workloads for development, test, and analytics purposes.

Dell EMC XtremIO: Redefining the fully virtualized data center

Dell EMC XtremIO all-flash storage solutions are designed for the virtual era and employ a unique and fresh approach to storage, optimized for flash media. The true scale-up and scale-out architecture, in-memory metadata, and powerful, always-on inline data services of XtremIO help deliver on the promise of a simple, agile scalable, fully-virtualized data center—all while minimizing infrastructure footprint and TCO.

BENEFITS

- **Breakthrough performance:** Scale-up/scale-out architecture and content-aware data engine ensure linear IOPs scalability, consistent and predictable performance, and sub-millisecond response times for all workloads all the time.

- **Simple, efficient infrastructure:** Inline, always-on data services reduce the total storage requirements and associated power, cooling, and administrative overhead. Intuitive three-step deployment with no required performance tuning further simplifies infrastructure provisioning and management.

- **Outstanding agility:** XtremIO copy services, 100 percent in-memory metadata, and support for hypervisor APIs like VAAI and ODX enable instantaneous provisioning of a large number of VMs without capacity overhead or performance penalty. These feaures also can dramatically accelerate service provisioning and the application development lifecycle, helping enhance IT agility.

With XtremIO, IT managers can now effortlessly consolidate a wide range of workloads with mixed characteristics and varying performance expectations on a common platform. They also can ensure consistent predictable performance and sub-millisecond response times; instantaneously provision new virtual machines; safely consolidate test, development, QA, and analytics environments with production; and lay a solid foundation for building an agile private cloud infrastructure. In addition, XtremIO seamlessly fits into established data center services for data protection, disaster recovery, compliance, and security.

Virtualize all workloads while meeting stringent SLAs

XtremIO is grounded on true scale-out architecture. The X-Brick, a self-contained building block of XtremIO storage, consists of two active-active controllers and an all-flash drive enclosure. IT organizations can start with a small number of SSDs and then add more SSDs non-disruptively in increments as capacity needs grow. More X-Bricks can be added to the same cluster with all of the applications running to linearly increase the performance as well as capacity.

Organizations can scale the XtremIO cluster to up to 8 X-Bricks, with 16 N-way active controllers providing multiple petabytes of effective capacity and millions of random mixed IOPs at sub-millisecond latency. XtremIO content-aware, fingerprint-based data distribution ensures that all data is spread over available storage and controller resources uniformly to get the most performance out of available resources.

The scale-out architecture and content-aware data placement of XtremIO, combined with the use of enterprise-class all-flash drives, ensure linear IOPs scalability, consistent predictable performance, and sub-millisecond response times for all workloads all the time—without any specialized tuning or configurations. With these capabilities, IT can confidently and effortlessly consolidate mixed-tiered workloads, including multiple tier 1 workloads, on a common high-performance storage platform while ensuring consistent service quality.

Reduce storage footprint and TCO

XtremIO offers always-on, inline data services that include thin provisioning, global deduplication, and compression. The scale-out architecture ensures that there are sufficient controller resources to provide these services at any scale without performance degradation—reducing the total storage requirements.

In a virtual environment, where many VMs share duplicate data, XtremIO can drastically reduce the total storage requirements and associated CAPEX. It is not uncommon to see data reduction ratios in the range of 10:1 with XtremIO. Further, the use of flash and reduced storage requirements inherently lowers power and cooling expenses. XtremIO is also radically simple to deploy and manage, which decreases administrative overhead.

Enhance agility and accelerate time to productivity

XtremIO features global inline deduplication, 100 percent in-memory metadata, smart copy services, and comprehensive support for hypervisor APIs, including vStorage APIs for Array Integration (VAAI) and Microsoft Offload Data Transfer (ODX). These capabilities help improve the agility of the virtual infrastructure and accelerate provisioning of new services.

When IT or end users request copies of VMs, the XtremIO copy operation is near instantaneous and has no impact on capacity consumption—it is merely an in-memory metadata operation, eliminating any storage IOs. With this unique capability, IT can rapidly deploy new services, clone a large number of VMs, and empower the end users to self-service their infrastructure needs swiftly, all while controlling storage sprawl.

The XtremIO copy operation can also be used to accelerate application development. New test, development, and QA instances can be brought up rapidly on the same pool that houses the production environment with no impact on total capacity utilization or production performance. The copy operation can also enable real-time analytics, creating instant copies of production data for business intelligence and reporting.

Uncomplicate your virtual infrastructure

XtremIO is exceptionally easy to deploy and manage. With the smart, intuitive, enterprise-grade html5-based GUI, configuration is a simple, wizard-driven, three-step process. There is no specialized tuning or configuration required to ensure satisfactory performance.

XtremIO integrates with leading hypervisor and cloud management tools. The Dell EMC Virtual Storage Integrator (VSI) for VMware vCenter allows administrators to create and manage XtremIO datastores from vCenter. Additionally, VSI recommends the optimal configurations for XtremIO, helping administrators avoid errors. Similarly, administrators can simplify storage management in Microsoft environments with Dell EMC Storage Integrator (ESI).

XtremIO also integrates easily with other Dell EMC and third-party technologies including Dell EMC AppSync, Dell EMC Storage Analytics (ESA), Dell EMC ViPR software-defined storage, and VMware vRealize Suite. With these integrations and simple programmable RESTful APIs, IT can simply and efficiently integrate XtremIO into their broader data center management and monitoring frameworks. Further, with the Dell EMC VxBlock converged infrastructure solutions, you can confidently deploy the complete virtual infrastructure, powered by XtremIO storage, while eliminating complexities and slashing deployment times.
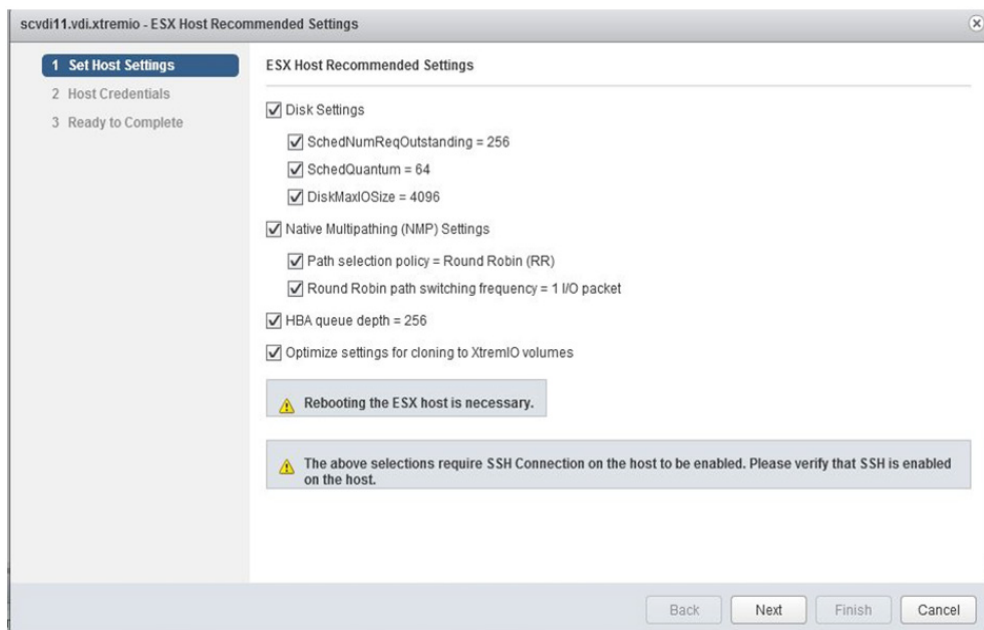
Automated Setting of ESXi Host Best Practices from vCenter Plug-in for XtremIO

Protect your mission-critical infrastructure and ensure service availability

XtremIO utilizes a proprietary data protection method called XtremIO Data Protection (XDP). XDP is optimized for all-flash storage and provides significantly better performance and lower storage overhead compared to popular RAID methodologies. With XDP, you can rebuild multiple drives per X-Brick simultaneously without downtime or impact on production workloads.

Additionally, XtremIO natively integrates with Dell EMC RecoverPoint Appliance to enable replication between two disparate sites. This integration coupled with VMware vCenter Site Recovery Manager (SRM) can be effectively used to build disaster recovery plans, test these plans, and fail over to the recovery site seamlessly in the event of a disaster—ensuring continuous service availability. Customers can also take advantage of Dell EMC VPLEX with XtremIO for load balancing and business continuity.

Summary

XtremIO remedies the typical storage challenges found in demanding virtual environments. Designed from the ground up for the virtual era and all-flash media, XtremIO enables virtualization of all of your workloads while ensuring consistent predictable performance and sub-millisecond response times, facilitating agile service delivery, and reducing the infrastructure footprint and TCO. XtremIO supercharges your virtual environments by breaking away from conventions and taking a clean-slate approach to enterprise storage.

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