PowerPath and PowerPath Virtual Edition Multipathing

Optimize data paths in your physical and virtual environments

Essentials

- Standardize data path management across physical and virtual environments, and grow without purchasing more infrastructure

- Automate multipathing policies and load balancing to provide predictable and consistent application availability and performance across physical and virtual environment

- Improve service-level agreements by eliminating application impact from I/O failures

PowerPath

PowerPath™ is host-based software that provides automated data path management and load-balancing capabilities for heterogeneous server, network, and storage deployed in physical and virtual environments. It enables you to meet your aggressive service levels with the highest application availability and performance, and with all the advantages of the industry's leading information storage systems. The PowerPath family includes PowerPath Multipathing for physical environments, as well as Linux, AIX, and Solaris virtual environments and PowerPath/VE Multipathing for VMware vSphere and Microsoft Hyper-V virtual environments.

Multipathing Business Challenges

With constrained IT budgets and the rush to virtualization for better resource utilization, many IT organizations are challenged to ensure application availability and performance while maximizing server, storage, and data path utilization. Multiple vendor arrays, operating systems, and virtual platforms-as well as ever-increasing virtual machine sprawl-compound the problem. Somehow you are expected to provide predictable and consistent application availability and performance across this diverse collection of platforms. What you need is flexible, automated, operational processes and tools to standardize management of your data paths to meet your service-level agreements and scale-out your mission-critical applications.

Standardized Path Management

PowerPath is used by many customers and is the leading path-management solution worldwide. Deploy PowerPath into existing infrastructure, and instead of using multiple-point solutions, standardize on a single offering across your evolving physical and virtual environments with support for heterogeneous servers, operating systems, and storage, including qualified non-Dell EMC arrays. Leverage PowerPath application-transparent failover to insulate core business operations from any disruption caused by a faulty data path. Automatically optimize physical and logical I/O paths by using sophisticated load-balancing algorithms to ensure consistent and predictable application availability and performance. PowerPath supports dynamic reconfiguration of the storage environment and gets the most out of existing resources. In addition, Dell EMC E-Lab tested interoperability assures PowerPath multipathing support for many combinations of servers, operating systems, and storage.

PowerPath-Supported operating Systems

- AIX
- Linux – support for FC-NVMe
- Solaris
- Microsoft Windows

PowerPath/VE-Supported operating Systems

- Microsoft Hyper-V
- VMware vSphere

PowerPath and PowerPath/VE Supported Dell EMC Storage Arrays

- Dell EMC PowerMax™
- Dell EMC PowerStore™
- Dell EMC VMAX3™
- Dell EMC VMAX All Flash™
- Dell EMC Unity
- Dell EMC Unity XT
- DELL SC Series
- Dell EMC VPLEX™
- EMC Celerra®
- EMC CLARiiON®
- EMC Symmetrix® DMX™
- EMC Symmetrix VMAX™
- EMC Symmetrix VMAXe™
- EMC VNXe™
- EMC VNX™

Automate Path Failover and Recovery for High Availability

PowerPath automated path failover and recovery eliminates the possibility of disrupting an application due to the failure of an adapter, cable, or user error. In the event of a path failover, all outstanding and subsequent I/O requests are automatically directed to alternative paths. From mission-critical to lower priority applications, your business remains online. PowerPath intelligent and dynamic path testing periodically probes inactive paths to check for path failures. When a failed path is found and the fault condition is resolved, the path is automatically restored to service without user intervention and without disrupting applications. Since it is automatic, no complex mapping is required, unlike most other vendors' MPIO solutions.

Optimize Load Balancing

PowerPath uniquely uses multiple I/O data paths to share the workload and automate load balancing to ensure that data paths are used efficiently. Performance is enhanced by intelligently optimizing data access across all available paths.

PowerPath's workload-balancing capabilities ensure that no one path becomes overloaded while others have underutilized bandwidth, causing an I/O bottleneck. When one or more paths become busier than others, PowerPath shifts the I/O traffic-while keeping track of load characteristics-from the busy paths to the others, further enhancing throughput over the already efficient multipathing capabilities.

PowerPath Features

Features	Benefits
Standardized path management	Unifies management across heterogeneous physical and virtual environments
Optimized load balancing	Adjusts I/O paths constantly to leverage all available data paths for best performance-and to monitor and rebalance the dynamic environment
Automated I/O path failover and recovery	Keeps the environment and applications running in the event of a failure

Deploy PowerPath in the Virtual Data Center

PowerPath and PowerPath/VE enable you to standardize on a single multipathing solution across your entire environment. The base technology in PowerPath Multipathing for physical environments is leveraged to enhance control and ensure application availability and performance in virtual environments.

PowerPath and PowerPath/VE help effectively manage virtual environments with increasingly high consolidation ratios and to scale-out mission-critical applications. With hyperconsolidation, you may have hundreds or thousands of independent virtual machines running, including I/O-intensive applications which can disrupt I/O from other applications.

Manually configuring load-balancing policies to ensure that all virtual machines receive the required I/O response time is very difficult. This situation is further complicated when tools such as VMware vMotion®, Data Resource Scheduler, and High-Availability are introduced, since these tools invalidate any assumptions about which I/O streams will be sharing which data paths.

PowerPath and PowerPath/VE automatically manage all of this complexity by constantly adjusting the I/O path usage to the changes in I/O loads coming from the virtual machines. Simply assign all devices to all paths and PowerPath and PowerPath/VE will automatically optimize the overall I/O performance for you. For VMware deployments, PowerPath/VE is integrated with VMware vCenter™ Server and Update Manager as well as vSphere auto- deploy and stateless licensing capabilities to further simplify path management in a virtual environment.

For those who want data path optimization in a fully integrated IT package, PowerPath/VE is a key component in Vxblock™ infrastructure solutions-scalable platforms from Dell EMC, Cisco and VMware for building solutions for virtual environments and cloud deployments. For Vblock customers, this means you can automate I/O load balancing to manage the complexity of virtual machines and the complications caused by virtual machine sprawl, as well as I/O-intensive applications in hyper-consolidated environments.

PowerPath Monitoring and Data Migration

PowerPath also offers data path monitoring across supported operating systems in physical and virtual environments and convenient data migration capabilities. PowerPath Migration Enabler leverages PowerPath and EMC data mobility technologies to perform data migrations without application downtime.

PowerPath Integration with Microsoft Windows Admin Center

PowerPath for Windows can be inserted into Windows Admin Center (WAC). WAC users have insight to PowerPath connected devices such as HBAs and Dell EMC Storage arrays while utilizing a single GUI for path management.

Dell EMC Services for PowerPath

Dell EMC offers QuickStart implementation services for single-host and four-host implementations in addition to custom PowerPath services to expand its features and functionality. Our expert PowerPath implementation services leverage our extensive storage deployment best practices and proven methodology to accelerate business results without straining resources.

Learn more about PowerPath

Contact a Dell EMC Expert

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