

# SmartFabric Storage Software

Standards-based Centralized Discovery Controller for NVMe/TCP block storage solutions

The need for modern applications and distributed workloads are causing an explosion in the demands of data transport and storage requirements, bringing about the necessity for new low-latency/high-bandwidth storage technologies. NVMe/TCP is a communication protocol that provides high-performance, low-latency access to NVMe flash storage solutions over a network - without the complexity and cost of other NVMe connectivity methodologies that use special switches, adapters and configuration settings that can be more expensive to purchase and manage.

Dell SmartFabric Storage Software for NVMe/TCP enables automation of storage services on a wide range of existing 25GbE and 100GbE IP fabrics. Additional software-driven automation and life cycle management capabilities can be achieved by using Dell Ethernet Interconnects running SmartFabric OS10, SmartFabric Services, and OpenManage Network Integration (OMNI). These components work together to provide Fibre Channel-like access control and reliability.

SmartFabric Storage Software is a standard based NVMe/TCP Centralized Discovery Controller (CDC) that provides automated discovery, endpoint management and zoning services that are similar to Fibre Channel. SmartFabric Storage Software automates the establishment of IP-based connectivity between NVMe/TCP hosts and NVMe/TCP storage subsystems.

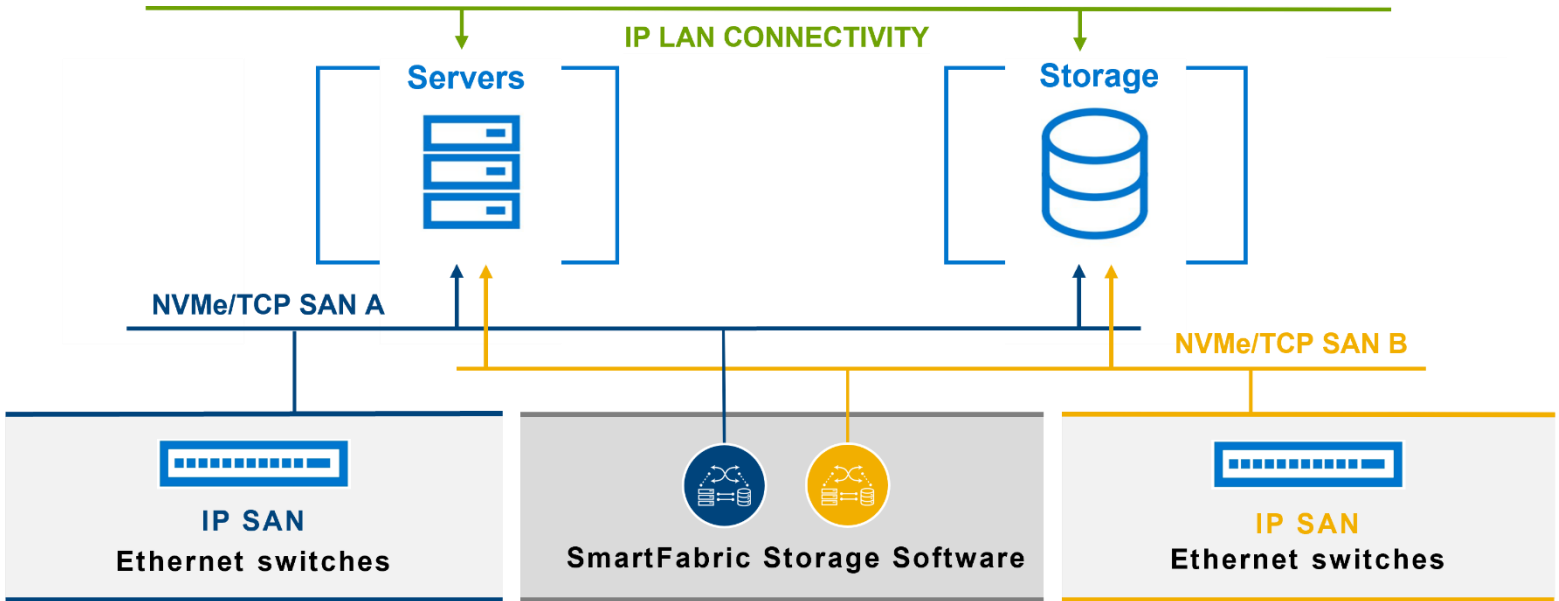
## SmartFabric Storage Software Fabric Services

- **Discovery Service** - NVMe/TCP endpoints dynamically discover the SmartFabric Storage Software instance and SmartFabric Storage Software listens and responds to mDNS queries from endpoints in the fabric
- **Endpoint Registration Service** - NVMe/TCP endpoints (hosts and subsystems) register their information with SmartFabric Storage Software
- **Endpoint Query Service** - NVMe/TCP Hosts query SmartFabric Storage Software to discover the NVMe/TCP subsystems they can communicate with and NVMe/TCP subsystems query SmartFabric Storage Software to discover the NVMe/TCP hosts that can connect to them
- **Zone Service** - Soft Zoning – SmartFabric Storage Software responses only include subsystems zoned for the querying host
- **Asynchronous Notifications** - Asynchronous Event Registration subscribes to state change notifications from endpoints and Asynchronous Event Notifications – send notifications to endpoints for state

## Technical Specifications

NVMe Express™ Standards	<ul style="list-style-type: none"> <li>• NVMe Express Base Specification 2.0</li> <li>• NVMe Express over Fabrics Revision 1.1a</li> <li>• NVMe Express Technical Proposal 8009 (TP8009) Compliance for mDNS based Discovery</li> <li>• NVMe Express Technical Proposal 8010 (TP8010) Compliance for Registration and Zoning</li> <li>• Compliance for Unique Discovery Controller ID (TP8013)</li> <li>• USGv6 certified/compliant</li> </ul>
Supported Host Endpoints	<ul style="list-style-type: none"> <li>• Dell PowerEdge servers with VMware, SUSE Linux Enterprise Server Red Hat Linux (RHEL)</li> <li>• Dell VxRail solutions</li> </ul> <p>For details on all Dell servers and 3<sup>rd</sup> party servers refer to <a href="#">NVMe/TCP Host/Storage Interoperability Matrix</a></p>
Supported Storage Subsystems	<ul style="list-style-type: none"> <li>• Dell PowerStore T/X OS 2.1** and OS 3.x+</li> <li>• Dell PowerMax 2500 and 8500 with PowerMaxOS 10+</li> </ul> <p>For other Dell and 3<sup>rd</sup> party storage refer to <a href="#">NVMe/TCP Host/Storage Interoperability Matrix</a></p>
Supported IP Switches	For 3 <sup>rd</sup> party IP switches refer to <a href="#">Switch Interoperability Matrix</a>
Scale	<ul style="list-style-type: none"> <li>• Maximum number of CDC instances: 16</li> <li>• Maximum number of endpoints (TCP connections to SmartFabric Storage Software per application): 2048</li> <li>• Maximum number of subsystems returned to a hosts in a getLogPage response: 16</li> <li>• Maximum number of zone groups: 16</li> <li>• Maximum number of zones per zone group: 26</li> <li>• Maximum number of members per zone: 80</li> <li>• VMware ESXi host configuration: 7.0U3 or later</li> <li>• Linux host configuration: Linux with KVM</li> <li>• OMNI plugin for vCenter: 3.0.0</li> <li>• Hardware processor: 8 vCPUs</li> <li>• Hardware RAM: 16GB</li> <li>• Storage capacity 40GB</li> <li>• Network: One or more Management Network and one or more Storage Area Network</li> </ul>
Infrastructure for SmartFabric Storage Software	<ul style="list-style-type: none"> <li>• VMware ESXi host configuration: 7.0U3 or later</li> <li>• Linux host configuration: Linux with KVM</li> <li>• OMNI plugin for vCenter: 3.0.0</li> <li>• Hardware processor: 8 vCPUs</li> <li>• Hardware RAM: 16GB</li> <li>• Storage capacity 40GB</li> <li>• Network: One or more Management Network and one or more Storage Area Network</li> </ul>
Security	<ul style="list-style-type: none"> <li>• RADIUS</li> <li>• TACACS+</li> </ul>
Configuration access	<ul style="list-style-type: none"> <li>• Ansible role and collections</li> <li>• RestAPI for integration with external orchestrations</li> </ul>
Deployment and configuration information	For complete details on deployment, including options for topologies, please view the <a href="#">SmartFabric Storage Software Deployment Guide</a> .
NVMe/TCP Boot from SAN Guide	<a href="https://infohub.delltechnologies.com/t/nvme-tcp-boot-from-san-with-dell-powerstore-storage-arrays/">https://infohub.delltechnologies.com/t/nvme-tcp-boot-from-san-with-dell-powerstore-storage-arrays/</a>
SmartFabric Storage Software Networking Interoperability Guide	<a href="https://infohub.delltechnologies.com//networking-support-interoperability-matrix-1/networking-support-interoperability-matrix-3">https://infohub.delltechnologies.com//networking-support-interoperability-matrix-1/networking-support-interoperability-matrix-3</a>

## IP SAN Components



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