



Solution Brief

ScaleIO

Dell Validated System for EMC® ScaleIO®

A reference architecture for a rack-scale hyper-converged solution based on EMC® ScaleIO® software

At-A-Glance

- Server SAN
 - ✓ Leverage ScaleIO software to create a highly scalable converged compute and storage architecture
- Flexibility
 - ✓ Choose to build your own ScaleIO solution based on Dell PowerEdge servers
 - ✓ Start small and grow the number of nodes as needed
 - ✓ Incorporate your preferred network fabric
- Operational efficiency
 - ✓ Reduce TCO compared to traditional SAN storage
 - ✓ Reduce your power and cooling costs by up to 50%
 - ✓ Improve performance
- Reduce risk
 - ✓ Build with a validated, tested design
 - ✓ Speed your implementation
 - ✓ Reduce complexity in the design and build phase of your project

Challenges with traditional data center architectures

The management of large-scale, rapidly growing infrastructures is a constant challenge for many data center operation teams and it is not surprising that data storage is at the heart of these challenges. The traditional dedicated SAN and dedicated workloads cannot always provide the scale and flexibility needed. A storage array can't borrow capacity from another SAN if demand increases and can lead to data bottlenecks and a single point of failure. When delivering Infrastructure-as-a-Service (IaaS) or high performance applications, delays in response are simply not acceptable to customers or users.

Public cloud agility with private cloud resiliency

EMC® ScaleIO® is software that creates a server-based SAN from local application server storage to deliver flexible and scalable performance and capacity on demand. It converges storage and compute resources into a single-layer architecture, aggregating capacity and performance, simplifying management and scaling to thousands of nodes. As an alternative to traditional SAN infrastructure, ScaleIO combines HDDs, SSDs, and PCIe flash cards to create a virtual pool of block storage with varying performance tiers. In addition, it provides enterprise-grade data protection, multi-tenant capabilities, and add-on enterprise features such as QoS, thin provisioning, and snapshots.

Accelerate infrastructure design and deployment

For organizations that choose to build their own infrastructure, architecting an enterprise-grade server SAN deployment based on ScaleIO can be a daunting task. Dell Validated System for ScaleIO streamlines that process by providing a complete prescriptive reference architecture based on a validated design built on Dell PowerEdge servers, and standard networking infrastructure. This architecture includes information on configuration of the software stack, the server platform for compute and storage, the management server and network infrastructure,

Flexible, efficient, streamlined

No two organizations are alike, and your organization has unique requirements. The Dell Validated System for ScaleIO provides you the flexibility to build your own rack-scale ScaleIO infrastructure based on Dell PowerEdge servers and integrate it with your people and processes. This solution will help you reduce TCO compared to traditional SAN storage architectures through prescriptive guidance, reduced power and cooling and leveraging server-based economics. You will reduce the risk of your project by building with a validated design, eliminating the trial-and-error of exploring configuration options, accelerate your project schedule and reduce the overall complexity of the effort.

Software stack

ScaleIO is designed to massively scale from three to thousands of nodes. Unlike most traditional storage systems, as the number of storage devices grows, so do throughput and IOPS. Whenever the need arises, additional storage and compute resources can be added modularly so that resources can grow individually or together to maintain balance.

Server platform

Every server in the ScaleIO cluster is used in the processing of I/O operations. The Dell Validated System for ScaleIO is built around the Dell R730XD server platform with dual controller backplane which is optimized for in-chassis storage and high performance server SAN operations. Two options are available including all HDD or mixed SDD/HDD for hybrid flash performance. Between 10 and 16 ScaleIO cluster nodes can be configured per rack.

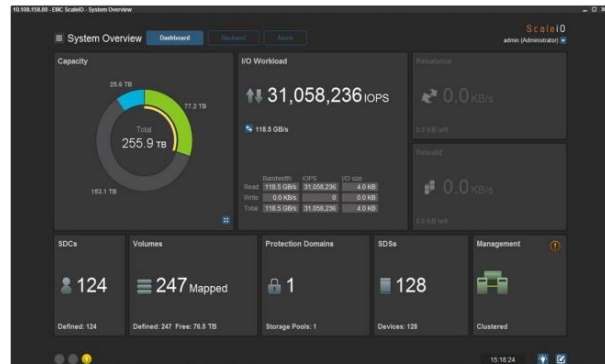
Management server

The architecture includes an optional single node for management. This is based on the PowerEdge R630 server running vSphere and Virtual SAN cluster for ScaleIO management console, and includes Dell Open Manage Essentials for firmware-level operations management.

Network infrastructure

A key aspect of rack-level reference architectures is including network design. The

Dell Validated System for ScaleIO includes a networking design based on 1GbE management network and a 10GbE Top of Rack spine-leaf network architecture. The design can be implemented on the networking hardware of your choice, and has been validated with Dell Open Networking switches.



Become Future Ready

Ultimately you want to be future-ready – you want to build a data center to deliver the right IT services at the right time for the right cost in support of your organizational goals. Dell has collected the learnings from years of experience helping our customers design and build scalable and highly available infrastructure that is designed according to the best practices and recommendations for enterprise applications and providing them to business users based on standard X86 servers. The Dell Validated System for ScaleIO will help you or Dell professional services build the right solution for your needs today, while avoiding the guesswork and lead-time involved with starting from scratch.

