Introducing Storage Spaces Direct (S2D) – the next generation software-defined storage solution from Lenovo and Microsoft.

OVERVIEW

Microsoft Storage Spaces Direct (S2D) is incorporated within Windows Server 2016 Data Centre Edition and continues the concept of collecting a pool of affordable drives to form a large, shareable storage repository (software-defined storage).

With Windows Server 2016 Data Centre Edition, S2D expands to encompass support for hyper-converged private cloud (HCI), consolidating storage and compute with Hyper-V virtualisation.

For more information, please visit:
http://bit.ly/2fCgUVM

PULLING IT TOGETHER

Lenovo and Microsoft have teamed up to create a pre-defined appliance-like solution that combines the advanced features of Windows Server 2016 Data Centre Edition with the flexibility of Lenovo's System x rack server and RackSwitch™. Enhanced security is designed in to the solution and implementation is via certified engineers.

Through the deployment of a software-defined storage infrastructure, features such as hyper-convergence can be implemented, consolidating compute and storage into a common platform that can be replicated.

Significant cost savings can be achieved by either of these deployment methods, compared to established dedicated storage solutions.

When planning hyper-converged or software-defined systems, it is often simpler to think in terms of "scale-units" – single, hyper-converged or S2D clusters that may scale from 2 to 16 nodes, with all nodes directly aiding in both data resilience and compute performance.

"Siloes are now completely broken down, giving us the ability to focus purely on performance." Flemming Riis, Systems Technician, Cloud Factory

To read the full case, please visit:
https://lenovosuccess.com/casestudy/se-cloud-factory

This is coupled with the very high-performance capabilities of Hyper-V, with support for full failover and recovery of workloads within the scale-unit (cluster) and dynamic distribution of workloads to avoid node "hot-spots", thereby providing maximum resource utilisation across the system.

Hyper-V also supports "live migration" of VMs between clusters, allowing migrations and balancing to occur without taking VMs, and therefore workloads, offline.

THE BENEFITS OF S2D

Unrivalled Performance

Whether all-flash or hybrid, S2D easily exceeds 150,000 mixed 4k random IOPS per server with consistent, low latency, thanks to its hypervisor-embedded architecture, its built-in read/write cache, and support for cutting-edge NVMe drives mounted directly on the PCIe bus.

Resource Efficiency

Erasure coding delivers up to 2.4x greater storage efficiency, with unique innovations like Local Reconstruction Codes and real-time tiering to extend these gains to hard disk drives and mixed hot/cold workloads, all while minimising CPU consumption to give resources back to where they're needed most – the VMs.

Scalability

Go up to 16 servers and over 400 drives, for multiple petabytes of storage per cluster. To scale out, simply add drives or add more servers. S2D will automatically on-board new drives and begin using them. Storage efficiency and performance improve predictably at scale.

Fault Tolerance

Built-in resiliency handles drive, server, or component failures with continuous availability. Larger deployments can also be configured for chassis and rack fault tolerance. When hardware fails, just swap it out; the software heals itself, with no complicated management steps.

Manageability

Use Storage QoS Controls to keep overly busy VMs in check with minimum and maximum per-VM IOPS limits. The Health Service provides continuous built-in monitoring and alerting, and new APIs make it easy to collect rich, cluster-wide performance and capacity metrics.

Windows Server 2016

LENOVO AND MICROSOFT – A PERFECT PARTNERSHIP

Lenovo and Microsoft have collaborated to deliver successful integrated solutions to customers worldwide, who recognise the advantage of solutions that combine Lenovo's leadership in the worldwide server market with Microsoft's leadership in the enterprise market.

SUMMARY

The importance of having a SAN in the enterprise space as the high-performance and high-resilience storage platform is changing. The Microsoft S2D solution is a direct replacement for this role. Whether the primary function of the environment is to provide Windows applications, or a Hyper-V virtual machine farm, S2D can be configured as the principal storage provider to these environments. Another use for S2D is as a repository for backup or archival of VHD(X) files. Wherever a shared volume is applicable for use, S2D can be the new solution to support this function.

GET IN TOUCH

To learn more about how S2D can help to meet your data storage challenges, please email Lenovo:

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