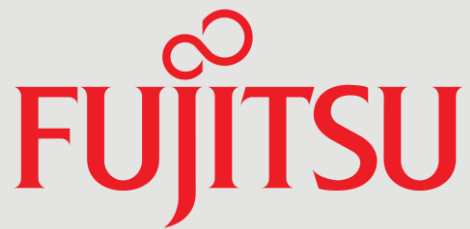




Inside Track Research Note

In association with



Microsoft's Boost for Hyperconvergence

Storage Spaces Direct expands your HCI options

Freeform Dynamics, 2017

About this Inside Track

The insights presented in this document are derived from independent research conducted by Freeform Dynamics. Inputs into this include in-depth discussions with IT vendors and service providers on the latest technology developments, along with intelligence gathered from mainstream enterprises during broader market studies.

Simplified and automated software-defined management can give HCI a cloud-like simplicity.

Storage virtualisation allows virtual disk to be built from a pool of physical storage.

In a nutshell

As application delivery evolves, hyperconverged infrastructure (HCI) is maturing to become an important part of the platform mix, alongside dynamic virtualised and private/hybrid cloud platforms. Indeed, in many cases, HCI is the foundation upon which those virtualised and private/hybrid cloud platforms have been built.

At the same time, there is a growing recognition of the importance of storage as a foundation that underpins HCI. This in turn has driven the convergence of two key technologies: storage virtualisation and scale-out storage.

With Microsoft's introduction of Storage Spaces Direct (S2D) as part of Windows Server 2016, all the major HCI software stacks have now taken this route for their key storage foundation. In this paper, we look at what this implies and why storage matters so much to HCI.

The virtual server ticket machine

HCI's growing popularity is in large part due to its cloud-like relative simplicity. One of the things that defines a hyperconverged solution is that it has a single and fully software-defined management layer across the top. This allows tasks such as provisioning to be simplified and automated, so the HCI system can deliver resources such as virtual machines in a single step, much as a cloud provider does.

The aim is to emulate a ticket machine – insert tokens, press a button, and out comes a virtual machine, ready to use. There's a challenge though, which is that anything like this depends for resilience and performance on its storage. If that's in the same box and managed by the same processors, you have a single point of failure.

This is one of the key areas in which scale-out storage can help, so anyone using or acquiring HCI needs to consider scale-out for resilience, not just for the ability to scale past what you can fit in a single HCI node. Fortunately, the technology to do this is a good fit with storage virtualisation, which is already in place within most HCI systems.

HCI re-energises storage virtualisation

Storage virtualisation is one of the key technologies within software such as Microsoft Storage Spaces Direct and VMware vSAN. As a foundation layer within HCI, it allows the host server's physical storage devices to be abstracted into a pool of logical blocks, which can then be recombined under software control to form new virtual disks.

More importantly, many software-defined storage (SDS) implementations allow this pool to span multiple physical servers, aggregating their physical storage into a single network-shared pool. This concept is an old one – in the open systems world, it dates back almost 20 years – but it has been both revalidated and invigorated by Microsoft's 2016 introduction of Storage Spaces Direct on top of its existing Storage Spaces technology.

Where Storage Spaces Direct fits in

S2D adds two key things to the virtual disk functionality already present in Storage Spaces: cluster-wide storage aggregation, and a three-tier storage model for systems which have three media types – HDD (hard disk), SSD (solid-state) and NVMe.

S2D adds the ability to pool storage cluster-wide, and then tier automatically within that pool.

The latter allows for a performance tier (SSD) as well as a caching tier (SSD or NVMe) and a capacity tier (HDD). You can argue it's actually two-and-a-half tiers because the performance tier is part of the capacity tier – an S2D volume comprising both SSD and HDD works rather like a hybrid disk drive – but in essence S2D can automatically tier data across three layers of storage.

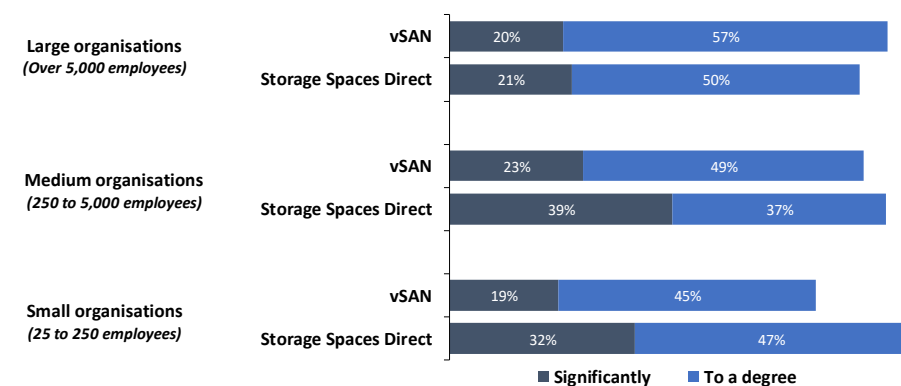
S2D scales to 16 HCI nodes, with a recommended minimum of four. As already mentioned, the network-based storage aggregation concept is not original – other SDS products already do cluster-wide storage pooling, most notably vSAN – but S2D is integrated and converged within the Windows Server operating system.

So while you may want to assess its capabilities against the alternatives on the market, S2D will be adequate in many HCI applications, which in turn validates Microsoft as an HCI option, especially where the user already has Windows Server and the relevant skills in place.

A clear boost for HCI overall

One of the interesting findings from a recent study^[1] that Freeform Dynamics carried out on the HCI market was that S2D now features in the forward planning of more organisations than the other major commercial offering, namely vSAN. It is notable that S2D's popularity is greatest within small and medium-sized organisations, while the VMware stack is in general stronger among large enterprises (Figure 1).

Figure 1
How significantly do the following figure in your plans going forward?



Still, it shows that the Microsoft software stack is now accepted as a fully viable alternative for HCI, giving organisations two major commercial options alongside several smaller offerings and open-source solutions. An important reason for this new viability is, as we have discussed, the effort that Microsoft has put into strengthening its underlying storage infrastructure.

The bottom line

Of course, simply choosing S2D just because it is the default or 'free' option is not the best way to decide. As with any and every decision, organisations should evaluate their needs, skillsets and existing commercial relationships, and check how those fit with the HCI options on the market – and there are many of them.

As such, the new capability that S2D brings to Hyper-V ought to be good news for HCI more generally, as it helps organisations recognise that their HCI software and storage options have both broadened and solidified.

Organisations now have multiple strong options for HCI, both commercial and open source.

'Free' can be good, but still, validate your HCI options against your needs, skills and business relationships.

References and further reading

The following research report is available from the Freeform Dynamics website [here](#):

1. Application Platforms Matter

But how do you take the pain out of designing and building optimised systems?

About Freeform Dynamics

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