Windows Server Software-Defined Datacenter

Virtualization

Networking

Storage

Security

Management

Deploy

Microsoft Services

Windows Server Software-Defined Solutions

Preferred Microsoft partners, DataON, Fujitsu, Lenovo, QCT, SuperMicro, Hewlett Packard Enterprise and Dell EMC, can get you up and running quickly and efficiently with Microsoft-validated design and best practices for seamless deployment and steady state operation.

Microsoft partners offer an array of Windows Server Software-Defined (WSSD) solutions that work with Windows Server to deliver high-performance storage or hyper-converged infrastructure. Hyper-converged solutions bring together compute, storage, and networking on industry-standard servers and components for improved datacenter intelligence and control.

Partners offer three WSSD solutions

Software-Defined Storage (SDS)	Enterprise-grade shared storage solution built on server node clusters replaces traditional SAN/NAS at a much lower cost. Organizations can quickly add storage capacity as needs grow over time. Support for all-flash NVMe drives unrivaled performance.
Hyper-Converged Infrastructure (HCI) Standard	Highly virtualized compute and storage are combined in the same server node cluster, making them easier to deploy, manage, and scale. By eliminating traditional IT compute, storage and networking silos, you can simplify you can simplify your infrastructure.
Hyper-Converged Infrastructure (HCI) Premium	Comprehensive "software-defined datacenter in a box" adds Software-Defined Networking and Security Assurance features to HCI Standard. This makes it easy to scale compute, storage, and networking up and down to meet demand just like publice cloud services.

Configure

Windows Server 2016

Software-Defined technologies

The software-defined technology in Windows Server 2016 provides a platform for hyper-converged infrastructure solutions that help organizations sustain efficiency and adjust to changing business needs.

Manage

System Center 2016

Management and automation

Cloud management with support for LAMP stack and VMware, including monitoring resources and services in Azure and Amazon

Scan to learn more:

Virtualize anything

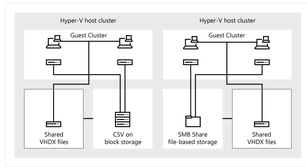
Windows Server, Hyper-converged

As a virtualization platform, Windows Server can be installed in three different sizes to meet the needs of your business:

- **Nano** — optimized as a lightweight operating system for running "cloud-native" applications based on containers and micro-services
- **Core** — for reduced space required on disk, the potential attack surface, and especially the servicing requirements, install Server Core unless you require a graphical interface.
- **Desktop** — the standard user interface and all tools and client experience features Server roles and features are installed with Server Manager. Compared with the Server Core, it requires more space on disk, and has higher servicing requirements.

Guest clustering with Shared VHDX

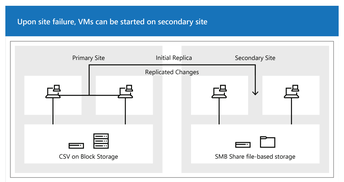
Flexible and secure, and not bound to the underlying storage topology, Shared VHDX removes the need to present the physical underlying storage to a guest OS. The new Shared VHDX supports online resize.



- Shared VHDX can reside on a Cluster Shared Volume (CSV) on block storage, or on SMB file-based storage.
- Protected: Shared VHDX supports Hyper-V Replica and host-level backup.

Hyper-V Replica

Integrated software-based VM replication across the network with certificates. Not bound to server, network or storage hardware on either site.

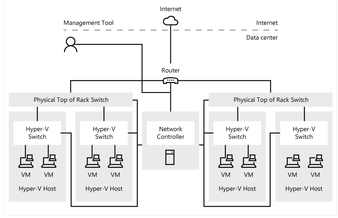


- No need for other virtual machine replication technologies, reducing costs.
- Handles live migration automatically.
- Simple configuration and management — either through Hyper-V Manager, PowerShell, or with Azure Site Recovery.

Connect everything

Network Controller

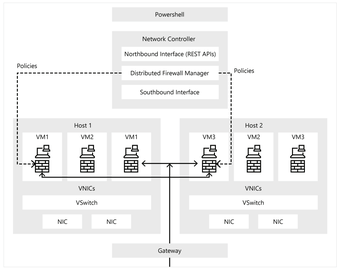
A centralized, programmable point of automation to manage, configure, monitor, and troubleshoot virtual and physical network infrastructure in your datacenter.



Administrators use a Management Tool that interacts directly with Network Controller. Network Controller provides information about the network infrastructure, including both virtual and physical infrastructure, to the Management Tool.

Datacenter Firewall

When deployed and offered as a service, tenant administrators can install and configure firewall policies to help protect virtual networks from unwanted traffic from Internet and intranet net-works.



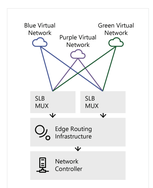
The service provider administrator or the tenant administrator can manage the Datacenter Firewall policies via the network controller.

Switch Embedded Teaming

SET is an alternative NIC Teaming solution that you can use in environments that include Hyper-V and the Software Defined Networking (SDN) stack.

Software Load Balancing

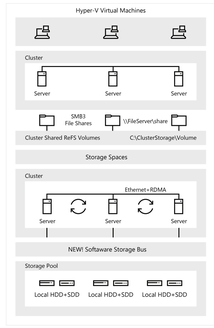
SLB enables multiple servers to host the same workload, providing high availability and scalability.
Scale out load balancing capabilities using SLB VMs on the same Hyper-V servers you use for your other VM workloads. SLB supports the rapid creation and deletion of load balancing endpoints for Cloud Service Provider operations. SLB supports tens of gigabytes per cluster, provides a simple provisioning model, and is easy to scale out and in.



Store more, spend less

Storage Spaces Direct

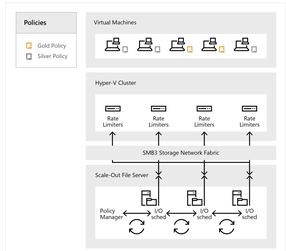
Using industry-standard servers with local-attached drives, SSD provides highly available, highly scalable software-defined storage at a fraction of the cost of traditional SAN or NAS arrays. Its architecture radically simplifies procurement and deployment.



SSD introduces the new Software Storage Bus and leverages many of the features you know today in Windows Server, such as Failover Clustering, the Cluster Shared Volume (CSV) file system, Server Message Block (SMB) 3, and Storage Spaces.

Storage Quality of Service

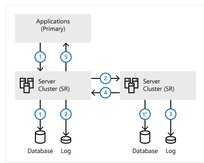
Centrally monitor and manage storage performance for virtual machines using Hyper-V and the Scale-Out File Server roles, improving storage resource fairness between multiple virtual machines.



Storage QoS is built into the Microsoft software-defined storage solution provided by Scale-Out File Server and Hyper-V using SMB3 protocol. A new Policy Manager provides central storage performance monitoring.

Storage Replica

Disaster recovery and preparedness make possible zero data loss, with the ability to synchronously protect data on different racks, floors, buildings, campuses, cities, and countries with more efficient use of multiple datacenters.



Synchronous Replication

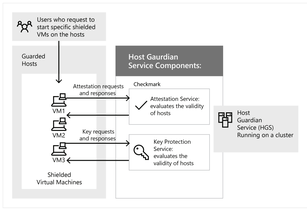
1. Application writes data
2. Log data is written and the data is replicated to the remote site
3. Log data is written at the remote site
4. Acknowledgement from the remote site
5. Application write acknowledged

t & t1 : Data flushed to the volume, logs always write through

Protect assets

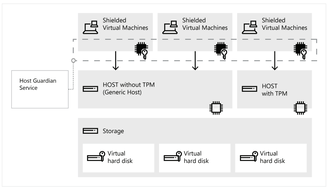
Guarded Fabric

As a cloud service provider or enterprise private cloud administrator, you can use a guarded fabric to provide a more secure environment for VMs. A guarded fabric consists of one Host Guardian Service (HGS) - typically, a cluster of three nodes - plus one or more guarded hosts, and a set of shielded virtual machines (VMs).



Shielded VM

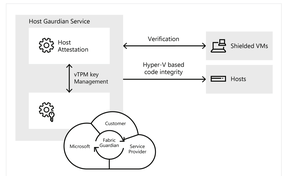
The data and state of a shielded VM are protected against inspection, theft and tampering, from both malware and datacenter administrators.



- Shielded VMs will only run in fabrics designated as owners of the VM.
- Shielded VMs are encrypted by BitLocker, or other means, so that only designated owners can run them.
- Running VMs can be converted to shielded.

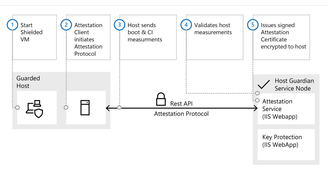
Host Guardian Service

Host Guardian Service holds the keys to legitimate fabrics, as well as encrypted virtual machines.



Device Health Attestation

Attestation enables enterprises to raise the security bar of their organization to hardware monitored and attested security, with minimal or no impact on operation costs.

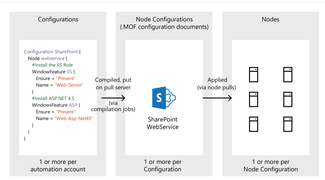


Hardware trusted mode, shown above, provides the highest level of assurance, with TPM v2.0 hardware rooted trust and compliance with code-integrity policy for key-release.

Manage efficiently

PowerShell DSC

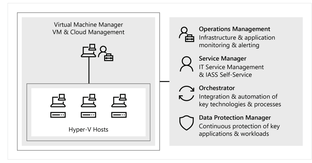
Windows PowerShell Desired State Configuration is a configuration management platform built into Windows that is based on open standards. DSC is flexible enough to function reliably and consistently in each stage of the deployment lifecycle (development, test, pre-production, production), as well as during scale-out.



- DSC supports "continuous deployments," so you can deploy configurations over and over without breaking anything.
- DSC configurations only apply settings that have changed from the original for faster deployments.
- DSC can be used on-premise, in a public, or in a private Cloud environment.
- You can integrate DSC with any Microsoft or non-Microsoft solution as long as you can execute a PowerShell script on the target system.

System Center VMM

Virtual Machine Manager is part of the System Center suite, used to configure, manage and transform traditional datacenters to provide a unified management experience across on-premises, service provider, and the Azure cloud.



- Datacenter: Configure and manage datacenter components as a single fabric in VMM.
- Virtualization hosts: VMM can add, provision, and manage Hyper-V and VMware virtualization hosts and clusters.
- Networking: VMM provides network virtualization, including support for creating and manage virtual networks and network gateways.
- Storage: VMM can discover, classify, provision, allocate, and assign local and remote storage.

Operations Manager

The core functionality of OMS is provided by a set of services that run in Azure. Each service provides a specific management function, and you can combine services to achieve different management scenarios.

	Service	Description
	Log Analytics	Monitor and analyze the availability and performance of different resources including physical and virtual machines.
	Automation	Automate manual processes and enforce configurations for physical and virtual machines.
	Backup	Backup and restore critical data.
	Site Recovery	Provide high availability for critical applications.

Just because OMS services run in the cloud doesn't mean that they can't effectively manage your on-premises environment. Log Analytics can help you analyze data collected from cloud or on-premises services. Use Azure Backup and Azure Site Recovery to leverage the cloud for backup and high availability for on-premises resources.

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