Windows Server

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Microsoft

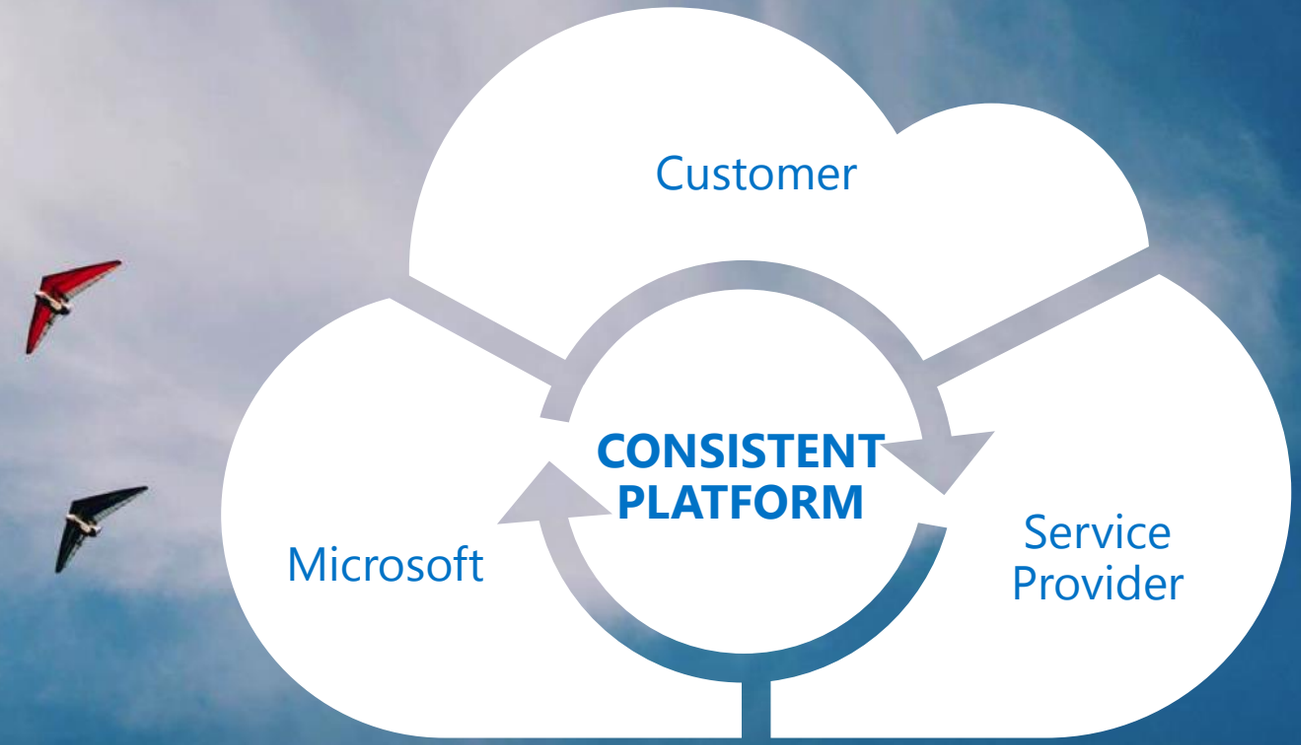
Agenda

- Ignite
  - http://channel9.msdn.com/
- Nano Server
- **SW defined**
  - Network
  - Storage
  - Compute

Cloud OS Vision

Microsoft's vision of the unified platform for modern business

- transform the datacenter
- unlock insights on any data
- empower enterprise mobility
- enable application

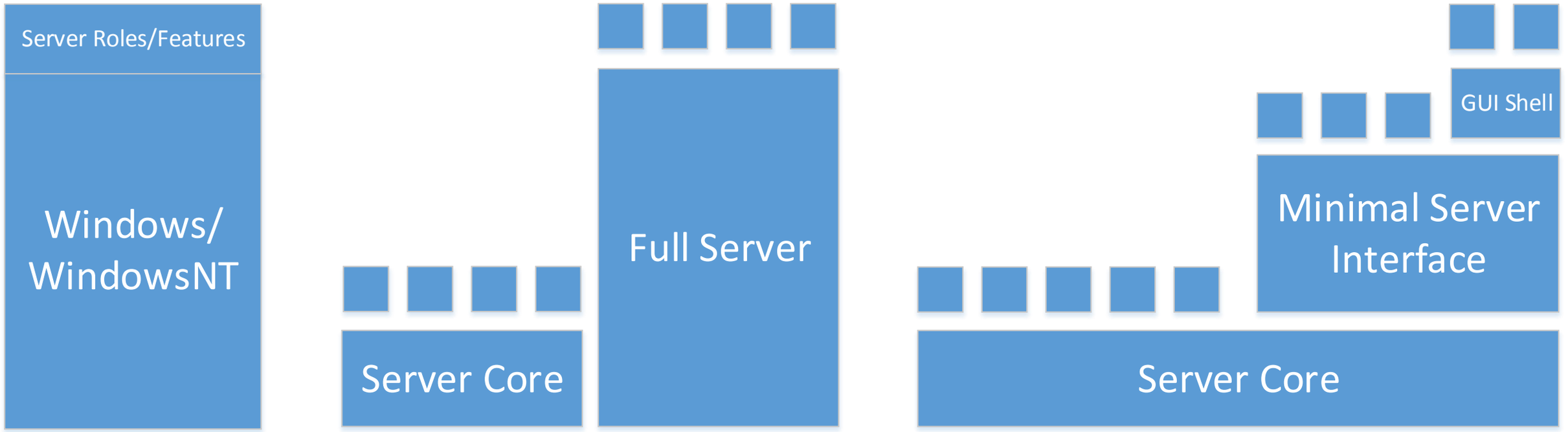


Development Management Identity Data Virtualization


Microsoft Ignite

I want just the components needed to accomplish my goals and nothing more

Our Server Journey



Windows NT to Windows Server 2003

Windows Server 2008 and Windows Server 2008 R2

Windows Server 2012 and Windows Server 2012 R2

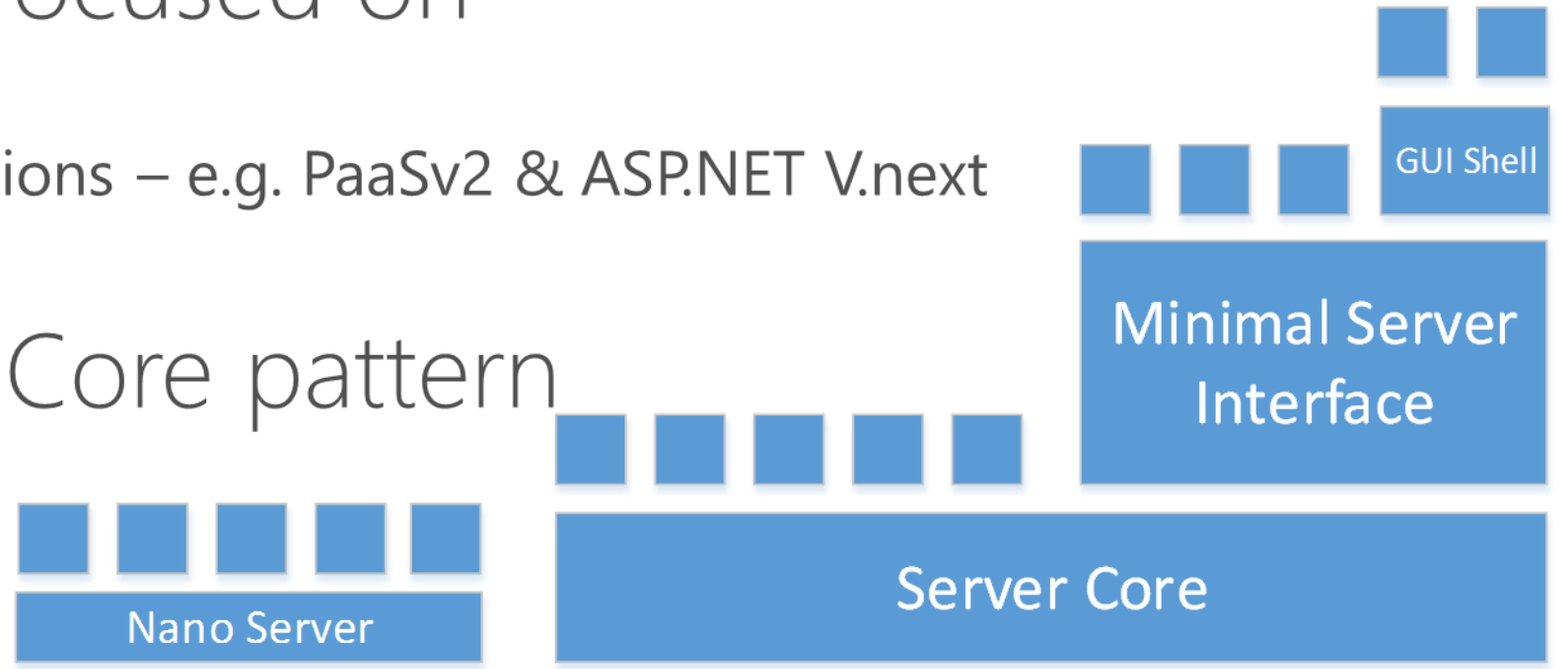
Our Cloud Journey

- Azure
  - Patches and reboots interrupt service delivery
  - (*__VERY__ large # of servers) * (large OS resource consumption) => COGS
  - Provisioning large host images competes for network resources
- Cloud Platform System (CPS)
  - Cloud-in-box running on 1-4 racks using System Center & Windows Server
  - Setup time needs to be shortened
  - Patches and reboots result in service disruption
    - **Fully loaded CPS would live migrate > 16TB for every host OS patch**
    - Network capacity could have otherwise gone to business uses
    - Reboots: Compute host ~2 minutes / Storage host ~5 minutes

We need server configuration optimized for the cloud

Nano Server - Next Step in Our Cloud Journey

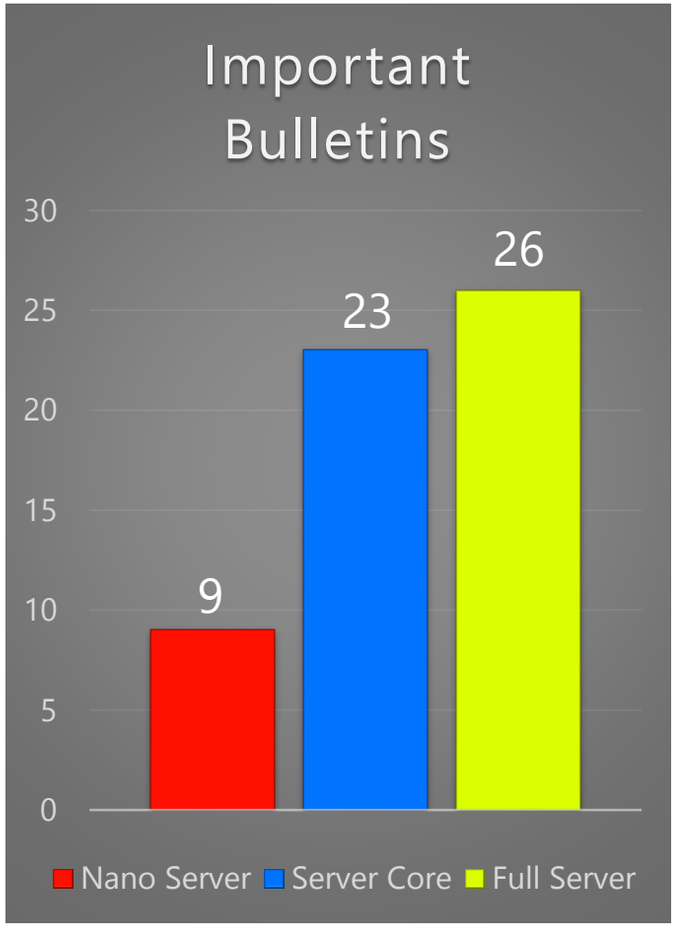
- A new headless deployment option for Windows Server
- Deep refactoring focused on
  - CloudOS infrastructure
  - Born-in-the-cloud applications – e.g. PaaSv2 & ASP.NET V.next
  - Containers
- Follow the Server Core pattern

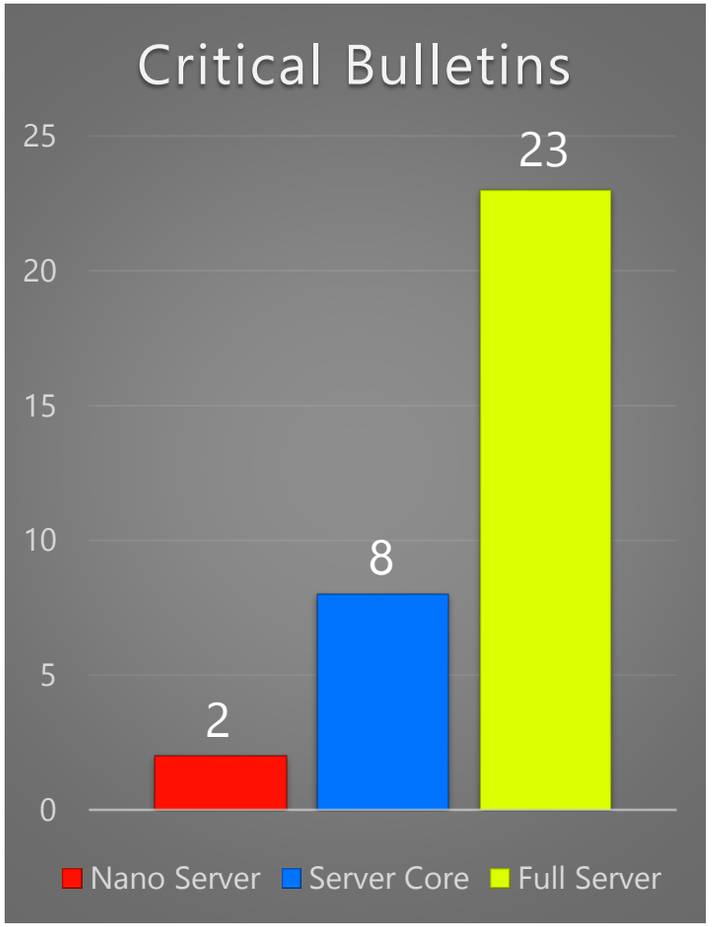


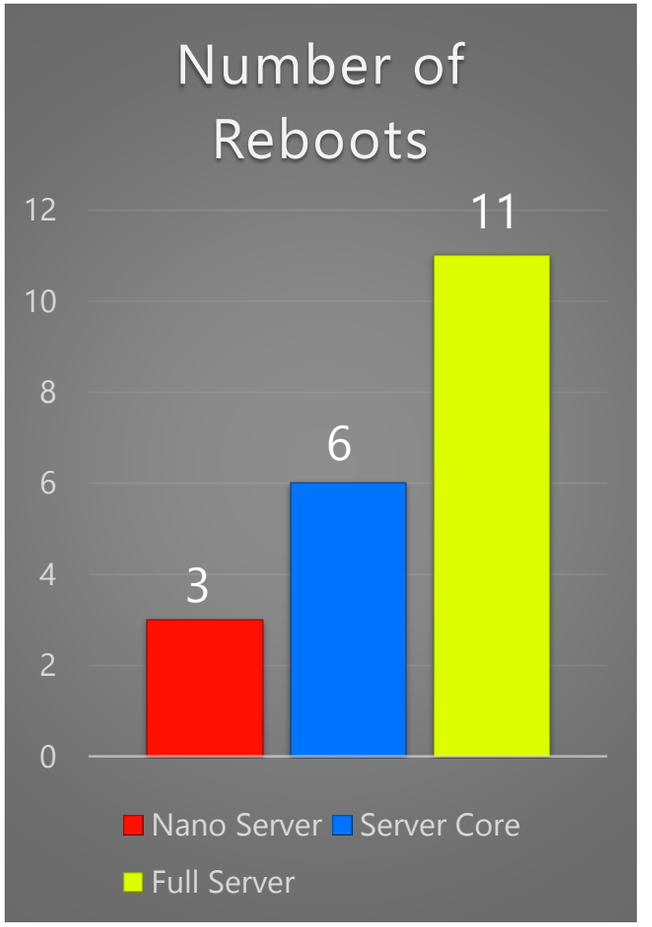
Windows Server v.Next

Preliminary Results

Servicing Improvements*

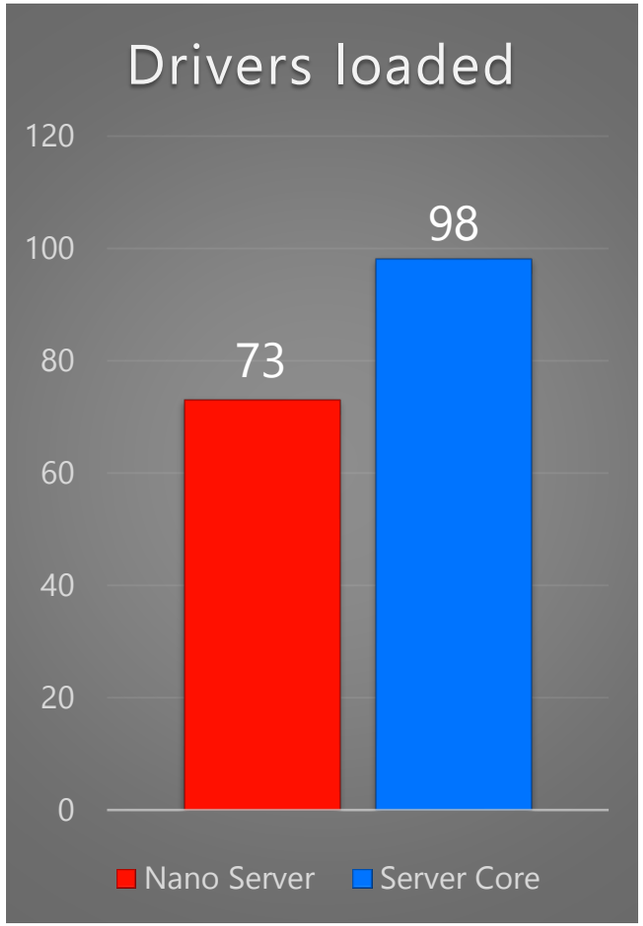


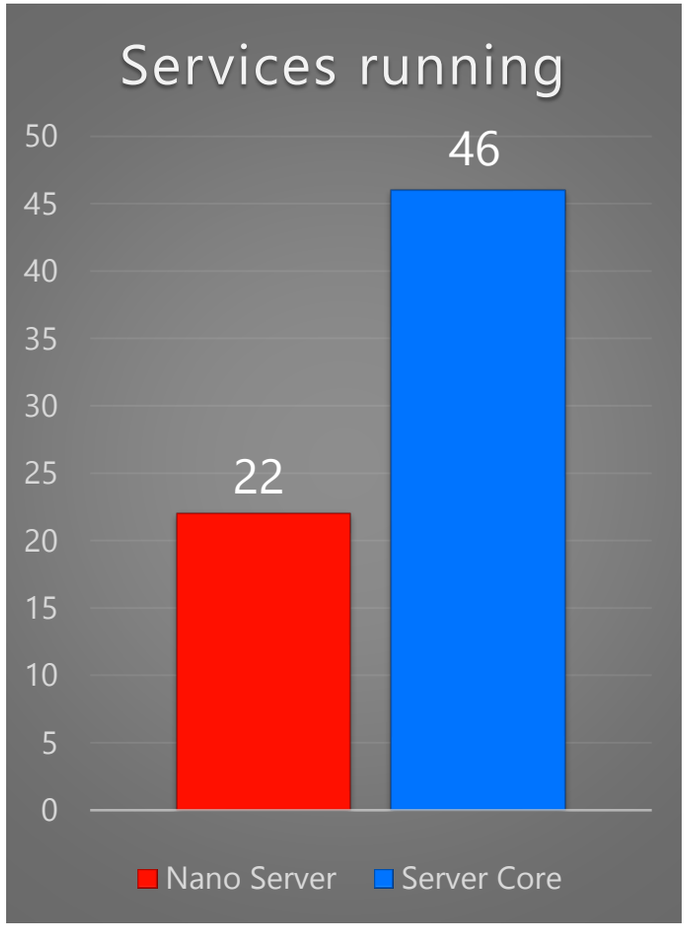


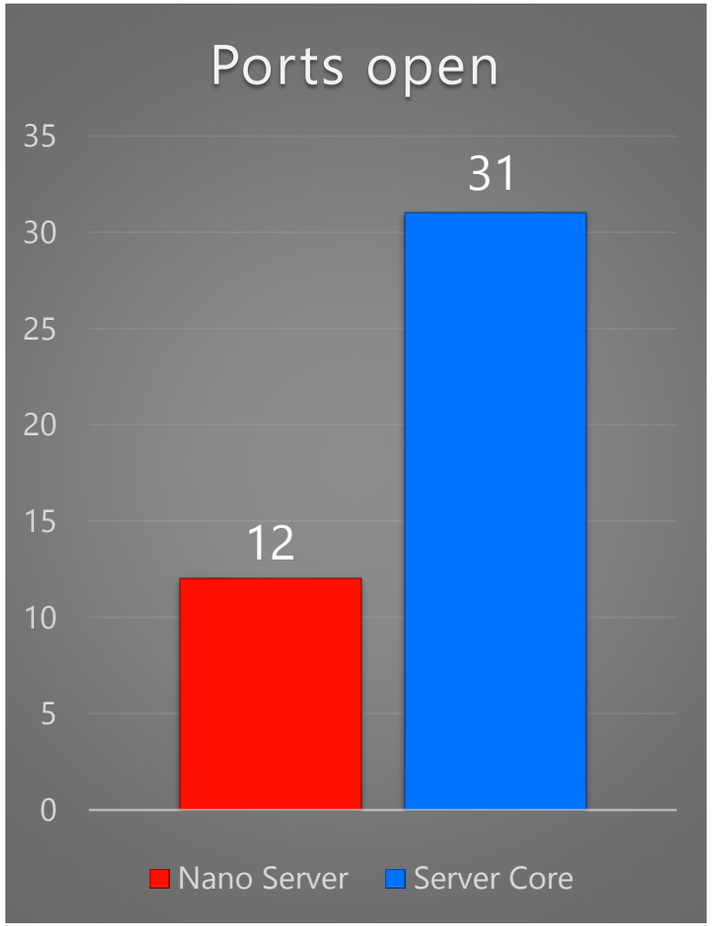


* Analysis based upon 2014 patches

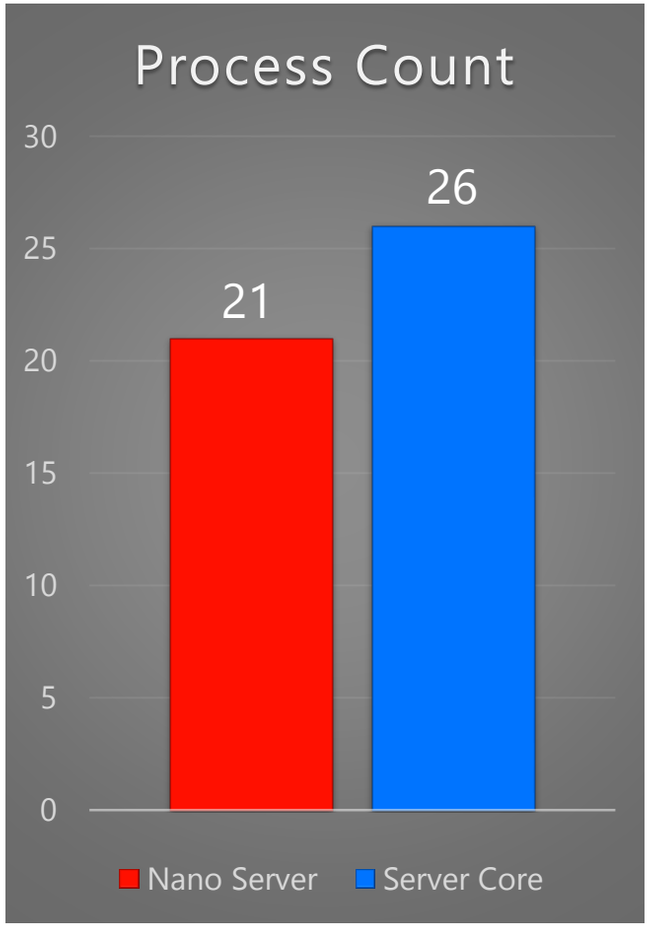
Security Improvements

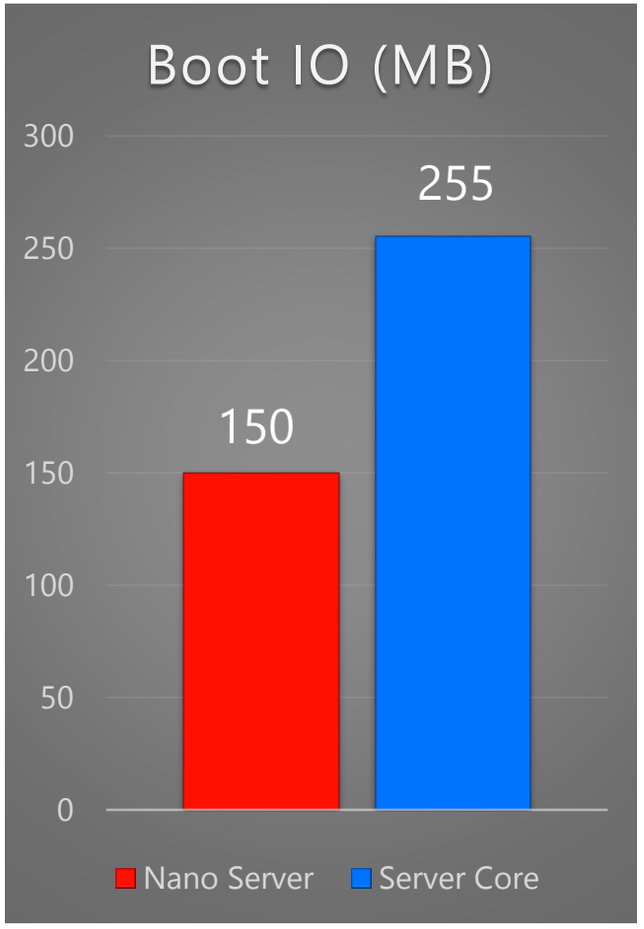


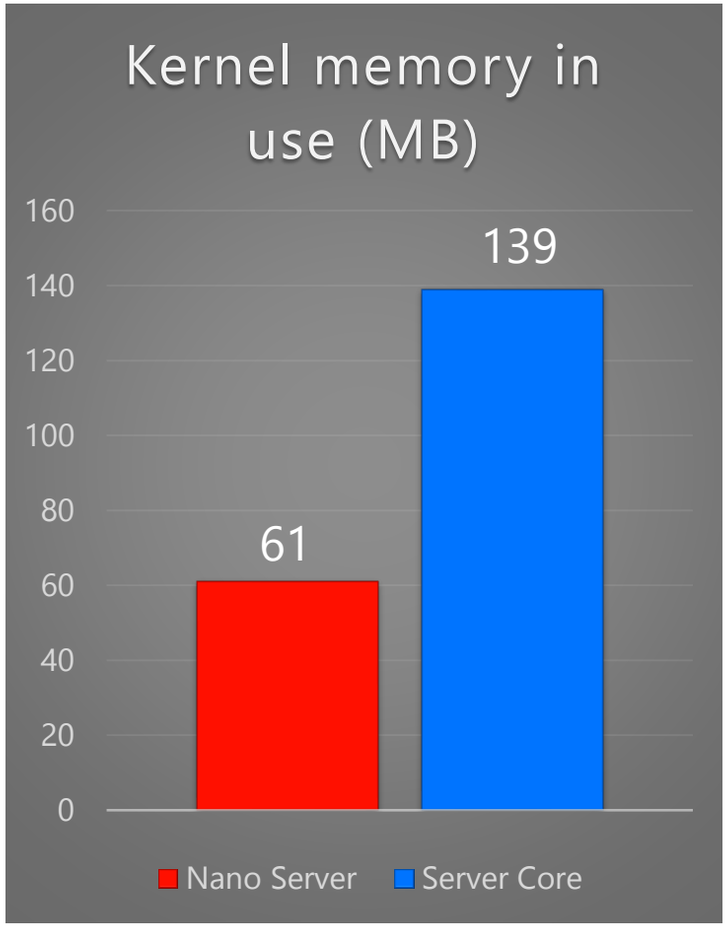




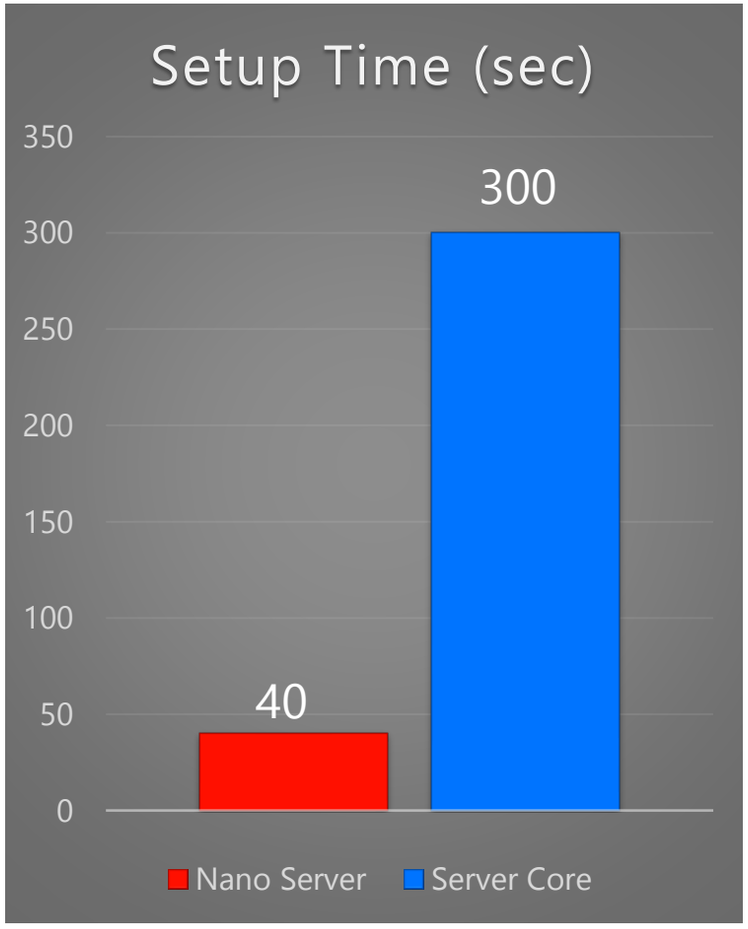
Resource Utilization Improvements

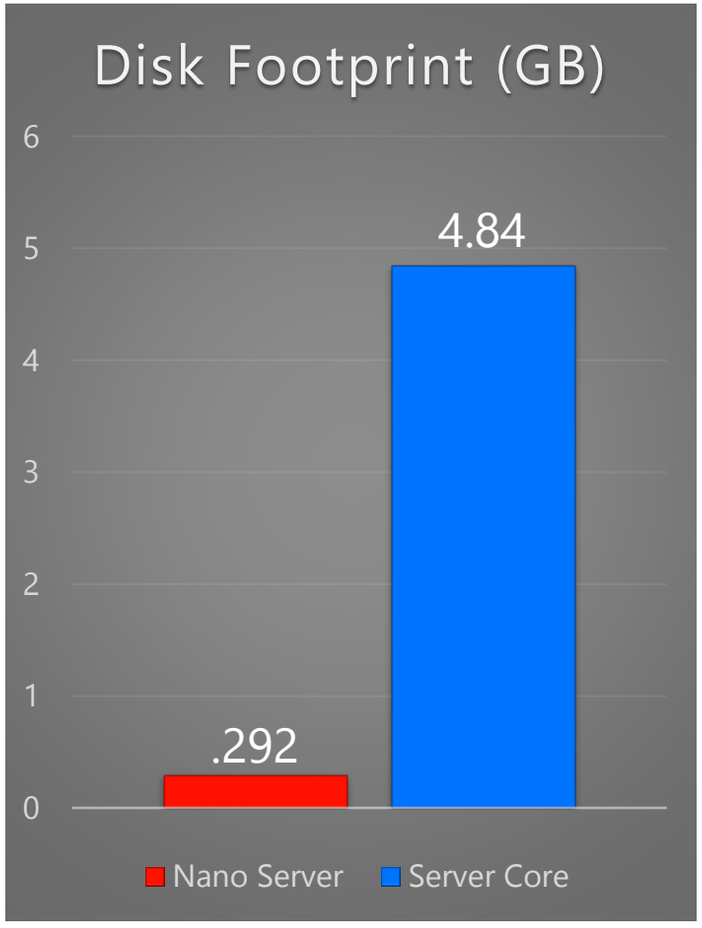


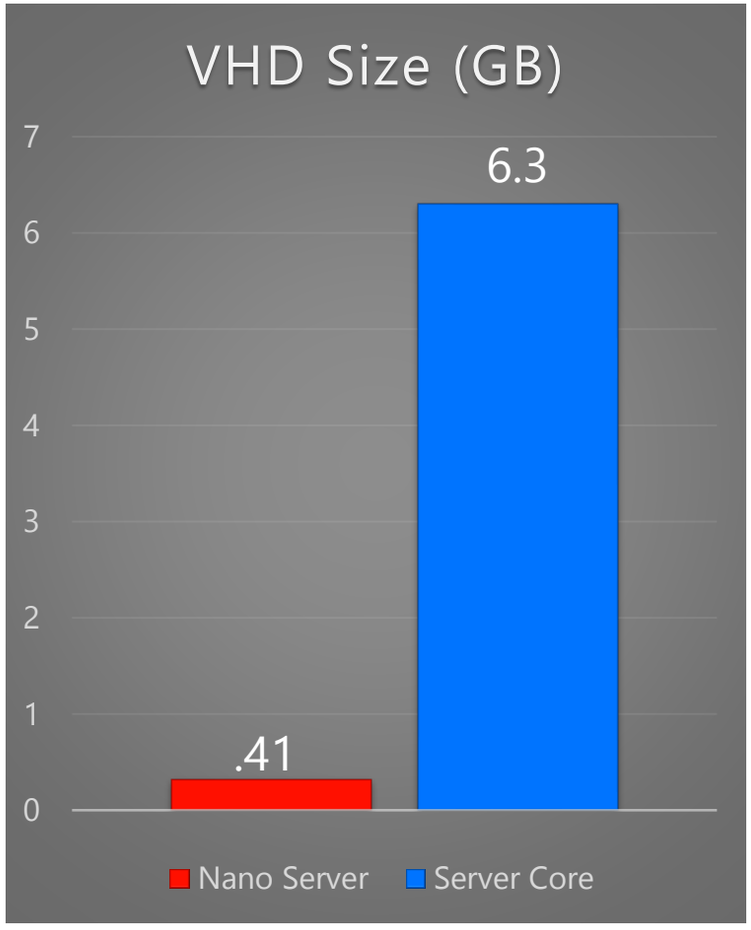




Deployment Improvements







Transform the datacenter

Build a software-defined foundation

Automate and secure your infrastructure

Extend to the cloud on demand

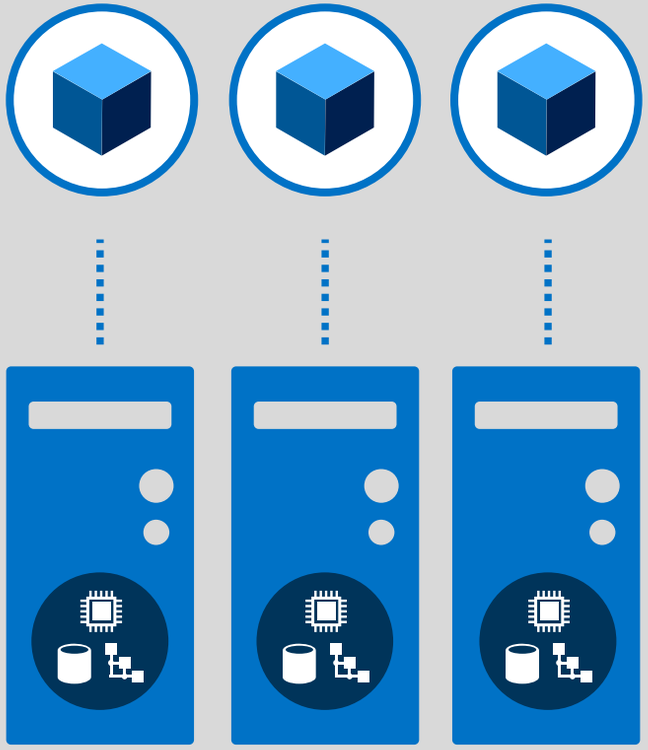
Microsoft Azure

Windows Server

Microsoft System Center

The software-defined datacenter

Highly customized



Standardized, automated

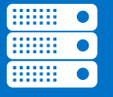
Reimagine compute

Virtual Machines

Scale to your largest workloads

Hosts

Drive up your consolidation ratio



Clusters

Increase scale per cluster

- Industry-leading scale and performance
- Zero-downtime migrations
- Open-source integration
- Infrastructure for hardware-based security

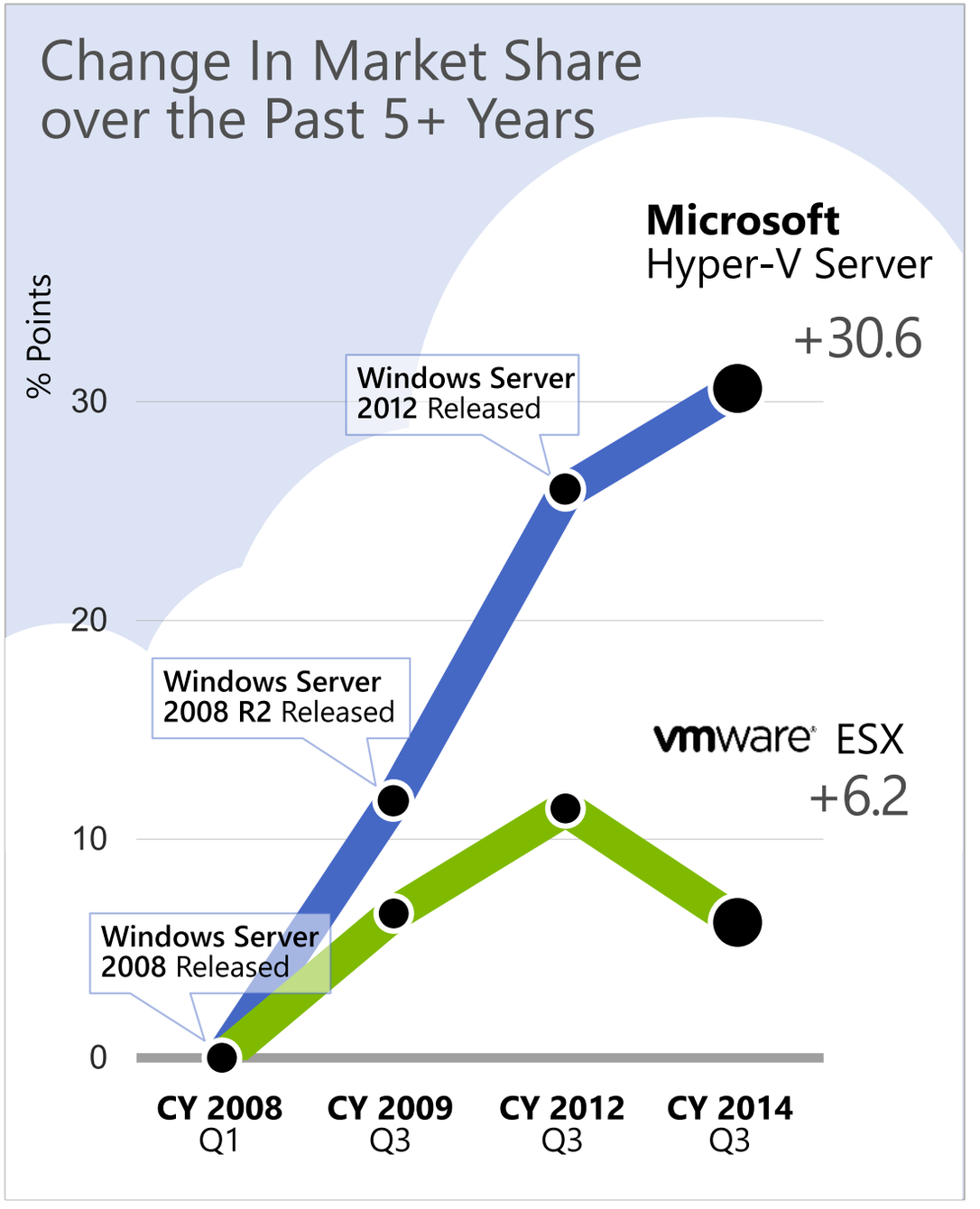
Hyper-V: winning virtualization share

x86 Server Virtualization Share for the Past 5+ Years

	Q1 CY2008 Windows Server 2008 Released	Q3 CY2009 Windows Server 2008 R2 Released	Q3 CY2012 Windows Server 2012 Released	Q3 CY2014 CURRENT	Change Since Hyper-V Released
Microsoft Hyper-V Server	0.0%	11.8%	25.9%	**30.6%**	**+30.6 Pts**
vmware ESX	40.0%	46.6%	51.4%	**46.2%**	**+6.2 Pts**

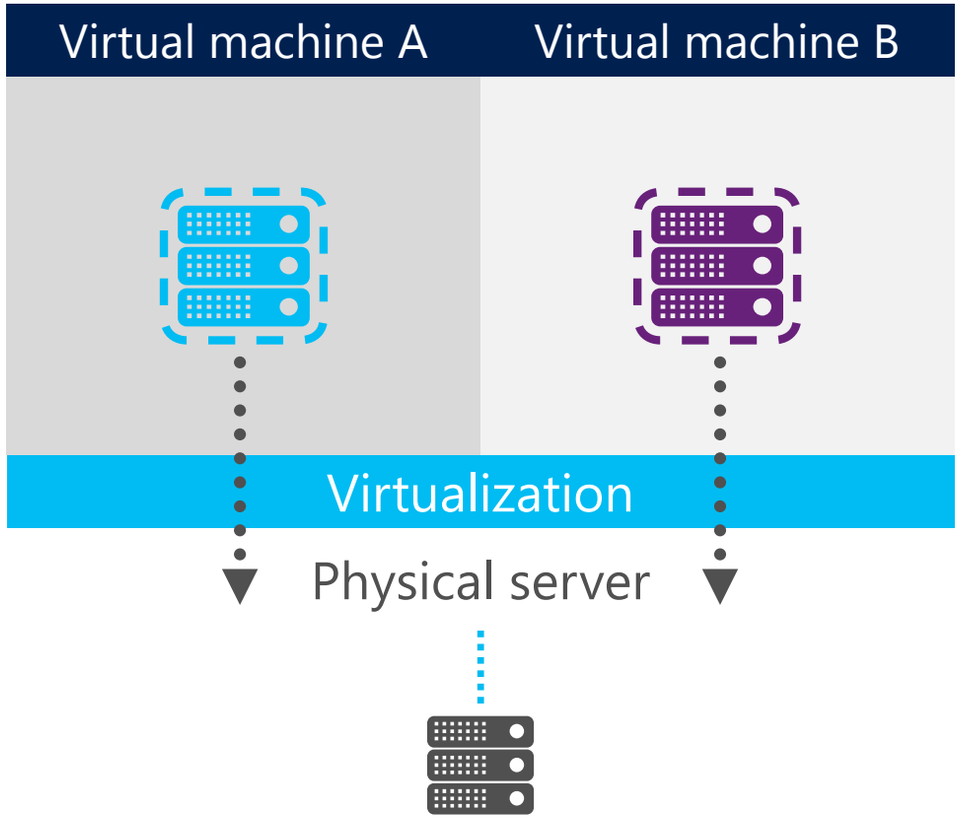
Source: IDC WW Quarterly Server Virtualization Tracker, December 2014. Hyper-V and ESX + vSphere shares based on percent market share among all x86 new hypervisor deployments (nonpaid and paid). x86 hypervisor shipments include those sold on new servers, new nonpaid hypervisor deployments aboard new servers, and new hypervisor sales and nonpaid hypervisor deployments on installed base servers. Share gains for Hyper-V and ESX + vSphere come in part from market share transfers from older products from same vendors.

Change In Market Share over the Past 5+ Years

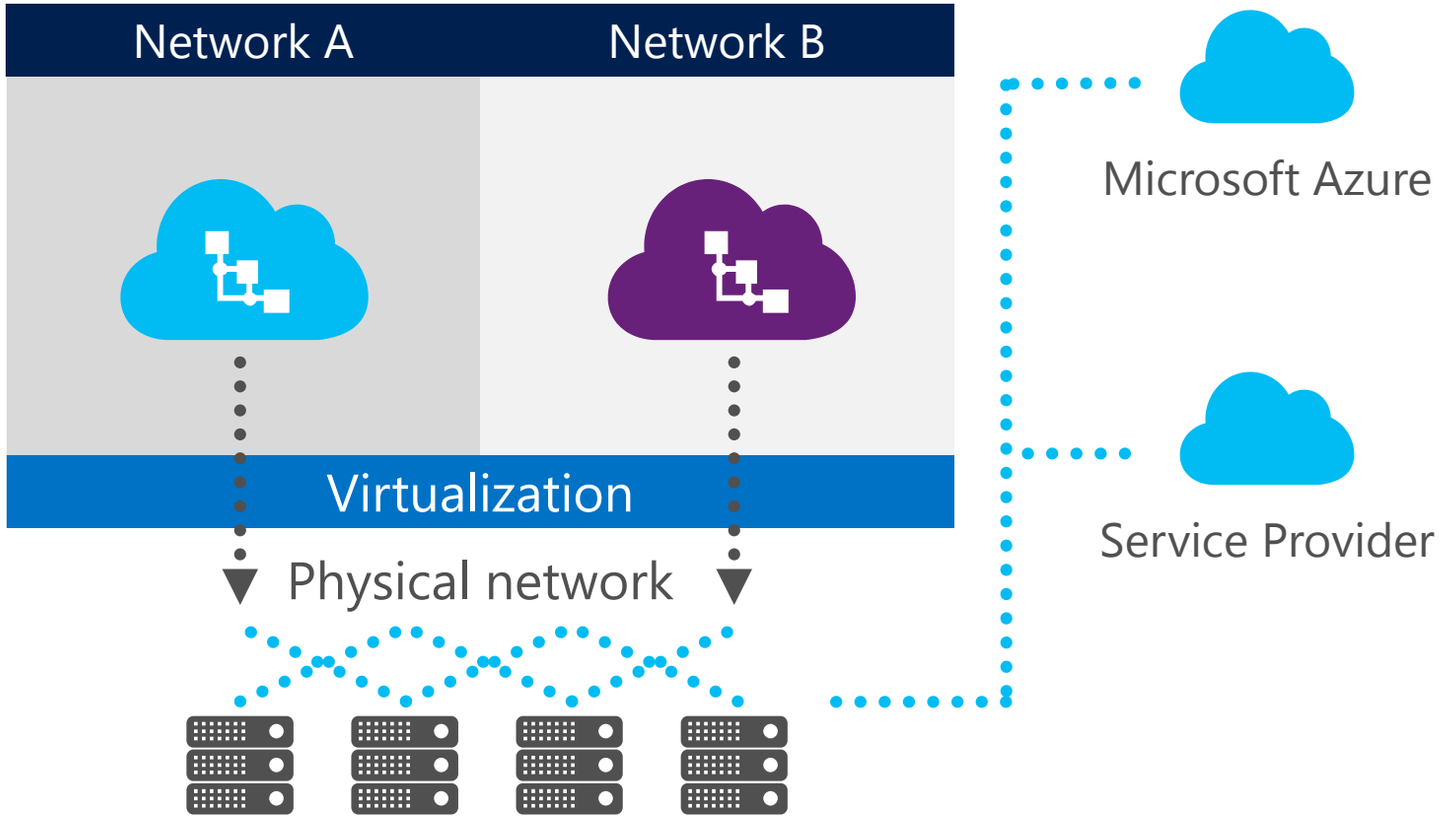


Reimagine networking

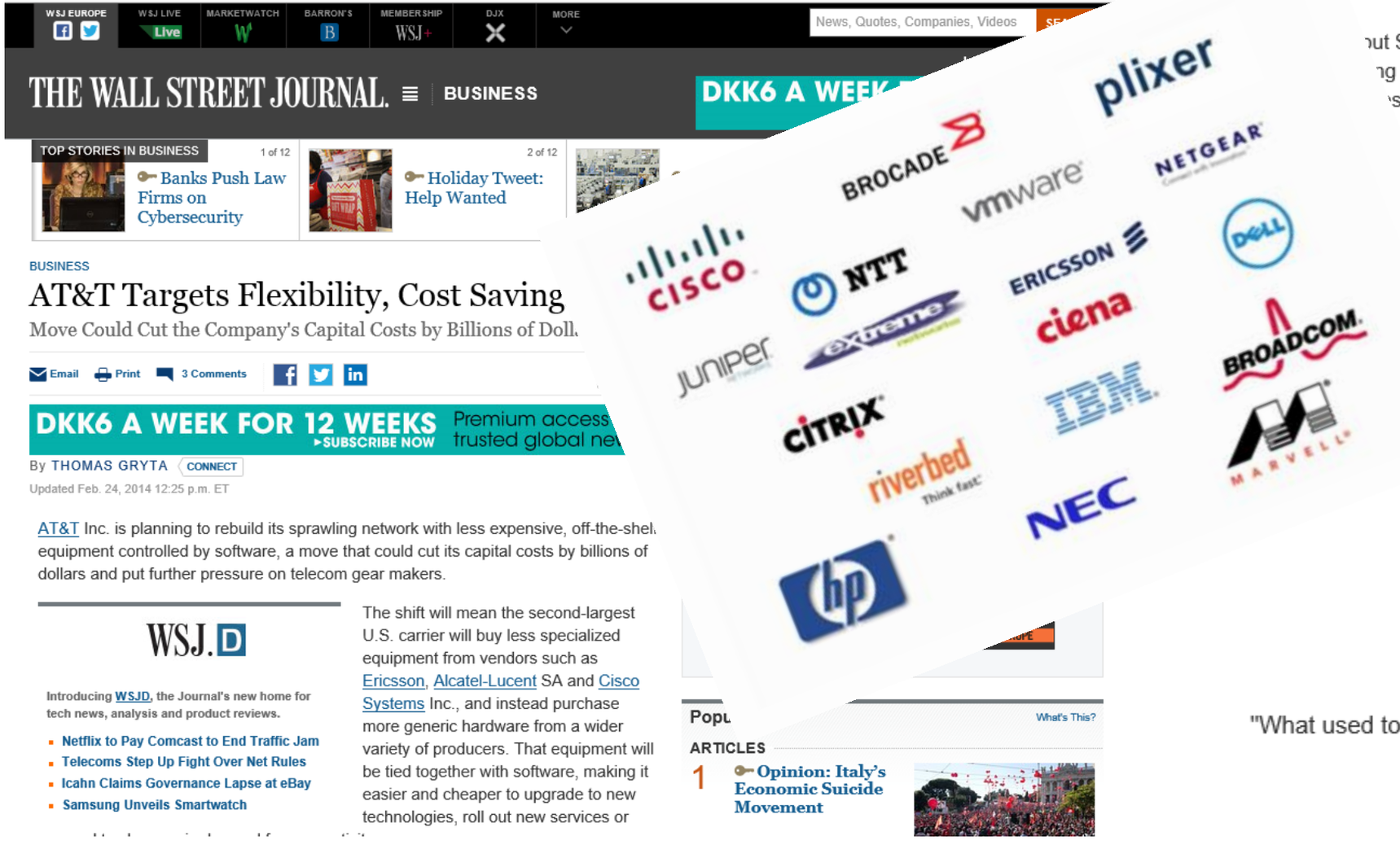
Server virtualization



Network virtualization



SDN – What's in it for me?



ut $21 billion in capital spending this year. In general, about one-third
g at U.S. telecom companies goes to network equipment, according
s analyst Simon Leopold.

wered that spending target to reflect its new network plans, but
w program to put "a downward bias" in those costs in the next
c increases as the project is completed across its entire

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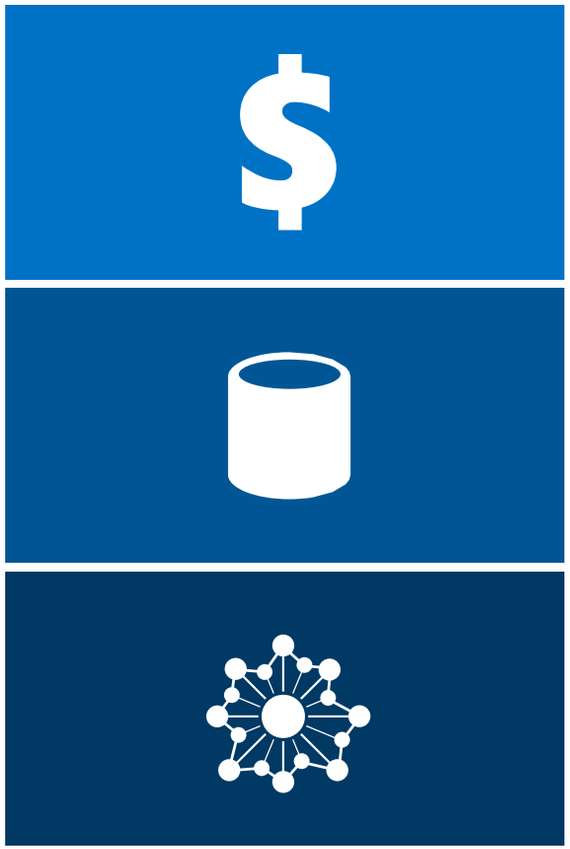
om
Google
verizon
facebook
Microsoft

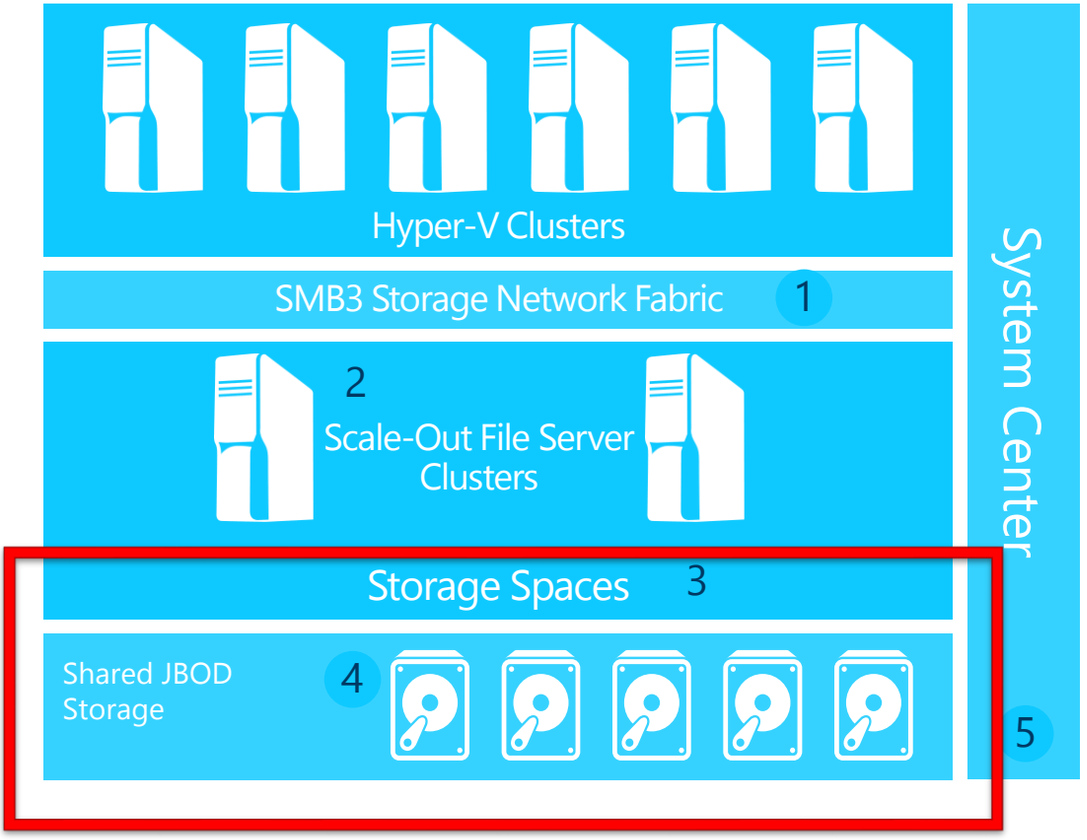
"What used to take 18 months should take minutes," Mr. Donovan said.

Reimagine storage



- Lower cost than traditional storage infrastructure
- Flexible and easy-to-manage storage
- Performance and availability of traditional NAS and SAN infrastructures

Software Defined Storage in Windows Server 2012 R2



Focus of this talk!

Primary application data storage on cost affective, continuously available, high performance SMB3 File Shares backed by Tiered Storage Spaces

1. **Performance, Scale, Fault-Tolerance:** SMB3 File Storage network
2. **Continuous Availability and Seamless Scale Out:** File Server Nodes
3. **Reliability, Elasticity, Performance:** Tiered Storage Spaces
4. **Reduced Cost:** Standard Volume Hardware
5. **Unified Management:** System Center

Storage Spaces Shared Nothing

Enable cloud hardware designs

Support for servers with local storage
Support for SATA, SAS and NVMe devices

Scalability

Scale to larger number of drives in a pool
Add or remove resources as needed
Simple storage expansion

Availability

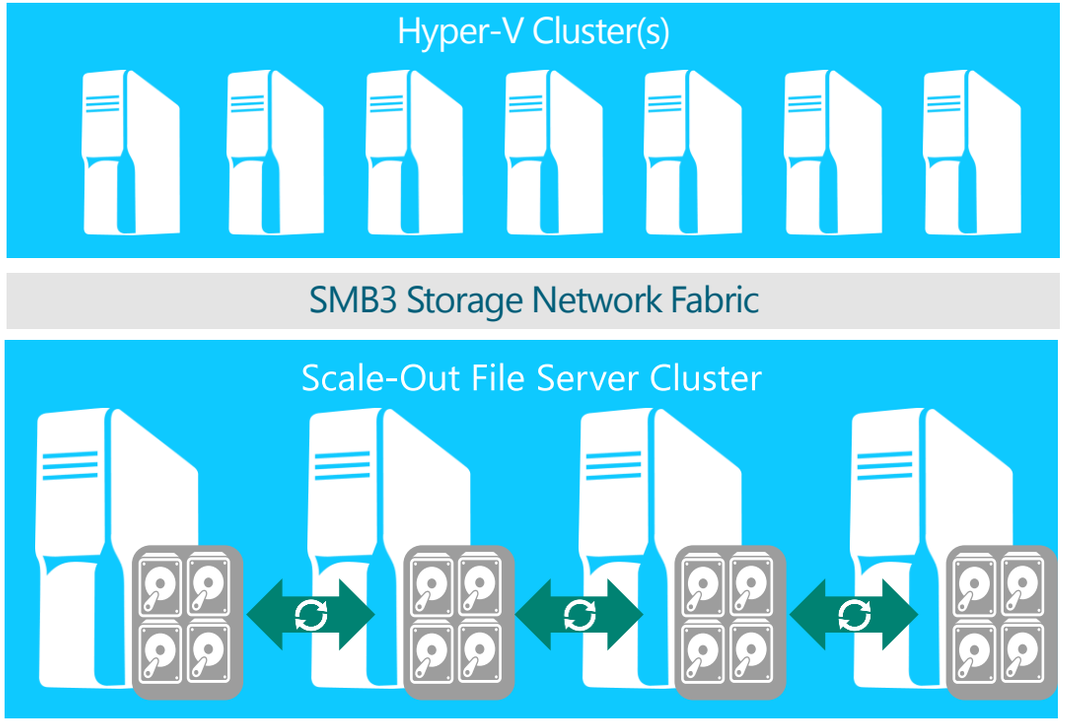
Resilient to node and disks failures
Zero downtime servicing and failover

Management

System Center Virtual Machine Manager
System Center Operations Manager
SMAPI / PS

Use cases

Scoped for disaggregated compute and storage in v1
Hyper-V storage and replica storage for Service Providers
Archive storage for Service Providers



Under the hood

Storage Access (Scale-Out File Server)

Remote data access for Hyper-V
Data access resiliency

File System (CSVFS/ReFS)

System-wide data access
Fast VHDX creation, grow and merge

Storage Spaces

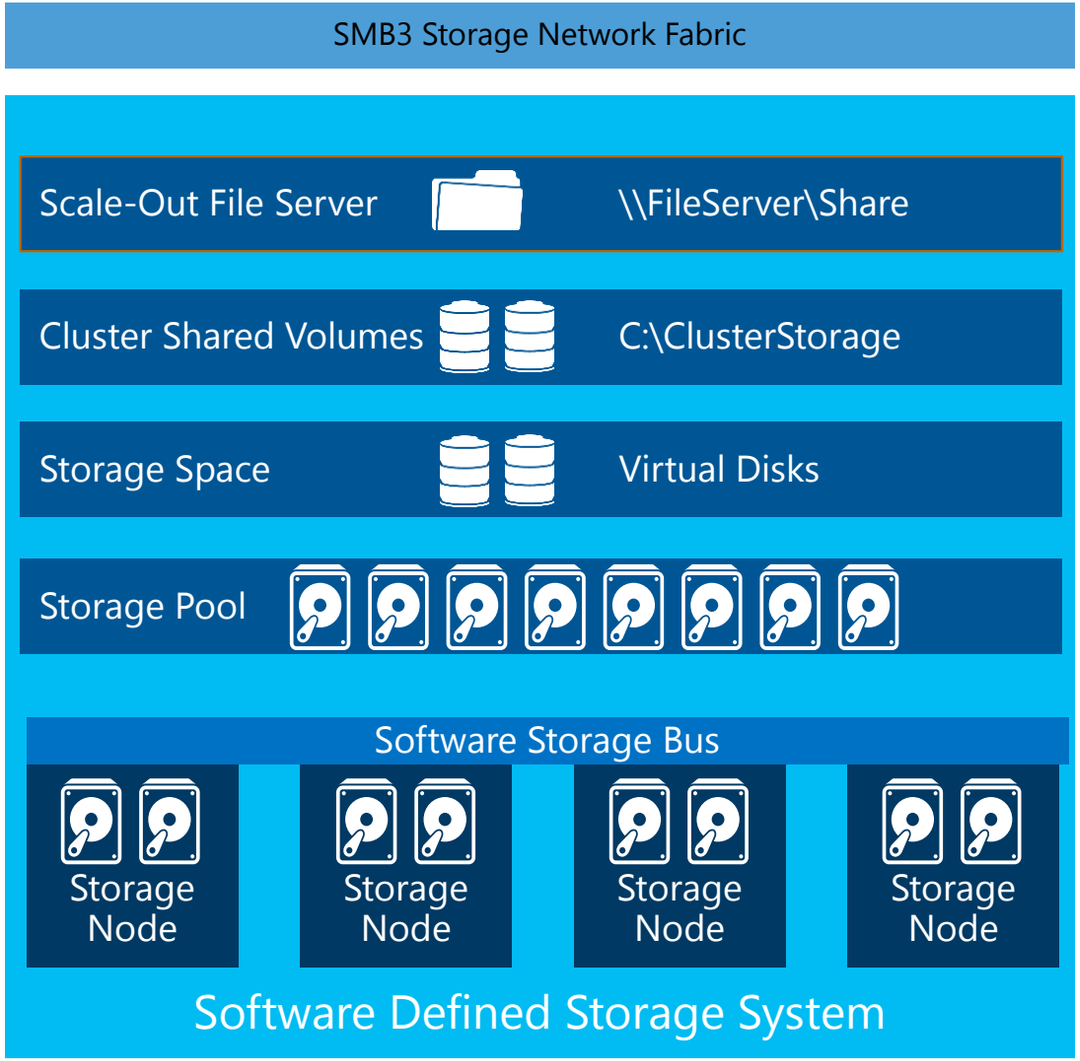
Storage pooling
Virtual disks
Data storage resiliency

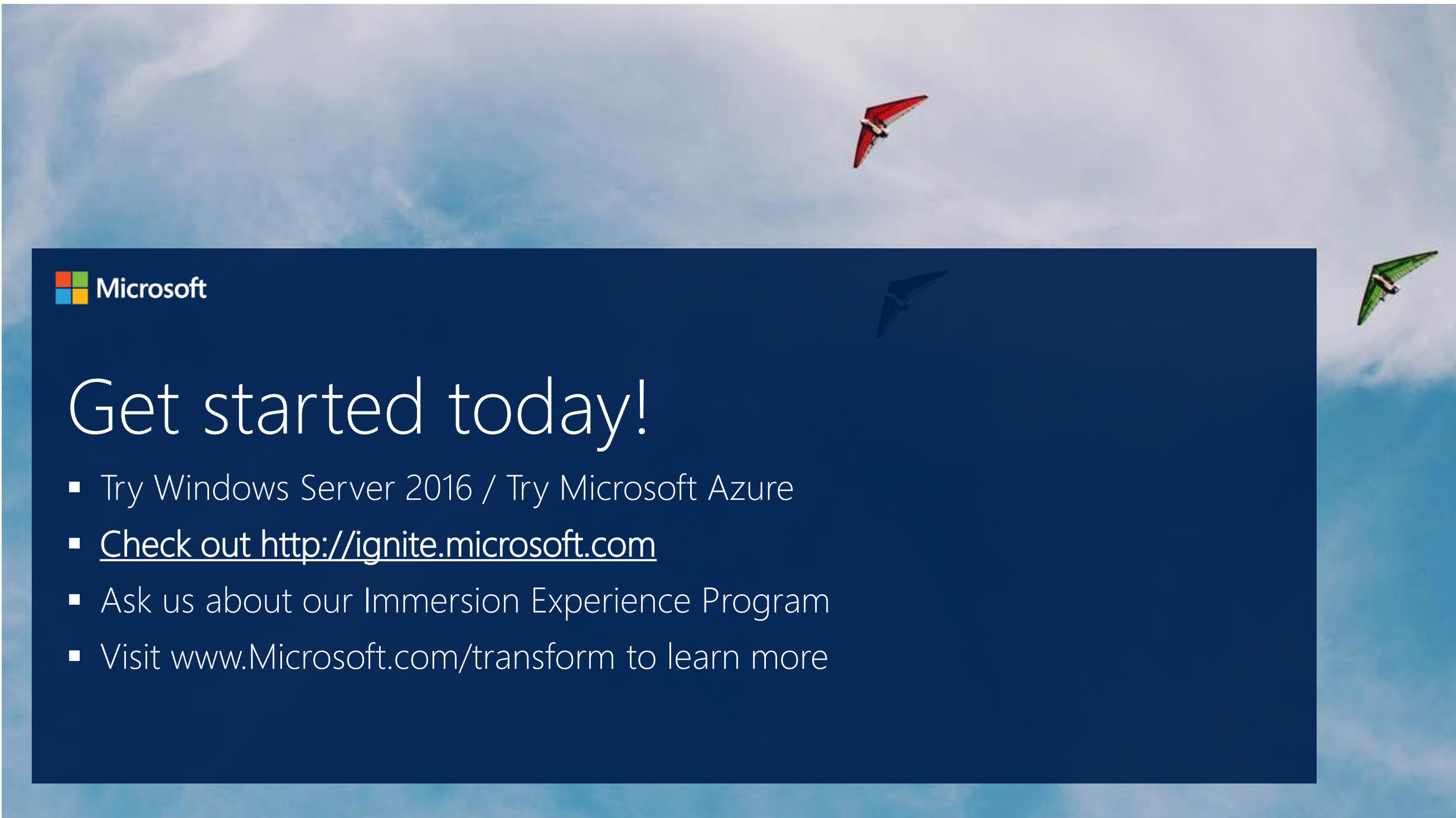
Software Storage Bus

Spans all storage nodes
Virtualizes physical disks
Leverages SMB3 and SMB Direct

Storage nodes with internal disks

SATA, NVMe, SAS





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