Conheça a nova versão do Windows Server & System Center

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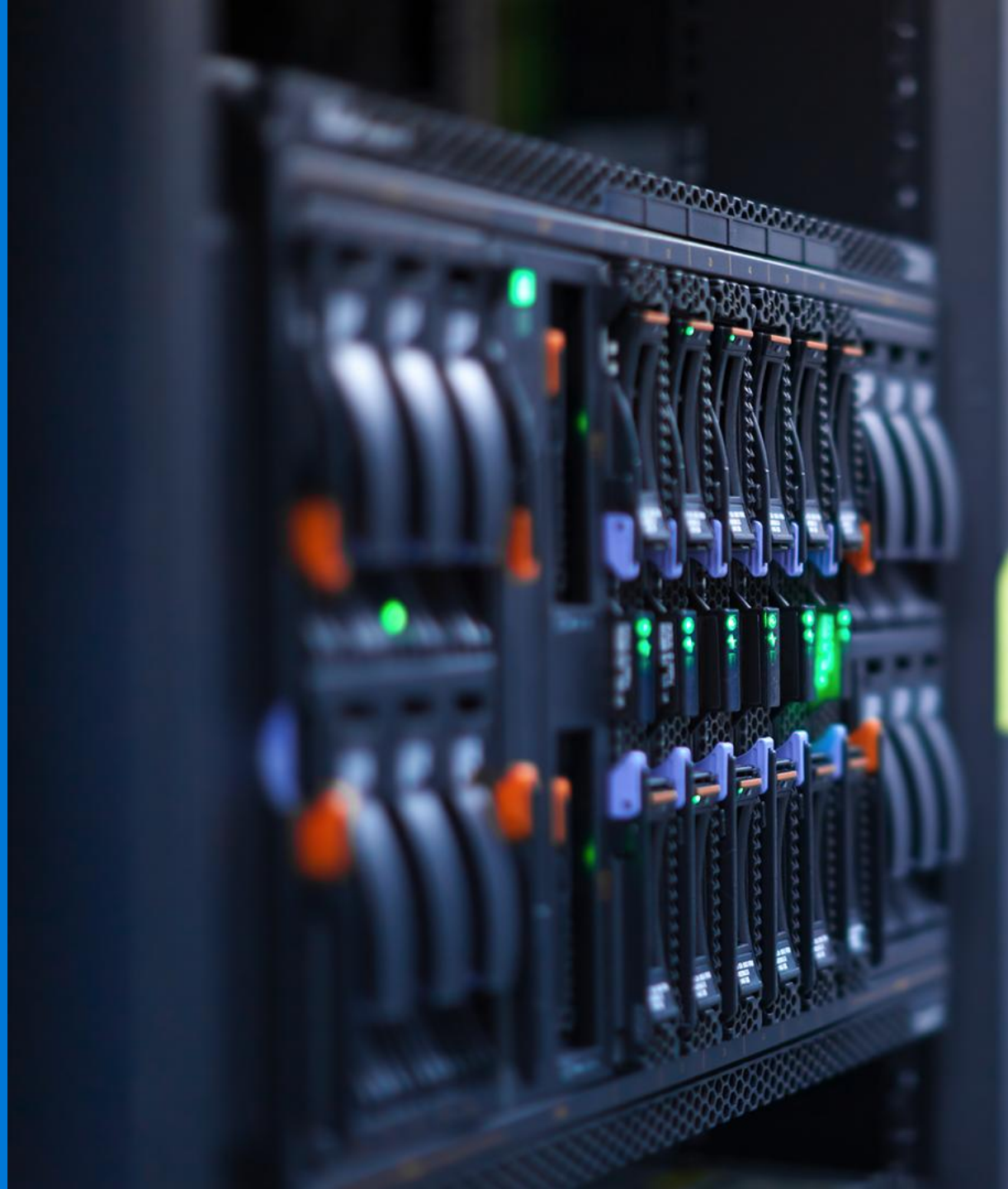
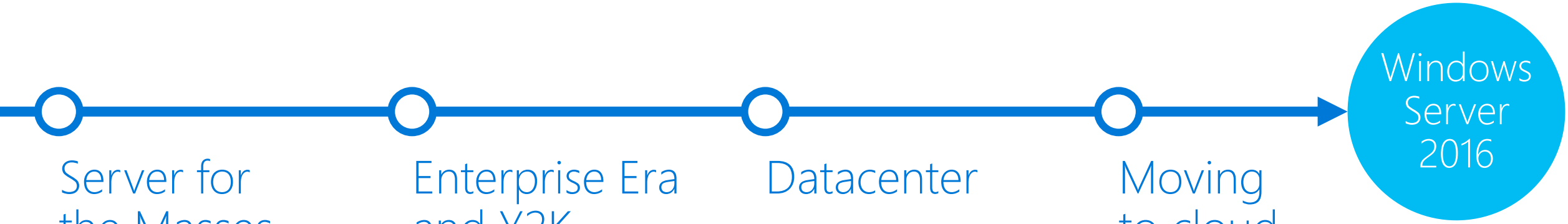
Cloud Infrastructure | App Innovation | Communities

Microsoft



20 anos de inovação



Server for the Masses

Windows Server NT4

Enterprise Era and Y2K

Windows Server 2000

Datacenter

Windows Server 2008

Moving to cloud

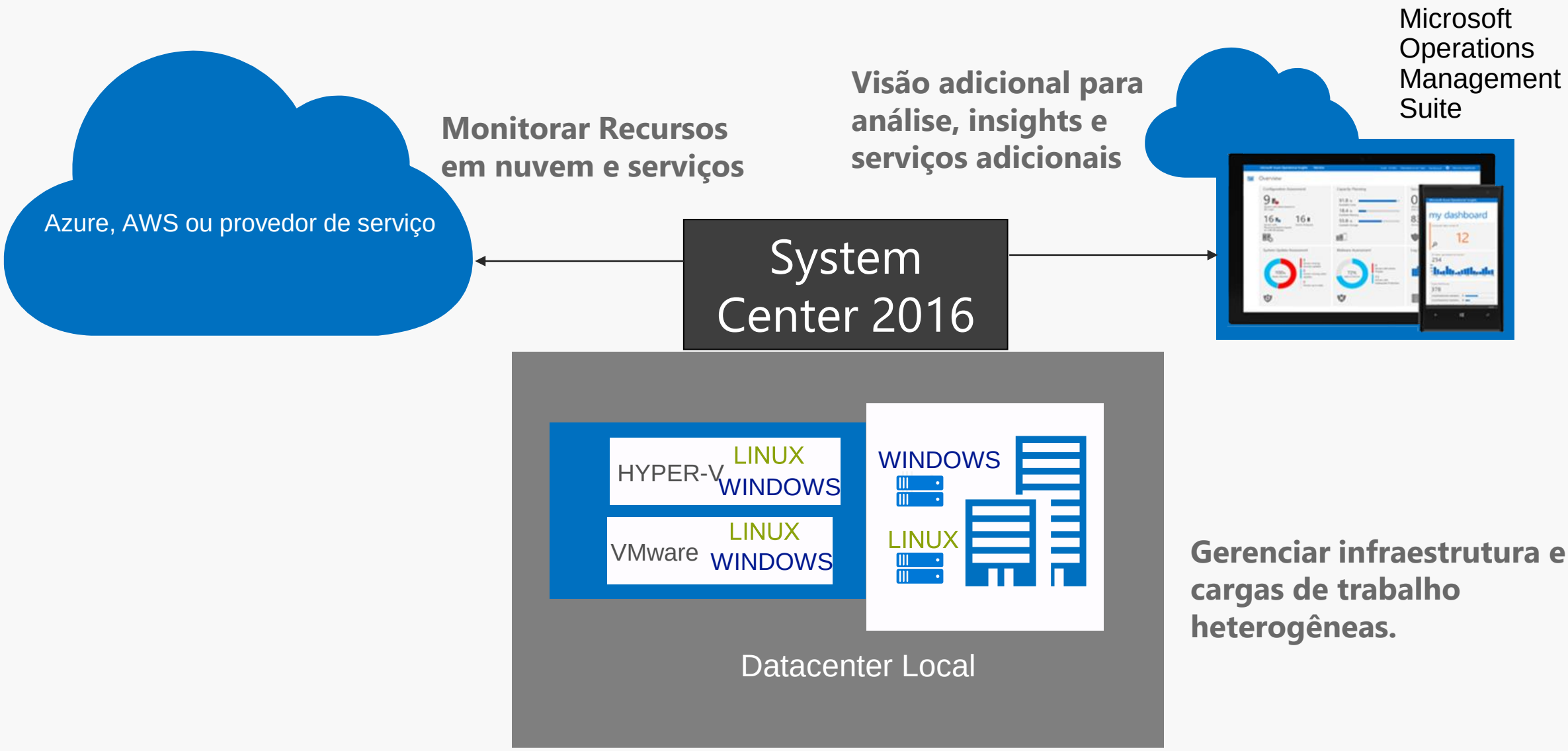
Windows Server 2012

www.20yearsofwindowsserver.com

Pontos de design do Windows Server

1. Fornecer segurança em camadas contra ameaças emergentes.
2. Criar o datacenter definido por software.
3. Criar uma plataforma de aplicativos otimizada para a nuvem.

O que você consegue com System Center 2016?



www.aka.ms/experimenteOMS

Agenda

Virtualização e Alta Disponibilidade

Novos recursos e cluster Hyper-V

Redes e Armazenamento Definidos por Software

Storage Spaces Direct e Storage Replica

Nova plataforma de desenvolvimento e infraestrutura

Nano Server, Windows Containers e Hyper-V Containers

Gerenciamento Moderno de infraestrutura híbrida

System Center + Operations Management Suite (OMS)

A inteligência da nuvem provendo segurança em ambientes híbridos

OMS security

Q&A

Datacenter definido por software

Computação

Atualizações sem interrupção para tempo de inatividade zero.

Adicione/remova NICs/memória fixa quente.

Mais resistente a problemas de rede, armazenamento e computação.

Armazenamento

Hiperconvergido com Storage Spaces Direct.

Replicação síncrona nativa.

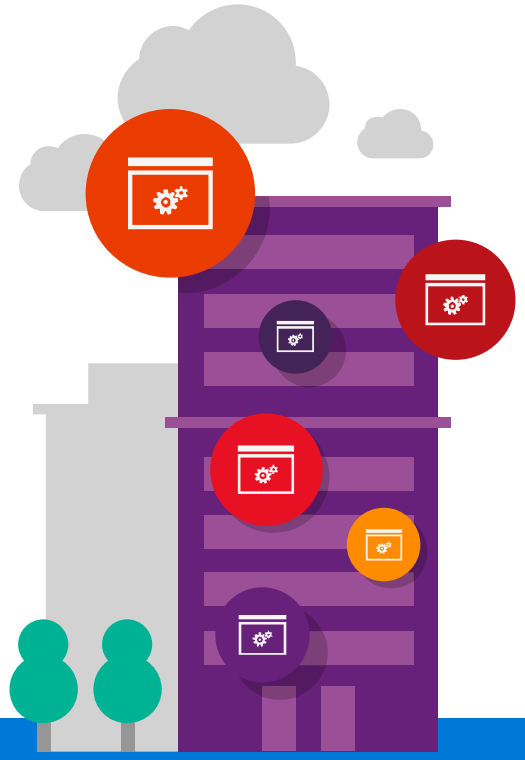
Qualidade de serviço em todo o cluster.

Rede

Controlador de rede para controle centralizado de políticas de rede.

Balanceador de carga integrado do Azure com hiperescala.

Firewall de datacenter distribuído com segurança aprimorada.



Inovação da plataforma de aplicativos e infraestrutura

Contêineres do Windows Server

Leve a agilidade e a densidade de contêineres para o ecossistema do Windows.

Contêineres seguros e manutenção flexível com contêineres do Hyper-V.

Gerencie com o Docker.

Nano Server

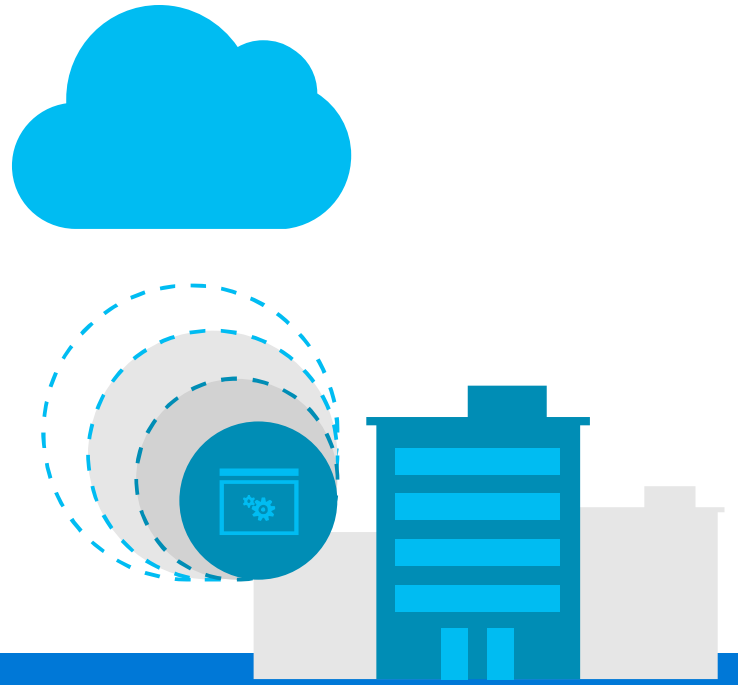
SO Just Enough.

Ideal para infraestrutura inspirada em nuvem.

- Tamanho de imagem e superfície de ataque menores, menos reinicializações e patches.

Ideal para o desenvolvimento de aplicativos de última geração.

- Criado para contêineres e aplicativos nativos da nuvem.



Gerenciamento

System Center

Ferramenta de gerenciamento consolidada do mercado

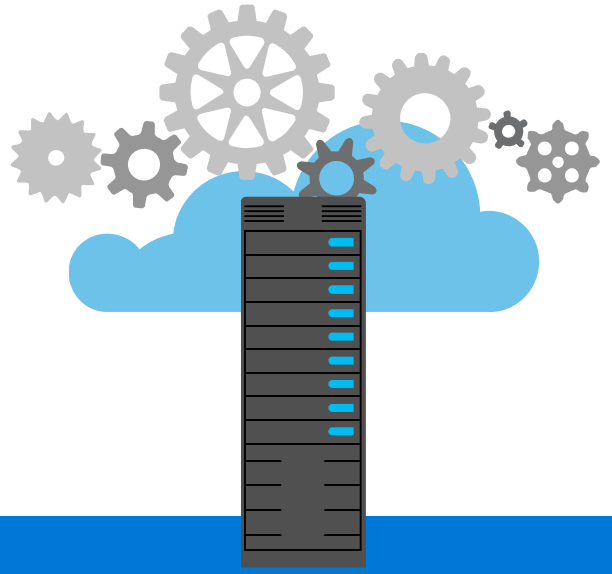
Família completa de ferramentas de gerenciamento de um datacenter

Operations Management Suite

Ferramenta de gerenciamento de um datacenter moderno

Inovação com tecnologias atuais de hiper armazenamento e performance

Traz inteligência e insights imediatos para seu negócio

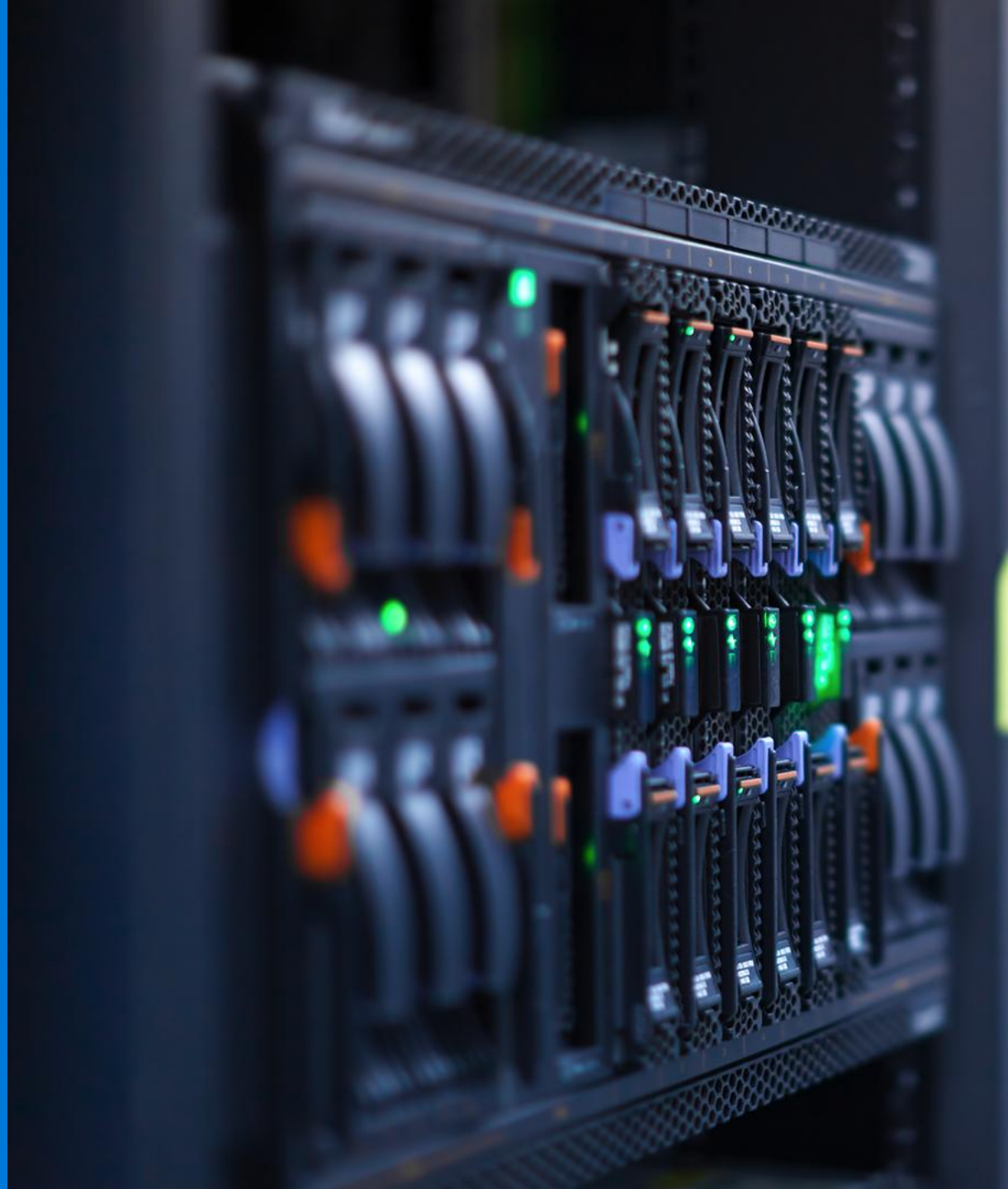


Virtualização e Alta Disponibilidade

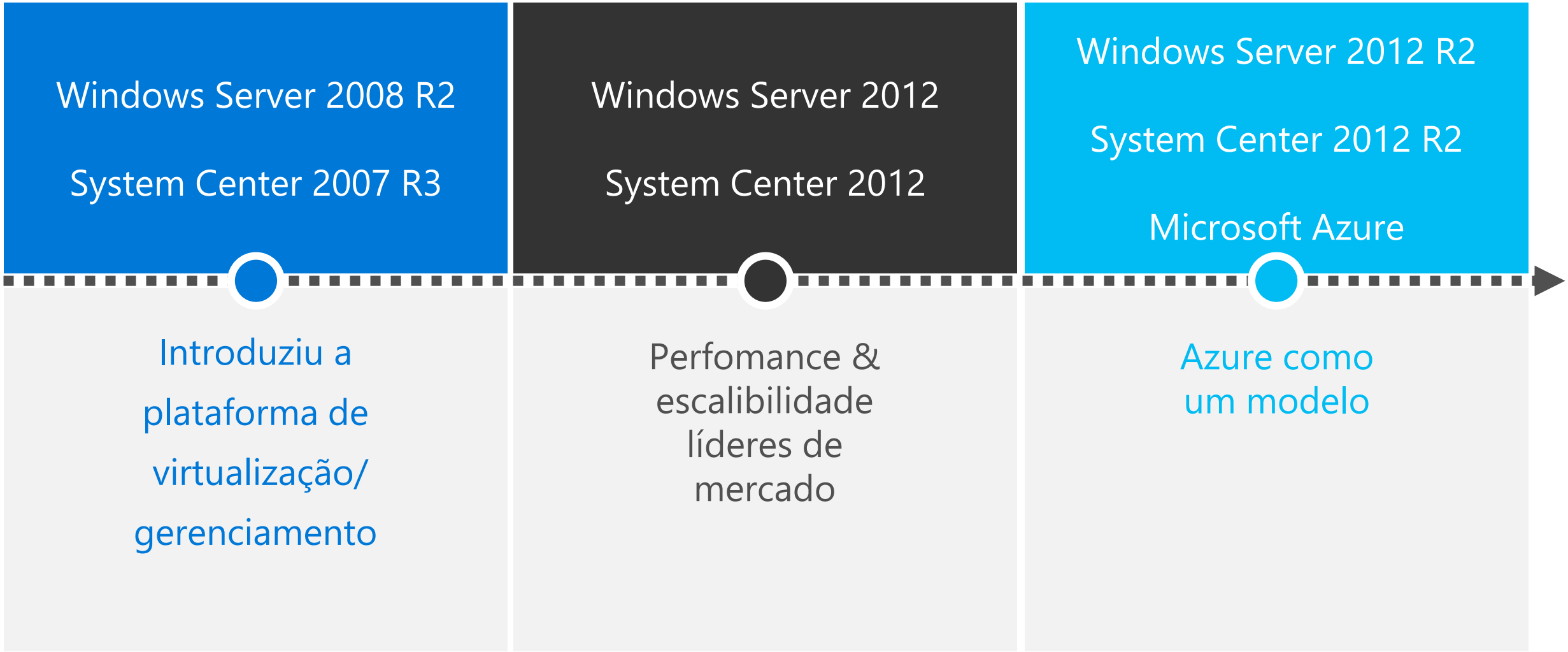
Fabio Hara

Senior Technical Evangelist

Microsoft



Virtualização: Versões Passadas



Windows Server 2012 / 2012 R2 Hyper-V

High performance live migration (compression/RDMA)

Zero downtime upgrades

Automatic VM Activation

Live VM export

Guest backup improvements

Enhanced VMConnect

Dynamic memory host balancing

First class Linux support – Dynamic memory, file system consistent host based backup

RemoteFX over WAN

Generation 2 Virtual Machines

Secure boot in a VM

User defined meta data for VHDX

PowerShell for all Hyper-V operations

Hyper-V Metrics

Shared nothing live migration

High performance auto tiered storage spaces

Write back cache with spaces

Storage QoS

Shared VHDX for guest clustering

VHDX online resize

Storage deduplication with live VMs for VDI

Hyper-V Recovery Manager (Microsoft Azure Site recovery)

Azure Backup

Inbox multi-tenant site-to-site VPN gateway for physical & virtual networks

Protected VM Networks/Virtual RSS

Enhanced LBFO performance with NIC teaming

Hyper-V Extensible Switch

4K Sector support

Hyper-V over SMB

Hyper-V over Spaces & ReFS

64 VP, 1 TB VMs

SR-IOV for 10+GB networking

64TB VHDX

Hyper-V Replica

Network Virtualization

USB redirection over RemoteFX vGPU

Hot add/remove of storage

VHDX resiliency

Dynamic & differencing VHDX performance improvements

384 LP, 4TB physical system

2+ Million IOPS to a single VM

Resource Pools

NUMA in a VM

1024 running VMs on a host

Windows Server 2016 Hyper-V

High performance live migration (compression/RDMA)
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Live VM export
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Secure boot in a VM
User defined meta data for VHDX
PowerShell for all Hyper-V operations
Hyper-V Metrics
Shared nothing live migration

Shielded VM support
vTPM
Key Storage Drive for Gen 1 VM
Guest VSM (enable Device Guard & Credential Guard in a VM)
VM Isolation
Linux Secure Boot
RemoteFX improvements
Discrete Device Assignment of GPU
Headless mode support

Distributed Storage QoS
REFS Block
REFS Fast Fixed Disk Creation

High performance auto tiered storage spaces
Write back cache with spaces
Storage QoS
Shared VHDX for guest clustering
VHDX online resize
Storage deduplication with live VMs for VDI
Hyper-V Recovery Manager (Microsoft Azure Site recovery)
Azure Backup
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Protected VM Networks/Virtual RSS
Enhanced LBFO performance with NIC teaming
Hyper-V Extensible Switch
4K Sector support

Nested virtualization
VMCX configuration file
Nano Server Host Support
Multi-host management (WMI)
Hypervisor Power Management (connected standby works)
Virtual machine grouping
IC Upgrade via Windows Update
HvSocket (Guest-Host)
TimeSync improvements
240 VP, 16TB VMs
Support for Containers

Resilient Change Tracking (RCT)
Backup improvements
Backup of Shared VHDX

Hyper-V over SMB
Hyper-V over Spaces & ReFS
64 VP, 1 TB VMs
SR-IOV for 10+GB networking
64TB VHDX
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VM configuration version & upgrade
Runtime Memory Resize
Hot / add remove of NICs
Production Checkpoints
Storage Resiliency - All Paths Down
Online Resize for Shared VHDX
Hot add / remove of replicated VHD
Rolling Cluster Upgrade
Cluster Compute Resiliency
Cluster Node Quarantine
Device Naming of NIC
512LP, 24TB Host
Direct Device Assignment

Windows Server 2016 Virtualização

Alguns desafios que ele endereça

Performance

- RDMA e Redes convergentes
- Alta performance para live migration
- Virtual Machine Multi-Queue (VMMQ)
- Node Fairness
- VM start ordering
- SMB Multi-channel and Multi-NIC

Confiabilidade

- Hot add e remove de memória de VM
- Hot add e remove VM de rede virtual
- Online storage resize (agora para Guest Clustering com Shared VHDX)
- Production checkpoints
- Cluster OS Rolling Upgrade
- Mixed OS Mode cluster
- VM resiliency
- Fault domain-aware clusters

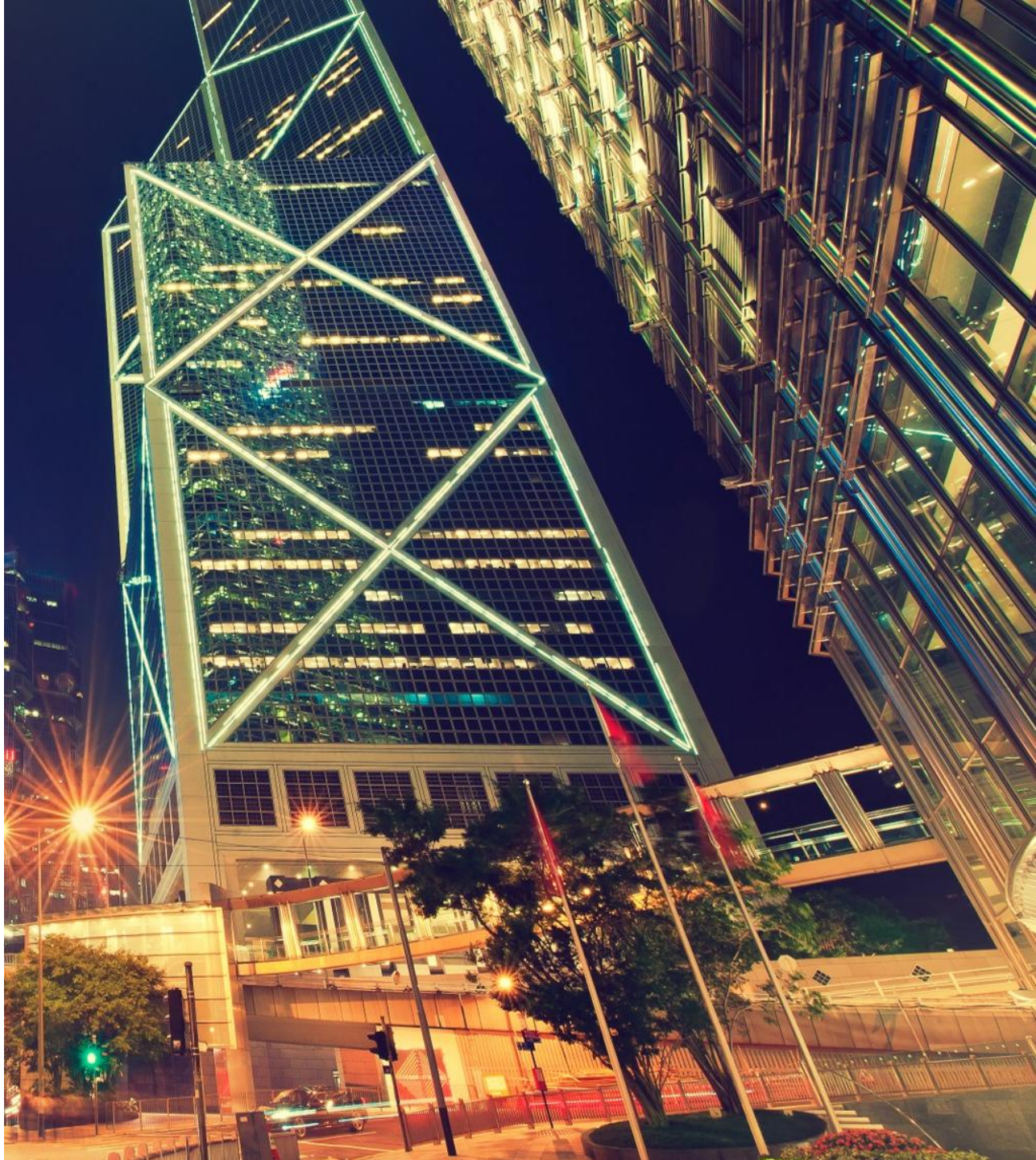
Flexibilidade

- Storage QoS
- Broad Linux support
- Virtual machine compatibility mode
- VM services model (Integration Services via Windows Update)
- Stretched clusters (Storage Replica)
- Workgroup and multi-domain cluster
- Cloud Witness
- Diagnostic improvements

Gartner 2016: x86 Server Virtualization Infrastructure

https://info.microsoft.com/Gartner-MQ-Server-Virtulization.html?ls=Blog

Performance



Windows Server 2016 Hyper-V: Limites

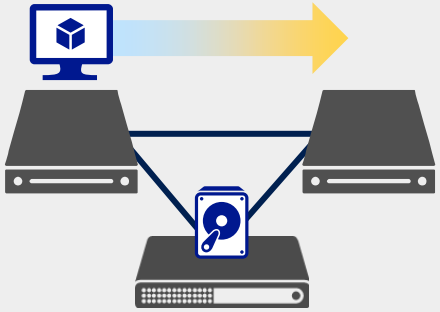
Capacidade	Windows Server 2012/2012 R2 Standard ou Datacenter	Windows Server 2016 Standard ou Datacenter	VMware vSphere 6 Enterprise Plus
Memória física suportada (Host)	4 TB por servidor	**24 TB por servidor físico (aumento de 6x)**	6 TB por servidor físico (12 TB for specific OEM certified platform)
Processadores lógicos suportados (Host)	320	**512**	480
Suporte a memória da máquina virtual	1 TB por VM	**16 TB por VM (aumento de 16x)**	4TB por VM
Suporte a processadores lógicos da máquina virtual	64 por VM	**240 por VM (aumento de 3.75x)**	128 por VM

Source: http://www.vmware.com/pdf/vsphere6/r60/vsphere-60-configuration-maximums.pdf

Live migration com alta performance

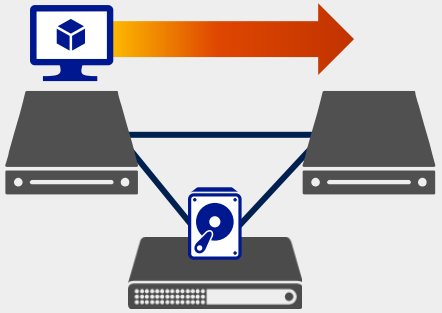
Flexibilidade total no live migration de máquinas virtuais

RÁPIDO
Live migration por TCP/IP

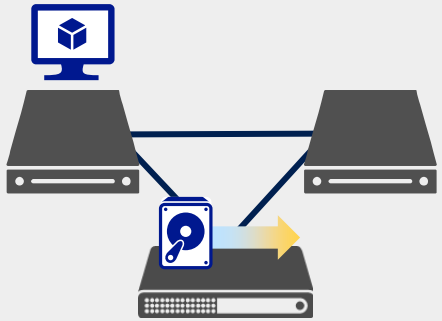


MAIS RÁPIDO
Live migration com compactação

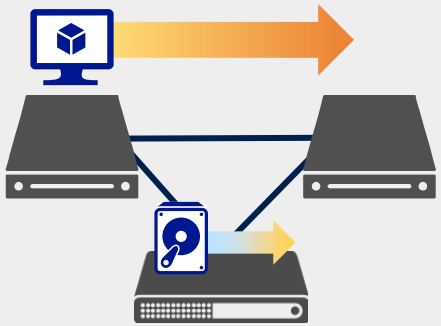
INCRÍVELMENTE RÁPIDO
Live migration por SMB (direto)



Armazenamento
Live migration



Shared Nothing
Live migration



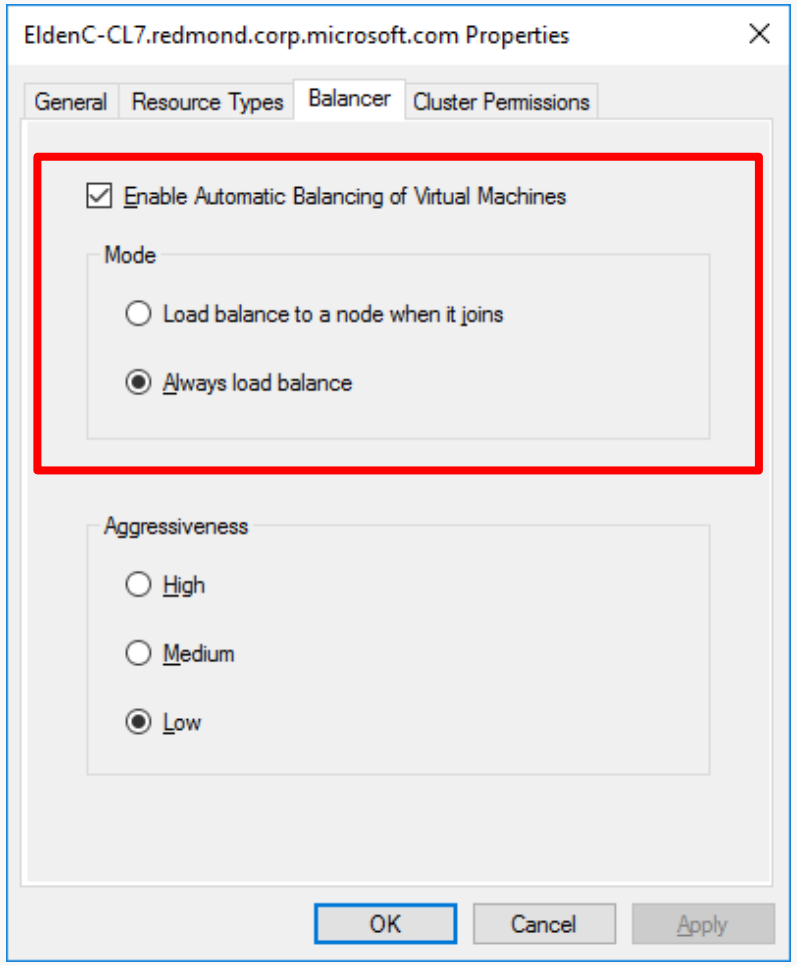
VM Load Balancing

- Identifica os nós menos utilizados em um cluester e distribui as VMs entre eles
- Utilização determinada pela memória e CPU
- Nuvens privadas são balanceadas automaticamente
- Respeita políticas ja existentes
  - Como Sites, anti-affinity, possible owners, paused nodes

Balanceamento para o Cluster 

VM Fairness: Configurando

GUI



PowerShell

- Cluster common property 'AutoBalancerMode'

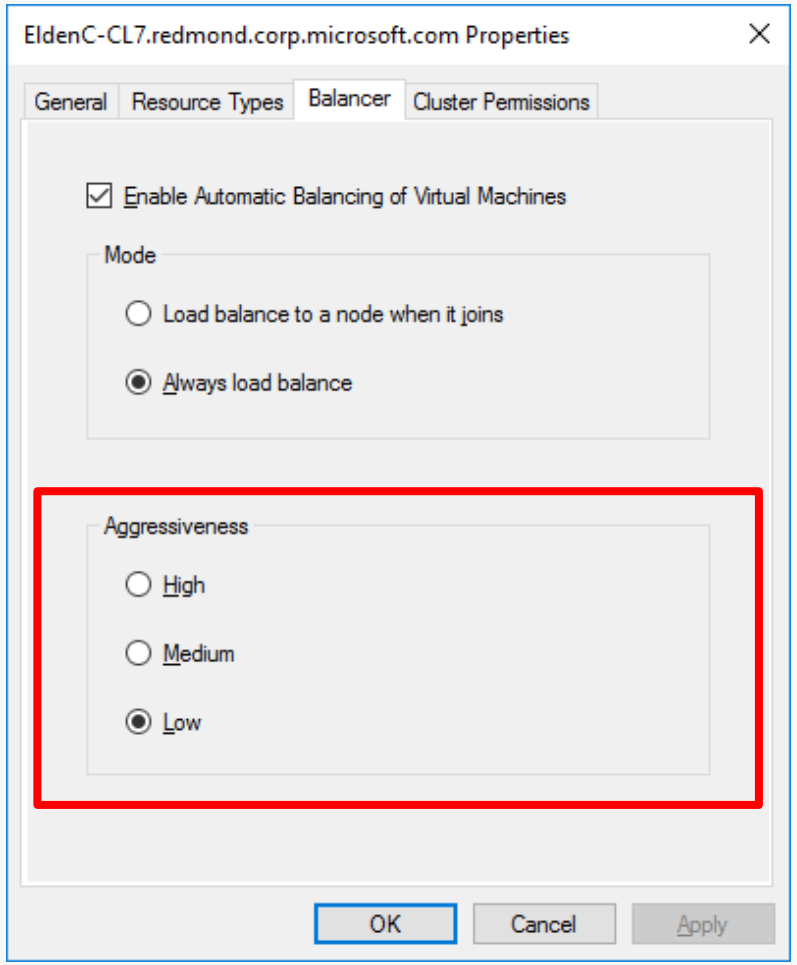
Value	Behavior
0	Disabled
1	Load balance on node Join
2	Load balance on node Join and every 30 minutes (default)

PowerShell:

```
(Get-Cluster).AutoBalancerMode = 2
```

VM Fairness: Agressividade

GUI



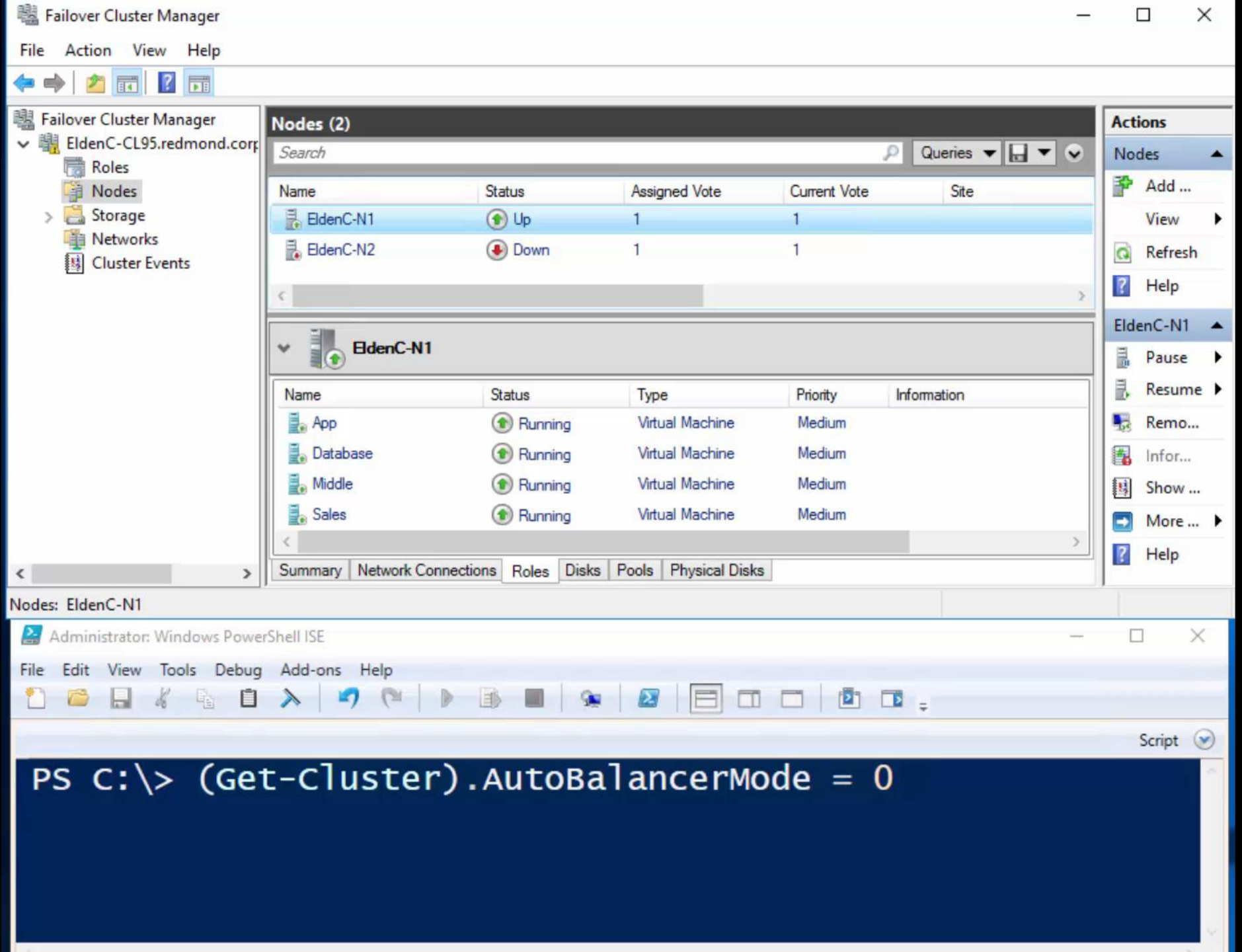
PowerShell

- Controlada pela propriedade do cluster 'AutoBalancerLevel'

Valor	Agressividade	Comportamento
3	Alta	Balanceamento quando o host está 5% acima da média
2	Média	Balanceamento quando o host está a 70% carregado
1	Baixa (Default)	Balanceamento quando o host está a 80% carregado

PowerShell:

```
(Get-Cluster).AutoBalancerLevel = 3
```


Failover Cluster Manager
File Action View Help
Failover Cluster Manager
EldenC-CL95.redmond.corp
Roles
Nodes
Storage
Networks
Cluster Events
Nodes (2)
Search
Queries
Name Status Assigned Vote Current Vote Site
EldenC-N1 Up 1 1
EldenC-N2 Down 1 1
EldenC-N1
Name Status Type Priority Information
App Running Virtual Machine Medium
Database Running Virtual Machine Medium
Middle Running Virtual Machine Medium
Sales Running Virtual Machine Medium
Summary Network Connections Roles Disks Pools Physical Disks
Actions
Nodes
Add ...
View
Refresh
Help
EldenC-N1
Pause
Resume
Remo...
Infor...
Show ...
More ...
Help
Nodes: EldenC-N1
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Script
PS C:\> (Get-Cluster).AutoBalancerMode = 0

VM Start Ordering

VMs especiais

Configure VMs para iniciarem antes que outras (appliances, domain controllers, etc)

Ordenação

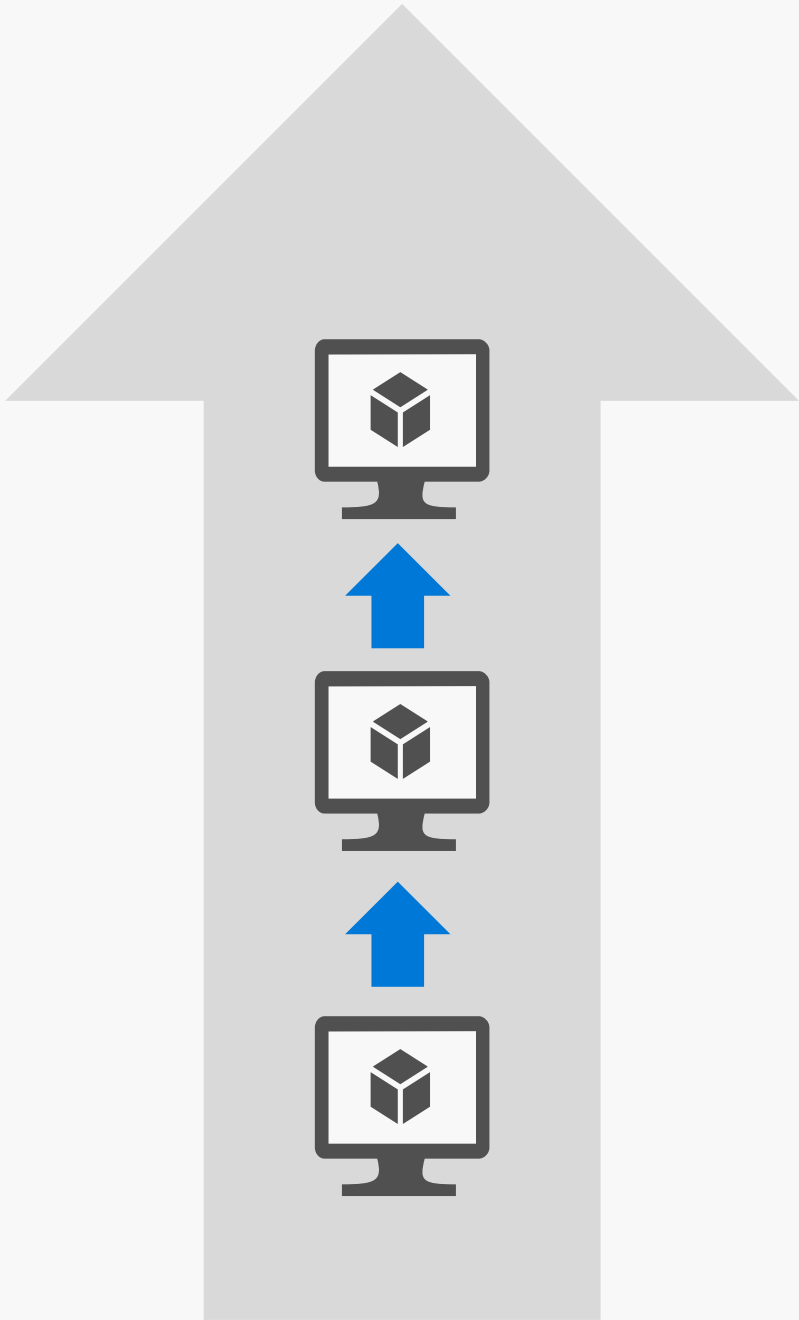
Multi-tier

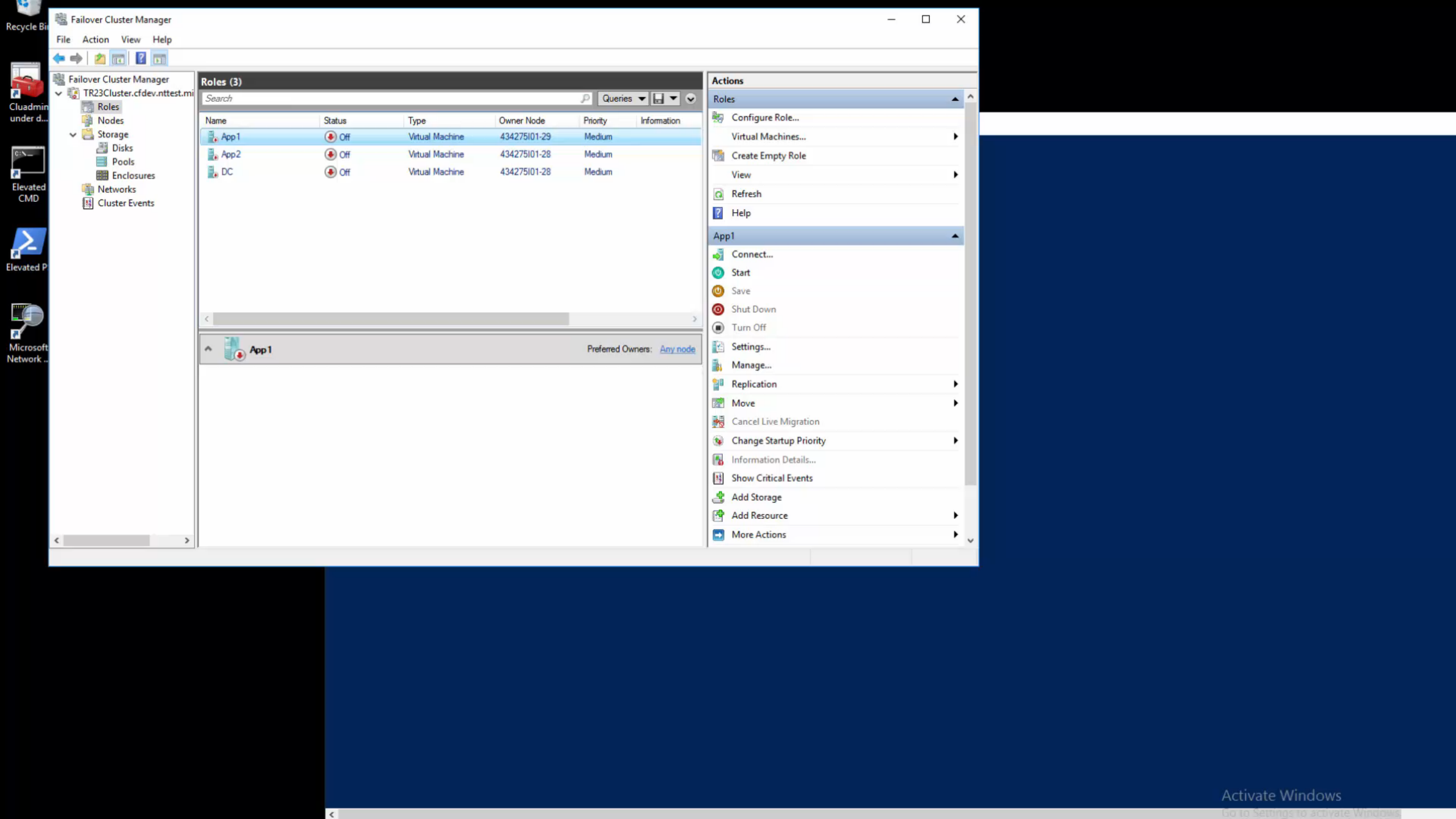
Database → Middle Tier → Front End

Orchestração

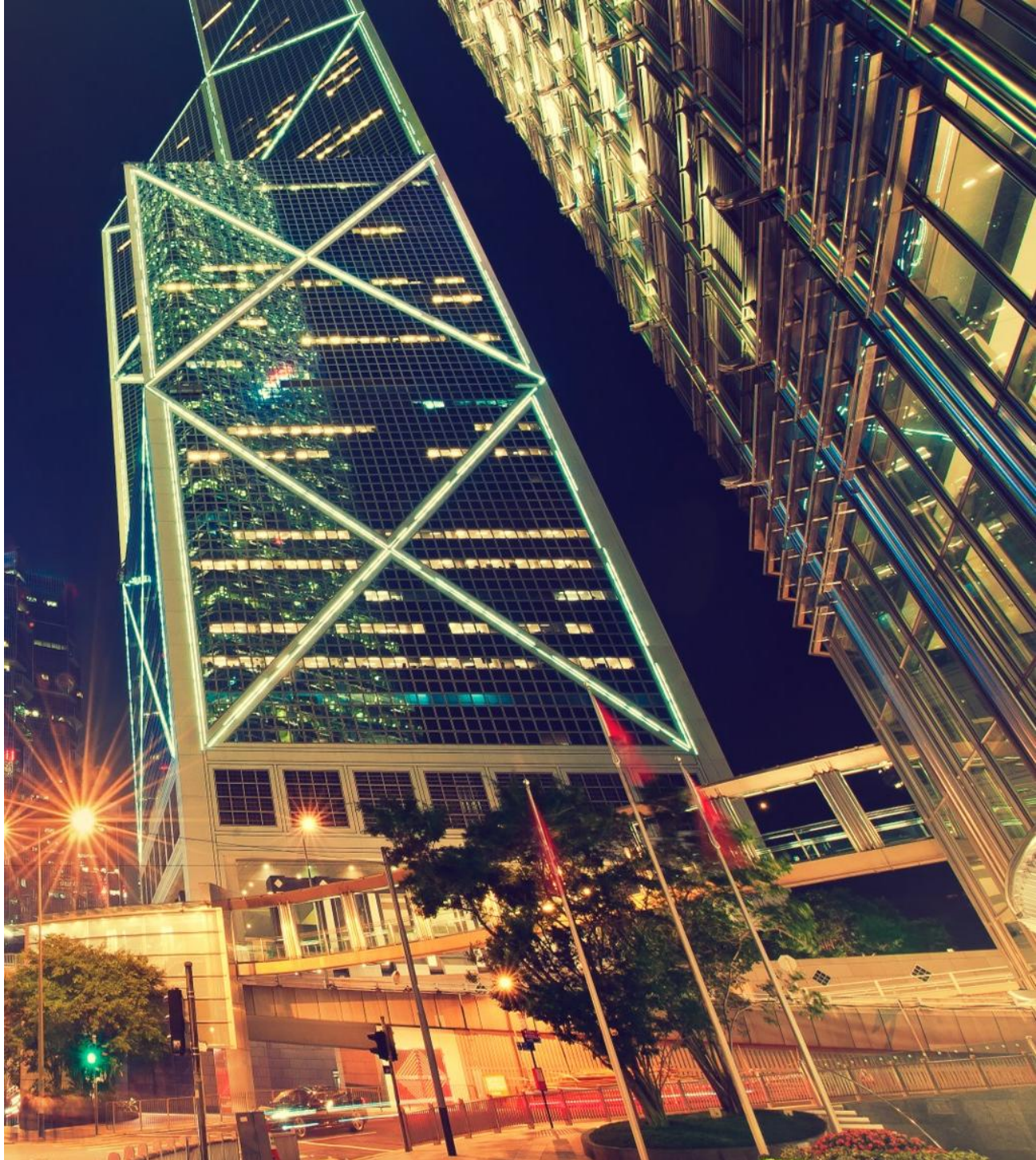
Defina grupos de VMs por tiers

Defina indicadores e triggers para um start de um grupo




Failover Cluster Manager
File Action View Help
Failover Cluster Manager
TR23Cluster.cfdev.nttest.mi
Roles
Nodes
Storage
Disks
Pools
Enclosures
Networks
Cluster Events
Roles (3)
Search
Queries
Name Status Type Owner Node Priority Information
App1 Off Virtual Machine 434275I01-29 Medium
App2 Off Virtual Machine 434275I01-28 Medium
DC Off Virtual Machine 434275I01-28 Medium
App1
Preferred Owners: Any node
Actions
Roles
Configure Role...
Virtual Machines...
Create Empty Role
View
Refresh
Help
App1
Connect...
Start
Save
Shut Down
Turn Off
Settings...
Manage...
Replication
Move
Cancel Live Migration
Change Startup Priority
Information Details...
Show Critical Events
Add Storage
Add Resource
More Actions

Confiabilidade



Aumente a confiabilidade com Hyper-V

Hot add e remove de disco, memória e rede

Realize manutenção nas máquinas virtuais sem impactar workloads rodando dentro dela.

Online storage resize (Guest clustering with Shared VHDX)

Gest Clusters com melhorias de disponibilidade incluindo redimensionamento on-line, backups em nível de de host e suporte para Hyper-V Replica.

Production checkpoints

Criar facilmente e em qualquer momento, imagens de uma VM, que podem ser restauradas posteriormente para todas os workloads em produção.

Checkpoint de produção

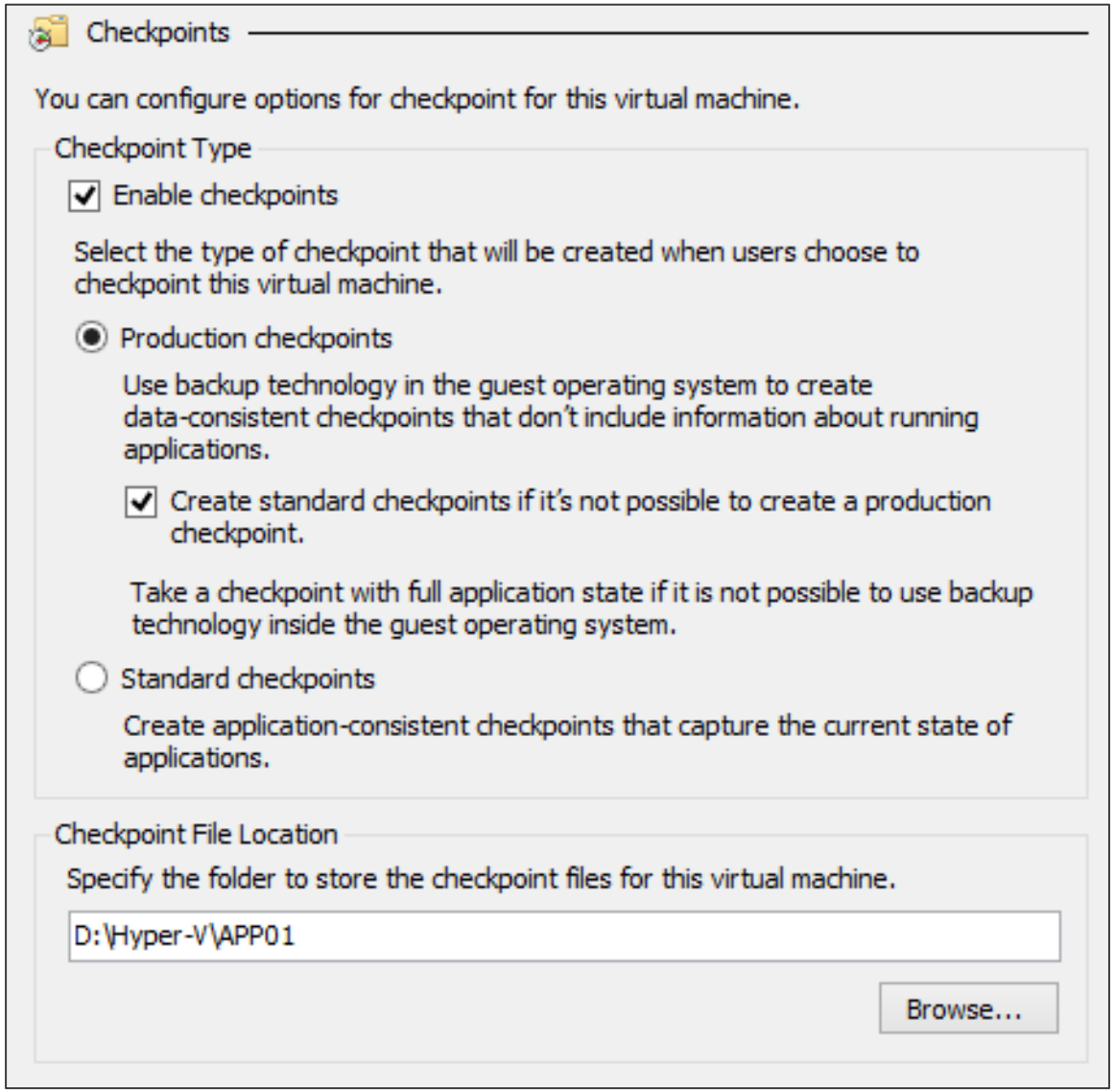
Suporte total para workloads chave: Crie facilmente imagens de "pontos no tempo" de máquinas virtuais, que podem ser restaurados posteriormente de um modo totalmente suportado em produção

VSS: Volume Snapshot Service (VSS) é agora usado de dentro da máquina virtual para criar o creckpoint de produção, ao invés da tecnologia save state

Interface Familiar: Mesma interface do tradicional checkpoint

Linux: VMs Linux executam um flush do buffer do sistema para criar o checkpoint de produção consistente com o sistema de arquivos

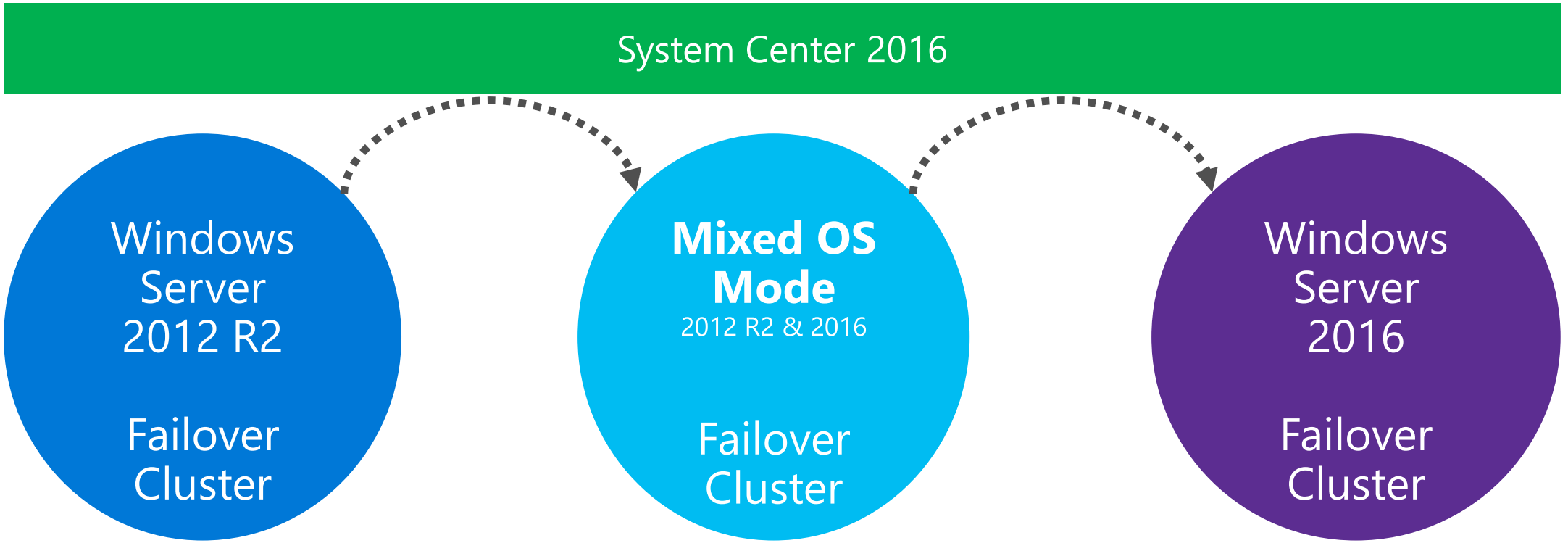
Produção como default: Novas máquinas virtuais usarão o checkpoint de produção como default



Cluster OS Rolling Upgrade

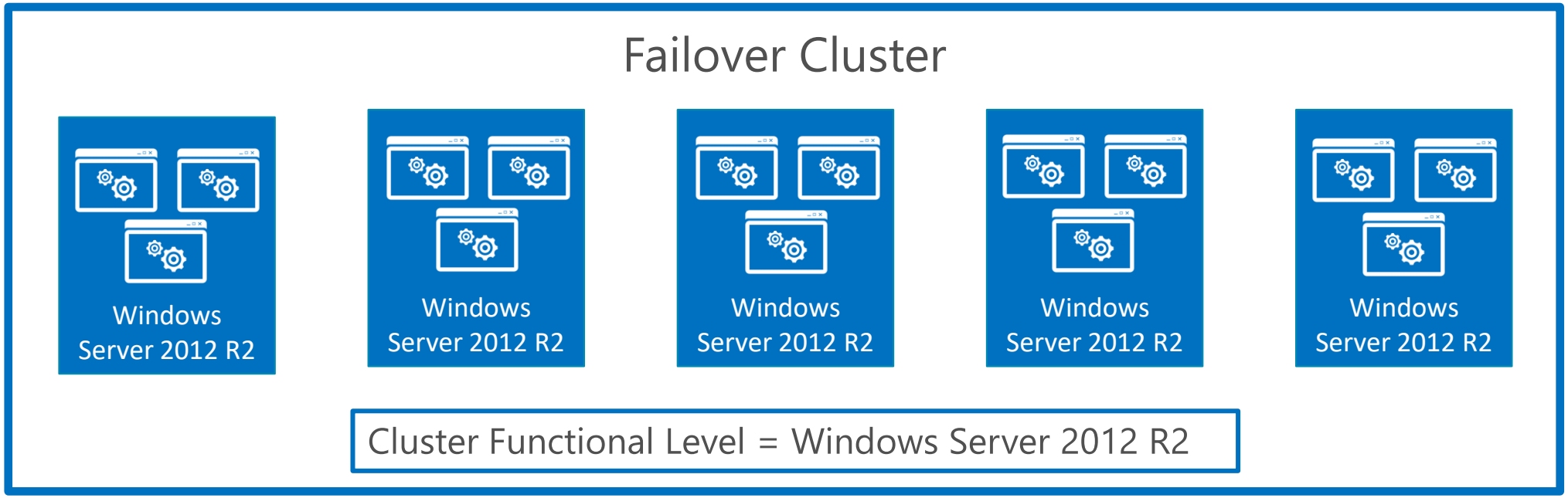
Failover Cluster com “Mixed OS mode”

Novas funcionalidades não ficam disponíveis
Não rode o cluter em “Mixed Mode” por mais de 1 mês.
Funciona com o conceito de Cluster Functional Level



Cluster OS Rolling Upgrade: Processo

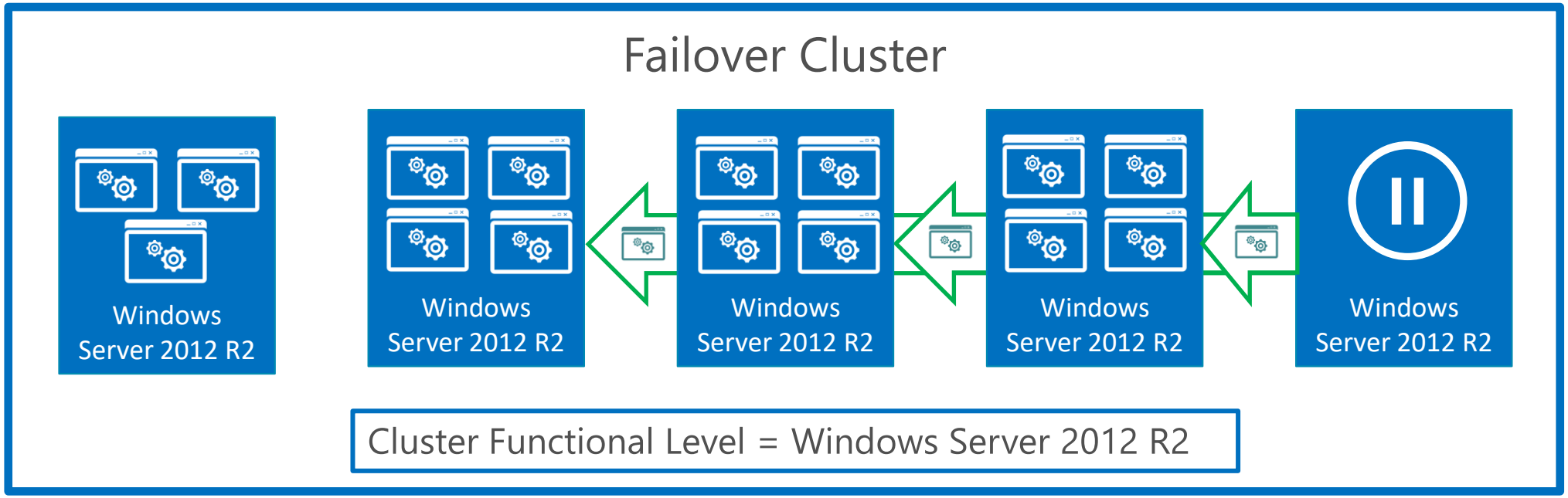
Cluster Windows Server 2012 R2



Cluster OS Rolling Upgrade: Processo

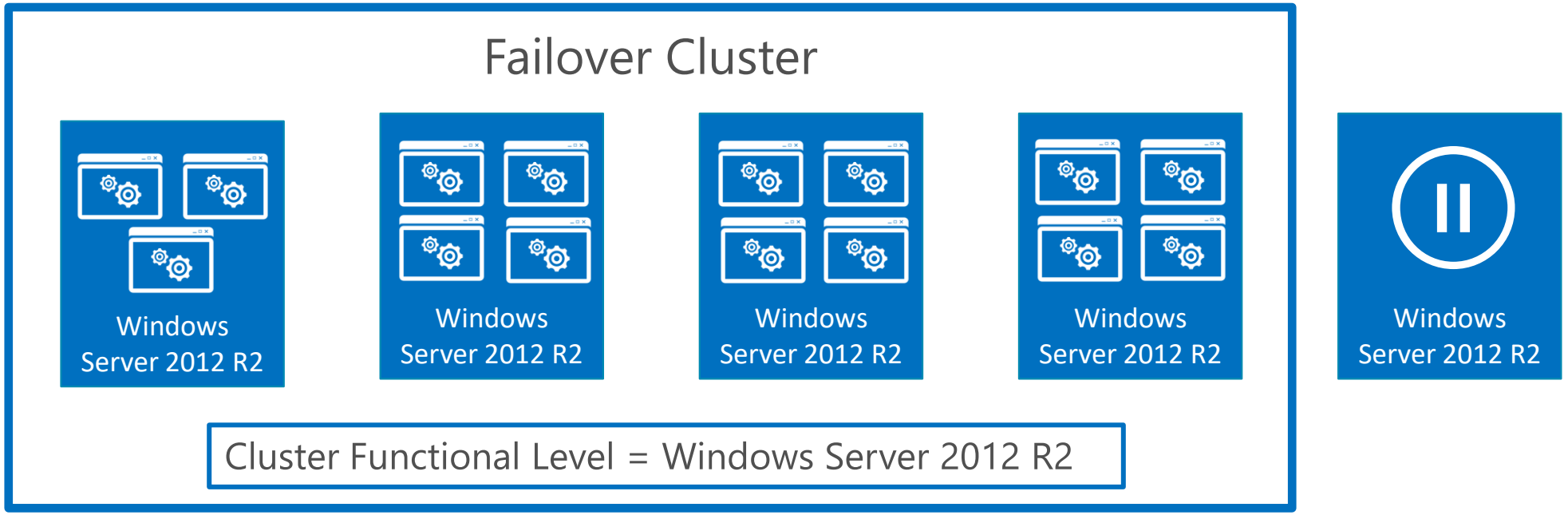
Migração de workloads para fora do nó

Pause | Drain



Cluster OS Rolling Upgrade: Processo

Evict Idle no nó do cluster

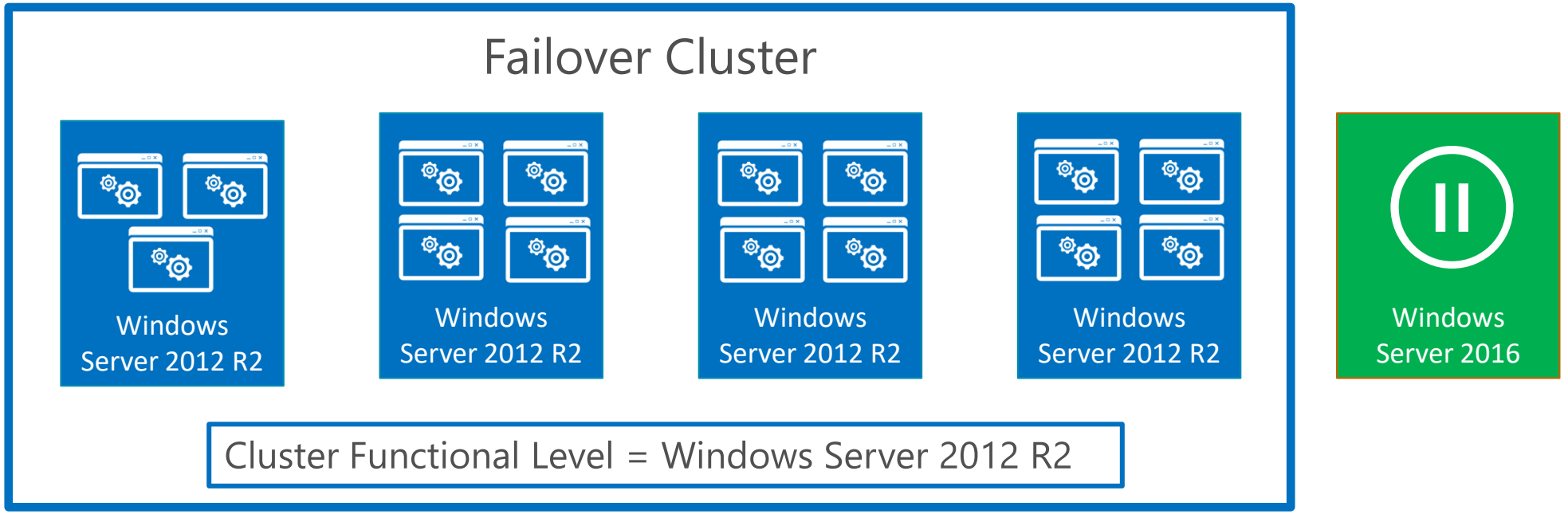


Cluster OS Rolling Upgrade: Processo

Atualização do nó

Instalação do novo OS

Instalação e configuração de quaisquer requisitos dos workloads

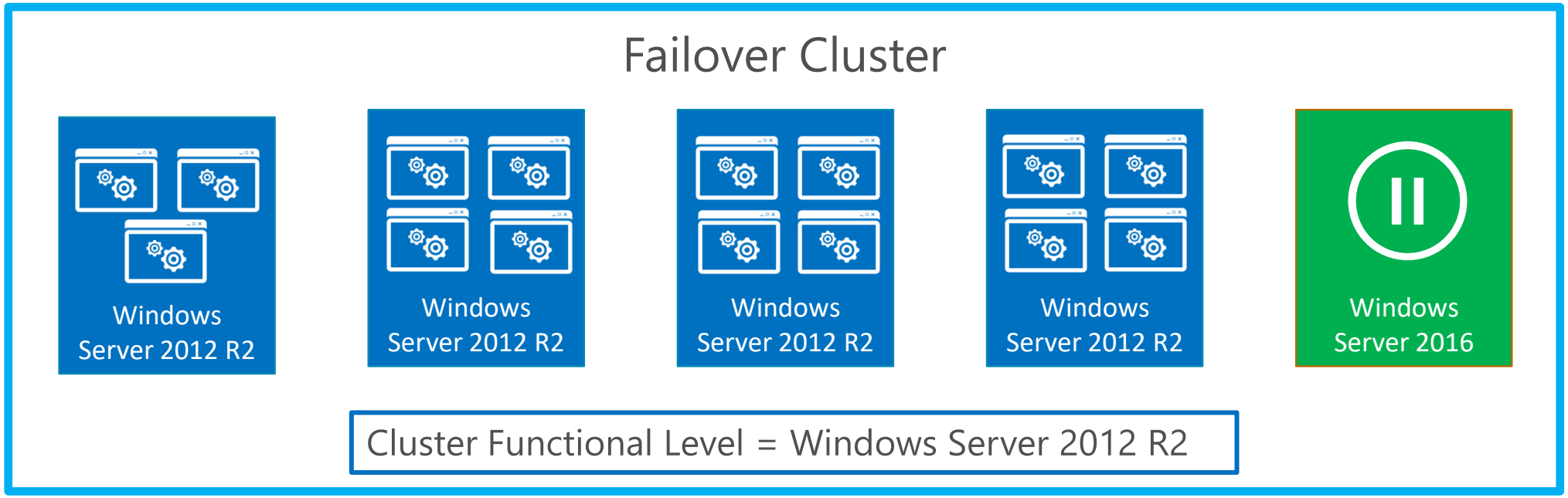


Cluster OS Rolling Upgrade: Processo

Readicionar o nó no cluster

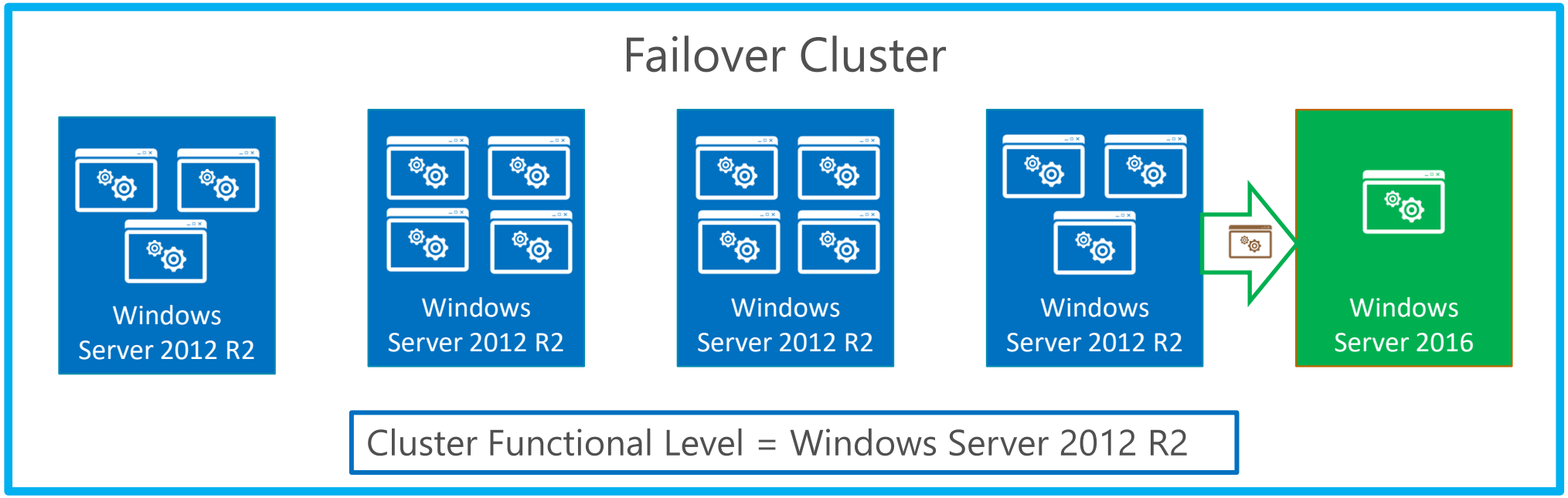
Usando UI ou PowerShell

Note que o Cluster Functional Level permanece como Windows Server 2012 R2.



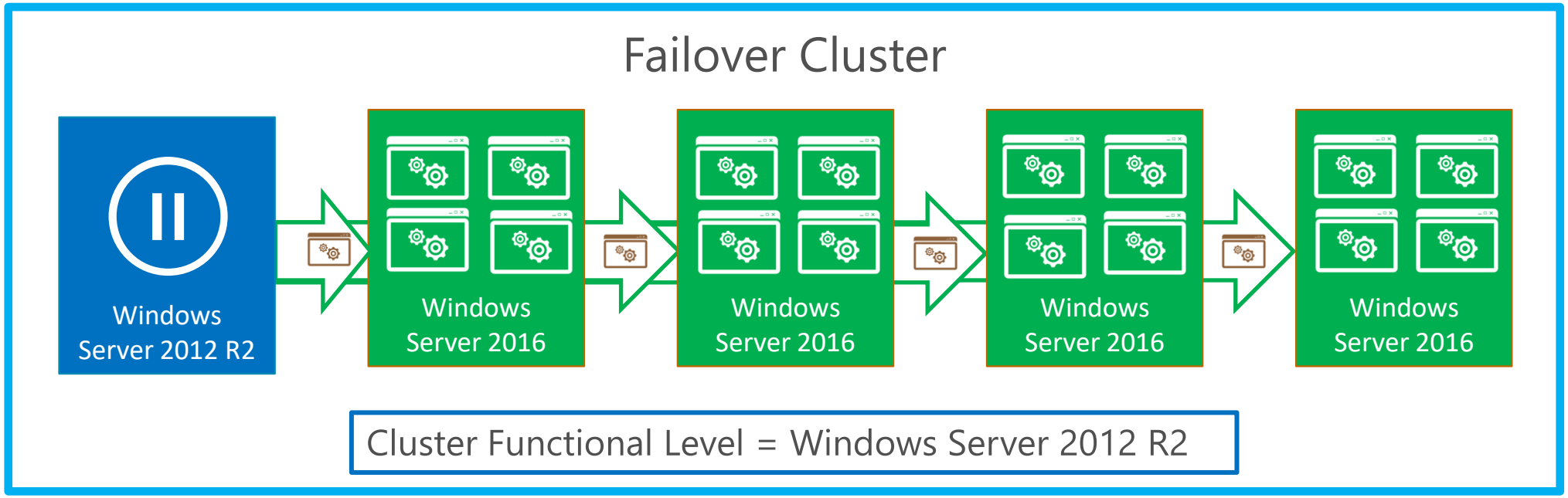
Cluster OS Rolling Upgrade: Processo

Rebalanceamento de carga



Cluster OS Rolling Upgrade: Processo

Repete-se o processo para os outros nós



Cluster OS Rolling Upgrade: Processo

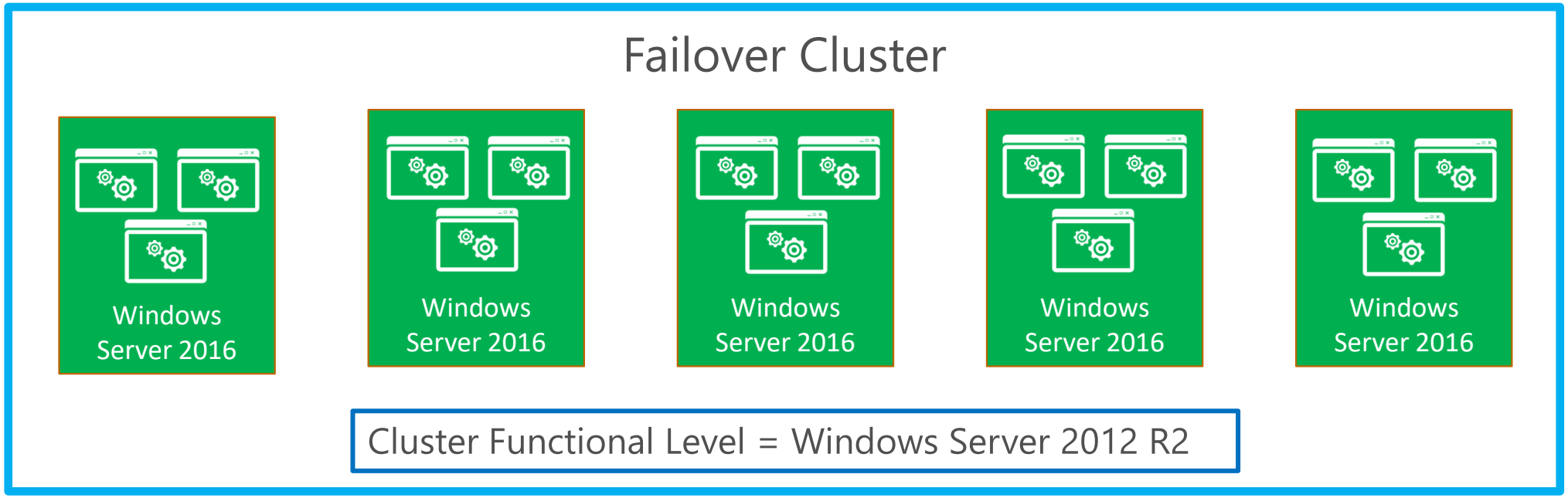
Pronto para upgrade

Note que neste momento:

O Cluster Functional Level é ainda 2012 R2.

As funcionalidades são limitadas às do Windows Server 2012 R2.

É ainda possível adicionar um nó com Windows Server 2012 R2.



Cluster OS Rolling Upgrade: Processo

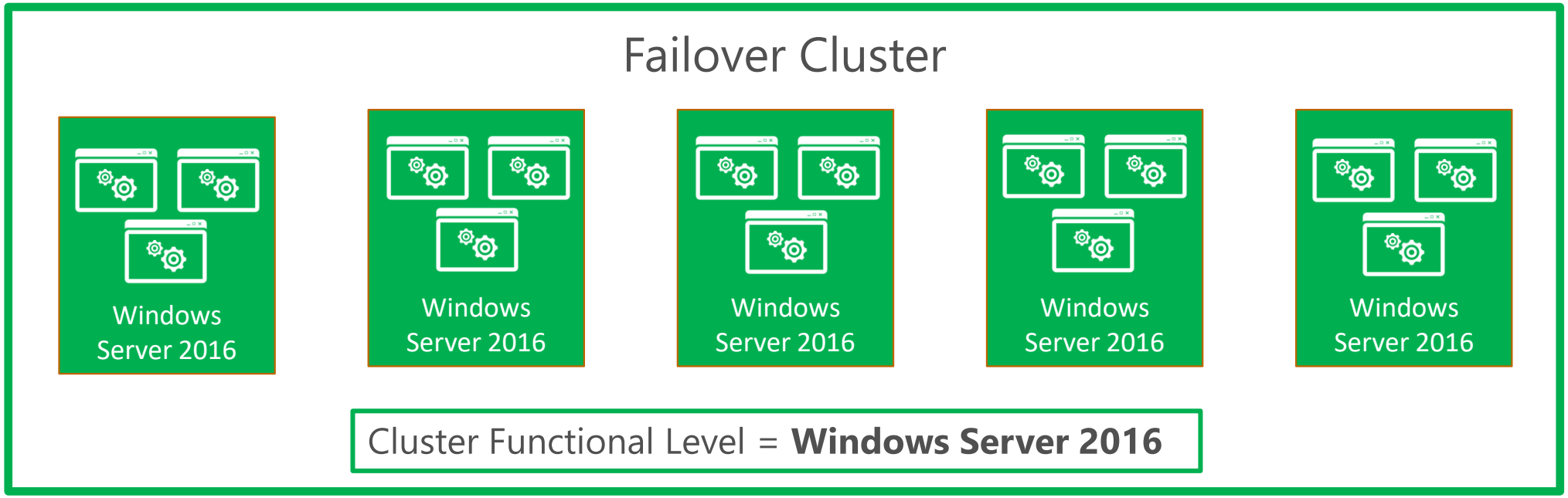
Upgrade do Functional Level para 2016

`Update-ClusterFunctionalLevel` cmdlet

Agora:

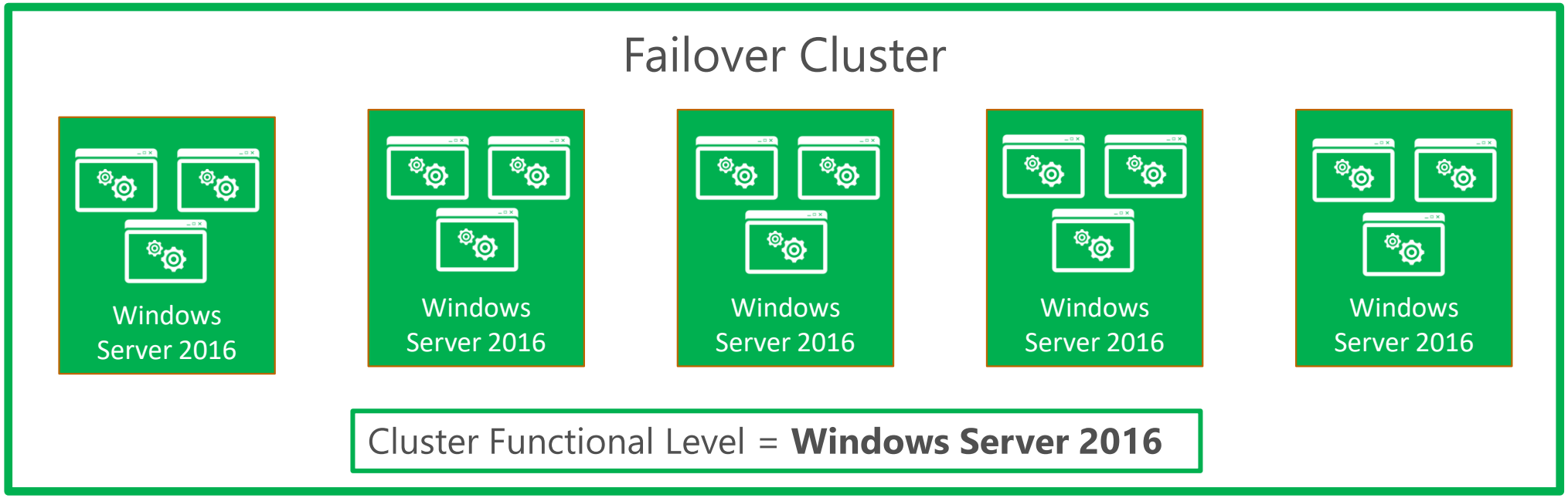
As funcionalidades do 2016 estão habilitadas.

Não é mais possível adicionar um nó com Windows Server 2012 R2.



Cluster OS Rolling Upgrade: Processo

Fim do Upgrade



Resiliência de VM: Computação

Flexibilidade

Desenhando para escalabilidade de nuvem com hardware comoditie

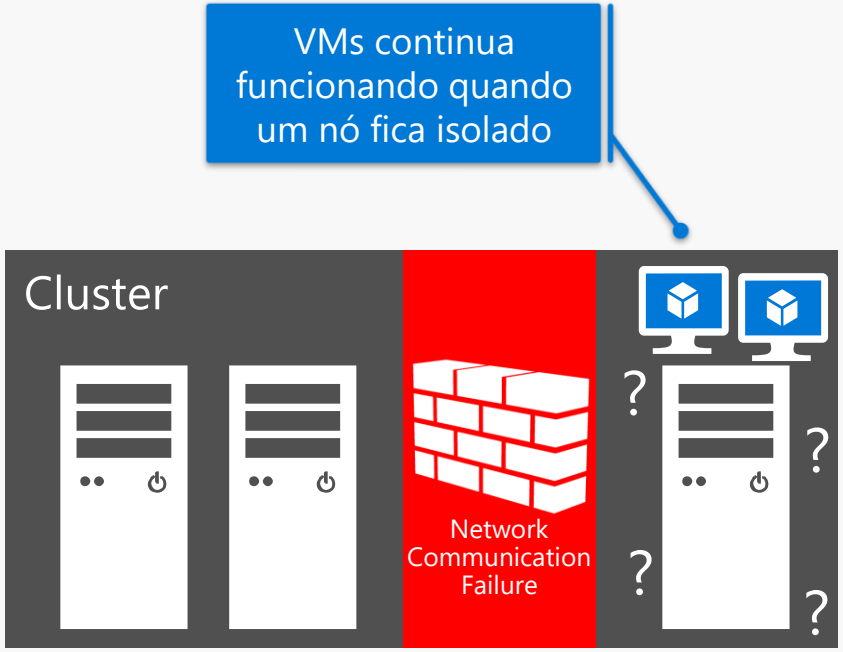
Configurável, baseado no seu SLA

Disponibilidade

VM continuam funcionando mesmo quando um nó é isolado do cluster

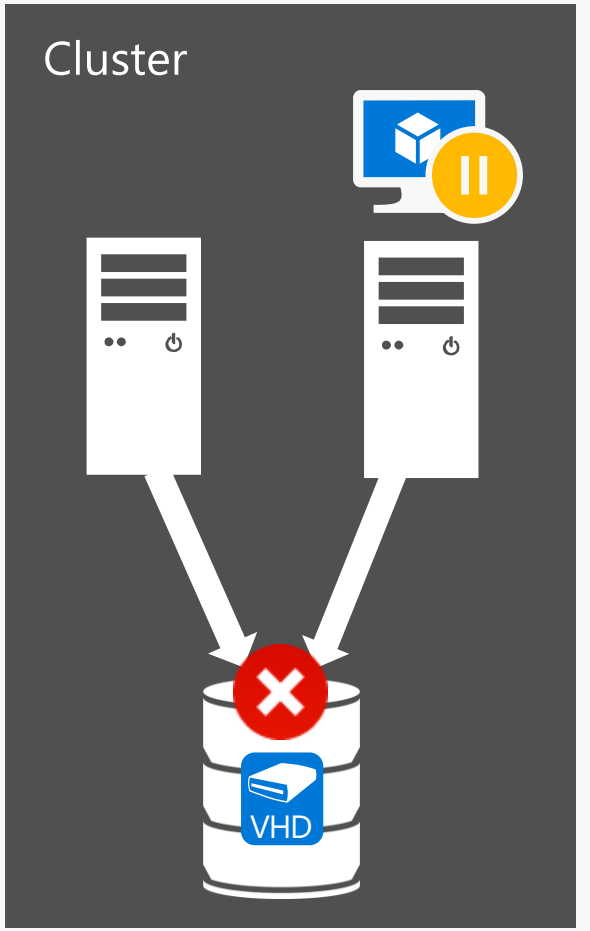
Confiabilidade

Resiliência para falhas transientes



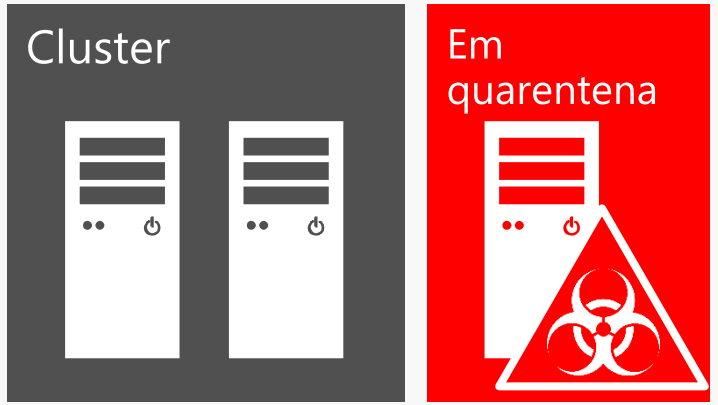
Resiliência de VM: Storage

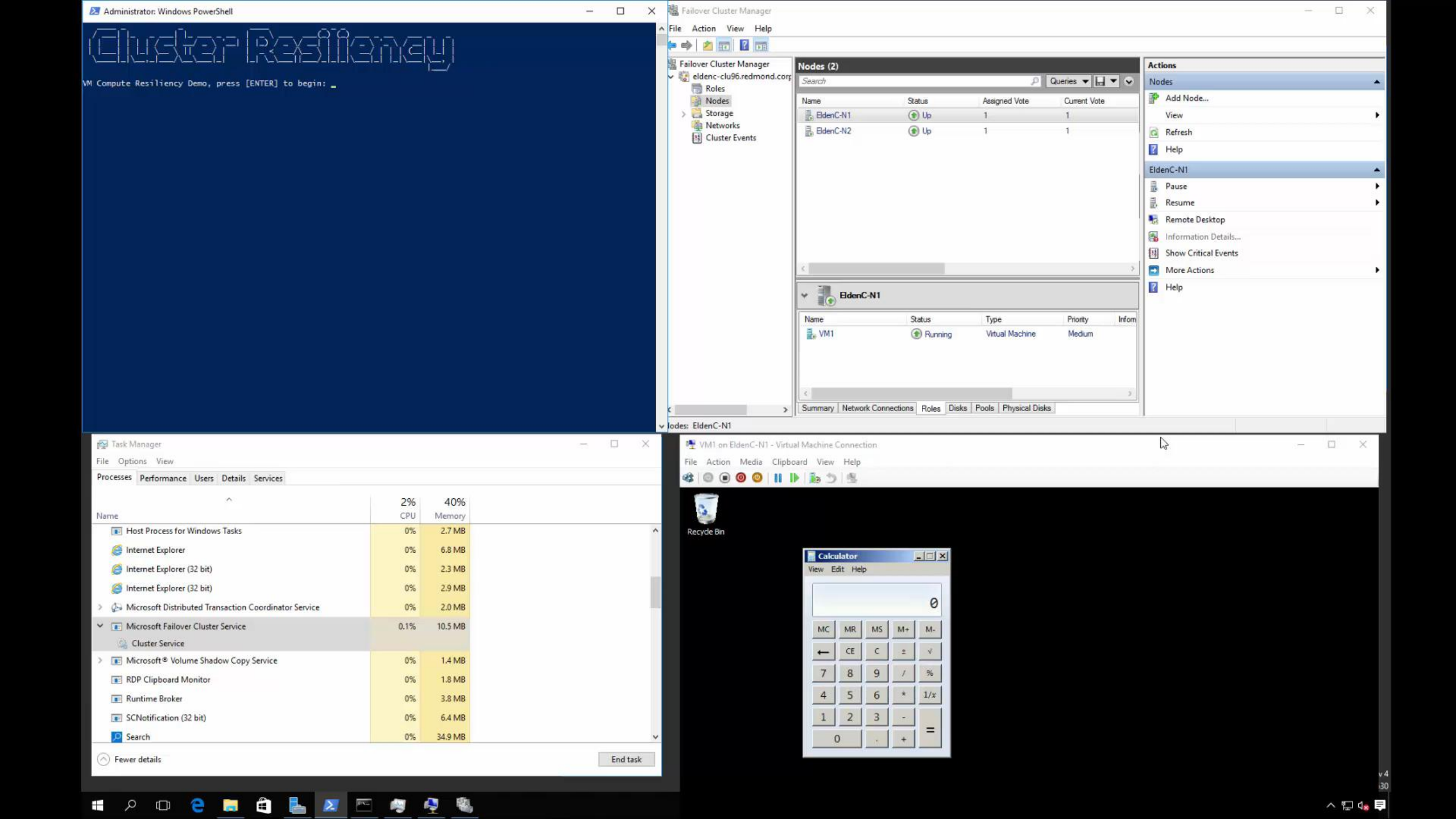
Resiliência	Desenhando para escalabilidade de nuvem com hardware comoditie Preserva a sessão da VM em um evento transiente de interrupção da storage
Visibilidade	VM é notificada rapidamente da falha Resposta rápida da VM evita problemas com blocos ou arquivos baseados na infraestrura de storage
Confiabilidade	VM é movida para estado PausedCritical e esperará a storage se recuperar



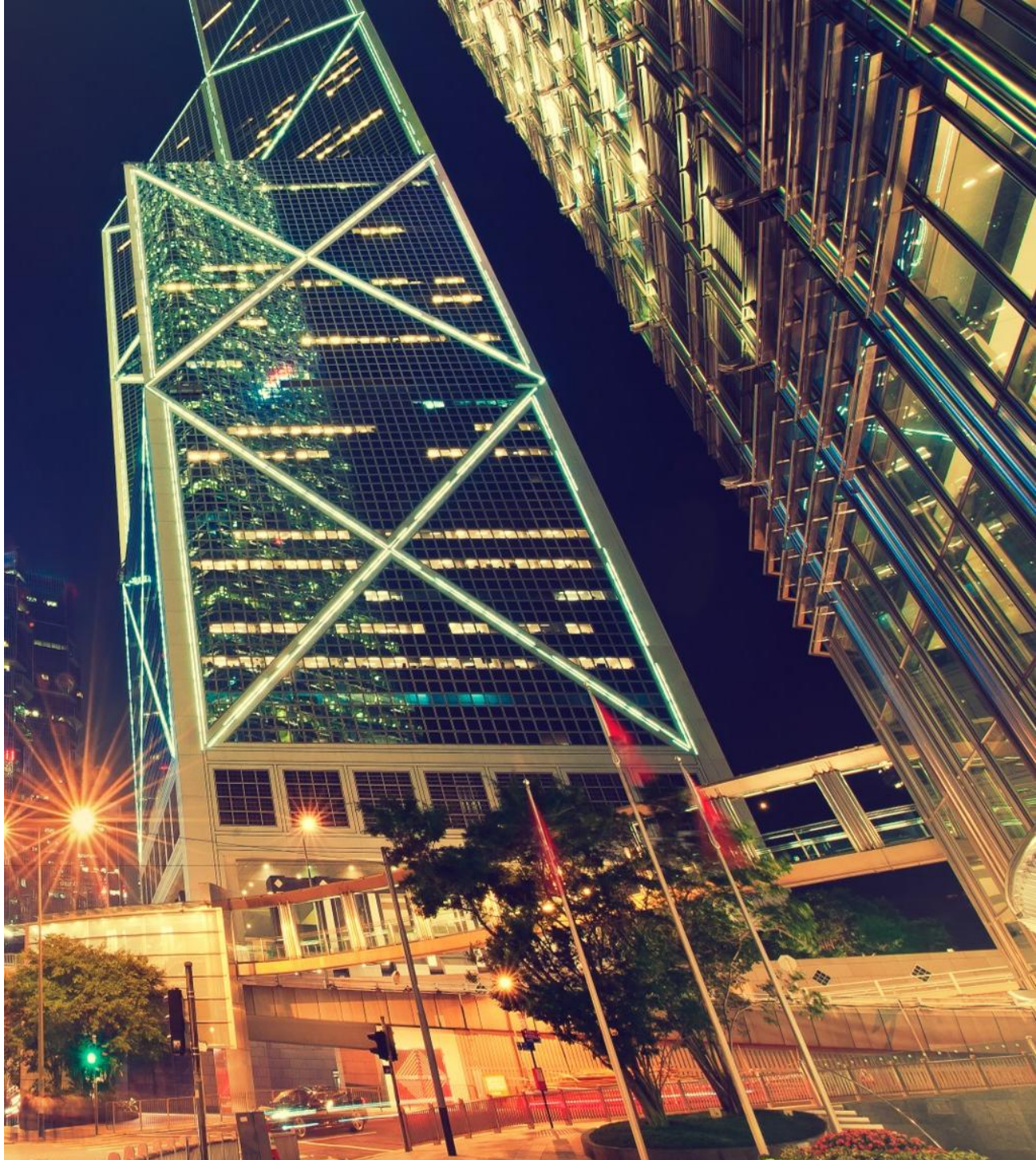
Quarantena para os “Flapping Nodes”

Proteção	Nós não saudáveis são colocados em quarentena, não permitindo o ingresso no cluster Previne problemas dos outros nós e do cluster em si
Resiliência	Um nó é colocado em quarentena depois de 3 problemas transientes que resultou no isolamento dentro de 1 hora
Controle	Máximo de 25% dos nós podem entrar em quarentena Nós não podem ingressar no cluster por 2 horas




Administrator: Windows PowerShell
Cluster Resiliency
VM Compute Resiliency Demo, press [ENTER] to begin:
Failover Cluster Manager
File Action View Help
Failover Cluster Manager
eldenc-clu96.redmond.corp
Roles
Nodes
Storage
Networks
Cluster Events
Nodes (2)
Search
Queries
Name Status Assigned Vote Current Vote
EldenC-N1 Up 1 1
EldenC-N2 Up 1 1
Actions
Nodes
Add Node...
View
Refresh
Help
EldenC-N1
Pause
Resume
Remote Desktop
Information Details...
Show Critical Events
More Actions
Help
EldenC-N1
Name Status Type Priority Infom
VM1 Running Virtual Machine Medium
Summary Network Connections Roles Disks Pools Physical Disks
Nodes: EldenC-N1
Task Manager
File Options View
Processes Performance Users Details Services
2% CPU
40% Memory
Name
Host Process for Windows Tasks 0% 2.7 MB
Internet Explorer 0% 6.8 MB
Internet Explorer (32 bit) 0% 2.3 MB
Internet Explorer (32 bit) 0% 2.9 MB
Microsoft Distributed Transaction Coordinator Service 0% 2.0 MB
Microsoft Failover Cluster Service 0.1% 10.5 MB
Cluster Service
Microsoft® Volume Shadow Copy Service 0% 1.4 MB
RDP Clipboard Monitor 0% 1.8 MB
Runtime Broker 0% 3.8 MB
SCNotification (32 bit) 0% 6.4 MB
Search 0% 34.9 MB
Fewer details
End task
VM1 on EldenC-N1 - Virtual Machine Connection
File Action Media Clipboard View Help
Recycle Bin
Calculator
View Edit Help
0
MC MR MS M+ M-
← CE C ± √
7 8 9 / %
4 5 6 * 1/x
1 2 3 - =
0 . +

Flexibilidade



O melhor suporte a Linux com Hyper-V

Suporte Amplo: Execute Red Hat, SUSE, OpenSUSE, CentOS, Ubuntu, Debian e Oracle Linux com suporte total.

Aumente a utilização: Execute *Windows* e *Linux* lado a lado, aumentando a utilização e reduzindo custos com *hardware*.

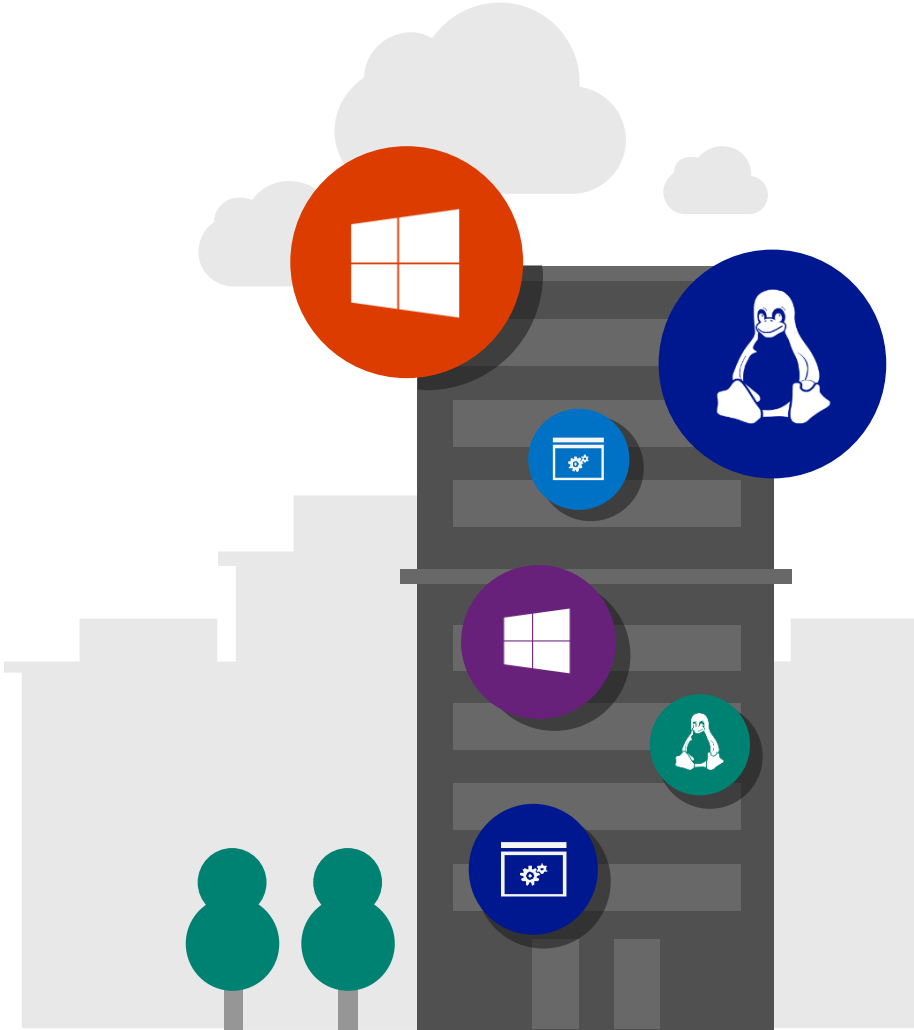
Networking melhorado: Os maiores níveis de performance de *networking* em *Linux guests* com suporte a virtual *Receive Side Scaling* (vRSS).

Melhorias no armazenamento: *Hot-add* e *online-resize* de armazenamento para uma melhor e mais flexível admnistração.

Proteção garantida: Melhor do que suporte ao backup físico, suporte ao backup para virtualizações *Linux Guest* no *Hyper-V*.

Gerenciamento Simplificado: Experiência única para gerenciamento, monitoração e operações de infraestrutura.

PowerShell support: Use a configuração *PowerShell Desired State* para especificar declarativamente a configuração dos seus servidores *Linux*.



Novos cenários de cluster

Stretched clusters (Storage Replica)

Hardware-agnostic, sincronia e replicação *block-level*, de fábrica.

Workgroup & multi-domain cluster

Crie cluster de Failover sem domínios ou dependências, incluindo nós que são membros de servidores/workgroups(que não estão em nenhum domínio) ou membros de diferentes domínios.

Cloud Witness

Aproveite o poder da Microsoft Azure Blob Storage para aumentar a resiliência da solução, sem sites adicionais.

Diagnostic improvements

Coletar e analisar dados para o diagnóstico é o primeiro passo para a solução de problemas e Windows Server 2016 vem com melhorias que tornam esse processo mais fácil e rápido.

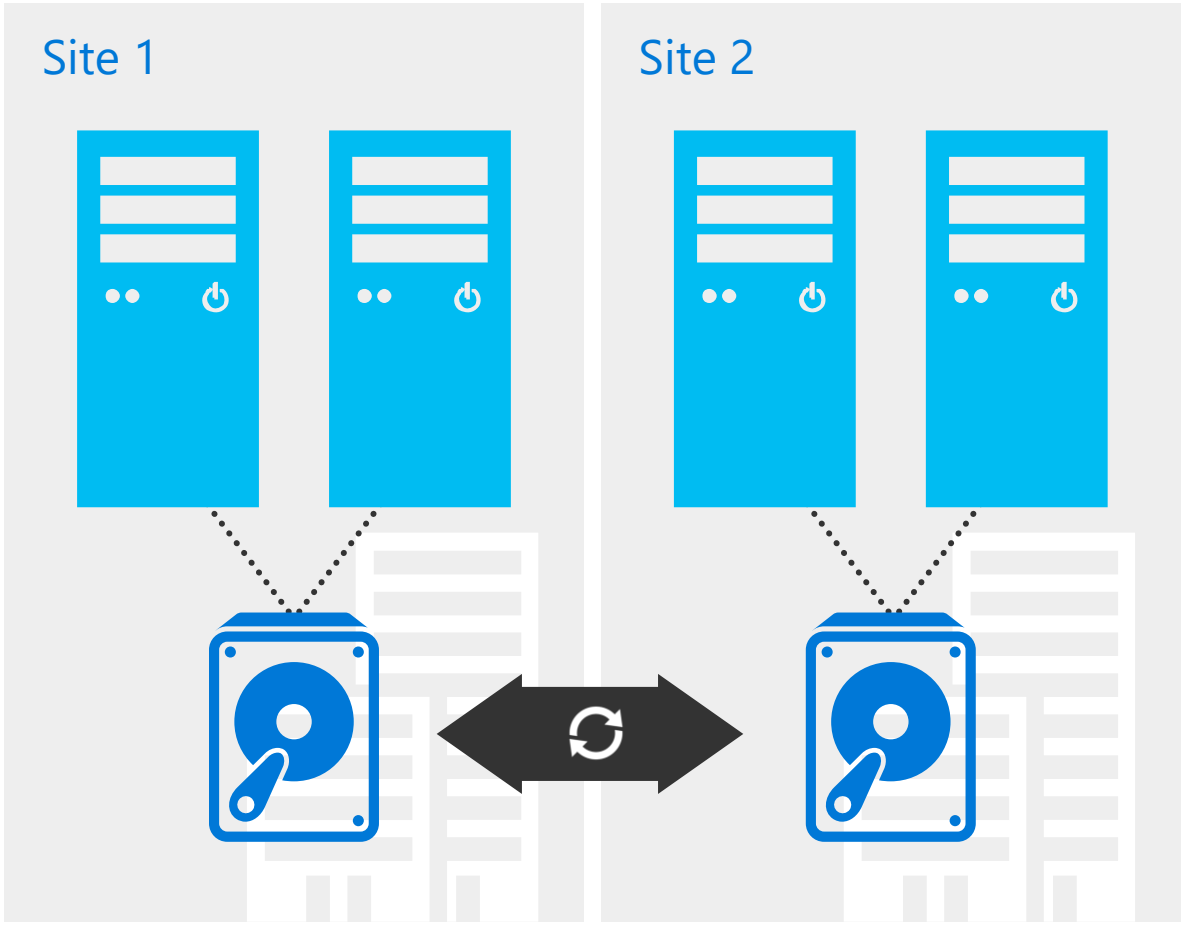
Stretched clusters (Storage Replica)

Replicação sincronizada: Armazenamento agnóstico e espelhado de dados em locais físicos com volumes consistente com travamento garantindo nenhuma perda de dados no nível de volume.

Maior resiliência: Debloqueie novos cenários para *metro-distance clusters,* cluster de recuperação de desastres e *stretch failover clusters* para alta disponibilidade automatizada.

Flexibilidade: Servidor a servidor, cluster a cluster e cluster estendido. Discos locais, Storage Spaces Direct, discos com cluster. NTFS, REFS, CSVFS. TCP, RDMA. Síncronos ou a Assíncrono.

Streamlined management: Gerenciamento gráfico para cada nó individuais e clusters através do Cluster Manager e Azure Site Recovery. Suporte total a PowerShell e SMAPI.



Multi-site clustering

Cluster failover automático entre sites

Multi-site cluster

Cluster único, espalhado entre multiplos sites, connectado por infraestrutura e redes de alta velocidade.

Workload e Storage agnostic

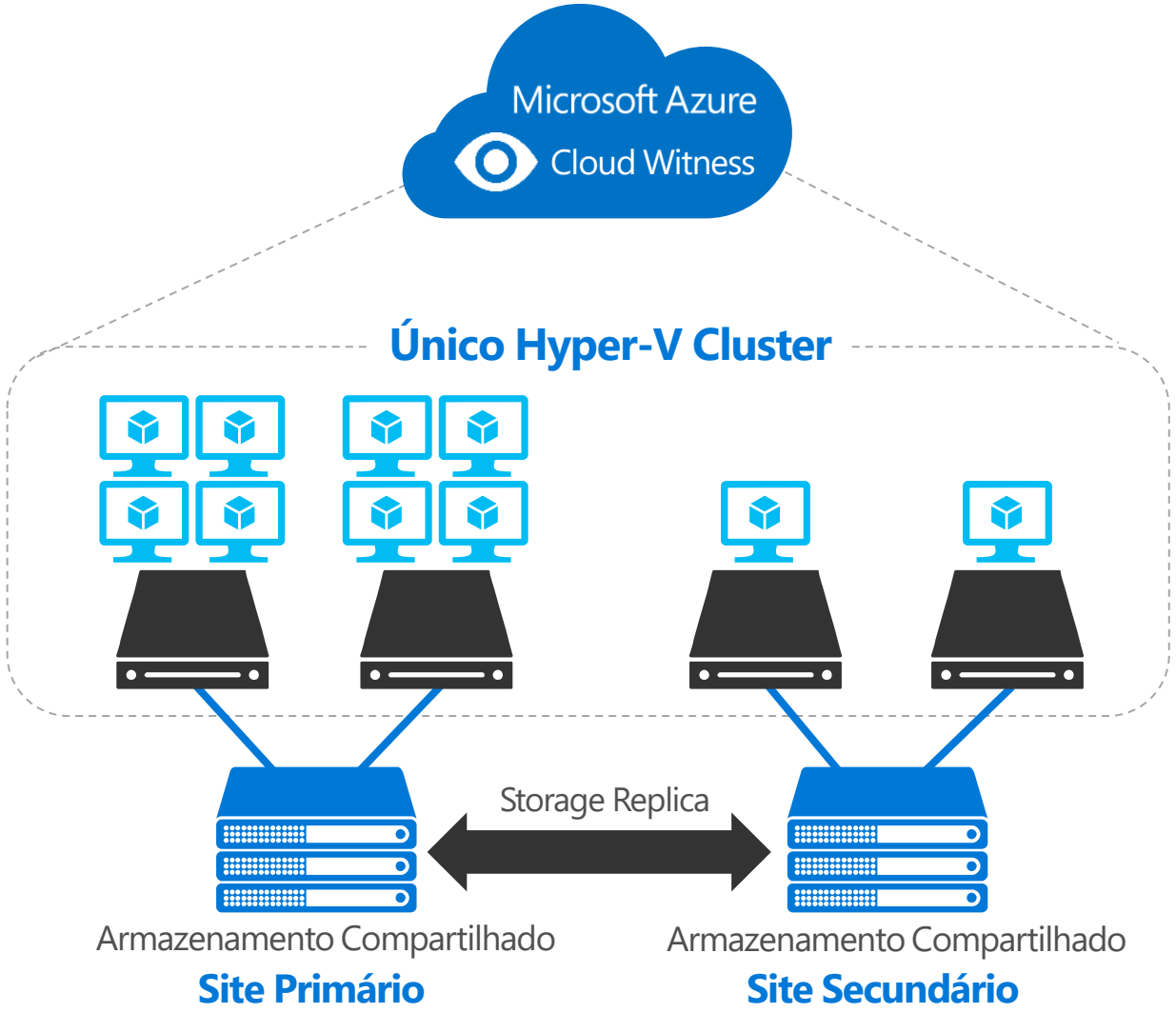
Utiliza armazenamento com replicação no volume-level entre armazenamentos de qualquer tipo. Executa workloads agnósticos.

Cloud Witness

Aproveite o poder da Microsoft Azure para aumentar a resiliência da solução, sem sites adicionais. Utilizando o Azure Blob Storage como um ponto de arbitragem para ajudar a atingir o quorum caso um site falhe.

Automated

Com replicação síncrona, no caso de uma interrupção local, um cluster multi-site pode providenciar automático *failover*, para objetos com baixo tempo de recuperação, sem perda de dados no nível do sistema de arquivos.



Recursos

Como começar a usar o Windows Server 2016

Baixe a versão de avaliação

- https://aka.ms/ws16-download

Obtenha a documentação

- https://aka.ms/ws16-br-doc

Assista aos vídeos técnicos mais detalhados

- https://aka.ms/ws16-br-doc

Veja esses slides

- https://aka.ms/o-futuro-dos-servidores

Mantenha contato conosco no Twitter ou nos blogs do Windows Server

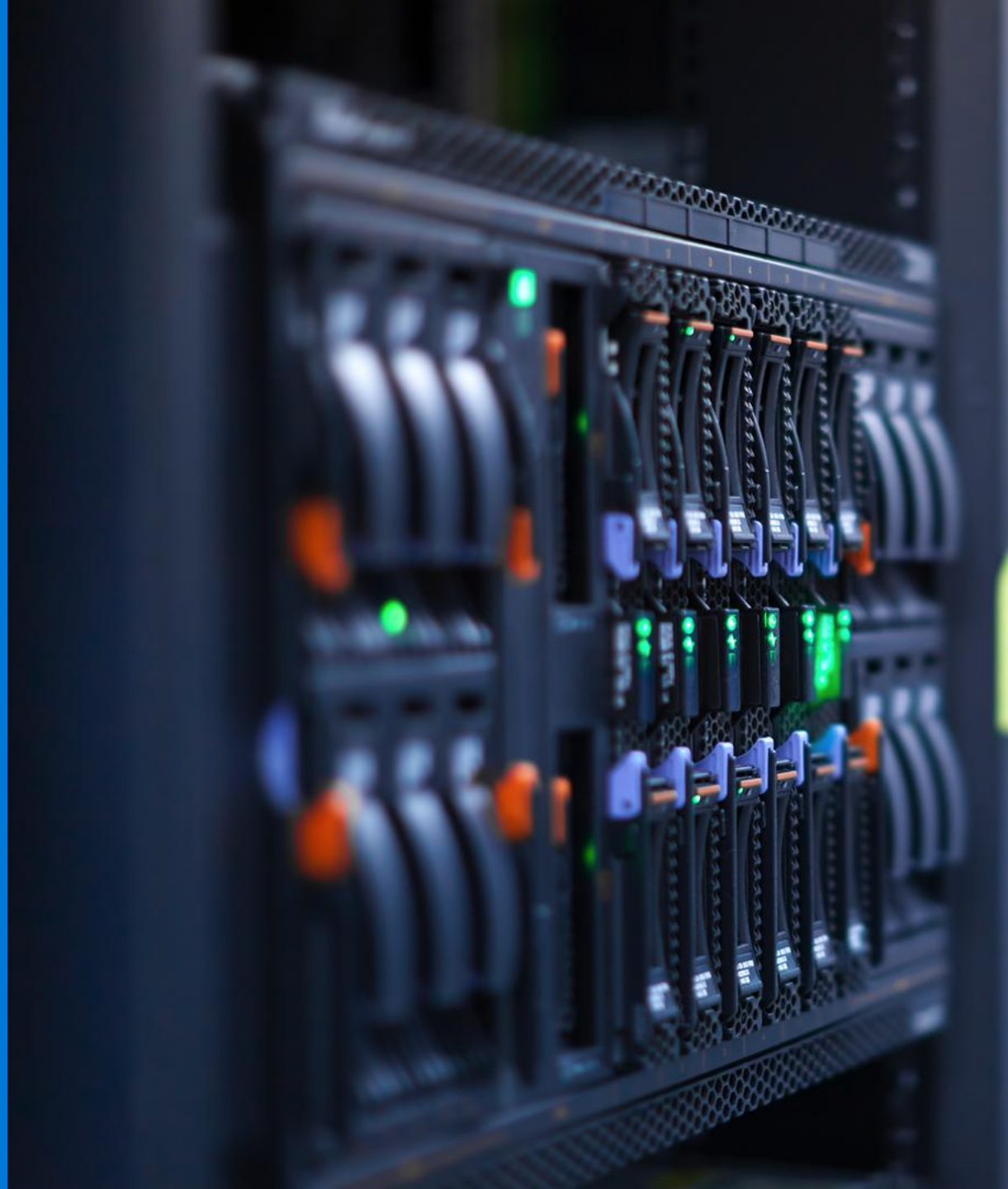
www.Microsoft.com/WindowsServer2016

Redes e Armazenamento Definidos por Software

Speaker

cargo

Microsoft

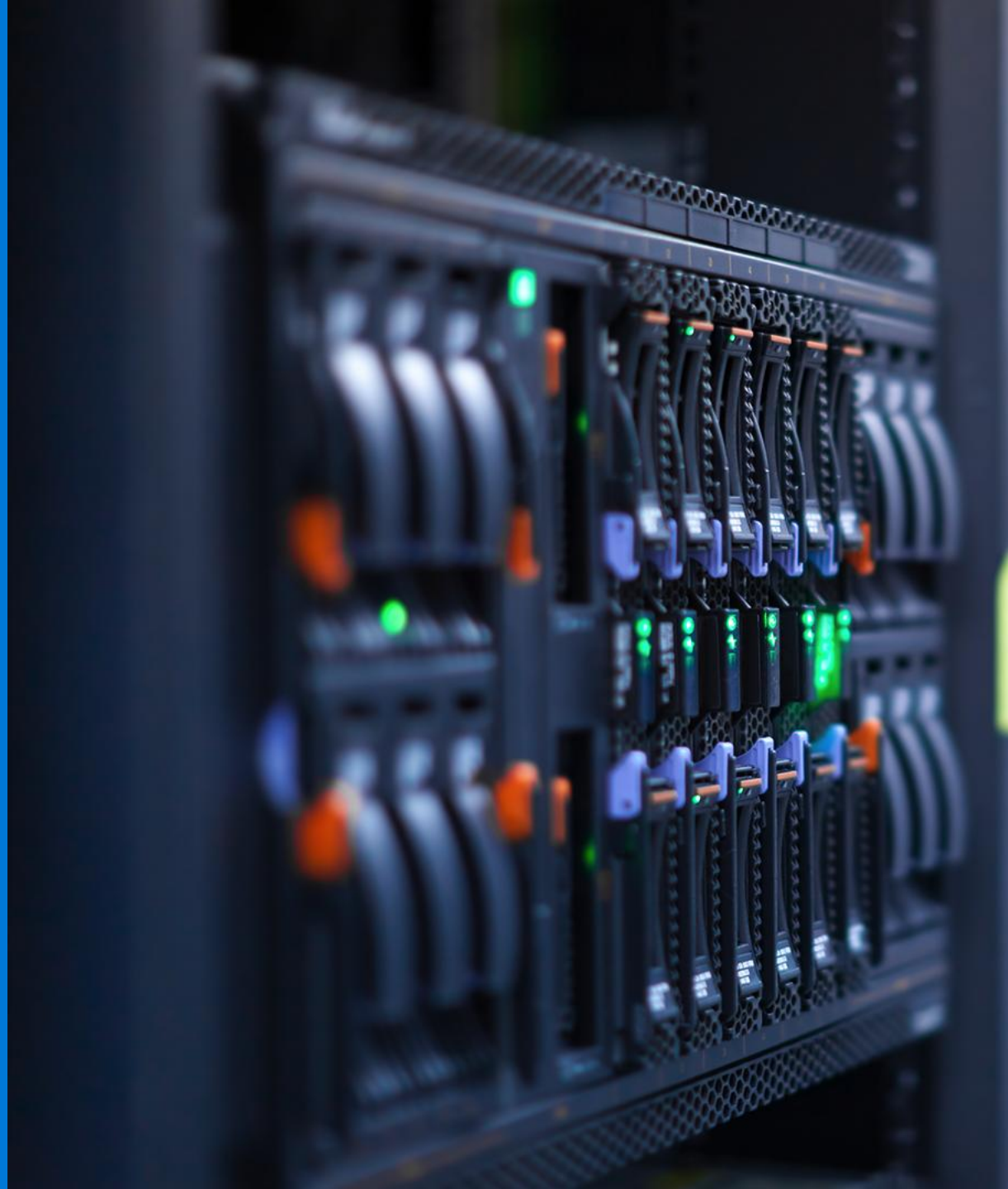


Rede Definida por Software (SDN)

Speaker

Cargo

Microsoft

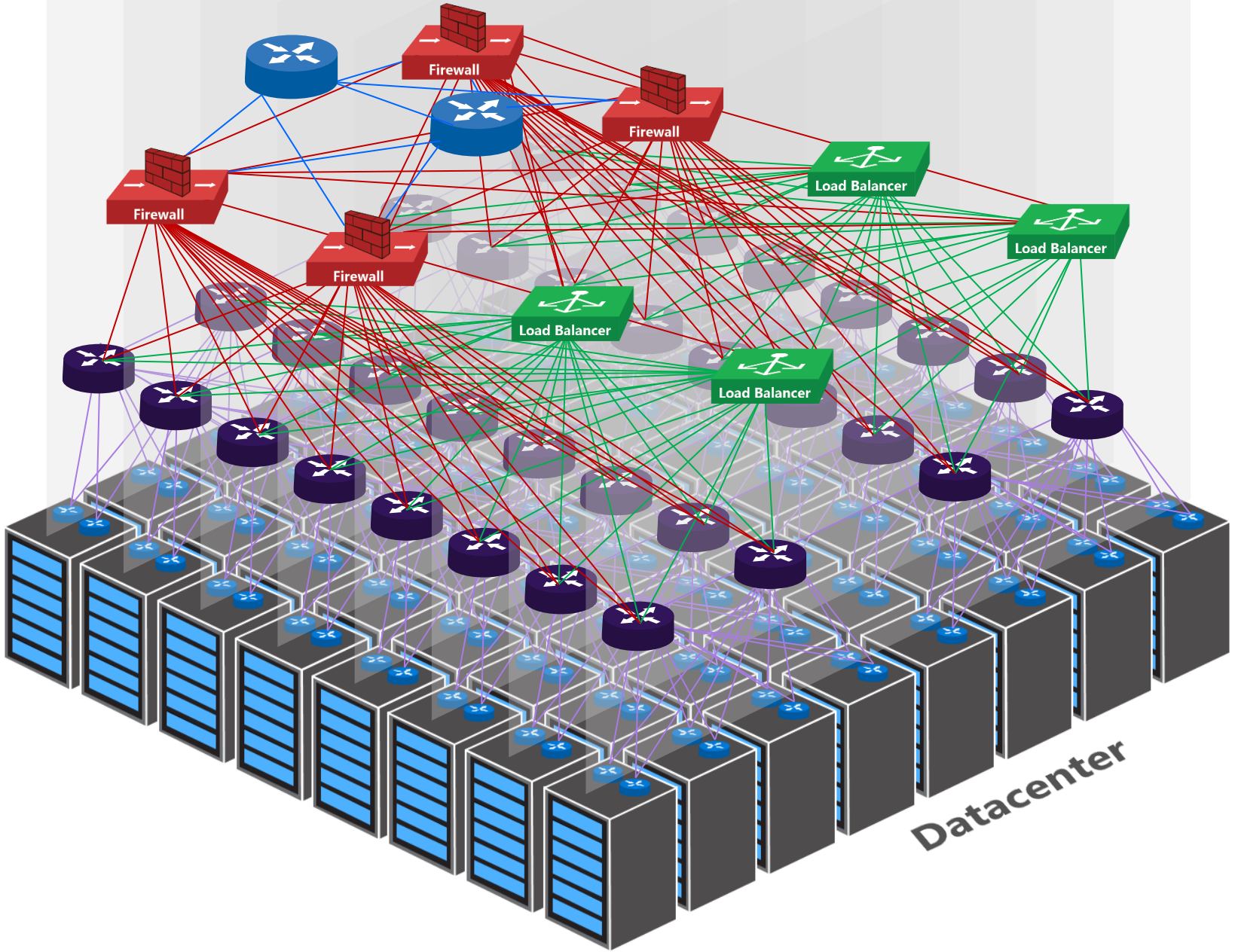


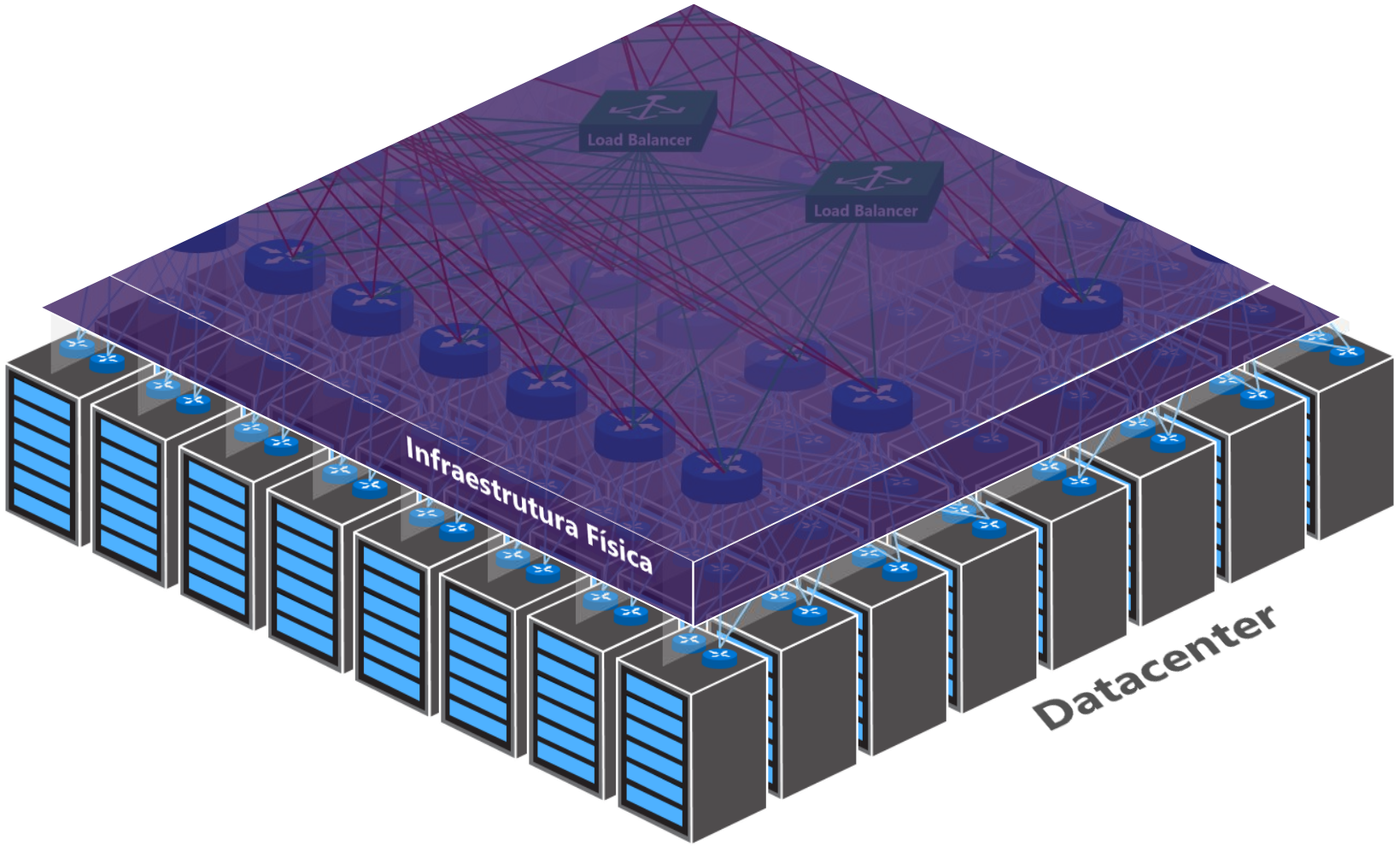
Edge Routers

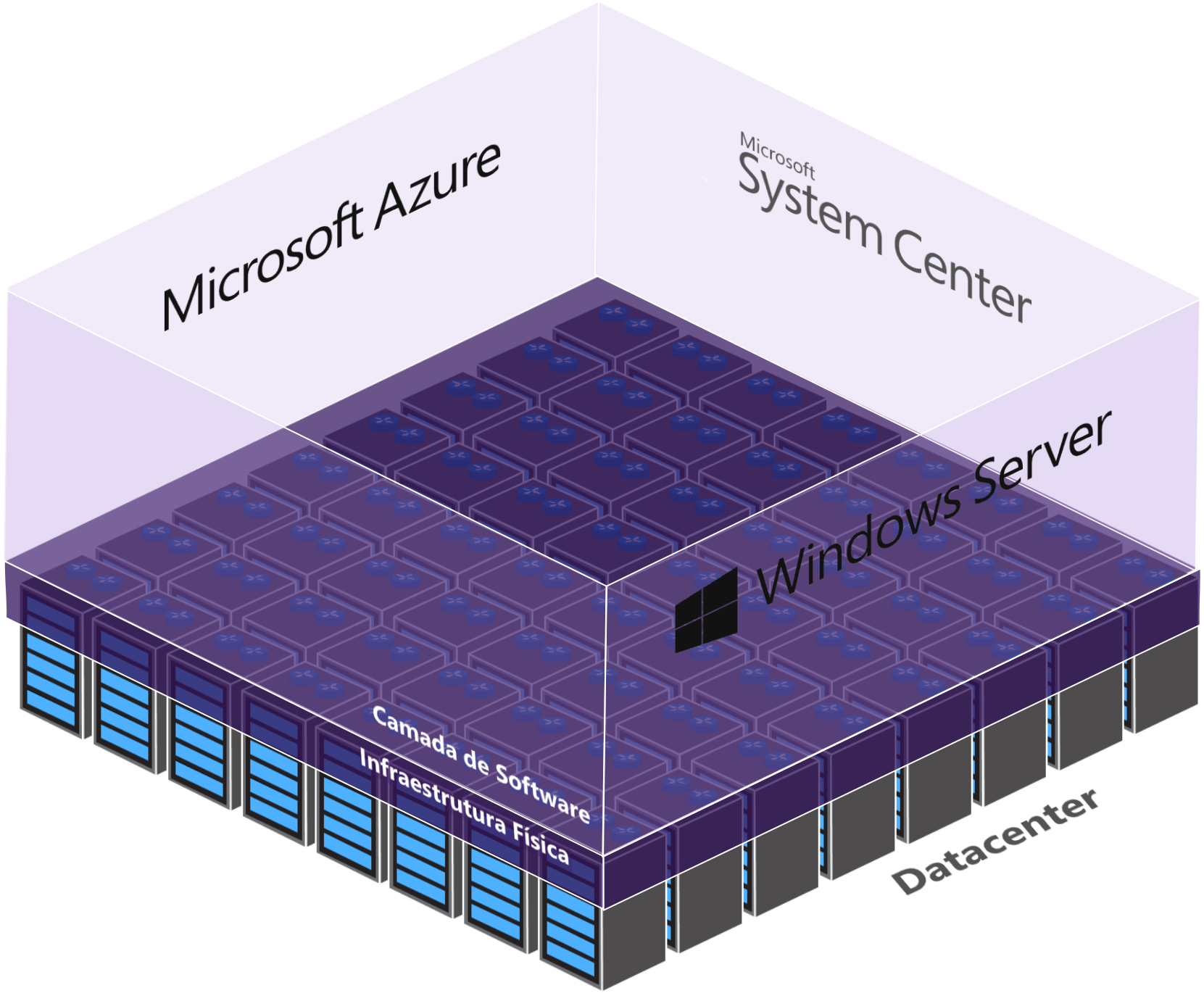
Fixed-Function
Physical Appliances

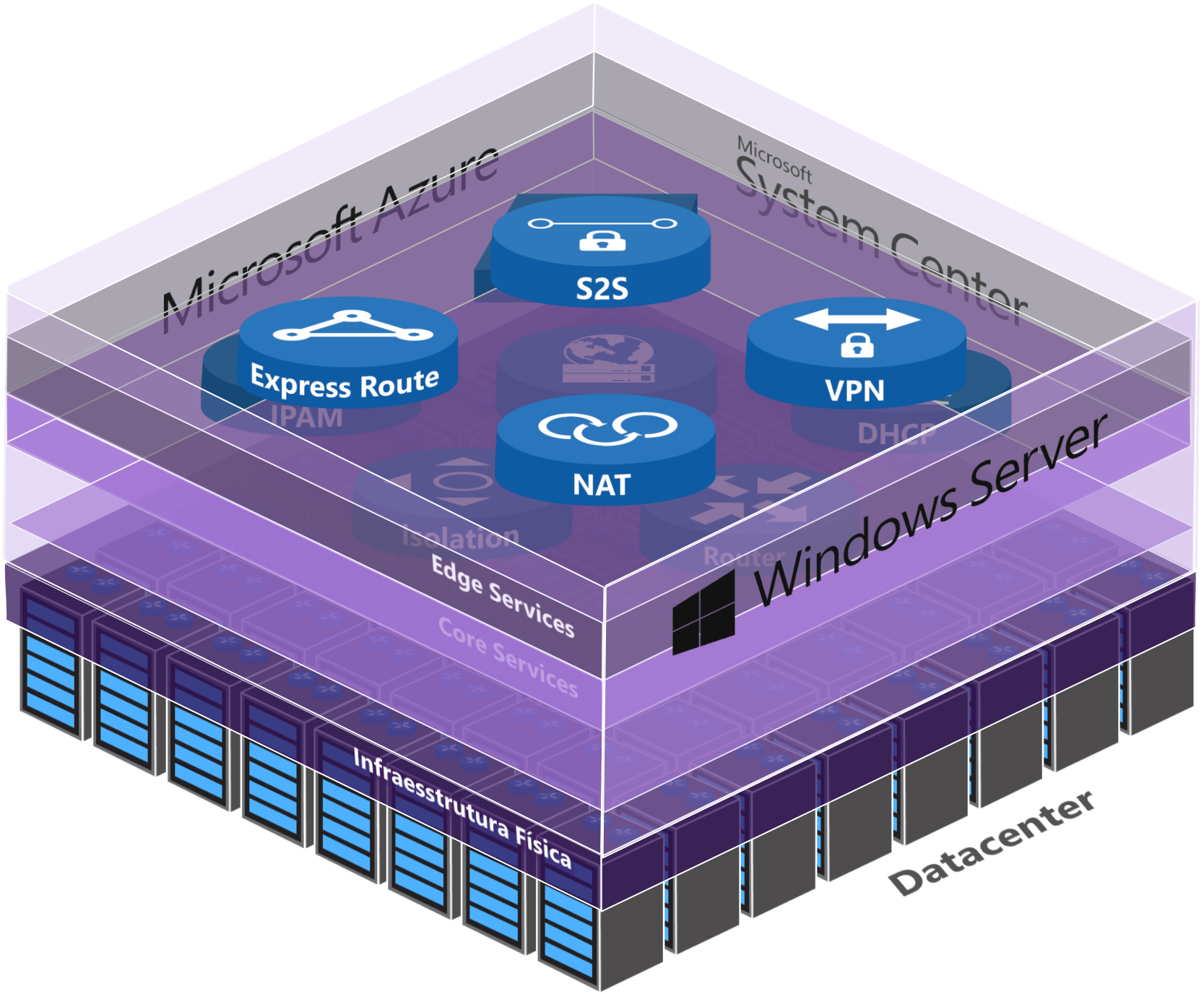
Spine Switches/Routers

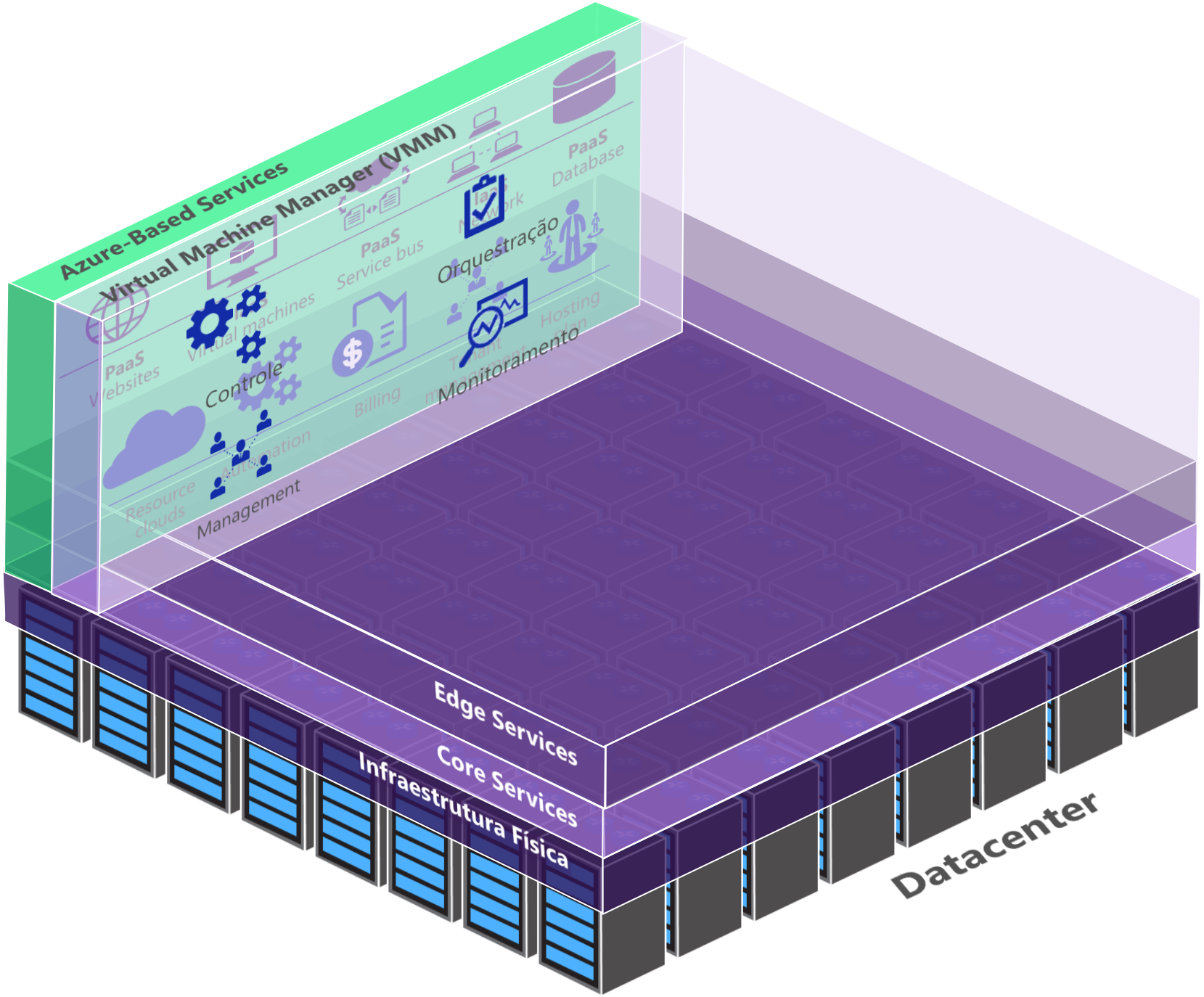
Compute/Storage
& TOR Switches



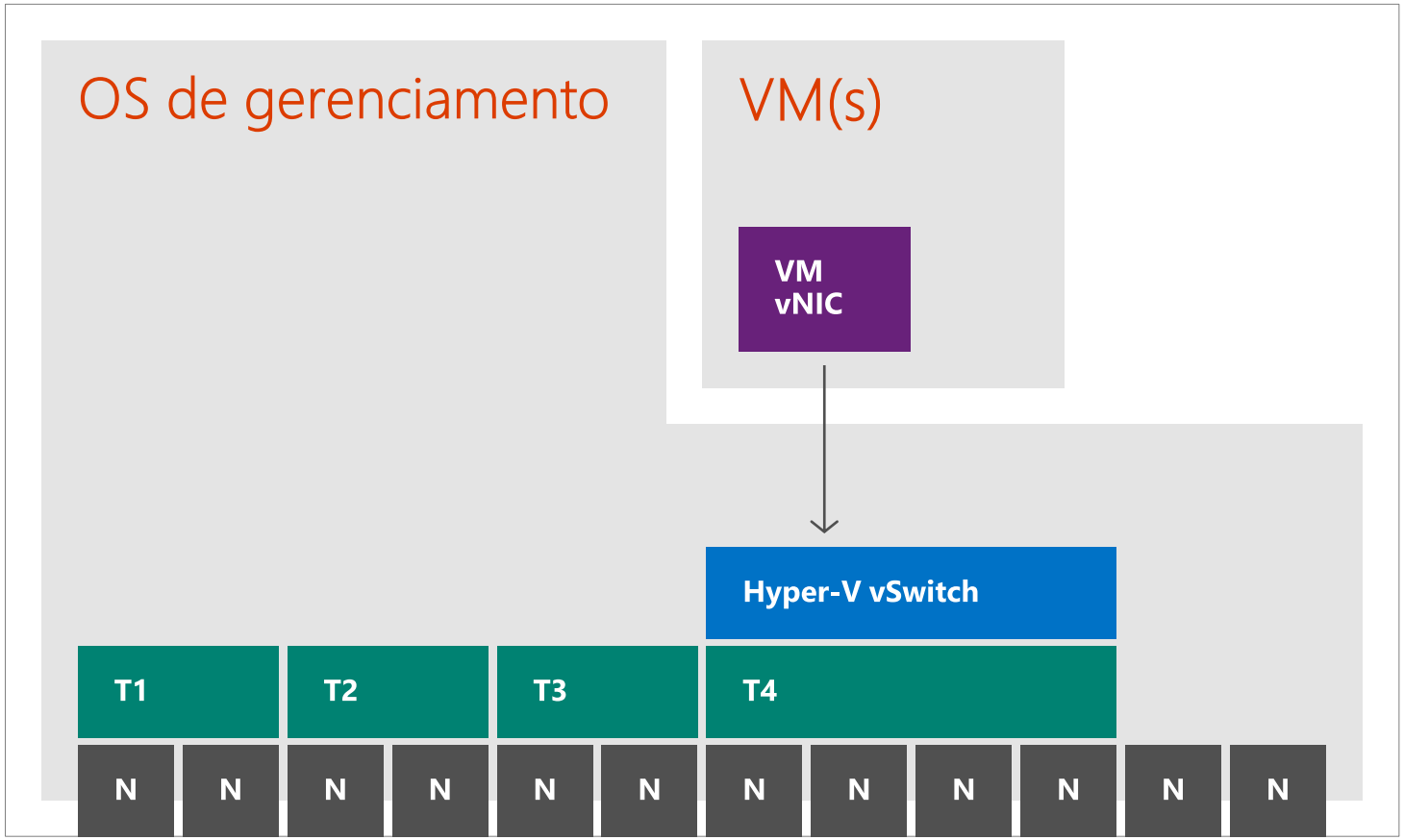

Load Balancer
Load Balancer
Infraestrutura Física
Datacenter


Microsoft Azure
Microsoft System Center
Windows Server
Camada de Software
Infraestrutura Física
Datacenter


Microsoft Azure
Microsoft System Center
S2S
Express Route
VPN
NAT
IPAM
DHCP
Isolation
Router
Edge Services
Core Services
Windows Server
Infraesstrutura Física
Datacenter


Azure-Based Services
Virtual Machine Manager (VMM)
PaaS
Database
PaaS
Service bus
Orquestração
PaaS
Websites
Virtual machines
Controle
Billing
Hosting
Monitoramento
Resource
clouds
Management
Edge Services
Core Services
Infraestrutura Física
Datacenter

Redes Convergentes: cenário atual



Host Hyper-V tradicioanal (não convergente)
Examplo 12 x 1GbE NICs

N NIC físico

Tx Team

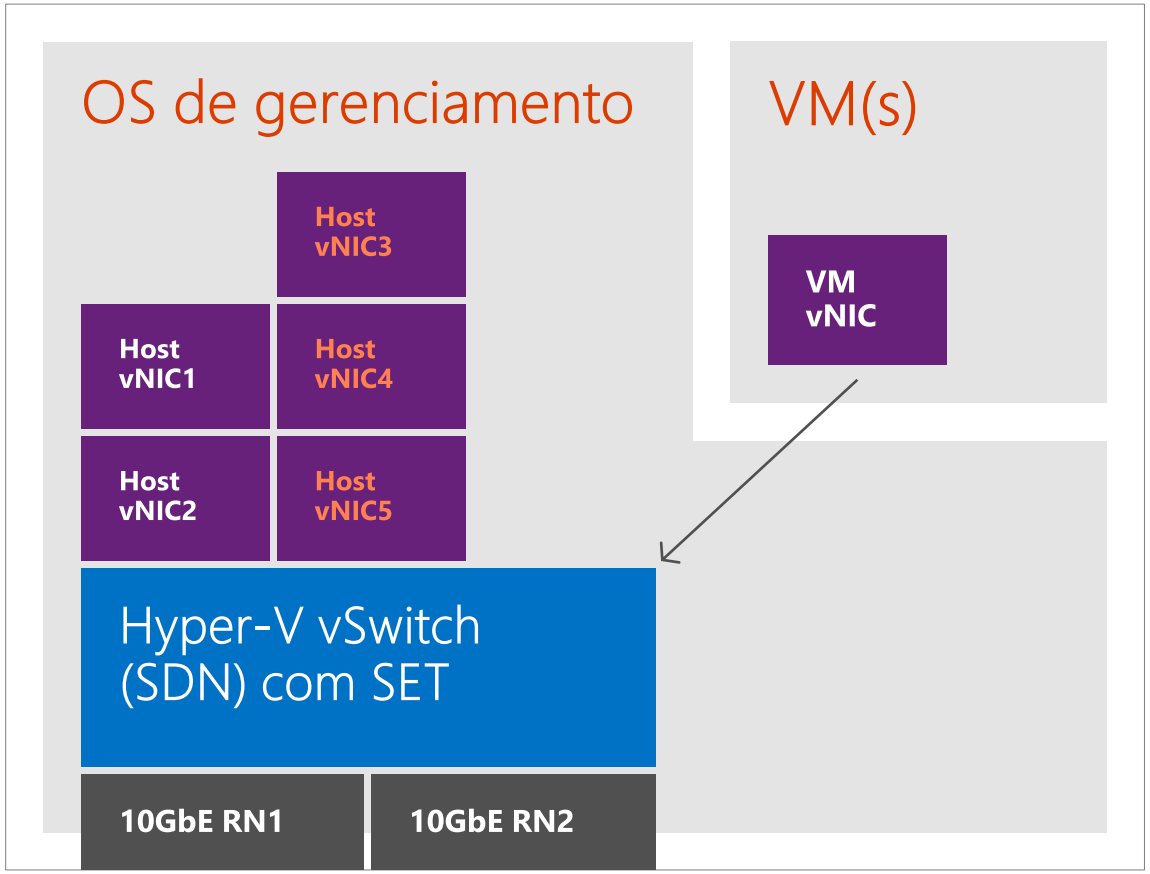
Cada host precisa de redes separadas para:

Gerenciamento (Agentes, RDP)
Cluster (CSV)
Live Migration
Storage (2 Subnets com SMB/SAN)
Tráfico de VMs

Resultado:

Muitos cabos, **muitas** portas, **muitos** switches, banda **considerável**.

WS 2016: Redes Convergentes com RDMA



WS2016 Hyper-V Host (with converged)
Example 2 x 10GbE RDMA NICs

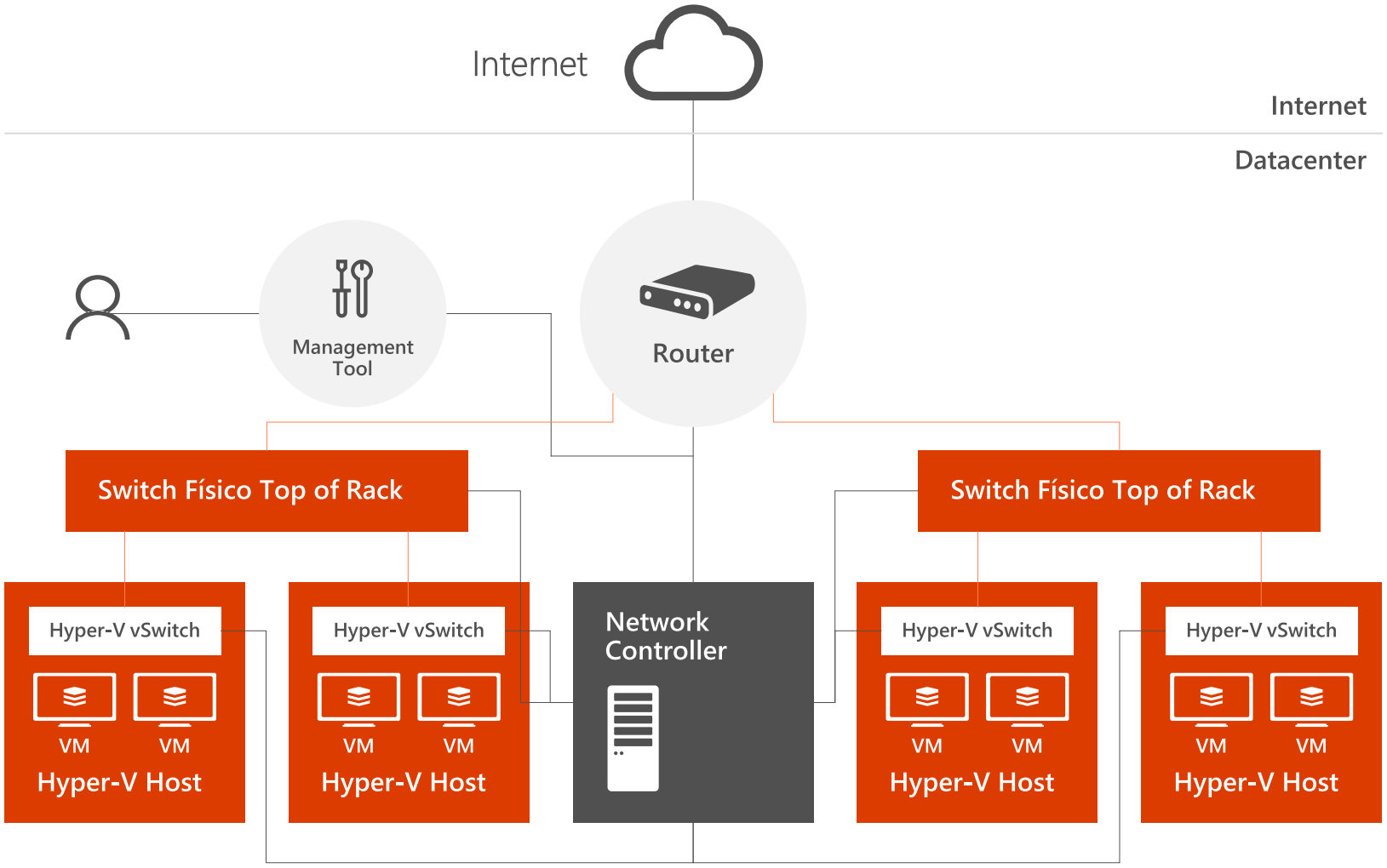
Host vNIC1	Management Traffic
Host vNIC2	Cluster
Host vNIC3	Live Migration
Host vNIC4	Storage Subnet 1
Host vNIC5	Storage Subnet 2

Use QoS para dividir a banda entre diferentes redes

```
Set-VMNetworkAdapter –ManagementOS –
Name “Management”
–MinimumBandwidthWeight 5
```

Host vNICs podem co-existir em diferentes VLANs

Network Controller



Único ponto de automação para **gerenciar, configurar, monitorar e realizar** troubleshoot da rede virtual ou física

Network Controller overview

Alta disponibilidade e escalabilidade

Southbound API

Discovery de dispositivos, detecção de configurações e outras informações sobre a rede.

Provê caminhos para enviar informação para Infraestrutura de rede, como mudanças de configurações efetuadas.

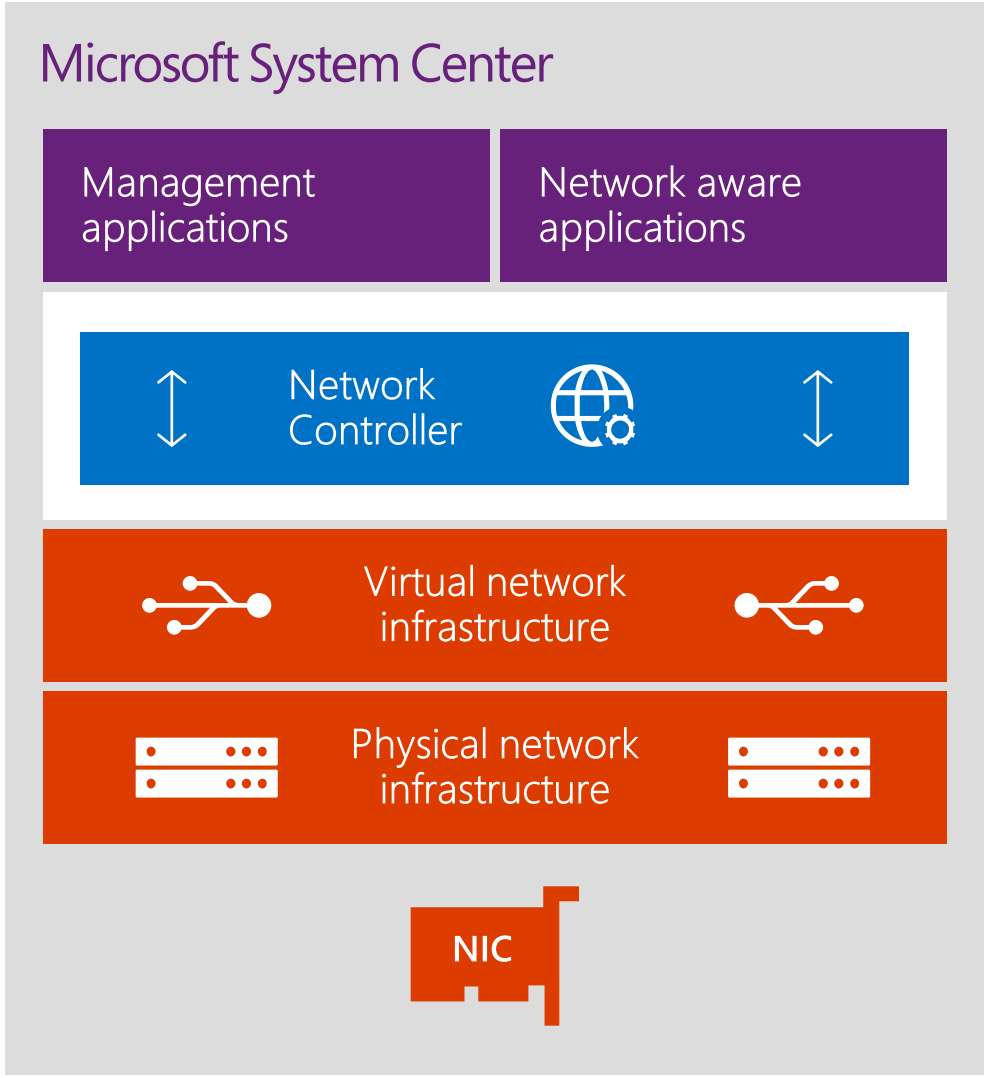
Conecta via OMI

Northbound API (Interface REST)

Monitore, configure e execute troubleshooting de rede através desta interface usando Windows PowerShell, REST, SCVMM, SCOM etc.

Gerencia

Hyper-V VMs & vSwitches, switches físicos, roteadores físicos, software de firewall, gateways de VPN, RRAS, load balancers...



Network Controller: Funcionalidades

Fabric Network Management

IP subnets

VLANS

L2 and L3 switches

Host NICs

Firewall Management

Allow/deny rules

East/West & North/South

Firewall rules plumbed into vSwitch port of VMs

Rules for incoming/outgoing traffic

Log traffic allowed/denied

Network Topology

Automatic discovery of network elements and relationships

Service Chaining

Rules for redirecting traffic to one or more virtual appliances

Software Load Balancer

Centralized configuration of SLB policies

Network Monitoring

Physical and virtual

Active network data: Network loss, latency, baselines, deviations

Fault localization

Element data: SNMP polling and traps

Limited set of critical data via public Management Info Bases (MIB) i.e., link state, system restarts, BGP peer status

Device (switch, router) and Device Group (racks, subnets etc.) health

Gathers network loss, latency, device CPU/memory usages, link utilization, and packet drops

Impact analysis: Overlay networks affected by underlying faulty physical networks using topology information to determine vNext footprint and health

System Center Operations Manager integration for health and statistics

Virtual Network Management

Deploy Hyper-V Network Virtualization

Deploy Hyper-V Virtual Switch

Deploy Virtual Network Adaptors to VMs

Store and distribute virtual network policies

Supports NVGRE and VXLAN

Windows Server Gateway Management

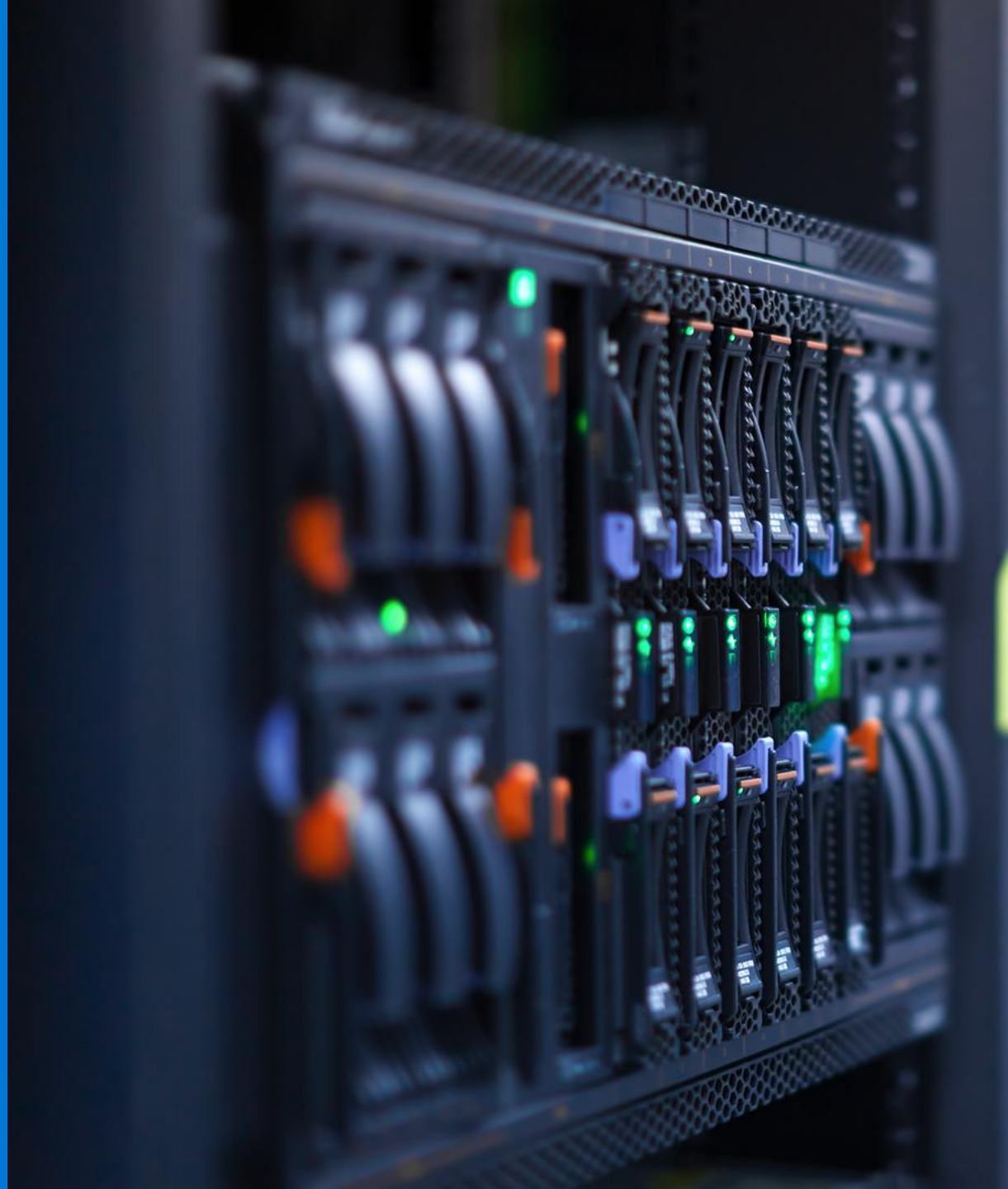
Deploy, configure & manage WSGs -> host & VMs

S2S VPN with IPsec, S2S VPN with GRE

P2S VPN, L3 forwarding, BGP routing

Load balancing of S2S and P2S connections across gateway VMs + logging config/state changes

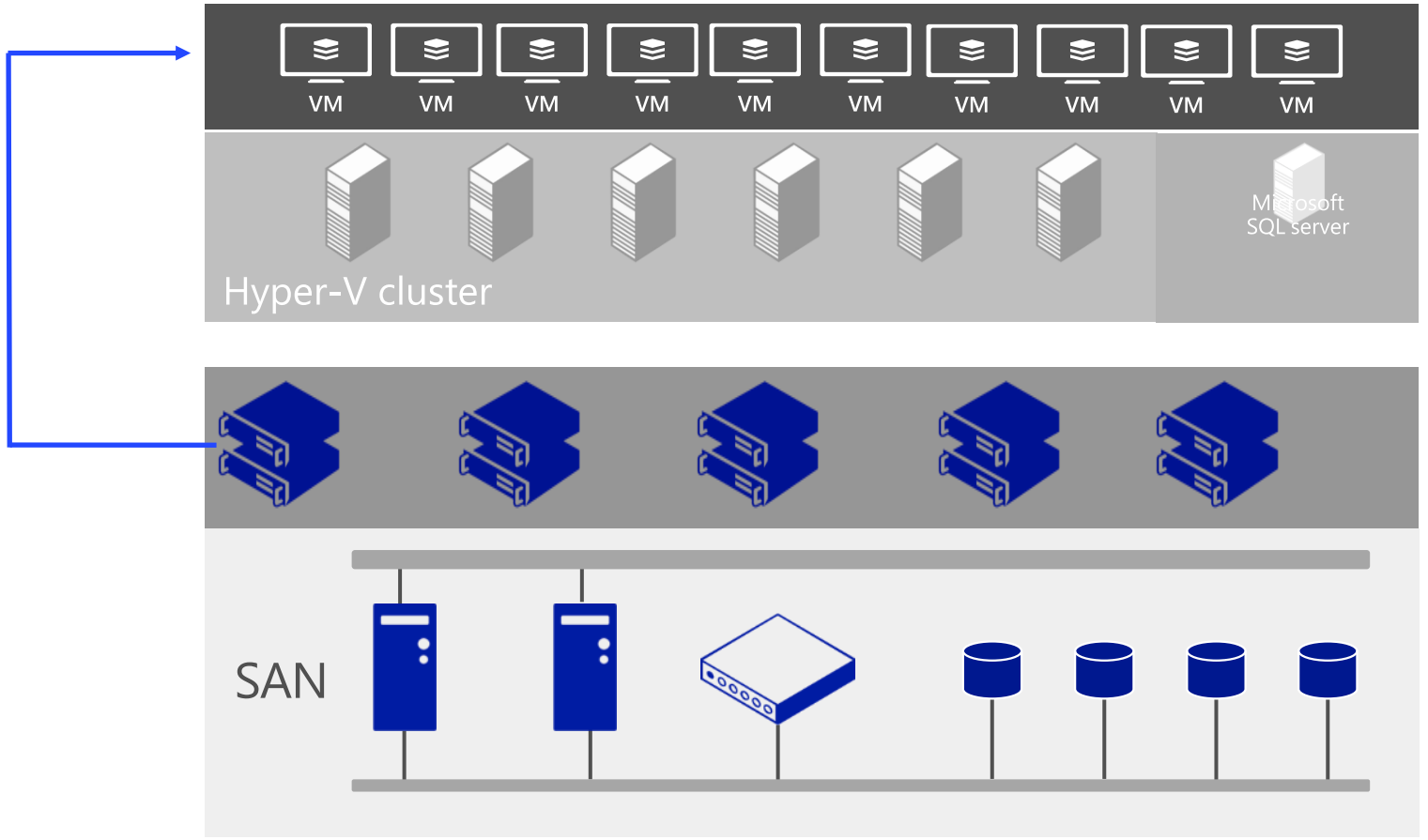
Armazenamento Definido por Software (SDS)



Microsoft

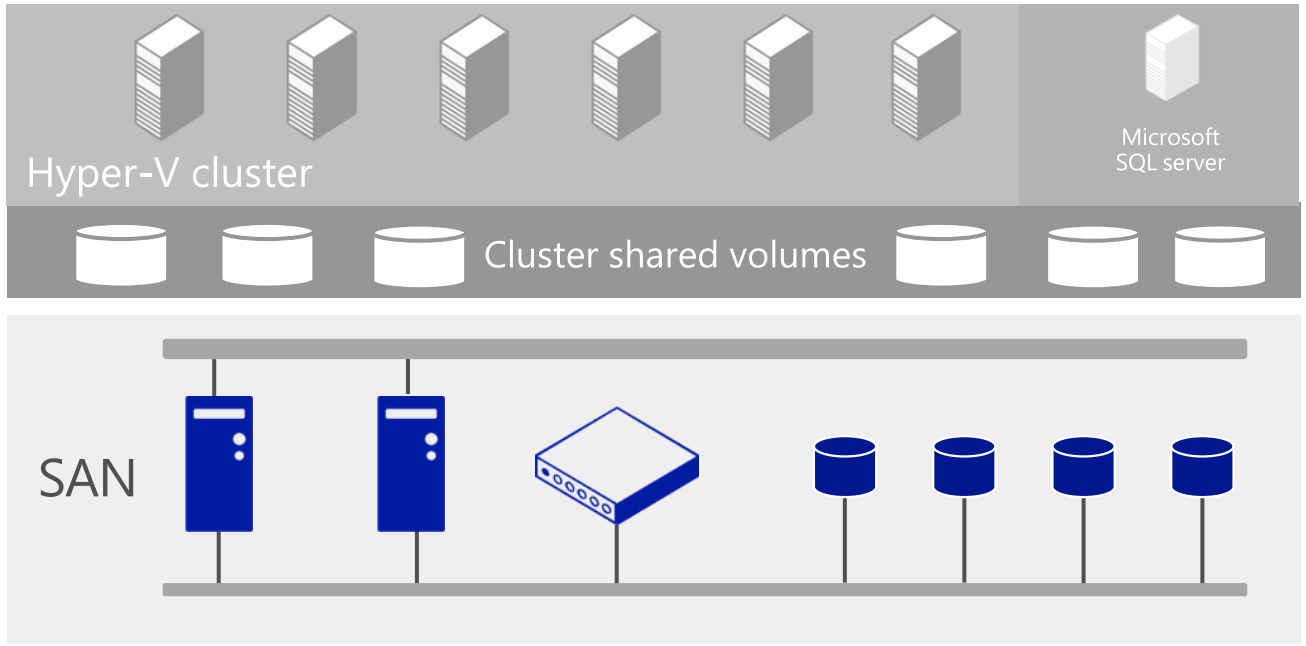
Microsoft SDS: Evolução

ENTERPRISE-CLASS
STORAGE PLATFORM
BUILT ON WINDOWS



Microsoft SDS: Evolução

ENTERPRISE-CLASS
STORAGE PLATFORM
BUILT ON WINDOWS



Microsoft SDS: Evolução

ENTERPRISE-CLASS
STORAGE PLATFORM
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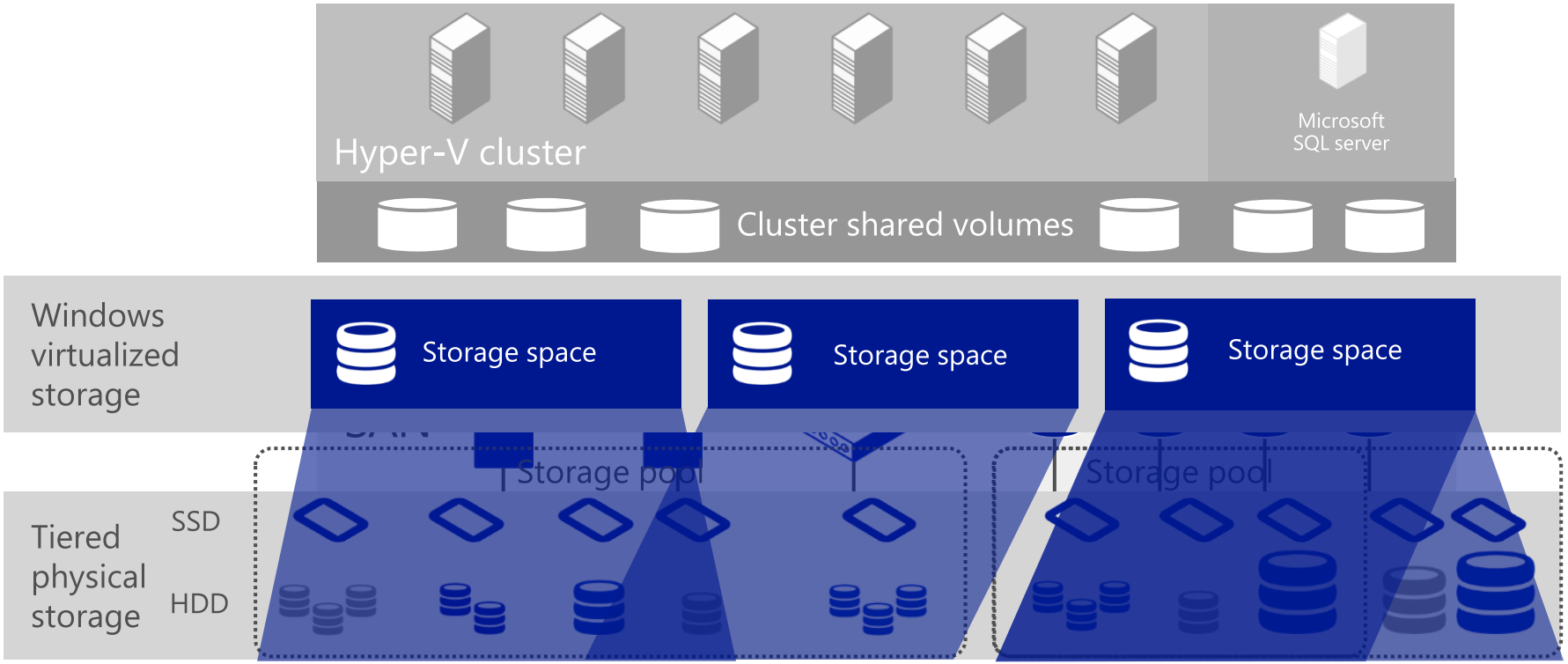


Storage spaces

Solução Windows para gerenciamento de storage

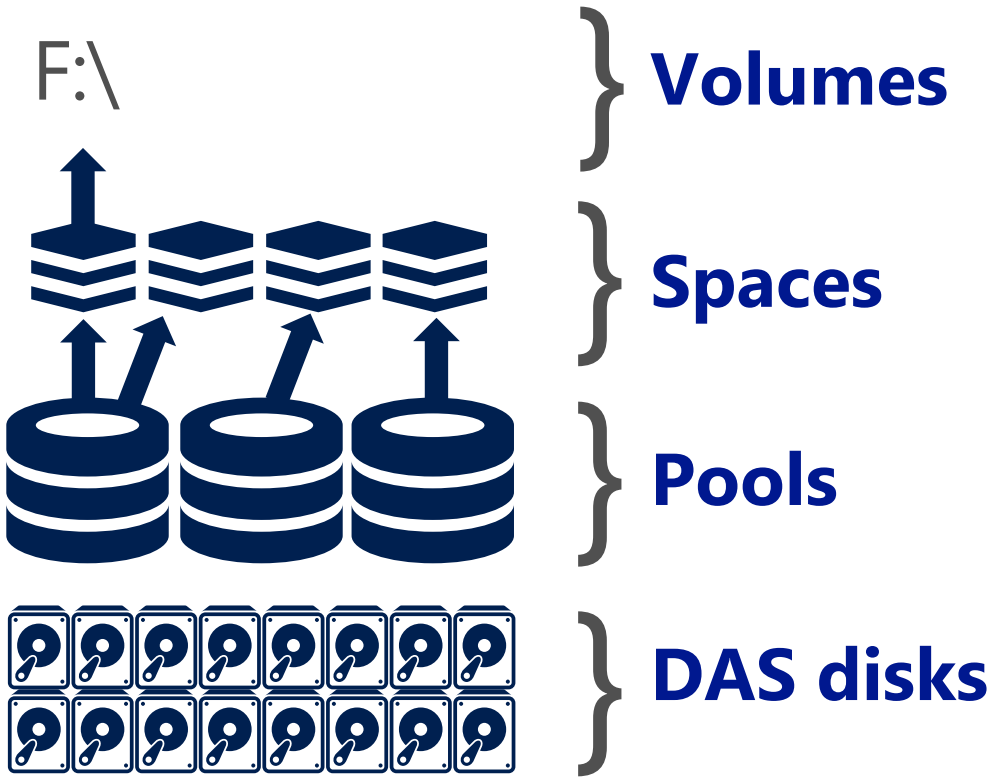
Virtualize o storage agrupando discos padrões de mercado em storage pools

Pools são divididos em discos ou espaços.

Espelhamentos possíveis:

- Simple (RAID 1)
- Mirrored (RAID 2)
- Pairity
- Single (RAID 5)
- Dual (RAID 6)

Espaços podem usar somente DAS (local do chassis, ou via SAS)



SAN vs. solução Microsoft de SDS

Storage tradicional
com FC/iSCSI array de storage

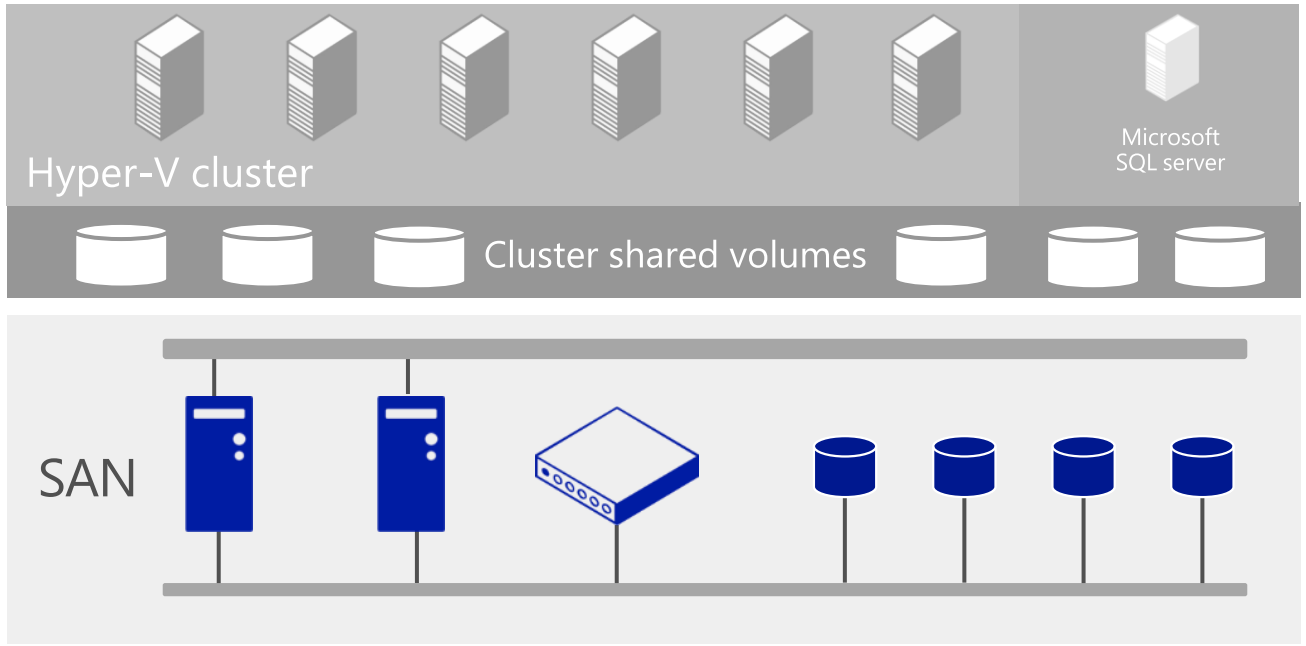
- Storage tiering
- Data deduplication.
- RAID
- Pooling of disks.
- Alta disponibilidade
- Cache write-back persistente.
- Copy offload.
- Snapshots.

Windows file server cluster
com storage spaces

- Storage tiering. (novo no R2)
- Data deduplication. (melhorado no R2)
- Flexible resiliency options. (melhorado no R2)
- Pooling of disks.
- Disponibilidade continua.
- Cache write-back persistente. (novo no R2)
- SMB copy offload.
- Snapshots.

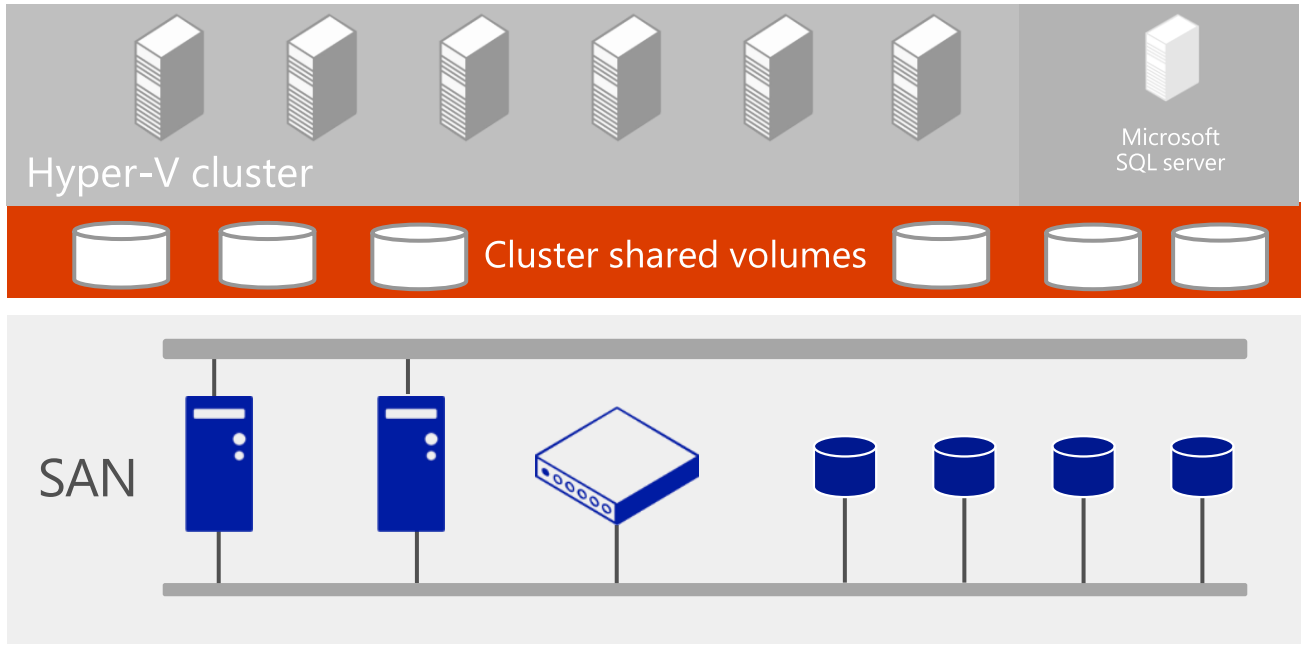
Evoluindo mais um passo...

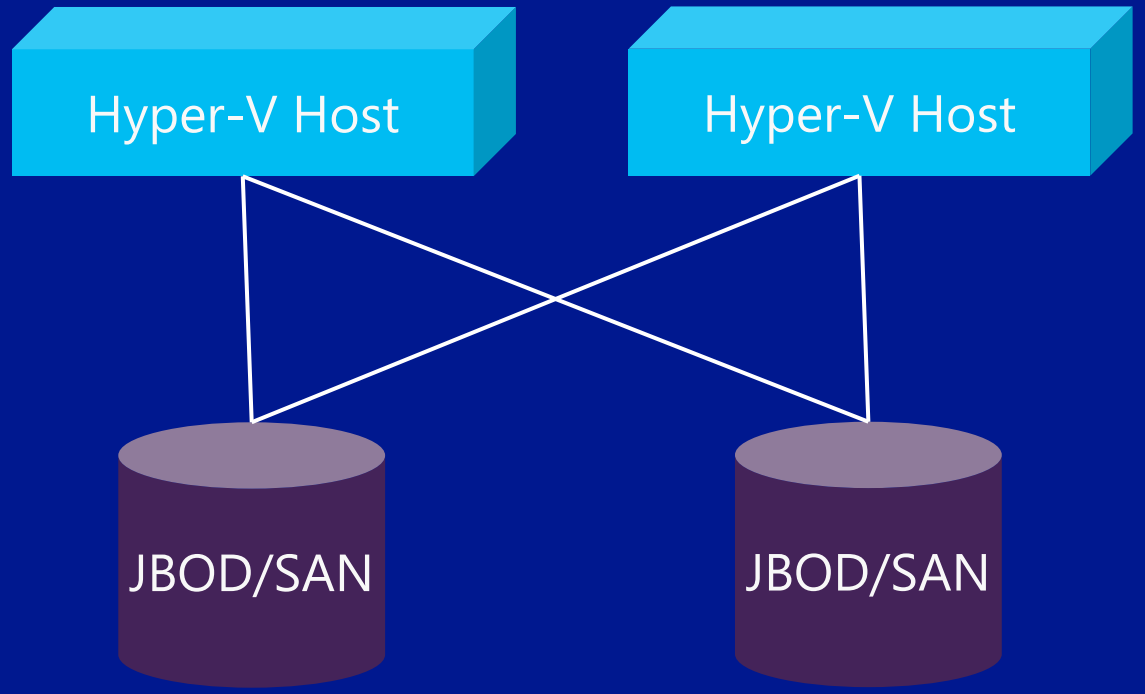
ENTERPRISE-CLASS
STORAGE PLATFORM
BUILT ON WINDOWS

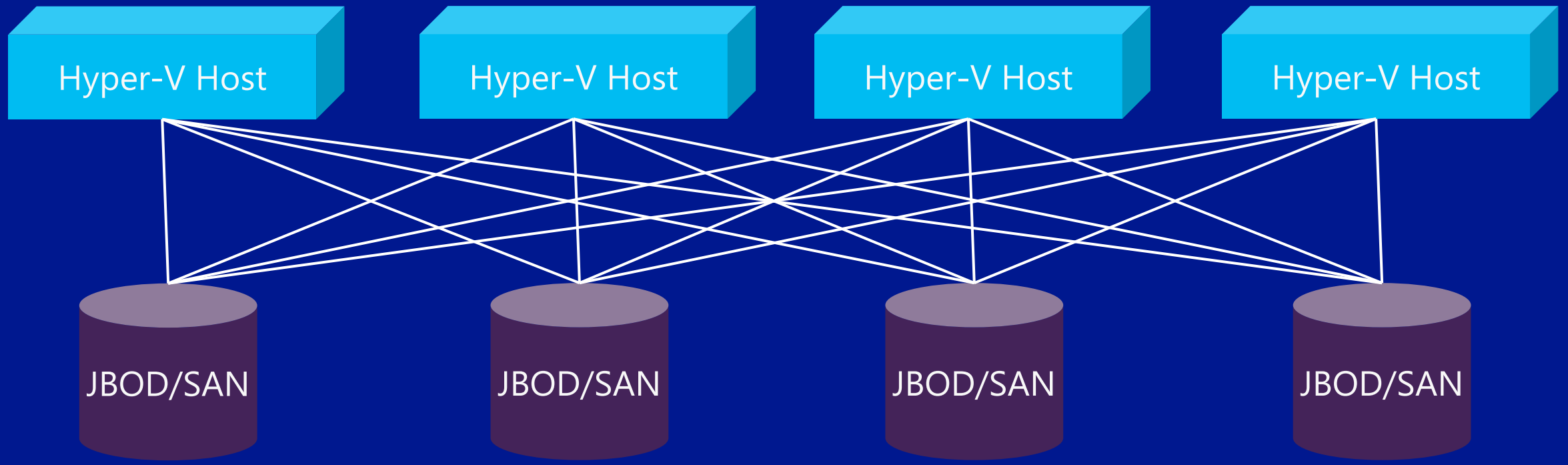


Evoluindo mais um passo...

ENTERPRISE-CLASS
STORAGE PLATFORM
BUILT ON WINDOWS




Hyper-V Host
Hyper-V Host
JBOD/SAN
JBOD/SAN


Hyper-V Host
Hyper-V Host
Hyper-V Host
Hyper-V Host
JBOD/SAN
JBOD/SAN
JBOD/SAN
JBOD/SAN

Scale-out file server (SOFS)

Baixo custo, alta performance, storage compartilhado resiliente

Cluster de file server para armazenamento de VHDs, através de file shares

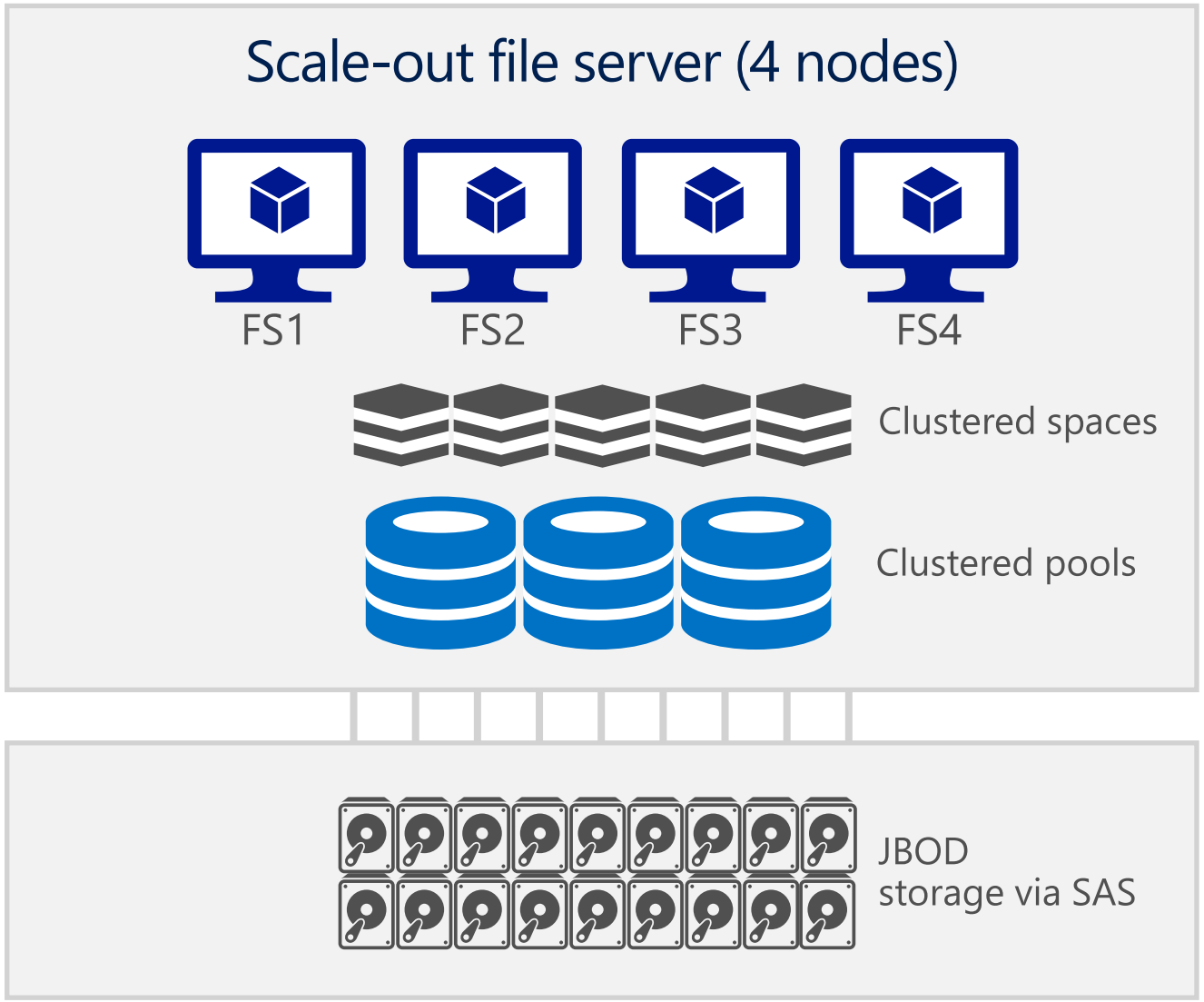
Alta confiabilidade, disponibilidade, gerenciamento e performance que é experado de uma SAN.

Nós Ativo-ativo

Aumento de banda quanto mais nós SOFS são adicionados

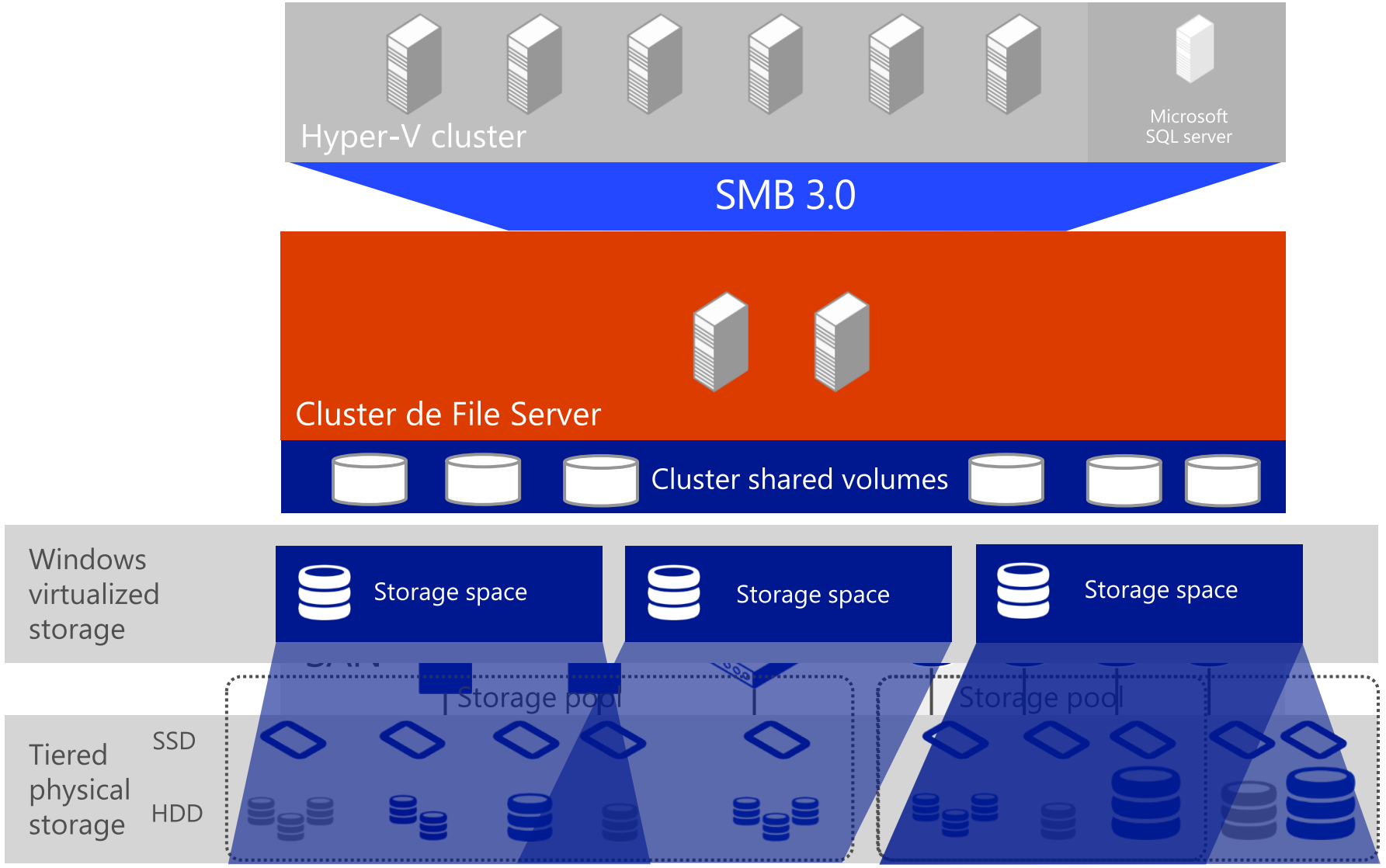
CHKDSK com downtime zero e cache CSV

Pode ser criado (deploy ou bare metal) e gerenciado pelo VMM



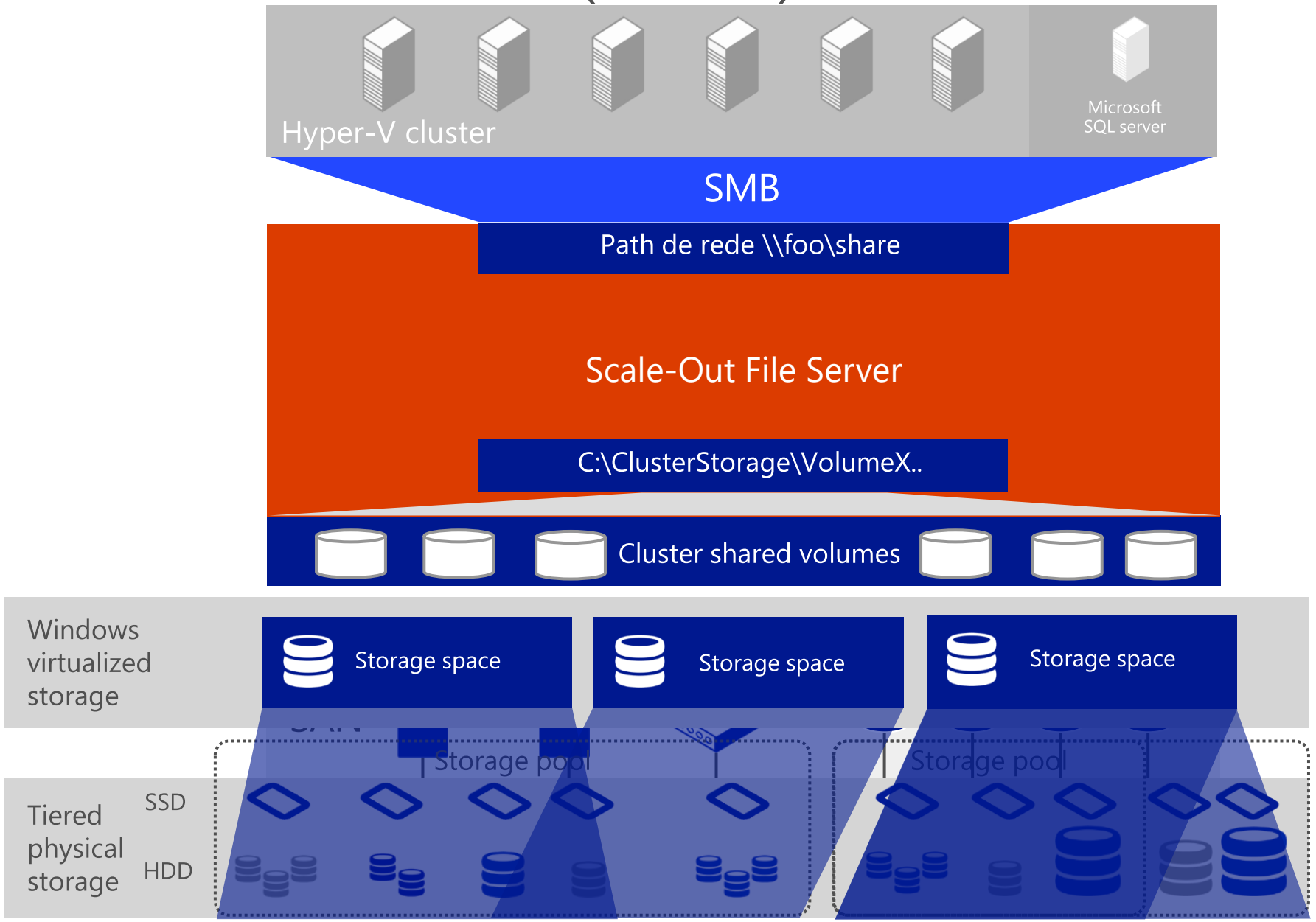
Scale-Out File Server (SOFS)

ENTERPRISE-CLASS
STORAGE PLATFORM
BUILT ON WINDOWS



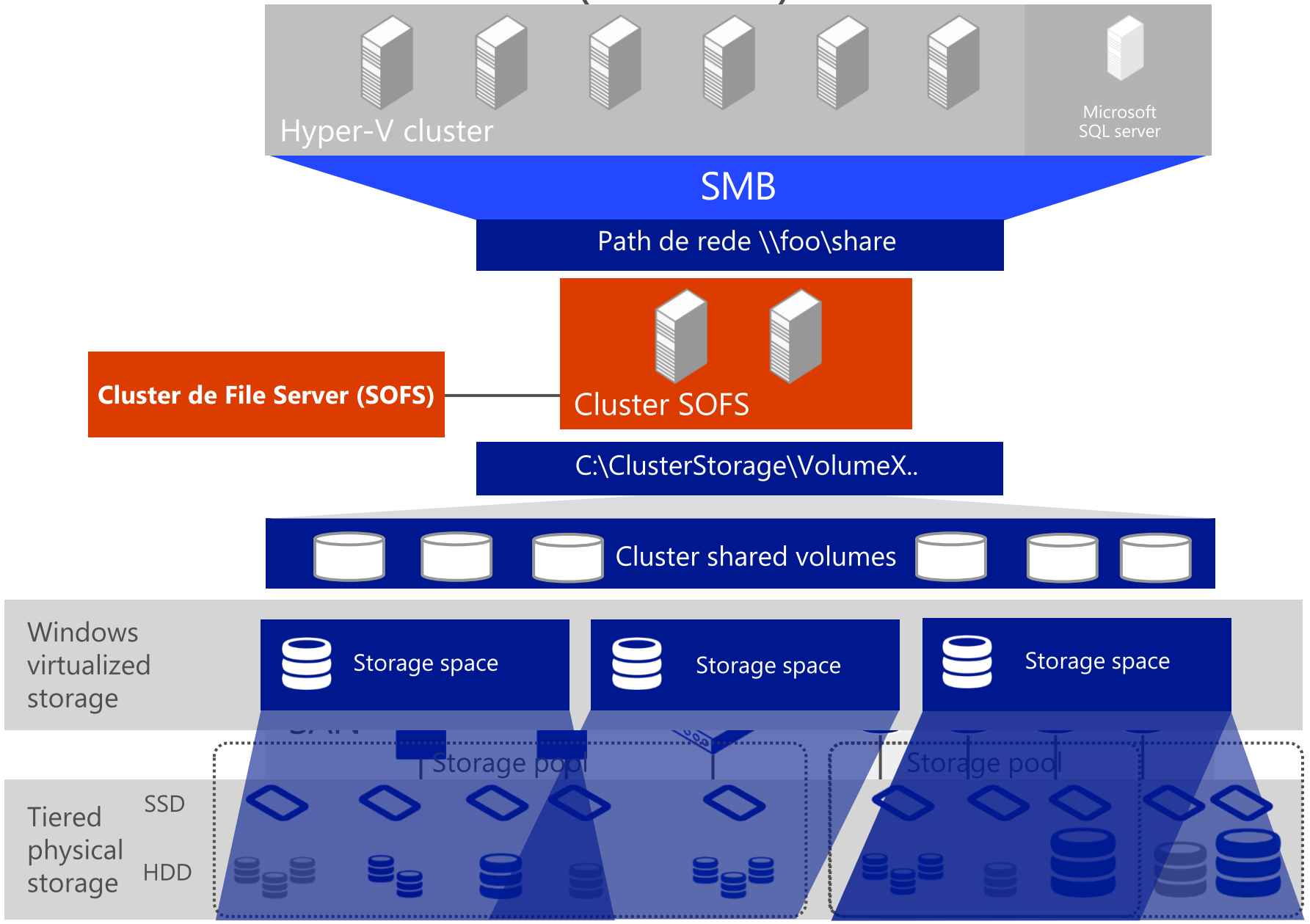
Scale-Out File Server (SOFS)

ENTERPRISE-CLASS STORAGE PLATFORM BUILT ON WINDOWS



Scale-Out File Server (SOFS)

ENTERPRISE-CLASS STORAGE PLATFORM BUILT ON WINDOWS



dataON™

CiB-9470V12 #7070

Dual HBA Configuration

V12 Cluster-in-a-Box

Windows Server 2012 R2 Certified

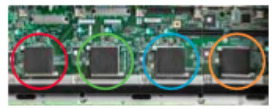
Server Node 1

Server Node 2

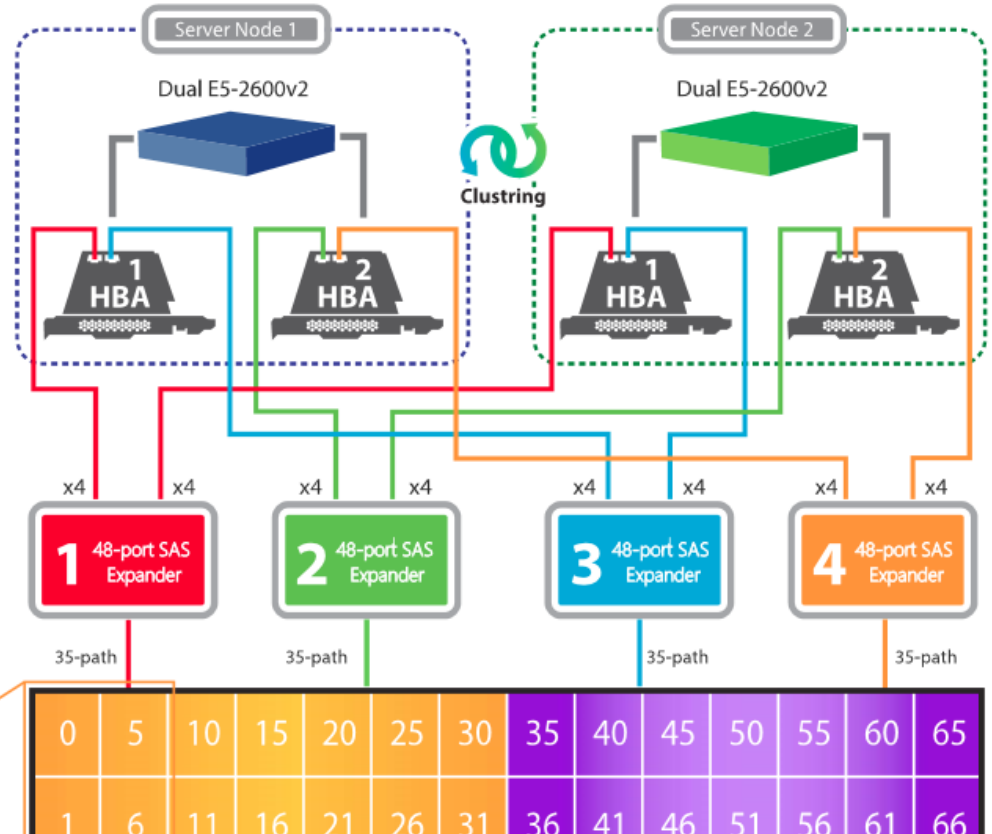
12Gb/s SAS

End-to-End 12Gb/s SAS

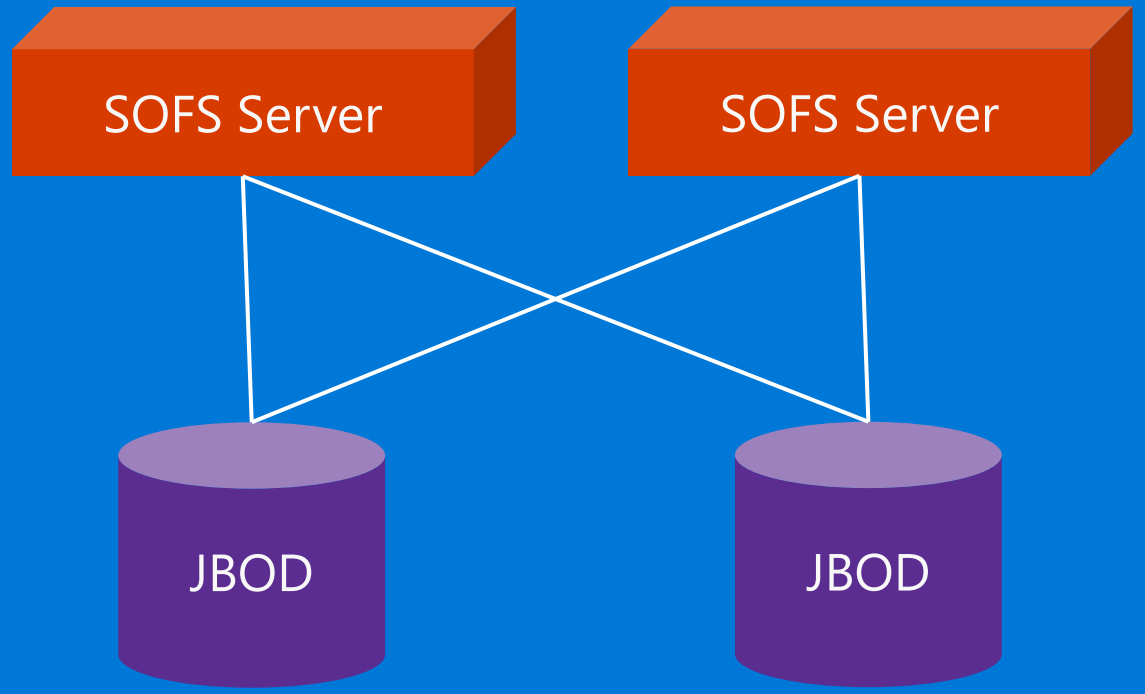
LSI® 9300-8i 8-port
12Gb/s SAS HBA

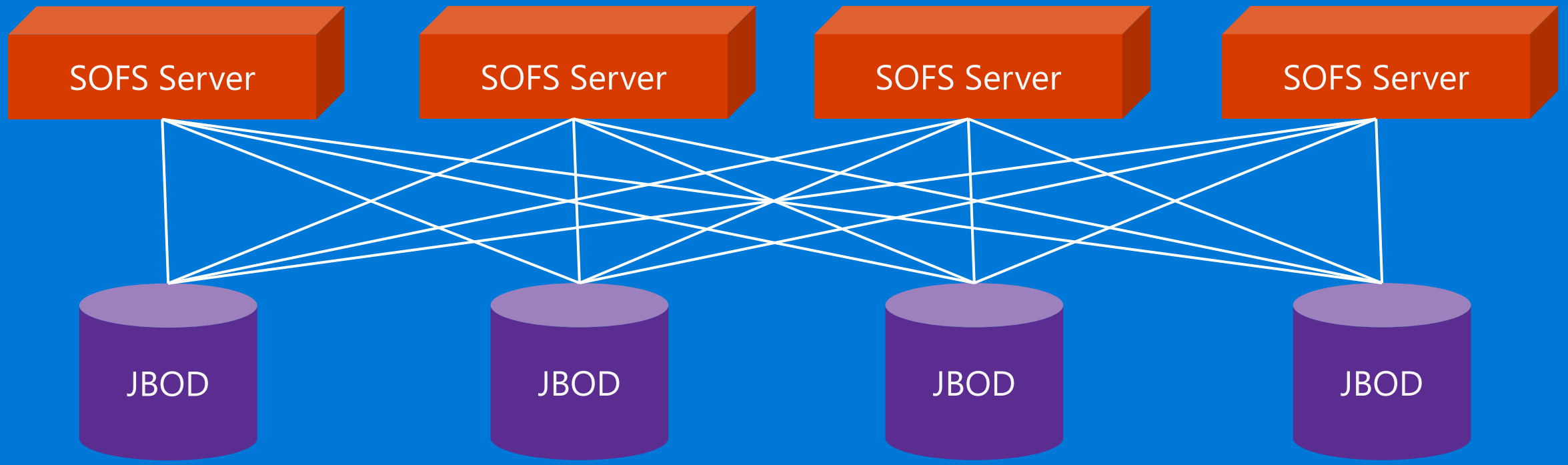


Four 48-port SAS expander



Dual SAS Path


SOFS Server
SOFS Server
JBOD
JBOD


SOFS Server
SOFS Server
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JBOD
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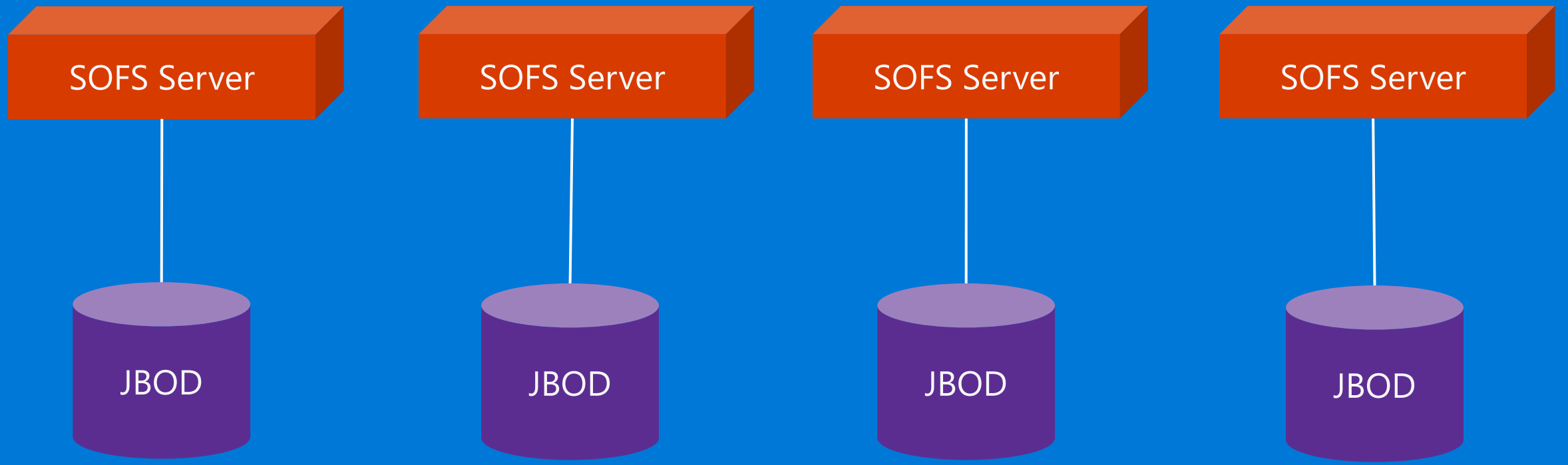
SOFS Server
SOFS Server
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JBOD
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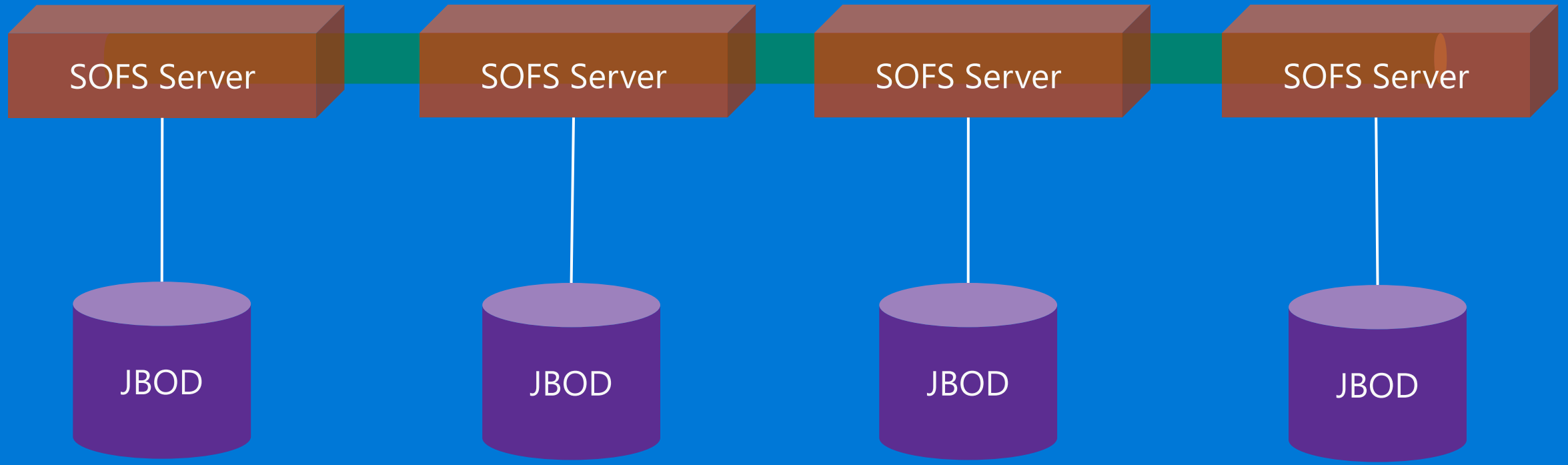
SOFS Server
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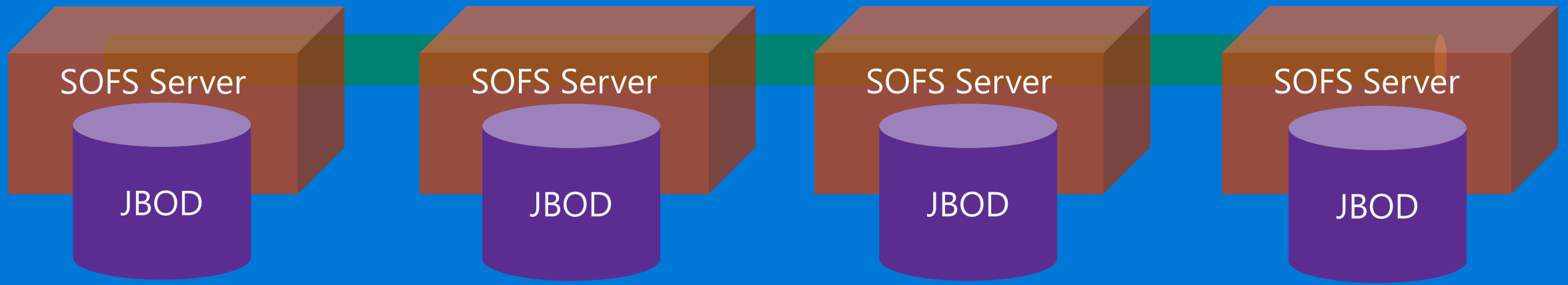
SOFS Server
JBOD
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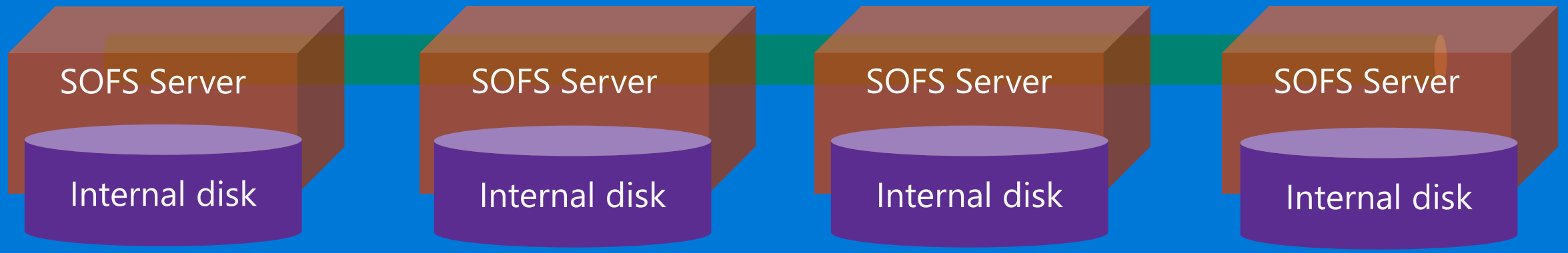
SOFS Server
JBOD


SOFS Server
Internal disk
SOFS Server
Internal disk
SOFS Server
Internal disk
SOFS Server
Internal disk

Storage Spaces Direct (S²D)

O que é Storage Spaces Direct?

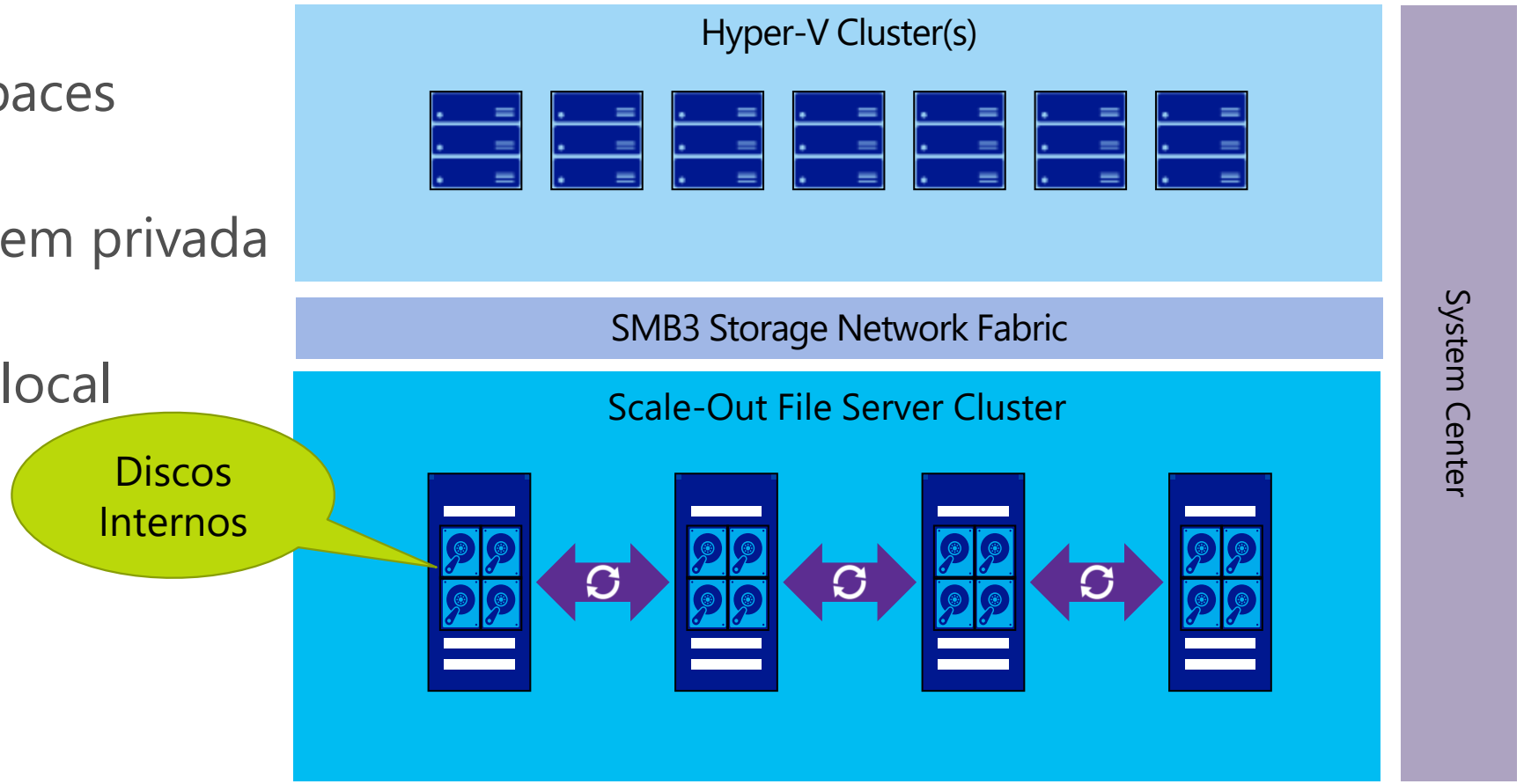
Evolução do Storages Spaces

Foco em storage de nuvem privada

Servidores com storage local

Alta disponibilidade e escalabilidade

Habilita novos cenários



Por que Storage Spaces Direct?

Novos tipos de disco

- SATA SSDs (baixo custo)
- NVMe SSDs (alta performance)

Deployment mais simples

- Trabalhe com fabric de rede no lugar da SAS
- Arquitetura mais simples

Requisitos de Hardware simplificados

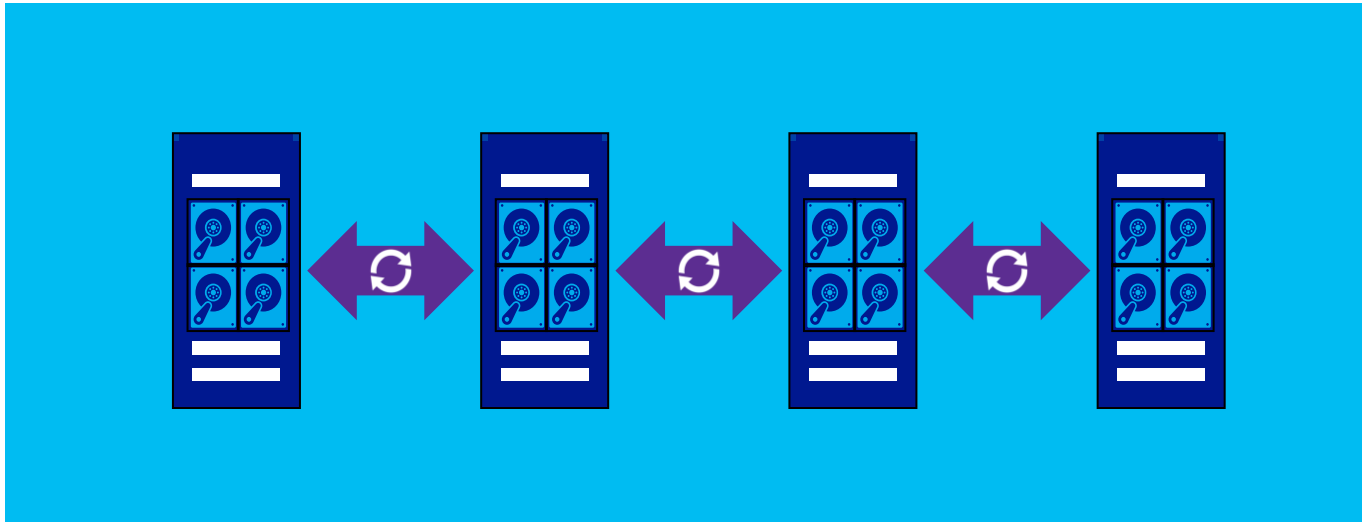
- Sem necessidade de MPIO
- Sem necessidade de multicabeamento SAS

Expansão natural

- Simples: adicione mais nós
- Rebalanceamento de storage

Aumento de escalabilidade

- Suporte até 400 discos e 16 nós



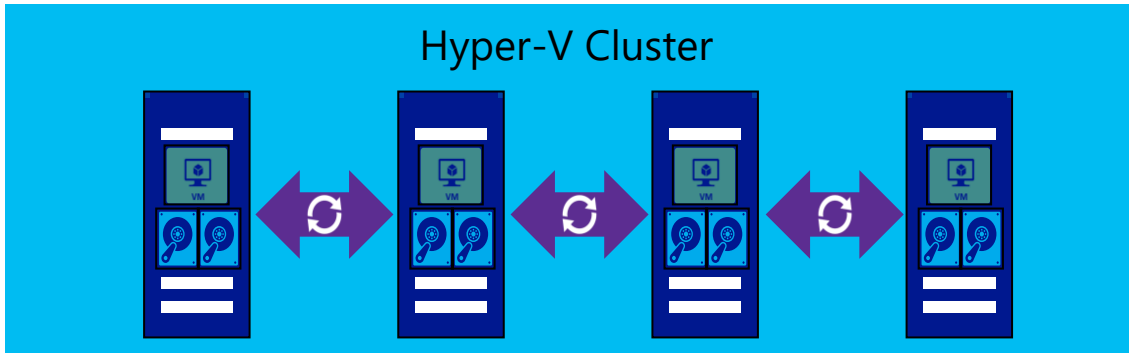
S²D – Modos de deployment

Hyper-Converged

Computação e storage juntos

Escalabilidade de computação e storage são gerenciadas juntas

Tipicamente para pequenas e médias implementações

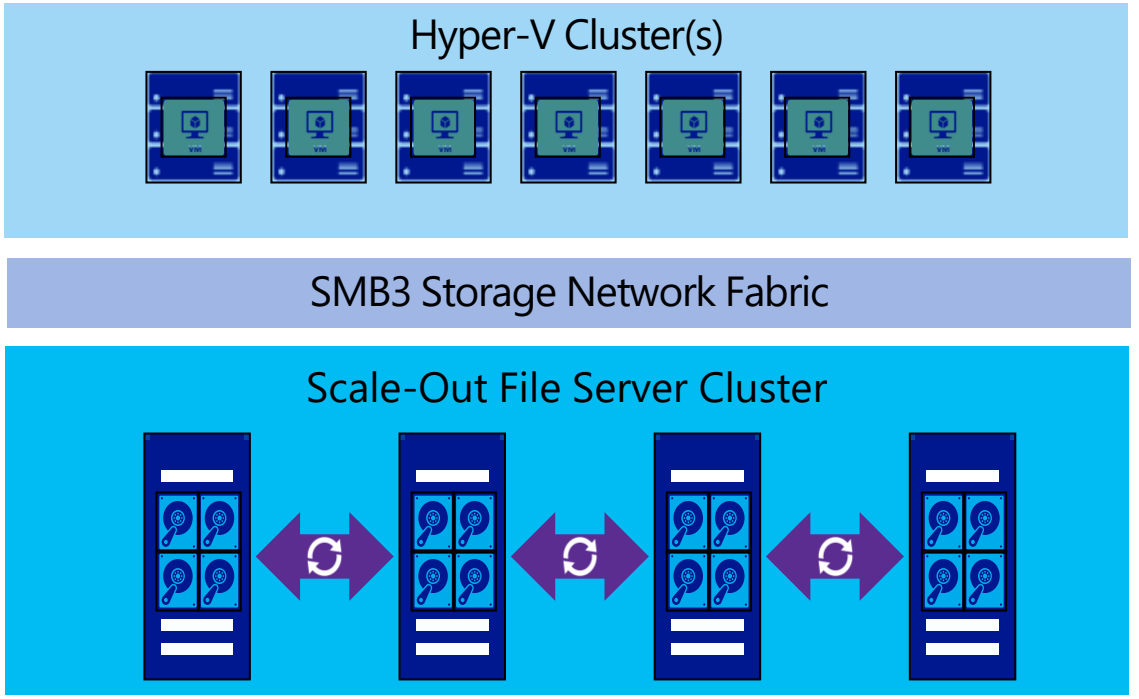


Disaggregated

Computação e storage separados

Escalabilidade de computação e storage são gerenciadas separadamente

Tipicamente para grandes implementações



Storage Spaces Direct - Parceiros

Cisco UCS C3160 Rack Server

Dell PowerEdge R730xd

Fujitsu Primergy RX2540 M1

HP Apollo 2000 System

Intel® Server Board S2600WT-Based Systems

Lenovo System x3650 M5

Quanta D51PH

Testing Storage Spaces Direct using Dell PowerEdge R730xd

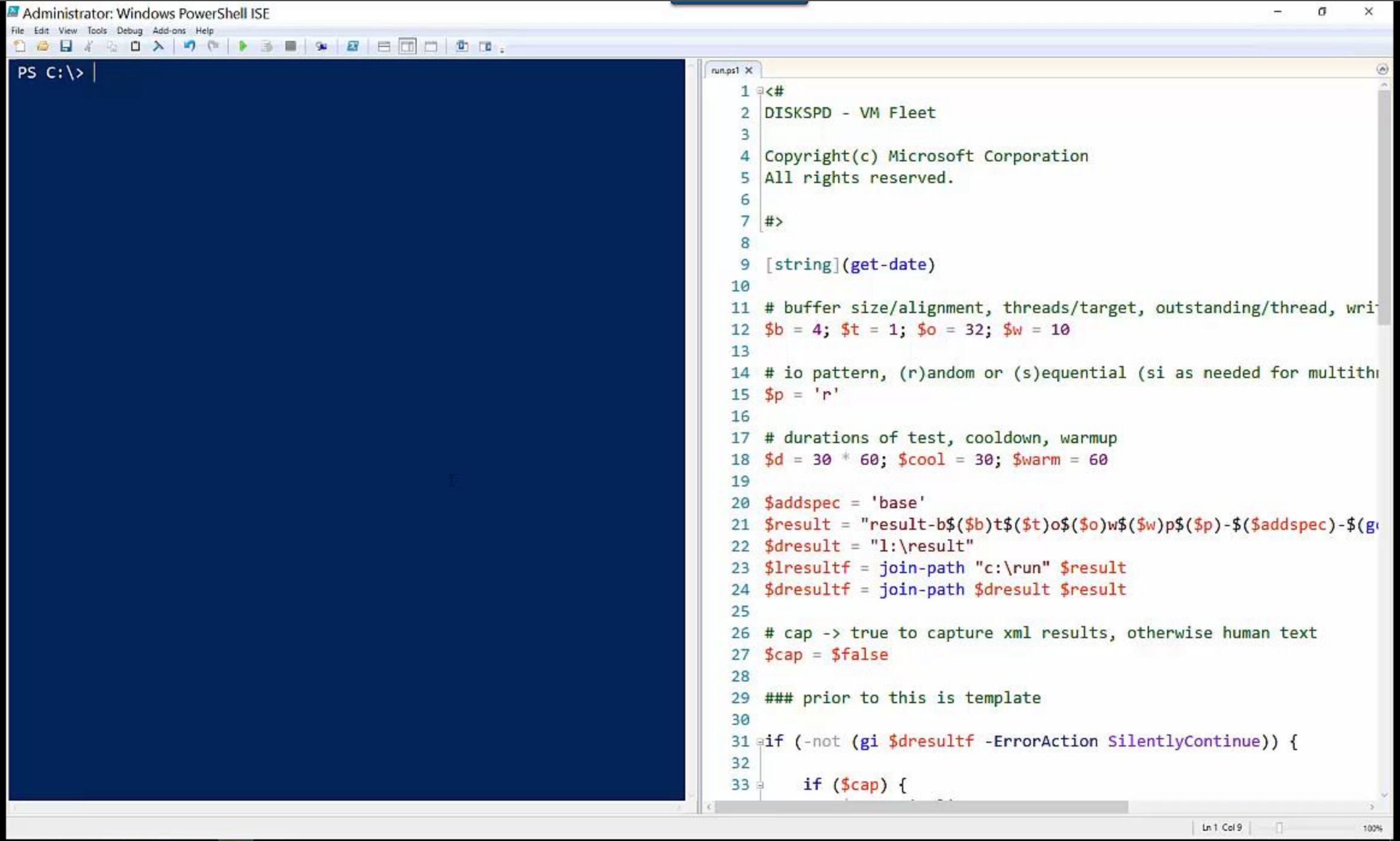
OS AND APPLICATIONS - WIKI

Disclaimer: Dell does not offer support for Windows Server 2016 at this time. Dell is actively testing and working closely with Microsoft on WS 2016, but since it is still in development, the exact hardware components/configurations that Dell will fully support are still being determined. The information divulged in our online documents prior to Dell launching and shipping WS2016 may not directly reflect Dell supported product offerings with the final release of WS 2016. We are, however, very interested in your results/feedback/suggestions! Please send them to *WinServerBlogs@dell.com* ***or*** leave comments below.

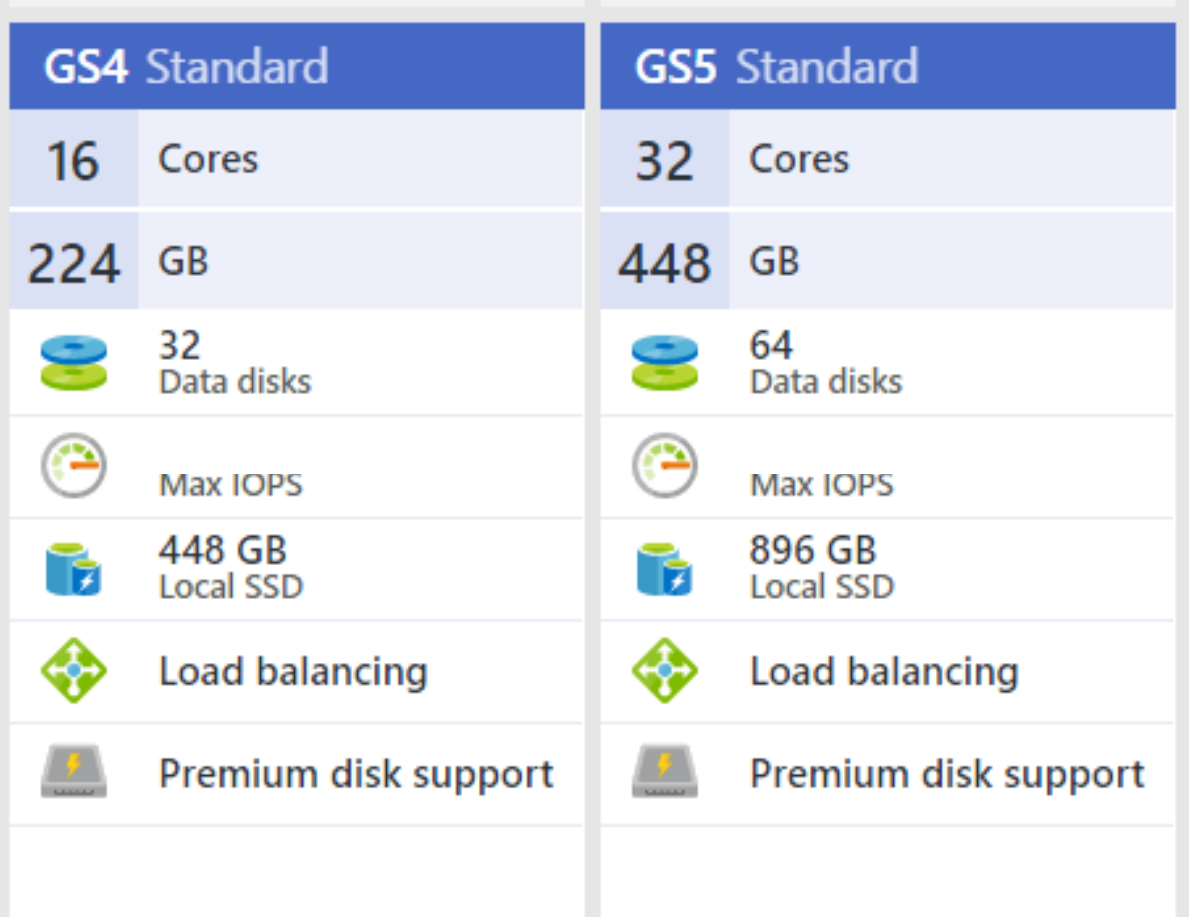
For the past several years Dell and Microsoft have worked closely together to deliver fully validated Storage Spaces-based private cloud solutions, Storage Spaces-compatible components, workload specific sizing, and optimized management tools based on the highest performing, most innovative Dell PowerEdge servers and Dell PowerVault storage enclosures. If you are looking to deploy a Windows Server® 2012 R2 based Storage Spaces solution in production today then please check out Dell Storage with Microsoft Storage Spaces blog for our fully supported and production ready shared-SAS Storage Spaces solutions information.

Storage Spaces Direct is a new storage virtualization capability introduced in Windows Server® 2016 Technical Preview. Microsoft® provides very good overview and software configuration details here.

Storage Spaces Direct is significant step forward in Microsoft Windows Server software defined storage (SDS) as it simplifies the deployment and management of SDS systems and also unlocks the use of new classes of disk devices, such as SATA HDD, SATA SSD and NVMe, that were not previously possible with Windows Server 2012 R2 clustered Storage Spaces systems.


Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
PS C:\>
run.ps1
<#
DISKSPD - VM Fleet
Copyright(c) Microsoft Corporation
All rights reserved.
#>
[string](get-date)
buffer size/alignment, threads/target, outstanding/thread, wri
$b = 4; $t = 1; $o = 32; $w = 10
io pattern, (r)andom or (s)equential (si as needed for multithr
$p = 'r'
durations of test, cooldown, warmup
$d = 30 * 60; $cool = 30; $warm = 60
$addspec = 'base'
$result = "result-b$($b)t$($t)o$($o)w$($w)p$($p)-$($addspec)-$(g
$dresult = "l:\result"
$lresultf = join-path "c:\run" $result
$dresultf = join-path $dresult $result
cap -> true to capture xml results, otherwise human text
$cap = $false
prior to this is template
if (-not (gi $dresultf -ErrorAction SilentlyContinue)) {
if ($cap) {
Ln 1 Col 9
100%

1.000.000 IOPS?



GS4 Standard	GS5 Standard
16 Cores	32 Cores
224 GB	448 GB
32 Data disks	64 Data disks
Max IOPS	Max IOPS
448 GB Local SSD	896 GB Local SSD
Load balancing	Load balancing
Premium disk support	Premium disk support

1.000.000 IOPS

=

12,5 x VM G5

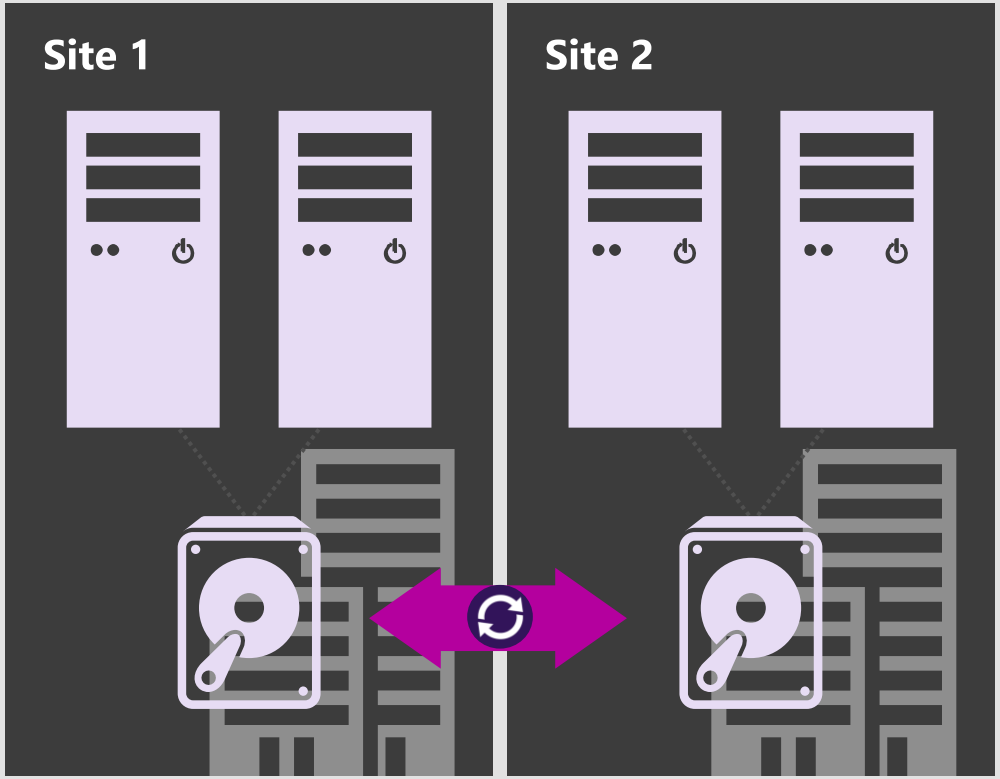
Storage Replica

Replicação síncrona: Espelhamento de dados em sites físicos com volumes uniformes independente do armazenamento para garantir perda zero de dados no nível do volume.

Maior resiliência: Libera novos cenários para recuperação de desastres cluster a cluster a metro-distância e clusters de failover estendidos para alta disponibilidade automática.

Flexível: Servidor a servidor, cluster a cluster e cluster estendido. Discos locais, Storage Spaces Direct, discos em cluster. NTFS, REFS, CSVFS. TCP, RDMA. Síncrona e assíncrona.

Gerenciamento dinamizado: Gerenciamento gráfico para nós e clusters individuais por meio do Gerenciador de Cluster de Failover e Azure Site Recovery. Suporte completo ao PowerShell e SMAPI.



Recursos

Como começar a usar o Windows Server 2016

Baixe a versão de avaliação

- https://aka.ms/ws16-download

Obtenha a documentação

- https://aka.ms/ws16-br-doc

Assista aos vídeos técnicos mais detalhados

- https://aka.ms/ws16-br-doc

Veja esses slides

- https://aka.ms/o-futuro-dos-servidores

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www.Microsoft.com/WindowsServer2016

Obrigado!

Nova plataforma de desenvolvimento e infraestrutura

Speaker
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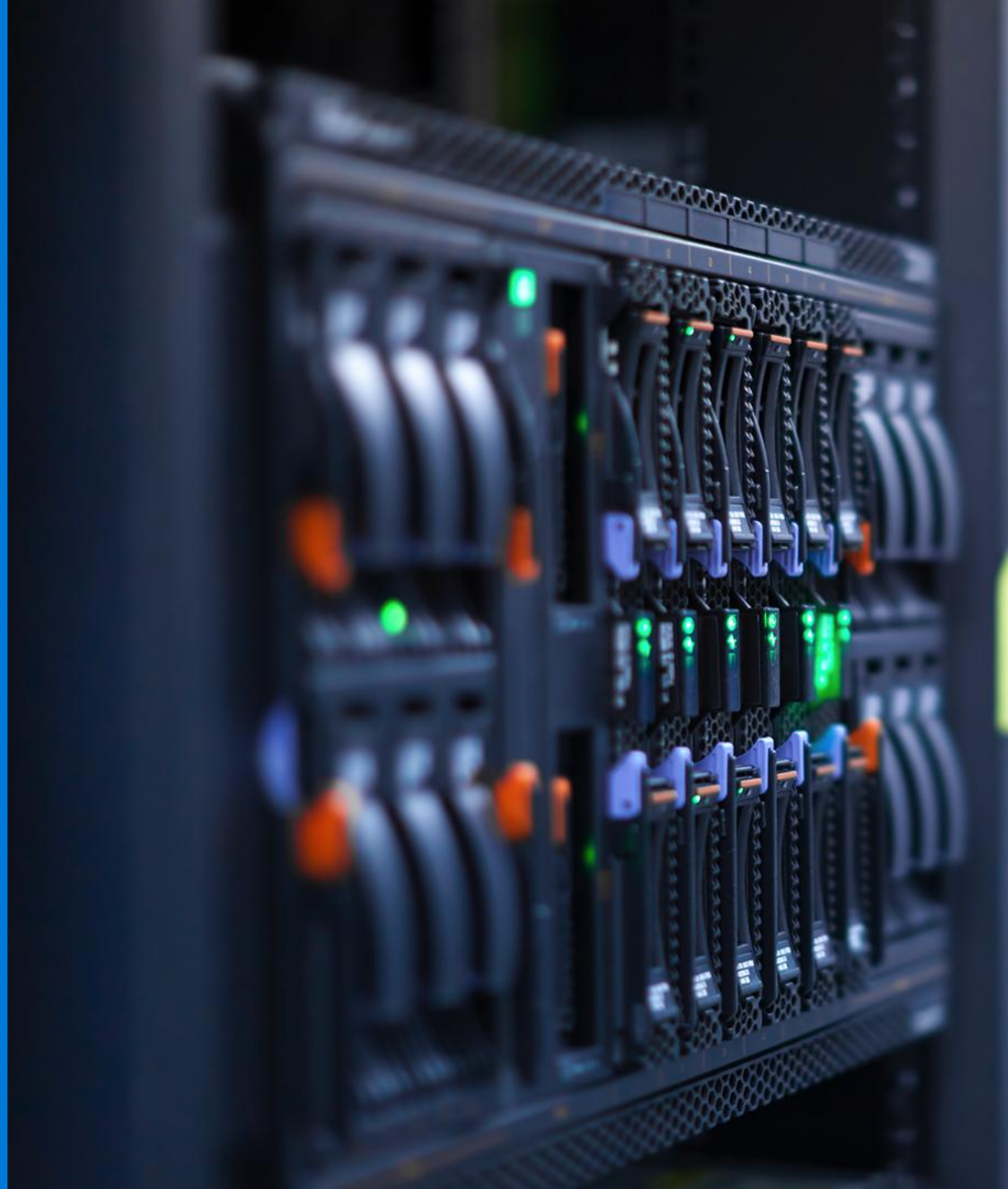
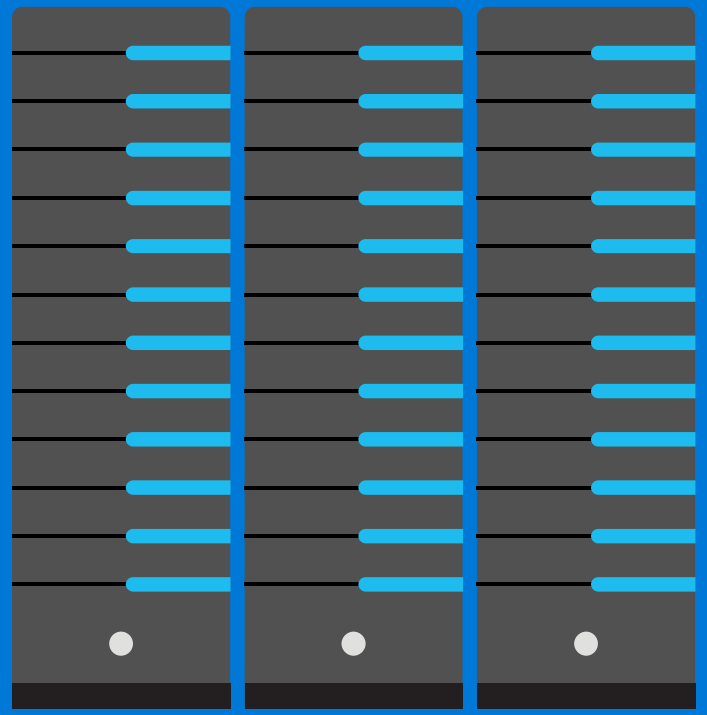
Microsoft



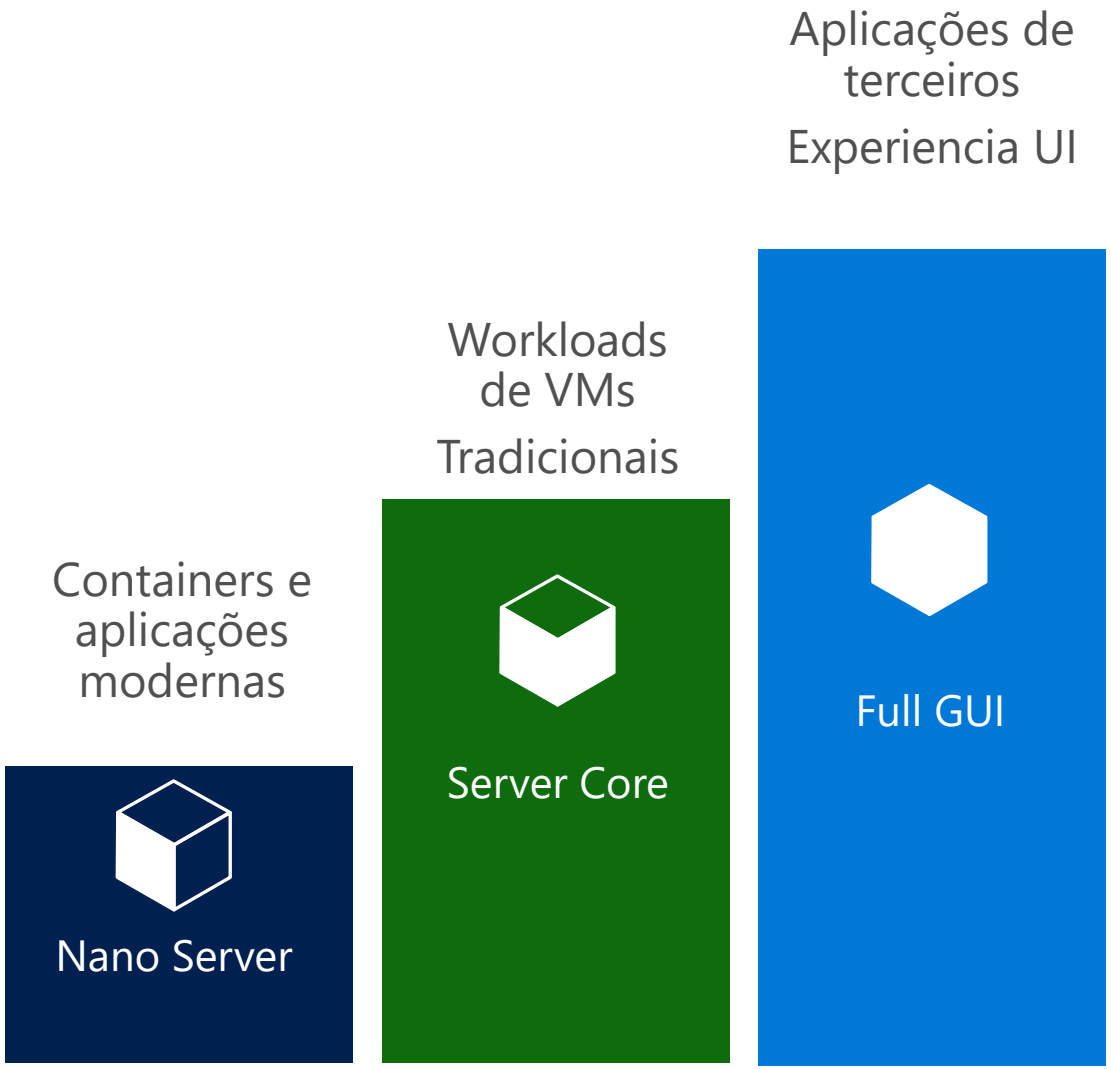
Nano Server



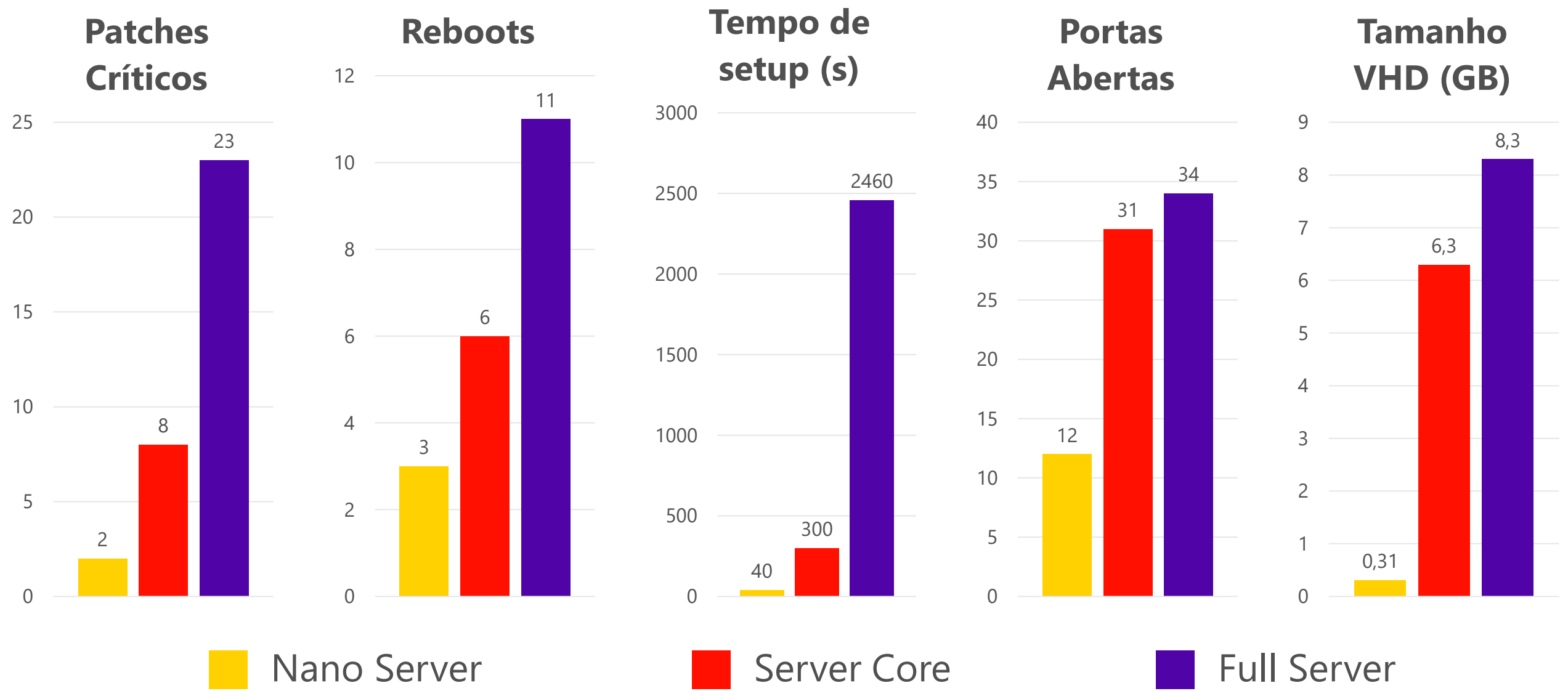
Microsoft

Nano Server

- "Just enough OS"
- Otimizados para aplicações modernas
- Alta densidade e performance
- Redução da superficie de ataque
- Framework para próxima geração de apps distribuídas
- Interoperabilidade com servidores existentes



Resultados Preliminares



Nano Server

Modelo “Just enough OS”

- Features adicionais e Serviços
- Funções e Recursos estão fora dos binários do Nano Server
- Pacotes são instalados

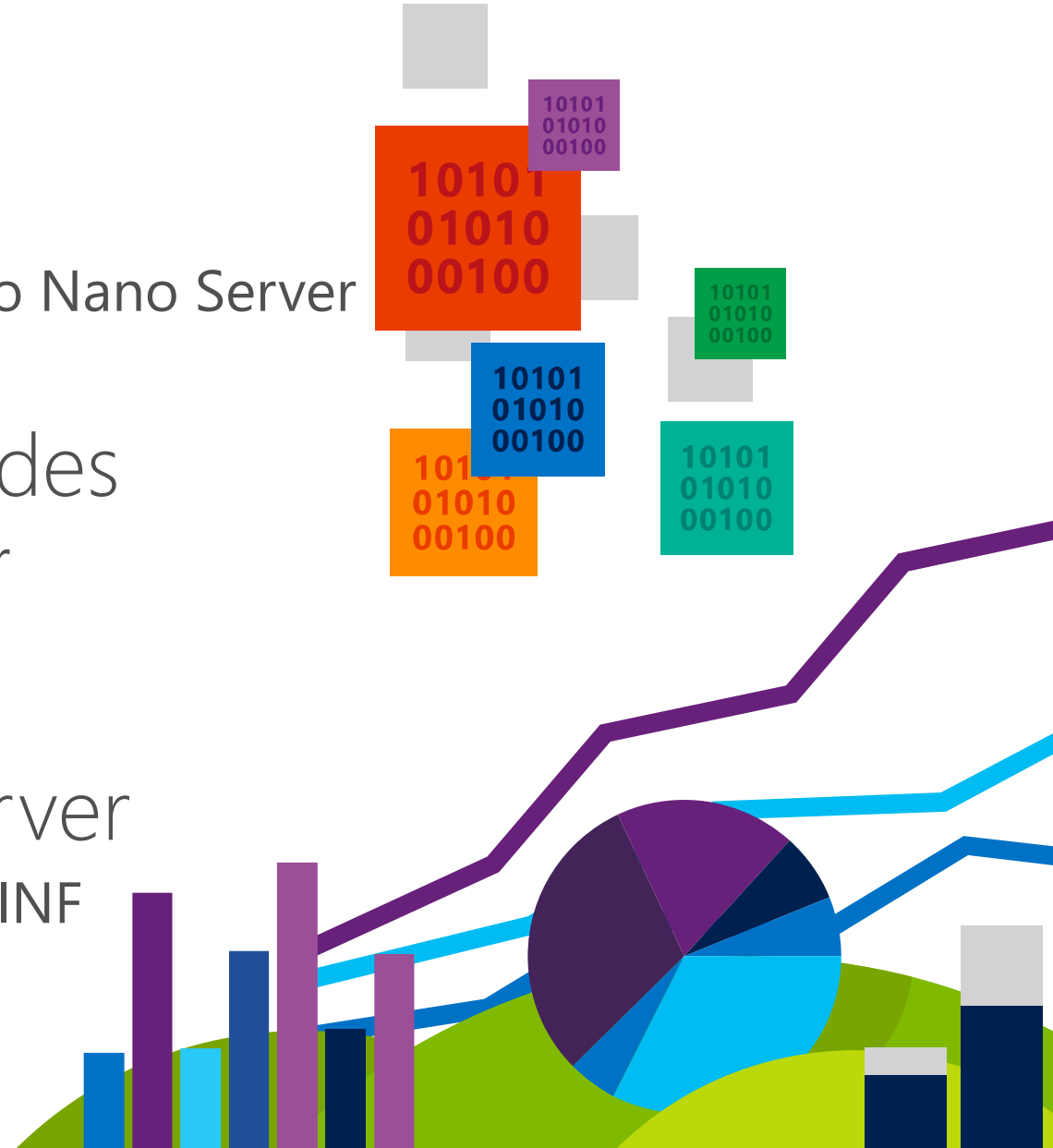
Recursos principais e funcionalidades

- Hyper-V, SoFS, Clustering, IIS, and DNS Server
- Windows Defender, TPM, SIL, PowerShell DSC
- .NET Core and ASP.NET Core

Suporte a drivers do Windows Server

- Suporte a instalação de drivers baseados em INF
- Instalação offiline de drivers via PnP

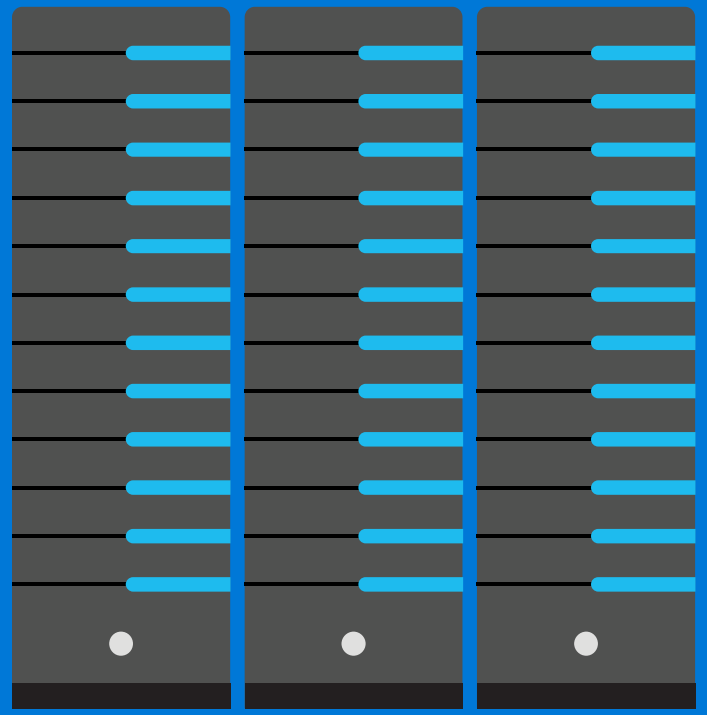
Agentes SC VMM e OM



“Usamos para aumentar a densidade de VMs; ao invés de 8 VMs por hosts, aumentamos para 12 a 14 VMs no mesmo hardware. Segundo Morimoto: “Somente com o uso do Nano Server reduzimos nosso overhead de operações em 70%”

Rand Morimoto
CEO
Convergent Computing

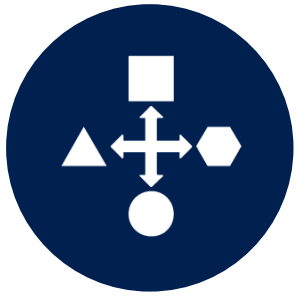
Containers



Microsoft

Por que containers?

Densidade

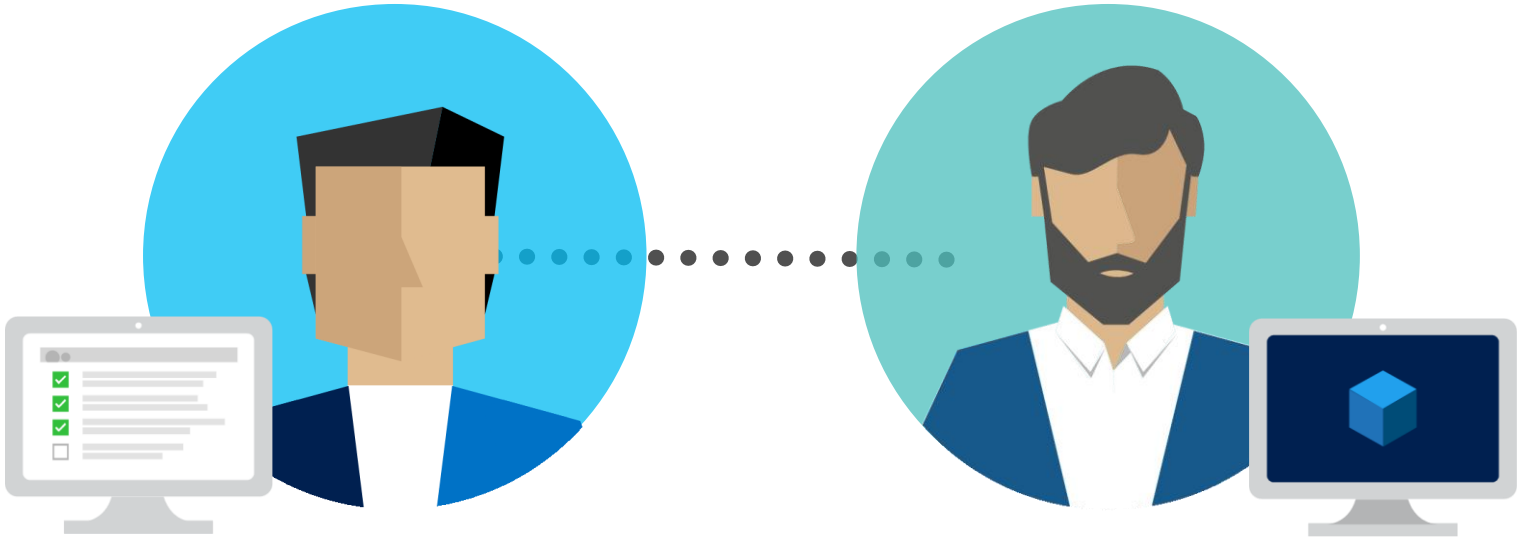


Flexibilidade

Consistência

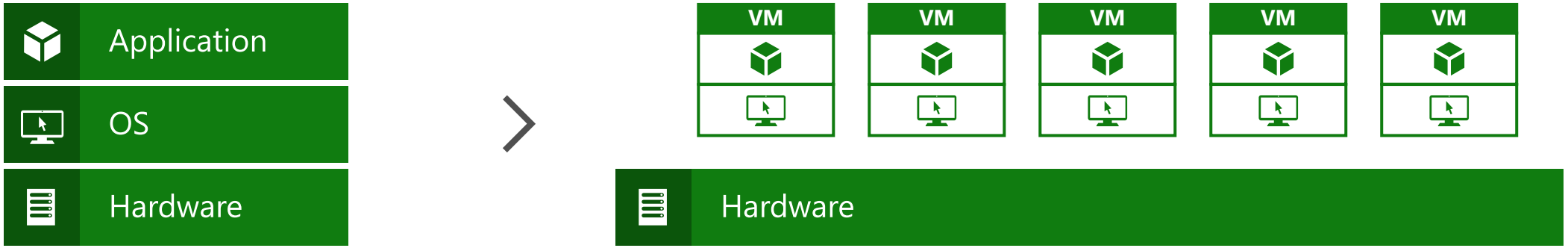
Velocidade

Isolamento

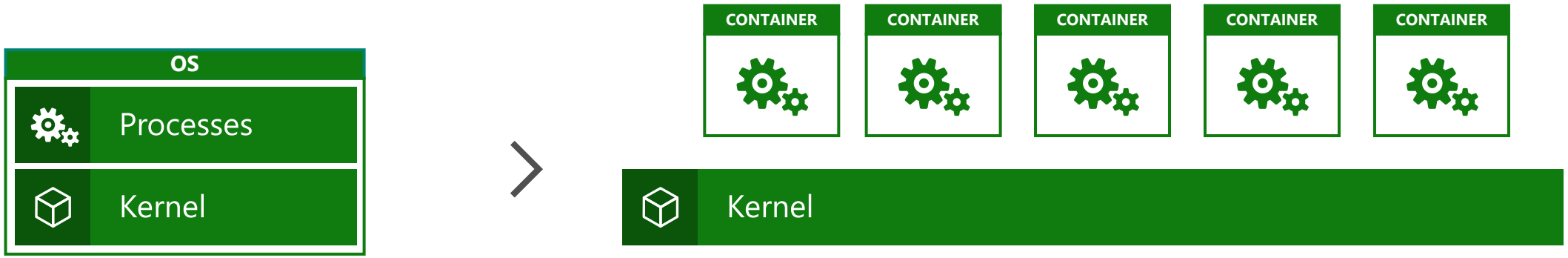


O que é um container?

VM = virtualização do hardware



Containers = virtualização do sistema operacional



Windows Server Containers

Em destaque:

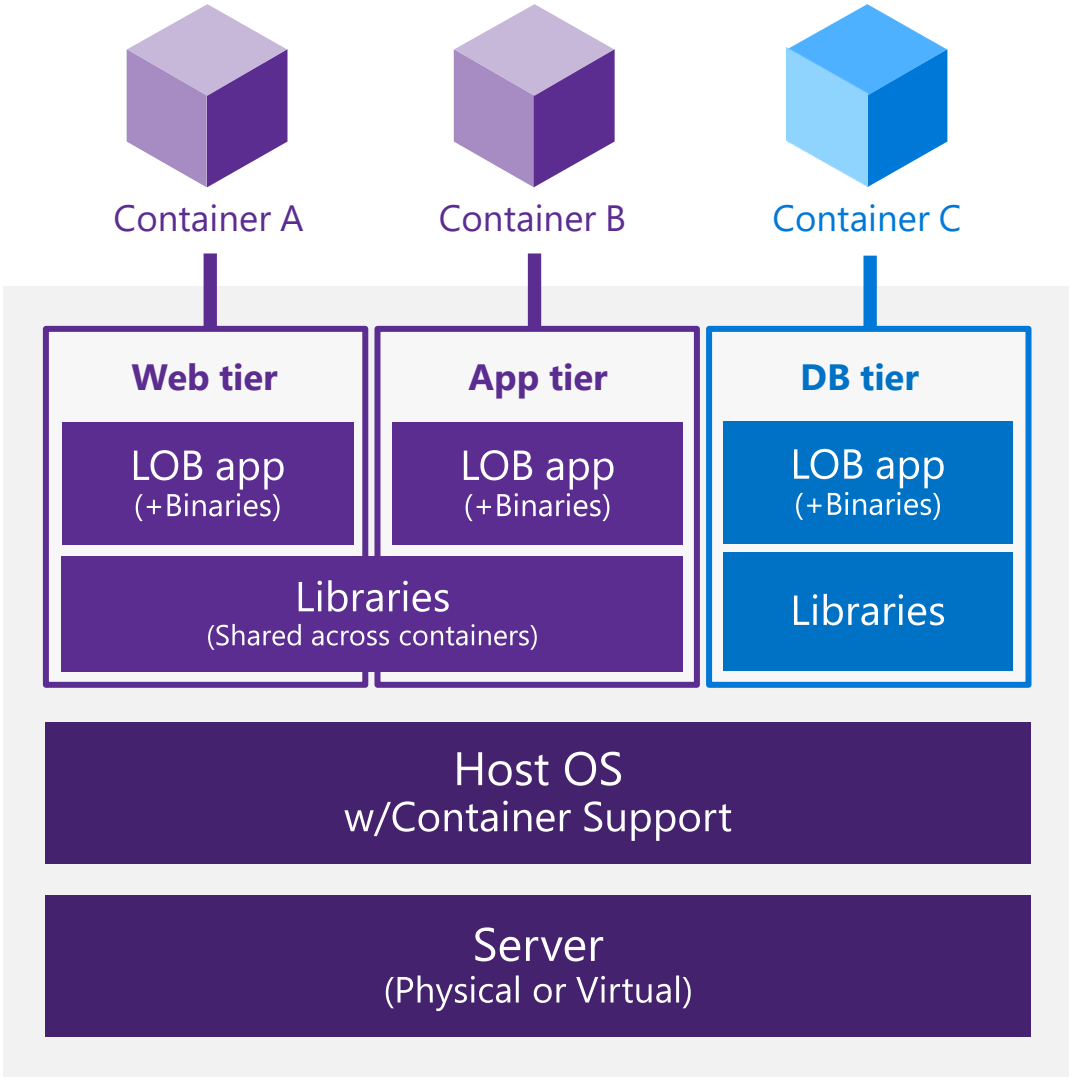
Construção: escreva, execute e escale com containers

Execução: suporte à containers é nativo no Windows Server

Gerenciamento: gerenciamento e deploy usando PowerShell

Recursos: defina recursos por container

Rede: opções de ip para conectividade



Hyper-V Containers

Em destaque:

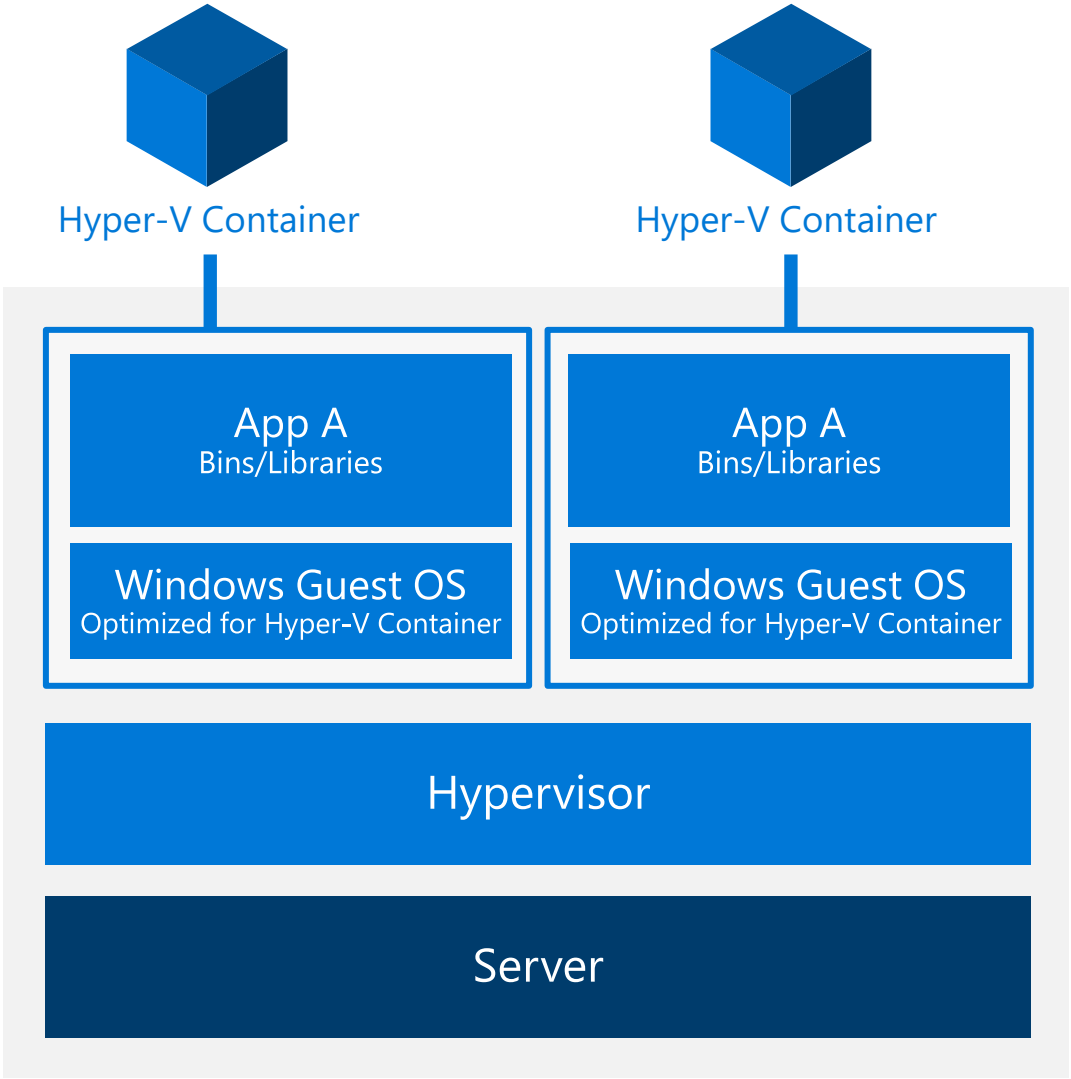
Consistência: APIs consistentes com containers

Compatibilidade: imagens dos containers identicas

Forte isolamento: cópia do kernel dedicada

Altamente confiável: usa a tecnologia Hyper-V

Otimizada: camadas de virtualização e OS otimizadas



Por que Hyper-v Containers?

Isolamento: imagine um hoster hospedando sua aplicação compartilhando o kernel com outras aplicações de outras empresas..

Patches: Imagine um hoster aplicando um patch em um host com n containers compatilhando o mesmo kernel...

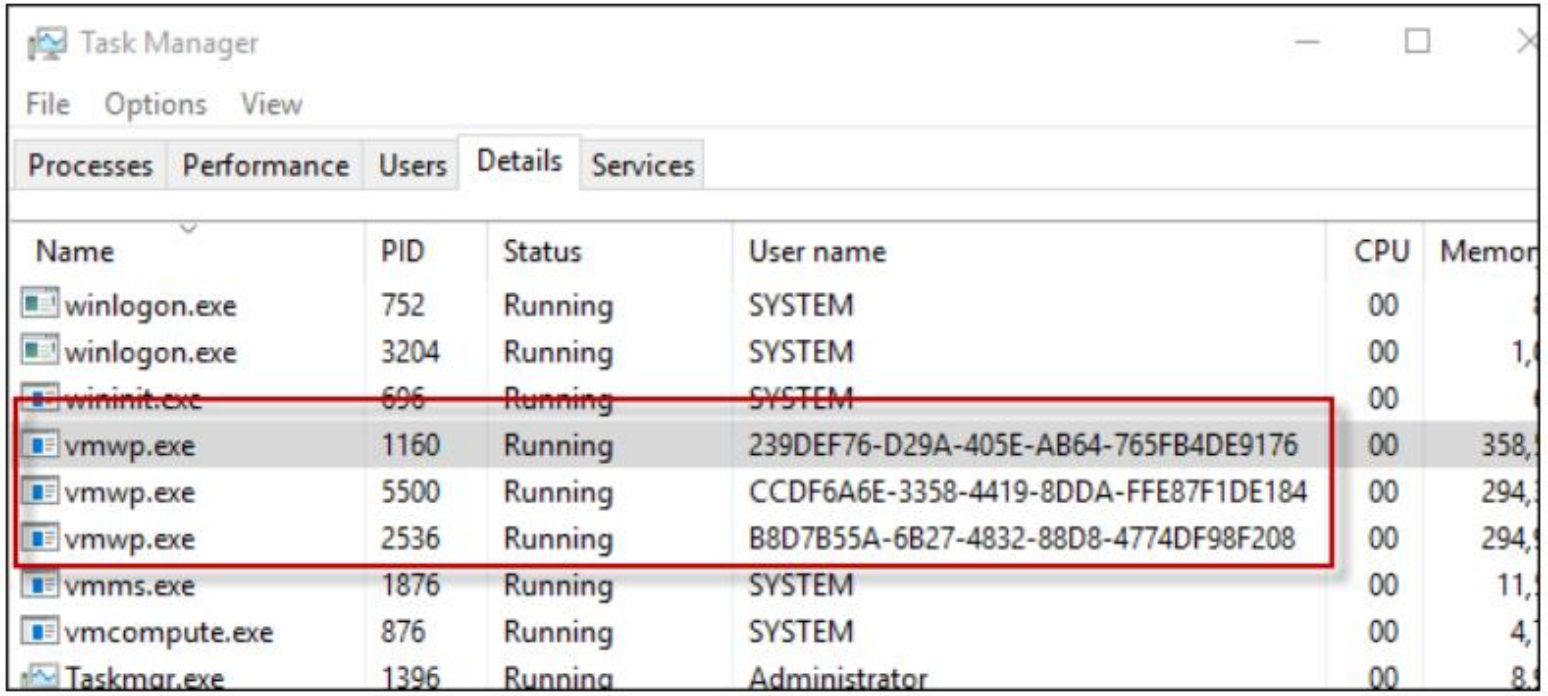
Containers

```
PS C:\> get-process | where {$_.ProcessName -eq 'csrss'}

Handles  NPM(K)    PM(K)      WS(K) VM(M)   CPU(s)     Id  SI ProcessName
-------  ------    -----      ----- -----   ------     --  -- -----------
    252      11     1712       3968 ...98     0.53    532   0 csrss
    113      11     1176       3676 ...93     0.25    608   1 csrss
    175       9     1260       3708 ...97     0.20   1228   3 csrss
    243      13     1736       5512 ...17     3.77   3484   2 csrss
```

```
[WINCONT]: PS C:\> get-process | where {$_.ProcessName -eq 'csrss'}

Handles  NPM(K)    PM(K)      WS(K) VM(M)   CPU(s)     Id  SI ProcessName
-------  ------    -----      ----- -----   ------     --  -- -----------
    167       9     1276       3720 ...97     0.20   1228   3 csrss
```

Hyper-V Containers

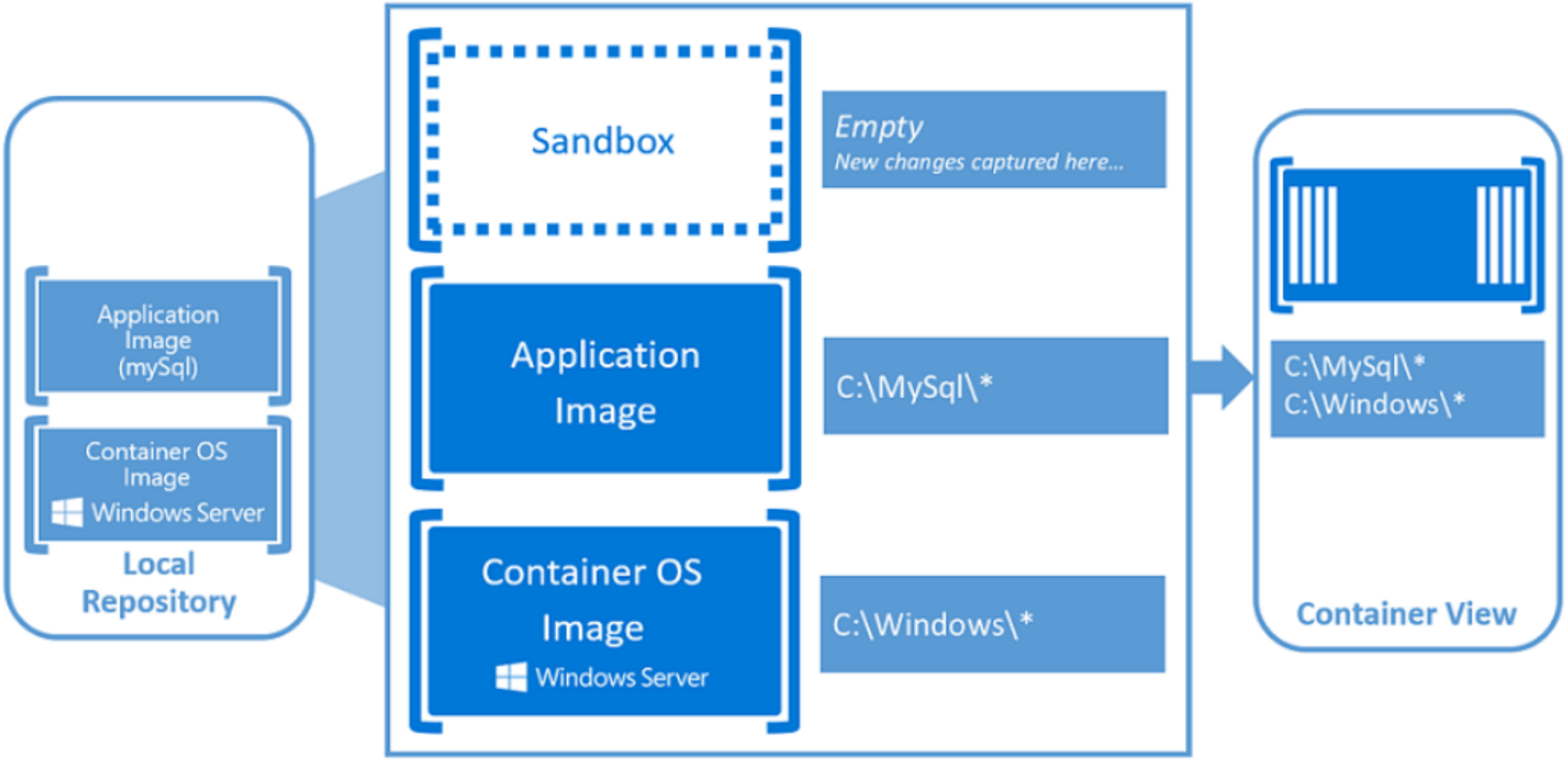
```
PS C:\> Get-Container | Select Name, RuntimeType, ContainerID | Where {$_.RuntimeType -eq 'Hyperv'}

Name RuntimeType ContainerId
---- ----------- -----------
TST3       HyperV 239def76-d29a-405e-ab64-765fb4de9176
TST        HyperV b8d7b55a-6b27-4832-88d8-4774df98f208
TST2       HyperV ccdf6a6e-3358-4419-8dda-ffe87f1de184
```



WS Conteiners -> Hyper-v Container
Como converter?

```
Set-Container "MyContainer" -RuntimeType Hyper-v
```

Container Fundamentals



Docker integration

Joint strategic investments to drive containers forward

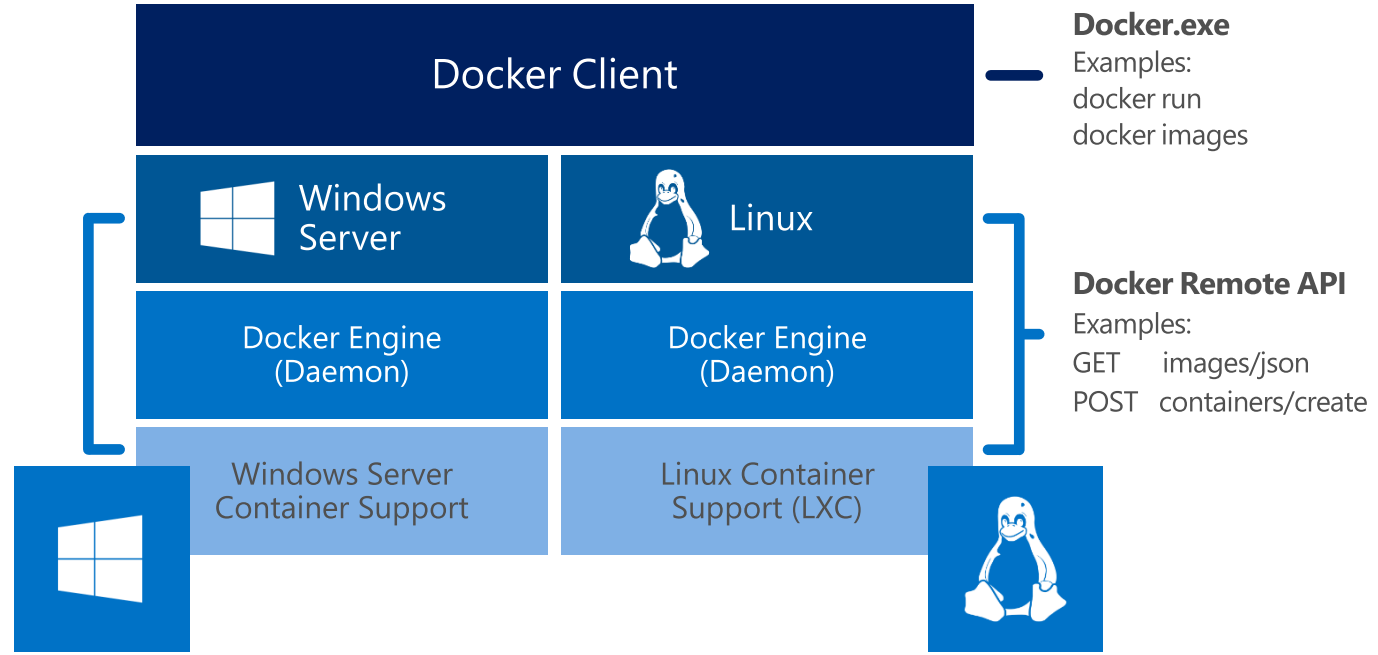
Spotlight capabilities

Docker Hub: Huge collection of open and curated applications available for download.

Collaboration: Bring Windows Server containers to the Docker ecosystem to expand the reach of both developer communities.

Docker Engine: Docker Engine for Windows Server containers will be developed under the aegis of the Docker open source project.

Docker client: Windows customers will be able to use the same standard Docker client and interface on multiple development environments.



As ferramentas certas

Gerenciamento de Containers

PowerShell

Docker

Others

Ambientes de desenvolvimento

Outros...

Tecnologia do container

Windows Server

Linux

Nuvem Microsoft

Azure

On premises

Service Provider

Recursos

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- https://aka.ms/o-futuro-dos-servidores

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Obrigado!

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Gerenciamento Moderno de infraestrutura híbrida

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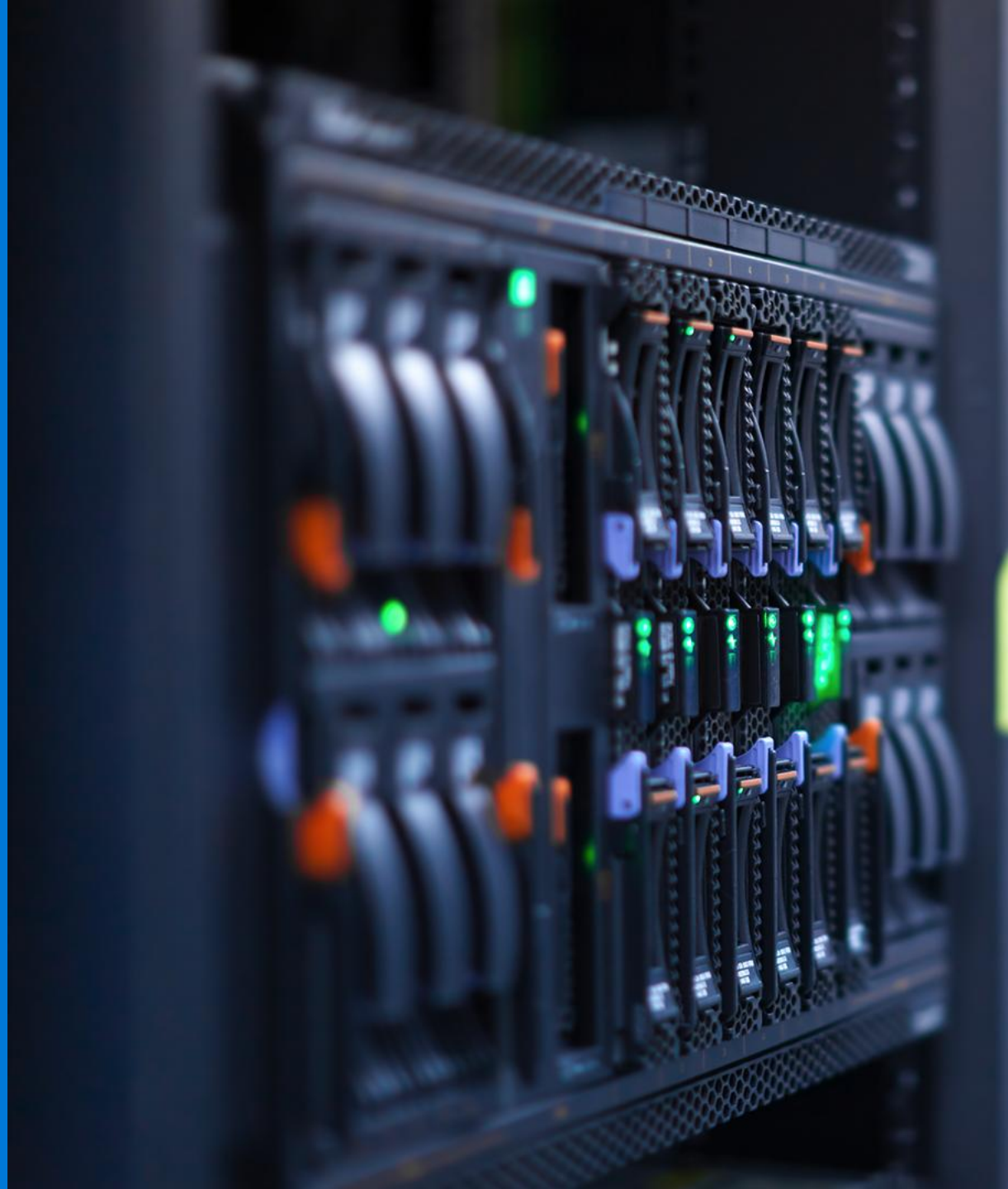


Mudanças nas necessidades no gerenciamento de TI

Gerenciamento as a service

Inspirada em nuvem

Micro serviços e containers

Suporte para ambientes heterogêneos

Gerencie qualquer lugar

Qualquer nuvem, qualquer plataforma

- Próxima geração de soluções para gerenciamento de nuvens
- Suporte multi-cloud, multi-plataforma
- Gerenciamento unificado entre Infraestrutura e serviços

Solução de gerenciamento de nuvem híbrida

Operations Management Suite

Controle

Agilidde do negócio com o controle tradicional da TI

Visibilidade

Visão incomparável de aplicações e Infraestrutura

Proteção

Backup e DR (Disaster Recovery) automatizados

Segurança

Análises de ameaças robusta para seus servidores e workloads workloads

System center

Solução de gerenciamento de nuvem híbrida

Operations Management Suite

Controle

Visibilidade

- Monitoração fim a fim
- Gerenciamento de alertas Near-Real-time
- Monitoração orientada a análise de logs

Proteção

Segurança

System center

O que é o OMS Log Analytics?

Colete, pesquise e visualize dados de máquina vindos de uma nuvem ou on-premises

1. Plataforma de análise de **dados de máquina** de hiper escala
2. Provê nativamente **insights** de seus workloads e aplicações
3. Solução de monitoração híbrida robusta

microsoft.com/oms

Certifications

Global

ISO 27001

ISO 27018

SOC 1
Type 2

SOC 2
Type 2

SOC 3

US Gov

PCI DSS
Level 1

FISC
Japan

HIPAA / HITECH Act

Industry

High
JAB P-ATO

Coming by Oct.16

Regional

EU
Model Clauses

Australia
IRAP/CCSL

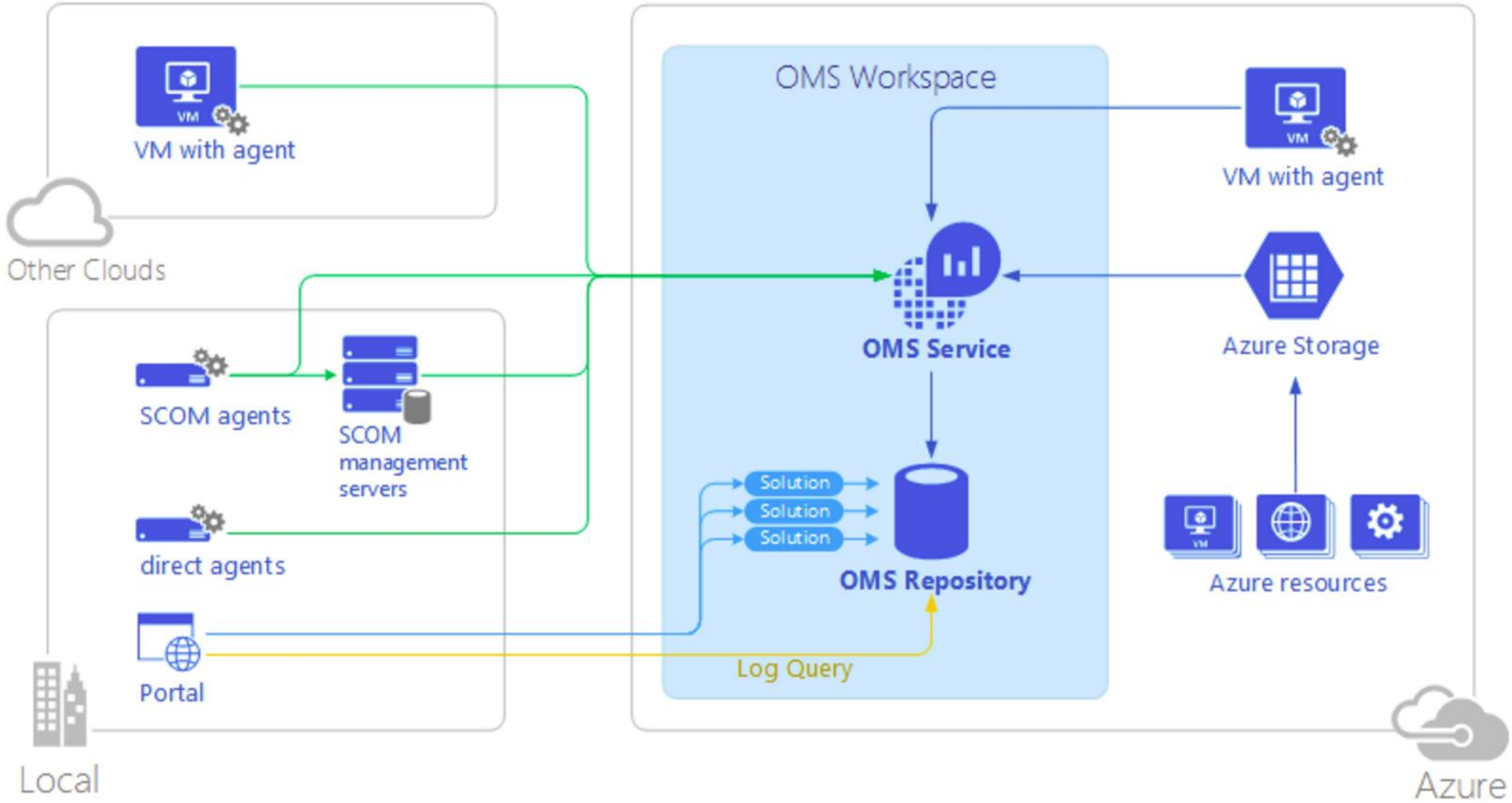
UK
G-Cloud

Singapore
MTCS

China
GB 18030

Japan CS Mark
Gold

Arquitetura



O que é suportado hoje no OMS?

Windows Events Logs

- Application
- Security
- System
- ...

Windows Performance Counters

- Logical Disk (% Free Space, Avg. Disk Bytes/Transfer..)
- Network Adapter (Bytes Sent/sec, Bytes Received/sec..)
- Processador (% Processor Time, Private Bytes, Virtual Bytes..)
- Memória (% Committed Bytes In Use, Available MBytes..)

Linux Performance Counters

- Logical Disk (% Free Space, Avg. Disk Bytes/Transfer..)
- Memória (% Committed Bytes In Use, Available MBytes…)
- Physical Disk (Physical Disk Bytes/sec, Avg. Disk sec/Read)

IIS Logs

- Formato W3CIIS

SysLogs

Custom Logs*

- Qualquer tipo de log!

* Feature em Preview

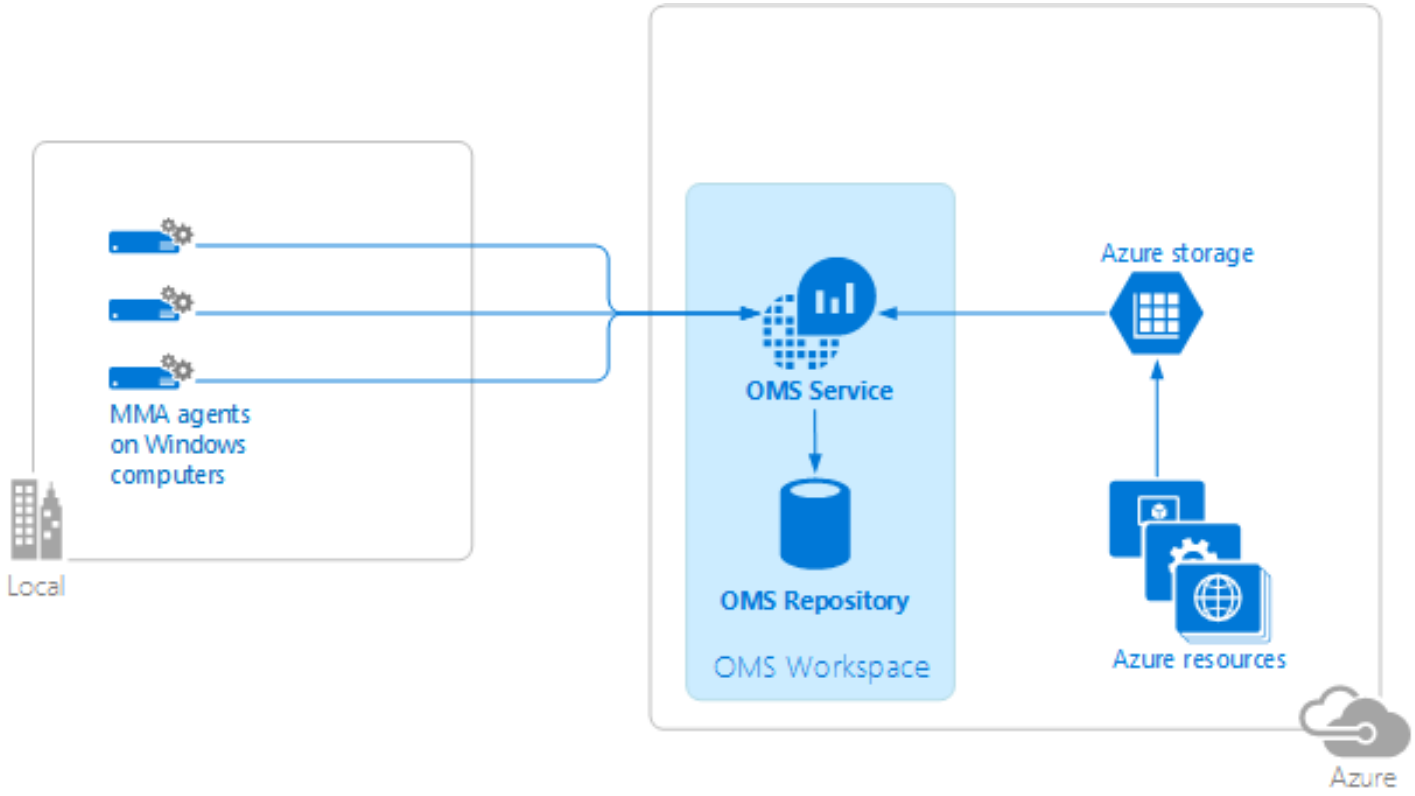
Agentes diretos

Requisitos

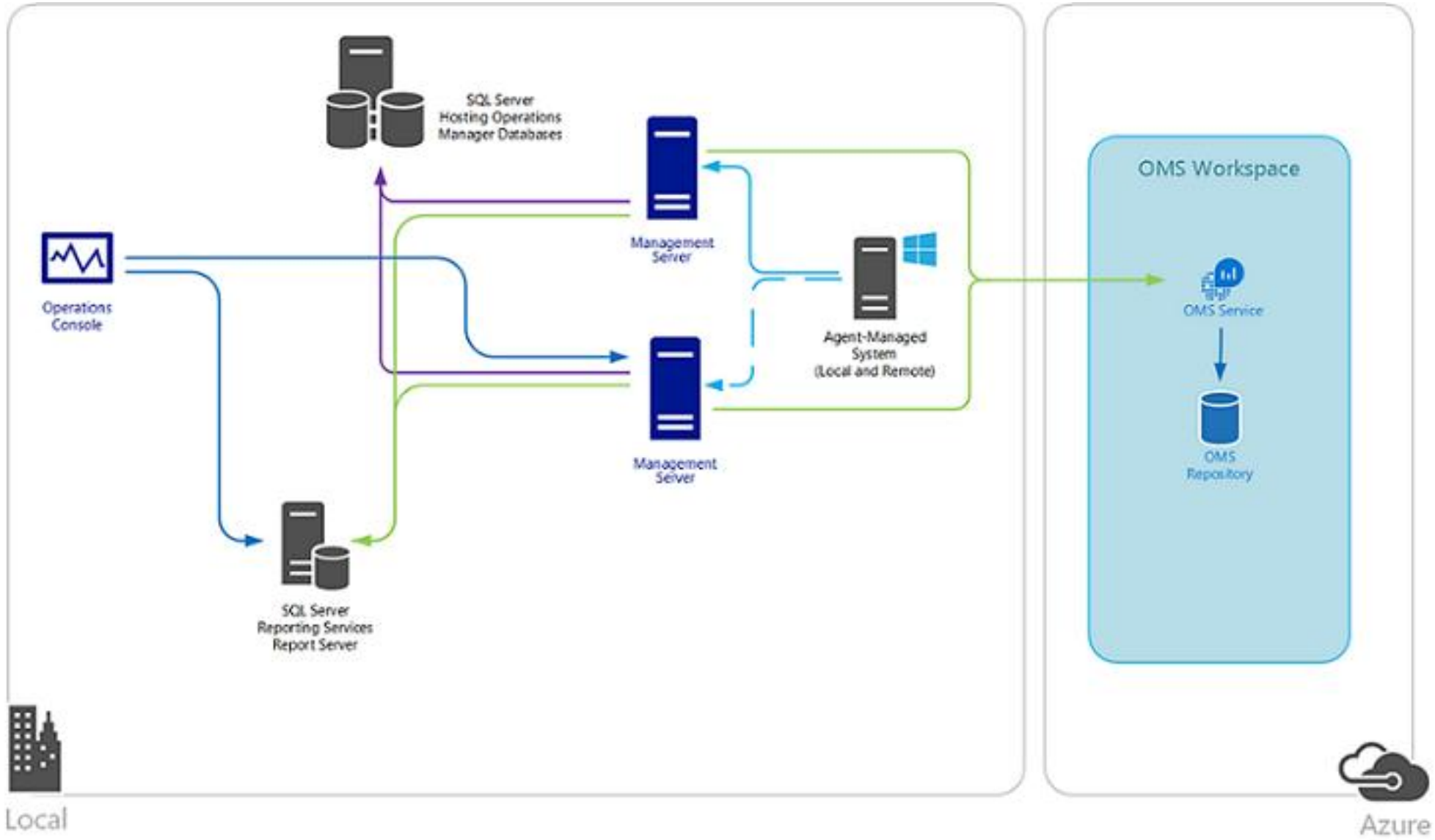
- Windows Server 2008 SP1 ou posterior
- Windows 7 SP1 ou posterior
- Conexão internet https ou OMS Gateway
- OMS subscription

Firewall

Agent Resource	Ports
*.ods.opinsights.azure.com	443
*.oms.opinsights.azure.com	443
*.blob.core.windows.net	443
ods.systemcenteradvisor.com	443



Integração com Operations Manager



Integração com Operations Manager

Versões Suportadas

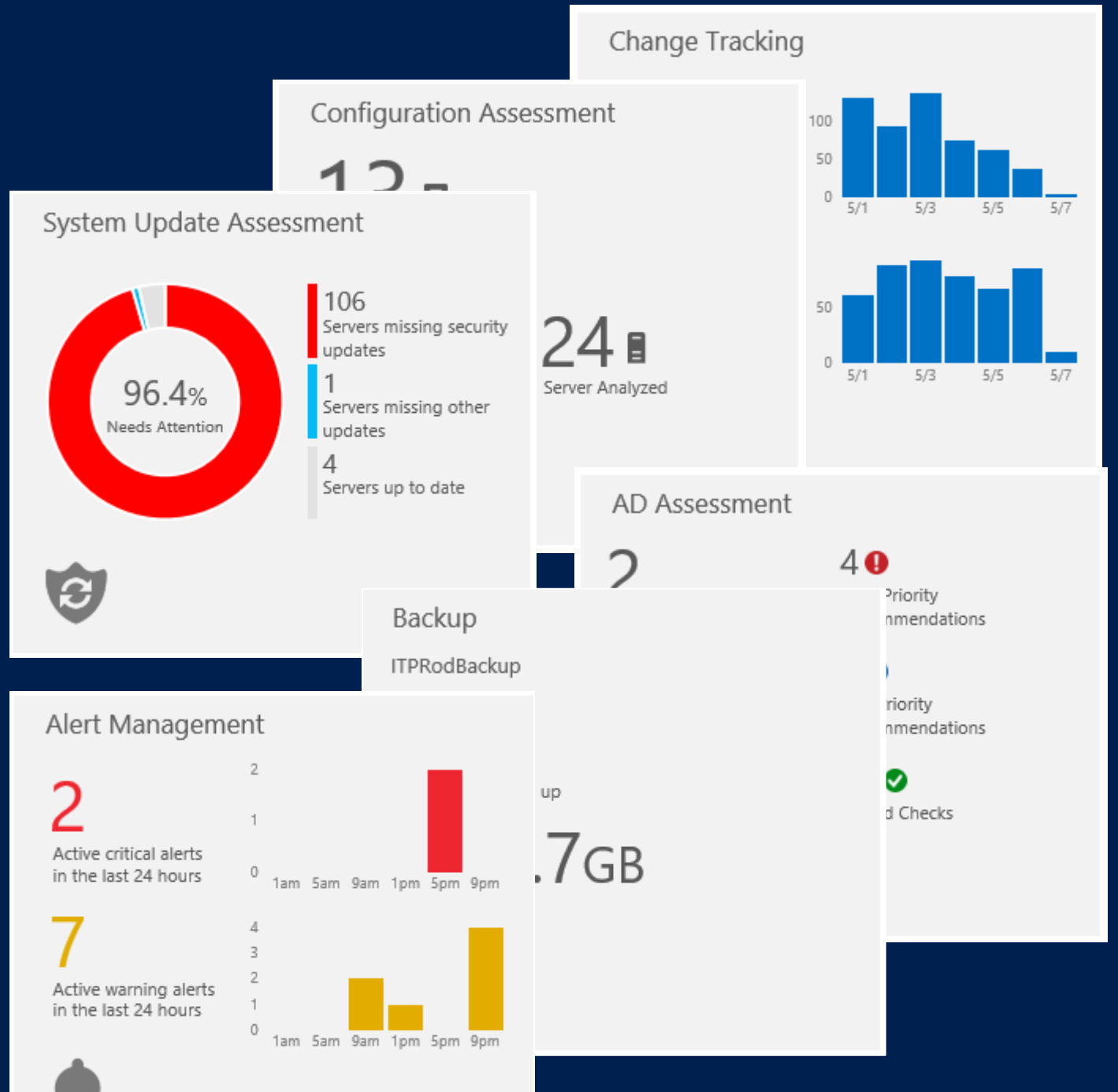
- Operations Manager 2012 SP1 UR6 (UR7 para proxy)
- Operations Manager 2012 R2 UR2 (UR3 para proxy)

Log Analytics: Solutions Packs

Solution Packs

Coleção de lógicas, visualizações e regras de aquisição de dados

- Usa a base analítica de logs gerada
- Metricas são pivotadas em torno de uma particular área de problema
- Investiva problemas operacionais
- Pode ser adicionada/removida facilmente

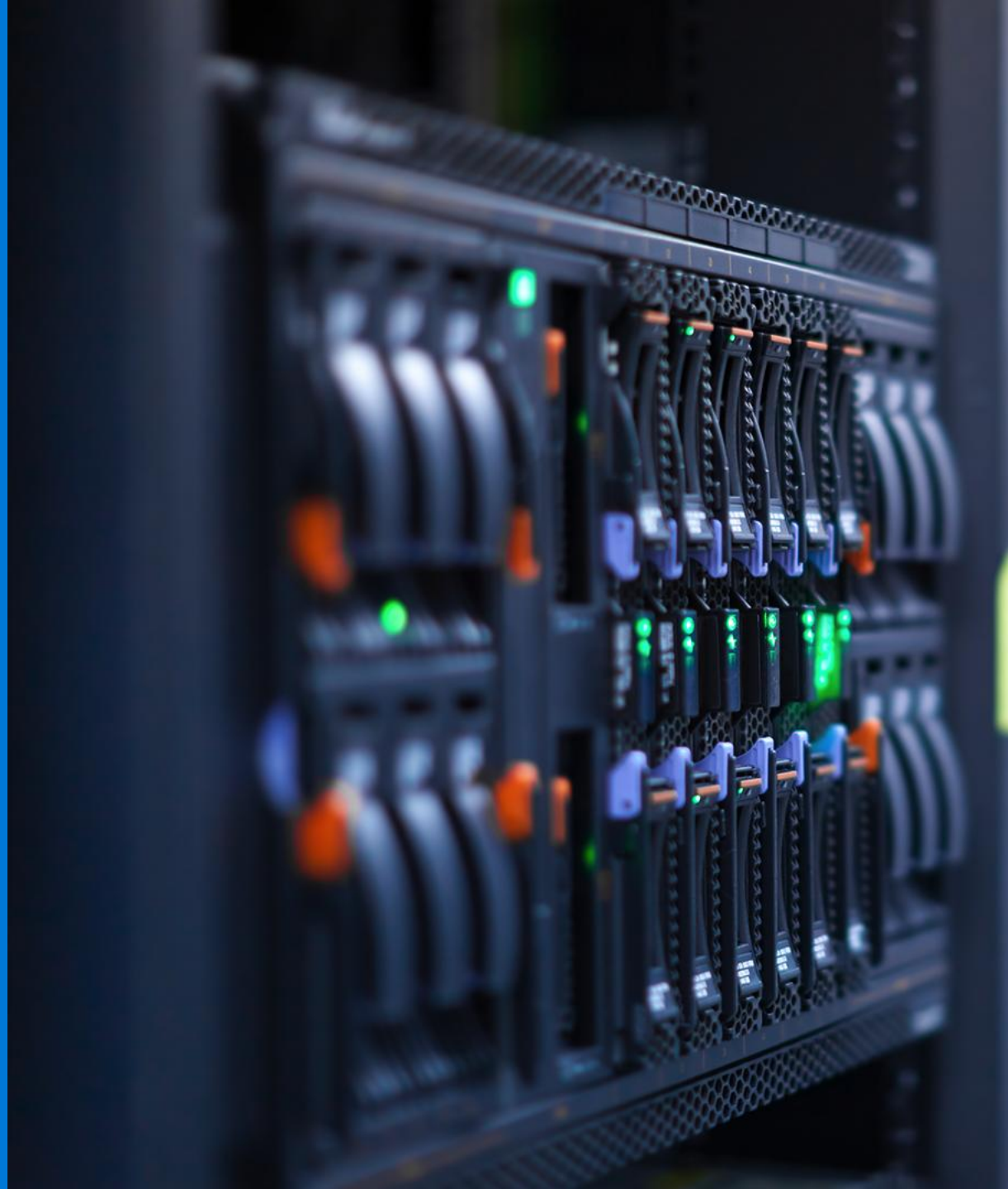


A inteligência da nuvem provendo segurança em ambientes híbridos

Speaker

Cargo

Microsoft



Solução de gerenciamento de nuvem híbrida

Operations Management Suite

Controle

Visibilidade

Proteção

Segurança

Identifique updates de softwares faltantes e estado de malwares

Colete eventos de segurança relacionados e conduza performance forence, auditorias e análises de violação

System center

Cyber Security & Mundo Atual

TARGET

SONY PICTURES

THE HOME DEPOT

PREMERA BLUE CROSS

STAPLES

...

Desafios de segurança para Operações de TI

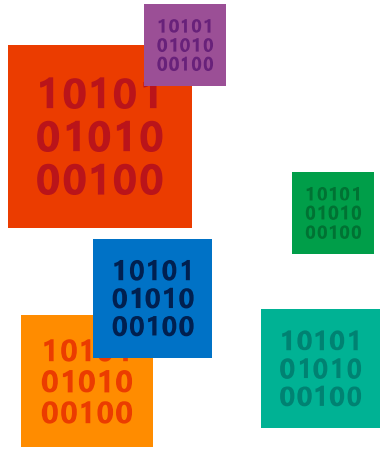
O número de threats está crescendo

Ambientes estão se tornando cada vez mais complexos

Pessoas capacidadas em segurança é cada vez mais escasso

Segurança na Microsoft

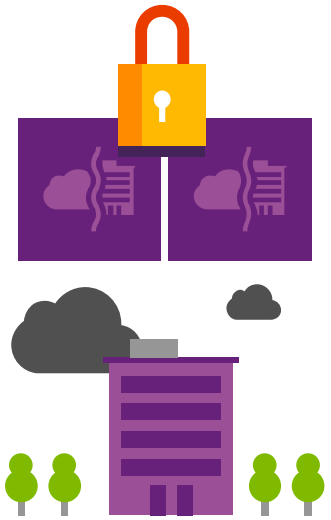
DADOS



Rights Management Services

Information Protection

CLOUD & DATACENTER



OMS Security

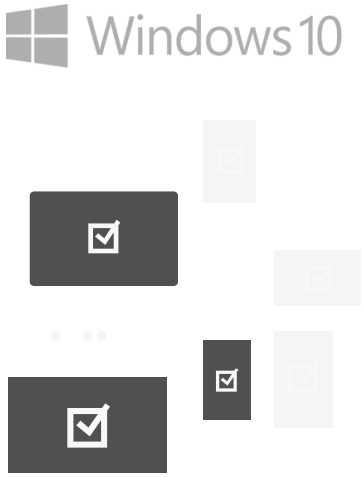
Azure Security Center

APLICAÇÕES (SaaS)

Cloud App Security

Advanced Threat Protection

ENDPOINTS (Devices)



Device Guard

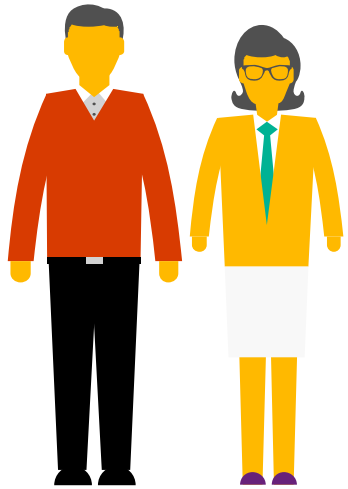
Credential Guard

Intune

Windows Hello

Windows Defender & ATP

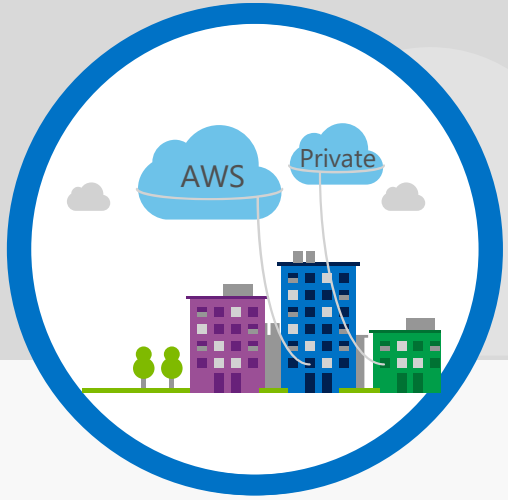
IDENTIDADE



Azure AD Identity Protection

Advanced Threat Analytics

OMS Security

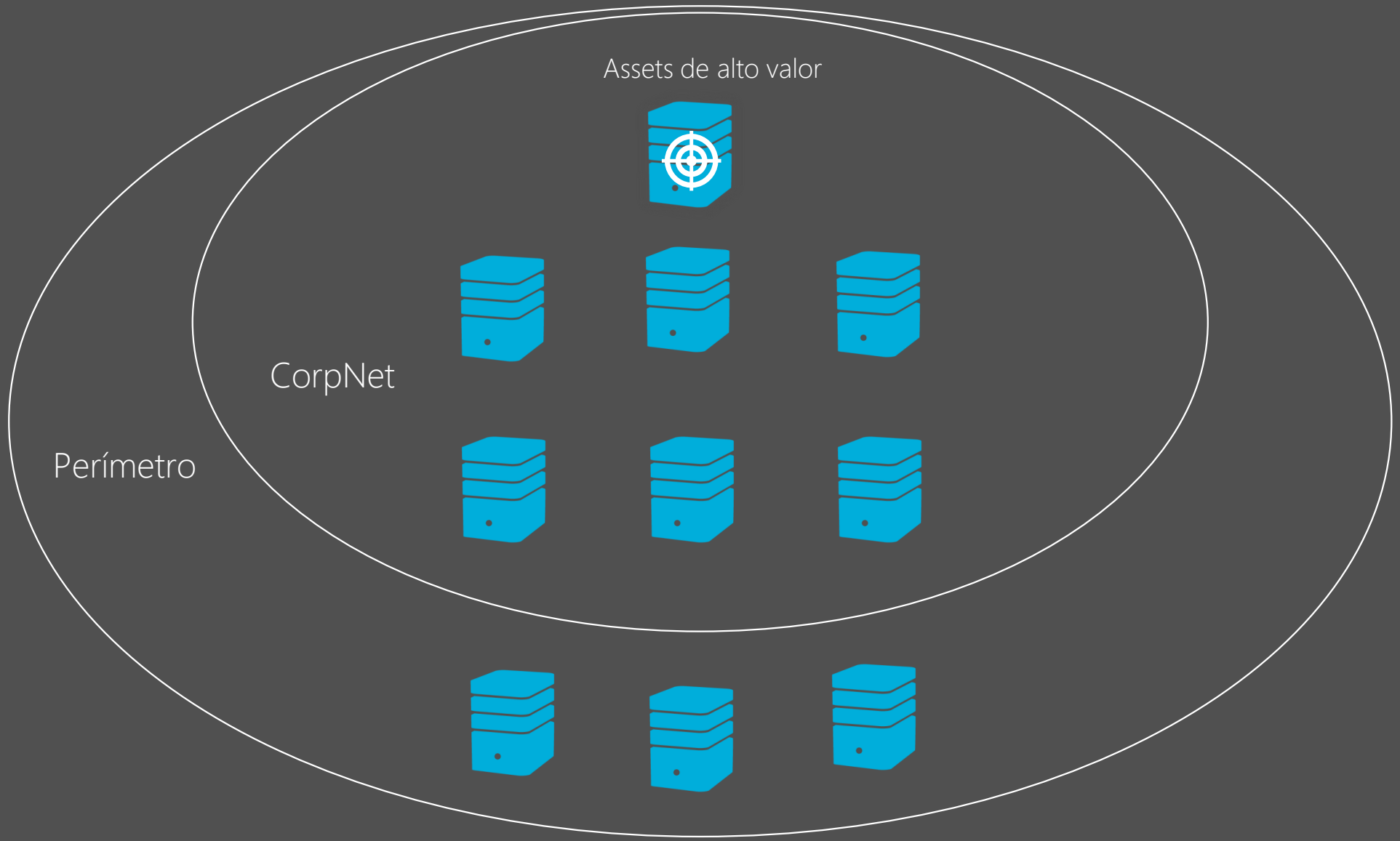


Colete, correlacione e atue em qualquer dado de segurança

Analise e visualize sua postura de segurança

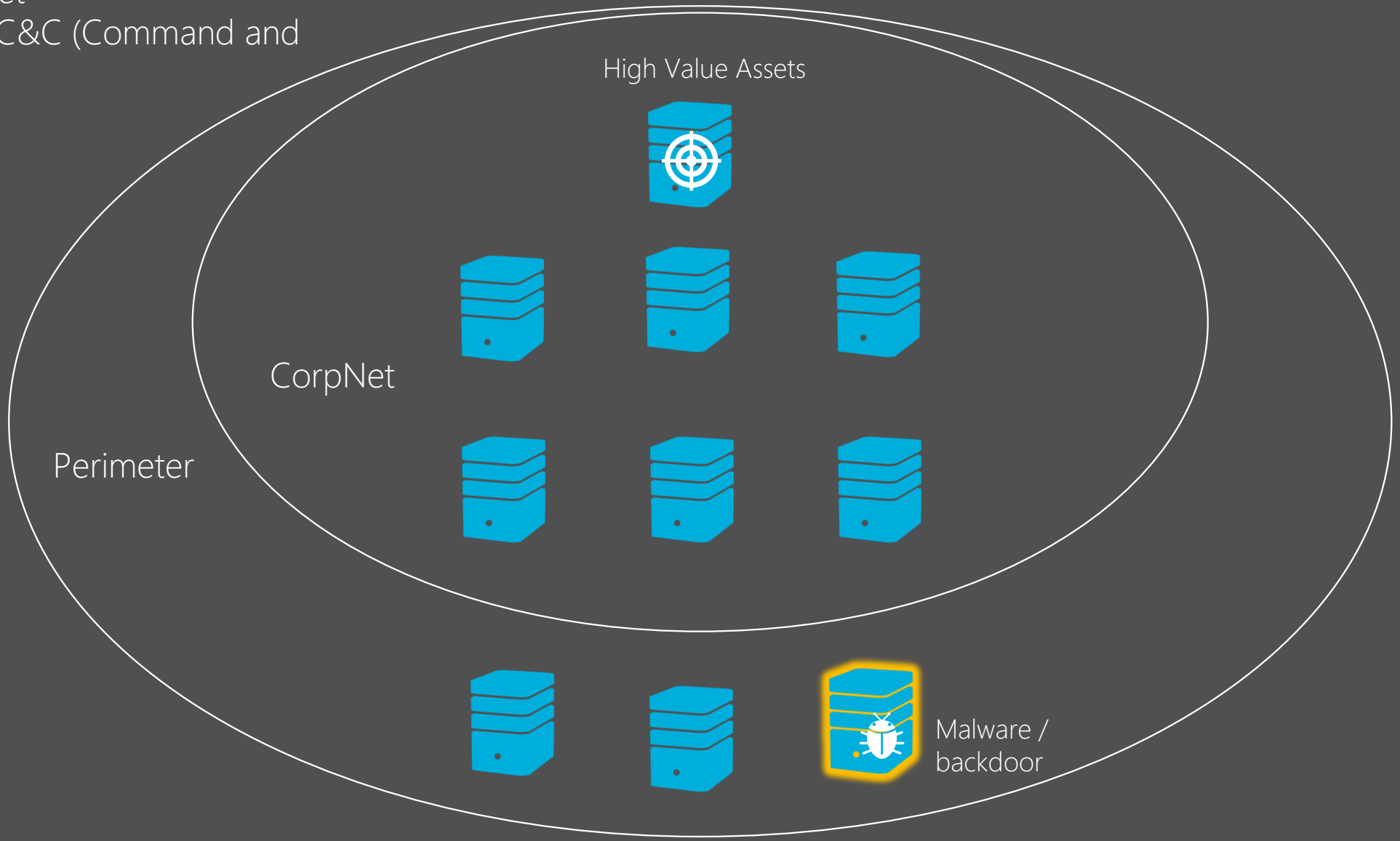
Ganhe insights sobre eventos notáveis e ameaças

Advanced Persistent Threat (APT)



Advanced Persistent Threat (APT)

Infecção do asset
Estabelecendo C&C (Command and Control)



Advanced Persistent Threat (APT)

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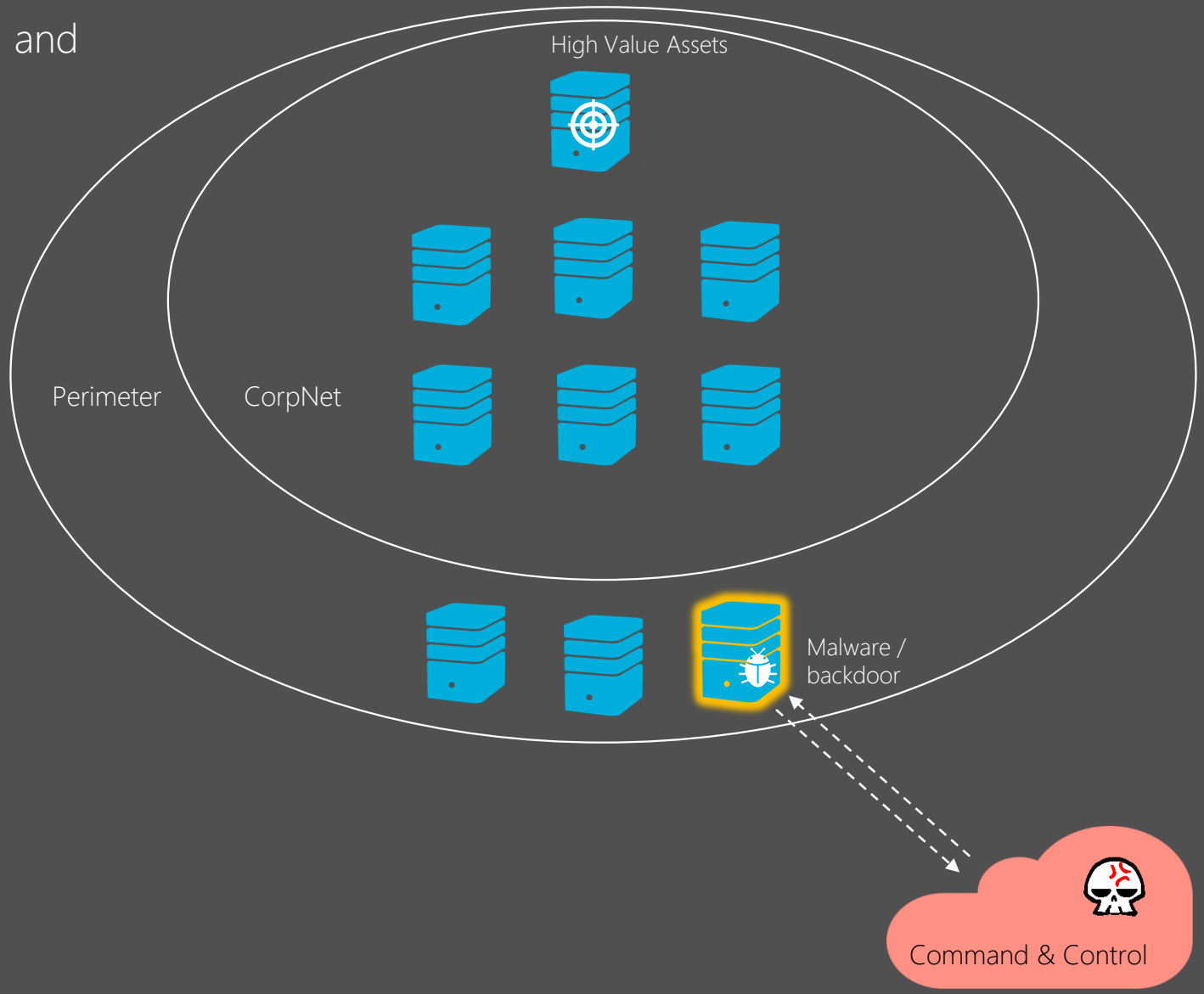
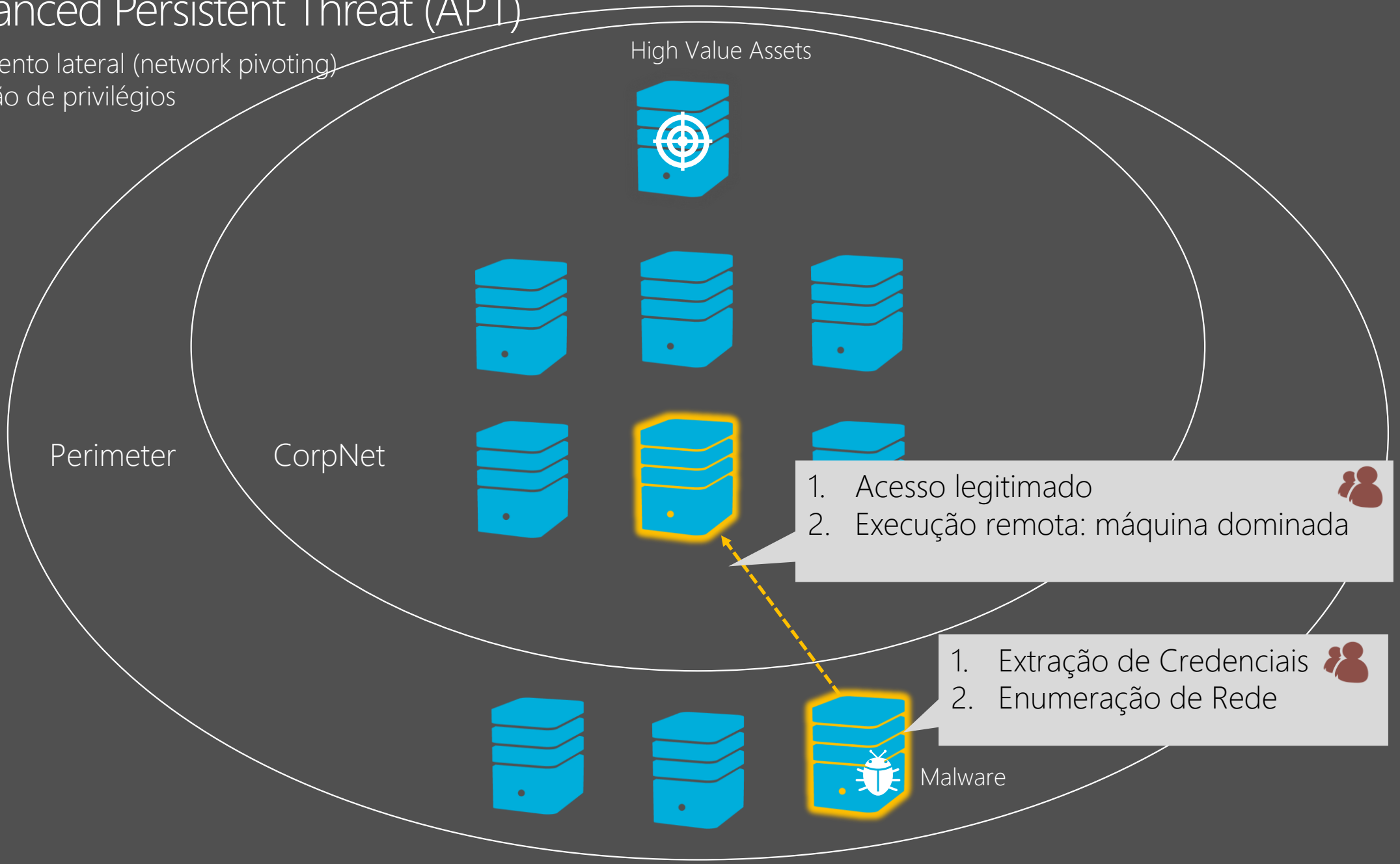


Advanced Persistent Threat (APT)

Movimento lateral (network pivoting)
Elevação de privilégios

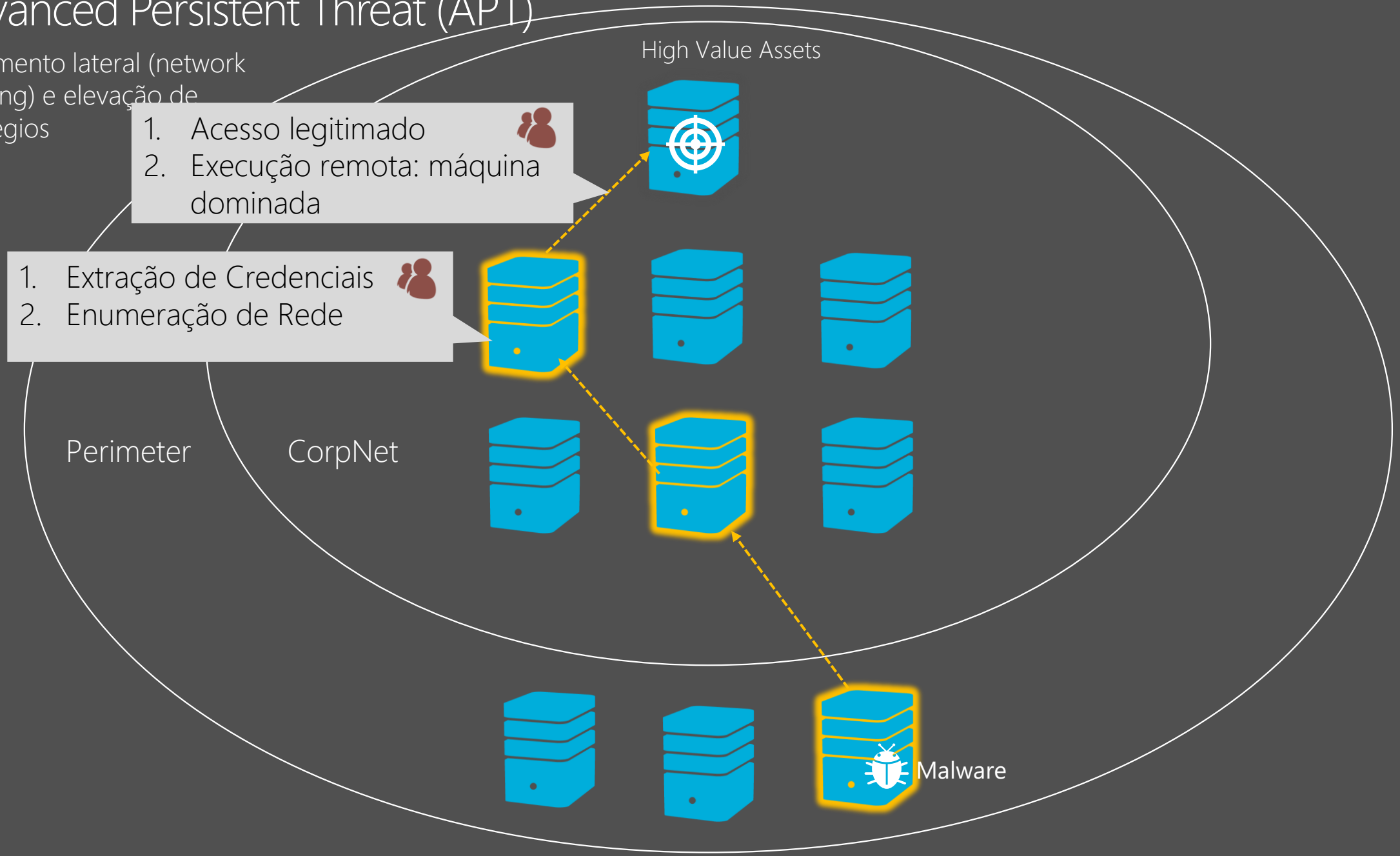


Advanced Persistent Threat (APT)

Movimento lateral (network pivoting) e elevação de privilégios

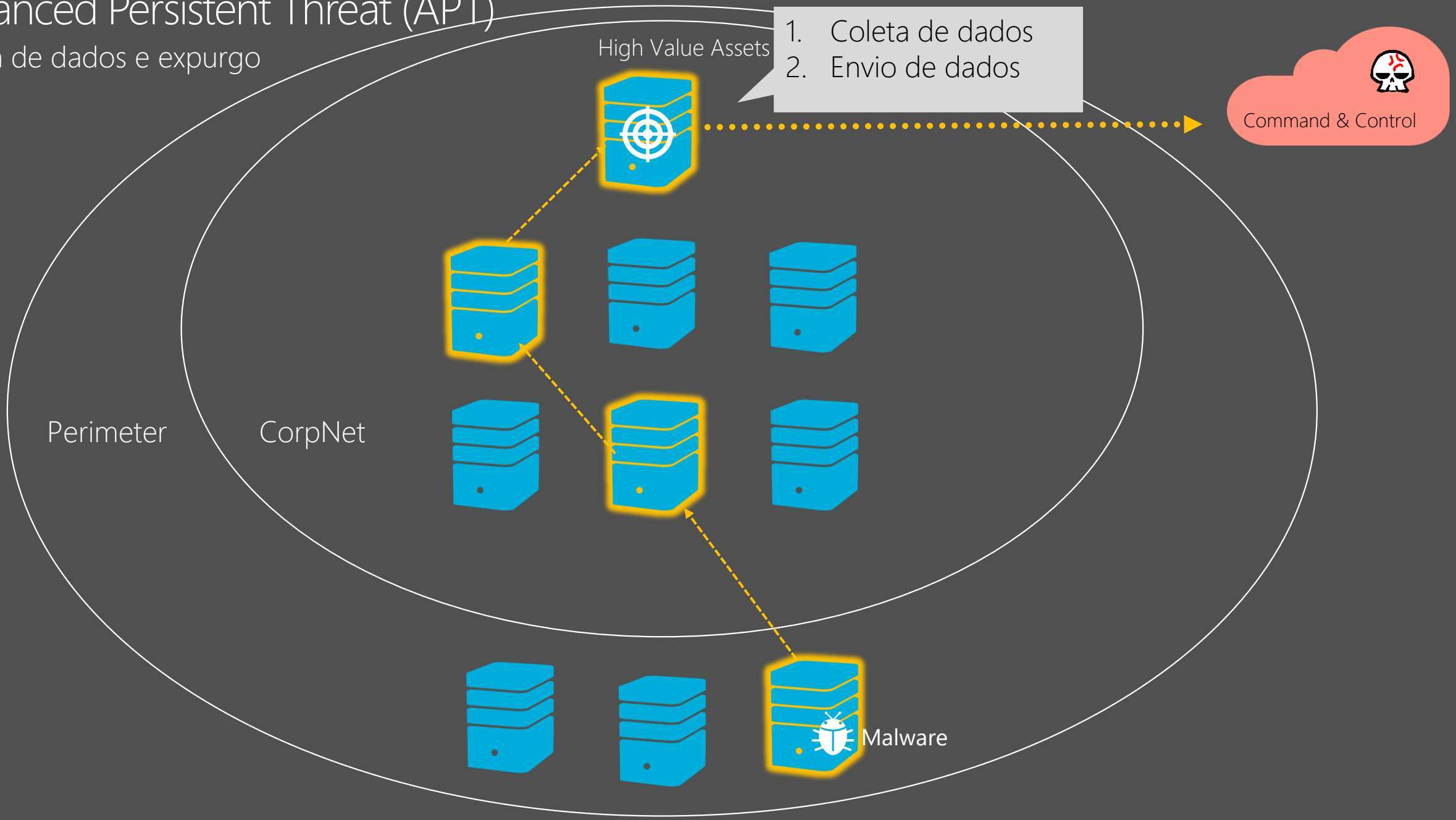
Advanced Persistent Threat (APT)

Movimento lateral (network pivoting) e elevação de privilégios

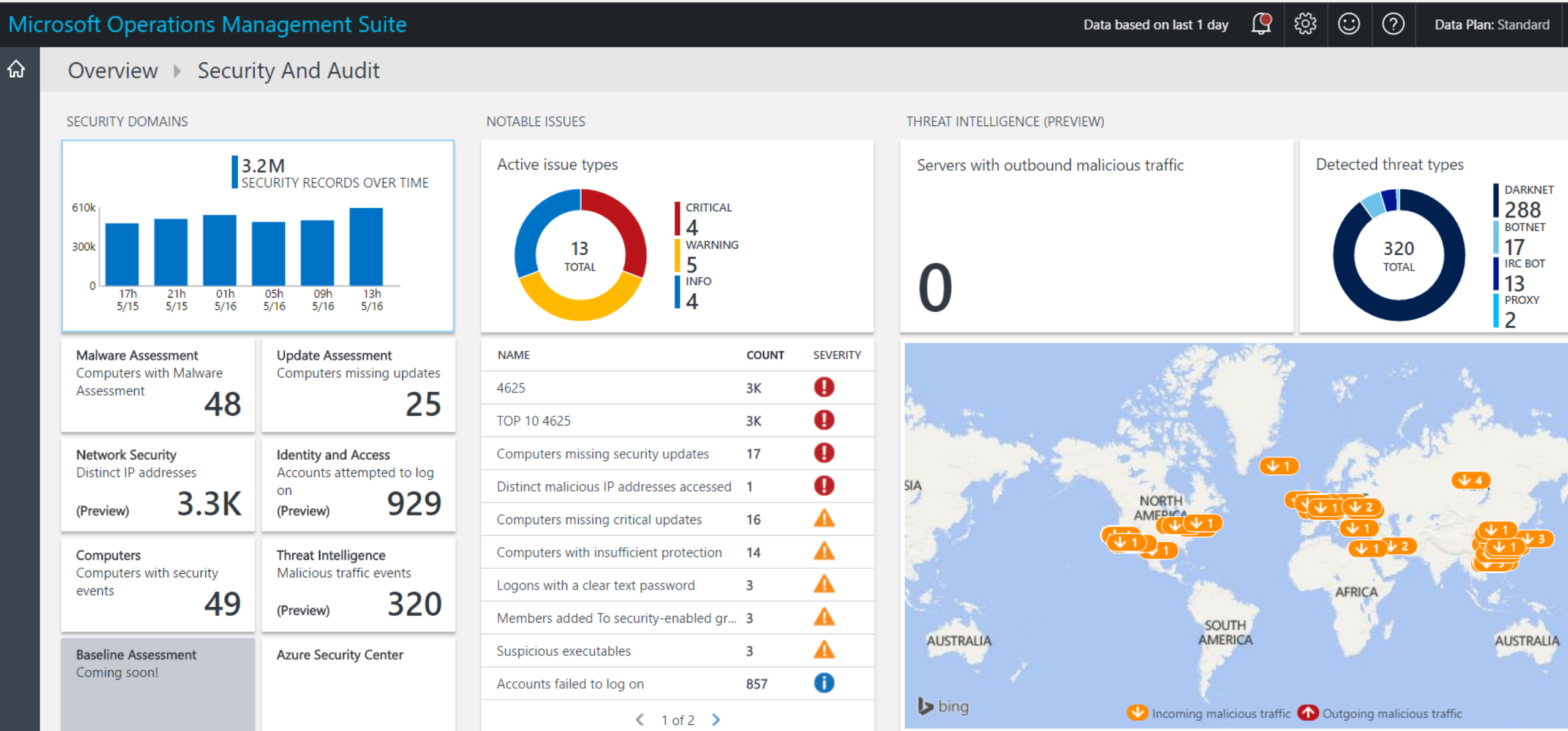


Advanced Persistent Threat (APT)

Coleta de dados e expurgo



Solution Pack: Security and Audit



Q&A

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