Windows Server und System Center Roadmap Part 1

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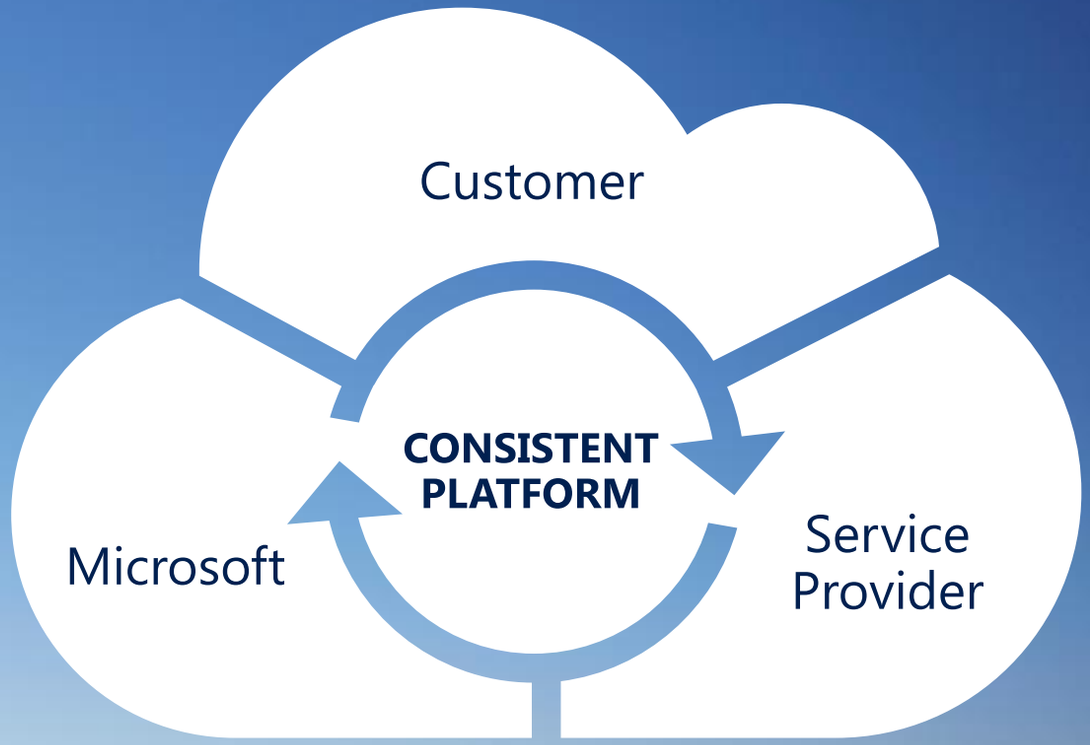
Microsoft cloud platform

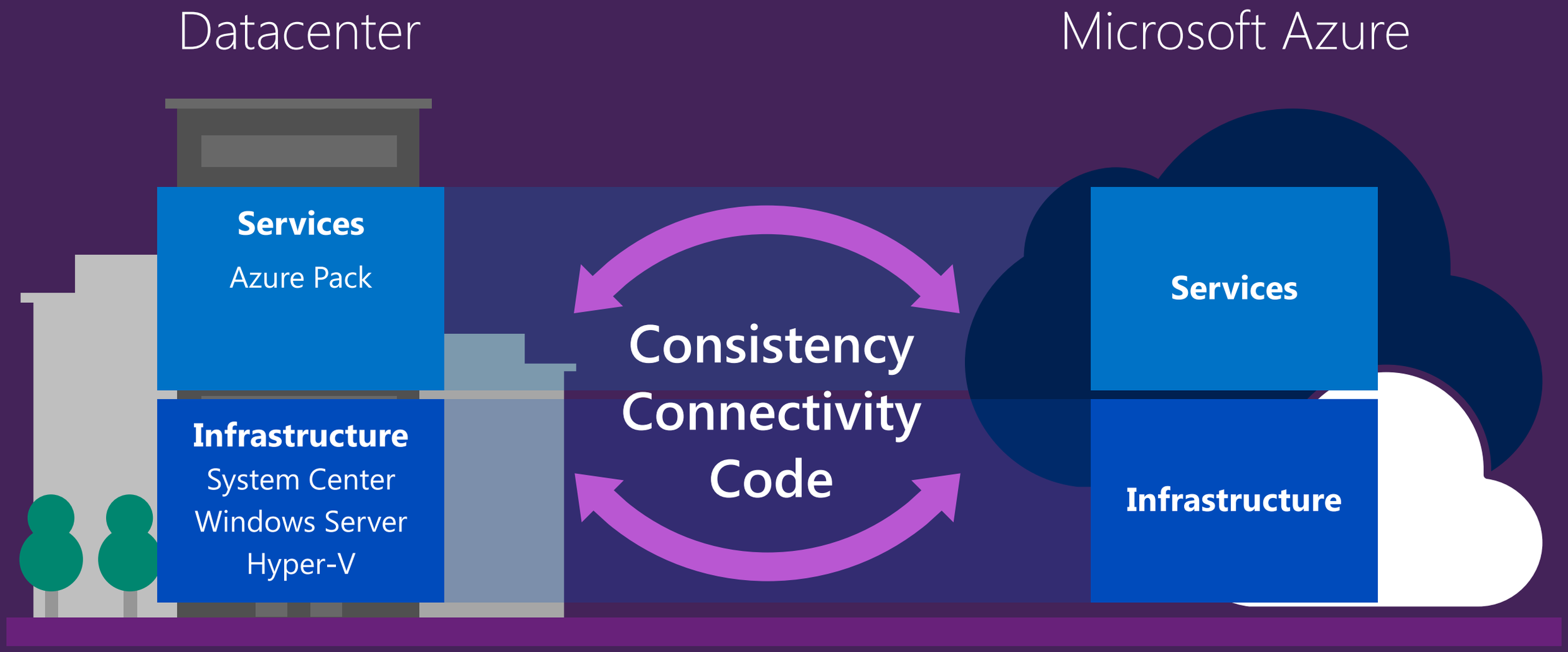
The platform for hybrid cloud enables IT to:

- Empower **enterprise mobility**
- Create the **Internet of** your **things**
- Enable **application** innovation
- Unlock **insights** on any data
- Transform the **datacenter**



Development Management Identity Data Virtualization

Azure innovation everywhere



Cloud OS…

Infrastructure management

Infrastructure provisioning

Enterprise-class multi-tenant infrastructure for hybrid environments

Infrastructure monitoring

Comprehensive monitoring of physical, virtual, and cloud infrastructure

Automation

Tools to streamline repetitive tasks and increase efficiency and productivity

Data protection

Centralized backup and protection of servers and data

Infrastructure management to service delivery

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Enterprise-class multi-tenant infrastructure for hybrid environments

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Data protection

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Fabric

Evolving from management to service delivery

Business

IT

Service delivery stack

Customer services & infrastructure

PaaS Websites | **IaaS** Virtual machines | **PaaS** Service bus | **IaaS** Network | **PaaS** Database

Service administration

Resource clouds | Automation | Billing | Tenant management | Hosting plan

Fabric

Azure Pack

System Center

Windows Server

More business agility

Shorter cycle times

Less "rogue IT"

Greater operational efficiency

Windows Server…

Compute: Confidently virtualize enterprise workloads

Customers require

Enterprise grade reliability

Best platform for traditional, distributed and cloud applications

Flexibility

Microsoft software-defined compute in your datacenter

- Deliver best-in-class scale, performance and resilience for enterprise workloads
- Frictionless fabric upgrades without downtime
- Deploy and manage Linux as a first-class citizen

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Networking: Enable flexible workload placement and mobility

Customers require

Flexibility

Reliability and high-performance

Application and workload focus

Microsoft software-defined networking in your datacenter

- Enhance virtual networking reliability, performance, and interoperability
- Enable centralized configuration and management across virtual and physical networks
- Transform the network cloud by using virtualized network functions
- Enable seamless datacenter extensions for flexible workload placement and mobility

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Storage: Help reduce enterprise storage costs

Customers require

Microsoft software-defined storage in your datacenter

- Deploy a cost-effective cloud-scale software-defined storage platform
- Centrally deploy and manage more resource-efficient on-premises storage
- Deliver business continuity for data and workloads
- Deploy a scalable hybrid-cloud storage solution

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Some TechEd News..

Microsoft Cloud Platform System
powered by Dell

Microsoft

Windows Server 2012 R2, System Center 2012 R2, Azure Pack

Microsoft-perfected design and best practice implementation

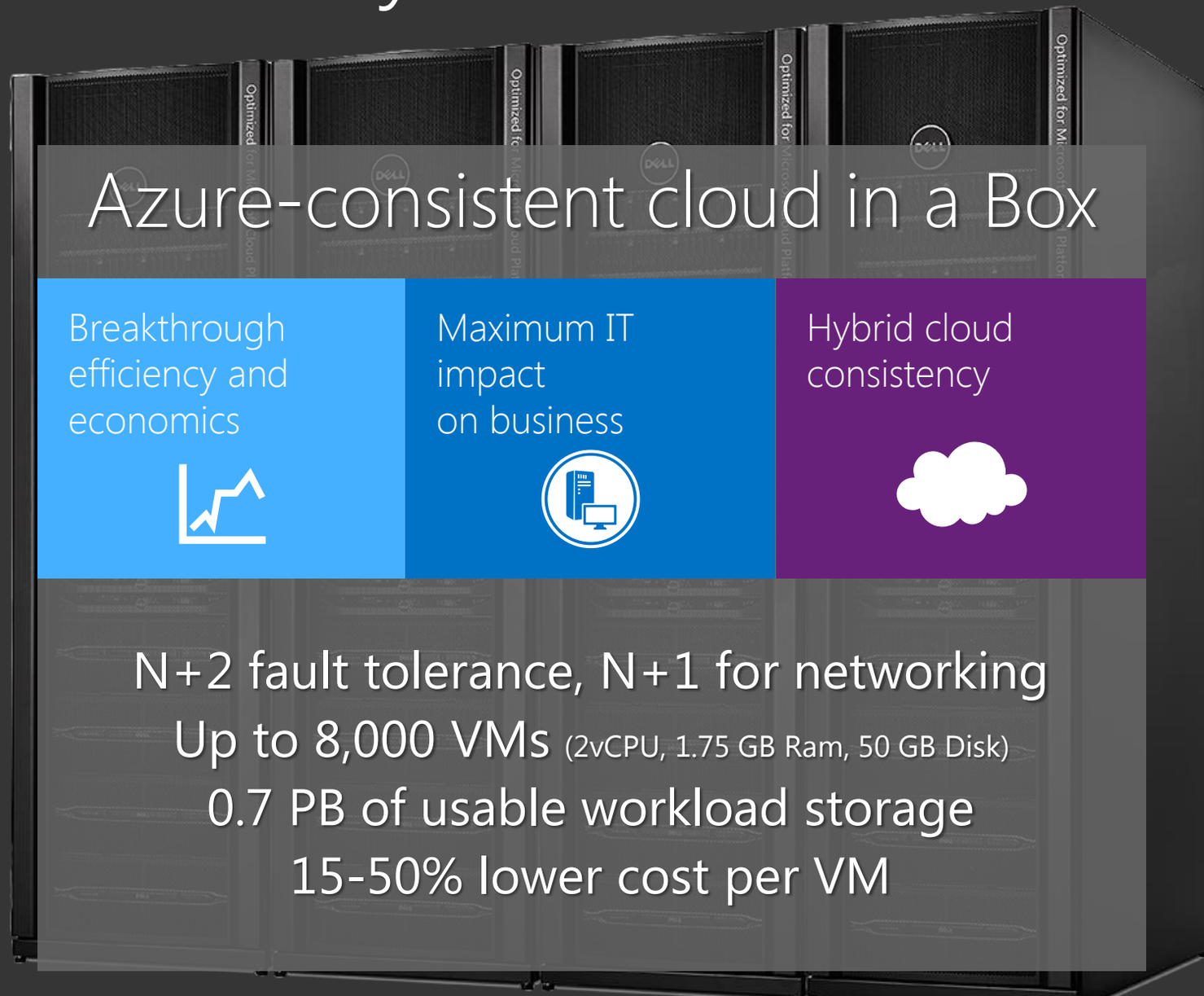
Microsoft-led support and orchestrated updates

Optimized run-books for Microsoft applications

DELL

Dell PowerEdge servers, Storage, Networking

Optimized racking and cabling for high density, servicing, reliability, and redundancy



Azure-consistent cloud in a Box

Breakthrough efficiency and economics

Maximum IT impact on business

Hybrid cloud consistency

N+2 fault tolerance, N+1 for networking

Up to 8,000 VMs (2vCPU, 1.75 GB Ram, 50 GB Disk)

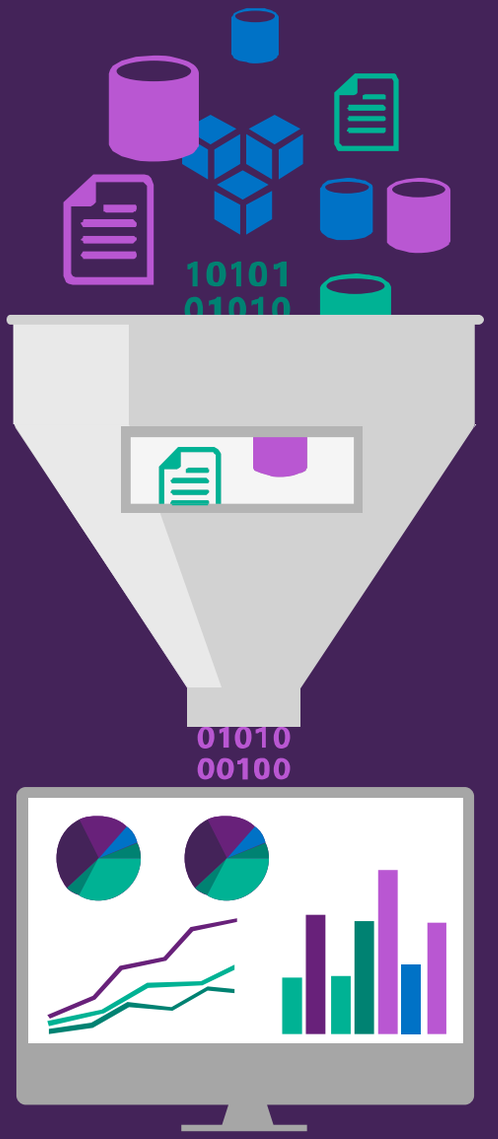
0.7 PB of usable workload storage

15-50% lower cost per VM

Introducing: Microsoft Azure operational insights

SaaS-based operations management and intelligence service that analyzes machine data across environments and turns it into actionable real-time intelligence

- Centralized log data ingestion
- Fast search and analysis
- Pre-packaged intelligence packs
- Gallery for saved searches and intelligence



Windows Server insides.

Compute

Cluster OS Rolling Upgrades

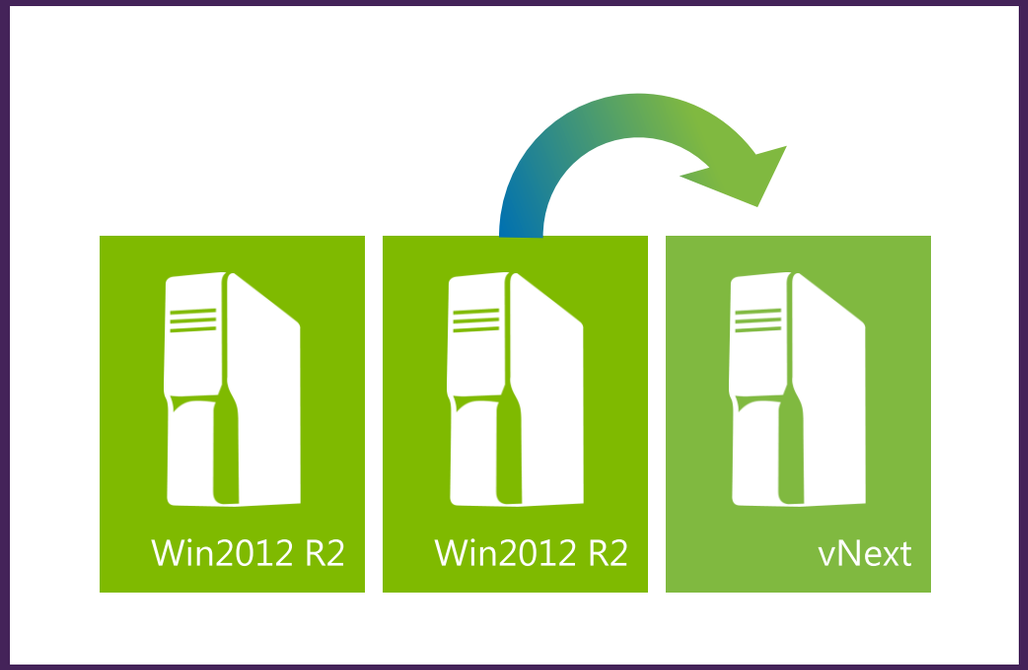
Simple

Rolling Upgrades with Win2012 R2 and vNext nodes within the same cluster

Easily roll in nodes with new OS version

Seamless

Zero downtime cloud upgrades for Hyper-V and Scale-out File Server



Cluster OS Rolling Upgrade

Cluster OS Rolling Upgrade

"Mixed-OS Mode" is a new state that allows Windows Server 2012 R2 and Windows Server vNext nodes in the same cluster

Cluster OS Rolling Upgrade

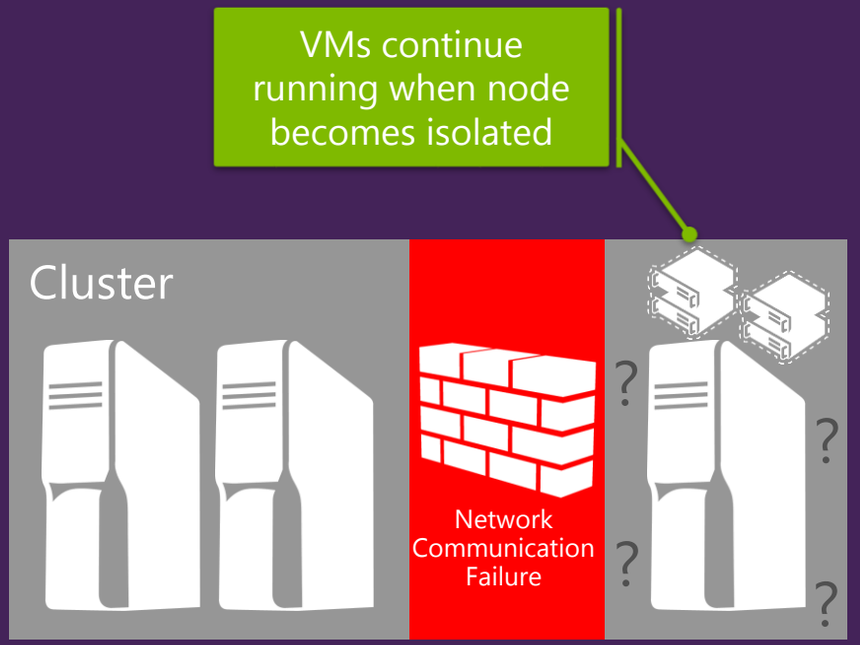
A Mixed-OS Mode cluster can be reverted back to Windows Server 2012 R2

Cluster OS Rolling Upgrade

- Mixed OS mode is a transition state
  - Optimizations don’t run
  - New features are not available
  - Do not plan on running your cluster in Mixed OS Mode for longer than one month

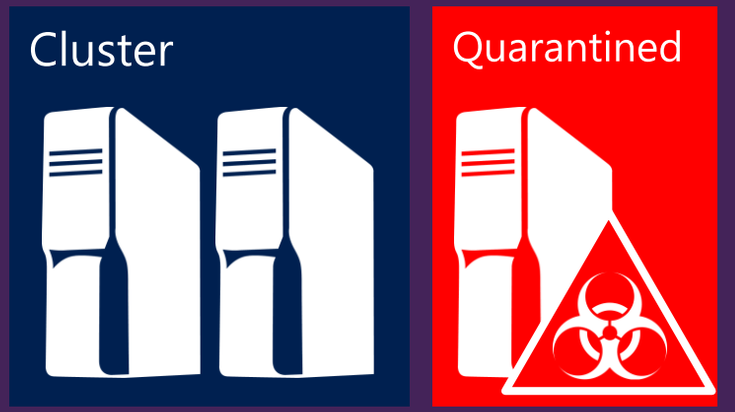
VM Compute Resiliency

Flexibility	Designing for cloud scale with commodity hardware Configurable based on your SLA's
Availability	VMs continue to run even when a node falls out of cluster membership
Reliability	Resiliency to transient failures



Quarantine of Flapping Nodes – Reliability

Protection	Unhealthy nodes are quarantined and are no longer allowed to join the cluster Prevents flapping nodes from negatively effecting other nodes and the overall cluster
Resiliency	Node is quarantined if it ungracefully leaves the cluster three times within an hour VMs are gracefully drained once quarantined
Control	`QuarantineDuration`: cluster property Default 2 hours `QuarantineState`: Node read only common property for node substatus



DEMO

New VM Upgrade Process

Windows Server Technical Preview:

- Hyper-V will not automatically upgrade virtual machines
- Upgrading a virtual machine is a manual operation that is separate from upgrading the host
- Individual virtual machines can be moved back to earlier versions, until they have been manually upgraded

Evolving Hyper-V Backup

New architecture to improve reliability, scale and performance.

- Decoupling backing up virtual machines from backing up the underlying storage.
- Efficient change tracking for backup is now part of the platform

Secure Boot Support for Linux

Providing kernel code integrity protections for Linux guest operating systems.

Works with:

- Ubuntu 14.04 and later
- SUSE Linux Enterprise Server 12

Production Checkpoints

Delivers the same Checkpoint experience that you had in Windows Server 2012 R2 – but now fully supported for Production Environments

- Uses VSS instead of Saved State to create checkpoint
- Restoring a checkpoint is just like restoring a system backup

Replica Support for Hot Add of VHDX

When you add a new virtual hard disk to a virtual machine that is being replicated – it is automatically added to the not-replicated set. This set can be updated online.

```
Set-VMReplication "VMName" -ReplicatedDisks
(Get-VMHardDiskDrive "VMName")
```

Runtime Memory Resize

Dynamic memory is great, but more can be done.

For Windows Server Technical Preview guests, you can now increase and decrease the memory assigned to virtual machines while they are running.

Hot add / remove of network adapters

Network adapters can be added and removed from Generation 2 virtual machines while they are running.

Network Adapter Identification

You can name individual network adapters in the virtual machine settings – and see the same name inside the guest operating system.

PowerShell in host:

```
Add-VMNetworkAdapter -VMName “TestVM" -SwitchName "Virtual Switch" -Name "Fred" -Passthru |
Set-VMNetworkAdapter -DeviceNaming on
```

PowerShell in guest:

```
Get-NetAdapterAdvancedProperty | ?{$_.DisplayName -eq "Hyper-V Network Adapter Name"} |
select Name, DisplayValue
```

Hyper-V Manager Improvements

Multiple improvements to make it easier to remotely manage and troubleshoot Hyper-V Servers:

- Connecting via WinRM
- Support for alternate credentials

Requires that you have CredSSP enabled on server and client (http://blogs.msdn.com/b/powershell/archive/2008/06/05/credssp-for-second-hop-remoting-part-i-domain-account.aspx)

- Connecting via IP address
- Able to manage Windows Server 2012, 2012 R2 and Technical Preview from a single console

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Windows Server und System Center Roadmap Part 2

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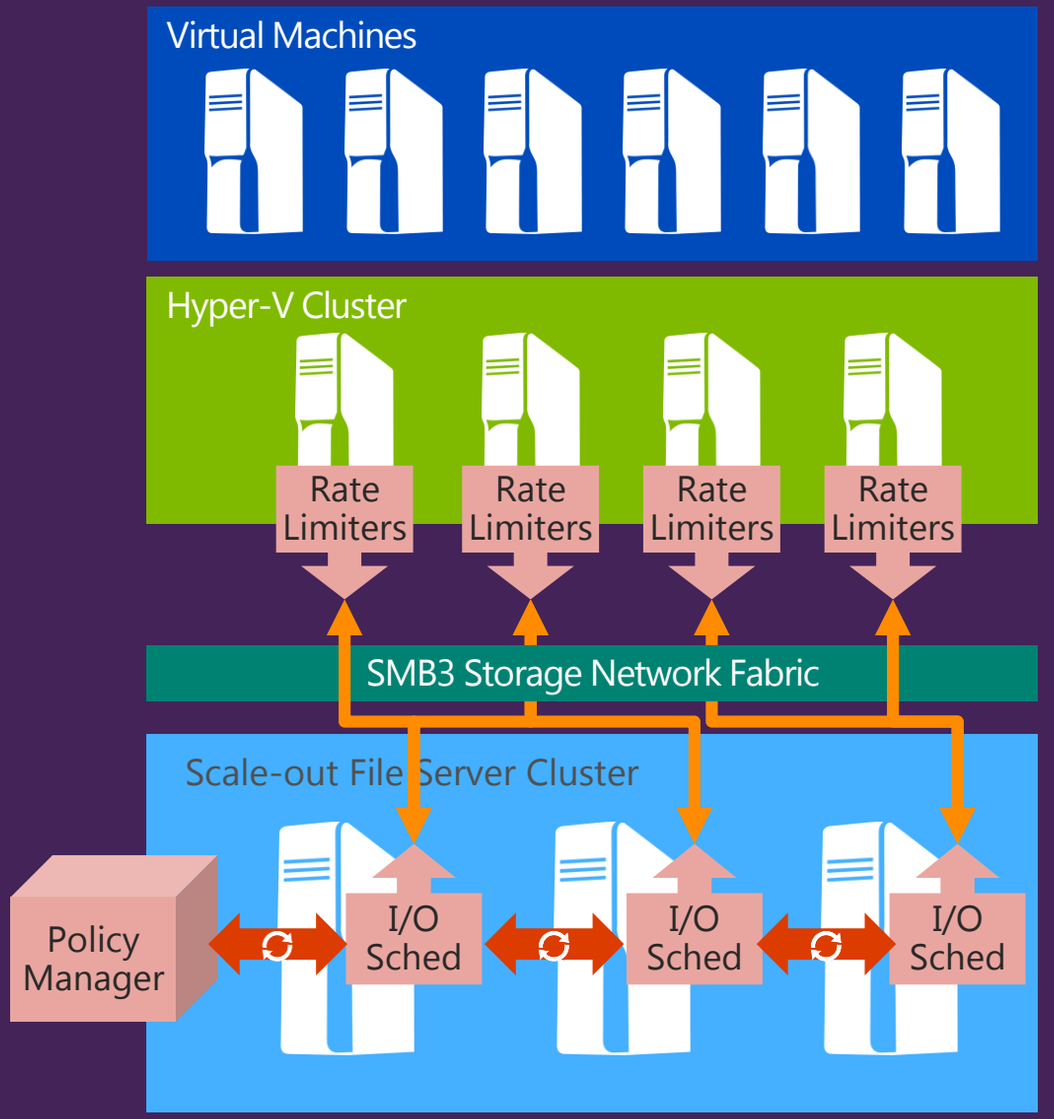
Storage

Storage Quality of Service (QoS) – Greater efficiency

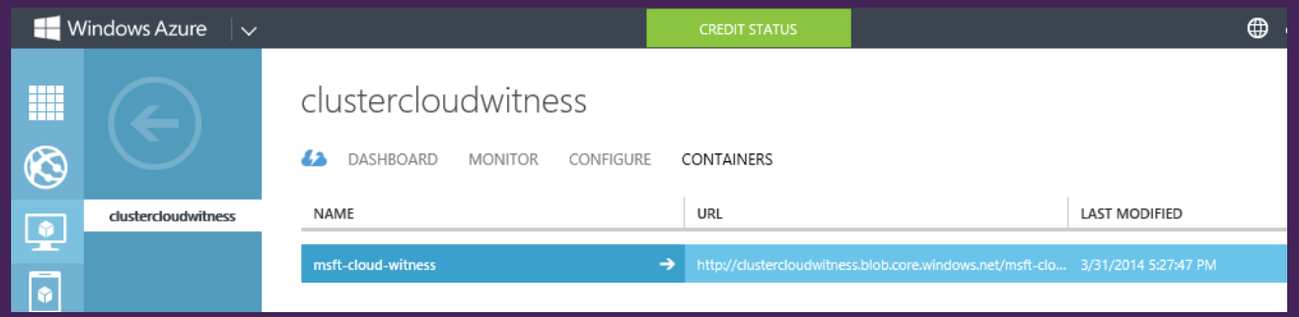
Control and monitor storage performance

Simple out of box behavior	Enabled by default for Scale Out File Server Automatic metrics (normalized IOPs & latency) per VM & VHD
Flexible and customizable	Policy per VHD, VM, Service or Tenant Define Minimum & Maximum IOPs Fair distribution within policy
Management	System Center VMM and Ops Manager PowerShell built-in for Hyper-V and SOFS



Cloud Witness – Greater efficiency

Hybrid Cloud	Leveraging the power of the public cloud to increase resiliency of your private cloud Azure blob storage as an arbitration point
Flexible Scenarios	Stretched clusters without a 3rd site Clusters without shared storage Guest Clusters in Azure VM role

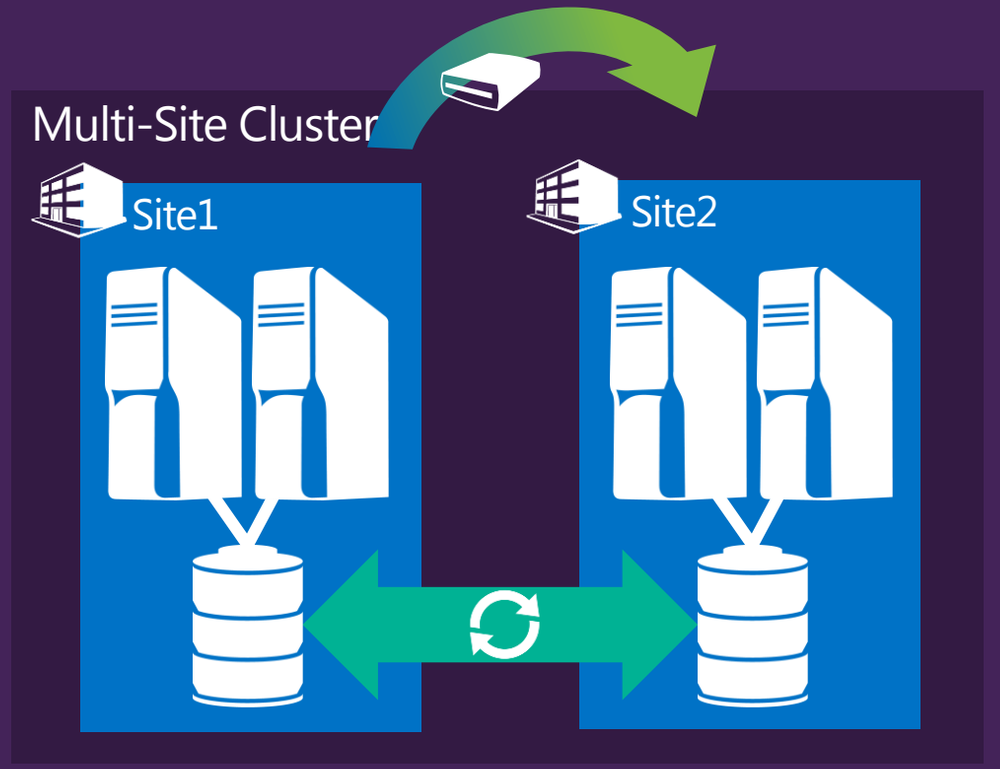


https

Storage Replica – More uptime

Cross site HA DR: Stretch clusters across sites with synchronous volume replication

Integrated management	End-to-end Windows Server disaster recovery solution Failover Cluster Manager UI and PowerShell
Flexible	Works with any Windows volume, uses SMB3 as transport Hardware agnostic - works with Storage Spaces or any SAN volume
Scalable	Block-level synchronous volume replication Automatic cluster failover for low Recovery Time Objective (RTO)

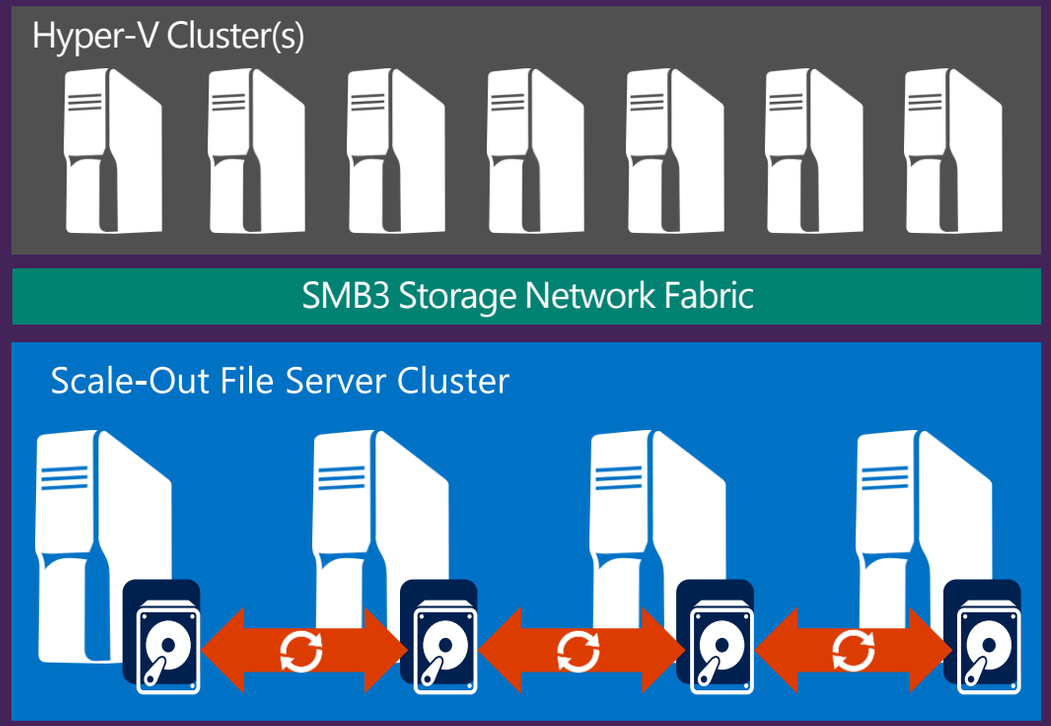


DEMO

Storage Spaces Shared Nothing – Low cost

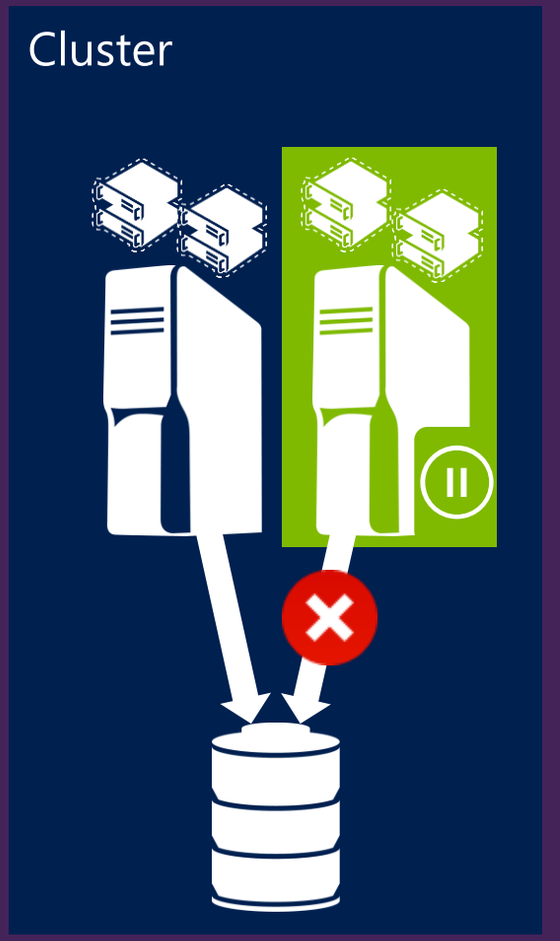
SoFS clusters with **no shared storage.** Doesn't need shared JBODs and SAS fabric behind Scale Out File Server nodes

Cloud design points and management	Prescriptive configuration. Reduced hardware costs with SATA drives Deploy, manage and monitor with SCVMM,SCOM
Reliability, Scalability, Flexibility	Fault tolerance to disk, enclosure, node failures Scale pools to large number of drive Fine-grained storage expansion
Use Cases	Hyper-V IaaS storage Storage for Backup and Replication targets



VM Storage Resiliency – Reliability

Resiliency	Designing for cloud scale with standard hardware Preserve tenant VM session state in the event of transient storage disruption
Visibility	VM stack quickly notified on failure Intelligent and quick VM response to block or file based storage infrastructure issues
Reliability	VM moved to PausedCritical state and will wait for storage to recover Session state retained on recovery



Network

Next Generation Networking: Key Deliverables

SDN Infrastructure	Network Function Virtualization	Cloud Scale Fundamentals
Scalable Network Controller encompassing physical and virtual infrastructural components	Infrastructure enabling service composition via tenant-defined service chaining	Converged fabric supporting virtualized tenant *and* RDMA-enabled disaggregated storage traffic, with quality-of-service guarantees
Enhanced interoperability at every layer in the stack	Included key virtualized services proven at very large scale in Azure	Very high-throughput & low-latency packet processing infrastructure
SCVMM integration for deployment, lifecycle management, and orchestration + Azure Pack for tenant self-service	Best-in-class performance for Linux based 3rd party virtual network appliances	Industry leading merchant silicon integration – focus on quality and optimal offload handling
		Cloud oriented DNS (geo-location awareness, traffic management), & enhanced IPAM (planning + mgmt.)

SDN Infrastructure

Management plane

System Center

Microsoft Azure Pack

Network aware Applications (e.g. Lync)

Standardized Rest APIs

Control plane

SDN controller

- Integrated control: virtual & physical network
- Network service lifecycle management
- Network monitoring

Standardized protocols for communication

Data plane

Distributed Network Services

Virtual Network
SDN v-Switch +
Distributed HNV Router

Virtual Edge Services

- Performant data plane
- Distributed forwarding/routing
- High-value network services

Network Function Virtualization

Standardized Rest APIs

&

PowerShell

Network Service Managers

- Software Load Balancer
- Distributed Firewall
- Service Chaining – 3rd Party VNFs
- HNV L2/L3 Gateway
- VPN Gateway
- Site-To-Site Gateway
- BGP Route Reflector

Appropriate South-Bound Transports & Schemas

- Site-To-Site Gateway
- Software Load Balancer
- HNV L2/L3 Gateway
- VPN Gateway

Hyper-V Host

- Host Agent
- Service Chaining
- SLB Agent
- FW Agent

Software Load Balancer (SLB) – Overview

Scalable & available

Proven with Azure - Scale out to many Multiplexer (MUX) instances

High-throughput between MUX and virtual networks

Flexible & integrated

Reduced capex through multi-tenancy

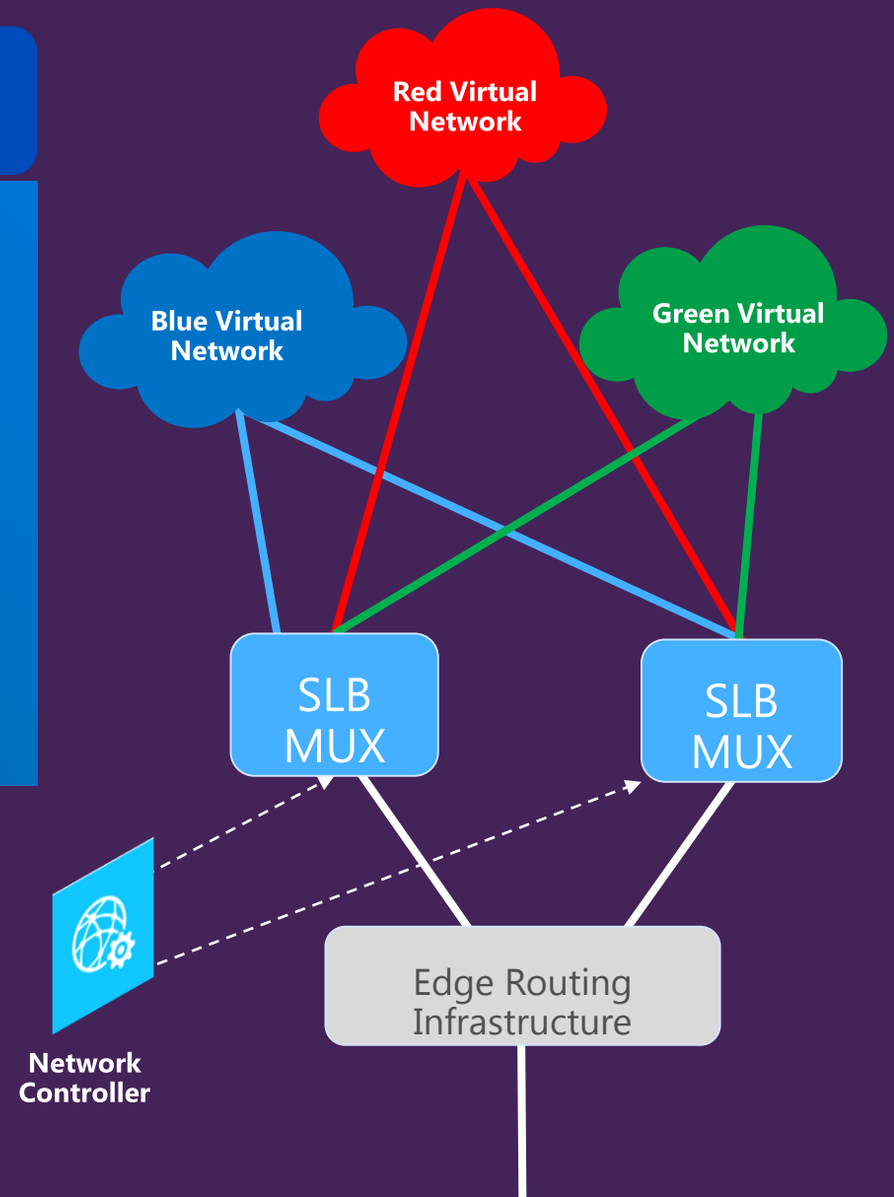
Access to physical network resources from tenant virtual network

Easy management

Centralized control and management through Network Controller

Easy fabric deployment through SCVMM

Integration with existing tenant portals via Network Controller - REST APIs or PowerShell



Virtual Edge Gateway – Windows server vNext

Flexible & complete

Flexible multi-site connectivity with dynamic routing

High-speed connectivity to tenant virtual networks over MPLS, metro Ethernet, etc.

Access to physical network resources from tenant virtual network

Highly available & efficient

Easy scaling of edge services

Simplified pool configuration for better high availability

Reduced capex through multi-tenancy

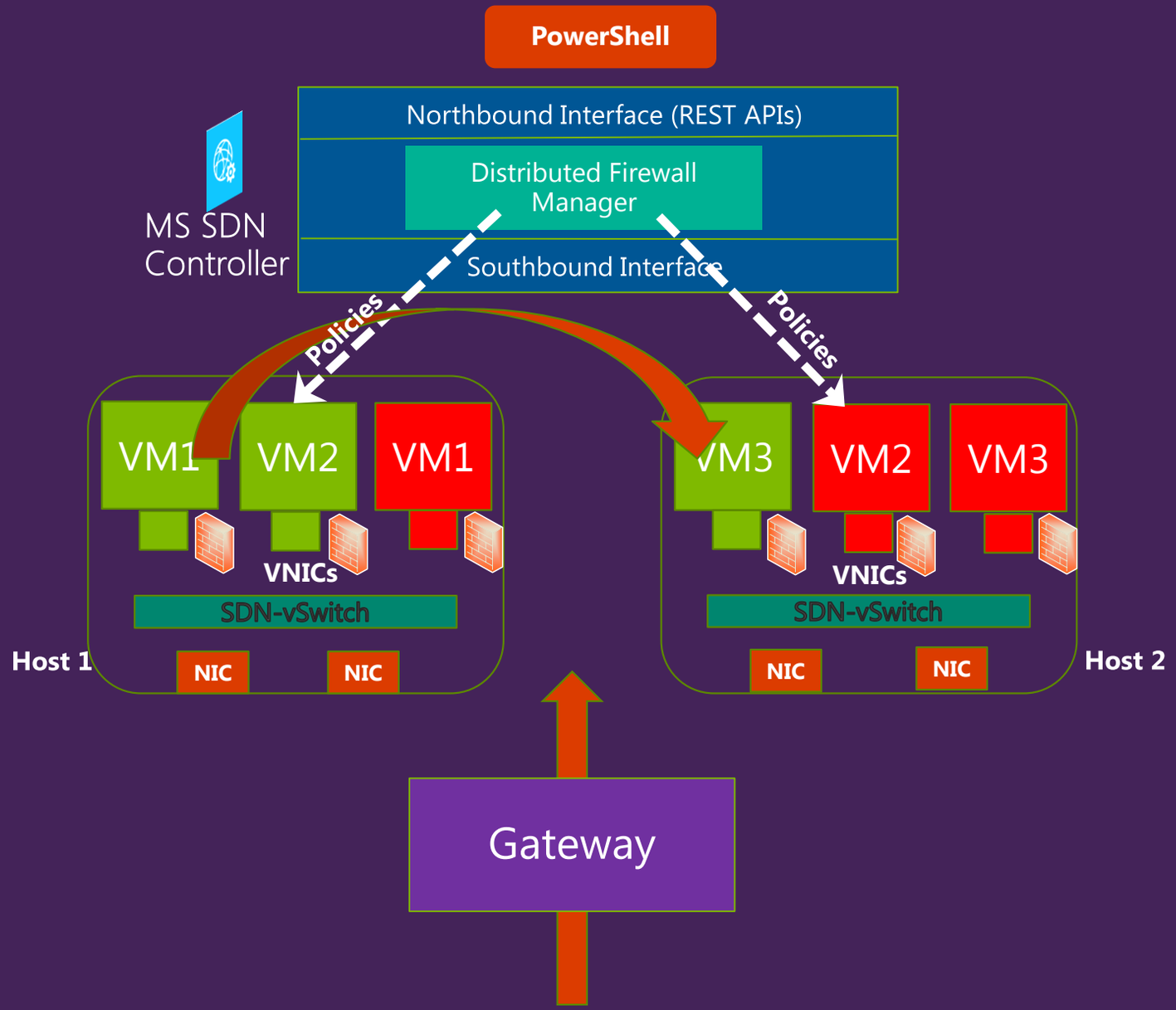
Easy management & integration

Easy deployment through SCVMM

Centralized control and management through SDN Network Controller

Integration with existing tenant portals via SDN REST APIs or PS

Distributed Datacenter Firewall



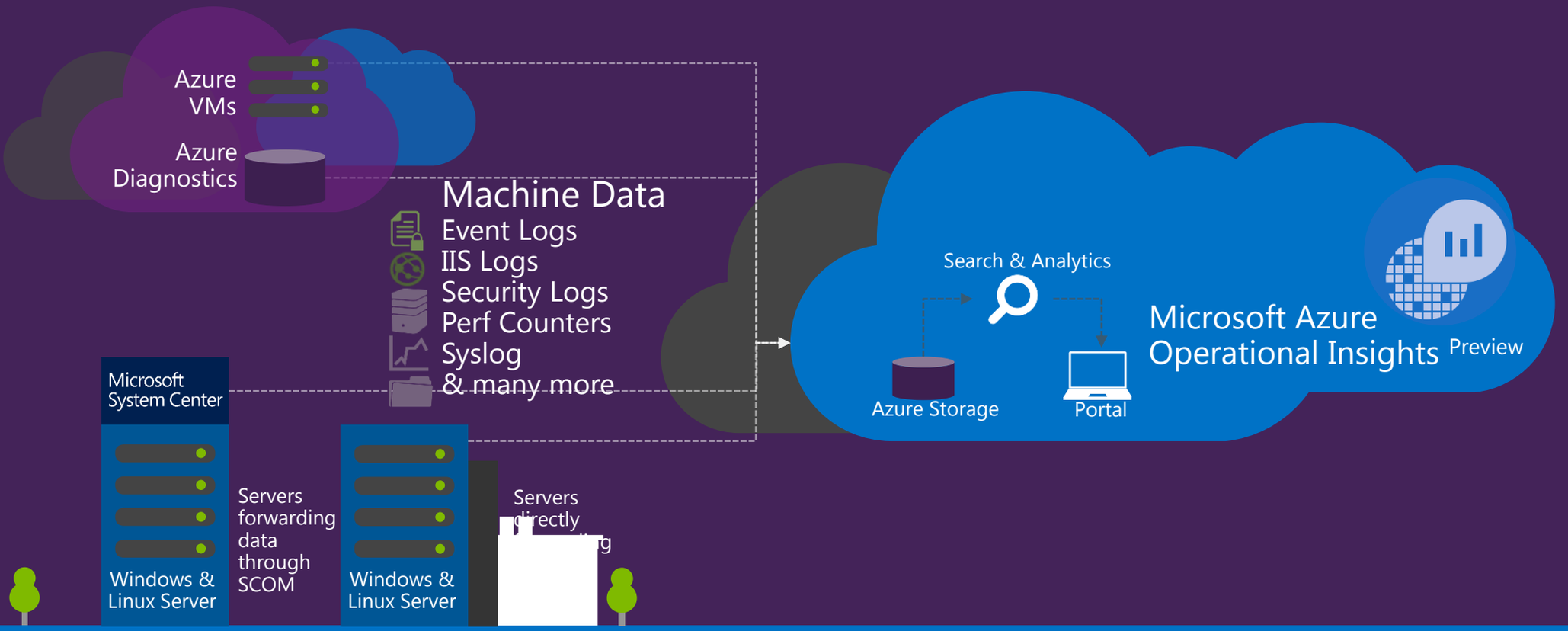
- Distributed multi-tenant firewall protecting network layer of virtual network
- Policies enforced at the SDN-vSwitch port of each tenant VM
- Protect all traffic flows - East-West and North-south
- Network Controller Integration
  - Policies pushed through tenant portal and Network Controller distributes to all applicable hosts

System Center

https://OpInsights.Azure.com

Microsoft Azure Operational Insights Preview

Enables enterprise operations teams to transform machine data into near real-time operational intelligence



Operational Insights

- Search, Correlate & Combine
- Visualize Results
- Centralized & Extensible Collection
- Multiple Data Sources regardless of Volume, Format or Location

Ready Made Intelligence

- Forecast Capacity
- Assess System Update, Malware, Configuration
- Change Tracking
- Respond to Threats
- Identify security breaches
- Audit & Compliance

REAL TIME

SEARCH

READY MADE INTELLIGENCE

DASHBOARDS & REPORTING

SCALABLE

Orchestrator

Today: Orchestrator and Automation

Orchestrator for Datacenter	Azure Automation, SMA and Azure Pack
User Interface • Standalone Management Console • Access Permissions (RBAC)	User Interface • Web portal
Authoring • Graphical, forms-based authoring of runbooks • Visualize end-to-end orchestration • Testing console to validate end to end process	Authoring • PowerShell Authoring • Service Administrator can create runbooks to automate all aspects of cloud infrastructure, plan delivery, and maintenance activities
Runbook Engine • Highly available • Custom workflow engine • Databus to easily pass information between activities	Runbook Engine • Highly available • PowerShell Workflow based engine
Integration • Integration packs for Microsoft and 3rd party systems • Orchestrator toolkit to extend into custom systems	Integration • PowerShell Module based integration • Use existing PowerShell modules for Microsoft and 3rd party systems • Create PowerShell modules for additional resources/systems

Coming: Orchestrator and Automation

One Automation Solution for Azure and On Premises

User Interface
- Web portal
- Access Permissions (RBAC)

Authoring
- Graphical Authoring
- PowerShell Authoring
- Visualize end-to-end orchestration
- Gallery
- Service Administrator can create runbooks to automate all aspects of cloud infrastructure, plan delivery, and maintenance activities

Runbook Engine
- Highly available
- PowerShell Workflow based engine

Integration
- PowerShell Module based integration
- Use existing PowerShell modules for Microsoft and 3rd party systems
- Create PowerShell modules for additional resources/systems

Tools
- Tools to convert SCO Integration Packs and runbooks

Web portal

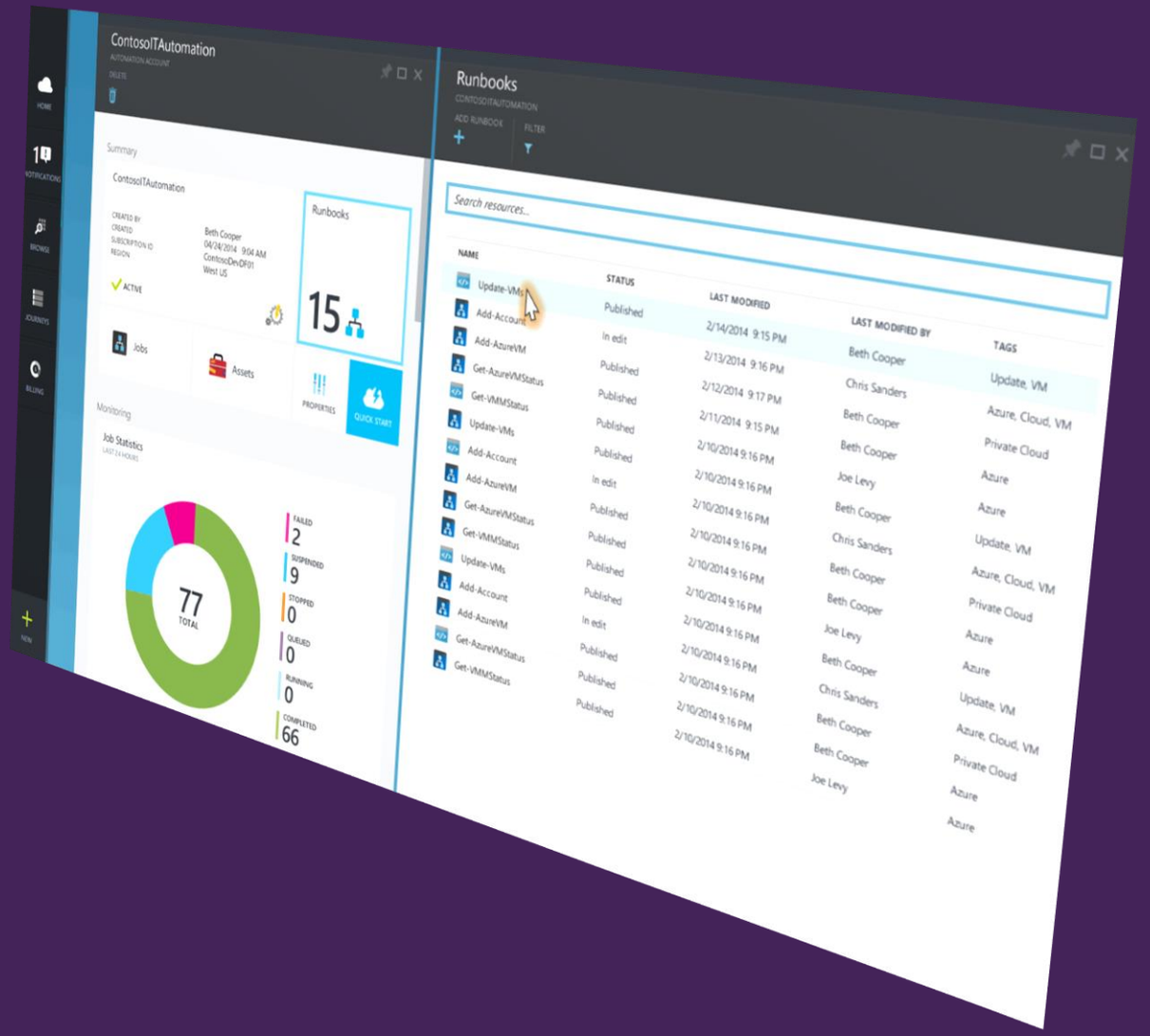
Centralized library for all Automation
- Create runbooks within portal
- Call existing runbooks in library

Manage Assets
- Import Modules
- Create settings
- Create schedules

Browse and insert assets in runbooks
- Modules and Activities
- Credentials (PowerShell Credentials and Certificates)
- Variables (standard and encrypted)
- Connections

Test
- Run runbook and see results within authoring window
- Troubleshoot issues

Publish
- Edit draft before publishing



Graphical Authoring

Visual Process

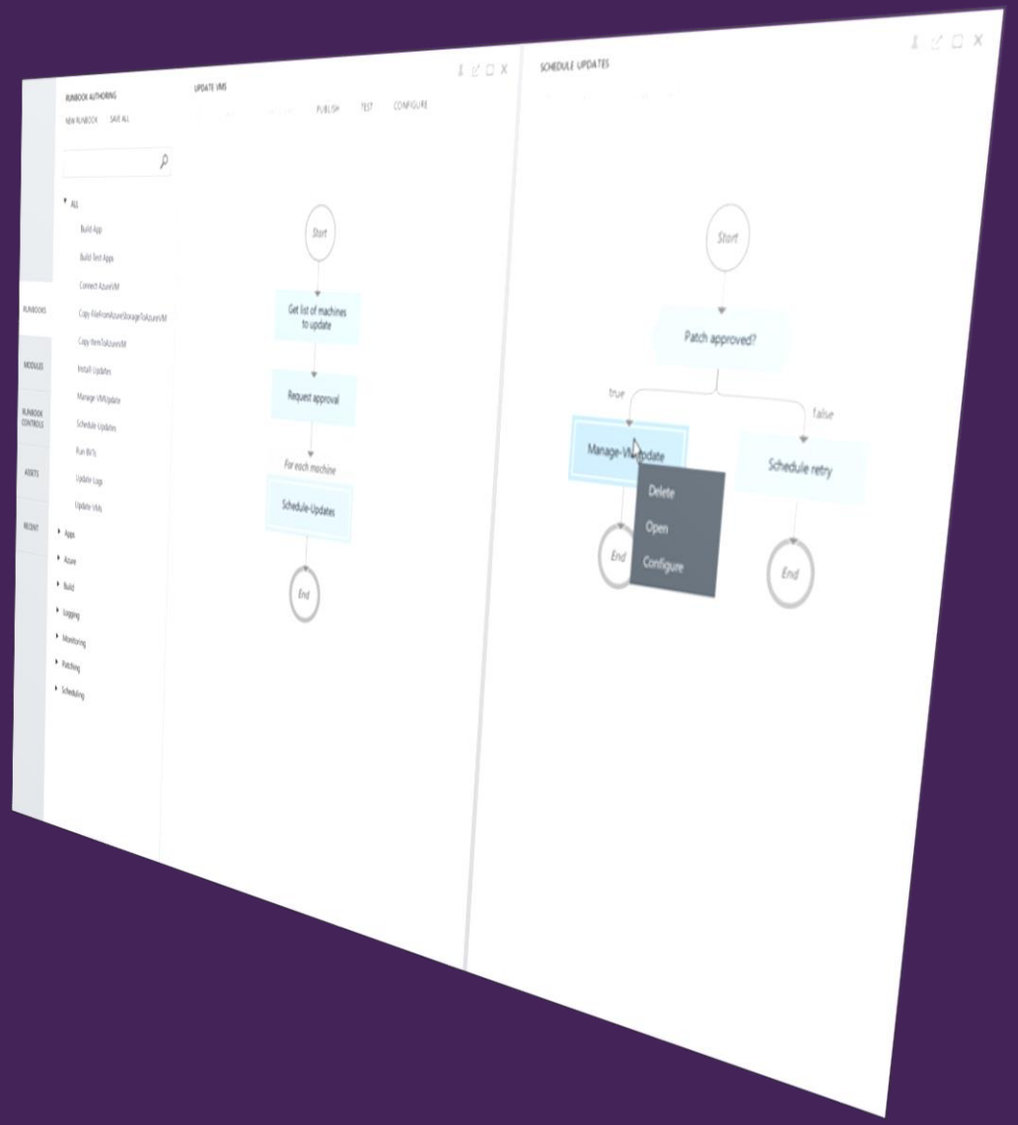
- Design your end to end processes using a visual experience
- Share easily with co-workers responsible for different parts of the process
- Document end to end process based on visual representation

DataBus

- Subscribe to previous activities published data at design time
- Publish results to data bus during runtime.

Authoring

- Create runbooks using forms based authoring
- Easily identify where the process failed for enhanced debugging

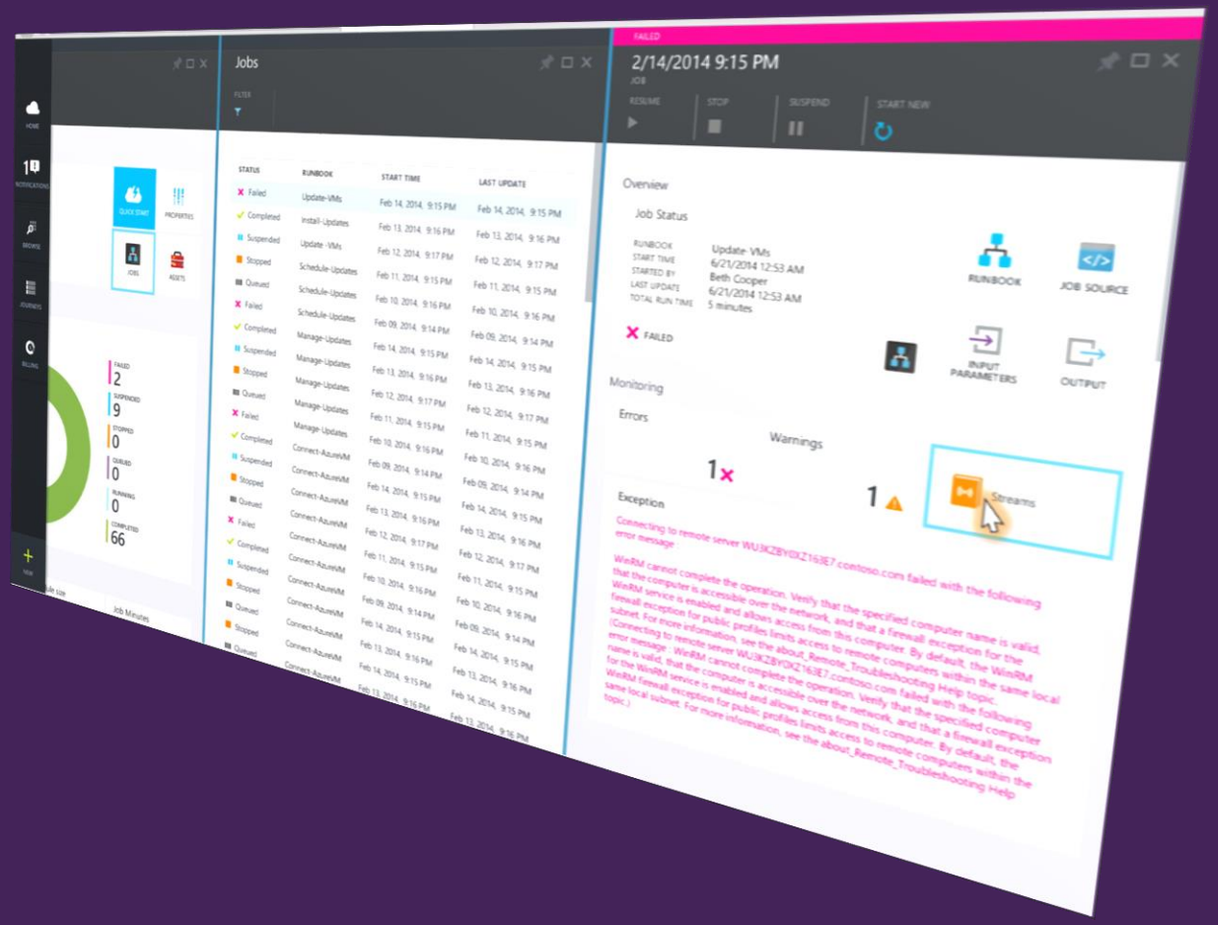


Managing Runbooks & Jobs

Dashboard View
- View runbook jobs over time
- Find jobs that may need attention

Runbooks View
- Filtering of jobs based on status and date
- Identify authoring state (New, In edit, Published)
- Filter by tags to group related runbooks

Jobs View
- History of jobs per runbook
- Who last updated and when
- Input parameters and output
- Drill into each job to view streams generated to help troubleshooting
- Stop, Suspend and Resume job



Consistent Runbooks / Assets / API

Runbooks

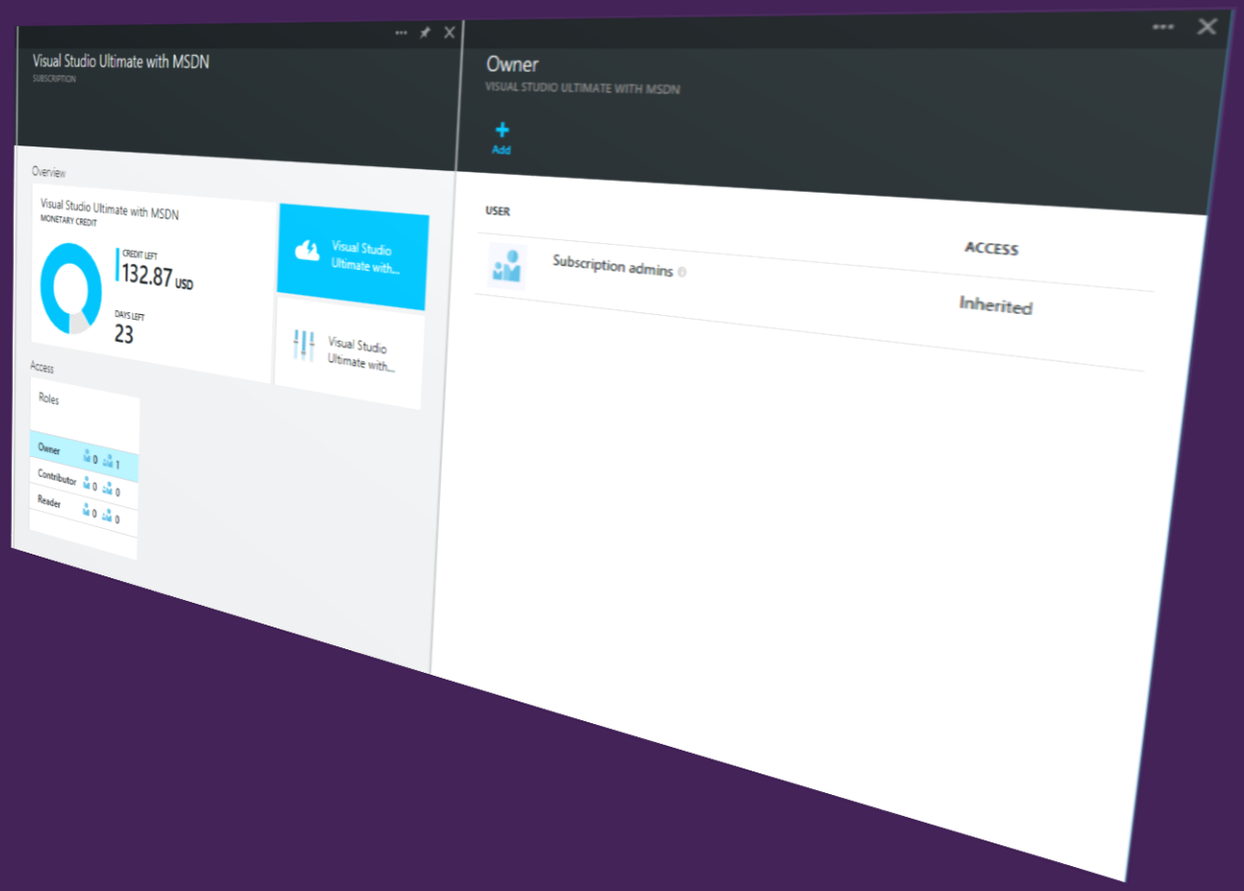
- Runbooks can be moved between Azure & On premises
- Export & Import without changing PowerShell script

Role Based Access Control

- Grant permissions to Automation resources

API / PowerShell Module

- Consistent API so you can automate runbooks in Azure & on premises the same way
- Azure module for Automation to work against Azure and on premises



Gallery

Content

- Bring in Runbooks, PowerShell scripts, workflows and modules from Microsoft & community locations.

Integrated Experience

- Customers can find and import content from within portal experience

Ecosystem

- Customers can contribute runbooks and modules to community

Orchestrator Investments move forward

Integration packs

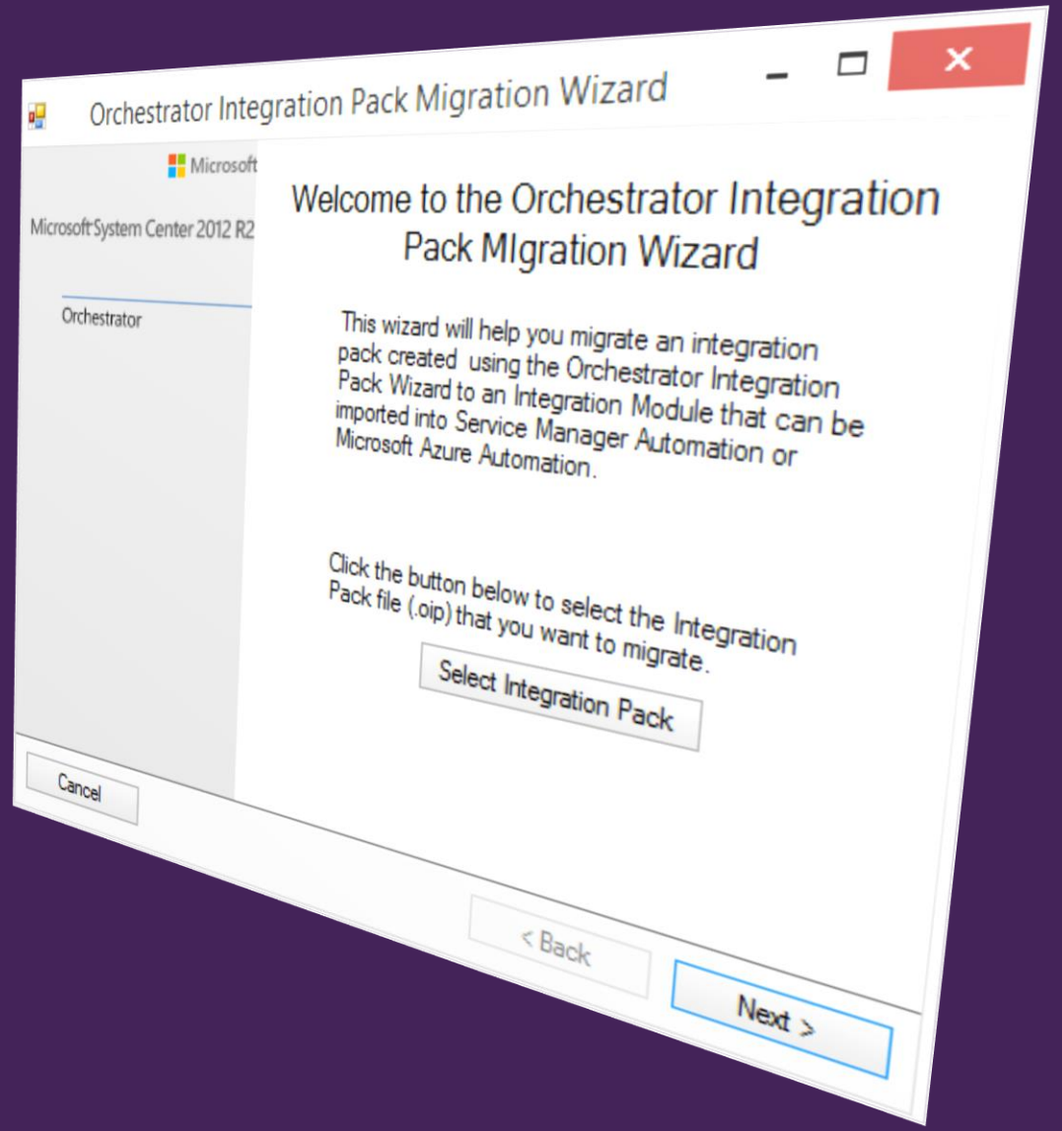
- Migration tool to convert Orchestrator Integration packs to PowerShell modules
- Write PowerShell module for built in Orchestrator activities

Runbooks

- Migration tool to export runbooks from Orchestrator and import into new system
- Some fix up of runbooks required for things not directly supported

Service Manager connector

- New SM connector to allow it to work with the new Orchestrator solution.
- Update existing SM processes to use new connector



Orchestrator Roadmap

System Center 2012 / SP1

- Orchestrator for traditional datacenter Automation
- Heterogeneous support with Integration Packs

System Center 2012 R2

- Updated Orchestrator with additional integration packs and customer feedback
- Released Service Management Automation for the Azure Pack

Azure Automation

- Released Automation in Azure (Generally available now)
- Multi-tenant solution for Azure operational tasks

vNext

- Single Automation solution for cloud and datacenter automation
- Graphical authoring
- Consistent solution delivered in Azure and on premises
- Convert non-PowerShell-based runbooks to PowerShell Workflow runbooks. Convert integration packs to PowerShell modules

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