



Best of Ignite 2017

Cloud Platform / Infrastructure

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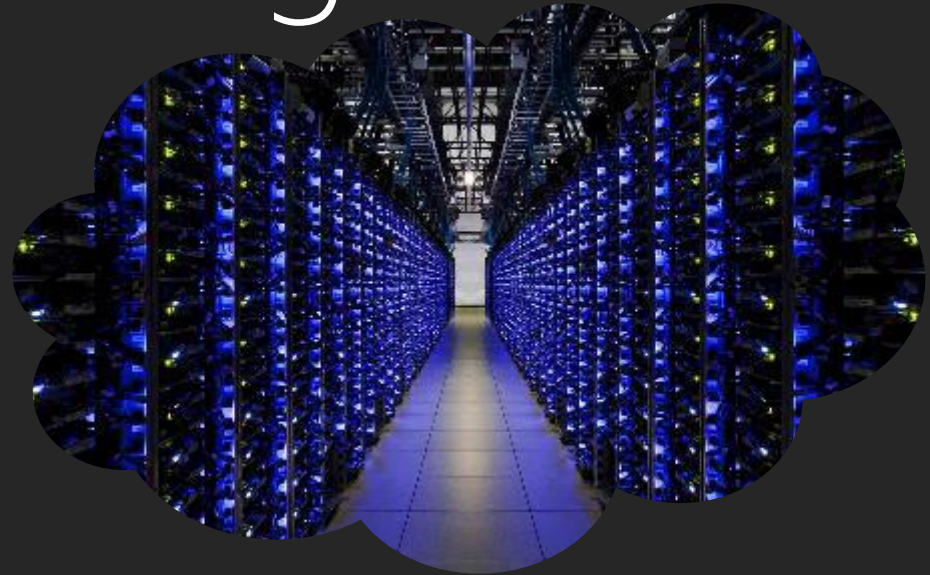
Agenda

- Azure Compute
 - Infrastructure
 - Nested Virtualization
 - Security
 - Management & Governance
 - Networking
- Azure Stack
- Azure File Sync
- Containers
- Server 2016 and beyond
- System Center 2016 and beyond





The world is
shifting



Everything goes CLOUD

Are ITPros still needed?

Git, GitHub, TFS

Automation kills jobs

C#, Ruby, Python, .NET Core

It's all about DEVELOPERS

LINUX & Open Source

Machine Learning

Shadow IT

Docker

The business is bypassing IT

Source Control & Versioning

Far too high release cadence

Are you afraid?



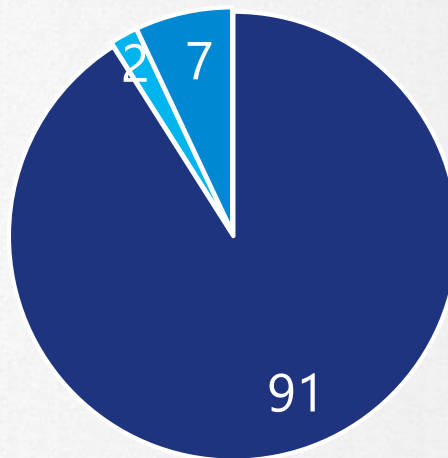
Hybrid is the reality

Hybrid cloud as a long-term viable strategy

(n = 1000)

67% Two-thirds of organizations are using a hybrid cloud

RightScale 2017 State of the Cloud Report



■ Yes ■ May be ■ No





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Azure Compute | new-features | roadmap

Infrastructure

Security

Governance
&
Management

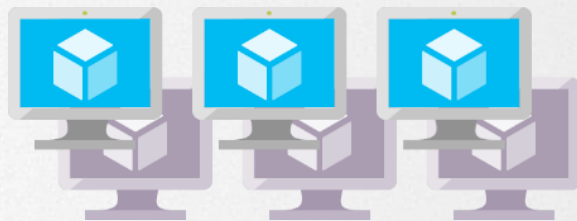
Networking





Infrastructure

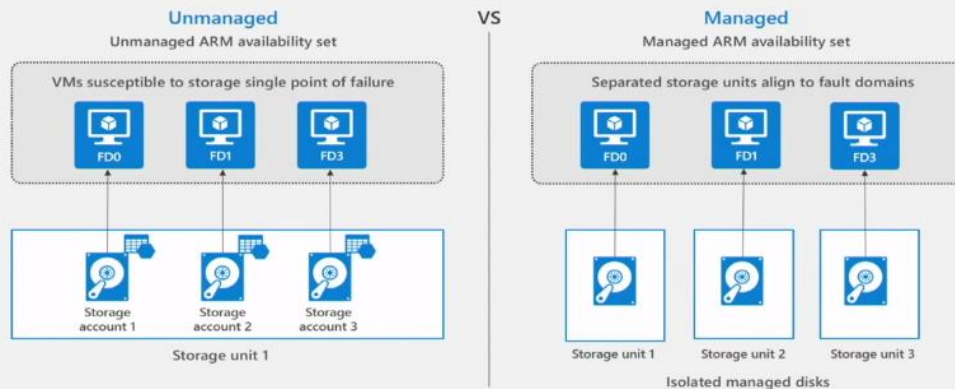
- New VM Sizes
- Burstable VMs
- Partial Core Offerings
- Managed Disks
- Availability Zones





Managed Disks (now)

- Up to 4 TB disks
- Easy upgrade from Standard to Premium
- Storage units align to fault domains
- Point in time disk snapshots





Managed Disks (coming)

- Incremental Snapshots
- Larger Disk Sizes
- Cross-subscription/region sharing
- Private Repository





What's new in Azure Networking

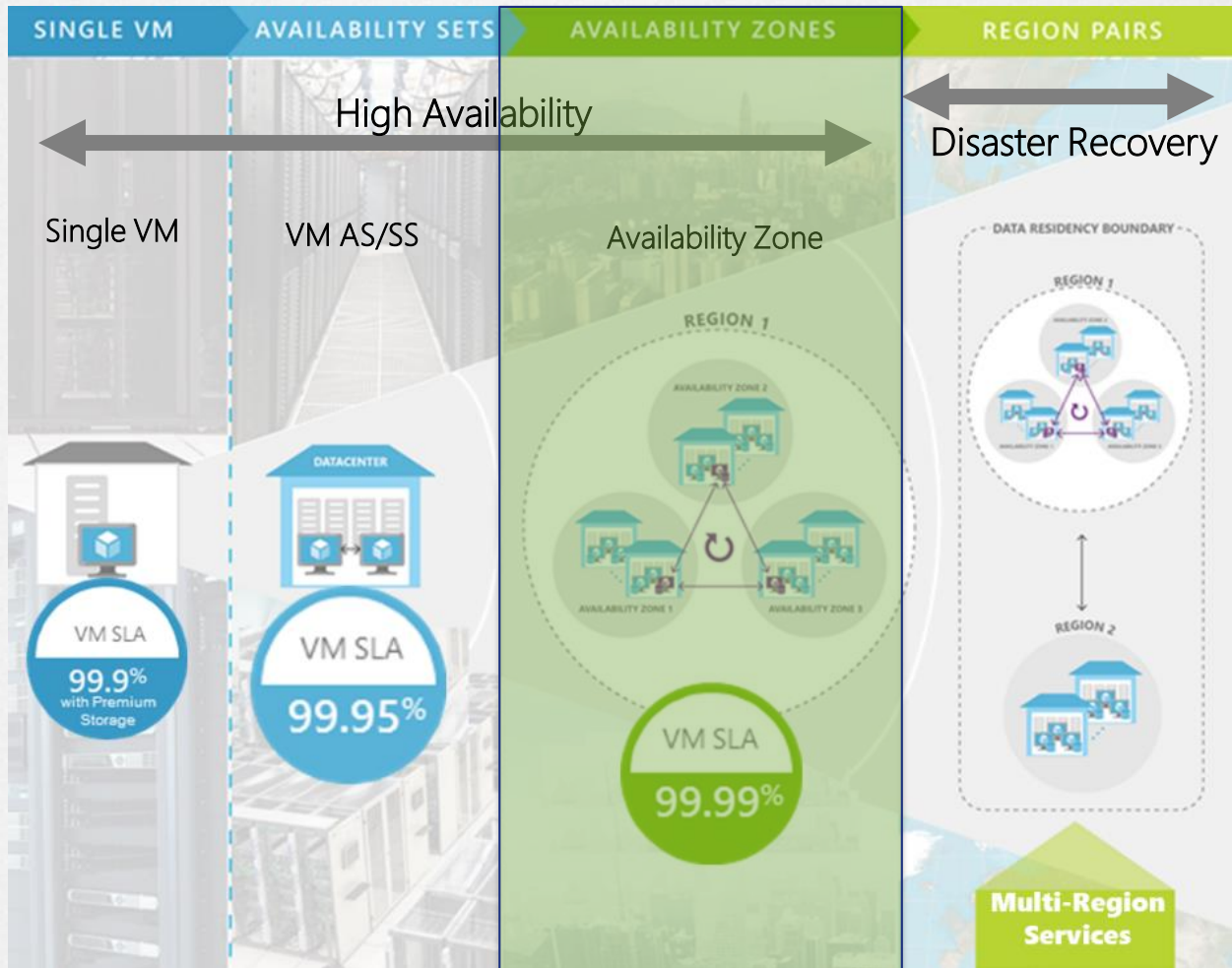
- vNet DDoS Protection
- vNet Service Endpoints
- Application Security Groups (named abstraction for NSG / IP Rules)
- **Global vNet Peering**
- Express Route IPv6 Support
- New Azure Load Balancer (higher scale > 1000 backend VMs, Across Availability Zones, Internal Load Balancer HA Ports)
- 30Gbps VM to VM network performance
- **New VPN Gateway SKUs - up to 6x faster**





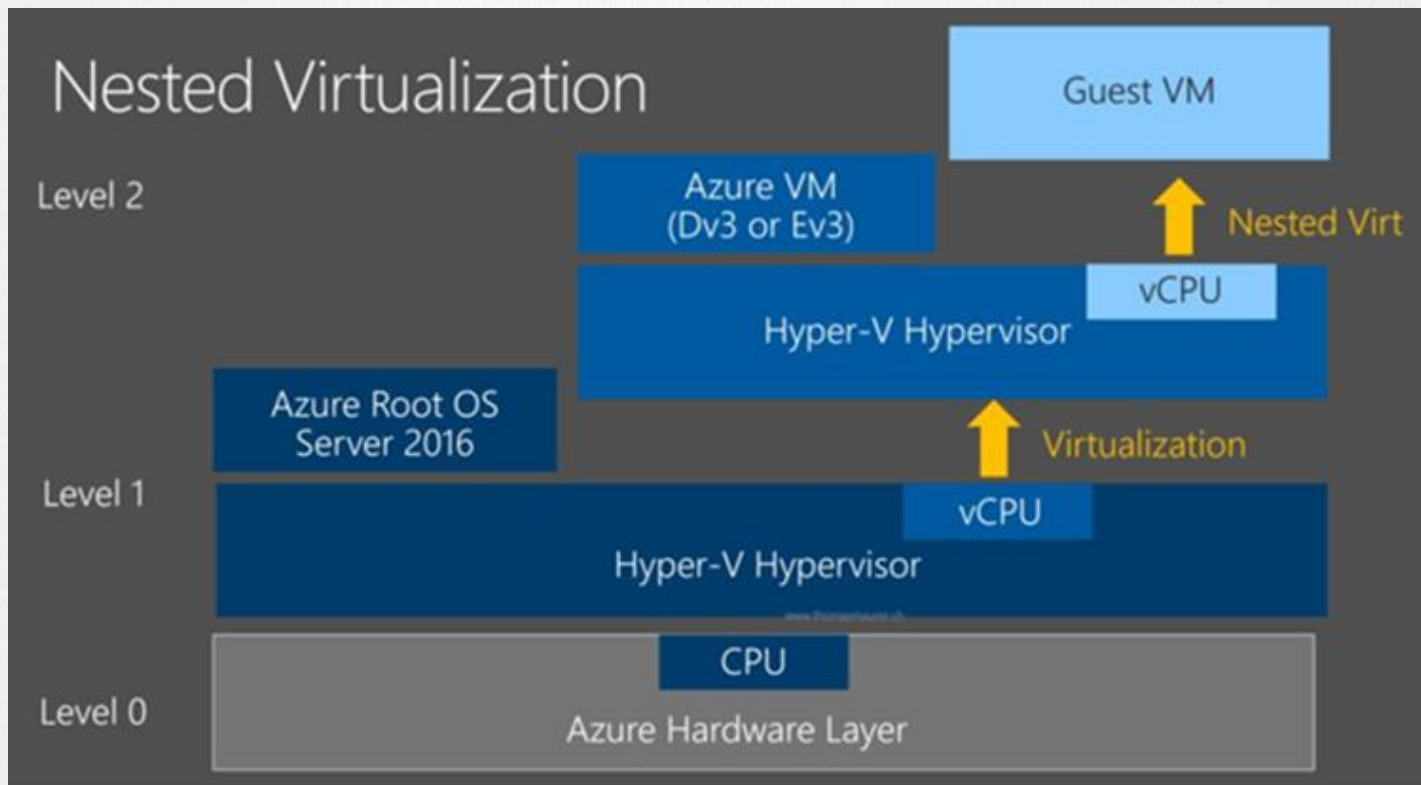
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Availability Spectrum





Nested Virtualization





Security

- Just-In-Time VM Access
- Application Whitelisting
- Azure Security Center
- Integrated Playbooks
- Azure and non-Azure!



Azure Security Center

The screenshot displays the Microsoft Azure Security Center - Overview page. The left sidebar contains navigation options: New, Managed applications, Advisor, Resource groups, All resources, Recent, App Services, SQL databases, Virtual machines, Logic apps, Monitor, Subscriptions, and More services. The main content area shows the Logic Apps Designer interface with a workflow titled "When a response to an Azure Security Center alert is triggered". The workflow steps are:

- When a response to an Azure Security Center alert is triggered
- If alert severity is high post to Teams and open incident in ServiceNow
 - Alert Severity x
 - is equal to
 - High
- If true
 - Post message in Teams security channel and ask to review ASAP (Preview)

The interface includes a top navigation bar with "Report a bug", search, and user profile options. The Logic Apps Designer toolbar at the top right includes Save, Discard, Run, Designer, Code view, Templates, Connectors, and Help.



Governance and Management

- Azure Policy Center (preview)
- Management Groups (soon)
- Managed Apps (GA)
- Update and Configuration Management (GA)





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Azure Policy Center

☰

+

 New

Dashboard

Resource groups

All resources

Recovery Services vaults

Recent

App Services

SQL databases

Virtual machines (classic)

Virtual machines

More services >

Compute Policies 2
PREVIEW

✖

 2

📄

Non-compliant

 out of 5

1

📄

0/0/0

Policies

Non-compliant resources

🔍

 Filter by policy name...

NAME	🔍	C...	NON-COMPLIANT RESO...	EFFECT	EVENTS
Allow custom VM image from a Resource Group	✖	N	1	Deny	0
Create VM using Managed Disk	✖	N	1	Deny	0
Audit if extension does not exist	✔	C	0	AuditIfNotExists	0
Deny hybrid use benefit	✔	C	0	Deny	0
Not allowed VM Extensions	✔	C	0	Deny	0





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DEMO

Security Center





Azure Management Groups

- Organize multiple subscriptions
- Target policies, access control and budgets
- Compliance Security and Reporting by team





Update / Change / Config Management

- Track changes to each system
 - Autocorrect configuration
 - Scheduled Patching
 - Compliance Reporting
-
- ✓ Azure and on premises Systems
 - ✓ Windows & Linux





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Update & Config Management





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Azure Stack



Dashboard

portal.azure.com/#

Microsoft Azure

Search resources

thomas.maurer@live...
NO

Dashboard

New dashboard

Edit dashboard

Share

Fullscreen

Clone

Delete

Service health

MY RESOURCES

Portal settings

Feedback

Azure classic portal

All resources

ALL SUBSCRIPTIONS

tm01-prod-weu-01	Recovery Services vault
tm-prod-weu-oms-01	Log Analytics (OMS)
tm01-demo-weu-autom...	Automation Account
tm01-demo-01	Network security group
thomasmaurer.cn	DNS zone
tm01-demo-01	Virtual machine
tm01-demo-01719	Network interface
ConHostNano01.cloud02	Server management tools...
DC01.cloud02.thomasma	Server management tools...
SMTGateway	Server management tools...
tm01-demo-lin01	Virtual machine
tm01-demo-weu-asr-01	Recovery Services vault

Marketplace

Tour

What's new

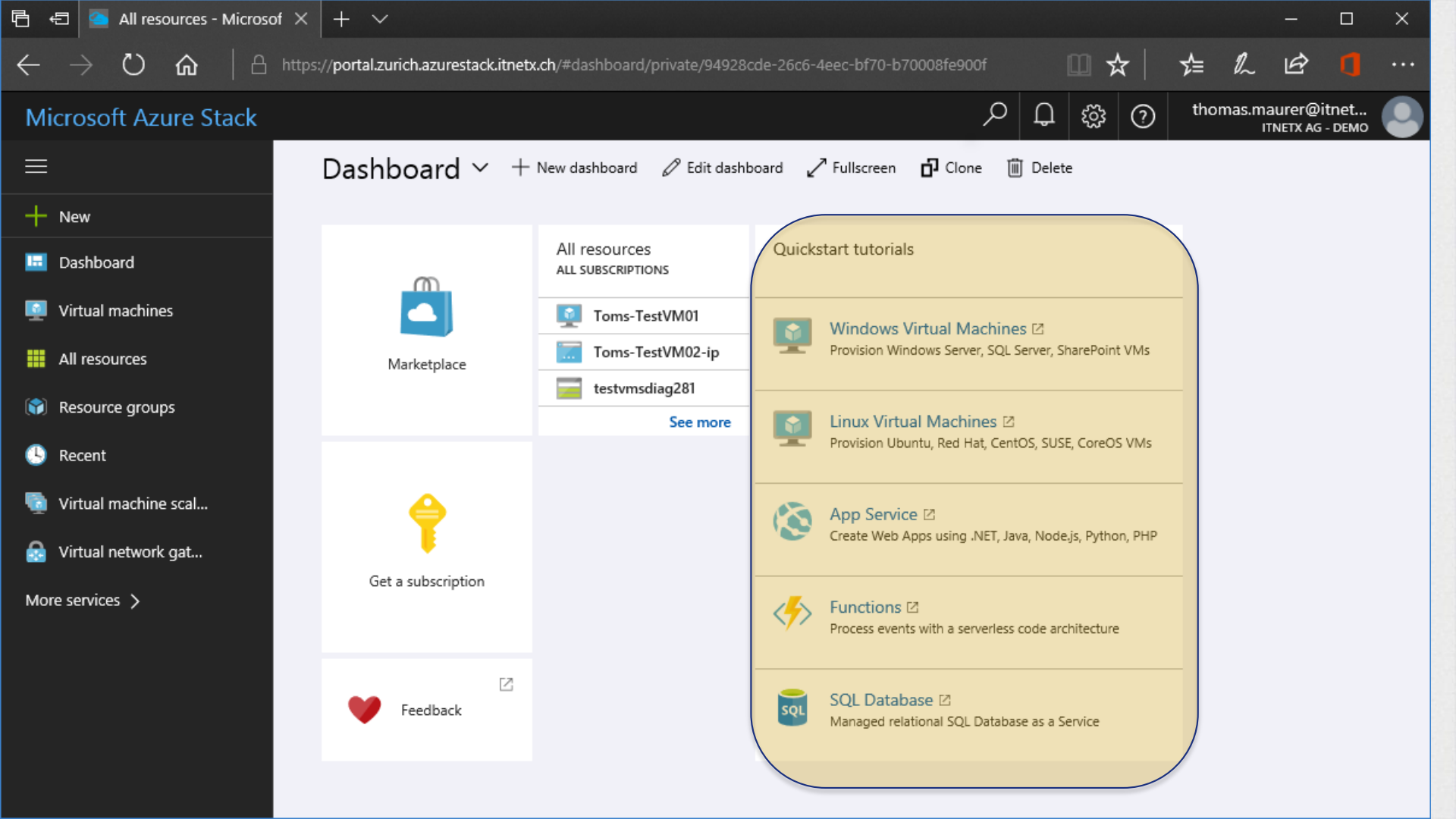
Help + support

tm01-ConHo


tm01-demo-nano1

Stopped


DEMOTESTO




- ☰
- + New
- Dashboard
- Virtual machines
- All resources
- Resource groups
- Recent
- Virtual machine scal...
- Virtual network gat...
- More services >






Marketplace




Get a subscription





Feedback


All resources	
ALL SUBSCRIPTIONS	
	Toms-TestVM01
	Toms-TestVM02-ip
	testvmsdiag281
See more	


Quickstart tutorials

[Windows Virtual Machines](#) ⓘ
Provision Windows Server, SQL Server, SharePoint VMs

[Linux Virtual Machines](#) ⓘ
Provision Ubuntu, Red Hat, CentOS, SUSE, CoreOS VMs

[App Service](#) ⓘ
Create Web Apps using .NET, Java, Node.js, Python, PHP

[Functions](#) ⓘ
Process events with a serverless code architecture

[SQL Database](#) ⓘ
Managed relational SQL Database as a Service

Azure Stack integrated systems

Accelerated time to value

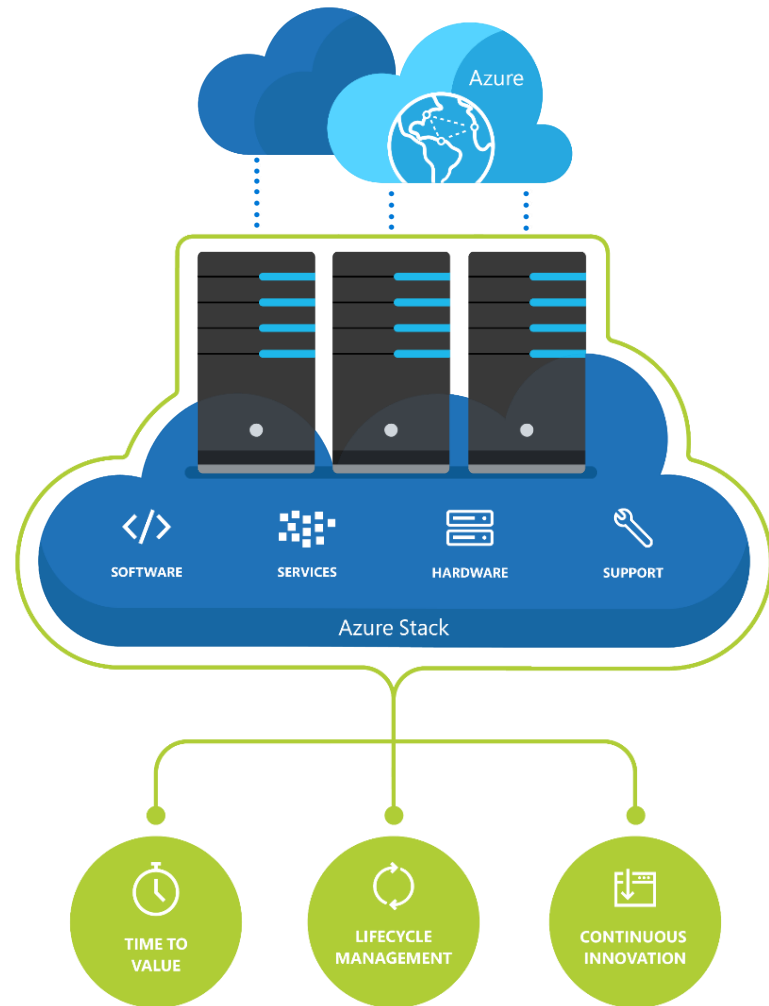
- From concept to operations in days, not months
- Help developers be productive much faster

Enriched lifecycle management

- Greater quality and system reliability
- Focus on delivering Azure services, not operations

Continuous innovation

- Newest services and fastest updates
- No disruption to tenant availability or experience



DELL EMC

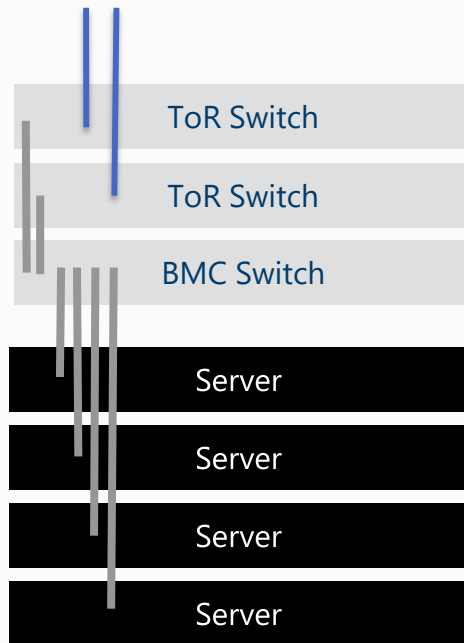

**Hewlett Packard
Enterprise**

Lenovo™



Peek into a Scale Unit

- 4 x servers + network switches
- Min spec for server
 - 2 x 10 Gb ports with RDMA
 - 256 GB Memory
 - 1 x boot media, 2 x SSD (cache) + 4 x HDD
 - 8 x cores per CPU, min 2 x CPU's
- Each server runs Windows Server 2016
- Failover cluster with hyper-converged storage spaces direct
- Resilient deployment of Azure Stack software in VM's
- Appropriate resiliency for each layer





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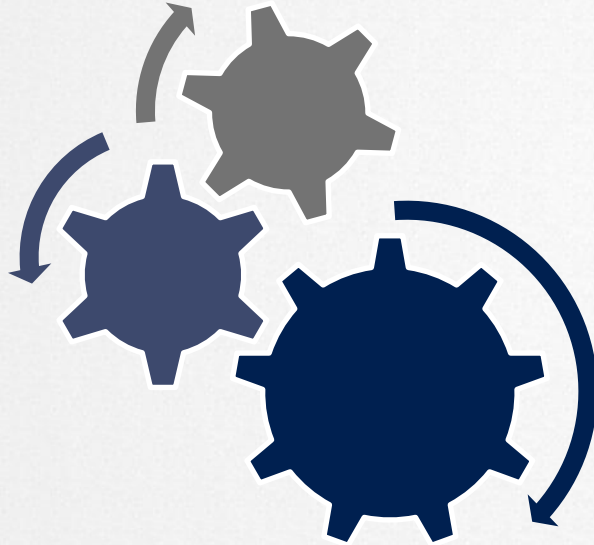
Azure File Sync (preview)





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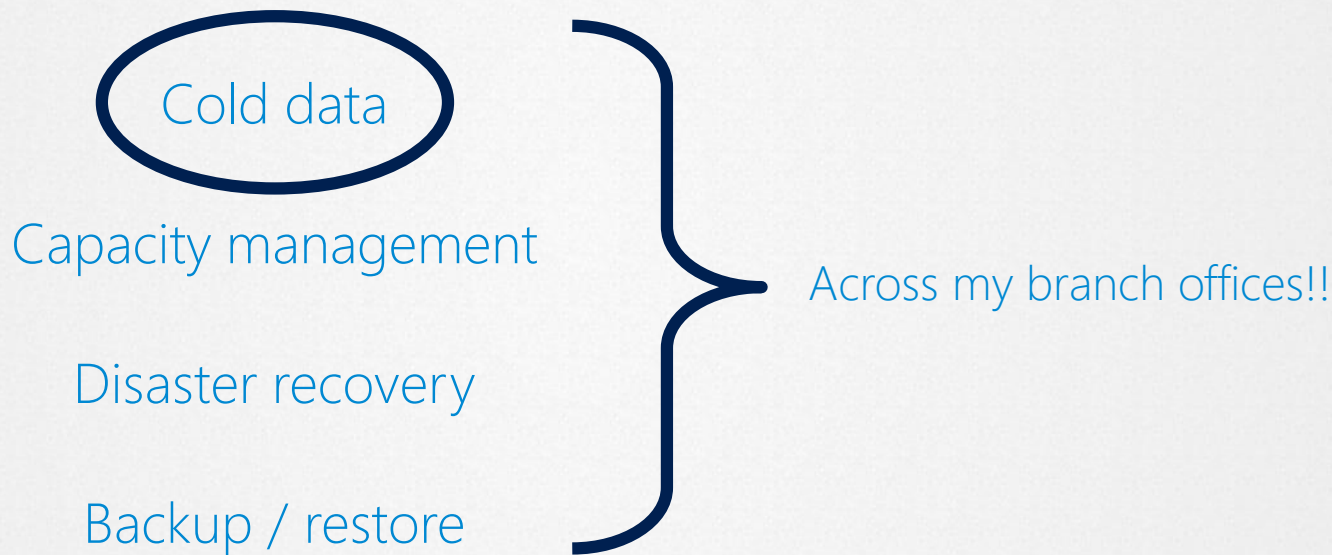
Why file servers?





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Customer pain





Why Azure File Sync

- Centralize your file services in a managed cloud service
- Reduce complexity associated with server sprawl
- Preserving on-prem compatibility and performance



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PaaS

SMB
REST

West Europe

File Share

East US

File Share

Azure Backup Vault

Work Folders

SMB
NFS

Users

Applications

Branch Office

HQ Server

Branch Office

- AMD
- Common Files
- DelTTPad
- DIFX
- Hyper-V
- Internet Explorer
- Managed Forefront
- Microsoft
- Microsoft Analysis Services
- Microsoft Forefront Identity Manager
- Microsoft LifeCam
- Microsoft Office
- Microsoft Office 15
- Microsoft Policy Platform
- Microsoft Silverlight
- Microsoft SQL Server
- Microsoft.NET
- MSBuild
- PureText
- Reference Assemblies
- STMicrelectronics
- Uninstall Information
- Windows Defender
- Windows Firewall Configuration Provider
- Windows Journal



Azure File Sync Scenarios

Multi-site sync

Keep a data set in sync across multiple locations

Cloud tiering

Turn a server into a lightweight, performance cache for Azure Files

Direct cloud access

Native file format with SMB or REST access

Integrated cloud
backup

Point-in-time recovery and retention policies without redundant data transfer

Rapid file server
DR

Fast namespace sync with no need to wait for data restore





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Windows Server





Server 2016 RS1..RS3..RS4...

- New version released every 3-4 years
 - 2000, 2003, 2008, 2008 R2, 2012, 2012 R2, 2016
- Is that still sufficient in today's world?
 - We need new features at cloud speed!





Windows As A Service

- Today you can choose how to service your servers
 - 2 servicing options available



Long-time Servicing
Channel (LTSC)

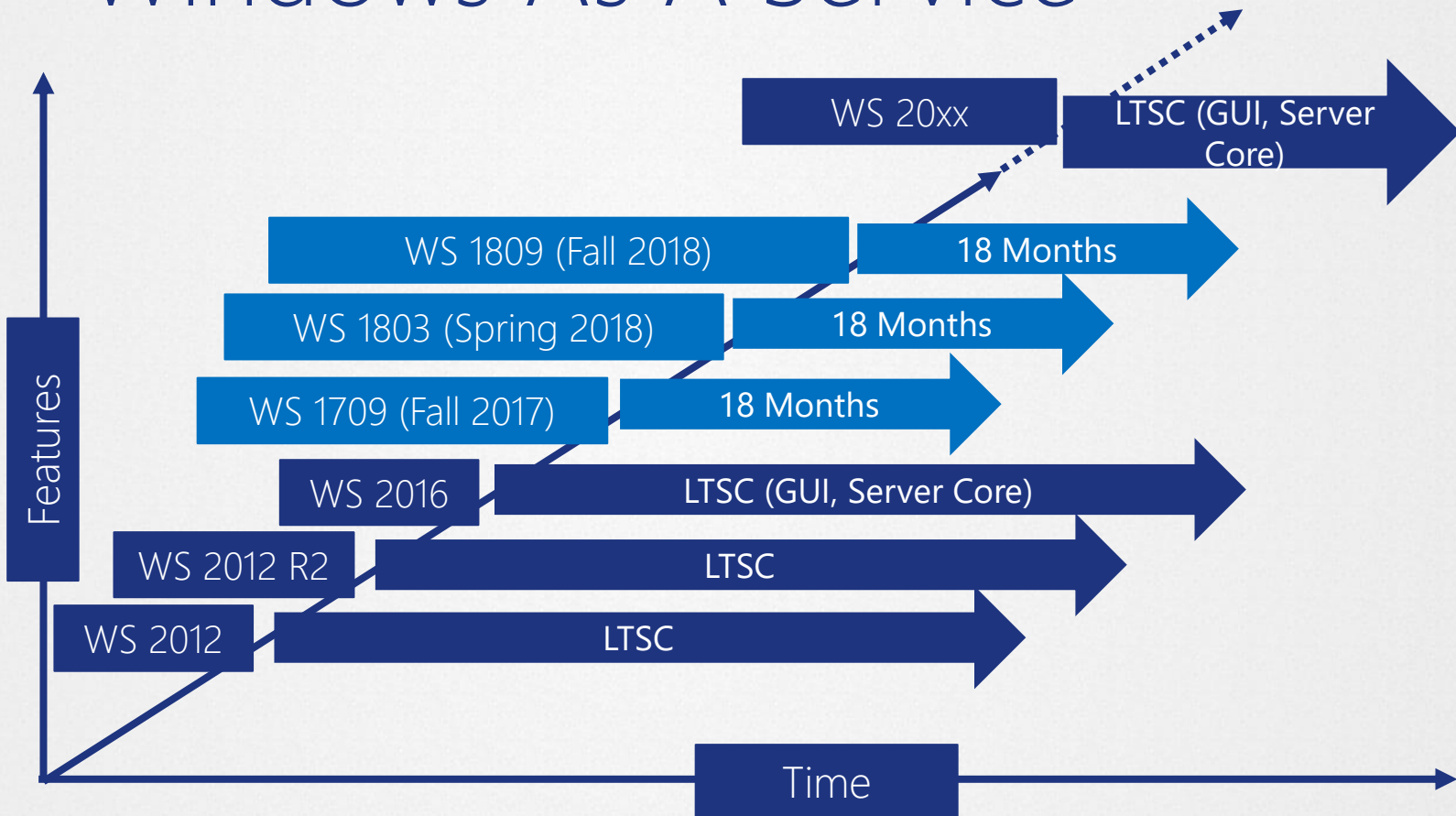


Semi-Annual
Channel





Windows As A Service





What's new in RS3 (1/2)

- Completely focused on Containers
 - Nano Server Image now 80MB
 - Nano Server only for containers
 - Persistent Storage for containers on CSV
- Server Core only
- Support for Linux shielded VMs
- Storage Replica – Test failover
- Dedup support for ReFS





What's new in RS3 (2/2)

- S2D is **disabled** (re-enabled in a next release)
 - ReFS Compaction
 - Performance boost for MAP volumes
 - Rogue disk detection through health service
- Support for SCM (Storage Class Memory)



Windows Server Management

The image is a collage of various Windows Server Management interface elements. It includes the Windows Settings app showing Windows Update status, the Server Manager console with a dashboard and virtual machines list, the Disk Management console showing disk status and actions, and a File Explorer window showing the contents of the Local Disk (C:). There is also a snippet of the Windows Event Viewer showing an audit success event.

Settings - Windows Update

Home

Find a setting

Update and security

Windows Update

Check for updates

Update history

Update settings

Restart options

Advanced options

Learn more

Have a question?

Use help

Make Windows

Give us feedback

Server Manager

Dashboard

HOME TO SERVER MANAGER

1 Add other...

Disk Management

File Action View Help

Volume	File System	Format	Size	Free Space	Usage
Healthy (B...)	NTFS	1861.67 GB	1229.09 ...	66 %	
Healthy (R...)	NTFS	450 MB	450 MB	100 %	
Healthy (E...)	NTFS	100 MB	100 MB	100 %	
Healthy (R...)	NTFS	813 MB	813 MB	100 %	
Healthy (P...)	NTFS	931.39 GB	67.48 GB	7 %	
Healthy (P...)	NTFS	483.84 GB	317.43 GB	66 %	

Virtual Machines

Name	State	CPU Usage	Assigned Memory	Uptime	Status
MS Hyper-V Server 2012 R2 Gen 1	Shut Off				
Ubuntu Server 15.10	Off				
Windows 10 KB RS2 15047	Off				
Windows Server 2016	Started				
Windows Server 2016	Off				
Windows Server 2016 RS2 15046 Full	Started				
Windows Server 2016 Server Core	Off				

File Explorer - Local Disk (C:)

Manage

Layout

Current view

Date modified	Type	Size
6/22/2017 2:22 PM	File folder	
7/18/2017 7:07 AM	File folder	
6/23/2017 12:23 PM	File folder	
6/22/2017 2:21 PM	File folder	
6/22/2017 2:41 PM	File folder	
7/11/2017 11:42 AM	File folder	
6/26/2017 10:29 AM	File folder	

Event Viewer

Audit Success

Source: Microsoft Windows Security

Event ID: 4673

Level: Information

User: N/A

OpCode: Info

More Information: [Event Log](#)



Project "Honolulu"

- Evolution of traditional OOB management tools
- Collection of modules
 - Server Manager
 - Failover Cluster Manager
 - Hyper-Converged Cluster Manager
 - Extensible through Microsoft and partners
- Can be installed on WS16 or Win10
 - Uses WinRM & Remote PowerShell to access servers
- Technical Preview (TP) available now





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Project "Honolulu"

Overview - Project Honolulu

localhost:6516/servermanager/connections/server/samli-ws2016-1/tools/overview

Project Honolulu Server Manager

samli-ws2016-1

Tools

Search Tools

- Overview
- Certificates
- Devices
- Events
- Files
- Firewall
- Local Users & Groups
- Network
- Processes
- Registry
- Roles & Features
- Services
- Storage
- Storage Replica
- Virtual Machines
- Virtual Switches
- Windows Update

Overview

Restart Shutdown Disable Disk Metrics Edit Computer ID Settings Refresh

Server Name: SAMLI-WS2016-1	Domain: 	Operating System: Microsoft Windows Server 2016 Datacenter	Installed Memory (RAM): 1 GB	Total Disk Space: 131.92 GB
Processors: Intel(R) Core(TM) i7-6600U CPU @ 2.60GHz	Manufacturer: Microsoft Corporation	Model: Virtual Machine	Logical Processors: 2	Free Disk Space: 116.26 GB
NIC(s) 2				

CPU

Utilization: **2.03%**
Speed: 2.81GHz
Processes: 47
Threads: 614
Handles: 18706
Up Time: 0:0:16:56

Memory

Utilization: **80.96%**
Total: 1023MB
In Use: 828.3MB
Available: 194.8MB
Committed: 1.1GB
Cached: 82.3MB
Paged Pool: 114.2MB
Non-Paged Pool: 32.3MB

Ethernet (vEthernet (Microsoft Hyper-V Network Adapter - Virtual Switch))

Send: **464 Kbps**
Receive: **104 Kbps**

Disk

Read Transfer Rate: **0 Kbps**
Write Transfer Rate: **46 Kbps**





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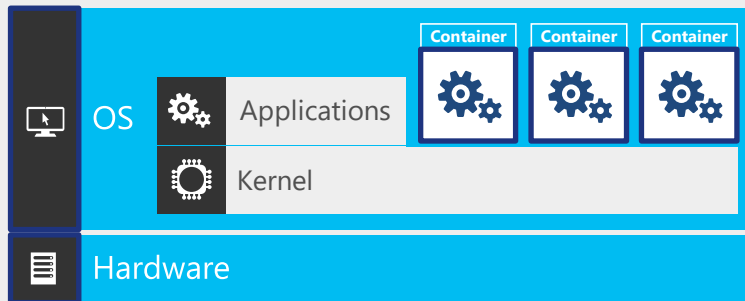
Containers...Containers...Containers...Containers...Containers



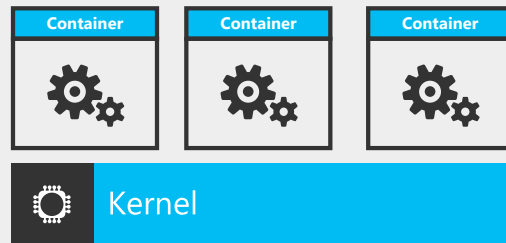


The Next Step In Virtualization

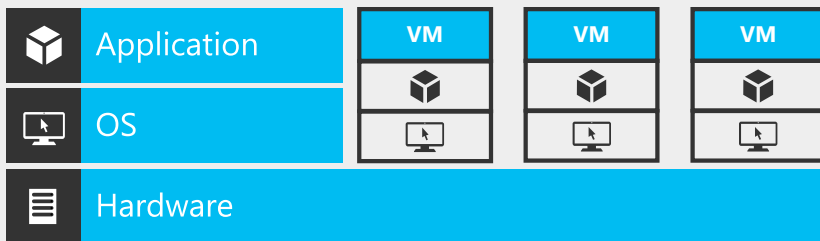
Containers = Operating system virtualization



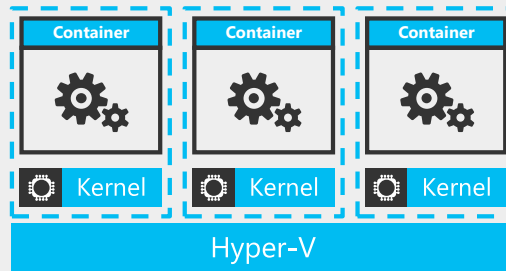
Windows Server containers
Maximum speed and density



Traditional virtual machines = hardware virtualization

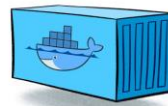


Hyper-V containers
Isolation plus performance





What's new in



- SQL Server inside Linux Container (GA)
- Azure Container Instances
- Web Apps for Containers (GA)
- Linux Containers on Windows (preview)





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System Center





SC Investments



Continue to
support Windows
Server



Improve fundamentals



Address top customer
and partner asks

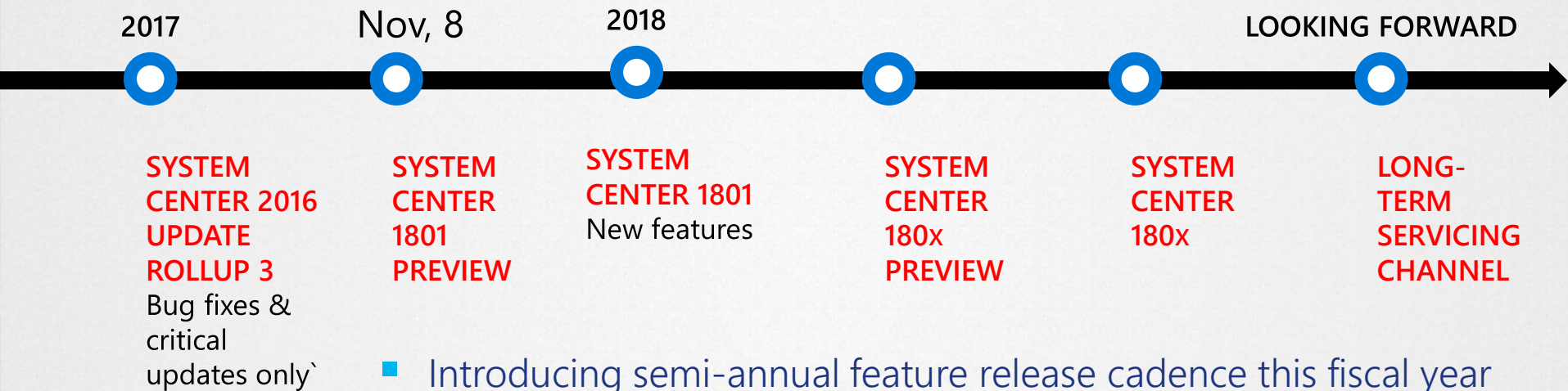


Enable Azure attach





System Center release cadence



- Introducing semi-annual feature release cadence this fiscal year
- Semester planning
- Aligned with WS releases
- Access to semi-annual channel will require active Software Assurance





SC 1801 coverage

Operations Manager

Config Manager

Virtual Machine Manager

Data Protection Manager

Orchestrator / SMA

Service Manager

Semi-annual
channel release
1801 feature
focus

Up-to-date with
security and
other fixes

Azure attach





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DPM Summary



Backup Windows and VMware efficiently

Backup WS v1709 at
par with WS 2016

Store VMware backups
efficiently using MBS



Fundamentals

Upgrade with ease – No
Production Server reboot



Better with Azure

Generate custom reports using
Power BI

Recover files/folders of cloud
recovery point in matter of
minutes





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VMM Summary



Enhanced Windows Server 2016 support

Support for Nested virtualization

Migrate VMware UEFI VM to HyperV VM

Configure SLB via Service Templates

SLB Guest cluster floating IP support

Storage QOS configured in VM template

Storage QOS at VMM Cloud

Storage QOS extended to SAN storage

Remote to VMs in Enhanced Session mode

Seamless Update of non-domain host agent



Windows Server v1709 & Linux support

Manage WS v1709 host at par with WS 2016

Configure Encrypted SDN virtual network

Manage Shielded Linux VMs on Hyper-V

Support for fallback HGS for shielded VM

VMM better together with in-box tools



Fundamentals

Host Refresher up to 10X faster

VMWare Migrate 50% faster



Better with Azure

More Azure regions

Azure AD support

Azure ARM VM mgmt,

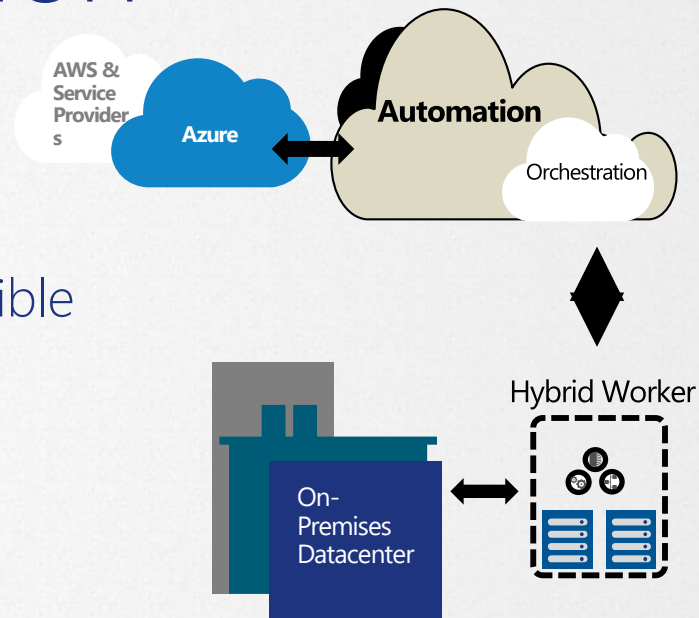
VMM Analytics



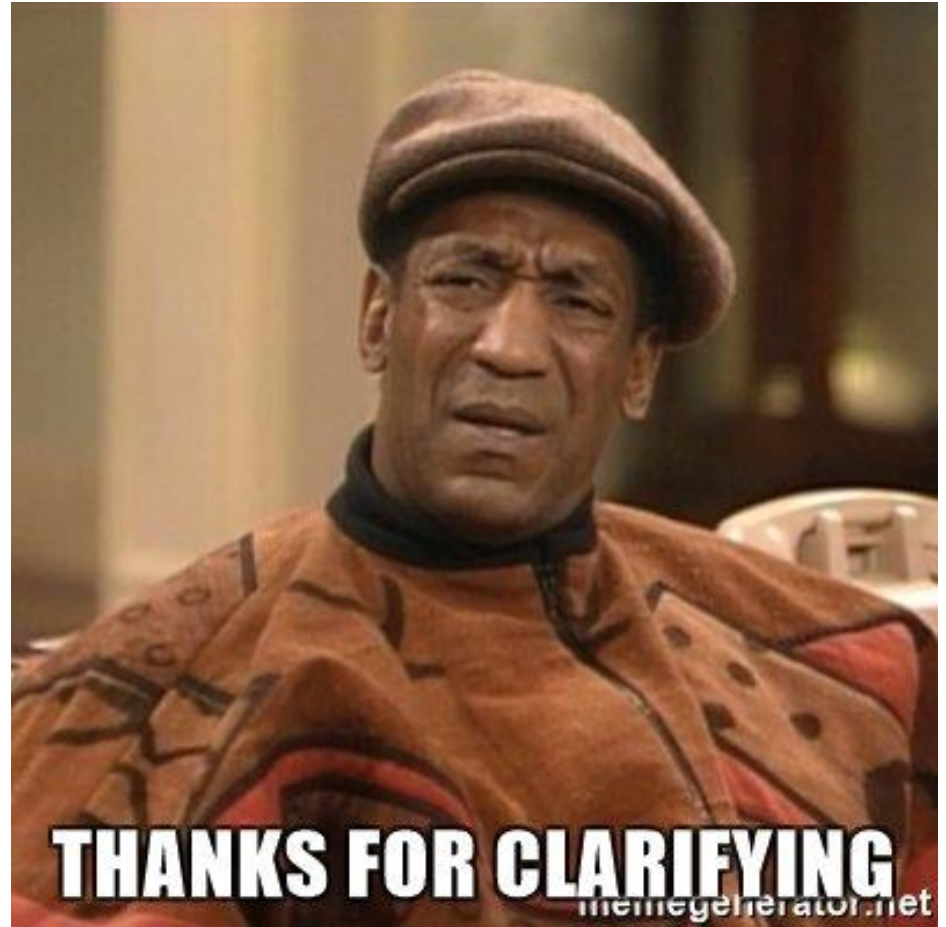


Azure Automation

- Python Support
- Linux Hybrid Worker
- RBAC support
- Multiple Integration and Extensible points
 - Event based automation
 - Source control integration
 - WebHooks integration



Conclusion
learn
adopt
automate
be ahead



An abstract graphic on the left side of the slide. It features a white silhouette of a person climbing a rope. The rope is represented by several thick, curved lines in various shades of blue and green. The background is a solid bright blue.

Thank you!

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