









Hyper-V to Azure Migration - Lessons learned

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AGENDA

Hyper-V Status Quo

Azure Status Quo

Migration Options

Migration Tools

Migration Pitfalls

Q&A



Hyper-V Status Quo



Hyper-V Status Quo

- Hyper-V on Server 2012 R2 / 2016 / 2019
- Cluster
- SAN / S2D / ???
- Gen 2 Windows VMs
- Gen 2 Linux VMs
- Free sizing
- Oversizing



Hyper-V Status Quo

- Console access
- Host-based backup
- Hyper-V Manager
- Failover-Cluster Manager
- SCVMM
- WAC
- PowerShell



Azure Status Quo



Azure Status Quo

- Hyper-V
- No Clusters → Single Hosts
- No SAN → JBODs
- Gen 1 VMs → Gen 2 VMs (GA)
- Windows VMs
- Linux VMs

Generation 2 feature	On-premises Hyper-V	Azure
Secure Boot	✓	✗
Shielded VM	✓	✗
vTPM	✓	✗
Virtualization-Based Security (VBS)	✓	✗
VHDX format	✓	✗

Azure Status Quo

- No console access
- No host access (VM-Backup)
- Azure Portal Management
- SCVMM
- PowerShell / CLI
- REST

Virtual machines

Mountain IT

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Subscriptions: All 6 selected – Don't see a subscription? [Open Directory + Subscription settings](#)

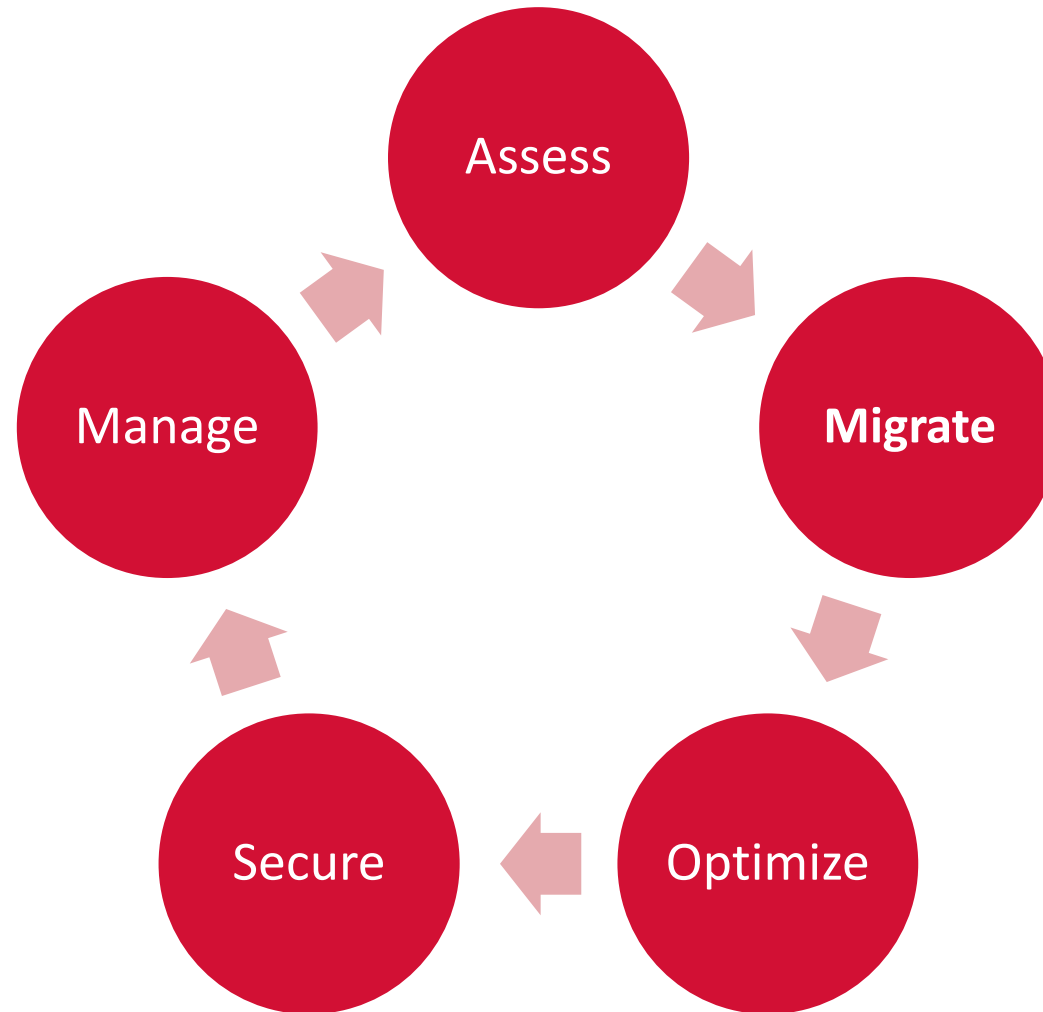
1 of 7 items selected

<input checked="" type="checkbox"/>	NAME ↑↓	TAGS ↑↓	TYPE ↑↓	STATUS
<input type="checkbox"/>	 HONOLULU-CL01	1 	Virtual machine	Stopped (deallocate)
<input type="checkbox"/>	 HONOLULU-CL02		Virtual machine	Stopped (deallocate)
<input checked="" type="checkbox"/>	 honolulu-dc01	1 	Virtual machine	Stopped (deallocate)
<input type="checkbox"/>	 HONOLULU-HV01	1 	Virtual machine	Stopped (deallocate)
<input type="checkbox"/>	 HONOLULU-NAN...	1 	Virtual machine	Stopped (deallocate)
<input type="checkbox"/>	 HONOLULU-SAC01	1 	Virtual machine	Stopped (deallocate)
<input type="checkbox"/>	 HONOLULU-SRV01	1 	Virtual machine	Stopped (deallocate)

Migration Options



Migration Options



Migration Options

- Upload VHDs
 - High downtime
 - High effort

```
$rgName = "myResourceGroup"
$urlOfUploadedImageVhd = "https://mystorageaccount.blob.core.windows.net/container/myUploadedVHD.vhd"
Add-AzVhd -ResourceGroupName $rgName -DestinationUri $urlOfUploadedImageVhd -LocalFilePath "C:\Users\Public\Documents\Virtual hard disks\myVHD.vhd"
```

```
$imageConfig = New-AzImageConfig `
    -Location $location
$imageConfig = Set-AzImageOsDisk `
    -Image $imageConfig `
    -OsType Windows `
    -OsState Generalized `
    -BlobUri $urlOfUploadedImageVhd
    -DiskSizeGB 20
```

```
New-AzImage `
    -ImageName $imageName `
    -ResourceGroupName $rgName `
    -Image $imageConfig
```

- New Install and Workload Migrate
 - Medium Downtime
 - High effort

Migration Options





- Azure Site Recovery
 - Low downtime
 - Medium effort
 - 31 days free
- Azure Migrate (still ASR?!)
 - Low downtime
 - Medium effort
 - 3rd Party support
 - 180 days free

Home > Azure Migrate - Servers > Add a tool

Add a tool

[Migrate project](#) [Select assessment tool](#) [Select migration tool](#) [Review + add tool\(s\)](#)

Choose a tool to migrate your on-premises servers to Azure.

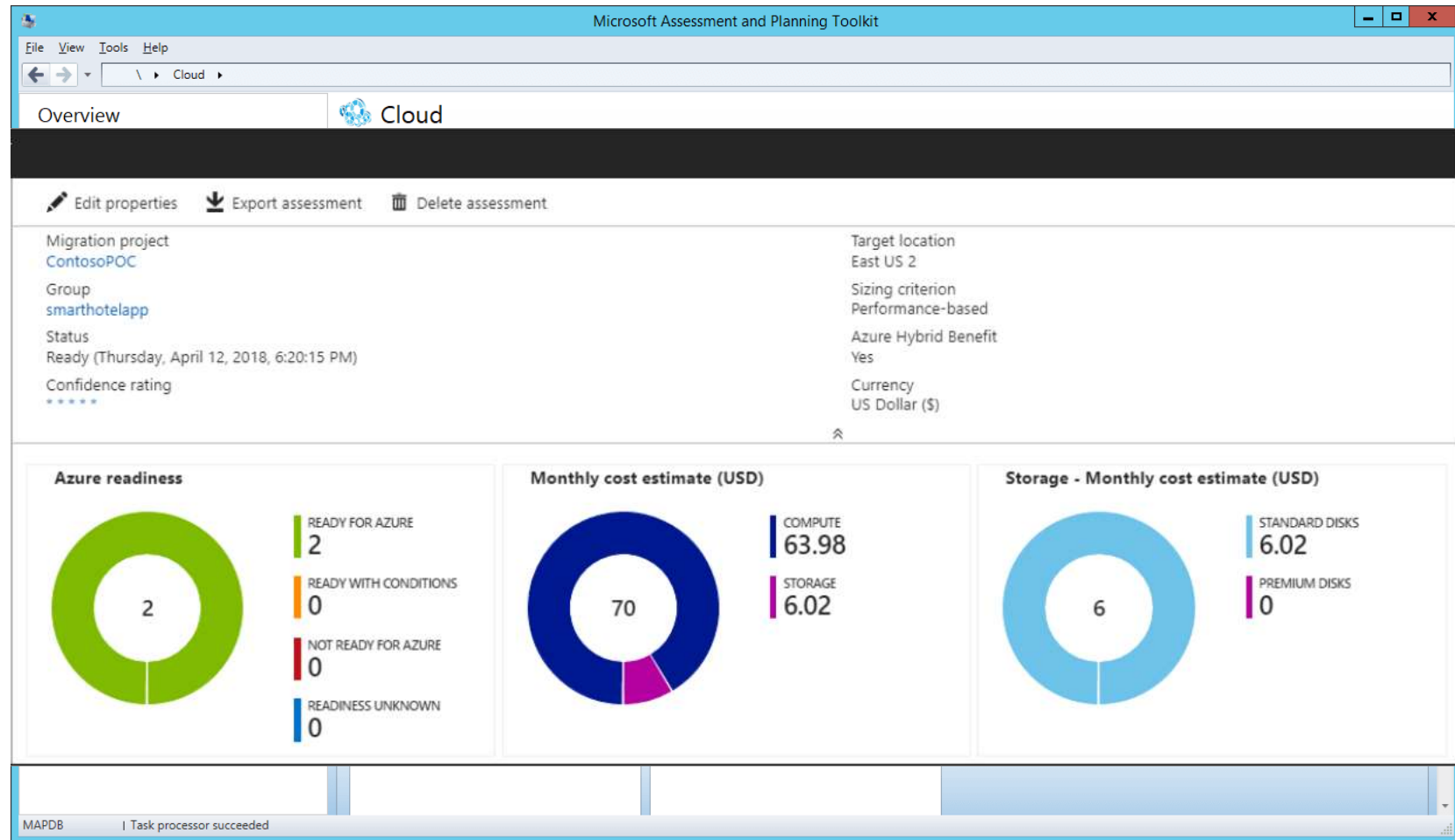
Tool	Pricing	Supported Workloads
 Azure Migrate: Server Migration	View	VMware and Hyper-V virtual machines Physical machines Migration from other public clouds
 Carbonite: Carbonite Migrate	View	VMware and Hyper-V virtual machines Physical machines Migration from other public clouds
 Corent Tech: SurPaaS MaaS	View	VMware and Hyper-V virtual machines Physical machines Migration from other public clouds
 RackWare: Cloud Migration	View	VMware, Hyper-V, Xen and KVM virtual machines Physical machines Migration from other public clouds

Migration Tools



Migration Tools

- Assessment
 - MAP Toolkit
 - Azure Migrate
 - Cloudamize
 - CloudScape
 - Movere
 - ...



Migration Tools

- Migrate
 - Azure Site Recovery
 - Azure Migrate
 - Zerto
 - Carbonite
 - ...

Essentials

Overview Backup **Site Recovery**

Replicated items [\(View all\)](#)



Failover test success ⓘ



ERROR SUMMARY

ERROR ID

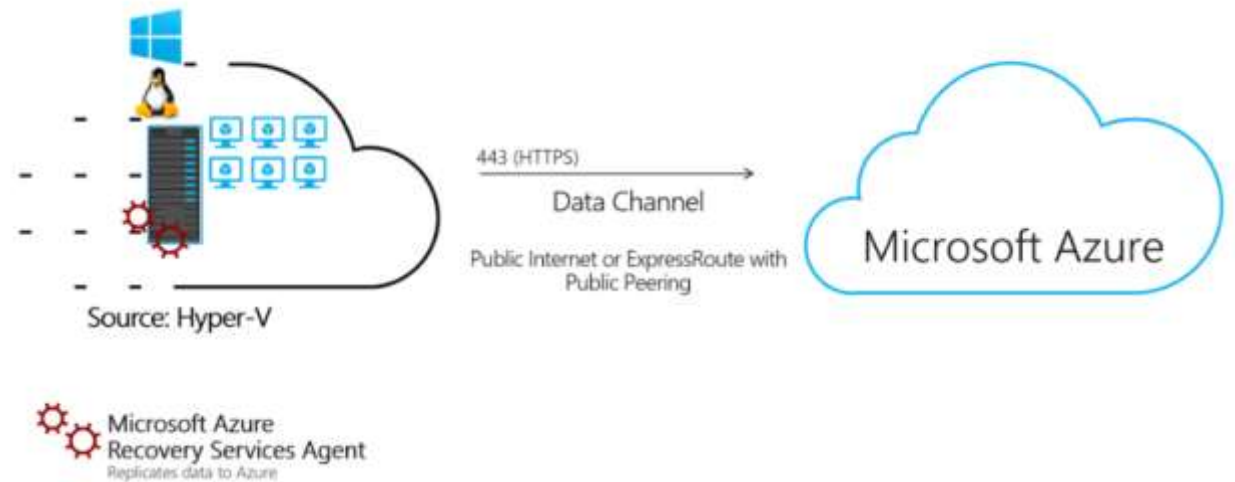
Recent crash consistent recovery point not available	70170
Replication hasn't progressed in the last one hour	68513
Resynchronization required	68510
Replication error	68501

Migration Pitfalls



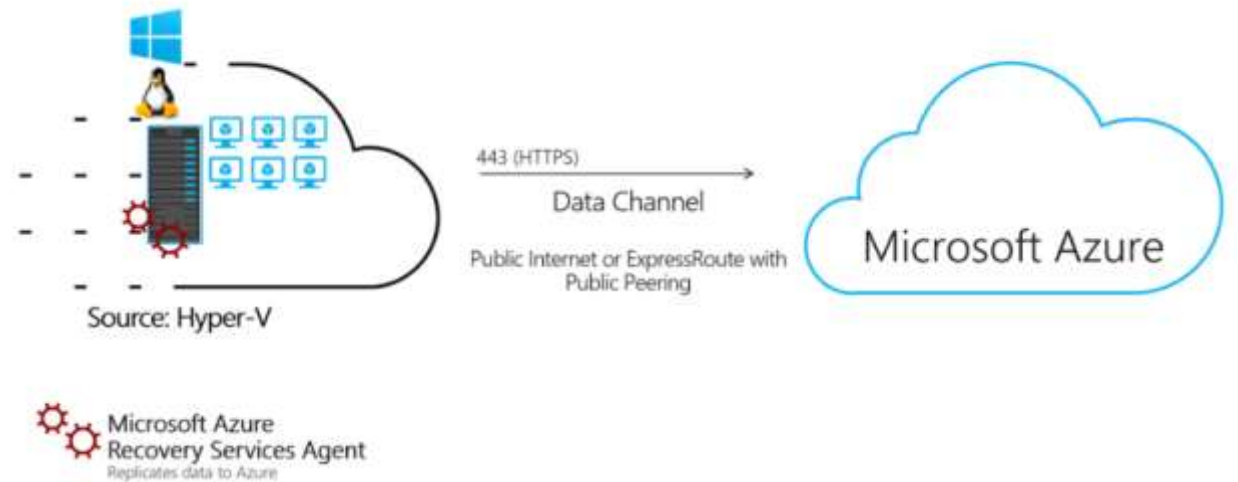
Migration Pitfalls

- Azure Migrate - Hyper-V Support
 - No disk-resizing during replica
 - No static IPs for Linux
 - No encrypted disks
 - No import export service
 - No failback with managed disks
 - Only 64-bit and Server 2008 32-bit



Migration Pitfalls

- Azure Migrate - Hyper-V Support
 - Gen 2 VMs max 300GB OS Disk
 - Gen 1 VMs max 2TB OS Disk
- OS-Config
 - San policy = onlineall
 - RDP enabled
 - Firewall set up correct



Migration Pitfalls

- Premium Storage Account max size = 35 TB

```
Type: SrsServiceException
Error Message: Failover for the virtual machine failed because its storage account is full. Azure error message: 'FMException: [ErrorCode.Storage
[SourceBlobUri = https://asresmigstor01.blob.core.windows.net/4817017157034096454-952675-35186122173689/vhd/12b33d5d-e636-4bc4-9682-1f209
Stack trace: at Microsoft.HyperV.Replica.Hrl.Utils.BlobOperations.<>c__DisplayClass38_0.<StartCopyBlob>b__00
at Microsoft.Internal.Common.FailureModeling.FMComponent3.FMBlock(String fileName, Int32 lineNumber, FMBlockArgs args, Action fmPrecheckBlock
```

- Bandwith / Firewall
- Churn Rate vs. Disk Limits

ASR Replication Storage Target	Source Disk I/O Size	Source Disk write churn that than can be handled by ASR Service per disk
Standard storage	8K	2 MB/sec per disk
Premium P10 disk	8K	2 MB/sec per disk
Premium P10 disk	16K	4 MB/sec per disk
Premium P10 disk	32K	8 MB/sec per disk
Premium P20/P30 disk	8k	5 MB/sec per disk
Premium P20/P30 disk	16K	10 MB/sec per disk
Premium P20/P30 disk	32K	20MB/sec per disk

Conclusion



Conclusion

- Full and long Assessment helps
- Check support matrices and limitations
- Plan project buffer
- No-migrate VMs → make decision early
- Think about limits
- “keep calm – it’s an evolution”

Q&A